

State of California  
AIR RESOURCES BOARD

**PROPOSED CONTROL MEASURE FOR  
OCEAN-GOING VESSELS AT BERTH**



**FINAL STATEMENT OF REASONS**

**November 2020**

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## *Table of Acronyms and Abbreviations*

AB	Assembly Bill
AEG	Advanced Environmental Group
AIS	Automatic Identification System
AMECS	Advanced Maritime Emissions Control System - Marine Exhaust Treatment System
AMP	Alternative Maritime Power
APA	Administrative Procedure Act
ATB	Articulated Tug Barge
At Berth Regulation	Control Measure for Ocean-Going Vessels At Berth
ATCM	Air Toxics Control Measure
BAAQMD	Bay Area Air Quality Management District
BCDC	San Francisco Bay Conservation and Development Commission
BIE	Barge Incident Exceptions
BPC	Bay Planning Coalition
BSFC	Brake Specific Fuel Consumption
C+C	Capture and Control
CAAP	Clean Air Action Plan
CAAQS	California Ambient Air Quality Standards
CAECS	CARB Approved Emission Control Strategy
CAISO	California Independent System Operator
CalEPA	California Environmental Protection Agency
CAPA	California Association of Port Authorities
CAPCOA	California Air Pollution Control Officers Association
CAPP	Community Air Protection Program
CARB	California Air Resources Board
CCR	California Code of Regulations
CE	Cost Effectiveness
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CEQA	California Environmental Quality Act
CH <sub>4</sub>	Methane
CHC	Commercial Harbor Craft
CLIA	Cruise Line International Association
CMP	Carl Moyer Program
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2e</sub>	Carbon Dioxide Equivalent
Control Measure	Control Measure for Ocean-Going Vessels At Berth
CORE	Clean Off-Road Equipment

CPF	Cancer Potency Factor
CPUC	California Public Utilities Commission
CSLC	California State Lands Commission
DOF	Department of Finance
DPM	Diesel Particulate Matter
EA	Environmental Analysis
EF	Emission Factor
EGR	Exhaust Gas Recirculation
EIA	Energy Information Administration
EIAPPC	Engine International Air Pollution Prevention Certificate
EIR	Environmental Impact Report
EO	Executive Order
FAF	Freight Analysis Framework
FAQ	Frequently Asked Questions
FRRS	Freight Regulations Reporting System
FSOR	Final Statement of Reasons
FY	Fiscal Year
G	Gram
GHG	Greenhouse Gas
GW/hrs	Gigawatt Hours
HFC	Hydrogen Fuel Cell
HFO	Marine Heavy Fuel Oil
HRA	Health Risk Assessment
HSC	Health and Safety Code
IAPPC	International Air Pollution Prevention Certificate
IC	Innovative Concept
IEEE	Institute of Electrical and Electronics Engineers
ILWU	International Longshore and Warehouse Union
IMO	International Maritime Organization
IMT	Independent Marine Terminal
IMTT	International-Matex Tank Terminal
IPT	Incidences Per Ton
ISGOTT	International Safety Guide for Tankers and Terminals
ISO	International Organization for Standardization
ISOR	Staff Report: Initial Statement of Reasons
ISR	Indirect Source Rule
K	Thousand
Kg	Kilogram
kWh	Kilowatt Hour
LA	Los Angeles
LADWP	Los Angeles Department of Water and Power
LB	Long Beach
LCFS	Low Carbon Fuel Standard
LNG	Liquefied Natural Gas

LPG	Liquefied Petroleum Gas
MDO	Marine Diesel Oil
MEIR	Maximum Exposed Individual Incremental Cancer Risk
MERP	Modeled Emission Rates for Precursors
METS-1	Clean Air Engineering-Maritime, Inc. Marine Exhaust Treatment System
MGO	Marine Gas Oil
MOTEMS	Marine Oil Terminal Engineering & Maintenance Standards
MOU	Memorandum of Understanding
MWh	Megawatt Hour
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
N <sub>2</sub> O	Nitrous Oxide
NO <sub>x</sub>	Oxides of Nitrogen
OAL	Office of Administrative Law
OEHHA	Office of Environmental Health Hazard Assessment
OGV	Ocean-Going Vessel
PIE	Port Incident Exceptions
PM	Particulate Matter
PM <sub>2.5</sub>	Particulate Matter that are 2.5 microns or less in diameter
PM <sub>10</sub>	Particulate Matter that are 10 microns or less in diameter
PMSA	Pacific Merchant Shipping Association
POLA	Port of Los Angeles
POLB	Port of Long Beach
Prop 1B OR 1B	Proposition 1B: Goods Movement Emission Reduction Program
PSD	Prevention of Significant Deterioration
Reefer	Refrigerated Cargo Ocean-Going Vessel
Regulation	Control Measure for Ocean-Going Vessels At Berth
REL	Reference Exposure Level
REMI	Regional Economic Model, Inc.
Ringlemann Number	Visible Darkness Opacity Limit
RLW	Richmond Long Wharf
ROG	Reactive Organic Gases
Ro-ro	Roll-On Roll-Off Ocean-Going Vessel
RPS	Renewables Portfolio Standard
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO <sub>x</sub>	Sulfur Oxide
SRIA	Standardized Regulatory Impact Assessment
Staff Report	Staff Report: Initial Statement of Reasons

T121	Port of Long Beach Pier T, Berth T121
Tanker	Product or Crude Tanker Ocean-Going Vessel
TEU	Twenty-Foot Equivalent Unit
TIE	Terminal Incident Event
TOG	Total Organic Gases
TPD	Tons Per Day
TPY	Tons Per Year
ULCC	Ultra Large Crude Carrier
U.S.	United States
USCG	United States Coast Guard
U.S. EPA	United States Environmental Protection Agency
VIE	Vessel Incident Event
VLCC	Very Large Crude Carrier
WSC	World Shipping Council
WSPA	Western States Petroleum Association

State of California  
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Response**

PUBLIC HEARING TO CONSIDER THE PROPOSED AT BERTH REGULATION

Public Hearing Date: December 5, 2019, June 25, 2020, and August 27, 2020  
Agenda Item No.: 19-11-1, 20-6-4, 20-8-1

**I. GENERAL**

The Staff Report: Initial Statement of Reasons for Rulemaking (Staff Report or ISOR), entitled "The Proposed Control Measure for Ocean-Going Vessels At Berth," released October 15, 2019, is incorporated by reference herein. The staff report, which is incorporated by reference herein, contained a description of the rationale for the proposed amendments. On October 15, 2019, all references relied upon and identified in the staff report were made available to the public.

As explained in the Staff Report, the Control Measure for Ocean-Going Vessels At Berth ("At Berth Regulation" or "Regulation") is designed to achieve added public health and air quality benefits for California port communities, including those disadvantaged communities identified as Assembly Bill (AB) 617 communities. These benefits result from additional emissions reductions of oxides of nitrogen (NOx), diesel particulate matter (DPM), particulate matter 2.5 (PM2.5), reactive organic gases (ROG), greenhouse gas (GHG) emissions, and black carbon (BC) from ocean-going vessels (OGVs) at berth at California ports and Independent Marine Terminals (IMT).

The At Berth Regulation accomplishes these goals by introducing emission control requirements to: additional ports and terminals, including marine terminals that operate independently from a port or port authority, and vessels not covered under the 2007 Control Measure. The At Berth Regulation intends to simplify and streamline enforcement of the current regulatory requirements by using a regulatory structure different than the 2007 At-Berth Regulation. The 2007 At-Berth Regulation is a vessel fleet-based regulation with annual reporting requirements, whereas the new At Berth Regulation contains emission control and reporting requirements based on individual vessel visits. The regulation requirements amend California Code of Regulations (CCR), title 13, division 3, chapter 5.1, section 2299.3; and title 17, division 3, chapter 1, subchapter 7.5, section 93118.3 and adopt new title 17, division 3, chapter 1, subchapter 7.5, sections 93130-93130.22, CCR.

On December 5, 2019, the California Air Resources Board (CARB) held a public hearing to consider the proposed At Berth Regulation, as described in the Staff Report and

associated Notice of Public Hearing (45-Day Notice). The formal comment period for the Proposed Regulation opened October 18, 2019, and closed December 9, 2019. Written comments were received from a total of 58 comment letters from individuals or organizations during the formal comment period. Oral comments were given by 40 individuals during the December public hearing. Two written comments were received at the hearing. After the December 5, 2019, public hearing, staff proposed to make modifications to the originally proposed regulation, in order to address comments received during the formal public comment period, as well as comments during the Board Hearing.

The text of the proposed modifications to the originally proposed regulation and supporting documents were made available for a supplemental 15-day comment period through a "Notice of Public Availability of Modified Text and Availability of Additional Documents" (15-Day Notice). The 15-Day Notice, modified regulatory language, and additional supporting documents were posted on March 26, 2020, on CARB's website <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>, accessible to stakeholders and interested parties. The comment period commenced on March 26, 2020, and ended on May 1, 2020. All modifications to the regulatory language are clearly indicated in the Notice of Public Availability of Modified Text. There were 75 comment letters received during this period.

On June 25, 2020, CARB held a public information hearing to discuss potential further changes to the proposed regulation. Staff requested the Board's perspective and input in considering a second round of proposed changes, given the current global economic situation. Oral comments were given by 38 individuals during the June public hearing. After the June 25, 2020, public hearing, staff proposed a second set of modifications to the proposed regulation, in order to address comments received during the first 15-day comment period, as well as comments during the Board Hearing.

Staff's proposed changes and supporting documents were made available for a second 15-day comment period through a "Notice of Public Availability of Modified Text and Availability of Additional Documents" (Second 15-Day Notice). The second 15-Day Notice, modified regulatory language, and additional supporting documents were posted on July 10, 2020, on CARB's website <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>, accessible to stakeholders and interested parties. The comment period commenced on July 10, 2020, and ended on July 27, 2020. All modifications to the regulatory language are clearly indicated in the Notice of Public Availability of Modified Text. There were 19 comment letters received during this period.

The written responses to the Draft Environmental Analysis (EA) was posted on August 25, 2020, for public review. The Final EA was subsequently published on August 25, 2020, for public review.

On August 27, 2020, the Final EA, Response to Comments, Final Regulation Order, and Proposed Resolution 20-22 for the Proposed Regulation were presented at a third Board Hearing. Oral comments were given by 35 individuals during the August public hearing. The Board adopted Resolution 20-22 which approves written responses to the Draft EA, certifies the Final EA, approves amendments of the 2007 At-Berth Regulation and adoption of the new At Berth Regulation. This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally-proposed regulatory text, including changes directed by the Board at the December 5, 2019, hearing and the June 25, 2020, hearing and text circulated for public comment during the first and second 15-day comment periods. The FSOR also contains a summary of the comments received during the formal rulemaking process by CARB on the Proposed Regulation or the process by which they were adopted, and CARB's responses to those comments. This FSOR hereby incorporates by reference the August 25, 2020, Responses to Comments on the Draft Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth in California<sup>1</sup> ("*Responses to Comments on the Draft Environmental Analysis*") and the August 27, 2020, Supplemental Responses to Comments on the Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth in California.<sup>2</sup>

#### **A. MANDATES AND FISCAL IMPACTS TO LOCAL GOVERNMENTS AND SCHOOL DISTRICTS**

The Board has determined that this regulatory action will result in a mandate to local agencies but not to school districts. However, the Board finds that that these costs are not reimbursable pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code because costs are not reimbursable when they may be fully financed by local agencies raising their own fees. The local ports have authority to raise fees, if needed, to address the costs of this regulation. Therefore, this is not a reimbursable mandate.

The At Berth Regulation directly impacts ports, many which are local government agencies. Compared to the current conditions, the At Berth Regulation is expected to result in a total cost of \$600,208,000 for ports from 2021 through 2032.

#### **B. CONSIDERATION OF ALTERNATIVES**

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective

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<sup>1</sup> Available at <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/rtc.pdf>.

<sup>2</sup> Available at <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/supplementalrtc.pdf>.

in implementing the statutory policy or other provisions of law than the action taken by the Board.

## **II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL**

### **A. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR IN THE FIRST 15-DAY COMMENT PERIOD (March 26, 2020)**

Subsequent to the December 5, 2019, Board hearing, modifications to the original proposal were made at the Board's direction and to address comments reviewed during the 45-day public comment period. CARB staff released a Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (15-Day Notice) on March 26, 2020, which notified the public of additional documents added into the regulatory record and presented additional modifications to the regulatory text.

The following is a summary of the changes that were made to the initial proposal and were made available for a 15-day comment period. Staff proposed modifications to amendments to Title 13, division 3, chapter 5.1, section 2299.3, and title 17, division 3, chapter 1, subchapter 7.5, section 93118.3, CCR, and adoption of new title 17, division 3, chapter 1, subchapter 7.5, sections 93130-93130.22, CCR.

#### **1. Modifications to Section 93130.2 Section Summary, and Definitions**

- i. Modifications to Subsection 93130.2 (b) Definitions, staff made modifications to the following definitions:
  - a. In Subsection 93130.2(b)(1), staff added a definition for "Assembly Bill (AB) 617 Community Emissions Reduction Plan." This definition explains to the reader what an AB 617 community emissions reduction plan is. This definition is necessary to include in the regulation language because the term is referenced in the requirements section of new section of regulation text (Section 93130.17) that staff added to the regulation.
  - b. In Subsection 93130.2(b)(3), staff added the definition for "Ammonia Slip" to clarify that the term ammonia slip refers to unreacted ammonia through a selective catalytic reduction (SCR) system. This definition is necessary to clarify the requirements for SCR systems in Section 93130.5.
  - c. In Subsection 93130.2(b)(5), staff amended the definition for "Applicant" to include a person requesting approval for an innovative concept. The innovative concept is a new provision added to Section 93130.17, and as such, it is necessary to broaden

the original definition to include persons applying for an innovative concept.

- d. In Subsection 93130.2(b)(6), staff amended the definition for “Application” to include reference to the innovative concept in addition to a CARB-approved emission control strategy (CAECS). It is necessary to establish that applications apply to both an innovative concept and a CAECS.
- e. In Subsection 93130.2(b)(20), staff amended the definition for “Commissioned Shore Power Vessel” to remove the word compatible in response to numerous public comments received expressing uncertainty about the meaning of the word “compatible” in the wording of the original proposal. In the revised definition, staff updated the wording to state that a commissioned shore power vessel is compatible with a terminal when it has completed commissioning at a terminal. As such, the word “compatible” is redundant and no longer necessary and was removed to avoid confusion.
- f. In Subsection 93130.2(b)(21), staff added the definition for “Compliance Period” to establish the maximum timeframe that an innovative concept may be used for compliance. The term is necessary to ensure applicants understand the timeframe an innovative concept is valid before applying (or reapplying) to use an innovative concept.
- g. In Subsection 93130.2(b)(32), staff amended the definition for “Fleet” to include language on maintaining and authorizing the use of Vessel Incident Events (VIE). This addition is necessary to answer the question of how a vessel operator uses a VIE and was made in response to public comments received.
- h. In Subsection 93130.2(b)(39), staff added the definition of “IMO Number”, where IMO stands for International Maritime Organization. This change is necessary to clarify the vessel and terminal reporting requirements.
- i. In Subsection 93130.2(b)(40), staff added the definition of “IMO NOx tier”. This change is necessary to clarify the vessel and terminal reporting requirements.
- j. In Subsection 93130.2(b)(42), staff added the definition of “Innovative Concept” to include an alternative compliance pathway in which applicants can achieve additional reductions

near a port or marine terminal and use the reductions for compliance. It is necessary to add this definition as the innovative concept provision is a new addition to the Proposed Regulation and was not included in the original proposal.

- k. In Subsection 93130.2(b)(63), staff broadened the definition of “Ready to Work” to ensure that delays caused by any government authority with jurisdiction over a vessel visit do not impede with compliance with this regulation. This change is necessary to ensure the start of a visit occurs after a vessel is capable of being worked.
- l. In Subsection 93130.2(b)(88), staff updated the definition of “Visit” to include the clarification that vessel shifts are considered another visit. This occurrence is alluded to in the regulation text but is necessary in the definition to avoid any misunderstanding of the definition of a visit.
- m. In Subsection 93130.2(b)(91), staff added language identifying that a shift from one berth to another is considered a new visit at each subsequent berth. This addition is necessary to clarify the compliance requirements of the regulation to vessel and terminal operators.

## 2. Modifications to Section 93130.3 Applicability

- i. In Subsection 93130.3(b) Federal Requirements, staff added the following sentence: “Nothing in this Control Measure shall be construed to require anyone to take any action prohibited by the United States Constitution or the California Constitution.” This addition is necessary to ensure that this regulation is consistent with any federal or state laws.

## 3. Modifications to Section 93130.5 CARB-Approved Emission Control Strategy

- i. In Subsection 93130.5(a) Executive Order (EO) requirement, staff modified the original proposed regulatory language to remove the phrase “at a port or terminal”. This change is necessary to ensure that CAECS can be used on the vessel or alongside the vessel in addition to a port or terminal.
- ii. In Subsection 93130.5(b)(4) Requirement to reduce emissions, staff added new language to establish the innovative concept provision (added as Section 93130.17 to the regulation) as an approved compliance option for regulated entities in this regulation. This addition is necessary to ensure that entities using an innovative concept can

comply with the requirements of the regulation.

- iii. In Subsection 93130.5(d)(4), staff added language to specify that CAECS using SCR must use a continuous emission monitor in order to continuously test ammonia slip and (NO<sub>x</sub>). This addition is necessary to ensure that any technology relying on an SCR to control ammonia slip and NO<sub>x</sub> must have a continuous emissions monitoring system (CEMS) on it.
- iv. In Subsection 93130.5(g), staff deleted the word “certified”. Because CARB does not have a certification program for vessel source testing, this change is necessary to be less restrictive in who can provide source testing for ocean-going vessels. However, CARB staff still expects third party testing to be completed by qualified sources with knowledge in the area of ocean-going vessel emissions testing.
- v. In Subsection 93130.5(k) Records Retention, staff decreased the time allowed for a regulated party to return information when requested by CARB staff from 30 days to 10 days. This change is necessary to ensure CARB enforcement staff are provided with requested information in a timely manner to aid in the determination of a visit’s compliance, and for consistency with the same change in Sections 93130.7(g), 93130.9(g), and 93130.12(e).

#### 4. Modifications to Section 93130.6 Opacity Requirements

- i. In Section 93130.6 Opacity Requirements, staff added amendments to clarify the methodology to be used to analyze opacity to ensure that readers understand the methodology that will be used to assess opacity. Staff also added language to recognize that alternative test methods for opacity may be used upon written approval from the Executive Officer. In public comments, use of the United States Environmental Protection Agency’s (U.S. EPA) Alternative Method 082 was suggested to measure opacity. Although this alternative wasn’t incorporated into the regulation language because of the emissions stack size limitations of the method, the modification to the original proposal is necessary to ensure that a suitable alternative standard could be used to determine opacity.

#### 5. Modifications to Section 93130.7 Vessel Operator Requirements

- i. In Subsection 93130.7(a) Shore power requirements for at berth emission reductions, staff amended the requirement for terminals to plug-in commissioned shore power vessels. The concept of a compatible shore power vessel was removed and replaced with compatibility being based on the vessel successfully commissioning. This change is necessary to

provide clarity to regulated entities as to what constitutes a commissioned shore power vessel and is critical as it plays a role in determining who is responsible for violations when emissions are not reduced from shore power capable vessels at berth.

- ii. In Subsection 93130.7(b) Requirements for vessel auxiliary engines, staff changed the compliance start dates for controlling auxiliary engines for roll on-roll off vessels to 2024, tanker vessels visiting the Ports of Los Angeles (LA) and Long Beach (LB) to 2025, and all remaining tanker vessels to 2027. This change is in direct response to the CARB Board's request to accelerate implementation dates in order to achieve earlier public health benefits from the regulation.
- iii. In Subsection 93130.7(c) Requirements for tanker auxiliary boilers on tanker vessels with steam driven product pumps, staff changed the compliance start dates for controlling tanker auxiliary boilers for tanker vessels at the Ports of LA/LB to 2025, and all remaining tanker vessels to 2027. This change is in direct response to the CARB Board's request to accelerate implementation dates in order to achieve earlier public health benefits from the regulation.
- iv. In Subsection 93130.7(e) Vessel compliance checklists, staff made the following modifications:
  - a. In Subsection 93130.7(e)(2), staff added ports as an entities that can require commissioning. The original proposal only listed terminals, so this change is necessary to capture the fact that ports can be the entity requiring commissioning of a vessel prior to connecting it to shore power.
  - b. Subsection 93130.7(e)(3), staff changed the time requirement for vessels to begin controlling emissions from within one-hour after "Ready to Work" to within two hours after "Ready to Work". This change is necessary to address concerns that vessel and terminal operators have with meeting the one-hour requirement from the original proposal when common issues (such as equipment malfunctions, connection issues, and labor delays) arise.
  - c. In Subsection 93130.7(e)(4), staff made the following modifications:
  - d. The allowable timeframe for vessel operators to report visit information be increased from 7 days to 30 days. This change is necessary to address concerns that vessel and terminal operators have with meeting the reporting timeframe in the original

proposal.

- e. In Subsection 93130.7(e)(4)(A), adding “fleet name” to the vessel’s reporting requirements. This change is necessary to ensure that fleet names are reported with each visit, as that is how VIEs are determined (in Section 93130.11 of the regulation).
- f. In Subsection 93130.7(e)(4)(E), adding reporting of a vessel’s IMO NOx tier to the vessel’s reporting requirements. This addition is necessary because the IMO NOx tier of a vessel has an impact on the remediation fund amount due if a remediation fund is used during a visit.
- g. In Subsection 93130.7(e)(4)(S), amending language to clarify the reporting requirements in the event a vessel uses the remediation fund during a visit. These changes were necessary to clarify how to report use the remediation fund, and to specify that remediation fund usage must be requested and is not automatically approved through reporting of an incident.
- h. In Subsection 93130.7(e)(4)(T), amending language to clarify the reporting requirements in the event a vessel uses a TIE or VIE during a visit. These changes were necessary to clarify how to report use of a TIE or VIE.
- i. In Subsection 93130.7(e)(4)(U), adding reporting requirements for vessel operators using an innovative concept to comply with the regulation instead of using a CAECS on a vessel to reduce emissions at berth during a visit. This addition is necessary as a direct result of new language staff added to the regulation in Section 93130.17.
- j. Subsection 93130.7(f) was deleted and consolidated in a new section (Section 93130.19) along with other identical subsections throughout the document. This change was made to shorten and simply the regulation text.
- k. In Subsection 93130.7(g) Records retention, staff decreased the time allowed for a regulated party to return information when requested by CARB staff from 30 days to 10 days. This change is necessary for consistency with the same change in Sections 93130.5(k), 93130.9(g), and 93130.12(e).

## 6. Modifications to Section 93130.8 Vessel visit exceptions

- i. In Subsection 93130.8(d), staff broadened the exception for research projects. CARB recognizes that there are times when valuable research could further the efforts of technology for controlling emissions. Broadening this research exception is necessary to allow for vessels to remain compliant with the regulation if their research precludes a vessel visit from reducing emissions at berth as required by the regulation, especially if the research task is to test a new potentially viable compliance strategy.
- ii. In Subsection 93130.8(g), staff amended the language to clarify that the at berth emission reduction requirements of section 93130.7 and section 93130.9 of this Control Measure do not apply during a vessel's visit if the vessel fleet uses a VIE or the terminal operator uses a TIE specified in section 93130.11 of this Control Measure. This addition is necessary to clarify what requirements of the regulation covered by the use of a TIE or VIE.
- iii. In Subsection 93130.8(h), staff amended the language to clarify that the at berth emission reduction requirements of section 93130.7 and section 93130.9 of this Control Measure do not apply during the portion of a vessel's visit that qualifies and uses the remediation fund option in section 93130.15 of this Control Measure. This addition is necessary to clarify what requirements of the regulation covered by the use the remediation fund.
- iv. Staff added Subsection 93130.8 (i) to provide a vessel operator with instructions for how to use an exception when using an innovative concept to comply with the regulation. This addition is necessary to ensure that vessel visits utilizing an innovative concept can comply with the regulation even if emissions are not reduced while a vessel is at berth.

## 7. Modifications to Section 93130.9 Terminal Operator Requirements

- i. In Subsection 93130.9 (a) Shore power requirements for at berth emission reductions, staff made the following modifications:
  - a. In Subsection 93130.9(a), staff amended language throughout subsection (a) to include ports as entities with the responsibility to commission vessels. This change is necessary based on comments CARB staff received stating that ports often were responsible for requiring vessel's to commission, and that it is not always the responsibility of the terminal operator.
  - b. In Subsection 93130.9(a)(1), staff deleted the word "compatible"

from the regulation language. This change is necessary to eliminate stakeholder confusion about what made a shore power vessel “compatible” and align this subsection with the revised definition of “commissioned shore power vessel” in subsection 93130.2(b)(19). Subsection 93130.9(a)(1) emphasizes the requirement that a terminal accommodate a vessel that has previously been commissioned. If a terminal has accommodated a vessel once, they are expected to find a way to accommodate them again.

- c. In Subsection 93130.9(a)(2), language added to clarify that a terminal operator’s responsibility to commission shore power vessels exists when the vessel is berthed with shore power facing the wharf. This addition is necessary to ensure that terminal operators are not held responsible for connecting a vessel to shore power if that vessel does not have a connection point on the side that a terminal can berth the vessel. For example, if a terminal is only able to accommodate a vessel berthing on the port side, then they do not have an obligation to commission the shore power on a vessel that only has a starboard side connection point. In this case, the vessel would be responsible for making shore power commissionable with the terminal, including moving their shore power connection box or installing shore power on both sides of the vessel.
- ii. In Subsection 93130.9(d) Terminal operator compliance checklist, staff made the following modifications:
    - a. In Subsection 93130.9(d)(4), added language to clarify requirements for connecting a vessel to shore power or another CAECS. This change from the original Proposed Regulation is necessary to specify that these requirements apply to all CAECS, not only shore power.
      - a) Subsection 93130.9(d)(4)(B) and (C) amendments to the time requirement for vessels to begin controlling emissions from within 1-hour after “Ready to Work” to within-2 hours after “Ready to Work”. This change is necessary to address concerns that vessel and terminal operators have with meeting the 1-hour requirement from the original proposal when common issues (such as equipment malfunctions, connection issues, and labor delays) arise. The language is also changed to clarify that the connection time requirement pertains to any CAECS, not just shore power.

- b. In Subsection 93130.9(d)(5), staff increased the time to submit visit information from 7 days to 30 days to be consistent with the changes made to Sections 93130.7(e)(3) and 93130.15(c). This change is necessary to ensure consistent reporting requirements in the regulation language.
  - c. In Subsection 93130.9(d)(5)(C), staff added language to include reporting of a vessel's type. This information is necessary for consistency with the vessel reporting requirements in Subsection 93130.7(e), and is critical because control requirements of the regulation depend on vessel type.
  - d. In Subsection 93130.9(d)(5)(D), staff added language to include to include reporting of a vessel's IMO NOx tier. This addition is necessary because the IMO NOx tier of a vessel has an impact on the remediation fund amount due if a remediation fund is used during a visit.
  - e. In Subsection 93130.9(d)(5)(N), staff added language to clarify the reporting requirements in the event a vessel uses the remediation fund during a visit. These changes were necessary to clarify how to report use the remediation fund, and to specify that remediation fund usage must be requested and is not automatically approved through reporting of an incident.
  - f. In Subsection 93130.9(d)(5)(O), staff amended the language to clarify the reporting requirements in the event a vessel uses a TIE or VIE during a visit. These changes were necessary to clarify how to report use of a TIE or VIE.
  - g. In Subsection 93130.9(d)(5)(P), staff added amendments to include reporting requirements for terminal operators using an innovative concept to comply with the regulation instead of using a CAECS on a vessel to reduce emissions during a visit.
- iii. Subsection 93130.9(e) was deleted and consolidated in a new section (Section 93130.19) along with other identical subsections throughout the document. This change was made to shorten and simply the regulation text.
  - iv. In Subsection 93130.9(g) Records retention, staff decreased the time allowed for a regulated party to return information when requested by CARB staff from 30 days to 10 days. This change is necessary for consistency with the same change to Section 93130.5(k), 93130.7(g), and 93130.12(e)

## 8. Modifications to Section 93130.10 Terminal Exceptions

- i. In Subsection 93130.10(c) Vessel commissioning, staff added language to be consistent with the vessel exception for commissioning in Subsection 93130.8(c). This change is necessary to identify that the exception for commissioning applies to terminal operators, as well as vessel operators because commissioning must occur when using shore power to ensure safe operation of the system.
- ii. In Subsection 93130.10(e) Research, staff added updates consistent with the changes made to Subsection 93130.8(d), which are necessary to allow for a broader exception for research projects.
- iii. In Subsection 93130.10(h) Innovative concept, staff made updates to be consistent with changes made to Subsection 93130.8(i). This addition is necessary to ensure that terminal operators utilizing an innovative concept are able to comply with the regulation even if emissions are not reduced while a vessel is at berth.

## 9. Modifications to Section 93130.11 Vessel Incident Events (VIE) and Terminal Incident Events (TIE)

- i. In subsection 93130.11(a), staff amended the language to include the phrase "excluding those visits made under an innovative concept in Section 93130.17 of this control measure". This addition is necessary to clarify that regulated entities using an innovative concept provision to comply with the regulation cannot use TIEs and VIEs as a compliance option.
- ii. In Subsection 93130.11(b), staff updated the VIE and TIE table to reflect the proper TIE and VIE rates for the adjusted implementation dates for roll on-roll off (ro-ro) and tanker vessels. This is necessary to provide VIEs and TIEs at appropriate levels for these categories based on their new compliance start dates.
- iii. Staff added a new Subsection 93130.11(c) Request for TIEs and VIEs in order to provide a process for fleets and terminals to request additional TIEs or VIEs when an increase in activity is anticipated, or for new fleets or terminals that would not have historical visit information to determine TIEs or VIEs. This section is necessary to ensure fleets and terminals have the ability to plan for growth, and to allow for new businesses to enter the California market. When a request for TIEs or VIEs is approved, the number of TIEs or VIEs granted would be based on a percentage of the upcoming year's anticipated visits instead of the current year's visits. A

fleet or terminal operator that receives additional TIEs and VIEs are responsible for not using more TIEs and VIEs than they would receive based on their actual activity in the year. The process allows for CARB staff to review the vessel visit activity and issue a violation for noncompliance if excess VIEs and TIEs are used.

#### 10. Modifications to Section 93130.12 CAECS Operator Requirements.

- i. In Subsection 93130.12(b) CARB approved emission control strategy (CAECS) checklist, staff made the following changes:
  - a. In Subsection 93130.12(b)(2), staff made amendments to be consistent with the changes made in section 93130.7(e)(3). This change is necessary to address concerns that vessel and terminal operators have with meeting the 1-hour requirement from the original proposal when common issues (such as equipment malfunctions, connection issues, and labor delays) arise.
  - b. In Subsection 93130.12(b)(3), staff made the following modifications for consistency with changes made to Subsection 93130.7(e)(4):
    - b) The allowable timeframe for reporting a vessel visit increased from 7 days to 30 days. This change is necessary to address concerns that vessel and terminal operators have with meeting the reporting timeframe in the original proposal.
  - c. In Subsection 93130.12(b)(D), staff added language requiring the reporting of a vessel's IMO NO<sub>x</sub> tier to the vessel's reporting requirements. This addition is necessary because the IMO NO<sub>x</sub> tier of a vessel has an impact on the remediation fund amount due if a remediation fund is used during a visit.
  - d. In Subsection 93130.12(b)(H), staff added language requiring the reporting of a CAECS operator's contact information. This addition is necessary to provide CARB enforcement staff with contact information in case additional follow-up is required.
  - e. Staff created a new Subsection 93130.12(c), to move malfunction reporting and recordkeeping requirements out of the CAECS compliance checklist section and in its own separate section for better clarity. In this new subsection, staff made multiple changes to reporting requirements from the original proposal into recordkeeping requirements (versus reporting), which were moved

to a separate subsection 93130.12(c)(2). The changes in this subsection are critical to streamlining the reporting requirements and lessen the burden on reporting for CAECS operators.

- f. In Subsection 93130.12(e) Records retention, staff decreased the time allowed for a regulated party to return information when requested by CARB staff from 30 days to 10 days. This change is necessary for consistency with the same change to Section 93130.5(k), 93130.7(g), and 93130.9(g).
- g. Subsection 93130.12(f) was deleted and consolidated in a new section (Section 93130.19) along with other identical subsections throughout the document. This change was made to shorten and simply the regulation text.

#### **11. Modifications to Section 93130.13 Port Requirements**

- i. Staff added Subsection 93130.13(b) Shared responsibility with terminals, to specify that ports share responsibility with terminals to reduce emissions from vessels at a terminal. The language states that ports must outline their responsibilities in their port plan, and can be held responsible for violations that can be found to be the ports responsibility. This addition is necessary to ensure ports understand that the responsibilities of the port in the port plan are tied to compliance with a vessel visit.

#### **12. Modifications to Section 93130.14 Terminal and Port Plans and Interim Evaluation**

- i. Staff made the following modifications to Subsection 93130.14(a) Terminal plans:
  - i. In Subsection 93130.14(a)(2)(F), staff adjusted the submittal dates by one year for ro-ro terminals (from 2024 to 2023) and by two years for tanker terminals (from 2026 to 2024 for tankers at Ports of Los Angeles and Long Beach, and from 2028 to 2026 for all remaining statewide tanker terminals). This change is in response to the adjusting of implementation dates in Section 93130.5(b) and (c).
  - ii. In Subsection 93130.14(a)(3), staff added "such that the terminal is capable of meeting compliance requirements by the implementation date listed in Table 1". This change is necessary to ensure that terminal plans include a discussion of any necessary infrastructure modifications that are needed to reduce emissions

from ocean-going vessels, and are done within a time frame that will allow the terminal to comply with the required implementation date for their vessel category as listed in Table 1.

- iii. In Subsection 93130.14(a)(4), staff added language to specify that if a terminal operator does not meet terminal plan schedules, then they are subject to enforcement actions. This addition is necessary to ensure consistency with language specified for port plans in Section 93130.14(b)(3).

Language is also added to specify that the division of responsibilities between a terminal operator and port (as applicable) must be signed by the port's Responsible Officer. This addition is necessary to ensure that terminal and ports are submitting an agreed upon division of responsibilities to assist with CARB's determination of which party may ultimately be held responsible for any uncontrolled emissions during a regulated vessel visit.

- ii. Staff made the following modifications to Subsection 93130.14(b) Port plans:
  - i. In Subsection 93130.14(b)(3), staff added "such that each terminal at the port is capable of meeting compliance requirements by the implementation dates listed in Table 1". This change is necessary to ensure that port plans include a discussion of any necessary infrastructure modifications that are needed to reduce emissions from ocean-going vessels and are done within a time frame that will allow each of their regulated terminals to comply with the required implementation date for their vessel category as listed in Table 1.
  - ii. In Subsection 93130.14(b)(4), staff to deleted the phrase "If port plan schedules are not met, they are subject to enforcement actions". This deletion is necessary in order to avoid penalizing terminals and ports that are unable to meet their original plan timelines, which could potentially be due to circumstances outside their control (such as construction or permitting delays).

Staff also added language to specify that the division of responsibilities between a terminal operator and port (as applicable) must be signed by the port's Responsible Officer. This additional language is necessary to ensure consistency with language added to Subsection 3130.15(a)(4).

- iii. In Subsection 93130.14(d), staff added language specifying that the Interim Evaluation will include a review of:
- Potential requirements for control technologies for use with bulk and general cargo vessels, and for ocean-going vessels at anchor;
  - Information provided by port and terminal plans;
  - Other information provided to CARB, including terminal-specific engineering evaluations, logistical considerations, public engagement, and independent studies that informs the implementation timeline.

These additions are necessary to provide more specificity to the Interim Evaluation and are in direct response to direction given to staff by CARB's Board at the December 5, 2019, public Board Hearing.

Staff also adjusted the date of the Interim Evaluation from July 1, 2023 to December 1, 2022. This change is due to the adjustment of implementation dates in Section 93130.5(b) and (c) and is necessary to provide more time prior to ro-ro and tanker vessel implementation dates for CARB staff to review the progress of emissions control technologies and necessary infrastructure improvements.

### **13. Modifications to Section 93130.15 Remediation Fund Use**

- i. Staff made the following modifications to Subsection 93130.15(b):
- i. Adding language throughout Section 93130.15 to allow CAECS operators and ports to request to use the remediation fund option if the request is supported by compelling documentation that demonstrates the eligibility of the request, consistent with the criteria in Section 93130.15, as determined by CARB. The original proposal specified that only vessel and terminal operators could use the remediation fund. This change is response to multiple comments received requesting CAECS operators and ports to be able to use remediation to remain compliant with the regulation in qualifying circumstances.
  - ii. In Subsection 93130.15(b)(1) Terminal equipment repairs, staff added language that allows terminals and/or ports who have invested in shore-side control equipment, and maintain that equipment according to manufacturer recommendations, to use the remediation fund in the event that equipment needs maintenance, commissioning, repairs, or needs to be replaced (and new or replacement equipment has been ordered in a timely manner, but has not been received). The original proposal

allowed remediation fund use only for terminal equipment repair/replacement, construction, and delayed connection events, however, staff received numerous comments that the remediation fund should be open for commissioning and maintenance as well.

- iii. In Subsection 93130.15)(b)(2) Vessel equipment repairs, staff added language that allows vessel operators who have invested in shore power or other on-board control equipment, and maintain that equipment according to manufacturer recommendations, to use the remediation fund in the event that equipment needs maintenance, commissioning, repairs, or needs to be replaced (and new or replacement equipment has been ordered in a timely manner, but has not been received). The original proposal allowed for remediation fund use only for equipment repair/replacement, construction, and delayed connection events. However, staff received numerous comments that the remediation fund should be open for commissioning and maintenance as well.
- ii. In Section 93130.15(c), staff increased the visit reporting requirements from 7 days to 30 days to remain consistent with changes made to the vessel and terminal operator reporting requirements in Sections 93130.7(e)(4) and 93130.9(d)(5), respectively. This change is necessary to ensure consistent reporting requirements in the regulation language.
- iii. In Section 93130.15(h), staff increased the reporting requirements from 7 days to 30 days to remain consistent with changes made to the vessel and terminal operator reporting requirements in Sections 93130.7(e)(4) and 93130.9(d)(5), respectively. This change is necessary to ensure consistent reporting requirements in the regulation language.

#### **14. Modifications to Section 93130.16 Remediation Fund Administration**

- i. In Subsection 93130.16(a), staff added the phrase “the California air Pollution Control Officers Association (CAPCOA)” to the language to make it clear that solicitations for a remediation fund administrator will be sent to this group. The addition of CAPCOA as an eligible entity to apply to be a remediation fund administrator is a change from the original proposal, and as such, it is necessary to include them in this section for clarity and consistency.
- ii. In Subsection 93130.16(d), staff added language stating that CARB may request additional information from an applicant requesting to use the remediation fund if it is necessary to determine the applicant’s eligibility or that it meets the criteria for approval as specified in the regulation. This additional language is necessary to ensure that CARB staff can

request additional information from entities requesting to use the remediation fund if inadequate information is submitted during the application process.

- iii. In Subsection 93130.16(f), staff added language to allow air districts without direct jurisdiction over a port and the California Air Pollution Control Officers Association (CAPCOA) as potential remediation fund administrators, and deleting the phrase “non-profit”. This additional language is necessary to broaden the pool of potential remediation fund administrators in order to reduce the risk of the remediation fund not being an available option to use for compliance with the regulation at any specific port or marine terminal.
- iv. Staff made the following modifications to Subsection 93130.16(h):
  - i. In Subsection 93130.16(h)(5), staff added language to state that a memorandum of understanding (MOU) with a remediation fund administrator must include a timeframe by when the remediation monies must be expended. This additional language is necessary to ensure that remediation funds collected by remediation fund administrators are spent over a certain period of time and not left sitting unused for an extended period of time.
  - ii. In Subsection 93130.16(h)(7), staff amended the recordkeeping requirements for remediation fund administrators from three years to up to five years, and also added language to clarify when that time period of recordkeeping commences and ends. The change is necessary to ensure CARB staff has ample time to audit and review projects funded through use of the remediation fund to ensure they are achieving the required emissions reductions, and to ensure remediation fund administrators have a clear understanding of the timeframe in which those records need to be kept.

## **15. Addition of Section 93130.17 Innovative Concept Compliance Option**

- i. Staff added Section 93130.17 to the regulation. This section sets forth a compliance option to provide a vessel operator, terminal operator, or port a way to incorporate an innovative concept to reduce emissions from other sources in and around the port at a level comparable to what would be achieved with reducing emissions from vessels.

Under this section, innovative strategies can be implemented as an additional compliance pathway for the regulation, provided the Innovative Concepts/strategies result in equivalent emission reductions

of PM, NO<sub>x</sub>, and ROG emissions that are the same or greater than the emissions reductions that would have occurred under the regulation over the applicable compliance period, while also not increasing GHG emissions.

Staff added this section to the regulation in response to numerous comments received from industry members and ports expressing the desire to pursue lower cost emissions reductions strategies that might achieve equivalent or greater emissions reductions as reducing emissions from vessels at berth. This provision is anticipated to be particularly useful during the early years of the regulation, acting to give vessels, terminals, and ports additional time to develop infrastructure and equipment to control emissions from vessels at berth.

- ii. Subsection 93130.17(a) lists the requirements for using an innovative concept compliance option including the timeframe which one can submit an application, the emissions reductions requirements that must be achieved, the location(s) where reductions must occur, the timeframe an innovative concept can be used for compliance, and how the innovative concept interacts with traditional compliance mechanisms such as TIEs, VIEs, and remediation. This section is necessary to provide regulated parties with criteria for how the innovative concept can be used and to provide certainty that the concept will result in reductions equivalent or greater to the control measure's requirements. This section is also necessary to advise applicants that they must receive Executive Officer approval for an innovative project prior to using it for compliance.
- iii. Subsection 93130.17(a)(1) lists the application due dates. Applications for Innovative Concepts are due on or before terminal plan and port plan due dates. The reason staff selected this due date for Innovative Concepts is to allow time for staff to evaluate port and terminal plans with the knowledge of what potential Innovative Concepts would be applied, as well as ensure Innovative Concepts are projects that are real, quantifiable, and achieve emissions reductions early or in excess of the regulation.
  - a. In Subsection 93130.17(a)(8), staff allowed Innovative Concepts to be valid for a compliance period no greater than three years before needing to be renewed. The three-year time period is expected to be long enough to allow the applicant a window of certainty for compliance with the Regulation but short enough to ensure that an innovative concept is still achieving early or excess emissions reductions. Reapplication after three years is necessary because it is possible that the emissions source being controlled

through an innovative concept may become regulated in the future, meaning that innovative concept may not be valid for achieving early or excess emissions reductions indefinitely. After each compliance period of three years, the Executive Officer may renew an innovative concept application, but only after ensuring that it still meets all the criteria of an innovative concept and has succeeded in meeting the required reductions of the program.

- a) In Subsection 93130.17(a)(8)(A), staff required applications for Innovative Concepts be reapplied for at least 180 days before the end of the three year compliance period. Staff selected 180 days to ensure there is enough time to complete the full application process, including the public comment period, response period, and review period.
- b) In Subsection 93130.17(a)(14), staff required that any person complying with this Control Measure using an approved innovative concept maintain and keep all records as specified in this subsection for a period of not less than five years. This addition is necessary to ensure that entities using an innovative concept are reporting and recording adequate information needed by CARB staff to verify that the innovative concept is achieving the required emissions reductions.

Staff also made a change that reports and records should be submitted to the Executive Officer in the manner specified in the approved innovative concept and upon request by the Executive Officer within 10 calendar days or by a later date approved by the Executive Officer on a case-by-case basis. This language is necessary to give CARB staff flexibility if an entity is unable to meet the 10-calendar-day deadline due to events occurring beyond their control.

- iv. Subsection 93130.17(b) lists the application and approval process for an innovative concept compliance option. Applications must contain enough information so that CARB staff can review the innovative concept to understand who will be the primary contact overseeing the innovative concept project(s), what reductions will the concept achieve, how will the reductions be accounted for, and review the agreement with all project partners on the scope and requirements of the project to qualify it for use as an innovative concept. A public comment period is required, and applicants must respond to all public comments before CARB will

consider an application. This is necessary to allow the public an opportunity to engage in a dialogue and be included in the process for Innovative Concepts.

- i. Subsection 93130.17(b)(2) outlines the public comment and response requirement for innovative concept applications. Staff believes 45 days is an adequate time for the public to review the proposed compliance pathway and for the applicant to respond.
- ii. Subsection 93130.17(b)(3) lists the factors staff will use to evaluate and approve an innovative concept. Staff believes 45 days is adequate to review an application and respond to the applicant with an approval or request for additional information.
- iii. Subsection 93130.17(b)(5) requires applications to respond to a request for additional information and provides applicants 30 days to complete the response. Staff believes that 30 days is adequate for an applicant to provide any additional information that may be requested for staff to complete the evaluation of the innovative concept.
- v. Subsection 93130.17(c) reiterates that vessel operators and terminal operators must continue to report vessel visit information as they normally would during a visit that uses an innovative concept. This language is included to gather information about the vessel visit activity and resulting emissions, so that CARB staff can determine the baseline emissions that need to be offset by the innovative concept.
- vi. Subsection 93130.17(d) lists the process for submitting annual reports and a mechanism to calculate how much emissions reductions are required for compliance under an innovative concept. In general, the emissions needing to be reduced will be strictly those emissions that result from the operation of auxiliary engines and tanker boilers in the case of tanker vessels with steam driven boiler pumps. In the situation where a vessel uses an innovative concept that involves the vessel itself at berth, the vessel needs to create a new baseline for the vessel's visit based on the estimated emissions from the total power used at berth, assuming the auxiliary engine(s) and boiler(s) were running the entire time using CARB's default emissions rates. The annual report must also include a summary of the reductions achieved by the innovative concept, which will follow the calculations and methodology described in the Innovative Concept's approved application. Staff chose February 1 for

the reporting deadline for consistency with other reporting deadlines in the regulation.

- a. Subsection 93130.17(d)(1)(B) describes an equation to determine emissions needing to be reduced based on fuel used during a visit. This equation is "fuel used (kg) \* power conversion factor of a diesel engine (kWh/kg) \* emission factor (g/kWh)", where kg means kilograms, kWh/kg means kilowatt-hour per kilogram, and g/kWh means grams per kilowatt-hour. For the emission factor, we use the difference between the baseline emission factor of a vessel and the required emission level for compliance. For example, if a vessel used 1,000 kg of fuel during a visit, then the vessel's anticipated emission reductions would be about 41,000 g NO<sub>x</sub> (0.045 tons) because  $1,000 \text{ kg MGO} * (1 \text{ kWh} / 0.270 \text{ kg MGO}) * (13.8 - 2.8) \text{ g NO}_x / \text{kWh} = 40,740 \text{ g}$ . Similarly, PM 2.5 reductions would be 560 g and ROG reductions would be 1,680 g. This equation is necessary to include in the regulation so that entities applying to use an innovative concept know how to calculate projected emissions reductions when planning and developing their innovative concept and application.
  
- b. Subsection 93130.17(d)(1)(C) describes an equation to determine emissions needing to be reduced based on power used during a visit. This equation is to be used when an innovative concept incorporates strategies that effect the fuel used on the vessel during a visit such as shore power. In these cases, the first equation would be improper to use as a baseline since the innovative concept would reduce the amount of fuel used and thus reduce the emission reductions required by the innovative concept. The equation is power consumed at berth (kWh) multiplied by the emission factor (g / kWh). For the emission factor, we use the difference between the baseline emission factor of a vessel and the required emission level for compliance. For example, if a vessel used 3,700 MWh of electricity during a visit, then the vessel's anticipated emission reductions would be about 41,000 g (0.045 ton) NO<sub>x</sub> because  $3,700 \text{ MWh} * (13.8 - 2.8) \text{ g NO}_x / \text{kWh} = 40,740 \text{ g}$ . This equation is necessary to include in the regulation so that entities applying to use an innovative concept know how to calculate projected emissions reductions when planning and developing their innovative concept and application.

- c. Subsection 93130.17(f) describes a procedure for revocation or modification of an approved innovative concept. This is necessary to ensure that the Executive Officer has the means of limiting the use of an innovative concept if requirements as specified in the Proposed Regulation and the innovative concept application are not met. An innovative concept will not be revoked if it continues to operate as specified in the approved application, continues to meet all criteria and requirements for an innovative concept.
- vii. In Subsection 93130.17(f)(2), staff believes that 30 days is adequate time for users of an innovative concept to be alerted of a revocation or modification of their EO and is consistent with other similar CARB review periods.

**16. Modifications to Section 93130.18 Summary of Responsibilities (formerly Section 93130.17)**

- i. Staff made the following modifications to Table 6 (formerly Table 5): Summary of Responsibilities
  - i. Adding the innovative concept as a circumstance that may qualify for an exception to the at berth control requirements of the regulation (as found in Sections 93130.8(i) and 93130.10(h)). This change is necessary to clarify that the new Innovative Concepts provision may qualify a regulated entity for an exception from the at berth control requirements of the regulation.
  - ii. Amending the Summary of Responsibilities table to reflect that CAECS operators are considered responsible parties when delays connecting to a CAECS occur but reductions are still achieved, and to reflect that terminal operators may be considered responsible parties when CAECS fail. This addition is necessary to more accurately reflect the control requirements of the regulation, and to signal that any party may be held accountable when uncontrolled emissions occur during a regulated vessel visit, depending on CARB enforcement team's assessment of each unique situation.

**17. Addition of Section 93130.19 Sending information to CARB.**

- i. Staff added new section 93130.19 to the regulation to streamline the regulation by putting identical submission information from multiple sections in the original proposal into one place.

**18. Modifications to Section 93130.20 Violations (formerly Section 93130.18)**

- i. In Subsection (b), staff added language to emphasize that readers understand that all responsible parties may be held jointly and severally liable for violations of the regulation. This addition is necessary to ensure regulated entities understand they have an obligation to comply with the requirements of the regulation or risk being held accountable.

**B. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR IN THE SECOND 15-DAY COMMENT PERIOD (July 10, 2020)**

Subsequent to the June 25, 2020, Board hearing, further modifications to the proposal were made at the Board's direction and to address comments received during the first 15-day public comment period. CARB staff released a second "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information" (Second 15-Day Notice) on July 10, 2020, which notified the public of additional documents added into the regulatory record and presented additional modifications to the regulatory text.

The following is a summary of the second set of changes that were made to the proposal and made available for a 15-day comment period. Staff proposed modifications to previously proposed amendments to Title 13, division 3, chapter 5.1, section 2299.3, and title 17, division 3, chapter 1, subchapter 7.5, section 93118.3, CCR, and adoption of new title 17, division 3, chapter 1, subchapter 7.5, sections 93130-93130.22, CCR.

**1. Modifications to Section 2299.3 and 93118.3**

- i. Staff adjusted the date the existing 2007 At-Berth Regulation set forth in 17 CCR section 93118.3 will be superseded by section 93130 (adjusted from 2021 to 2023). This change was necessary to explain that control requirements for the existing 2007 At-Berth Regulation will remain in effect until the new Control Measure for Ocean-Going Vessels At Berth begins on January 1, 2023.

**2. Modification to Section 93130**

- i. Staff added a paragraph to the proposed regulation language clarifying that the Control Measure is effective alongside the existing 2007 At-Berth Regulation from January 1, 2021, until January 1, 2023. This addition was necessary to clarify to the reader that both regulations will be in effect for a period of time, as there are multiple sections of the new Control Measure that need to become effective before the control measure supersedes the existing 2007 At-Berth Regulation on January 1, 2023. These sections include, but are not limited to, sections 93130.5 (e) Application process (for a CAECS), 93130.14 (a) Terminal Plans, 93130.14 (b) Port Plans, 93130.16 Remediation Fund Administration, and 93130.17 (b) Application and approval process (for the Innovative Concept Compliance Option).
- ii. Staff adjusted the date the existing 2007 At-Berth Regulation set forth in 17 CCR section 93118.3 will be superseded by section 93130 (adjusted from 2021 to 2023) to align with the proposed revised implementation

dates in subsection 93130.7(b). This change was necessary to explain that control requirements for the existing 2007 At-Berth Regulation will remain in effect until the new Control Measure for Ocean-Going Vessels At Berth begins on January 1, 2023.

- iii. Staff adjusted the dates that reporting and recordkeeping requirements for the existing 2007 At-Berth Regulation remain in effect (adjusted from 2020 to 2022) to align with the proposed revised implementation dates in subsection 93130.7(b). This change was necessary to explain that reporting and recordkeeping requirements for the existing 2007 At-Berth Regulation will remain in effect until the new Control Measure for Ocean-Going Vessels At Berth begins on January 1, 2023.
- iv. Staff adjusted the dates annual statements of compliance are due to CARB's Executive Officer for the existing 2007 At-Berth Regulation (adjusted from 2021 to 2023) to align with the proposed revised implementation dates in subsection 93130.7(b). This change was necessary to explain that annual compliance statements required under the existing 2007 At-Berth Regulation are due to CARB's Executive Officer annually on March 1 through the year 2023. These compliance statements are necessary to verify compliance for with the existing 2007 At-Berth Regulation.
- v. Staff adjusted the dates that annual Wharfinger data is due to CARB's Executive Officer for the existing 2007 At-Berth Regulation (adjusted from 2021 to 2023) to align with the proposed revised implementation dates in subsection 93130.7(b). This change was necessary to explain that the requirement in the existing 2007 At-Berth Regulation for ports to submit annual Wharfinger data by April 1 of the following year remains in effect through April 1, 2023.
- vi. Staff adjusted the date that compliance records required in sections 93118.3 (g)(1)(B), (g)(2)(B), and (g)(3)(B) are required to be maintained (adjusted from 2021 to 2023) to align with the proposed revised implementation dates in subsection 93130.7(b). This change was necessary in order to keep a five-year recordkeeping requirement for all compliance records from the existing 2007 At-Berth Regulation.

### **3. Modifications to Section 93130.2 Section Summary, and Definitions**

- i. Modifications to Subsection 93130.2 (b) Definitions, staff made modifications to the following definitions:
  - i.Subsection 93130.2(b)(4) – Staff added the word “regulated” for clarity. This change was necessary for clarity and to align with the

definition of “Regulated California Waters” already included in the regulation.

- ii. Subsection 93130.2(b)(5) – Staff added the phrase “to administer a remediation fund” to the definition of “Applicant”. This change was necessary to define to the reader the use of the word “Applicant” in the remediation fund section (93130.16).
- iii. Subsection 93130.2(b)(6) – Staff added the phrase “for the process outlined in section 93130.16 of this Control Measure for remediation fund administration” to the definition of “Application”. This change was necessary to define to the reader the use of the word “Application” in the remediation fund section (93130.16).
- iv. Subsection 93130.2(b)(21) – Staff updated the definition of “Compliance Period” to last for up to five years (the original 15-day package specified this period as three years). This change was necessary to align with changes made to the Innovative Concept Compliance Option section of the regulation (93130.17).
- v. Subsection 93130.2(b)(40) – Staff updated the definition of “IMO NOx tier” to clarify the definition based on comments received from stakeholders. This change was necessary so that regulated entities have a clear understanding of what information they need to report as required in sections 93130.7(e)(4) and 93130.9(d)(5).
- vi. Subsection 93130.2(b)(60) – Staff removed the definition of “Previously Unregulated Vessels”. This definition is no longer necessary to include in the regulation because the new phase-in between regulations will occur in 2023 and there is no longer a need to define the small subset of container, refrigerated cargo, and cruise vessels that would have phased into the regulation in 2023.
- vii. Subsection 93130.2(b)(80)(A) – Staff added ‘fire prevention’ to the definition of utility event as a circumstance in which the utility may need to reduce power. This change was necessary to clarify that vessels planning to comply with the regulation using shore power will not be penalized if the utility ceases providing electricity due to a shutdown for fire prevention.
- viii. Subsection 93130.2(b)(87) – Staff added the phrase “ For the purpose of this definition, direct control is the person who decides where a vessel is to call and is considered the responsible party” to the

definition and modified the last sentence to align with this addition. This change was made to clarify what qualifies an entity as a vessel operator, which is essential to determining who has regulatory requirements.

#### **4. Modifications to Section 93130.5 CARB Approved Emission Control Strategy**

- i. Subsection 93130.5(i)(3) – Staff deleted this section and moved the revocation information to a new subsection 93130.5(l) to clarify the fact that the revocation section is separate from the requirements that determine CARB approval of an emission control strategy.
- ii. Subsection 93130.5(l) – Staff added this section with new language to clarify the revocation process for a CAECS.

#### **5. Modifications to Section 93130.7 Vessel Operator Requirements**

- i. Subsection 93130.7(b) – Staff revised the compliance start years for container, refrigerated cargo vessels, and passenger vessels from 2021 to 2023 and for ro-ro vessels from 2024 to 2025. These changes are in direct response to the CARB Board’s discussion at its June 25, 2020, hearing to delay implementation dates for container, refrigerated cargo, cruise, and ro-ro vessels in order to give regulated entities additional time to prepare for compliance considering the current global pandemic situation.
- ii. Subsection 93130.7(e)(4) – Staff added the phrase “Beginning on January 1, 2023, and thereafter, all vessel operators must report...”. This addition was necessary to clarify that all vessel operators must begin reporting the information required in section 93130.7(e)(4) beginning January 1, 2023, and is not tied to the vessel compliance start dates for emissions reductions from subsections 93130.7(b) and (c).

#### **6. Modifications to Section 93130.8 Vessel Visit Exceptions**

- i. Subsection 93130.8(e) – Staff deleted the section exempting “Previously Unregulated Vessel”. This section was no longer necessary with the proposed revised implementation date of 2023 for container, refrigerated cargo, and cruise vessels, as with that change, there is no longer a need to define the small subset of these same vessels that would have phased into the regulation in 2023.
- ii. Subsection 93130.8(e)(2) – Staff adjusted the date all vessel operators are required to report vessel visit information from January 1, 2021, to

January 1, 2023. This change is necessary to align with the proposed revised implementation dates in section 93130.7(b).

## **7. Modifications to Section 93130.9 Terminal Operator Requirements**

- i. Subsection 93130.9(b) – Staff added the phrase “berths at” to the subsection header and the phrase “that receives a vessel at a berth”. This change is necessary to clarify that this section applies specifically to terminals that receive vessels at a berth that does not have shore power. This language is necessary to clarify that if a terminal has berths that are not shore power capable and they receive regulated visits at those berths, that the terminal has a responsibility to come up with an alternative method of reducing emissions.
- ii. Subsection 93130.9(d)(5) – Staff added the phrase “Beginning on January 1, 2023, and thereafter, all terminal operators must report...”. This addition was necessary to clarify that all terminal operators must begin reporting the information required in section 93130.9(d)(5) beginning January 1, 2023, and is not tied to the vessel compliance start dates for emissions reductions from subsections 93130.7(b) and (c).

## **8. Modifications to Section 93130.10 Terminal Exceptions**

- i. Subsection 93130.10(a)(2) – Staff adjusted the date “2019” and “2020” to read “2021” and “2022”, respectively. This change was necessary to align with the proposed revised implementation dates in Subsection 93130.7(b).
- ii. Subsection 93130.10(a)(4) – Staff adjusted the year “2021” to “2023”. This change was necessary to align with the proposed revised implementation dates in Subsection 93130.7(b).
- iii. Subsection 93130.10(b) – Staff adjusted the year “2021” to “2023”. This change was necessary to align with the proposed revised implementation dates in Subsection 93130.7(b).

## **9. Modifications to Section 93130.11 Vessel Incident Events (VIE) and Terminal Incident Events (TIE).**

- i. Subsection 93130.11(a)(1) – Staff added the phrase “and reported to CARB by January 7” to the regulation language in two places in this subsection. This change was necessary to ensure that vessel and terminal operators have time to report visit information from the previous calendar year to CARB for the visits to be considered in TIE/VIE calculations. Staff chose January 7 of each calendar year as the submittal

deadline in order give sufficient time for regulated entities to report visit information while still getting the information to CARB staff in an expeditious manner, as CARB staff needs this visit information in order to be able to meet the regulatory commitment to granting TIEs/VIEs as of February 1 each calendar year as specified in this subsection. There is no compliance obligation to not meeting the January 7 deadline, this deadline is only for consideration in the number of TIEs/VIEs a terminal or fleet is granted.

Staff also adjusted the year "2021" to "2023" in the last sentence of this subsection. This change was necessary to align with the proposed revised implementation dates in Subsection 93130.7(b).

- ii. Subsection 93130.11(a)(2) – Staff added the sentence "Fleet operators that did not have a compliance obligation under California Code of Regulations, title 17 section 93118.3 may instead request TIEs and VIEs for 2023 per section 93130.11(c) of this Control Measure." This addition was necessary to provide vessel fleet operators who are not regulated under the existing 2007 At-Berth Regulation the opportunity to request CARB to consider their 2023 projected activity as the basis for granting their 2023 TIEs/VIEs. This provision is expected to assist newly regulated vessel fleets that may have had low amounts of visits to California prior to 2023 in obtaining additional VIEs for use, as specified in subsection 93130.11(c).

Staff also adjusted the dates of "2021" and "2019" to "2023" and "2021", respectively. This change was necessary to align with the proposed revised implementation dates in subsection 93130.7(b).

- iii. Subsection 93130.11(b) – Staff deleted the columns for the years 2021 and 2022 from the Table of VIEs and TIEs rates. Staff also deleted the 5 percent from the "ro-ro" row for the year 2024. These changes were necessary to align with the proposed revised implementation dates in subsection 93130.7(b).
- iv. Subsection 93130.11(e) – Staff deleted the phrase "can be used for infrequent situations" and replaced it with "apply to incidents". This change is necessary in order to not limit what VIEs and TIEs may be used for (they can be used for any event the VIE or TIE owner chooses, not just infrequent situations).

## **10. Modifications to Section 93130.12 CAECS Operator Requirements**

- i. Subsection 93130.12(b)(3) – Staff added the phrase "Beginning on January 1, 2023, and thereafter, the...". This addition was necessary to

ensure that all CAECS operators know they must begin reporting the information required in section 93130.12(b)(3) beginning January 1, 2023.

- ii. Subsection 93130.12(c)(2)(A) – Staff changed the word “nature” to “source”. This change was necessary to avoid confusion for the reader about the type of information that CARB requires for recordkeeping in the event of a CAECS malfunction.

## **11. Modifications to Section 93130.14 Terminal and Port Plans and Interim Evaluation**

- i. Subsection 93130.14(a)(1) – Staff adjusted the referenced year in the second sentence of the regulation text in this subsection from “2021” to “2023” and add the phrase “and submit a revised plan the year before the compliance date reflecting any changes to the terminal operator’s strategy”. This change is necessary to align with the proposed revised terminal plan submission dates in subsection 93130.14(a)(2) and advise those regulated entities with compliance dates after January 1, 2023, of when they must submit revised terminal plans if any changes occur prior to their respective implementation dates.
- ii. Subsection 93130.14(a)(2)(A) – Staff adjusted terminal plan submission dates for container, refrigerated cargo, and passenger terminals from July 1, 2021, to December 1, 2021. This change is made in response to the proposed revised implementation dates in subsection 93130.7(b).
- iii. Subsection 93130.14(a)(2)(i) – Staff adjusted the revised terminal plan submission date for ro-ro terminals from 2023 to 2024. This change is made in response to the proposed revised implementation dates in subsection 93130.7(b).
- iv. Subsection 93130.14(a)(3)(D) – Staff deleted the phrase “identity of” and replaced it with “identify”. This change is necessary to avoid confusion about what CARB staff is asking terminals to provide in the terminal plan; staff need to know which berths terminals will use emissions control equipment at to ensure the terminal is planning ahead for compliance.
- v. Subsection 93130.14(b)(2)(A) – Staff adjusted port plan submission dates for container, refrigerated cargo, and passenger terminals from July 1, 2021, to December 1, 2021. This change is made in response to the proposed revised implementation dates in subsection 93130.7(b).

- vi. Subsection 93130.14 (a)(2)(F)(i) – Staff changed the ro-ro terminal plans due date back to 2024 reflecting the change back to a 2025 compliance start for ro-ro vessels.
- vii. Subsection 93130.14 (d) – Staff rephrased the sentence “CARB staff will review the potential requirements for control technologies for use with bulk and general cargo vessels, and for ocean-going vessels at anchor.” This sentence now reads “CARB staff will review control technologies for use with bulk and general cargo vessels, and for ocean-going vessels at anchor, and potential requirements for these vessel types”. This change clarifies that CARB is not looking at requirements for control technologies. CARB is looking at what technologies are available and considering potential requirements for these specific vessel categories.

## **12. Modifications to Section 93130.15 Remediation Fund Use**

- i. Subsection 93130.15 (b)(3) – Staff added the clause “or a failure of the CAECS operator under contract to perform.” This ensures that vessel operator or terminal operators that are under contract with a CAECS operator are eligible for the remediation fund if the CAECS operator was expected to perform but does not. The language change is meant to clarify this point, it was previously unclear whether the use of the remediation fund option was or was not allowed.
- ii. Subsection 93130.15 (b)(3) – Staff removed the phrase “If CARB approved emission control strategy operator is under contract to reduce emissions from that vessel visit and a malfunction” and replaces it with “If a CAECS operator has a malfunction that”. This language modification differentiates performing per a contract from reporting a malfunction.
- iii. Subsection 93130.15 (f) – Staff adjusted the table for the remediation fund hourly amount to reflect the new start of the remediation fund in 2023.

## **13. Modifications to Section 93130.17 Innovative Concept Compliance Option**

- i. Subsection 93130.17 (a)(1) – Staff adjusted the due date for innovative compliance applications for container/reefer and cruise vessel types to December 1, 2021, to match the other vessel types. This change was made to align the innovative concept applications with the revised due dates for terminal and port plans.
- ii. Subsection 93130.17 (a)(3) – Staff added the phrase “on the date that the compliance period starts,”. This phrase clarifies that the innovative concept must achieve reductions that are considered early or in excess of

other requirements up to the date that the compliance period starts. Without this phrase, it was unclear when an innovative concept would be invalidated when a new requirement comes into effect that effects the innovative concept.

Staff also added the phrase “that is in effect, has been approved, or is noticed” to the end of the last sentence. This change was necessary to clarify that this subsection applies to any state, federal or international rule, regulation, statute, or any other legal requirement (including any requirement under a Memorandum of Understanding with a government entity), or an emission reduction strategy identified in an AB 617 Community Emissions Reduction Program that has been approved by CARB’s Governing Board that is in effect, has been approved, or is currently being noticed.

- iii. Subsection 93130.17(a)(7) – Staff added the phrase “including any requirement under a Memorandum of Understanding with a government entity” in two places in this subsection. This addition was necessary to clarify that a Memorandum of Understanding qualifies as a legally binding mandate for the purposes of this Control Measure.

Staff also added the phrase “, is approved, or is noticed” and “or being approved, or being noticed” in two separate places in this subsection. This change was necessary to clarify that this subsection applies to any state, federal or international rule, regulation, statute, or any other legal requirement (including any requirement under a Memorandum of Understanding with a government entity), or an emission reduction strategy identified in an AB 617 Community Emissions Reduction Program that has been approved by CARB’s Governing Board that is in effect, has been approved, or is currently being noticed.

- iv. Subsection 93130.17 (a)(7), (a)(11), and (b)(1)(F) – Staff updated the duration of a compliance period from three years to up to five years to allow more certainty to innovative concept projects to be used for compliance under the proposed regulation.
- v. Subsection 93130.17 (a)(7) – Staff added the following sentences. “If any law, regulation, or legally binding mandate requiring emission reductions comes into effect which would affect the innovative concept, during an innovative concept’s compliance period, then the innovative concept may continue to claim those emission reductions for the remainder of the compliance period, but the innovative concept may not renew that compliance period. If an innovative concept has not been approved prior to the law, regulation, or legally binding mandate going into effect, or the law, regulation, or legally binding mandate goes into effect before

the innovative concept's compliance period renews, then only emission reductions that are in excess of what is required to comply with those laws, regulations, and/or legally binding mandates may be attributed toward the innovative concept." These sentences make it clear that an innovative concept may continue to be used during a compliance period, even if a new regulation comes into effect during that compliance period that places requirements on the innovative concept. Furthermore, it states that if a regulation goes into effect before a compliance period, then those reductions that are in excess of the requirement may still be used for compliance with the innovative concept.

- vi. Subsection 93130.17(a)(11) – Staff changed the language in this subsection to read "first compliance period of up to five years". This change was necessary to align with the proposed revised compliance period as detailed in subsection 93130.17 (a)(7).
- vii. Subsection 93130.17 (b)(3)(F)(ii) – Staff changed the phrase "the applicant must submit documentation from the local lead agency explaining environmental review is not required" to the phrase "the applicant must submit documentation explaining why environmental review is not required, to the Executive Officer's satisfaction." This change corrected an error in which a lead agency would only exist if a project needed environmental review.
- viii. Subsection 93130.17 (d)(1)(B) and (d)(1)(C) – Staff added the word "rate" to clarify that anticipated emission reduction rate is indeed a rate.
- ix. Subsection 93130.17 (d)(1)(B) and (d)(1)(C) – Staff added a definition for 'anticipated emission reduction rate', clarifying that it is the difference between the default emission rate and the archived emission rate. Previously the phrase anticipated emission reduction rate lacked a clear meaning.

#### **14. Modifications to Section 93130.18 Summary of Responsibilities**

- i. Table 6 Summary of Responsibilities – Staff revised the language for one of the circumstances that may qualify for a VIE/TIE or remediation. The situation "CAECS failure" was changed to "CAECS equipment failure, or CAECS failure to perform" to clarify the responsibility of CAECS operators to provide emission reductions from vessels at berth.

### III. DOCUMENTS INCORPORATED BY REFERENCE

The regulation and the incorporated test procedures, models and documents adopted by the Executive Officer incorporate by reference the following documents:

- ISO 8217, Petroleum products – Fuels (class F) Specifications of marine fuels, Fourth edition June 15, 2010, section 93130.2(b)(46)
- ISO 8217, Petroleum products – Fuels (class F) Specifications of marine fuels, Third edition November 1, 2005, section 93130.2(b)(46)
- ISO 8178, Reciprocating internal combustion engines – Exhaust emission measurement – Part 1: Test-bed measurement of gaseous and particulate exhaust emissions, August 15, 1996, section 93130.5(g)(1)
- ISO 8178, Reciprocating internal combustion engines – Exhaust emission measurement – Part 2: Measurement of gaseous and particulate exhaust emissions at site, August 15, 1996, section 93130.5(g)(1)
- ISO 8178, Reciprocating internal combustion engines – Exhaust emission measurement – Part 4: Test cycles for different engine applications, August 15, 1996, section 93130.5(g)(1)
- CARB - FRAC (Excel) - Fraction data for source categories, February 21, 2019, section 93130.5(g)(3)
- CARB - PMPROF REF (Excel) - Reference number for PM profiles, July 8, 2019, section 93130.5(g)(2)
- Source Test Procedure ST-1B Ammonia Integrated Sampling, January 20, 1982, section 93130.5(g)(6)
- ISO 8754, Petroleum products – Determination of sulfur content – Energy dispersive X-ray fluorescence spectrometry, July 15, 2003, section 93130.5(g)(7)
- CARB - Method 100, Procedures for Continuous Gaseous Emission Stack Sampling, July 28, 1997, section 93130.5(g)(8)
- California Environmental Protection Agency Air Resource Board Recommended Emissions Testing Guidelines for Ocean-going Vessels, June 20, 2012, section 93130.5(h)(4)
- Bureau of Mines Information Circular 8333 Ringelmann Smoke Chart (Revision of IC 7719), May 1967, section 93130.6(a)(1)

- 40 CFR Pt. 60, App. A-7, Method 25A – Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer, December 23, 1971, section 93130.5(g)(3)
- 40 CFR Pt. 60, App. A-4, Method 9 – Visual Determination of the Opacity of Emissions from Stationary Sources, December 23, 1971, section 93130.6(b)
- United Nations, International Law Commission, Responsibility of States for Internationally Wrongful Acts, 2001, section 93130.4(a)(1)(B)

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the CCR. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the CCR is not needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by CARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries or may be purchased directly from the publishers.

#### **IV. SUMMARY OF COMMENTS AND AGENCY RESPONSES**

This chapter contains comments (or summaries of comments) on the regulations or the process by which they were adopted that were in comment letters submitted during the 45-day comment period, written or oral comments provided at the Board Hearings on December 5, 2019, June 25, 2020, and August 27, 2020, as well as comment letters received during the public comment periods for both the first and second 15-day changes. This chapter also contains responses for these comments.

The comments are grouped into tables for each of the primary opportunities for public comment and lists the comment numbers associated with the comment, the commenter, their organization, the date associated with the comment, and the comment number for associated EA responses (if necessary). Each table has a corollary appendix that contains all of the comments for that period and shows how the comments were analyzed by CARB staff. This chapter is broken up into sections A, B, and C, to address comments received during the 45-day comment period and at the December 5, 2019, Board Hearing, comments received during the first 15-day period and at the June 25, 2020, Board Hearing, and comments received during the second 15-day period and at the August 27, 2020, Board Hearing, respectively.

**A. Comments Received during 45-day comment period and at the Board Hearing on December 5, 2019**

*Table 1: Comments Received During 45-Day Comment Period*

<b>Comment Number</b> <small>(Docket # . comment #)</small>	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Comment was Received/ Added to Database</b>	<b>Environmental Analysis Response to Comment Number</b> <small>(EA # - #)</small>
1.1	Dennis Miller	Individual	10/26/2019	1-1
2.2	Jerilyn Mendoza	Coalition for Clean Air	11/07/2019	n/a
3.1/4.1*	David Mik	Power Engineering Construction Co.	11/08/2019	n/a
5.1	Jeffery Kilbreth	Individual	11/18/2019	n/a
6.1	Stephen Rosenblum	Individual	11/19/2019	n/a
7.1	Joseph Puleo	Individual	11/19/2019	n/a
8.1	Larry Wilske	MEC Energy	11/21/2019	n/a
9.1	Clayton Heard	Individual	11/21/2019	n/a
10.1 – 10.2	Willaim Barrett	American Lung Association, California	11/22/2019	n/a
11.1	Diana Bohn	Individual	11/23/2019	n/a
12.1 – 12.3	obo Jack Broadbent, Justine Buenaflor,	Bay Area Air Quality Management District	11/26/2019	n/a
13.1 – 13.4	Zorik Pirveysian	South Coast Air Quality Management District (SCAQMD)	11/26/2019	n/a
14.1	Joseph Puleo	Individual	11/30/2019	n/a
15.1	Marinell Daniel	Individual	12/02/2019	n/a
16.1	Jerilyn Lopez Mendoza	Coalition for Clean Air	12/02/2019	n/a
17.1 – 17.56	Tracy Fidell	Port of Oakland	12/02/2019	17-1 to 17-2
18.1	Ben Keller	Individual	12/02/2019	n/a
19.1 – 19.3	Mike Jacob	PMSA, CAPA, CLIA, WSC, WSPA	12/02/2019	n/a
20.1 – 20.5	Dragos Rauta	INTERTANKO	12/02/2019	20-1
21.1 – 21.5	John Kaltenstein	Friends of the Earth	12/03/2019	n/a
22.1 – 22.39	Catherine Reheis-Boyd	Western States Petroleum Association (WSPA)	12/03/2019	22-1 to 22-48
23.1 – 23.8	Morgan Caswell	POLB/LA	12/03/2019	n/a
24.1 – 24.7	Ken Fletcher	Yusen Terminals LLC	12/03/2019	n/a
25.1 – 25.2	Fern Uennatornwarangoon	Environmental Defense Fund	12/03/2019	n/a
26.1	Jerilyn Lopez Mendoza	Coalition for Clean Air	12/04/2019	n/a
27.1	Micah Mitrosky	IBEW Local 569	12/04/2019	n/a
28.1 – 28.2	Roman Berenshteyn	Bay Planning Coalition	12/04/2019	n/a
29.1/30.1*	Shawn Dolan	Individual	12/05/2019	n/a
31.1 – 31.6	Jones, Scott	General Steamships Agency, Inc.	12/05/2019	n/a

<b>Comment Number</b> (Docket # . comment #)	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Comment was Received/ Added to Database</b>	<b>Environmental Analysis Response to Comment Number</b> (EA # - #)
32.1	Garcia, Ruben	Advanced Environmental Group (AEG)	12/05/2019	n/a
33.1	Clifford, Debi	Individual	12/06/2019	n/a
34.1	Belden, David	Individual	12/06/2019	n/a
35.1 – 35.4	Brown, Simon	Pacific Basin Shipping	12/06/2019	n/a
36.1 – 36.3	Mead, Art	Crowley	12/06/2019	n/a
37.1 – 37.8	Mathew Sullivan	SSA Marine	12/06/2019	37-1
38.1 – 38.3*	Art Mead	Crowley	12/06/2019	n/a
39.1	Judith Schumacher-Jennings	Individual	12/09/2019	n/a
40.1	Diana Bohn	Individual	12/09/2019	n/a
41.1 – 41.15	Sande George	CLIA	12/09/2019	41-1
42.1	Lawrence Sullivan	Individual	12/09/2019	n/a
43.1 – 43.7	Jesse N. Marquez	Coalition For A Safe Environment	12/05/2019	n/a
44.1 – 44.24	Bill Carson	Long Beach Container Terminal	12/09/2019	n/a
45.1 – 45.35	Douglas Schneider	World Shipping Council	12/09/2019	45-1 to 45-2
46.1 – 46.38	Lee Kindberg	Maersk	12/09/2019	46-1
47.1. – 47.6	Kathy Metcalf	Chamber of Shipping of America	12/09/2019	47-1
48.1. – 48.6	David Yow	Port of San Diego	12/09/2019	n/a
49.1	Janice Cecil	Individual	12/09/2019	n/a
50.1 – 50.43	Eric Bayani	ITS	12/09/2019	n/a
51.1 – 51.2	Bill Schopp	TraPac, LLC	12/09/2019	51-1
52.1 – 52.62	Thomas Jelenic	PMSA	12/09/2019	52-1 – 52-23
52.A.1 – 52.A.45	Thomas Jelenic	PMSA	12/09/2019	""
52.B.1 – 52.B.14	Thomas Jelenic	PMSA	12/09/2019	""
52.C.1 – 52.C.155	Thomas Jelenic	PMSA	12/09/2019	""
53.1 – 53.32	Giles Pettifor	Port of Hueneme	12/09/2019	53-1 – 53-3
54.1 – 54.7*	Jesse N. Marquez	Coalition For A Safe Environment	12/09/2019	n/a
55.1 to 55.6	Roger Strevens,	Wallenius Wilhelmsen	12/09/2019	n/a
56.1	Mishwa Lee	Individual	12/09/2019	n/a
57.1	Theral Golden,	West Long Beach Association	12/09/2019	n/a
58.1	Sean McCaskill	igus Inc.	12/10/2019	n/a
59.1 – 59.4	Tyler Welti	CAPA	12/10/2019	59-1 – 59-2
60.1 – 60.37	Morgan Caswell	Port of Long Beach	12/10/2019	n/a

\* duplicate comment

*Table 2: Comments Received at the Board Hearing held on December 5, 2019*

<b>Comment Number</b>	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Comment was Received/ Added to Database</b>
OC-1 – OC-3 Martien	Mr. Martien	Bay Area Air Quality Management (BAAQMD)	12/05/2019
OC-1 – OC-3 Rees	Ms. Rees	South Coast Air Quality Management (SCAQMD)	12/05/2019
OC-1 Kropke	Ms. Kropke	International Brotherhood of Electrical Workers, Electrical Contractors Association	12/05/2019
OC-1 – OC-2 Wilske	Mr. Wilske	MEC Energy	12/05/2019
OC-1 Magavern	Mr. Magavern	Coalition for Clean Air	12/05/2019
OC-1 – OC-4 Kilbreth	Mr. Kilbreth	Richmond Planning Commission	12/05/2019
OC-1 Puleo	Mr. Puleo	Individual	12/05/2019
OC-1 – OC-2 Harvey	Ms. Harvey	Individual	12/05/2019
OC-1 – OC-5 Marquez	Mr. Marquez	Coalition For A Safe Environment	12/05/2019
OC-1 – OC-5 Jacob	Mr. Jacob	Pacific Merchant Shipping Association (PMSA)	12/05/2019
OC-1 Dow	Mr. Dow	Carnival Corporation	12/05/2019
OC-1 – OC-5 Miller	Ms. Miller	California Association of Port Authorities	12/05/2019
OC-1 – OC-3 Cannon	Mr. Cannon	Port of Los Angeles	12/05/2019
OC-1 – OC-4 Caswell	Ms. Caswell	Port of Long Beach	12/05/2019
OC-1 – OC-3 Sinkoff	Mr. Sinkoff	Port of Oakland	12/05/2019
OC-1 – OC-4 Umenhofer	Mr. Umenhofer	Western States Petroleum Association (WSPA)	12/05/2019
OC-1 Stashower	Mr. Stashower	Woodbridge Marine	12/05/2019
OC-1 – OC-2 McDonald	Mr. McDonald	Marathon Petroleum Corporation	12/05/2019
OC-1 – OC-2 Kindberg	Ms. Kindberg	Maersk	12/05/2019
OC-1 Gray	Mr. Gray	350 Bay Area	12/05/2019
OC-1 Thomas	Ms. Thomas	East Yard Communities for Environmental Justice	12/05/2019
OC-1 Yow	Mr. Yow	Port of San Diego	12/05/2019
OC-1 Zizi	Ms. Zizi	Stand Earth	12/05/2019

CARB would like to express its deep appreciation to the numerous organizations, agencies, and individuals that participated in the amendment process for the At-Berth Regulation (referred hereafter as “Regulation”) since workshops began in 2014. Your advice, comments and support contributed to the development of amendments that will prove practical and useful in the reduction of air pollutants and GHG emissions. That so many dedicated their time and energy over the years is a testament to the importance of these amendments.

A summary of comments on the Regulation, as well as responses, are categorized and provided below. Comment letters received during the public review period and further information are posted on the At-Berth Regulation rulemaking website.

## 1. COMMENTS IN SUPPORT

CARB received broad support from a range of organizations and stakeholders. The following commenters support the objectives and goals of the New At Berth Regulation (Regulation):

(11.1), (15.1), (16.1) (26.1), (27.1), (33.1), (34.1), (39.1), (40.1), (42.1), (49.1), (56.1), (57.1), (10-1)

***Agency Response (to all comments in support):*** CARB staff made no changes based on the received comments. CARB appreciates the support for this regulation's goals of improving public health and air quality benefits, reducing emissions, and addressing the implementation challenges of the 2007 At-Berth Regulation. The Regulation will accomplish emission reduction goals by imposing emission control requirements to additional port and marine terminals, and vessels not covered by the 2007 At-Berth Regulation. As explained in the ISOR, the Regulation is anticipated to result in additional emission reductions of NO<sub>x</sub>, DPM, PM<sub>2.5</sub>, ROG, GHG, and black carbon emissions beyond those already realized by the 2007 At-Berth Regulation.

The Regulation will directly benefit communities and individuals in California. Communities around California's port complexes bare a disproportionate health burden due to their close proximity to the emissions generated from freight activity associated with seaports, including truck, train, and vessel traffic in and around the ports. The Regulation will further protect communities that are most heavily impacted by California's freight sector by requiring emission reductions through the utilization of emissions control equipment at ports. Individuals will directly benefit in the form of improved public health resulting from lower emissions of PM<sub>2.5</sub>, DPM, NO<sub>x</sub>, ROG, GHG, and black carbon at California ports.

In addition, the Regulation is expected to accelerate technological advances, create jobs, and provide other benefits near ports spanning across the globe. Staff analyzed the cost and benefits of the Regulation, and updated the analysis as needed, with details on calculations and assumptions as part of the required Standardized Regulatory Impact Assessment (SRIA). As explained in the ISOR, the Regulation is expected to result in benefits to industries and businesses that operate in California from likely increases in manufacturing, engineering, and construction related jobs throughout the State to meet the needs of the Regulation. The Regulation is also intended to simplify and streamline enforcement efforts.

## 2. MASTER RESPONSES

### *i. Master Response 1: Tug and Barge-based Emissions*

**Comment:** Various comments asserted that CARB failed to adequately assess tug emissions directly occurring from the use of barge-based emission control systems, nor did CARB calculate and include control system's generator emissions in the inventory. Additionally, commenters claim CARB fails to calculate and include in the inventory increased emissions created from vessels needing to bunker at anchor due to barge-based systems preventing bunkering at berth.

**Master Response 1:** Contrary to what many of the commenters claim, the Draft EA released in October 2019 evaluated and accounted for emissions of criteria air pollutants and GHGs from the operation of tug boats from barge-based emission control systems. Page 55 of the Draft EA summarizes the level of criteria pollutant emissions anticipated from tug boat usage under the Regulation. The analysis states:

CARB estimates that the additional tug boat emissions could be up to 7.1 tons/year NOX, 0.14 tons per year (tpy), DPM, 1.2 tons/year ROG and 827 metric tons/year of CO<sub>2</sub> throughout California. These estimates may be lower in future years due to full implementation of CARB's Existing Commercial Harbor Craft (CHC) Regulation, and anticipated future requirements that may take effect beginning in 2023 for tug boats and other harbor craft. Tug boat emissions attributed to the placement of barge-based capture and control systems are considerably lower than the overall emissions reductions achieved from the use of the system on a vessel. For example, in the year 2021, capture and control systems are expected to reduce NO<sub>x</sub> emissions by approximately 32 tpy and 970 tpy in 2031.

For GHG emissions, the Draft EA states on page 91:

"CARB estimates that the additional tugboat emissions could be up 827 metric tons/year of CO<sub>2</sub> throughout California.

However, these estimates should be lower in future years due to full implementation of CARB's Existing Commercial Harbor Craft Regulation, and anticipated future requirements that may take effect beginning in 2023 for tug boats and other harbor craft."

Tug emissions are not included in CARB's OGV emissions inventory as tugboats are considered commercial harbor craft (CHC). Their emissions are included in the CHC emissions inventory. However, because barge-based emission control systems are strictly used for reducing OGV emissions at berth, the barge-based emission control systems' generator emissions are reflected in the OGV

emissions inventory by the amount of reductions they deliver. In other words, the OGV emissions inventory reflects a reduced amount of emissions reductions for barge-based emission control systems as a direct result of the associated generator emissions.

The current barge-based emissions control systems are approved for at least an 80 percent emissions capture rate for PM<sub>2.5</sub>, and NO<sub>x</sub> while in use. The 80 percent capture rate accounts for the generator usage for operations as well as missed emission capture from connection and disconnection of the system to a vessel stack. The systems control fewer emissions than shore power mainly because, 1) while in use, a vessel's auxiliary engines and the barge-based systems generators are operating, and 2) shore power has the ability to reduce emissions by 100 percent while a vessel is plugged in. This is why shore power has been considered the "gold standard" for at berth emissions reductions. Therefore, CARB's OGV emissions inventory considered the reduced emissions from using barge-based systems and included it accordingly in the inventory.

Several commenters expressed concerns over the ability for a vessel to bunker while connected to a barge-based capture and control system. They claim that without the ability to bunker at berth, vessels will be forced to bunker while at anchor, leading to additional time running their engines and emitting emissions in California waters. No information was submitted to CARB for analysis during the rulemaking process that specified the amount of vessel visits that would be forced to bunker at anchor instead of at berth as a direct result of the Regulation, and CARB has not been able to locate any such information. Therefore, analyzing comparative increases in bunkering at anchorage due to the use of barge-based control systems would be too speculative for consideration, as industry stakeholders did not provide the information necessary to analyze this claim. Nonetheless, staff note that barge-based systems may impede bunkering in some cases. Bunkering challenges could be avoided by using a land-based system or a control system designed to be used simultaneously with bunkering. Alternatively, vessels may choose to disconnect early from control systems to allow for bunkering and pay a remediation fee (Section 93130.15((b)(3)) or bunkering could occur and the vessel be excused from emissions reduction requirements by using a VIE.

Regardless, anchorages are more remote, far from shore, and further from sensitive receptors and impacted communities, and reducing emissions from vessels at anchor, while theoretically possible, is more technically difficult than reducing emissions at berth. Vessels at anchor do not have structures nearby to support equipment, such as electrical infrastructure, and must deal with harsher weather conditions (stronger winds and waves) outside of the sheltered waters at berth. Vessels are also using their anchor to stay in place, versus being tied to a berth. This makes connecting something like high voltage shore power equipment or a capture and control system to a vessel's stack more difficult while at anchor. However, CARB staff recognizes that emissions from vessels at

anchor still contribute to health and environmental impacts. As noted above, commenters did not submit evidence to support their claims regarding increased bunkering at anchor, and CARB is unaware of any evidence to that effect. Furthermore, as part of the first 15-day changes to the Regulation, CARB staff included a 2022 Interim Evaluation that will review potential requirements for control technologies for use with bulk vessels, and for OGVs at anchor (Section 93130.14(d)).

*ii. Master Response 2: Goods Diversion and Leakage*

**Comment:** Several comments focused on the topic of goods diversion and leakage. These comments assert that the costs of compliance could potentially cause businesses to divert cargo away from California ports and as a result, CARB should conduct additional analysis on the economic, GHG, and criteria emission impacts.

**Master Response 2:** As described in the Draft EA at pages 92-93, the Regulation marginally increases costs to California ports and terminals, and the vessels that visit them, which has resulted in some feedback from industry stakeholders that vessels may be directed elsewhere in an effort to avoid the increased costs at California ports and terminals. Cargo owners and international cargo transport delivery companies rely on sophisticated proprietary models and factors to guide decisions on where to ship goods. The factors include access to consumer markets and intermodal transportation networks; reliability and velocity of transport modes; port and trans-loading infrastructure; the overall efficiency of the supply chain as it is impacted by the availability of labor; congestion delays and other impediments; and costs, including compliance costs for all regulations. To date, the available data and research has been insufficient to quantify the Regulation's potential effects regarding cargo diversion. CARB staff directly engaged industry stakeholders for their experience or data and found that a company's decision to divert cargo from one port to another is complex and unique to individual businesses. CARB staff was unable to obtain information on business level responses to regulatory costs due to the highly competitive nature of the freight industry.

Quantifying the potential for the Regulation to cause cargo diversion requires a detailed understanding of how increased regulatory costs would impact each beneficial cargo owner's use of a specific port, such as from the perspective of a person making those decisions for a cargo owner. Alternatively, absent industry knowledge, assessing the potential for diversion would require making inferences about what changes in port uses were caused by cost changes, which requires an understanding of all factors that affect choice of port and, then, isolating the changes caused by port use cost. CARB staff did not find empirical research that focused on the impact of regulatory costs on cargo diversion. A number of studies have explored the relationship between general cost increases and the likelihood of cargo diversion. One case study on the

potential impact of a container fee suggested that cargo diversion is unlikely for modest per TEU cost increases, up to \$30 per TEU. To put this into context, the Regulation would add additional costs of approximately \$1.14 per TEU in 2030 for container and reefer vessels, far below the \$30 level (Appendix C, SRIA Appendix D).

Furthermore, analyzing direct regulatory cost increases from a particular regulation is of limited use in determining the potential for diversion or leakage. Direct regulatory cost is also only one variable that can affect choices about shipping routes. Other variables include, but are not limited to: access to consumer markets and intermodal transportation networks; reliability and velocity of transport modes; port and trans-loading infrastructure; the overall efficiency of the supply chain as it is impacted by the availability of labor; congestion delays and other impediments; and costs generally, including compliance costs for all regulations. A 2018 study conducted by the Texas A&M Transportation Institute, *The Potential Impacts of the Panama Canal Expansion on Texas Ports*, found that intermodal routes throughout California are consistently more favorable for high-valued goods. Intermodal routes between East Asia, California, and Texas are faster than all water routes to Texas from East Asia, and research shows shippers prefer more expensive routes through West Coast ports, including California, because of the shorter travel time.

In sum, it is difficult to predict how businesses may react to increased costs of using California ports in response to implementation of the Regulation. It is possible, though unlikely, that some may decide to change shipping mode or may divert to another port. In that case, the Regulation could result in some level of additional emissions of GHGs and criteria emissions associated with mode shift and diversion. Again, given the very minimal cost impacts per unit of product delivered,<sup>3</sup> CARB believes mode shift and diversion to be unlikely. In fact, there is very little published research on cargo diversion, and no published research specifically on whether increased costs due to environmental regulations have in the past, or could in the future result in cargo diversion. The existing research on cargo diversion is limited to modeling exercises (no empirical studies). These studies show that at some increased cost, cargo would divert, however, that “tipping point” is determined by multiple factors as discussed above. CARB staff has not received evidence in support of cargo diversion and commenters did not provide the types of data (including the tipping point) that would be necessary to further evaluate this claim.

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<sup>3</sup> See, e.g., Table IX-9 at page IX-23 of the ISOR.

If California berths continue to be used as they would regardless of the Regulation, as is expected, long-term operational-related GHG emissions impacts would be beneficial. As discussed above, vessels that elect to supply their electrical load with shore-power would receive electricity from public utility companies that will become increasingly more renewable over the coming years to comply with the targets mandated by the RPS. Implementation of the Proposed Regulation would minimize emissions associated with operation of vessels at berth and would assist the State in meeting GHG emissions goals.

As shore power becomes more globally available, its use would be expected to increase. Further, as communities, including California, incorporate a greater percentage of renewable electricity to the energy grid, using shore power would result in a substantial reduction in emissions of GHGs and criteria emissions as compared to those emitted by diesel-powered generators. It is anticipated that the reductions made from use of shore power would offset the emissions associated with powering land- and barge-based capture and control systems.

### iii. *Master Response 3: Implementation Timelines*

**Comment:** Numerous commenters asserted implementation timelines are not feasible. Development of technology, permitting and other regulatory requirements would impede meeting implementation timelines. The commenters believe more time is needed for compliance with the Regulation and thus implementation dates are not feasible.

**Master Response 3:** CARB staff agrees that construction of emission control systems for vessels, especially for tankers and ro-ro vessels, may require years to complete. However, the timing and completion of construction may vary substantially from project to project. As noted in the ISOR and Draft EA, staff considered several projects and generally found that construction involving substantial new infrastructure at tanker terminals required five to seven years to complete, depending on the size and scope of new or modifications to a facility.

In general, when analyzing the projects referenced in the ISOR and Draft EA, the projects in the San Francisco Bay area that involved extensive construction (including in areas that are underwater) were found to have the longest construction timelines (for example, the Chevron MOTEMS project at the Richmond Longwharf, as detailed on p. III-20 of the ISOR). By contrast, simpler projects proved to have shorter timelines that would be manageable in three to four years (for example, the Shell Marine Oil Terminal MOTEMS project detailed on p. III-21 of the ISOR). In the initial proposed version of the Regulation released in October 2019, CARB staff set tanker implementation dates seven to nine years in the future (originally set at 2027 for the Ports of Los Angeles and Long Beach and 2029 for the remainder of the tanker terminals statewide) in order to provide ample time for the installation of new infrastructure that might be needed to support the installation of emissions control technologies. However, staff heard concerns from CARB Board members about the prolonged implementation timeline. Staff also received numerous requests from environmental advocates and community members asking for CARB to accelerate the health benefits of the Regulation (see comments (18.1), (9.1), (21.1), (OC-1 Martien), (OC-1 Rees), (OC-1 Kropke), (OC-2 Wilski), (OC-1 Magavern), (OC-1 Kilbreth), (OC-1 Puleo), (OC-1 Harvey), (OC-5 Marquez), (OC-1 Gray), (OC-1 Thomas), (OC-1 Zizi), (43.3), (43.5), (6.1), (13.1), (10.2), (14.1)). Because tanker vessels are responsible for nearly half of the remaining emissions from vessels at berth (see ISOR, Chapter I), staff brought the tanker implementation dates forward two years to 2025 and 2027, respectively, which aligns closely with timelines for the infrastructure projects analyzed in the ISOR and Draft EA, as noted above.

CARB recognizes there is no single solution for every terminal throughout California. Construction activities at certain terminals may present unique

challenges or require more complicated installations than others and CARB staff understand that there may be some project timing uncertainties, depending on the scope and location of the tanker terminal project. As such, the Regulation provides several pathways towards compliance in order to give regulated entities compliance flexibility in the event that isolated projects are anticipated to extend longer than the 2025/2027 timeframes. The Regulation provides for a 2022 Interim Evaluation for new technologies and applications (Section 93130.14(d)). Briefly, staff would conduct an Interim Evaluation to assess the progress in adopting emission control technologies applicable to tanker and ro-ro vessel operations, as well as the status of land-side infrastructure improvements that may be needed to support emission reduction systems. If CARB staff determines, after evaluation, that the compliance deadlines and implementation dates warrant an adjustment, staff may propose formal regulatory amendments.

CARB staff also developed an “Innovate Concept Compliance Option” for an alternative compliance strategy to assist regulated entities with compliance. This approach may be used in lieu of meeting required emission reductions from a vessel, if the Innovative Concept meets or exceeds required emissions reductions otherwise achieved by controlling vessel emissions while at berth (Section 93130.17).

Last, regulated entities have the option of using the remediation fund for constructions projects. In sum, if a terminal has planned upgrades or construction projects the terminal may use the remediation fund as a compliance option until the project is completed.

Staff believes these provisions and the advancements in technology should help regulated entities meet compliance obligations of container, reefer, and cruise vessels in 2023, ro-ro vessels in 2025 and tankers in 2025 and 2027 as required by the Regulation (post 15-day changes).

#### *iv. Master Response 4: Connection and Disconnection Times*

**Comment:** Numerous comments expressed concern about the Regulation’s one-hour emissions control connect/disconnect requirements (Note: this was changed to a two-hour connection and one-hour disconnection time in the first and second 15-day changes). Some of the commenters’ claims are:

- CARB staff arbitrarily established the connection/disconnect requirements;
- Some technology takes a longer connection window than others (e.g. shore power vs. capture and control);
- Connection cannot be safely done within this timeframe; and
- Labor is not always available within the connection and disconnection timeframes;

Many commenters suggested CAECS connection and disconnection times should be changed to “as soon as practicable.”

**Master Response 4:** CARB staff modified the proposed regulatory language in response to the received comments by increasing the allowable time to connect a vessel to a CAECS to two hours. This change was based both on comments received by stakeholders as well as information provided by CARB enforcement staff based on actual connection times seen during the implementation of the 2007 At-Berth Regulation.

The 2007 At-Berth Regulation defines “visit” as beginning when an OGV is initially tied to a berth and ends when it casts off the lines at the end of a visit.” With that definition vessels were able to operate their auxiliary engines for a total of three hours while at berth. During implementation of the 2007 At-Berth Regulation, CARB was made aware of necessary events/procedures required before a vessel is declared “ready to work” which were not previously considered. These additional events and procedures delay the vessel’s ability to connect to emission control systems. One notably large contributor to delayed connection was when a vessel required clearance by U.S. Customs and Border Protection. The 2007 At-Berth Regulation does contain provisions for “Delays Caused By the United States (U.S.) Coast Guard or Department of Homeland Security Inspections” (93118.3(d)(1)E.2.), however, regulation does not address clearances needed from other agencies, such as Customs and Border Protection. CARB staff agrees that the time it takes to complete necessary clearances is beyond the control of vessel and terminal operators.

As part of the 2007 At-Berth Regulation, fleets must provide CARB with data that includes the times a vessel is plugged in and taken off of shore power or connected/disconnected to an alternative control strategy. If a vessel is unable to comply with the 2007 At-Berth Regulation’s 3-hour rule (the vessel’s auxiliary engines are not allowed to be uncontrolled for more than 3 hours in a visit) the reasoning must be noted. CARB staff evaluated this data from 2014 through 2018 to determine why vessels generally exceeded the 3-hour time window.

CARB staff evaluated connection times for vessels currently regulated under the 2007 At-Berth Regulation and found that a large portion of the vessels were unable to plug in to shore power or connect to a capture and control system within one-hour, which was part of CARB staff’s original proposal published in December 2019. Often times these delays are due to variables out of the control of the terminal or vessel operator. Staff determined that an additional hour would be necessary for compliance without penalizing parties trying in good faith to connect to shore power.

In addition to reviewing compliance data, staff requested information from fleets concerning recommendations on the timeline for the connection window.

CARB received many comments, generally recommending a connection timeline defined as “as soon as practicable.” Staff believes that this recommendation is too subjective to determine compliance and would fail to achieve certainty in levels of emission control during visits.

Staff reconsidered how the Regulation could define “visit” to meet regulatory objectives and remove the penalty of delayed connection time when it is outside the vessel or terminal operator’s control. The Regulation modified the definition of “visit” to “from when a vessel is declared “Ready to Work” to “Pilot on Board”. “Ready to work” means the vessel is tied to the berth, the gangway has been lowered with netting down, and all government authorities with jurisdiction over the vessel visit have cleared the vessel. Once declared “Ready to Work”, vessels would be required control emissions by a CARB-approved emission control technology within two hours, and must control emissions until one-hour before the pilot is on-board to depart.” Redefining the definition of a vessel “visit” is anticipated to remedy many instances for when a vessel is delayed in controlling emissions.

Some regulated companies have, or may decide, to invest in lift-on/lift-off alternative maritime power (AMP) containers. This is a process where the vessel side shore power equipment is in a container that is loaded onto the vessel at berth once other containers are reconfigured to allow sufficient space, which may take several hours. This allows for multiple vessels to use the same AMP container box as a way to minimize costs, versus installing an AMP container on individual vessels. The added time required to move an AMP container to the vessel can cause additional delays, and vessels utilizing this method to connect with shore power may not be able to plug in within two hours from “Ready to Work” as has often been shown during implementation of the 2007 At-Berth Regulation. However, CARB staff considers this type of operation to be a business decision and as such, any entity utilizing this option for compliance must meet the same connection time requirements as any other CAECS.

In regards to safety when meeting the two-hour requirement, port personnel have been connecting container, refrigerated cargo (or reefer), and cruise vessels to shore power for over a decade at California ports. It is a proven effective technology with a set of procedures well established as an industry practice. The 2007 At-Berth Regulation required labor to operate under a time constraint with the three-hour requirement, and CARB has not received any notification of safety concerns stemming from the time requirement. That being said, workplace safety is of the utmost importance. If personnel identify a potential safety risk with shore power systems or CAECS, the Regulation provides for certain safety exemptions.

CARB staff believes with the redefinition of vessel visit and added connection time (from one-hour to two-hours) all regulated entities should be able to

comply with the requirements. However, as alternatives, when connections are not made within “ready to work” plus two hours, the Regulation would allow use of a VIE/TIE or the remediation fund as compliance options.

v. *Master Response 5: Articulated Tug Barges*

**Comment:** Various comments and commenters asserted that CARB should include articulated tug barges (ATB) in the Regulation and remove them from CARB’s Commercial Harbor Craft Regulation. CARB staff also received some comments from stakeholders seemingly implying that ATBs may otherwise be at a competitive disadvantage if not included in the Proposed Regulation.

**Master Response 5:** CARB staff made no changes based on the received comments. CARB acknowledges that ATBs can do similar work, at least over shorter routes, as traditional ocean-going tanker vessels. However, they generally operate on coastal trades and not on trans-oceanic voyages like traditional ocean-going tanker vessels.

From a policy and regulatory perspective, CARB staff disagrees with industry’s position that ATBs should be considered OGVs instead of commercial harbor craft. ATBs consist of two separate vessels (a tugboat and a barge) that are: 1) subject to two separate sets of U.S. Coast Guard regulations<sup>4</sup>, 2) are not equipped with boilers to power steam-driven pumps (like crude oil carriers have), 3) are cheaper to build, and 4) require fewer workers to operate. As such, ATBs align more closely with other definitions of CHC, and CARB intends to regulate them as such. Both tugs and barges (including ATBs) exceeding 400 feet, 10,000 gross tons, or 30 L/cylinder displacement, will still be considered CHC for CARB regulatory purposes. By classifying ATBs as CHC, it ensures that all barges, whether transported as ATBs or line-towed by other ocean-going tugs, will be subject to the same regulatory requirements.

The CHC regulation requires the use of ultra-low sulfur diesel (ULSD) for all vessels, including tugs and barges. By redefining ATBs as OGVs, there would be a potential for the use of higher sulfur content fuels allowed for use in OGVs, resulting in higher emissions. Additionally, the CHC regulation includes in-use emission standards for both main and auxiliary engines, resulting in in-transit emissions reductions as well as reductions at berth. Considering ATBs as OGVs, reduces the opportunity to control in-transit emissions. Because ATBs engage in coastwise trade, additional operations outside of Regulated California Waters could still be impacting air quality in coastal California communities. Regulating ATBs as CHC provides stronger public health protections due to the timing and extent of intended emission reduction targets.

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<sup>4</sup> Tugboats are subject to 46 CFR Subchapter M requirements and tank barges are subject requirements in 46 CFR Subchapter O.

One of the major ATB owner/operators has claimed that subjecting ATBs to the Regulation would be a cheaper compliance option for them. While the company has provided a limited set of vessel retrofit costs, they have not provided cost information that includes the shore power terminal infrastructure costs. As can be seen throughout the ISOR, controlling tanker vessel emissions is complex and costly. As those costs are significant, CARB staff believes the commenter has likely significantly underestimated the total costs needed to comply if ATBs are subject to the Regulation. Staff believe adding emissions control systems for ATBs at terminal locations already requiring tanker emissions reductions could potentially add significant costs that terminal operators and ports would incur and could cause a redundancy of emissions control technologies.

Furthermore, estimating relative costs of complying with the At Berth Regulation versus the pending amendments to the CHC regulation, which are in their early stages of development, is essentially impossible. The CHC regulation amendments are currently in the initial stage of development and are likely undergoing substantial changes, the scope of which remain unknown at this time. Therefore, it is too early to determine compliance costs under the modified CHC regulation and too speculative to compare compliance costs between the two regulations which would impact competitiveness. However, CARB has committed to continued engagement with the ATB industry to consider the best options for reducing emissions from this vessel category.

*vi. Master Response 6: 2020 Economic Downturn*

**Comment:** Various comments and commenters asserted that CARB should delay the regulation and/or modify staff's economic and/or emissions inventory analysis as a result of the ongoing pandemic situation.

**Master Response 6:** CARB understands that vessel activity has been impacted by the ongoing economic downturn, and CARB staff have been closely tracking and analyzing vessel activity data since March 2020 in order to better assess the impacts to the shipping industry in California. The final Regulation is based on staff's assessment of these impacts, as presented publically at CARB's June 25, 2020, Board Hearing.

However, as there is no precedent for such a situation and there is no level of certainty as to how it will impact California port activity, in order to address the health burdens being placed on California's port communities by vessels at berth, CARB's Board has directed staff not to delay the rulemaking process. The current pandemic our country is facing has further served to remind CARB staff of the risk that air pollution brings to vulnerable Californians, as people

suffering from asthma and other health disorders may be more susceptible to illnesses like COVID-19, particularly those with conditions that impact the lungs.

While the Board directed staff not to delay the rulemaking process, the Board also directed staff to adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025 due to impacts to the industry as a result of the current ongoing economic situation. These changes were publically noticed as part of the July 10, 2020, 15-day package. CARB staff do not anticipate a significant difference in emissions reductions achieved by the regulation as a result of these changes (see Attachment C to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information).

Container, reefer, and cruise vessel fleets that are currently subject to the 2007 At-Berth Regulation will continue to be required to reduce emissions from 80 percent of their fleet at currently regulated ports as per the 2007 At-Berth Regulation, until the control requirements of the new Regulation begin on January 1, 2023. In addition, ro-ro vessels experienced a significant drop in vessel visits across California ports and CARB's staff expects a slow recovery (around 2-3 years) from this vessel category based on activity levels associated with historical economic downturns. As such, staff believes reductions achieved from decreased visits due to the economic downturn and subsequent slower recovery offsets reinstating the ro-ro compliance date of 2025 from 2024. However, staff is committed to closely monitoring the economic recovery from the ongoing pandemic situation, and if conditions improve faster than anticipated, can recommend to CARB's Board changes to implementation dates forward or backwards as necessary at the time of the Interim Evaluation, or at any other time as appropriate.

CARB staff believes reflecting the current downturn in growth calculations at this time is too speculative to include, as the true scope of the conditions are unknown. For example, near-term economic conditions depend on a host of variables, including the efficacy of individual countries' responses to the pandemic, the time needed to develop (and the efficacy of) a vaccine, how consumer and employment preferences develop in the coming months, government fiscal policy responses, etc. Furthermore, current economic conditions represent only a snapshot in time, and may not represent long-term economic trends (including in periods years down the road when tanker emissions control deadlines arrive in 2025 and 2027). As CARB staff noted in the June 2020 public Board hearing, crude oil imports and the tanker industry, while negatively impacted by the pandemic, had already begun to show signs of recovery as early as the summer of 2020 as more people resumed normal activities. While fluctuations in industry recovery periods are expected due to the uncertainties associated with the pandemic, CARB staff fully anticipate at this time that the 5 to 7 years provided for implementation of tanker emissions

control requirements in the Regulation will be ample time for the tanker industry to recover from the effects of the pandemic. The 2022 Interim Evaluation will be used by staff as a way to reassess the impacts stemming from the current pandemic situation and will provide an opportunity to suggest changes at that time if necessary based on updated information. CARB staff also committed in Resolution 20-22, as adopted by CARB's Board at the August 27, 2020, public hearing, to closely monitor the economic downturn and progress towards implementation of the Regulation for all regulated vessel types and report back to the Board if amendments to the Regulation are warranted to address implementation challenges.

Recovery for each industry will vary depending on the progress of the pandemic and on international, federal, state, and local directives that impact trade and consumer activities. Because there has been no event like the current pandemic in recent history, there are no solid forecasts that can be used to predict the cargo fluctuations in response to such an event. As such, staff have elected not to update the economic analysis and emissions inventory for the Regulation at this time. However, new data and reports are available often and CARB inventory staff will continue to update the inventories with the best available information. Future inventory updates may be completed and included in the inventory prior to the Board review of the Interim Evaluation scheduled for 2022.

Regarding the SRIA and economic analysis for the Regulation, the SRIA is a document developed at the appropriate time in the regulatory process based on the best information available at the time of publication, and is not required to be updated. Given the uncertainty described above in projecting future economic conditions in light of the current health crisis, the SRIA remains the best economic analysis available. CARB staff's cost methodology was supported by Department of Finance (DOF), as can be noted in the response letter from DOF to CARB dated August 29, 2019, published on DOF's website at:

[http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf).

Staff believe that the economic analysis performed for this Regulation remains valid, as changing economic conditions for regulated entities do not alter the cost of the Regulation. Portions of staff's ISOR that required updating in response to changes staff made in light of the ongoing pandemic situation were included as attachments to the first and second "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (available on CARB's website at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

### **3. INFORMATIVE COMMENTS**

The following comments are categorized as providing CARB with informational material related to the Proposed Regulation and its rulemaking process. The comments and materials neither provide objections or recommendations specifically directed at the Proposed Regulation nor provide recommendations on CARB's rulemaking process for adopting the amendments. Though responses are not required, staff provides the following responses.

**Comment:** "Ships at berth allowed to operate engines using fossil fuels should be required to switch from such engines to Hydrogen Fuel Cells (HFC) as an energy source. Such HFC when operated have no air emissions. Using renewable Hydrogen, the supplier of Hydrogen will be eligible for financial benefits, which will help lower production cost. The only by-product of operation is water, which can be recycled in the ship's water system. Without air emissions, the air in the Port will be cleaner and there will not be any CO2 emissions that contribute to climate change. In addition, the health and public safety of ship employees, workers supplying the ship with goods and services, guests on the ship, and people working in and near the port will have improved health, which will contribute to lowering medical costs in support of all people who are in or near the ship. HFC's are currently in use in cars, buses, trucks, trains, and in some ships around the world. HFC is an emerging technology that will surpass the use of battery power for all such vehicles, trains, and ships without the problem of toxic battery disposal and the length of time required to recharge batteries. Refueling time for HFC equipment takes less than five minutes for an auto. Larger systems will probably require more time, but still much shorter time than battery recharging. Looking at this issue holistically, such ships should be served by trucks and buses and even fork lifts that use HFC as a source of energy. The sale price of the renewable Hydrogen is about the same as high test gasoline or diesel now used by many vehicles." (1.1) (EA 1-1)

**Agency Response (1.1):** CARB staff made no changes based on the received comment. CARB staff agrees with the comment as hydrogen-powered fuel cells play a significant role in reducing California's GHG and air quality emissions as a zero emission technology that can be used in applications such as cars, buses as well as ships. The Regulation is structured in a way that will allow this technology and encourage alternative technologies such as hydrogen fuel cells in vessel applications. For more information, see response to EA comment number 1-1.

**Comment:** The Coalition for Clean Air submitted informational material titled "FAQs: California Air Resources Board Proposed At-Berth Regulation for Ocean Going Vessels" as an informative summary of the purpose, what the Regulation requires, and the benefits and costs of the Regulation. The document was distributed to individuals. (2.1)

**Agency Response (2.1):** CARB staff made no changes based on the received comment. Staff appreciates the Coalition for Clean Air's efforts in providing a

readily available and informative factsheet about the Regulation for interested parties.

**Comment:** Advanced Environmental Group (AEG) a barge-based capture and control system developer and provider supplied an informative letter describing the successful use of the barge-based systems on container vessels and progress on the development of other systems to be used on tanker vessel currently being developed. (32.1)

**Agency Response (32.1):** CARB staff made no changes based on the received comment. Staff appreciates the support of providing information that demonstrates the validity of a potential technology that may satisfy the Regulation’s requirements. Any particular technology is subject to CARB approval by demonstrating it achieves, as part of a broader strategy or when utilized as a primary means, required emissions reductions.

**Comment:** Flexible cable management system developer igus, inc., provided an informational document on their cable management systems working with current shore power systems. They foresee the systems as an option other than terminals adding more vault connections. (58.1)

**Agency Response (58.1):** CARB staff made no changes based on the received comment. Staff appreciates the support of providing information that demonstrates the validity of a potential technology that may be used to assist vessels plugging in and the Regulation’s requirements to be achieved.

**Comment:** The Western States Petroleum Association attached informational materials titled “Evaluation of At Berth Shore-Based Emission Control for Tankers at California Ports Report Outline.” The materials provide an outline of an evaluation study with a timeline and survey related to implementing shore-based emission control systems. (22.28)

**Agency Response (22.28):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional material. The comment does not provide any examples of projects or analysis that would be required by the Regulation, but instead outlines a study to explore the feasibility and cost effectiveness of shore-based emission control for tankers and includes a description of tankers and marine terminals. The commenter outlines that such a study should include the following:

- Executive Summary
- I. Introduction
- II. General Description of Tankers and Marine Terminals
- III. Tanker Emission Inventory
- IV. Technical, Safety, and Operational Review

- V. Cost-Effectiveness and Economic Impact Review
- VI. Conclusions
- VII. References

Analysis similar to what the commenter requests has already been done through the drafting and publishing of the ISOR and SRIA documents and associated appendices. As such, CARB staff did not publish a separate study assessing feasibility, as that work would have largely been redundant to the work performed for the Regulation as part of the ISOR, SRIA, and emissions inventory documents, which are required as part of the rulemaking process. The Regulation provides flexibility for vessel and/or terminal operators to choose whichever emissions control technology works best given unique operations, provided that technology is CARB approved. As such, regulated entities may find it necessary or desirable to perform a site-specific engineering analysis to assess the technical, safety, and operational needs specific to their operations, however, that type of site-specific analysis will be dependent on the location and emissions control technology and is beyond the scope of CARB staff's required analysis.

**Comment:** WSPA Submitted "Chevron Presentation: At-Berth Costs Q&A". It is an informational presentation projecting potential construction and costs of a Richmond wharf construction project for the Regulation. The commenter's submittal included aerial pictures of tanker terminals across California and a summary of "Timelines for Projects Involving Substantial New Wharf Infrastructure Comparable to At Berth Rule Compliance Projects" (22.29)

**Agency Response (22.29):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information, and notes that the commenter disagrees with staff's assessment of the costs and amount of time it will take to complete installation of an emissions control technology at a tanker terminal. Due to the unique structure of the Richmond Longwharf (the project discussed by this commenter), this example is likely a worst case scenario in terms of cost and projected timeline to complete, and not representative of what is expected to happen throughout all CA tanker terminals. CARB staff note that in footnote #1 of the timeline analysis, this commenter states that they only analyzed timelines for projects that required substantial new wharf infrastructure and intentionally disregarded simpler projects with shorter timelines that would bring the timeline average down to 3 to 9 years (down from the commenter's claim of 7 to 15 years), with an average of 4.6 years for completion. Because staff disagrees with the commenter's assertion that the Regulation will necessarily require substantial wharf upgrades in order to install an emissions control strategy (and crane(s), if needed), and also disagrees that such projects are likely to require the same invasive and intensive overhaul and extended timeline that a large-scale wharf reconstruction

project would require, staff's analysis of timelines remains valid (see ISOR Chapter III) and the tanker implementation dates are achievable. See Master Response 3 for a detailed discussion on the feasibility of tanker implementation timelines.

CARB staff notes that timelines are likely to vary at each wharf depending on the specific work needed to install the terminal's chosen emissions control strategy. However, the Regulation provides several pathways towards compliance in order to give regulated entities compliance flexibility in the event that isolated projects are anticipated to extend longer than the 2025/2027 timeframes. Again, see Master Response 3 for a detailed explanation of these compliance flexibilities provided in the Regulation.

**Comment: "Technical Analyses Regarding the Proposed Measure**

After release of the ISOR and initiation of the formal public review period, PMSA commissioned two technical analyses of the proposed control measure: (1) a review of the ISOR and proposed control measure, generally; and, (2) an evaluation of the emissions benefit and cost-effectiveness of controlling Ro/Ro vessels under the proposed regulation.

PMSA has attached those two analyses here as part of our comment letter. Technical Analysis: California Air Resources Board's Proposed Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At Berth in a California Port, December 2019, is included as Attachment A. CARB At-Berth Regulation Cost Effectiveness Analysis for Auto Carriers and RoRo Ships at Port of Long Beach & Port of Los Angeles, December 2019, is included here as Attachment B. The analyses, in their entirety, are submitted as part of PMSA's comments on the ISOR and its supporting documentation and they are incorporated by reference herein. To the extent that the issues raised therein are not already otherwise addressed in this comment letter, PMSA requests that each of the issues raised in both Analyses be addressed and responded to formally." (52.3)

**Agency Response (52.3):** CARB staff made no changes based on the received comment. Staff notes and appreciates the technical feasibility analysis and the cost effectiveness (CE) analysis submitted by PMSA. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB's rulemaking process for adopting the Regulation. To the extent that the comment also suggests a projects required technical analysis, the Regulation provides flexibility for vessel and/or terminal operators to choose whichever emissions control technology works best given unique operations, provided that technology is CARB approved. Additionally, the Regulation includes an Interim Evaluation (occurring in 2022) which will take into account the state of technologies at that time. If CARB staff finds that the implementation dates are not achievable based on progress made by the time

of the Interim Evaluation, CARB's Board may direct staff to work on regulatory amendments for their consideration that include adjustments to the compliance dates.

#### 4. REGULATION STRUCTURE

The following comments address certain aspects of the Regulation. The comments are summarized below, followed by a response. Where appropriate, comments are grouped, with reference to a specific comment in the letter, and provided with a single response.

**Comment:** "[A]ll Ports & Shipping Companies are responsible for the future planning, addressing all potential non-compliance circumstances & contracting of SECT services: Fines shall be doubled daily until compliance" (43.6)

**Agency Response (43.6):** CARB staff made no changes based on the received comment. Penalties for violations for the regulation are limited by statute to \$37,500 per action. See section 93130.20 of the regulation for more details about the penalty structure of the Regulation.

**Comment:** "Coalition for a Safe Environment "...do not support minimum Annual Thresholds because SECT is available" (43.7)

**Agency Response (43.7):** CARB staff made no changes based on the received comment. Alternative capture and control systems are currently available however, the thresholds for regulated parties were not only determined by technology availability. See the ISOR Chapter III for more information on how thresholds were set.

**Comment:** "Critical to success in a program of this kind is that both sides of the ship/shore interface are fully integrated in a timely and safe manner, a point with which we are sure CARB agrees. However, in the proposed regulation, specifically under section 93130.14, there are deadlines for submitting a schedule for implementing equipment (terminals) or a schedule for installing equipment and/or any necessary construction projects (ports), there is absolutely no deadline for when that equipment must actually be installed. Vessels however must actually be prepared to plug in or use an alternative compliance method by the set dates contained in the proposed regulations. We believe this represents a complete disconnect between the hard timeline for vessels to comply and the timeline for terminals and ports to actually provide the necessary infrastructure to assure compliance. In this respect, we believe a set implementation date should be established for terminals and ports to provide the necessary shore based infrastructure which should be in line with the compliance timeline for vessels." (47.5)

**Agency Response (47.5):** CARB staff made no changes based on the received comment. Vessel operators and terminal operators share the same compliance deadlines. This is specified in the Terminal Operator Requirements of Section 93130.9 (b) of the Regulation.

**Comment:** “The per-vessel/checklist-based concept was initially supported by industry as a way to clarify and streamline the compliance process, address many of the issues in the current rule, establish balanced responsibilities for all participants, and make enforcement simpler. However, as the concept and language developed, the spirit changed from encouraging desired behaviors to a more controlling, punitive approach, which is also complex to administer, provides significantly less flexibility and planning capability, and creates conflict rather than cooperation between regulated entities.” (46.2)

**Agency Response (46.2):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the checklist approach and required reporting is critical for establishing responsibility across multiple parties. In addition, CARB is developing an online reporting system designed around the per visit compliance approach. The Regulation provides multiple avenues of flexibility to assist in planning including pathways for new technologies under a CAECS, use of TIEs and VIEs, the remediation fund, and the Innovative Concepts compliance option.

**Comment:** “The proposed “per-vessel” rule requires vessels to connect almost all calls starting January 1, 2021, however, the infrastructure to do so is not in place. The proposed regulation calls for Ports’ infrastructure plans to be submitted by July 2021, approved by CARB in 90 days (October), and only then start the funding, permitting and construction process. In addition, the envisioned alternative control systems are inadequate in LA/LB and do not exist in any other ports, and barge-based alternatives may not be usable in some locations due to safety concerns.” (46.3)

**Agency Response (46.3):** CARB staff modified the proposed regulatory language in response to the received comment. See agency response (46.14). The new Regulation provides a smooth transition from the 80 percent visit requirement in the 2007 At-Berth Regulation to the 15 percent TIE / 5 percent VIE allocation in 2023 and 2024, and finalizing on 5 percent TIE / 5 percent VIE in 2025 and thereafter. This phase-in period allows time for infrastructure to develop if a terminal or port decides to implement a different control strategy or improve their existing infrastructure.

**Comment:** “Compliance Pathway:

- The rule basis is per-vessel with only a few exemptions. This demands near perfect performance from a mobile source technology that is used only

intermittently and must withstand the challenging ocean environment during and between uses.

- The rule does not provide feasible compliance pathways for some normal operational situations (e.g., major business or economic changes, network redesigns, or the large number of “extra loaders” encountered in late 2018).” (46.8)

**Agency Response (46.8):** CARB staff made no changes based on the received comment. Although compliance is measured per visit, there are a number of compliance pathways to accommodate normal operational situations. First, to assist vessel and terminal operators to comply with the Regulation CARB staff introduced TIE and VIE exceptions to the Regulation. These exceptions can be used for any reason a vessel or terminal is unable to comply with the requirements of the Regulation (Section 93130.11). Second, the remediation fund allows for an additional compliance option that may be used under limited circumstances where vessel operators and/or terminal operators, CAECS operators, and/or ports have made commitments to controlling emissions at berth but have been unsuccessful (Section 93130.15). Finally, during the first 15-day changes CARB staff added the Innovative Concept alternative compliance option (Section 93130.17). This option provides terminals and vessels the opportunity to reduce emissions from sources in and around the regulated port or marine terminal at a level equivalent or greater to what would be achieved by following the main compliance option of reducing emissions from vessels at berth. CARB staff believes the flexibility of these provisions allow for emission reductions and health benefits while still allowing for operational challenges encountered by the industry.

To address increases in vessel fleet activities, such as the extra loaders needed in 2018, fleets and terminals may request additional VIEs or TIEs to cover a projected increase in yearly activity (Section 93190.11(c)).

**Comment:** “The proposed rule is also administratively complex and challenging, so is not an improvement vs. the existing rule. The seven-day reporting requirement conflicts with annual allowance of VIEs and TIEs. This adds significant uncertainty and challenge to planning, decision-making and reporting for any non-routine call.” (46.10)

**Agency Response (46.10):** CARB staff modified the proposed regulatory language in response to the received comment, and other comments. The reporting requirement for vessel operators and terminals was increased to 30 days. See response to comments 44.5, 46.34, and 52.57 for more details.

**Comment:** “Conflict vs. cooperation: The design as now written will lead to conflict between vessel operators, terminals and ports rather than increasing cooperation.” (46.11)

**Agency Response (46.11):** CARB staff made no changes based on the comment received. The comment is not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff disagrees with the commenter and believes the clear responsibilities prescribed by the Regulation will help facilitate better communication and cooperation between regulated parties.

**Comment:** "Currently regulated Vessel fleet operators are required to comply on essentially every vessel call starting 1/1/2021, but infrastructure does not exist to do so. Ports and terminals must submit PLANS by July 2021, and CARB has 90 days to review and approve those plans. Only then can the infrastructure proposal, permitting, funding and construction processes be started.

- Recommendation: Defer implementation of the per-vessel approach until this infrastructure availability is addressed." (46.14)

**Agency Response (46.14):** CARB staff modified the proposed regulatory language in response to the received comment. CARB modified the implementation of new Regulation to supersede the 2007 At-Berth Regulation beginning January 1, 2023. All terminal and port plans are due before transitioning from the 2007 At-Berth Regulation to the new Regulation.

**Comment:** "The severability clause on the last page will leave the rule unbalanced and unworkable if any party is able to successfully challenge their inclusion in the rule. A reversion to some modified version of the existing rule may be more appropriate in this case." (46.37)

**Agency Response (46.37):** CARB staff made no changes based on the received comment. This severability clause ensures that the Regulation continues in effect in its current form to the greatest extent allowable if it is successfully challenged. If a section is struck down, it is likely that staff would work through the amendment process to resolve the issue.

**Comment:** "CARB staff has not identified any criteria that will inform their development of the limits of the rule. The current approach seems to be 'if we can do it, we will'. The every vessel/every visit approach is no longer tied to the emission reductions sought as part of mobile source strategy, local air quality needs, technical feasibility, cost-effectiveness, or economic feasibility. Before proceeding CARB should identify the criteria that will determine the scope of the rule; conversely, it should not develop the most restrictive rule imaginable and then identify the criteria post-hoc." (52.C.120)

**Agency Response (52.C.120):** CARB staff made no changes based on the received comment. CARB staff has identified the need for the Regulation in Chapter II of the ISOR. Some of the criteria used in developing the Regulation were the need to; 1) achieve greater public health and air quality benefits; and 2) address implementation challenges with the 2007 At-Berth Regulation.

**Comment:** “Given its importance to the final structure of the expanded rule, PMSA reiterates the need for CARB to identify the criteria that will inform their development of the rule. Without criteria, the current deviation from adopted CARB policy is arbitrary. The approach is no longer tied to the emission reductions sought as part of mobile source strategy, local air quality needs, technical feasibility, cost effectiveness, or economic feasibility. CARB staff must identify what criteria will be used to determine the scope of the rule. Criteria must not be developed after the fact to fit the rule sought by CARB staff.” (52.C.129)

**Agency Response (52.C.129):** CARB staff made no changes based on the received comments. CARB staff disagrees that the new Regulation’s approach is not tied to emissions reductions sought as part of the Mobile Source Strategy, local air quality needs, technical feasibility, cost effectiveness, or economic feasibility. CARB adopted the Regulation to build on the success of the 2007 At-Berth Regulation in order to further reduce the health burdens to local communities. Chapter II of the ISOR discusses the problems that the Regulation is intended to address, including air quality and compliance challenges of the 2007 At-Berth Regulation. Changing to an “every vessel, every visit” approach does not decouple the goals to achieve emission reductions sought by the 2007 At-Berth Regulation. The concept of an “every visit” approach was discussed as early as the workshop on August 2017, where CARB staff also discussed the goals and benefits of the new Regulation.

**Comment:** “The ‘every vessel/every visit’ approach also creates problems with regard to the phase-in proposed by CARB staff. As CARB staff acknowledged, how do you implement an incremental phase-in over multiple years for a single vessel visit? The likely answer is that you cannot and that subjecting a vessel engaged in international trade that will visit California only once or rarely to California-specific rules will likely result in cargo diversion that will have its own environmental impacts, as CARB has seen from PMSA’s Greenhouse Gas Route Comparison Tool. Another option hinted at by CARB staff is making the terminal operator select which vessels must comply during a phase-in period, but terminal operators have no basis to make such decisions. Further, in some cases the terminal operator may only provide stevedoring services at a public berth and may not have a contractual relationship with the vessel, and in others such a requirement could prove legally problematic. The only way a phase-in period can be successfully accomplished is from an ocean carrier perspective. As recommended in the attachment, a threshold for being subject to the rule will also allow the implementation of a phase-in period.” (52.C.124)

**Agency Response (52.C.124):** CARB staff made no changes based on the received comment. This comment was initially submitted to CARB staff on October 9, 2017, in regards to a previous proposal. The comment is no longer relevant to the final proposal, which phases in vessel types by category to prevent these complications.

**Comment:** “As CAPA noted in its October 9, 2017 submission and as is clear from the comments that have been submitted by our member port authorities, taking a standardized approach to achieving air emissions reduction is problematic. “If you’ve seen one port, you’ve seen one port” is a common expression in the port community. That statement certainly applies when it comes to California ports, whose operations vary significantly from port to port. Their facilities are different, as are the vessel types they service. CAPA members also operate in different air basins that have differing air quality concerns. These differences should be highly relevant to CARB as it seeks to put in place a world-class standard for reducing harmful air emissions, and CARB should take these differences into account in order to maximize the effectiveness of its regulatory scheme.” (59.1)

**Comment:** “CARB should modify its proposal to focus less on a “one size fits all approach” and more on permitting the use of flexible approaches, or alternative compliance plans, that will help each port achieve compliance taking into account its own unique circumstances. Approaches that CARB could usefully consider include: (1) providing funding to support investment in technologies that will help ports to comply with the proposed at-berth regulations and do not increase GHG emissions, recognizing that the funding and technologies required may differ from port to port; (2) providing flexible timeframes, given the uncertainty surrounding the availability of emissions capture and control technologies that are necessary to achieve compliance and taking into account the differences between California ports; and (3) allowing vessel operators, in coordination with ports, to develop local or regional emissions reduction plans that would achieve air emissions reductions that are equivalent to the proposed at-berth regulations, but through other means.” (59.4)

**Comment:** “PMSA is concerned that CARB is continuing to propose a single regulatory structure to control emissions from multiple disparate vessel types. When the original At-Berth Regulation was adopted in 2007, CARB acknowledged the differences in vessels types and consciously adopted a rule framework that segregates by vessel type. Given the disparities in vessel type, berthing time, emissions, frequency of visits, and technical hurdles, this was an appropriate and proper decision. The same disparities which existed at the time of the current rule promulgation persist and continue at the present time. Moreover, the currently regulated fleets and their Port and marine terminal partners were estimated by CARB to have needed to invest approximately \$1.8 billion in shore power infrastructure under the current rule on the basis of this bifurcation of ocean-going vessel fleets.

The new proposed regulatory framework proposes a single structure for the regulation of disparate vessel types despite the persistence of the same disparities which existed at the time of the initial rulemaking.” (52.14)

**Agency Response (59.1), (59.4), and (52.14):** As explained in the ISOR, CARB recognizes the need for a flexible regulatory approach given the diversity of operational characteristics at California ports. As facility and vessel types have unique operations, individual circumstances may necessitate varying emissions control strategies to maximize efficiencies and investment at a specific location. The structure of the Regulation is designed such that individual terminal operators and vessels would be able to utilize an emissions control system that works best for its unique operations, and also provides flexibility to account for situations where physical constraints may hamper the controlling of emissions from certain vessel types. CARB also recognizes that some air districts have different air quality issues; however, the Regulation is intended to address air quality issues that are critical for all California port communities, including reductions in cancer-causing diesel PM and ozone forming criteria pollutants like NO<sub>x</sub>, which are necessary to meet federal air quality standards.

CARB built an Interim Evaluation process into the Regulation, which is scheduled to be completed by the end of 2022, which will allow staff the opportunity to re-evaluate regulatory implementation schedules for ro-ro and tanker vessels and terminals, among other things. As part of the 15-day changes staff added the Innovative Concept compliance option to the Regulation. The Innovative Concept compliance option allows facilities or vessel operators to submit to CARB alternative emissions reduction plans that reduce emissions at a level equivalent to the vessel emissions reductions required by the Regulation (Section 93130.17).

**Comment:** “A Requirement to Control 100% of Visits Is Not Realistic - Requiring 100% of vessel visits to use at-berth controls will require redundant systems to ensure coverage at all times, leading to skyrocketing costs for Ports, terminal operators, and ship owners with little additional emissions benefit. We urge reconsideration of such an absolute goal, even in light of your proposed use of exceptions, including terminal safety and emergency events, equipment failure, and physical and spatial constraints.” (60.11)

**Agency Response (60.11):** CARB staff made no changes based on the received comment. The Regulation requires control on every vessel visit to a regulated terminal. However, along with exceptions, the Regulation considers the possibility of other unintended events where a vessel is unable to control emissions. To account for these events staff developed compliance mechanisms called Terminal Incident Events (TIE) and Vessel Incident Events (VIE) (See section 93130.11). When considering the allocation of TIEs and VIEs the requirement of the Regulation is not 100 percent as the commenter claims.

**Comment:** “We agree that 100% compliance cannot be met by vessels in any category– We want to thank CARB staff for adjusting the concepts to reflect the impossible goal of 100% compliance. It remains unclear whether or not terminals and vessel operators can meet the new minimum of 95% compliance.” (60.19)

**Comment:** “We want to thank CARB staff for adjusting the concepts to reflect the impossible goal of 100% compliance. It remains unclear whether or not terminals and vessel operators can meet the new minimum of 95% compliance. We urge CARB to produce a feasibility assessment to better inform this regulation.” (52.C.81)

**Agency Response (60.19) and (52.C.81):** CARB staff made no changes based on the received comment. Staff notes and appreciates the commenters acknowledging the past compliance and enforcement difficulties that the Regulation seeks to address. As explained in the ISOR, vessels, terminals, ports, and emissions reduction technology operators (which may be vessel, terminal, port, or third party entity) will all have responsibilities for compliance. For example, Section 93130.14(a)(1) through (3) would establish that terminal operators receiving visits from regulated vessel categories that also exceed the terminal visit threshold must submit a terminal plan to CARB. The Regulation also recognizes the need for flexibility and acknowledges multiple alternative methods or strategies to demonstrate emissions reductions, provided CARB approval. With the added flexibility in the form of TIEs, VIEs, remediation and Innovative Concepts, CARB is more confident that entities will be able to demonstrate regulatory compliance, and thus achieve further emissions reductions.

**Comment:** “Please ensure that there is at least one feasible, clear, cost effective -- reasonably cost effective method for compliance for all of the reasonably predictable disruptions that happen in this industry.” (OC-2 Kindberg)

**Agency Response (OC-2 Kindberg):** CARB staff made no changes based on the received comment. CARB recognizes the need for a flexible regulatory approach given the diversity of operational characteristics at California ports. As facility and vessel types have unique operations, individual circumstances may necessitate varying emissions control strategies to maximize efficiencies and investment at a specific location. The structure of the Regulation is designed such that individual terminal operators and vessels would be able to utilize an emissions control system that works best for its unique operations. In addition, it also provides flexibility in the form of TIEs/VIEs and the remediation fund to account for situations where disruptions or certain physical constraints may hamper the controlling of emissions from a vessel at berth. Staff also developed the Innovative Concept Compliance Option (section 93130.17), which allows vessel and terminal operators to utilize CARB approved Innovative

Concepts for reducing equivalent emissions in and around ports instead of reducing emissions directly from vessels at berth if it is more cost effective.

**Comment:** "The Best Practices Checklist Is a Concept Worth Pursuing - The Ports acknowledge that a major goal of this rule-making is to assign roles and responsibilities so that CARB may apportion compliance enforcement if multiple ports are at fault when a vessel fails to connect to shore power. Previously, CARB had suggested development of a "best practices checklist" which the vessel owner, the terminal operator, and the Ports would follow to maximize compliance. The Ports support exploration of this concept." (60.18)

**Agency Response (60.18):** Staff agrees that assigning roles and responsibilities to parties is a key requirement to ensure the Regulation requirements are clear and enforceable. The "Best Practices Checklist" is a concept that staff developed early in the development of this regulation, and has been incorporated into the Regulation as the "Terminal Operator Compliance Checklist," "Vessel Compliance Checklist," and "CARB Approved Emission Control Strategy Checklist." These lists clarify what is required from each party. The "Summary of Responsibilities" can be found in Section 93130.18.

**Comment:** "WSPA also believes that the At Berth Regulation should include "off-ramp" scenarios that provide next steps for facilities that demonstrate an inability to implement all the required elements in the default timelines provided under the At Berth Regulation." (22.27)

**Agency Response (22.27):** CARB staff modified the proposed regulatory language in response to the received comment. In response to several comments received on the original Proposed Regulation released October 15, 2019, CARB staff agreed the Regulation should include flexibility to help avoid potential scenarios in which emissions control implementation timelines cannot be met. Thus, in response to the aforementioned comments, as part of the first 15-day change regulatory package staff included the "Innovative Concept Compliance Option" as an alternative compliance pathway (Section 93130.17).

The "Innovative Concept Compliance Option" is intended to provide an alternative means for demonstrating compliance with the Regulation. By using this option, a vessel or terminal operator would be required to reduce emissions from other sources in and around the port at a level comparable to what would be achieved by reducing emissions from a vessel at berth.

Staff developed the Innovative Concept provisions to allow vessels or terminal operators flexibility when complying with the Regulation while other CARB-approved compliance methods and strategies are being developed or installed. CARB staff believes that the Innovative Concept pathway provides flexibility by allowing vessels or terminal operators additional time needed to identify

opportunities for implementing a compliance strategy that reduces vessel emissions while at berth. Approved Innovative Concept projects are valid for up to 5 years, and can be renewed indefinitely. As such, the Innovative Concept pathway can be utilized as a terminal's main pathway to compliance or as a bridge to reduce emissions while longer term project installations are taking place.

**Comment:** "CARB staff have designed a rule that can be quantitatively determined to be impossible to comply with. The attached two Starcrest Analyses demonstrate that the proposed structure including the use of VIEs and TIEs will leave ocean carriers and terminal operators without compliance mechanisms for known circumstances under the proposed regulation.

The evaluation does not include unknown but anticipated circumstances like maintenance, equipment failures, required equipment inspections, vessel redeployments, and extra loaders, nor possible unknown and unanticipated events. As a result, the anticipated degree of noncompliance is likely to be substantially higher. These issues would be substantially avoided by preservation of a fleet average compliance mechanism when paired with an effective vessel compliance checklist." It is inappropriate that CARB design a regulatory program where noncompliance is a rule feature. At the very least, the number of VIEs/TIEs should be increased to cover all known circumstances with a margin to cover anticipated issues (e.g., equipment maintenance, extra loaders) and/or the significant expansion of circumstances associated with eligibility for participation in a (properly priced) remediation fee program. More appropriately, the proposed rule should be restructured on a vessel fleet average approach, which can achieve greater emissions reductions." (52.16)

**Agency Response (52.16):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the Regulation allows for flexibility for compliance in several ways. Specifically, starting on page ES-32 of the ISOR details exactly "What happens if a vessel is not able to reduce emissions while at berth?" The number of VIEs/TIEs is designed to help with the transition from the 2007 At-Berth Regulation to the new Regulation, and accounts for new infrastructure time to be deployed. See Agency Response (45.28) for further discussion of the determination of the number of VIEs and TIEs. Additionally, the Regulation does require an "every visit" approach in place of fleet averaging, however fleet averaging has not been excluded as an option though the Innovative Concept compliance option (Section 93130.17).

**Comment:** "THE USE OF THE RELEVANT ISO STANDARD FOR SHORE POWER INFRASTRUCTURE SHOULD BE REQUIRED IN THE REGULATIONS: The regulation should be updated to require terminals and ports to meet the international standard agreed to by the International Maritime Organization consistent with ISO/IEC/IEEE 80005-1, for shorepower infrastructure to be considered compliant with the regulation." (52.C.64)

**Agency Response (52.C.64):** CARB staff made no changes based on the received comment. CARB staff understands that vessels and terminals are already adhering to international standards for the operation of shore power. Compliance is based on the action of reducing emissions in an agreed upon method by the terminal and vessel, which is likely to follow IEEE guidelines for shore power.

*i. Connection/Disconnection Times*

This subcategory contains comments focused on Sections 93130.7(e)(3), 93130.9(d)(4), and 93130.12(b)(2) requirements to begin controlling emissions by shore power or another CAECS within 2 hours after "Ready to Work."

**Multiple Comments:** Numerous comments expressed concern about the Regulation's one/two-hour control system connect/disconnect requirements. The commenters believe the hour limits would not be enough time to safely connect for each and every vessel visit. (50.1), (50.10), (46.23), (17.15), (37.4 / EA 37-1), (45.23), (46.5), (46.13), (48.6), (51.1 / EA 51-1), (52.44), (52.C.42), (52.A.11 / EA 52-11), (45.22)

**Agency Response:** CARB staff made no changes based on the received comment. See Master Response 4 for discussion on control system connection and disconnection times.

**Comment:** "PMSA recommends that one-hour limit be replaced with a checklist approach. CARB has never identified an instance when labor was available that a vessel was not connected to shore power in a timely manner. All discussions regarding the connection process have not been about how fast people work, but verifiable steps were taken by responsible parties: did the terminal order labor? is the vessel shore power capable? did the port authority send staff to energize the connection? As we have argued in past comment letters, these items can be successfully determined through a checklist approach without putting labor at risk with a stopwatch for handling heavy, high-voltage equipment." ( 52.45)

**Agency Response (52.45):** The emissions reduction strategy connection time is part of the vessel and terminal checklists for compliance with the Regulation. However, a checklist approach does not address the need to begin controlling a vessel's emissions as quickly as possible. Removing the time limit for connection to two hours after the vessel is made "Ready to Work", would fail to ensure certainty in level of emission control during a visit. For example, a vessel may connect to shore power in less than two hours but another vessel may not connect until ten hours have passed. This additional eight hours the vessel visit went uncontrolled will have negative effects on the surrounding communities.

If a vessel cannot meet the required connection time, the party responsible for the lack of connection may use a TIE or VIE, or remediate any excess emissions via the remediation fund. If disputed, CARB enforcement staff will investigate the reasoning for the delayed connection and may assess a violation where appropriate. Regarding the process for connecting shore power to a vessel, CARB leaves the specific procedural steps at discretion of vessel, terminal, and port operators.

Additionally, terminal operators have safely and successfully handled shore power equipment since 2014, when the 2007 At-Berth Regulation went into effect. However, if a terminal or vessel operator determines it is unsafe to plug into shore power they may claim a safety exemption (Sections 93130.8(a) and 93130.10(d)). All safety and emergency events are subject to review and audit by the Executive Officer.

**Comment:** "Bulk vessels and the terminals to which typically do not have the required infrastructure onboard or on the shore side to be compliance with this proposal." (35.3a) Also, what is called "line-hauling" is quite customary, whereby a vessel must shift along berth between hatches due to shore loading facilities do not have the ability to themselves shift along a berth. This shifting requires full use and readiness of vessels main engine, thereby questioning further to practicality of one-hour plug in's." (35.3)

**Comment:** "[T]he one-hour hook-up will be impossible to meet for the bulk and general cargo vessels." (31.2)

**Comment:** "A proposed "one-hour hook-up" is neither practical for a bulk vessel, nor for a bulk loading terminal." (35.2)

**Agency Response (35.3), (31.2), and (35.2):** CARB staff made no changes based on the received comments. Staff notes the comments; however, the Regulation does not include control requirements for bulk or general cargo vessels. Therefore, the hook-up time was not designed in consideration of bulk or general cargo vessels. Staff may re-evaluate the required hook-up and disconnection times if in the future, control requirements for bulk and general cargo vessels are added to the Regulation.

## *ii. Commissioning*

This subcategory contains comments focused on vessel commissioning. Vessel commissioning is the process used to ensure that the shore power equipment on the vessel is compatible with the shore power equipment on the terminal and that there are no safety issues for both the equipment and the personnel handling the connection. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "Terminal capable / Vessel capable. New ship calls ITS. Commissioning [sic] required. Ship cable is too short to connect to berth SPO vault. No other cables or vaults available.

Who is at fault? What steps does CARB expect Vessel or Terminal to take? What if this happened after ship was commissioned [sic]? In many cases, these ships are repaired overseas [sic] and parts are replaced. Terminals are not made aware of this." (50.40)

**Agency Response (50.40):** CARB staff made no changes based on the received comment. CARB requires a vessel and terminal operators communicate at least seven days prior to a vessel arrival to exchange information about the use and compatibility of a control strategy (Section 93130.7(e)(1)). In this situation, the vessel cannot commission to the terminal because the cables are too short. Since the vessel has never commissioned to the terminal, it is still up to the vessel to be compatible with the shore power infrastructure. If the ship was commissioned, then CARB expects that this vessel will continue to use shore power on each subsequent visit. If the cables are too short to connect to the SPO vault, then it is likely the vessel will need to be positioned as it was during commissioning. If an incompatibility is identified and caused a vessel and terminal to be unable to successfully connect a vessel to shore power, then a VIE or TIE could be used as a compliance option. If the vessel does not connect to shore power, and a VIE or TIE is not used, then CARB enforcement staff will evaluate and both the terminal and vessel operator could potentially be found to be non-compliant based on the specific circumstances of the visit.

**Comment:** "The Port is glad to see that Vessel Commissioning is specifically exempt from the rule, as listed in visit exception Section 93130.8(c). However, the Port notes that it should not be limited to only the first visit, and should not matter whether the commissioning was successful. What happens if the commissioning was not successful? The Port of Oakland requires that vessels be re-commissioned if they have not been in Oakland for over a year. Further, the same vessel might need commissioning on both port side and starboard side. For these reasons, the same ship might require multiple commissioning trips.

Port staff request that vessel commissioning events that do not successfully connect to shore power as discussed in Section 93130.8(c) be eligible for exceptions under the regulation without the use of a VIE. The commissioning attempt shows that the goal was to reduce emissions through shore power and as such should be an exception in this situation. Port staff conduct each vessel commissioning (with the exception of those at Berths 61-65 to ensure the safety of the vessel, terminal, and workforce. Vessel commissioning is an invaluable safety procedure and should not be penalized under the Proposed Control Measure." (17.13)

**Agency Response (17.13):** CARB staff made no changes based on the received comment. The Regulation states that a vessel commissioning may qualify for exception if approved by CARB in writing (Section 93130.8(c)). The first successful commissioning is always an exception, and if additional commissioning visits are required, there is a mechanism in the Regulation to approve them. The Regulation does not provide a blanket exception for unsuccessful commissioning. An unsuccessful commissioning will emit just as much emissions to the community as a non-shore power visit. Since this vessel will require another attempt to commission, then that next attempt, if successful, will be an exception to the rule. Additionally, a fixed number of VIEs and TIEs are available to fleet and terminal operators that to use to make any visit compliant.

**Comment:** "Port staff request that vessel commissioning events that do not successfully connect to shore power as discussed in Section 93130.7(f)(2) of the Proposed Control Measure be considered eligible for exceptions under the regulation. The commissioning attempt shows that the goal was to reduce emissions through shore power and as such an Exception should be available to operators in this situation. Port staff conduct each vessel commissioning (with the exception of those at the Matson Terminal) to ensure the safety of the vessel, terminal, and workforce. Vessel commissioning is an invaluable safety procedure and should not be penalized under the Proposed Control Measure." (17.25).

**Agency Response (17.25):** CARB staff made no changes based on the received comment. Staff proposed an exception for commissioning (Section 93130.8(c) and 93130.10(c)) in the Regulation language as commissioning is a necessary event to ensure the safety and compatibility of a vessel and terminal's shore power equipment. However, the Regulation retains language that requires repeat commissioning events to successfully connect to shore power. If the terminal requires the vessel to recommission, likely due to a change in infrastructure on the vessel or terminal, then there is a provision where an additional commissioning visit can be requested. An unsuccessful attempt to commission a vessel is not eligible for this exception, but can be compliant with the use of a TIE or VIE, see response to comment 50.40.

**Comment:** "93130.9 (d)(2)(A) It is the vessel's responsibility to commission. The Terminal Operator will coordinate, where applicable." (44.7)

**Comment:** "93130.9 (a)(2) It should not be the Terminal Operator's responsibility to commission the vessels. This involves vessels involved in international trade, and nearly exclusively under the jurisdiction of a foreign government. This could only be undertaken by international treaty." (44.2)

**Agency Response (44.7) and (44.2):** CARB staff made no changes based on the received comment. For the purposes of the Regulation, "Vessel

commissioning” means the process undertaken by the vessel operator and terminal operator to ensure that the necessary equipment on the vessel is compatible with the shore power equipment on the terminal, and ensure safe operations for both the equipment and the personnel handling the connection.

Commissioning will require coordination between both the vessel and terminal operators to be successful. Terminal operators have safely and successfully handled shore power equipment since 2014, when the 2007 At-Berth Regulation went into effect. Specifically, the terminal operator is responsible for commissioning a vessel to their shore power equipment as the terminal operator maintains control over any live power connections and shore side personnel required to connect a vessel to shore power.

**Comment:** “Vessel Visit Exceptions (Section 93130.8): We encourage CARB to process commissioning exceptions quickly, so vessel operators do not end up using a VIE for a commissioning that required two vessel calls.” (45.25)

**Agency Response (45.25):** CARB staff made no changes based on the received comment. CARB staff agrees with the commenter. Exceptions, in this case specifically commissioning exceptions, may be processed and approved/disapproved expeditiously.

**Comment:** “The proposed regulation imposes requirements on the vessel operator to seek approval, presumably ahead of time, for a vessel commissioning that requires more than one visit or instances where the terminal requires the vessel to be recommissioned. First, the language should recognize that it is often the port authority that imposes commissioning requirements and not the terminal. Second, an ocean carrier should not be held liable or required to seek CARB approval for imposed commissioning requirements. The ocean carrier has no ability to determine the extent of commissioning or the frequency imposed by a port authority. If CARB wishes to regulate commissioning, it should do so on the responsible party, which is not the ocean carrier. At most, the requirement should be revised to provide a notification to CARB within a specified period, but the ocean carrier’s compliance should not be at stake as a result of another party’s safety protocols.” (52.52)

**Comment:** “Vessel Commissioning Should Not Have Limitations. All vessel commissioning should be fully exempt from the provisions of the rule. The purpose of vessel commissioning is to identify problems that cannot be identified earlier. If all issues could be resolved with certainty before vessel arrival, there would be no need for commissioning. Commissioning is necessary to protect both the vessel’s shore power infrastructure and the shoreside infrastructure, preserving both for long-term successful use. Commissioning is also a function of the technology’s high voltage nature not malfeasance on the part of the port, carrier, or terminal. It should be recognized as a necessary part of supporting this regulation.” (52.C.46)

**Agency Response (52.52) and (52.C.46):** CARB staff made no changes based on the received comment. Requests for additional vessel commissioning would be addressed on a case-by-case basis. If a vessel is unable to commission at a terminal during a first commissioning attempt, the vessel and terminal operator should have a good indication as to whether or not that vessel will need to re-commission on its next voyage. As a vessel may often take several days between visits, staff anticipates there will be ample time for the vessel and terminal operator to notify CARB that another commissioning visit is necessary, and provide the necessary documentation by the time the vessel returns to that terminal.

Staff recognizes that vessel commissioning may be requested by a port authority, as well as a terminal operator. Staff also understands the essential need for vessel shore power commissioning. However, staff is aware of past documented cases where a vessel's equipment (or lack thereof) was the primary cause of repeated commissioning events. Further, repeated commissioning events may lead to periods of uncontrolled emissions that impact surrounding communities.

### *iii. Remediation Fund*

This subcategory contains comments focused on the remediation fund (Sections 93130.15 and 93130.16). Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "The Ports support the changes incorporated into the latest regulatory proposal, specifically:

Bifurcating the cruise vessels into two categories, one for vessels which carry less than 1,500 combined passengers and crew, and one for vessels which carry more than 1,500 combined passengers and crew, and providing different hourly remediation fees for each." (23.2)

**Comment:** "The Ports support the changes incorporated into the latest regulatory proposal, specifically:

- Tier III ships would have lower remediation fees than other Tier 0 to Tier II ships." (23.3)

**Agency Response (23.2) and (23.3):** CARB staff made no changes based on the received comments. Staff notes and appreciates the support.

**Comment:** "The proposed regulation provides for a remediation fund that will allow those who cannot immediately comply with the new regulation to mitigate their

emissions whereby the fund must be spent on projects that reduce emissions in the communities impacted by the uncontrolled vessel emissions. This option provides a potential solution to the uncertainties and constraints faced by operators. However, it is critical that this provision does not become a substitute for compliance efforts, so there should be an escalation factor (applied to the fees) and/or time limitation to discourage overuse of this provision.” (25.1)

**Agency Response (25.1):** CARB staff made no changes based on the received comment. CARB supports direct emission reductions and agrees that the remediation fund should not serve as a substitute for vessel emission reductions. Staff developed the remediation fund option to apply only in specific and limited circumstances such as, equipment repairs, construction projects and delays with controlling emissions. Additionally, the remediation fund option is only applicable to vessel or terminal operators with existing control strategies, thus it cannot be used as a mechanism to remove the need for control equipment. Not only is the fund a limited option, but can only be used after CARB’s eligibility determination. CARB approval is required to avoid dependencies and to ensure emissions are controlled at the source as required by the Regulation. For these reasons, CARB staff does not believe the remediation fund will be used as a substitute for direct emissions reductions from vessels and is restrictive enough to curb over use. Thus, staff do not agree with the commenter to escalate fees for use of the fund.

**Comment:** “Remediation fee: The remediation fee is an interesting and creative mechanism for addressing operational challenges and enabling community air quality improvements. Broad availability of the remediation fee option would help address the flexibility needs identified in both the existing and the proposed rule. As mentioned above, to be most useful, VIEs and remediation fees should be reviewable and adjustable if needed during the time that they are valid. A critical question is when is the Fee payable, how and by whom in each operational scenario?” (46.36)

**Agency Response (46.36):** CARB staff made no changes based on the received comment. Staff developed the remediation fund option to only serve specific circumstances such as equipment repairs, construction projects and delays with operating existing control strategies. As designed, the fund is limited and only eligible for use after CARB’s determination.

The remediation fee is to be paid by the requestor. The requestor can be a vessel, terminal, or CAECS operators, or ports (Section 93130.15). A request to use the remediation fund shall be submitted to CARB electronically within 30 calendar days of the vessel’s departure. Then, within 30 calendar days of receipt of each request, CARB will notify the requestor whether the visit or visits were eligible to use the remediation fund option. Within 30 days after use approval, the requestor needs to transfer the appropriate fee. The fee is calculated by the number of hours emissions were uncontrolled (minus allowed

connection and disconnection times) multiplied by the applicable hourly fee rate (Section 93130.15, Table 4). Payment is made to the CARB approved fund administrator according to the specific payment provisions established by that administrator in its Memorandum of Understanding with CARB. There should be no need to adjust the request for remediation, as CARB provides 30 days from the vessel's departure for regulated parties to fulfill the request.

**Comment:** "...[H]ow will a port or terminal operator handle major public works or infrastructure projects, such as the major projects to install infrastructure for electrification of cargo handling equipment and heavy duty over-the-road vehicles? Is the only option to increase the cost of these desirable projects due to remediation fees? Is it clear that remediation fees would be allowed for these uses?" (46.32)

**Agency Response (46.32):** CARB staff made no changes based on the received comment. The remediation fund option was designed as a compliance option in unique circumstances. One circumstance being when shore-side power is unavailable for a vessel visit due to a terminal construction project. Regulated parties should work to alleviate such circumstances through logistics and scheduling to ensure that construction projects do not hinder vessels from being controlled and that shore power or emission control technologies are available to vessels. If a construction project will be long term, the terminal may want to explore using or leasing another CAECS for the duration of the construction project. However, if vessel emission control is still not possible, the remediation may be a viable compliance option.

**Comment:** "Remediation fund. How was the \$1,900/hour amount calculated? Who will administer this fund? Who decides what emissions projects will receive funds. What is the appeals process? The draft language should be updated with remediation fund specifics and appeals processes." (24.6)

**Agency Response (24.6):** CARB staff made no changes based on the received comment. The remediation fund was calculated based on the Carl Moyer cost effectiveness formula for zero emission technologies of \$100k/weighted ton of emissions. This rate was used to calculate average hourly costs or fees associated with the average emissions in tons per hour by vessel category. Product and crude tanker values were averaged for cost estimation purposes; however, the fee is dependent on the vessel type. Smaller cruise vessels and larger cruise vessels are separated by those that carry less than 1,500 passengers and crew and those that carry 1,500 or more passengers and crew. Staff also separated tanker vessels as those that use electric pumps and those that use steam driven pumps to reflect a difference in reduction in emissions for tanker vessels with steam driven pumps.

In addition, CARB staff included a reduction to the remediation payment for vessels using an auxiliary engine that meets the IMO Tier III standard to

recognize the NOx reductions achieved by cleaner Tier III engines. A significant portion of emissions on these tanker vessels with steam driven pumps is from the boilers, which do not have an emissions limit under IMO Tier III. The remediation fund administrator will administer the funds for the program. The administrator must receive prior approval and execute an MOU with CARB following specific requirements (see section 93130.16 for more details on the remediation fund administration).

Although there is no appeal process, entities have 30 days after a vessels departure to report to CARB. In that timeframe, if regulated parties have questions on how to report or are concerned with the validity of a remediation fund request, they may contact CARB for assistance.

**Comment:** "S. 93130.15 Remediation Fund Use: This remediation fund would apply only to vessels that already have complied with the rule by installing on-board shorepower technology, or that are using an alternative if a vessel can use an alternative, for instances beyond the control of the vessel operator. The remediation request must be made and submitted to CARB electronically within 7 calendar days of a vessel's departure, long after the vessel has left the port. Vessels won't know for up to 30 days if such request to use the fund is granted, and ineligible requests to use the remediation fund for a vessel visit will result in that visit being considered non-compliant with this regulation. Why should vessels be in violation or non-compliance of a regulation under the listed scenarios that as a practical matter cannot be controlled 100% of the time - particularly if they will not know their compliance status until they have left port? The reality is that companies will not "plan to be noncompliant" as that would surely subject them to a violation. These issues are of particular concern to cruise vessels because they cannot use the existing approved alternative compliance options." (41.8)

**Agency Response (41.8):** CARB staff made no changes based on the received comment. The Regulation was modified to allow 30 days to report to CARB from a vessel's departure. The Regulation requires vessel operators to reduce emissions when at berth (Section 93130.7). A vessel will know if they are compliant during a visit by fulfilling the elements of their vessel visit checklist, and reporting that information to CARB. Vessels that plan for compliance will most likely be eligible to use the remediation fund if there are deficiencies in the visit and emissions are not controlled as required.

**Comment:** "Remediation Fund Hourly Amount... requires extremely high fees, even though shorepower is already installed on the ships. The fee will be assessed on a per hour rate when many of the scenarios cannot be resolved within hours or days, but rather months. This is extremely punitive for an equipment part that just isn't available quickly for instance. Duration of a scenario matters. It is particularly punishing for cruise lines at \$5,300 per hour for small lines and \$12,000 per hour for larger lines since they have no alternative compliance measure identified by CARB that will work

on a cruise ship. At \$12,000 per hour, if an equipment part takes 3 months to obtain, the fee for cruise ships could be in the millions. The methodology for these charges should be revised to be fairer among various vessel types, and longer-term issues should be assessed at lower rates. Without these changes, the remediation fee acts not like a fair alternative emission control option, but rather a major penalty that is usually reserved for willful or intentional violations.” (41.9)

**Agency Response (41.9):** CARB staff made no changes based on the received comment. CARB disagrees that the remediation fees are unreasonable. Staff calculated the hourly fee rate using a methodology that bases the rate against the amount of emissions a vessel would emit, thus cruise vessels are subject to higher rates. The fee reflects the relatively higher emission quantities that vessels may emit while they are at berth. For more information on the methodology used, see response to comment 24.6.

Further, the remediation fund option is not designed as a long-term option for vessel or terminal operators to reduce emissions. Staff expects the fund to only be used in limited circumstances and that operators would be prepared to alleviate reliance on the fund through coordinating logistics and scheduling to ensure that equipment repairs and construction projects do not hinder vessel emissions from being controlled.

**Comment:** “93130.15(1) Significant changes need to occur for the proposed language to balance compliance. The hourly fee for container vessel is \$1,900.00. This would be \$45,600 a day. This is an absurd penalty and needs serious reconsideration. There are many circumstances that may prevent or delay a vessel to 'plug in' or have an [sic] CARB-approved emission control device at the ready.” (44.23)

**Agency Response (44.23):** CARB staff made no changes based on the received comment. The remediation fund option is an additional compliance option which may be used only under limited circumstances where a vessel may qualify to remediate their emissions. This option is one pathway CARB has provided flexibility for vessels to meet their emissions reduction requirements, it was not intended to meet all the various circumstances in which vessel may encounter at berth. Further, it was designed to be limited and at a high enough cost to deter reliance as a substitute for direct emission reductions. The intent of the fund is to ensure the controlling and reduction of emissions as set out in the Regulation are achieved. For more information on how the cost values were determined see response to comment 24.6.

**Comment:** “Remediation Fund Use (Section 93130.15): We generally support CARB’s proposal to establish a remediation that regulated entities could pay into to offset auxiliary emissions that the regulated entity would have been responsible for under the regulation. We think it is critical that monies paid into the remediation fund be used on projects to reduce in-sector emissions or impacts of those emissions.

We recommend that CARB expand the list of circumstances in which vessel operators may use the remediation fund to include vessels that make infrequent calls to California ports (e.g. less than 3 calls per year). This is a logical regulatory approach for addressing infrequent calling vessels (e.g. vessels rotated in to address increased demand or “extra loaders” brought in to ease port congestion) because it would enable the vessels to have a compliance option if CAECS operators, which have limited operations, are not available or operational for a particular visit.” (45.33)

**Agency Response (45.33):** CARB staff made no changes based on the received comment. Staff notes and appreciates the support for the remediation fund option. CARB agrees that it is critical that generated funds support projects that reduce emissions with projects that benefit the community impacted by the remediated emissions.

Staff declines to expand the remediation fund option to low use vessels. The remediation fund is not a pay-to-pollute option. Entities using the remediation fund must make commitments to comply with the Regulation. Only then will they be eligible to use the remediation fund for the specific circumstances listed in section 93130.15 of the Regulation.

**Comment:** “Regarding the Remediation Fund described in Section 93130.15 of the Proposed Control Measure, what is the procedure and timeline for CARB to approve a public entity to manage the funds generated at the Port? What happens if no Remediation Fund administrator is established per Section 93130.15(a)? Does that mean the Remediation Fund would not be an option?”

Port staff request further information from CARB on when and where the Remediation Fund will be deployed. Given that CARB anticipates zero-emissions regulation on trucks, transport refrigeration units, forklifts, and cargo-handling equipment in the time frame of enhanced usage of the Remediation Fund, would those categories be ineligible for incentive-funded emissions reductions?” (17.17)

**Agency Response (17.17):** CARB staff made no changes based on the received comment. Once the Regulation is adopted “CARB staff shall notify, in writing, the California Air Pollution Control Officers Association (CAPCOA), the local air quality management districts and air pollution control districts with jurisdiction in the communities adjacent to covered ports and independent marine terminals of the opportunity to apply to administer the remediation funds.” After which each district may elect to submit a written application, to be a remediation fund administrator within 120 calendar days.

If an air district elects not to administer the program, CARB may allow local non-profit organizations with the demonstrated capacity and substantial experience with administering incentive programs to apply. (Section 93130.16)

Per Section 93130.15(a), the remediation fund may only be utilized if there is an established remediation fund administrator through an executed MOU with CARB for that port or independent marine terminal. If there is not an established remediation fund administrator at a port or independent marine terminal then the remediation fund option would not be applicable.

It is the intent that the remediation fund supports projects that would achieve emission reductions not otherwise required by law or regulation.

Regarding the use of the remediation fund, it can be used for projects that achieve emission reductions above and beyond what is required. If emission reductions are beyond what is required, those projects would be eligible if the emission reductions could be adequately quantified to the satisfaction of the fund administrator.

**Comment:** “Regarding the Remediation Fund described in Section 93130.12 of the Proposed Control Measure, what is the procedure and timeline for CARB to approve a public entity to manage the funds generated at the Port?” (17.29)

**Agency Response (17.29):** CARB staff made no changes based on the received comment. See response to comment 17.17 for remediation fund timeline and the regulatory language found in section 93130.16 regarding the remediation fund administration process.

**Comment:** The commenter requests that CARB revise remediation fees for longer-term outages due to construction or repairs. The commenter believes the fees are unreasonable for long term use and are concerned that the fees are so high the port may have to shut down or turn away vessels during repairs and construction. The commenter expresses concern that there are currently only two CARB approved emissions control systems in use. The limited number makes it challenging to secure the systems and thus the remediation fund would have to be used.

The commenter asks CARB to set up remediation funds for use specifically in technology research, development, demonstration, and deployment of emissions reduction technologies specific to ocean-going vessels rather than for general emission reduction use. In addition, the commenter requests that CARB “prioritize funding as they did for the currently regulated fleet through Proposition 1B in 2006. (60-30 POLB)

**Agency Response (60.30):** CARB staff made no changes based on the received comment. Although there are only two CARB approved systems other than shore power, other companies can come forward to develop additional systems if there is an increase in demand to drive the development of new CAECS. The longer implementation dates for roro and tankers provides time to deploy additional systems.

Regarding concern over the high fees associated with the remediation fund, see response to comment 41.9. In response to the request for setting funds aside specifically for OGV projects, the remediation fund was designed in an effort to achieve additional emission reductions from projects in and around the port that would also benefit the surrounding communities.

**Comment:** "Remediation Fund. CARB has set remediation fees in Table XVIII of the "Control Measure for Ocean-Going Vessels At Berth Cost Analysis Inputs and Assumptions for Standardized Regulatory Impact Assessment," that would be used for construction and repair projects.

**Table XVIII. Remediation Fee Costs**

Data Input	Value			Basis
Hourly remediation fee for terminal and for vessel, for each vessel type	Vessel Type	Vessel Hourly Fee	Terminal Hourly Fee	Staff analysis using Carl Moyer formula to calculate average emissions in tons per hour by vessel category. Product and crude tanker values were averaged for cost estimation purposes, however the fee would be dependent on the vessel type. Note that these values are estimates based on current Staff analyses at the time this document was prepared, and do not necessarily represent the exact fees that would apply.
	Container/ Reefer	\$2,395	\$2,395	
	Cruise	\$12,879	\$12,879	
	Auto/Ro-Ro	\$1,515	\$1,515	
	Product Tankers	\$1,783	\$1,783	
	Crude Tankers	\$9,873	\$9,873	
Which terminals would offer the remediation fee as an option?	All (100%)			Staff assumes that all terminals would offer the remediation fee as an option.

POLA owns and maintains shore power infrastructure at our terminals. Construction and repairs to shore power infrastructure are conducted through the Port. We are concerned that the mechanism used to determine the amount paid to the remediation fund is unreasonable for long construction or repair projects. There are instances where unforeseen repairs may take longer than a few months due to the need to order equipment, coordinate times for terminal shutdown during repairs, or other issues that may come up. The current scheme for calculating payment to the remediation fund is based on an hourly basis per a call. For extended periods where shore power will not be accessible, the cost will be extraordinarily high for industry or the Port as shown in the example provided below.

The Port recently upgraded our World Cruise Center to allow for 11 kV and 6.6 kV shore power connections for cruise vessels. This construction required a new transformer at the Cruise Center. The goal of the construction was to provide enough power for the large cruise ships to plug into shore power at POLA. The construction occurred from June 30, 2017 through April 23, 2018, and during the electrical upgrade no visiting cruise vessels were able connect to shore power. Alternative shore power was not an option either since there are no CARB-certified alternative emission control technologies for cruise vessels. The total number of hours for cruise vessels berthed at the World Cruise Center during the construction was 1,056.55 hours. Based on the hourly fee for cruise in Table XVIII, the hypothetical remediation fee for this construction project would have cost \$13,607,307 (1,056.55 hours x

\$12,879/hour). The total cost of the electrical upgrade itself was about \$11 million. This hypothetical remediation fee would have more than doubled the cost of this construction project that took less than a year to complete.

Since there are currently only two CARB-certified alternative emission control systems available at the Ports of Los Angeles and Long Beach, for long periods of construction or repair, there is uncertainty with respect to the availability of these systems in the future. In cases where a system cannot be secured, the remediation fee compliance mechanism would have to be utilized. As shown in our example above, the fee could increase to amounts that are not sustainable to industry or the Port. In our previous and current comment letters, the Ports request that CARB conduct a feasibility assessment. This will help determine the rate for the remediation fund as the current remediation fee costs will be too high for these prolonged instances of shore power construction or repair.” (60.36)

**Agency Response (60.36):** CARB staff made no changes based on the received comment. See response to comment 41.9 for a discussion on cruise vessel remediation fees. For long term projects, the remediation fund may be prohibitively expensive and developing, deploying, or contracting for another CAECS may be the best option. Additionally, an approved Innovative Concept could be used during long-term projects to aid with compliance.

**Comment:** “[T]he Ports recommend that the Air Districts maintain responsibility for implementation of the remediation fund. Our local air district, the South Coast Air Quality Management District, has the greatest local experience in evaluating technology, developing solicitations, and building air quality programs.” (23.8)

**Agency Response (23.8):** CARB staff made no changes based on the received comment. CARB staff agrees that Air Districts are the desired entity to maintain responsibility for implementation of the remediation fund, as reflected in section 93130.16 of the Regulation. However, CARB staff have left the administration of the remediation fund open to parties other than air districts to ensure maximum flexibility in case an air district does not wish to take on this role.

**Comment:** “Application of Remediation Pathways Must Be Applicable to Numerous Conditions and Consistent With Actual Costs of Remediation. PMSA supports the application of a concept of a remediation fund compliance pathway and the flexibility that such alternative forms of compliance may represent in this and other rulemakings, generally. However, we are concerned that the application of the remediation fund alternative as proposed presents a fee of an arbitrary amount well in excess of the actual value of the remediation sought, is punitive in nature, and represents an excessive duplication of compliance costs for those already in compliance with the rule.

In addition, we believe that if a proposed rule is going to be based solely on a per vessel per visit basis, as opposed to a fleet based average, that such pathways should be provided to vessels on a much broader scale, with increased certainty as to award, and given a prospective value based on a rationalized approximation of marginal costs to avoid duplication of costs of compliance.” (52.21)

**Agency Response (52.21):** CARB staff made no changes based on the received comment. Staff notes the comment and appreciates the support for the remediation fund option. CARB declines, however, to revise the hourly rate. Providing a discounted rate for uncontrolled emissions would not serve the purpose or goals of the Regulation to control and reduce emissions. Emissions from OGVs disproportionately affect surrounding port communities from elevated health risk resulting from vessel emissions, mainly diesel PM in the form of exhaust. See response to comment 24.6 on the methodology that was used to determine the hourly rate. In addition, there is another compliance pathway provided broadly to increase regulatory certainty. Vessel fleets and terminals operators, at their discretion, can use VIEs and TIEs to enable a small percentage of their visits to operate uncontrolled.

**Comment:** “The ISOR provides in Table ES-3 (reference to §93130.15 (f), “Table 4”) that various vessel types pay various remediation payment amounts in the circumstance of Terminal Equipment repairs, Vessel Equipment repairs, operational delays of a control strategy, or in the case of a terminal construction project. Please identify both the basis for a cost of equivalent emissions reductions claim with respect to the rate of dollars per gram of emissions, and which emissions, per hour per vessel type, the nature of the equivalency with which these rates are set, and the relative values when applied to vessel engine sizes for various classes of vessels. We note with some irony that by grouping these values by vessel type that CARB staff is proposing a method of compliance based on some presumptive average emissions rate per vessel type and then applying it fleet wide, thereby basing compliance for this section on a fleet averaging basis. If this is the correct methodology, please confirm.” (52.22)

**Agency Response (52.22):** CARB staff made no changes based on the received comment. The fee dollar amounts are determined to enable an administrator to fund projects up to the Carl Moyer Program cost effectiveness for a zero emission project. For more details on the methodology used to determine the remediation fund, see response to comment 24.6. In summary, the Carl Moyer Program cost effectiveness formula is based on reductions of NO<sub>x</sub>, PM, and ROG using the default value and expected reductions of these pollutants found in section 93130.5 of the Regulation. In order to make the fund amount more streamlined, the magnitude of these emissions are scaled based on an estimated power load per vessel type. Individual vessel visits are subject to compliance requirements and must comply with an option, one being

remediation for certain circumstances. The remediation fund option does not allow for fleet averaging as a basis for compliance.

**Comment:** “We are concerned with the punitive nature of these remediation pathways as proposed. If one presumes, for example, that the average rate of auxiliary engine emissions (DPM) is 0.18 g/kWh and the average power of a vessel’s auxiliary engines running at berth is 1,100kW, then the total amount of emissions per hour are approximately 198g DPM. There are 907,185 grams per ton, so 198g DPM is 0.0002 tons DPM. At the present Remediation Fund rate of \$1,900 per hour, the effective rate of Remediation Fund compliance is \$8,705,310 per ton DPM. While the ISOR explains that these amounts are “based on the cost of securing equivalent emissions reductions” (ES-34) there is no obvious justification or supporting data for this conclusion.

If these amounts were based on the actual cost of securing equivalent emissions reductions, and one was to use the general cost-effectiveness limits set at \$30,000 per weighted ton of emissions reduction from the Carl Moyer program, the Remediation Fund rate should be approximately \$120 per hour. A Remediation Fund rate of \$120 is 6.3% of the proposed rate of \$1,900 per hour, therefore the current Remediation Fund rate is 93.7% higher than the accepted standard cost of securing equivalent emissions reductions. We can only conclude that the proposed remediation rate is not only wholly arbitrary but it is also punitive.” (52.23)

**Agency Response (52.23):** CARB staff made no changes based on the received comment. Staff disagrees that the remediation fund rate is arbitrary and punitive. The remediation rate was calculated using Carl Moyer Program cost effectiveness formula for zero emission technologies of \$100k/weighted ton of emissions. Carl Moyer Program formula also uses weighted tons of emissions – not just DPM. The formula for the weighted emission reductions is NOx reductions + ROG reductions + 20 \* PM reductions. See response to comment 24.6 for more information on how CARB staff determined the fee amount.

**Comment:** “In addition, one additional consideration for a remediation rate that we believe is necessary to make the rate fair and reasonable is to subtract the existing and already incurred costs of compliance from any additional remediation fund rate so as to avoid the imposition of a duplicative compliance methodology on any one vessel. We agree with the ISOR’s description of this provision as providing “another pathway for compliance that addresses circumstances where vessels or terminal operators who have already made an investment in a control technology and may not be able to reduce emissions from a vessel’s visit for a limited period of time, such as construction projects, terminal and/or vessel equipment repairs, or delays in connecting to an emissions control strategy.” (ISOR, IV-91- IV-92)

The Remediation Fund rate should reflect this justification as well, such that the cost of participating in the Remediation Fund as an Alternative Pathway is appropriately

limited to the marginal costs of the vessel or terminal over-and-above both the baseline investment made in its regular control technology and the incremental cost of the limited event, such as the equipment repair or cost of hiring an alternative control provider, per call. By discounting the Remediation rate against an established baseline of costs per call for both the original investment in compliance and for the additional costs invested in the additional compliance required by equipment repair or infrastructure construction, the Remediation Fund will ultimately be fair to the vessel or terminal attempting to comply in good faith by limiting the amount charged only to the marginal additional cost of compliance necessary." (52.24)

**Agency Response (52.24):** CARB staff made no changes based on the received comment. Staff notes that comment and appreciates the support for the remediation fund option. CARB declines, however, to revise the hourly remediation rate. To give a discounted rate for uncontrolled emissions would be unfair to the surrounding port communities who suffer disproportionately from the elevated health risk resulting from vessel emissions. See response to comment 24.6 on the methodology that was used to determine the hourly rate.

**Comment:** "[E]xemption fees in the proposed regulatory concept provide flexibility in the constantly changing maritime industry. Equipment failures are a reality. In addition, such fees provide an opportunity to more quickly level the regulatory playing field between those that are unable or unwilling to comply and the vast majority of ocean carriers that are in compliance." (52.C.140)

**Agency Response (52-C.140):** CARB staff made no changes based on the received comment. CARB staff appreciates the support of the Remediation Fund.

**Comment:** "Initial exemption fees should be moderated to reflect the dynamic nature of the industry and the necessary fleet changes and changes in world-wide trade flows. CARB should consider a structure for "exemption fees" that reflect the ability to mitigate the inability to connect to shoreside power. As discussed later, alternative technologies, like bonnet systems, are not available in all ports and a very limited number of such systems are in existence. The "exemption fee" could reflect whether an alternative technology system was available for use or not in determining fee amount (i.e., a higher fee when such a system is available and compatible but not used versus a lower fee when a compatible system is not available)." (52.C.141)

**Agency Response (52.C.141):** CARB staff made no changes based on the received comment. The remediation fund's fee structure and how the fees were determined can be found starting on page III-32 of the ISOR. The remediation fund protects public health by offsetting the emission reductions anticipated by the communities from a compliant visit with payment into a fund that is required to be used to achieve emission reductions in or around that

port area. The fee amount ensures that sufficient funding is collected to be able to reduce these emissions.

**Comment:** "If CARB retains a "fleet average" approach as PMSA recommends, CARB should explore the use of the "fee exemption" as means of addressing the same connections issues by allowing the use of the fee to remove the applicable visit from the fleet average calculation." (52.C.142)

**Agency Response (52.C.142):** CARB staff made no changes based on the received comment. This comment was made prior to the release of the regulatory package and resubmitted during the 45-day comment period. Therefore, is no longer relevant. CARB staff has removed the fleet averaging approach as part of the main compliance pathways for the Regulation although it may still be allowed for a limited time under the Innovative Concept Compliance Option. Additionally, the Regulation includes a remediation fund which can be used as which may be used under limited circumstances (section 93130.15). CARB staff believes this fund is similar to the "fee exemption" as requested by the commenter during the regulation development phase.

#### *iv. Interim Evaluation*

This subcategory contains comments focused on the Interim Evaluation (Section 93130.14). The 2022 Interim Evaluation for new technologies and applications will assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. Staff will also review the potential requirements for control technologies for use with bulk vessels and for OGVs at anchor. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "In 2023 in the interim evaluation, we ask that you consider adding controls for bulk vessels at terminals located near and AB 617 designated community." (OC-2 Martien)

**Comment:** "For general cargo and bulk vessels that are not subject to control for requirements, we recommend that CARB also consider conducting a technology assessment by 2022 to better identify and evaluate cleaner technologies for these vessel types." (OC-3 Rees)

**Comment:** "Second, the rule should require the feasibility assessment in 2023 consider the state of technology, cost effectiveness, and safety considerations. There should be a mechanism for staff to alter the implementation timeline should the feasibility assessment deem the technology not feasible or the cost too great per ton of emissions reduction." (OC-2 Caswell)

**Comment:** “A feasibility study would be allowed -- would allow for setting achievable emission reduction targets and implementation timelines. It would fit nicely into the proposed regulations under the interim report section.” (OC-4 Umenhofer)

**Agency Response (OC-2 Martien), (OC-3 Rees), (OC-2 Caswell), and (OC-4 Umenhofer):** CARB staff modified the proposed regulatory language in response to the received comments. CARB agrees with including bulk and general cargo vessels in the Interim Evaluation and this element was included in the Regulation. In the Interim Evaluation, CARB will also assess progress made in adopting technologies to tankers and ro-ro vessels which includes a review of information provided to CARB on cost effectiveness and safety considerations. CARB prepared an economic analysis for the Regulation that showed the Regulation to be cost-effective. However, the Interim Evaluation that is included as part of the Regulation (occurring in 2022) will take into account the state of technologies at that time. If CARB staff finds that the implementation dates are not achievable based on progress made by the time of the Interim Evaluation, CARB’s Board may direct staff to work on regulatory amendments for their consideration that include adjustments to the compliance dates.

**Comment:** “Provision: CARB staff will conduct an interim evaluation of the At berth program and report to the Board. In this conceptual provision, CARB staff will review and report to the CARB Governing Board the status of at berth emission control technologies for Ro-Ros and tankers, progress in installing the land-side infrastructure required to support at berth control systems by 2023. This report to the Governing Board will advise the Governing Board as to whether there is a need to develop any amendments to the regulation.

WSPA agrees with this requirement for a report to the CARB Governing Board. However, the timing presents a significant challenge. Provided the infrastructure required to support the land-based capture system, if technology barriers exist into 2023, the four to six years between the review and compliance date for the southern and northern ports respectively is not sufficient to complete a project, and be in compliance.

WSPA does not believe the timeline should require an entity to design infrastructure for a technology while the technology is still in development. As the ongoing development to enable a capture device to function properly on tankers could change the infrastructure requirements to support the system.

As noted in the Industry Coalition Alternative Proposal, the report must include key elements such as:

- Reporting compliance methodologies and evaluation benchmarks consistent with the current staff proposal for Bulk vessels.

- Feasibility study to identify cost effective emission control programs for all vessel categories based on reasonable implementation deadlines, safety concerns, and technological feasibility.

The feasibility study aspect of the report to the CARB Governing Board should be conducted in cooperation with all industry stakeholders, and be based on data which is made publicly available during study development, [sic] With regard the 2023 reporting date, WSPA believes that subsequent feasibility “check-in” dates with the CARB Governing Board be included (i.e., 2025, 2028, 2031) to assess whether the proposed implementation deadlines remain viable or can be accelerated through additional amendments to the rule.” (22.16)

**Agency Response (22.16):** CARB staff modified the proposed regulatory language in response to the received comment. Modifications were made to the Regulation and the Interim Evaluation report will now be released no later than December 1, 2022 (Section 93130.14(d)).

CARB understands some terminal infrastructure and control technologies will take additional time to be developed and constructed. The Regulation has been designed to both incentivize the development of the technologies needed to control tanker emissions (and to ensure near-term reductions in port communities), and to provide the flexibility needed to allow time for technology development. As explained in detail throughout this FSOR, this includes the addition of an Innovative Concepts compliance option (Section 93130.17). In summary, this compliance option allows regulated entities to use other options for compliance that would achieve the same, or more emission reductions than the conventional compliance options. CARB has also included an Interim Evaluation to provide an update along the path toward emission control technology implementation. See Agency Response (22.27). These steps ensure that tankers remain on track to control emissions, while allowing for ongoing evaluation of technology development.

CARB has worked closely with WSPA and WSPA members during the rulemaking process and anticipate regular check-ins on the development of technology and infrastructure will be requested by industry members and sought by CARB.

**Comment:** “The Interim Evaluation Report Provides No Assurance of Relief from the Unattainable Deadlines in the At Berth Regulations.

The interim evaluation report envisioned under the At Berth Regulations would be of little help to regulated entities in avoiding the practical consequences of these unrealistic deadlines. As WSPA has explained to CARB Staff, while we agree with the need for a feasibility study (in coordination with industry stakeholders) with respect to tanker control technologies, the time to do that study is before adopting the At Berth

Regulations that would set timetables for installation of potentially non-existent technologies, not after. Regardless of the feasibility of control technologies in 2023, regulated parties would not be able to wait until direction from Staff in late- 2023 (or later) to begin the process of upgrading terminals in time to reach compliance in less than six years. By including a mandatory 2027/2029 compliance deadline in the At Berth Regulations, Staff would be effectively forcing regulated parties to commit to capital expenditures, construction planning, and permitting efforts years before the actual regulatory deadline for compliance. Even if Staff's interim evaluation report were to find continuing technology barriers in 2023, regulated parties would continue to be subject to a 2027/2029 compliance deadline until and unless CARB were to adopt changes to the At Berth Regulations (which this interim evaluation provision does not require). Staff have not produced any evidence in the record that regulated parties would be able to feasibly wait until 2023 or later to begin construction work and still reach compliance by 2029.

In sum, the evidence presented in this rulemaking strongly suggests that, even assuming that a safe and workable international standard can one day be developed for an interface between a tanker and a land-based capture and control system, the 2027 and 2029 compliance deadlines cannot feasibly be met. The ISOR's presentation of partial timelines for five projects, including two projects not comparable to the ISOR's own characterization of At Berth Regulations projects, does not contradict that conclusion. As such, there is no basis or support for imposing these deadlines as mandatory compliance requirements, subject to potential amendment following a future interim evaluation. If adopted as proposed, with patently unachievable default compliance dates (and penalties for failure to achieve them), the At Berth Regulations will be arbitrary, capricious and not supported by law or evidence. WSPA believes the Government Code, Health and Safety Code and other California laws and regulations require CARB to revise the proposed interim evaluation and compliance deadlines for proper development preparation and consideration of feasibility and cost effectiveness. See, e.g., HSC §§ 38560, 39602.5, 39665, 43013; see also Gov. Code § 11346.36 & 1 CCR §§ 2000-2004 (Standardized Regulatory Impact Assessment (SRIA) requirements).

WSPA recommends that CARB incorporate a thorough and technically sound feasibility evaluation study into the regulation, with input from relevant agencies and stakeholders, to provide guidance for the most applicable compliance dates possible." (22.6)

**Agency Response (22.6):** CARB staff made no changes based on the received comment. Tankers represent the largest single category of emissions remaining unregulated at California terminals and communities near these terminals cannot simply hope that industry will implement the technology needed to achieve emissions reductions equivalent to those sought by the Regulation; rather, a regulatory signal is needed to achieve these reductions. Staff understands that this Regulation is technology forcing. While the technology to

control emissions from all vessel types exists, not all of the technologies have been adapted for use, or are physically available for all vessel types in California at the time of adoption of the Regulation. However, the Regulation provides many years of preparation time for tanker vessels to implement technology to control emissions, with ro-ro and tanker compliance deadlines in Los Angeles and Long Beach beginning January 1, 2025, and all remaining tanker terminals beginning January 1, 2027. Staff expects regulated entities to perform feasibility studies on the technologies that they wish to use to achieve compliance under the Regulation. If these studies are provided to CARB in a timely manner, they will be considered in the Interim Evaluation. See also Agency Response (22.27).

v. *Applicability and Exceptions*

This subcategory contains comments focused on the applicability and exceptions to the Regulation. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** “S. 93130.4 Limited Exceptions and No Alternative Compliance Option for Cruise Vessels: This section discusses circumstances when the rule would not apply. This section should also explicitly exempt specific scenarios so vessels would not be in violation or non-compliance of the rule under circumstances that, as a practical matter, cannot be controlled 100% of the time. The fact that there are no existing approved alternative compliance technologies that can be used by the cruise lines leaves cruise vessels at a major disadvantage in attempting to comply with this at berth rule.” (41.7)

**Agency Response (41.7):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the vast majority of cruise vessel terminals have shore power installed (see ISOR Attachment E). However, to account for infrastructure build out, vessels and terminals not previously regulated would have until 2023 to comply with the emission reduction requirements of the Regulation (Section 93103.8(e)). Furthermore, the Regulation provides a limited amount of TIE/VIE for terminal or vessel operators to use throughout the year at their discretion to allow, requiring that 90 percent of all vessel visits are controlled, not 100 percent.

**Comment:** The Coalition for a Safe Environment, “do not support exempting smaller ports” (43.4) (OC-3 Marquez)

**Agency Response (43.4) and (OC-3 Marquez):** CARB staff made no changes based on the received comments. As explained in the ISOR, the 20-visit terminal threshold includes the largest active container, reefer, cruise, ro-ro, and tanker terminals in California. As terminal visits decrease, so does the cost effectiveness of installing emission control equipment because when fewer vessels visit the terminal to use emissions control equipment, it results in higher

per use costs with respect to installing, operating, and maintaining the equipment. Staff considered terminals and ports included in the Regulation as having high potential for achieving the greatest health protective emission reductions while also considering the cost requirements on the smallest terminals.

**Comment:** "Based on the current status of control options for oil tankers, it is apparent that all oil tankers and tanker marine terminals would fall into one category: "Exception". This is due to the fact that no emission control technology currently identified is feasible for tanker operations. Specifically, the interface between any control strategy (barge-based emission capture, land-based emission capture or electrification) and a tanker (in addition to the control device itself) have had no certifications and are not endorsed by a class society. Therefore for safety reasons alone (in the absence of class society certifications), the "Exemption" category is appropriate under the safety/emergency circumstance." (12.15)

**Agency Response (12.15):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the technology capable of controlling emissions from tankers exists today, however the technology still needs to be adapted specifically for tanker vessels. CARB described the necessary steps to developing the technology for tanker vessels in section the section titled "Development of Capture and Control Systems for Tanker Vessels" on page III-19 of the in the ISOR published October 15, 2019. The category of tanker vessels requirement to reduce emissions does not occur until at least 2025 providing four years to adapt technologies for tankers.

**Comment:** "...the Port of Oakland would be disadvantaged under the Proposed Control Measure because it does not have the option of a CARB approved emission control strategy ("CAECS") other than shore power. As CARB itself found, the Port of Oakland cannot use a barge-based capture and control ("C+C") method at three of its four terminals "due to concerns expressed from SF Bar Pilots about wave interaction from passing vessels and channel space and navigational constraints." (See Appendix E: Berth Analysis.) The three terminals cited in CARB's Appendix E (Everport, Matson, and OICT) account for over 83% of the Port's call volume."

"... It is well established that almost every vessel calling Oakland also calls the ports of Los Angeles and Long Beach. Unlike Oakland, the ports of Los Angeles and Long Beach can use a barge-based C+C strategy. What will happen if carriers rely on a barge for compliance at the ports of Los Angeles and Long Beach, and then come to Oakland where a barge is not possible? The Port is very concerned that carriers may bypass Oakland if the Proposed Control Measure is enacted as currently written. Oakland has no feasible C+C alternative, which could put the Port of Oakland at a serious competitive disadvantage.

To address the fact that a barge-based C+C will not work in Oakland, the Port requests that CARB grant Oakland exemptions corresponding to the number of calls that rely on barge-based C+C in Southern California.” (17.5)

**Agency Response (17.5):** CARB staff made no changes based on the received comment. CARB disagrees that there are no potential alternative emissions control options for the Port of Oakland. Nothing in the Regulation prevents the Port of Oakland from developing and using a non-shore power CAECS, including a capture and control system, for compliance with the Regulation. There may be no specific need for a capture and control system since the Regulation includes options like TIE/VIE to address irregular visits, remediation for expected or anticipated interruptions to CAECS systems, and Innovative Concepts for another compliance pathway.

The Berth Analysis (ISOR, Appendix E) shows likely emission control technology pathways to be used at regulated berths throughout the state. This informed assumption was based on information provided to CARB staff by Port, terminal, and industry stakeholders. It was determined that barge-based control options, similar to those in use in Southern California Ports, would be unlikely to be used at the Port of Oakland due to a number of reasons, including the high amount of existing shore power infrastructure at the Port and the physical set-up of the berths at the Port. However, this determination was not to be considered the definitive answer as that decision rests with the Port. There is nothing in the Regulation that prohibits the Port from utilizing an alternative control technology in lieu of shore power if the Port determines that is the best way to meet their customer’s needs.

**Comment:** “The Port requests that the Proposed Control Measure include an exemption for liquefied natural gas (LNG) powered vessels. This would have the desired effect of incentivizing cleaner ships, which would provide significant emission reductions throughout the ship’s voyage, not just the small fraction of time while the ship is at berth in California.” (17.21)

**Agency Response (17-21):** CARB staff made no changes based on the received comment. Staff agrees that research indicates the potential for liquefied natural gas (LNG) to achieve substantial reductions in SO<sub>x</sub>, NO<sub>x</sub>, carbon dioxide (CO<sub>2</sub>), and PM emissions. However, methane slip (when methane is introduced into the atmosphere from incomplete combustion or leaks while bunkering) and an increase in GHG emissions can vary depending on the engine type. At this time, information and data on marine engines running on LNG and the actual emission benefits is unclear.

The 2007 At-Berth Regulation exempts vessels that use natural gas in their auxiliary engines from control requirements. However, during development of this Regulation, staff considered the relatively limited emissions data available

for LNG as a marine fuel, and determined to not include this exemption. CARB supports alternative fuels, such as LNG, for its potential as part of, or a primary compliance strategy with the Regulation, but more testing must be done to prove its viability as an option. Therefore, similar to any other technology or compliance strategy, a vessel wishing to use LNG to comply with the Regulation must submit documentation as required in Section 93130.5 and be approved by CARB prior to use.

**Comment:** “The barge system, the control and capture device under your staff's analysis, won't work in the Oakland harbor conditions. So we'd like to see some exemptions that reflect the provisions for Southern California.” (OC-2 Sinkoff)

**Comment:** “In areas with strong currents, like the Carquinez Straits, or in restricted areas like the Ports of Richmond, Stockton, Sacramento, Redwood City, Wilmington, Long Beach, etc., the placement of a barge alongside will cause safety issues in addition to the inability to meet the one-hour rule.” (31.4)

**Agency Response (31.4) and (OC-2 Sinkoff):** CARB staff made no changes based on the received comments. Staff notes the comments and agrees that a barge-based capture and control system may not always work in areas with restricted waterways. In areas where a barge cannot safely be placed and operated by a vessel, the Regulation includes a “Physical Constraint” exception (Section 93130.2 (49)). However, if other means of control are possible at a terminal, such as shore power or a land-based capture and control system, the exception is inapplicable and a terminal operator must deploy another type of control strategy.

**Comment:** “The research exemption needs to be broader to cover testing of new measurement devices (e.g., CEMs), new treatment technologies, fuels, etc. for both ship and shore side.” (46.38)

**Agency Response (46.38):** CARB staff modified the proposed regulatory language in response to the received comment. CARB agrees with the comment and broadened the research exemption to all CARB-approved research (section 93130.8 and 93130.10).

**Comment:** “Some vessel lines are already developing and launching new vessels which call at the Port which incorporate onboard emissions controls technologies. The Port requests that CARB clarify whether this type of vessel will be exempted from the regulations or be grandfathered in.” (53.29)

**Agency Response (53.29):** CARB staff made no changes based on the received comment. As described in Section 93130.5, any emission control systems used for compliance with the Regulation (other than shore power) must first be approved by CARB and issued an EO. For CAECS approval requirements see

Section 93130.5. No vessel with on-board emissions control technologies will be exempt from this Regulation unless Section 93130.4 of the Regulation applies.

**Comment:** "Terminals and berths with shore-power equipment that's funded by Prop 1B revenue, we – we request that exemptions account -- be for no more than five percent of vessel visits." (OC-3 Martien)

**Comment:** "I urge that berths with shore power equipment funded by Proposition 1 B be allowed exemptions for no more than 5% of vessel visits." (12.3)

**Agency Response (OC-3 Martien) and (12.3):** CARB staff made no changes based on the received comment. Proposition 1B has project guidelines independent of the Regulation and berths funded by Proposition 1B must meet those requirements regardless of any exemptions granted in the Regulation. The most recent guidelines can be found on the Proposition 1B website at <https://ww2.arb.ca.gov/sites/default/files/2020-02/February%202020%20EO%20G-20-22.pdf>. At a minimum, the guidelines state that for shore power equipment funded by Proposition 1B, it must have additional emission reductions attributable to the project (beyond those required by any law or regulation) for at least 10 years. See Section 93130.11 of the Regulation language for TIE/VIE allowances by year.

**Comment:** "[Bulk and general cargo] vessels move rice, wind power generating equipment, aggregates, non-GMO grains, pet coke, cement, fertilizers, slag, steel, scrap and coal that are critical inputs for California agriculture, power generation, dairy, construction, recycling, refining and manufacturing industries that support millions of citizens and are the lifeblood of the "smaller" California that most of us live in. Massive diversions of cargoes away from California ports is the inevitable outcome. Will the extra emissions generated by trucking or railing these cargoes to whoever is left in business be part of your computer modelling?" (31.6)

**Agency Response (31.6):** CARB staff made no changes based on the received comment. Bulk and general cargo vessels are not currently included in the emissions reductions requirements of the Regulation. For information pertaining to cargo diversion in response to the Regulation please refer to Master Response 2.

**Comment:** "Although the proposed regulation includes an interim evaluation of technologies for regulated vessel types, we recommend that CARB also consider conducting a technology assessment for other vessel types excluded from control requirements under the proposed regulation (e.g., bulk, general cargo vessels) by 2022 to better identify and evaluate cleaner technologies for these vessel types. Left unchecked, these vessels will represent a larger share of emissions in the future." (13.4)

**Agency Response (13.4):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff will review potential requirements for control technologies for use with bulk and general cargo vessels in the Interim Evaluation and publish analysis and findings in a report by December 1, 2022.

**Comment:** "Due to the "tramp" nature of bulk cargo trades (in comparison to container liner trading), we are not consistently calling to one berth only, but may call to various berths for undetermined periods of time. Our vessels may collect separate cargo parcels from more than one berth or port within California, as part of a typical voyage." (35.1)

**Comment:** "As a secondary, and perhaps more important comment, the impacts of further regulation would be substantial upon the people living in the state of California. The state of California economy relies upon the import and/or export of products such as grains, rice, cement, fertilizers, slag, steel, scrap, steel, coal, slag and aggregates to name just a few. Should these regulations prevent a bulk carrier from calling to a California port as a result of increased regulation, these cargoes shall be exported elsewhere, beyond the state boundaries of California." (35.4)

**Comment:** "[Bulk] vessels frequently have to shift alongside, known as line hauling, therefore they are not fixed in a single position while conducting operations." (31.5)

**Comment:** "I urge that the proposed interim evaluation in 2023 include an assessment of the need to control emissions from bulk vessels at terminals located within or near an AB 617 designated community to ensure the benefits of the regulation are maintained." (12.2)

**Comment:** "[G]eneral cargo and bulk cargo vessels (also known as bulk carriers) are not included in the proposal. This decision raises concerns not only about emission reductions forgone but also the equity of including some ship types and not others. General cargo and bulk cargo ships made 812 combined visits, in 2016, to California ports, and tend to stay at berth, on average, for long periods of time. Statewide port calls for these two ship types exceeded 10 percent of overall vessel calls, in 2016. And, from 2021 to 2031, their combined auxiliary and boiler PM2.5 emissions are projected to climb from 5.3 to 7.2 tons per year, a 36 percent increase." (21.2)

**Comment:** "Another important business segment to the Port is break bulk project cargo which contributes about 4% of the Port's revenue. This business line is extremely important to the Port's overall competitiveness and the thousands of jobs it supports. 100% requirement to reach zero emission for this vessel type call, would cause the industry to virtually disappear. These vessels make one time calls to ports to load and unload special cargoes, and may never return for another call at the Port. By way of example the largest crane in the world from Arizona, came to Hueneme for a

one time move to China. These types of pieces frequently move through the Port on a different vessel on each occasion. A retrofit would not be justified in the eyes of an ocean carrier for a single voyage, thus potentially eliminating this business segment at the Port.

To best understand the implications of the proposed amendments, all business types at the Port need to be evaluated and the opportunity costs understood, again calling the need for a cost-benefit analysis to inform the draft regulations." (53.22)

**Comment:** In reference to bulk and general cargo vessels "Shore power will never suffice for the vast majority of the terminals that service these trades. They cannot physically or financially construct the infrastructure. In addition, the vessels, which number in the thousands, have vast differences in their construction, their power systems and their design. No "adapter" plug will ever suffice." (31.3)

**Comment:** The Collation for A Safe Environment "...believe that all categories of ships should be included: An even playing field" and "do not support exempting Bulk Ships or any category as proposed" (43.2)

**Comment:** "Dealing with bulk carriers helps us deal with the problem of coal and petcoke exports." (OC-4 Kilbreth)

**Comment:** "I agree also with including the bulk carriers for West Oakland." (OC-2 Harvey)

**Comment:** "They're trying to exclude bulk -- break bulk type ships. Well, there's no such thing as little emissions from a ship. (OC-2 Marquez)

**Agency Response: (35.1), (35.4), (31.5), (12.2), (21.2), (53.22), (31.3), (43.2) (OC-4 Kilbreth), (OC-2 Harvey), and (OC-2 Marquez):** CARB staff made no changes based on the received comments. During the development of the Regulation, staff excluded bulk and general cargo vessels from emission control requirements. As discussed in the ISOR, staff identified several factors including the relatively low emissions rates from these sources when compared to other vessel categories, high costs and commodity markets sensitivity, and unique complications with controlling emissions while at berth. (See ISOR chapter III (pg. 4)). However, staff recognizes that Bulk and General Cargo vessels do contribute to the overall emissions in and around the Ports. As part of the 15-day changes staff added bulk and general cargo vessels as a required component of the 2022 Interim Evaluation (Section 93130.14(d)) to determine if further advancements in technology or reduced costs would allow for inclusion in the Regulation.

**Comment:** "PMSA supports the idea of providing exemptions from controlling emissions in some cases. For instance, both commissioning and

re-commissioning of vessels is required by the international standard and often enforced by port authorities. The regulation should provide a clear exemption for these and other mandated activities. In general, fees should not be assessed for actions that ocean carriers do not have discretion over. Exemptions should also address other issues outside the ocean carrier's control, including failure by the utility to provide power or failure by the port to maintain port-wide electrical infrastructure." (52.C.138)

**Agency Response (52.C.138):** CARB staff made no changes based on the received comment. CARB agrees with the commenter and built an exception into the Regulation for commissioning events (Sections 93130.8 and 93130.10). Events outside of the control of either terminal or vessel operators, including safety, emergency, and utility failure events, are also built into the Regulation and will be considered on a case-by-case basis. For other issues that are not directly addressed, terminal or vessel operators can use a TIE or VIE as a per visit exemption to remain compliant.

**Comment:** "One consequence of moving to an every visit approach from a fleet averaging approach is that there is no opportunity to address vessel redeployments and drydocking without penalty. The dynamic nature of the maritime industry means that vessels will be rotated into and out of California service due to changes in trade flows or the need to drydock a vessel. Bringing a replacement vessel into California service will necessitate retrofitting the vessel. As such, CARB should provide an exemption for the initial visit of a vessel rotated into California service." (52.C.139)

**Agency Response (52.C.139):** CARB staff made no changes based on the received comment. To address vessel redeployments and other operational challenges, CARB has included TIEs and VIEs into the Regulation. For more information on how TIEs and VIEs can be used see Section 93130.11 of the regulatory language.

**Comment:** "Expanded Exemptions Are Necessary. The exemptions provided in the proposed regulation are too narrow and do not envision the multiple areas that other government agencies have competing requirements. Often, ocean carriers or terminal operators are required to perform actions at the direction of a government agency that would prevent a shore power connection. Just one example of this might be U.S. Coast Guard testing of auxiliary engines. The regulation should include a broad exemption for actions ordered by a government agency that prevents a shore power connection. Again, TIEs/VIEs should not be necessary for issues that arise outside the control of the regulated parties, whether caused by events like nature or at the direction of governmental agencies." (52.C.48)

**Agency Response (52.C.48):** CARB staff modified the proposed regulatory language in response to the received comment. CARB agrees that disruptions caused by government agencies should be considered an exception, and staff modified the definition of “Ready to Work” to clarify that connection to a CAECS is not required until after all government authorities with jurisdiction over the vessel visit have cleared the vessel.

**Comment:** “THE REGULATIONS SHOULD CONTINUE THE EXISTING NON-FREQUENT FLIER EXEMPTION FOR CRUISE SHIPS: CLIA remains concerned that the draft regulation is so rigid with every vessel, every call and mitigation of every emission at 100% that it will impact the cruise markets in California. This could result in world and transitioning cruises which cannot justify the millions of dollars to add shorepower equi22.5ent on vessels that visit California only a few times per year, to skip California ports, causing major financial impacts for those ports. CLIA requests that CARB reinstate the non-frequent flier exemption for cruise ships making four or fewer visits per year. CLIA is willing to discuss other potential options to the non-frequent flier exemption such as a major expansion of the types of situations that would qualify to pay a mitigation fee to offset emissions and avoid violations, if the fees are reasonable and based on the emissions of the vessels.” (52.C.60)

**Agency Response (52.C.60):** CARB staff made no changes based on the received comment. CARB staff developed VIEs for vessel fleets to use in cases such as infrequent visitors. Vessels in a fleet that do not frequently visit California would still be allowed a compliant visit if a VIE is used. CARB has allowed for flexible options for vessels to comply with the Regulation including, the Innovative Concept compliance option (Section 93130.17) in addition to TIE/VIEs.

**Comment:** “Shore power is the only compliance option for Port of Oakland. Due to navigational constraints, CARB assumes any vessel visiting Oakland must use shore power, even if the vessel visits only once a year (SRIA, 73). This situation seems to conflict with CARB’s stated goal of allowing flexibility for ports and operators to devise tailored compliance solutions. Additionally, CARB should evaluate the cost-effectiveness of shore power for this port, given the unique constraints.” (52.A.12)

**Agency Response (52.A.12):** CARB staff made no changes based on the received comment. CARB disagrees that the Regulation limits the compliance options for the Port of Oakland. See response to comment 17.5 Oakland for more information on CARB’s assumption about why staff assume shore power will be used at the Port of Oakland. In regards to port specific cost-effectiveness, CARB reviewed the terminal infrastructure at Oakland in the berth analysis. Oakland is already shore power capable at each terminal, and may require some amount of shore power improvements at some berths – which are likely needed to comply with the 2007 At-Berth Regulation anyway.

CARB staff expect the costs to support the Regulation at Oakland to be lower than costs at many other ports.

*vi. Reporting and Recordkeeping*

This subcategory contains comments on recordkeeping and reporting requirements of the Regulation. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "We do not yet know what information will need to be reported or how the system will work, and therefore cannot comment specifically on the feasibility, time commitment or individual items to report. This requirement should be made transparent to the regulated community quickly or be revisited when the reporting system design is available." (46.35)

**Comment:** "93130.9 Terminal Operator Requirements(e)(2) How will Terminal Operatos [sic] be trained on the on line system? Will spreadsheets be uploadable [sic]? Will CARB site provide downloadable spreadsheet templates?"

Recommend: "CARB to provide excel spreadsheet template for Terminals to use on a daily basis. Document should be unlocked. Drop down menus are highly recommended. Formulas for each cell should be available on separate worksheet for reference. Operator must be able to upload daily spreadsheet in CARB system without any issues. Homeland Security sensitive data will not be included and should not be asked." (50.13)

**Comment:** "There was discussion during the workshop of requiring ports to report vessel data to CARB under a new, streamlined reporting regimen. The Port requests clarification of this change and notes that altering the nature of the relationship between the Port and its clients could negatively influence it especially when regulatory compliance documentation is involved." (53.31)

**Agency Response (46.35), (50.13), and (53.31):** CARB staff made no changes based on the received comments. The reporting requirements are available for both vessel and terminal operators in section 93130.7(e)(4) and 93130.9(d)(5) of the Regulation text, respectively. CARB staff are not aware that any of this information is considered sensitive by Homeland Security. Regulated entities will be able to submit reporting information via email or using the Freight Regulations Reporting System (FRRS), which is an online tool that CARB is developing to streamline and consolidate reporting requirements for multiple freight regulations. Through the FRRS, a vessel fleet operator will be able to register vessels, and a terminal operator will be able to register berths at their terminal. After registering, both entities (or designated reporting parties) will be able to then report visit information for their registered vessels or berths. Some fields within the FRRS tool will have drop-down menus, while others will

require filling in vessel and visit specific information. CARB continues to develop the FRRS and anticipates completion in late 2020 or early 2021. Once the FRRS tool development is finished, there is expected to be an opportunity for regulated industry members to assist with beta testing the system to ensure its usability. Staff will also consider posting templates on CARB's Shore Power website that vessel or terminal operators may use to submit information via email if they are unable to access the FRRS system online.

Further, in direct response to comment 53.31, port authorities do not have a visit reporting requirement beyond annual wharfinger data and the scheduled Port Plans, unless acting expressly as the terminal operator.

**Comment:** "Repetitive/duplication of work. There is no need for a carrier, marine terminal operator, port authority to all supply the same data submittals to CARB. Yusen simply does not have the staff available to compile data and report to CARB for 144 vessel calls per year. We suggest that port authorities compile data and report to CARB quarterly. The administrative burden proposed by the draft regulatory reporting language is onerous." (24.2)

**Comment:** "Excessive Reporting Requirements and Deadlines: We find the reporting requirements to be excessive, redundant, time restrictive and in some cases unnecessary.

It seems redundant to have each party report the same information: In scenarios where a barge-based system is used it appears that all 3 parties would be reporting very similar information?

The proposed reporting requirements for terminal operators will add additional man hour costs to meet these mandates, especially for our high vessel volume facilities. Additionally, some of the data that is being requested is not information that is typically relayed between vessels and terminals, such as the time the pilot has boarded the vessel. This will require an additional burden to all parties to increase communication and cross-check all information that will be reported. We would recommend streamlining the information and instead of reporting within 7 days of a vessel's departure, to send reports on a monthly or quarterly basis." (37.8)

**Comment:** "93130.9 ( d)(3)( e) The Vessel Operator is already reporting this information, and this creates a redundant and an additional administrative burden to the Terminal Operator to report the same information. Further, there could be slight differences on reporting information between the two entities thus causing and creating additional coordination and/or research if the information is not exactly consistent. There could also be occasions that a third-party operator is involved and now you have three entities reporting the same redundant and likely slightly different. We are having difficulty identifying the reason/ need to have this redundant reporting." (44.11)

**Comment:** “93130.9 Terminal Operator Requirements (d)(3)(L) Terminals do not have access to Vessel Operator ship and engine specs. Vessel Ops own/charter their ships and readily have this information available to them. Engines specs are irrelevant to a Terminal operator. Terminal operator does not have the staffing to obtain this information. Again, duplicate effort and inefficient. Terminal is not familiar with this data and does not have the manning to obtain this data.”

Recommend: “Ask Terminal operators to provide data that the Terminal operator has control over.” (50.12)

**Comment:** “All of the data currently used to calculate the plug in/unplug time comes from the Port of Los Angeles. A Port of Los Angeles electrician is party to each plugin and unplug. The Port of Los Angeles also controls the Port pilots and track pilot boarding times. As the Port of Los Angeles has been tracking this data for years it does not make any sense for TraPac to duplicate these efforts. As discussed in outreach meetings with CARB, adding the ability to have an authorized agent for reporting purposes will help reduce duplication of efforts and become a single source of data management.” (51.2)

**Comment:** “Reporting requirements should not be duplicative and data collection should only be sought from the responsible party that produces the data. The proposed regulation has requirements for both terminal operators and ocean carriers to provide the exact same information. In other instances, CARB does not seek information from the responsible party. In some instances, port authorities will have control over power consumption data, and in other instances terminals will have control over power consumption data, yet CARB assigns specific reporting requirements for this to only one party, thereby imposing a burden that some terminal operators may not be capable of fulfilling. CARB should simplify the reporting requirements to reduce redundancy and ensure that the party that actually generates the data is the party responsible for reporting.” (52.54)

**Comment:** “93130.9 (d) There would likely be weekly notices by terminals up and down the coast the way the current proposed language is written. Regardless, there should be an email that can be utilized to report exceptions. The timeline should be extended as well, since it may take time to gather all pertinent information. Also, this is another administrative burden that is being placed onto the Terminal Operator. The designated person likely handles numerous other responsibilities and could be on business travel, meetings, etc. A more reasonable timeframe would be to report within 30 days.” (44.5)

**Comment:** “Post-Visit Reporting: This provision would require reporting of information for each visit to a California terminal within 7 days of vessel departure. The required visit information includes, among other things, information about whether a vessel uses an exception, if a vessel incident event (VIE) or terminal incident event (TIE) is

used for the visit or if a remediation fund payment will be made to cover the visit. It is not realistic to expect vessel operators to be able to report the above visit information in such a short timeframe.

First, the visit information will, for most or all shipping companies, be submitted not by the vessel itself, but by a senior company representative who will collect, review and then submit the information to CARB. One of the reasons for this reporting approach is quality control to ensure that all the required information is properly and consistently presented to CARB. Another reason is the fact that the decision whether to use a VIE, ask the terminal to use a TIE, or to use the remediation fund, is not for the vessel master, but for the company to make since VIEs are allocated based on the company fleets. This process takes time, particularly if there are ongoing negotiations between the shipping company and terminal about whether a VIE or TIE will be used. Weekends, holidays or operational issues affecting the ship's reporting of the data will also slow down this process.

It is also not clear to us why CARB would want the visit information on such short notice and why CARB would want visit information presented in a discrete submission for each visit. We believe that the visit information may, in fact, be more useful to CARB staff if companies submit visit information for all of their vessels (e.g. in a single large spreadsheet) that call California over a fixed period on a quarterly basis. CARB could, for example, require that each company submit visit information no later than 30 or 45 days after the end of each quarter. For example, visit information for all company vessel visits that occurred between 1 January and 31 March would be due to CARB no later than 30 April or 15 May.

We recommend that CARB replace the 7-day visit information reporting requirement with a requirement that visit information be submitted on a quarterly basis (due 30 or 45 days after the last day of the quarter). Given the complexity of the reporting process, CARB staff has supported the idea of establishing a dedicated industry workgroup to focus on reporting requirements for this rule. We recommend that CARB revisit that idea before the rule is finalized." (45.24)

**Comment:** "93130.9 Terminal Operator Requirements (d)(3). Redundancy is inefficient. Vessel operator already reports this information. PLEASE avoid duplicate reporting. PLEASE do not try to enforce CARB rules through the Terminal operator. Terminal and Vessel operators will log the TIE/VIE, but what if the Port and/or the barge company is found to be responsible, partial or otherwise?"

Terminal should be limited to reporting data that is available and applicable to the Terminal operator. Irrelevant data such as IMO #, name, address, email, telephone #, compliance instructions checklist, tier rating of the engine should not be the Terminal's responsibility. Terminal does not have the manning to obtain this kind of information on each call. Terminals should not be bullied into enforcing CARB's hopes to vet

Vessel operator data. CARB should properly staff their department to enforce these rules and validate the data given to CARB.”

Recommend: “Narrow down Terminal operator reporting requirement based on relevancy. Data reported should be the Voyage #, date and time of arrival/departure, connect/disconnect. Any issues with connecting/disconnecting, special notes i.e., commissioning required would also be included. Ports and barge company liability needs to be added to the Amendment. Ports and barge companies should also have PIEs or BIEs as well as be subject to remediation penalties. Until such language is in place and a full CARB Arbitration process is absolutely clarified with written and mutually agreed procedures, this Amendment should be placed on hold. Additionally, CARB should staff properly to enforce their rules and validate data received from Vessel operators.” (50.11)

**Comment:** “Due to the high level of expertise and knowledge required for managing VIEs, seven (7) days is not feasible during certain seasons (summer holidays, Christmas, etc.). Negotiation with terminals around use of TIEs vs. VIEs will also require time. In addition, VIE vs. remediation cost management calls for a minimum of 30 calendar days, and a quarterly or annual adjustment period would be more feasible for planning and fleet/cost management.” (46.34)

**Comment:** “In completing all this reporting, the rule provides only seven days for reports to be submitted to CARB. This is too short a timeframe to consistently prepare reporting. CARB should increase the reporting period to 45 days. CARB staff should also work with industry in its development of the proposed online reporting tool. In order to ensure success, the functionality of the online reporting tool should be consistent with industry standard reporting practices.” (52.57)

**Agency Response (24.2), (37.8), (44.11), (50.12), (51.2), (52.54), (44.5), (45.24), (50.11), (46.34), and (17.55):** CARB staff modified the reporting deadlines in response to numerous comments questioning the feasibility of reporting within 7 days after a vessel’s departure from a berth. In response to comments, staff adjusted the reporting deadline to allow reporting within 30 days after a vessel’s departure. Monthly reporting was selected over quarterly reporting to ensure the visit information is received in a timely manner in order to determine compliance with the Regulation. Also, CARB staff will rely on reporting data to calculate the number of TIEs and VIEs that should be issued each calendar year. Quarterly reporting would delay CARB’s staff’s ability to determine the number of TIEs and VIEs that a terminal or vessel would have to use for the calendar year.

CARB staff recognizes the duplicative nature of required reporting but believes it is necessary. Because both the terminal and vessel operators have compliance obligations, reporting by each party is essential to providing accurate information in order to determine if compliance obligations are met

without relying on the accuracy of a secondary entity reporting the information. Requiring each party to provide original information is intended to allow CARB staff to cross-check information and ensure that the reporting details are correct. An entity may designate another party to report on their behalf (such as a terminal giving reporting rights to a port), but the reporting entity has the ultimate responsibility to ensure the accuracy of information provided.

CARB staff worked with industry members when developing the reporting requirements of the Regulation, and expect there will be an opportunity for interested regulated entities to help beta test the FRRS system once it is ready for testing. Reporting requirements for the Regulation mirror information that is largely already gathered and/or is easily available to record during normal arrival and departure operations, and CARB staff does not believe reporting this particular information required by the Regulation produces any undue burden on the regulated entities. The FRRS is also being designed to allow vessel and terminal operators to be able to upload multiple visit reports to FRRS at one time in order to streamline the reporting process. If a vessel or terminal does not have information readily available, (such as if the information possessed only by another entity), CARB recommends immediate communication with the other entities involved with (1) the vessel's operations, and (2) connection to an emissions control strategy.

Regarding comment 50.11's recommendation to include port and barge liability, the Regulation assigns responsibilities for ports and CAECS operators. Both operators would be able to use the remediation fund compliance option in qualifying circumstances. Ports and CAECS operators were not given PIEs (what the commenter identifies as Port Incident Events) or BIEs (what the commenter identifies as Barge Incident Events), as the TIEs and VIEs are expected to account for the situations where uncontrolled emissions occur based on analysis of current enforcement data. The primary penalty for poorly performing CAECS operators is the revocation of the company's EO, which would mean the system no longer has CARB approval to operate for compliance with the Regulation.

In response to the comment about why CARB staff needs reporting information submitted for each visit, it is because compliance is based on the actions of a single visit and CARB needs reporting for each visit in order to determine compliance. As such, CARB staff disagrees with the commenter's statement that "visit information may, in fact, be more useful to CARB staff if companies submit visit information for all of their vessels (e.g. in a single large spreadsheet) that call California over a fixed period on a quarterly basis". To accommodate the reporting timeframe needs of vessel and terminal operators, staff did adjust the reporting timeframe from 7 days to 30 days. Monthly reporting was selected over quarterly reporting to ensure the visit information is received in a timely manner in order to determine compliance with the

Regulation. Regulated entities are encouraged to submit reports using FRRS, but CARB will also accept reports and exception information via email. CARB staff intends to publish an "FAQ" document prior to the first implementation dates of the Regulation to assist with how to report required information and other elements of the Regulation.

**Comment:** "Terminal Operator Requirements (Section 93130.9):

... We recommend that CARB make the following changes to Section 93130.9 to provide additional clarity regarding the terminal operators' responsibilities under this rule:

- Section 93130.9(d)(3): Amend the visit reporting deadline for terminals consistent with our recommendations for vessel visit reporting (discussed above in point 5.c.iii of these comments)." (45.26b)

**Agency Response (45.26b):** CARB staff made no changes based on the received comment. There was no point 5.c.iii as referenced in the commenter's letter; as such, staff are unable to respond directly to this comment. For more information on the changes made to the reporting deadlines for terminals, see response to comment 45.24.

**Comment:** "Port staff note that the power meter readings required in Section 93130.9(d)(2)(C) and (F) and Section 93130.9(d)(3)(I) are not available until the close of each calendar month. This means that it will often not be possible to report the power usage within seven calendar days of a vessel's departure, as required in the Proposed Control Measure." (17.18)

**Comment:** "Port staff note that the "power meter readings at the time of shore power connection and disconnection" requested in Section 93130.8(e)(2)(C) of the Proposed Control Measure are typically not available within 7 calendar days of a vessel's departure, as anticipated by CARB. Power meter readings at the Port are typically available at the close of the calendar month and not sooner." (17.33)

**Agency Response (17.18) and (17.33):** CARB staff modified the proposed regulatory language in response to received comments. In response to comments, CARB staff revised the required regulatory reporting timeframe from 7 days to 30 days in response to this and other received similar comments in order to give terminal operators additional time to obtain power usage information.

**Comment:** "93130.9 (d)(2) Ships manage their power usage, asking the Terminal Operator to communicate with the vessel to determine their usage does not seem to be practical or applicable. In many cases meters are not located on the terminal, and in fact are under the control of the providing utility. Beginning and ending meter readings are not possible in these cases." (44.6)

**Comment:** "What is the reasoning that CARB needs to know the meter reading? This appears as if CARB is expanding their jurisdiction. If terminal records the meter reading number, then wouldn't that be sufficient? If there is a 'need' to know that particular meter number, then that can be provided. In many cases meters are not located on the terminal, and in fact are under the control of the providing utility. Beginning and ending meter readings are not possible in these cases." (44.9) (44.12)

**Agency Response (44.6), (44.9), and (44.12):** CARB staff made no changes based on the received comments. CARB relies on meter reading to confirm that shore power is being used appropriately, and as required, to ensure that the anticipated emissions reductions are actually achieved. If a meter reading for an individual visit is not available, CARB enforcement staff would address issues on a case-by-case basis. CARB staff recognizes the duplicative nature of required reporting but believes it is necessary. See response to comment 52.54.

**Comment:** "The routes and berths of vessels regulated under the existing requirements are generally more predictable and regular than the operational characteristics of those vessels proposed to be added to the program. For example, many chartered vessels or vessels engaged in the tramp trade e.g. single voyage charters, may be directed very late in its voyage, to call at ports/berths based on the charterer's needs at the time and thus 7 days advance notice to the terminal operator and operator of the CARB approved emission control strategy is not possible. The different commercial and operational scenarios across ship types must be incorporated into these discussions to enable a workable program for all entities." (47.4)

**Agency Response (47.4):** CARB staff made no changes based on the received comment. CARB is aware of differences between liner and tramp shipping, and potential for a vessel's destination to change within seven days without advanced notice. In that event, CARB enforcement staff would address circumstances on a case-by-basis but vessel operators are expected to make all

reasonable and timely efforts to arrange for a CAECS at the new destination port. The Regulation is designed in such a way that a vessel or terminal operator can use a VIE or TIE for compliance if a CARB-approved emissions control strategy is unavailable due to short notice or not available at the terminal location.

**Comment:** “The Responsible Official must manage data quality and carefully allocate VIEs/TIEs/exemptions for the full fleet on a centralized basis. Thus, individual vessels will not be capable of reporting directly to CARB.” (46.33)

**Agency Response (46.33):** CARB staff made no changes based on the received comment. The Regulation contains reporting requirements that allow a vessel operator to report information on behalf of the vessel.

**Comment:** “Other reporting requirements include items that are irrelevant to the monitoring of rule compliance. CARB already has an OGV Fuel Rule in place to control and monitor fuel usage in oceangoing vessels within California waters. The proposed regulation needlessly adds reporting requirements that can be obtained through that rule’s requirements without adding a permanent, redundant regulatory burden within this rule structure. The fuel reporting aspects of this rule should be eliminated.” (52.55)

**Agency Response (52.55):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The Regulation includes fuel reports because that information is necessary to monitor emission quantities being produced during a vessel’s visit at a berth. To clarify, CARB’s OGV Fuel Regulation does not require vessels to report fuel usage information during their time at berth. CARB understands that a vessel’s log likely provides fueling information, and thus, believes the Regulation imposes a minimal added effort under the Regulation’s reporting requirements.

**Comment:** “The reporting requirements add a real, quantifiable burden to bulk and general cargo vessels, but do not advance any emissions reduction program in California. The State should not impose costly reporting requirements for the sole sake of collecting more information, particularly when there is no planned use for the data. If CARB identifies a future need for such data, it is readily available through alternative sources such as marine exchanges or port authorities. There is no reasonable basis to place a permanent, costly reporting burden for no measurable benefit. Specific comments are as follows:

Section 93130.7 Vessel Operator Requirements, Items (a) through (d) do not apply to these vessels;

Item (e) (1) - (3) do not apply to these vessels;

Item (e) 4 (A) - (G) is widely available information known to USCG, Marine Exchange, State Lands Commission (via Oil Spill Enrollment) and several existing commercial databases. To require repetitive reporting on these items is arbitrary, duplicative and capricious;

Item (e) (H) does not apply;

Item (e) (I) is irrelevant as the definition of "Ready to Work" is flawed for these vessels which, again, are not covered by these regulations. These vessels frequently work cargo alongside and at anchor prior to formal entry at CBP, with full permission of course, from CBP. Also, USCG never "clears" a vessel.

Item (e) (J)-(R) are mostly irrelevant due to the fact that these vessels are burning MDO or MGO as already required by the Federal government and the State of California." (31.1)

**Comment:** "The reporting requirements for general cargo and bulk vessels add a real, quantifiable burden to bulk and general cargo vessel operators, but do not advance any emissions reduction program in California. The State should not impose costly reporting requirements for the sole sake of collecting more information, particularly when there is no planned use for that data. If CARB identifies a future need for such data, it is readily available through alternative sources such as marine exchanges or port authorities. There are even existing regulatory tools in place like the OGV fuel rule that CARB can use to obtain vessel information and ensure significant emission reductions. There is no reasonable basis to place a permanent, costly reporting burden for no measurable or identified benefit.

CARB staff should also be aware that aspects of the rule do not make sense for bulk vessels. For example, while the ready-to-work definition may be appropriate for container vessels, the definition is not appropriate for bulk and general cargo vessels. This is a further reason why the reporting requirements for bulk vessels are burdensome, even if such vessels are exempt from the emission reduction portions of the rule. Ultimately, increased liability and uncertainty for bulk vessels will only harm California exports, particularly California agriculture that is dependent on bulk vessels to cost-effectively move their products to foreign markets." (52.59)

**Agency Response (31.1) and (52.59):** CARB staff made no changes based on the received comments. CARB disagrees that the information required by the reporting requirements in the Regulation is readily and easily available through other sources. CARB staff also disagrees with the commenter's statement: "There are even existing regulatory tools in place like the OGV fuel regulation that CARB can use to obtain vessel information and ensure significant emission reductions." CARB's existing Fuel Regulation does not involve any reporting of visit information and this data would not be available through that Regulation.

Reporting is an effective method to monitor activity for substantial increases at California ports. CARB staff disagrees that the reporting requirements are not appropriate for bulk and general cargo vessels. "Ready to work" is defined as the time when the vessel is tied to the berth, the gangway has been lowered with netting down, and all the United States Coast Guard, United States Customs and Border Protection, and other government authorities with jurisdiction over the vessel visit. It is CARB staff's understanding that all vessels need to go through each of these steps before starting cargo operations. Receiving this information is essential to helping CARB to evaluate the potential for control requirements for bulk and general cargo vessels during the Interim Evaluation in 2022, and will also be used to help refine and update CARB's statewide emissions inventory for bulk and general cargo vessels. To assist with streamlining reporting, and minimize financial burdens, CARB is developing the FRRS, intended to replace individual freight reporting systems currently used.

**Comment:** "Another concern regarding VIEs/TIEs is the requirement of reporting prior to vessel departure. In some cases, that would give responsible parties less than 10 hours to complete the reporting requirements. In other cases, it may simply be impossible because the cause of a failed connection may not be known immediately. In general, the reporting requirements of the proposal cannot rely on the assumption that the port, terminal, and vessel operators have perfect knowledge. As has been demonstrated multiple times, circumstances outside the control of any of the parties can arise and will leave the responsible parties working to identify all the necessary details to provide a complete report to CARB. At a minimum, responsible parties should have seven days to complete reporting, which would allow time for internal review of the reports." (52.C.40)

**Agency Response (52.C.40):** CARB staff made no changes based on the received comment. CARB notes the comment addresses a previous version of the draft Regulation. To clarify, staff's final proposal requires TIEs and VIEs to be reported with the visit information within 30 days of departure, not prior to departure.

#### vii. *Fleet vs. Per Visit Compliance*

This subcategory contains comments focused on the 2007 At-Berth Regulation's fleet based rule vs per visit compliance as required by the Regulation. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "Under the existing rule, container, cruise, and refrigerated vessels have been able to successfully comply through a fleet average approach that encourages long-term planning and incentivizes over compliance in order to manage trade uncertainty. Carriers voluntarily over comply in order to preserve flexibility to accommodate trade surges (as seen in last year's extra loaders – see prior comment letters attached), vessel redeployments, or unexpected equipment

repair/maintenance. The proposed structure would eliminate any incentive to over comply and encourage carriers and terminals to exhaust available Vessel Incident Event (VIE)/Terminal Incent Event (TIE) allowances to reduce cost.

CARB should maintain a fleet average approach for the existing regulated fleet in order to ensure its continued success and consider the creation of a separate regulatory structure for any expansion fleets.

The preservation of the existing regulatory structure for currently regulated fleets and consideration of a new regulation for expansion to new fleets can be achieved in a manner which does not impact any projected emissions reductions. It is simply an acknowledgment of the original bifurcation by CARB of vessel fleets over a decade ago and the continued investments and emissions reductions progress made by the currently regulated fleets in expectation of the durability and continuation of the current regulatory program for the foreseeable future.

PMSA respectfully requests that the Proposed At Berth Control Measure be bifurcated into one set of amendments for the existing fleet regulations and another entirely new regulation which is exclusively applicable to expansion fleets." (52.15)

**Comment:** "We don't believe we should be covered under the same rule as the additional fleets. We would like to maintain our rule." (OC-5 Jacob)

**Comment:** "We find ourselves in a binary situation with outlying infrequent fliers, which generally apply to ships that are on around the world cruises that might call on a California port one day every year or two or other non-frequent fliers that are not home-ported or regular ships calling. Those ships to equip to the ship, which is now running around \$2 million in round figures, if we're only going to use it for eight hours every two years, the company will make the decision not to deploy to California.... And we'd prefer to -- fleet averaging would allow us to accommodate this." (OC-1 Dow)

**Comment:** "[F]leet-wide averaging, not on a single vessel visit. The challenge of determining compliance on a real-time basis would be extremely challenging on a per vessel visit. Such an approach would also make compliance for short vessel calls nearly impossible. Alternatively, a vessel visit approach could be successful if it were based on a checklist of best practices to determine compliance. In such a way, every vessel would be treated equally. This approach would also provide a clear methodology to avoid the arbitrary penalties that everyone agrees are unworkable under the current 3-hour rule. PMSA would also propose that in the interest of simplicity, that a fleet averaging approach be based on the time connected to control technology based on a regulatory (e.g.,80% in 2020). Such an approach would be easy to measure and maximize emission reductions. (52.C.135)

**Agency Response (52.15), (OC-5 Jacob), (OC-1 Dow), and (52.C.135):** CARB staff made no changes based on the received comments. The 2007 At-Berth Regulation had requirements for fleet based annual averaging where 1) all compliance obligation was on the vessel fleets and 2) determining compliance took months after the end of each year. CARB was made aware of concerns about both of these aspects of a fleet-based regulation. In response, staff implemented an individual visit compliance requirement for the Regulation. Removing fleet averaging where all reductions were the vessel's responsibility and moving to an individual compliance option, allows for shared responsibility. Reducing emissions from OGVs is a collaborative effort between the vessel, the terminal operators, the port, and in some cases, a third-party emissions control technology operator. The Regulation has been developed to place responsibilities on all parties involved in the connection – and ensures that compliance obligations are assigned to the appropriate party. In addition, staff believes that at higher levels of compliance (80 to 90 percent), there would be less ability to absorb missed controlled visits through fleet averaging and shared responsibility will become even more important.

With a per visit compliance obligation, determination of compliance is faster and more streamlined and the regulated parties will have more certainty concerning compliance status. However, if fleets prefer the structure of fleet averaging, regulated entities can apply to CARB to use fleet averaging under the Innovative Concepts Compliance Options (section 93130.17).

To account for vessel fleets that have vessels who visit less than frequently, what the commenter refers to as “non-frequent fliers,” CARB staff included the VIE concept. VIEs can be used by a vessel fleet for any circumstance when a vessel visit is not able to reduce emissions, including for vessels not equipped with control equipment.

**Comment:** “We just would respectfully request that the Board direct staff to continue to work with us, the fleets, the different terminals and ports just to look at creating amendments to the current regulation just to help improve compliance methodologies.” (OC-1 Miller)

**Agency Response (OC-1 Miller):** CARB staff made no changes based on the received comment. The Regulation is a new regulation not merely an amendment to the 2007 At-Berth Regulation. While some of the affected parties remain the same, the structure and impacts far exceed the 2007 At-Berth Regulation and these reductions are critical to help meet the goals of the Community Air Protection Program (CAPP) by reducing the health impacts for disadvantaged communities surrounding California's ports. However, CARB staff are dedicated to working with all affected parties, and look forward to continued collaboration to inform the Interim Evaluation as the Regulation is implemented.

viii. *Vessel, Terminal, Port, and Third Party CAECS Operator Responsibilities*

This subcategory contains comments on the shared responsibilities requirements of the Regulation. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** “This concept of shared responsibility, it sounds great. But I do want to say that we already have shared responsibility, because when we don't have a successful plug-in, we reach out to the carriers. We reach out to the terminals. We send an immediate notification and we resolve the issue right away. So that shared responsibility is working.” (OC-3 Sinkoff)

**Agency Response (OC-3 Sinkoff):** CARB staff made no changes based on the received comment. CARB staff appreciates hearing that shared responsibilities are already in place and working well at the Port of Oakland. The Regulation is structured to promote and duplicate this success at all ports and terminals across California through the requirements for shared responsibilities.

**Comment:** “Liability and Responsibility. As a marine terminal operator, Yusen acts as a coordinator for shore power connections/disconnections. Yusen only employs its labor to physically perform plug/unplug work and leading/unloading of AMP units. The Port of Los Angeles is responsible for AMP vault installation, maintenance, and initiating the flow of electricity to AMP equipped vessels. Vessel agents schedule with Port of Los Angeles electricians to energize and de-energize electricity flows. Port authorities must take on more responsibility in the draft language. The port has numerous responsibilities to ensure a successful AMP connection is made and a marine terminal operator should not be responsible for a technical issue outside of its control. Unless the marine terminal operator is negligent by not ordering labor to assist with shore power connections and not performing the proper coordination between port authorities, arriving vessels, etc. then terminals should rarely be at fault for a failure to use shore power. It appears that marine terminal operators are being targeted for noncompliance for factors outside our span of control.” (24.3)

**Agency Response (24.3):** CARB staff modified the proposed regulatory language in response to the comments received. The At Berth Regulation is designed to hold all parties responsible for compliance matters that are within their direct control. CARB staff recognizes that ports, terminal operators, and vessels all play a significant role in the connection and disconnection of a vessel to shore power, and have added provisions to strengthen the Regulation language in order to ensure that ports, in addition to terminal and vessel operators, are held accountable for their roles in the connection process. This includes infrastructure commitments given in port and terminal plans. CARB staff disagrees that the Regulation targets marine terminal operators for

noncompliance for factors outside of their control. Staff developed this Regulation with the intention to hold parties responsible for actions that are under their control, and provides options in the Regulation for dealing with incidents that are outside direct control (through TIEs/VIEs and the remediation fund).

**Comment:** "Terminal Responsibility for Infrastructure Failures: We feel that in many cases the responsibility for failures in shore power infrastructure might be misdirected to the terminal operator. As an example, the Port of Oakland has recently made it very clear that they (The Port) are the owners of infrastructure. As such, the Port of Oakland is responsible for maintaining that infrastructure and we as a terminal operator pay significant fees for that maintenance. In the event there is a failure with that infrastructure, the draft language indicates that the terminal would be required to either use a TIE or pay into the remediation fund. 'if the Port is responsible for maintenance and repairs of the infrastructure, how is it that a terminal operator would be required to pay remediation fees or use a TIE when there is a failure with that infrastructure? Where is the Port's responsibility in this?' (37.5)

**Comment:** "93130.9 (f) How can the Terminal Operator be responsible for port owned land and infrastructure? If the work includes warranty-related repairs, is the manufacturer responsible? It surely can't be the Terminal Operator's responsibility. The Terminal Operator will report such issues but if there is construction or repair, there needs to be some flexibility. The reality is, there will be repairs, replacements, maintenance needed, and the rules need to account for that. Otherwise, this impacts commerce if you cannot have a vessel berthed when unforeseen or unavoidable circumstances present themselves." (44.13)

**Agency Response (37.5) and (44.13):** CARB staff modified the proposed regulatory language in response to the comments received. The At Berth Regulation is designed to hold all parties responsible for compliance matters that are within their direct control. CARB staff recognizes that ports can play a significant role in the connection and disconnection of a vessel to shore power, and have added provisions to have strengthened language in the Regulation to ensure that ports are held accountable for infrastructure commitments given in port and terminal plans. Port and terminal plans must assign the roles of each party (see Section 93130.14 (a)(3)(G) and (b)(3)(G)) and be signed by each party (see Section 93130.14 (a)(4) and (b)(4)).

The Regulation itself does not dictate when a terminal must use a TIE, or which party must pay the remediation fund in a qualifying event. In the case mentioned here, if the Port of Oakland identified itself as the responsible party for the shore power equipment in the port and terminal plans, then they could agree to pay the remediation fund or could be held liable for violation of the Regulation. This would be handled on a case-by-case basis by CARB enforcement staff, depending on each unique terminal and port relationship

and pending the results of any investigation by CARB staff. Ultimately, the goal with shared responsibilities is to ensure that terminals and ports are each fulfilling their roles to achieve the necessary emissions reductions and public health benefits of the Regulation.

**Comment:** "Terminal Operator Requirements for Infrastructure: The draft language of this section indicates that Terminal Operators are responsible for "equipping their berths with a CARB approved emission control strategy." We strongly disagree with this requirement. In the majority of cases, it is the port that is the landowner and the landlord. Terminal operators are tenants who lease the land from the ports and making significant investments in port infrastructure doesn't make business sense. If we as a company decide to relocate or discontinue operations at a particular location, this infrastructure is not an asset that we can take with us. In some instances, due to the lengthy construction and permitting process it would be necessary to begin infrastructure installation now to comply with upcoming deadlines, not even knowing if we will be at the facility at the time of implementation. We feel that it is the port's responsibility to equip the berths with a CARB approved control strategy. Bringing electricity to a terminal to enable shore power is really providing utilities to the terminal, which is something a landlord is usually required to do, not the tenant. We would recommend changing the wording in section 93130.10(a) to:

- (a) Port Infrastructure Ports with terminals not excluded due to thresholds found under Section 93130.B(g) Terminal Exceptions, are responsible for providing equipment or necessary infrastructure that will enable a terminal to comply with this Control Measure, unless such equipment or infrastructure is provided by the terminal operator." (37.6)

**Agency Response (37.6):** CARB staff modified the proposed regulatory language in response to the comments received. CARB staff recognizes that ports can play a significant role in the connection and disconnection of a vessel to shore power, and have added provisions to have strengthened language in the Regulation to ensure that ports are held accountable for infrastructure commitments given in port and terminal plans. The final version of the Regulation language requires terminal operators to identify and describe all necessary equipment needed to comply with the Regulation, but does not require terminals to equip their berths. See section 93130.14(a) for the latest requirements for terminal plans.

**Comment:** "CARB proposes to hold terminal operators accountable for the commissioning requirements established by port authorities. Terminal operators would not have any control if vessels, after their first visit, make changes to their electrical equipment that would trigger a port authorities' requirements for re-commissioning. Likewise, a port authority may modify shoreside equipment that necessitates re-commissioning. In these instances, CARB is proposing to hold terminal operators accountable for the actions of others." (52.C.97)

**Agency Response (52.C.97):** CARB staff modified the proposed regulatory language in response to the comments received by including language to specify that port or terminal operations are responsible for commissioning a vessel for shore power. CARB staff recognizes that ports can play a significant role in the connection and disconnection of a vessel to shore power, and have added provisions to have strengthened language in the Regulation to ensure that ports are held accountable for infrastructure commitments given in port and terminal plans. Port and terminal plans must assign the roles of each party (see Section 93130.14 (a)(3)(G) and (b)(3)(G)) and be signed by each party (see Section 93130.14 (a)(4) and (b)(4)). Each re-commissioning call will be handled on a case-by-case basis, depending on each unique situation, and if a commissioning event is not approved for any reason, then the party identified as responsible for commissioning vessels may be subject to a violation.

**Comment:** “Who is at fault if shore power or alternative compliance technology options are not available? The marine terminal operator is not the source of vessel emissions and should not be held liable for unsuccessful shore power connections due to circumstances beyond our control. If we comply with the proposed check list and make every reasonable effort to execute a shore power connection/use of alternative technology, with no malintent, how can the terminal operator be held responsible?” (24.7)

**Agency Response (24.7):** CARB staff made no changes based on the received comment. The Regulation is structured such that if a terminal receives a visit from a vessel that they have previously commissioned (within the guidelines of the port or terminal’s commissioning requirements), then they must plug that vessel into shore power or provide an alternative CAECS. With the 2007 At-Berth Regulation, a vessel could visit a terminal ready to plug in and fully comply with the requirements, but a terminal could refuse to plug the vessel in for any number of reasons, including operational business decisions. Now, that obligation is shared between both the vessel and the terminal. Determination of events that may be beyond a terminal’s control would come down to a case-by-case decision by CARB’s enforcement team depending on the documentation that could be provided by the vessel, terminal, port, and/or CAECS operator to explain the situation that resulted in uncontrolled emissions during a vessel’s visit to a berth.

**Comment:** “93130.9 (d)(2)(B) It is the Vessel Operators responsibility confirming that the strategy is CARB approved.” (44.8)

**Comment:** “93130.12 It is not the responsibility of the Terminal Operator to contract with a third party for an [sic] CARB approved emissions control equipment. This is not consistent with how current operations are handled and this needs to be reconsidered.” (44.18)

**Comment:** “The proposed rule even holds the terminal operator responsible for selecting alternative control technologies for vessels. A terminal operator cannot reasonably exercise proper engineering judgement to determine the suitability and compatibility of an emissions control system for a vessel. What would happen if a terminal operator selects a CARB-certified emissions control system, but a vessel operator does not allow it to be connected due to concerns of compatibility with the vessel? Even the regulation acknowledges that the terminal may not be compatible with the vessel’s needed emission control strategy. Only the vessel operator can determine the suitability of alternative control technologies for vessels they control.” (52.47)

**Agency Response (44.8), (44.18) and (52.47):** CARB staff made no changes based on the received comments. The structure of the Regulation is such that it is the responsibility of whichever entity is providing the emissions control technology to ensure it is CARB approved. Terminals and ports are expected to work together in the development of port and terminal plans and should distinguish these responsibilities when submitting their terminal and port plans. Shore power is considered an approved technology by default, but any entity using an alternative emissions control strategy for compliance would need to obtain CARB approval prior to being used for compliance. Terminals have a responsibility to provide CAECS to vessels, this is often shore power but terminals without shore power could provide another approved system. A terminal operator may choose to contract with a third party, but may also operate their own CAECS. The operator of a CAECS could be any regulated entity, and is not restricted to the vessel operator. If a terminal operator provides a CAECS that is approved for use for that specific vessel type to reduce the vessel’s at berth emissions, then the vessel must use it or provide an alternative CAECS to use instead. Otherwise, a violation of the Regulation may occur and CARB enforcement staff would consider the reason for the uncontrolled emissions on a case-by-case basis. A summary of responsibilities for regulated parties can be found in section 93130.18 of the Regulation.

**Comment:** “Port staff question if the suggestion in Section 93130.8(a)(3) of the Proposed Control Measure that a terminal operator should be responsible to provide an alternative CARB-approved emission control strategy if a commissioned shore power vessel is berthed such that it cannot connect to shore power is necessary. CARB’s own analysis in the Cost Inputs and Assumptions in PDF format, Table XI, declares that no barge-based capture and control system is anticipated for the Port.” (17.32)

**Comment:** “Additional Terminal Operator Requirements: The draft regulation suggests that if a vessel is commissioned to connect either-port or starboard, it is the terminal operator’s obligation to ensure that the vessel is berthed in that direction for all future visits, which places prohibitive operational and safety limitations on terminal

operators when berthing vessels. In order to work a vessel safely and efficiently, we as terminal operators find it necessary at times to adjust the berthing direction of a vessel. This restriction would eliminate our professional discretion and ability to do so." (37.7)

**Comment:** "The proposed regulation also places unnecessary burdens on terminal operators. The proposed rule requires that if a vessel is commissioned at a terminal in a given orientation (i.e., starboard or port) that the terminal may never change operations in a way that would require vessels to berth in a different manner. Terminals must have the ability to modify operations, which can include changing berthing requirements. It is unnecessary for the rule to preclude this. These are commercial and safety decisions that should be left between the terminal operator and ocean carrier. Terminal operators have incentives not to alienate their customers and ocean carriers have multiple terminal options to serve their needs. CARB should not restrict the ability to modify their operations, possibly to the needs of a different ocean carrier." (52.53 PMSA)

**Agency Response (17.32), (37.7), and (52.53):** CARB staff made no changes based on the received comments. CARB recognizes that shore power connection at berth may not always be achievable and that a vessel's position at berth may at times, need to be adjusted for safety and/or operational needs. As explained in staff's ISOR (Chapter III, pg. III-30), the terminal or vessel operator may use a TIE or a VIE for compliance for vessel visits that are unable to connect to shore power or another CAECS. This provision provides terminal operators with the flexibility needed to adjust vessel berthing positions as needed for safety or operational changes. CARB staff designed the Regulation to account for the potential for a vessel not being able to connect to an emissions control strategy as a result of the uncertainty that often surrounds vessel movements and operations at berth.

To address comment 17.32 specifically, in regards to CARB's own analysis showing that no barge-based capture and control system is anticipated for the Port of Oakland, see response to comment 17.5 for a discussion on why this assumption was made. CARB staff's published documents reflecting the type of emissions control technologies likely to be used at specific berths was a best educated assumption made by staff in order to assess the impacts of the Regulation. These assumptions do not in any way prohibit the terminal or port from utilizing a different alternative control technology in lieu of shore power if the determination is made that alternative control technology is the best way to meet their customer's needs.

**Comment:** "93130.9 (a)(3) It should not be the responsibility of the Terminal Operator to shift a vessel to shore power if the shore power was previously unavailable but becomes available at a berth. Consideration should be given if the vessel did not meet its schedule, who is responsible for the costs as a result of this including: labor,

pilots, etc. This could have significant impacts to stevedoring contracts that have been in place for decades. The proposed language did not consider the complexity of vessel operations as well as placing the burden on the Terminal Operator when they cannot control vessel schedule." (44.3)

**Agency Response (44.3):** CARB staff made no changes based on the received comment. CARB staff recognizes that vessel schedules are outside the direct control of a terminal operator. The Regulation does not have a specific requirement to shift a vessel when shore power becomes available. A vessel shift from one berth to another is considered as a new visit. The Regulation was drafted in such a way to provide a certain amount of regulatory flexibility for situations such as these; if a schedule change necessitates a visit with uncontrolled emissions, that visit may use a TIE or VIE to comply with the Regulation. The use of TIEs and VIEs are at the discretion of terminal and vessel operators respectively. Terminals with insufficient infrastructure may need to make improvements to facilitate vessels.

**Comment:** "93130.9 Terminal Operator Requirements. Explain how the liability in this scenario falls on the Terminal Operator instead of 'it depends'? What if Control technology design is flawed and cables are too short during commissioning? What if the Terminal only accepts Port side berth ships, but the Vessel Operator installs Starboard side control technology? What if Landlord installed vaults were incorrectly placed so shorepower operation is not possible? What if the barge company doesn't have enough barges to service the ship?"

We're losing touch on the spirit of this regulation. Ships are making every effort to reduce emissions. Ships have changed fuel, slowed down and now connecting to the shorepower 70+% of the time. Why does the rule need to be amended to this extreme? Just change the % and keep the existing language."

Recommend: "Add this scenario to Exceptions. TIEs/VIEs or Remediation penalties are not applicable. In these scenarios, the Vessel and Terminal Operator including the Port and the Barge company made every effort to connect. No group should be penalized or required to use a TIE/VIE? If CARB strongly believes that a group must be at fault than CARB must add language that states Ports and Barge companies are liable for Remediation penalties [sic] and be given Port Incident Exceptions (PIE) and Barge Incident Exceptions (BIE). Add language that responsibility depends on the who's at fault. Do not default liability to Terminals. WARNING: With several parties potentially liable, this will cause numerous 'finger pointing' and CARB will require an Arbitration process that will rival a small claims court. Determining [sic] who's at fault will takes months if not years. Attorneys, consultants, etc will cost tens of thousands if not more. Costs/Time/Personnel [sic] required to run this Arbitration Dept will be enormous." (50.5)

**Agency Response (50.5):** CARB staff modified the proposed regulatory language in response to the received comment. Section 93130.7 has been modified to clarify the roles of vessels and terminals with respect to accommodating shore power vessels. CARB staff have designed the Regulation such that a terminal is responsible for accommodating vessels that have successfully commissioned shore power at the terminal. The terminal is responsible for having sufficient infrastructure to connect a vessel to shore power if the vessels shore power is on the side of the vessel that faces the berth. If after this, the vessel is unable to commission then it is the vessels responsibility to use another CAECS. This means that if the terminal only accepts port side berthing arrangements and never commissions a vessel's starboard side equipment, the responsibility to plug the vessel in is on the vessel operator to come with compatible shore power equipment. Alternatively, if the terminal commissions the vessel, they are then expected to continue to plug the vessel in on the future visits.

CARB staff are making this change out of fairness to vessel operators. Currently, vessels can come to California berths ready and willing to plug in, but can be arbitrarily turned from port to starboard depending on the terminal's operational decision as there is no regulatory incentive for the terminal to plug the vessel in. These actions can make it very difficult for a vessel fleet to comply, particularly if no advance notice is given to the vessel about the change in terminal operations.

Regarding potential "finger pointing," the port and terminal plans are designed to help clearly delineate the responsibilities of each unique port and terminal relationship. Disputes will be handled by CARB's enforcement team, who will investigate the situation through an established audit process.

**Comment:** "93130.9 The proposed language has not considered numerous factors including: what if the reason the vessel cannot connect is a result of another (third) party (example: prior vessel at berth damaged infrastructure); what if there is a warranty issue with the shore power; what if the vessel cannot connect for as a result of compatibility, lack of commission, vessel issue. It should not be the 'shared responsibility' to arrange a CARB approved emission control strategy. The Vessel Operator is the holder of all vessel information including their design, ship power requirements, ship schematics and electrical infrastructure details, etc." (44.4)

**Agency Response (44.4):** CARB staff made no changes based on the received comment. CARB staff did consider situations such as those mentioned while drafting the Regulation language, and determined that many of these cases will be unique situations that will depend largely on the facts of each case. The responsibility for a terminal operator to contract a third party CAECS operator occurs when a terminal does not make shore power available to a shore power capable vessel that has been successfully commissioned at that terminal. There

are some terminals who do contract with a third party operator to provide emissions control technologies when shore power is unavailable to meet existing regulatory or terminal lease contract obligations, so this is not an unprecedented situation at California ports. If a vessel refuses to use a CAECS being provided by the terminal, and was notified in advance that the CAECS would be the control method available for the vessel to use in accordance with the regulation, then the vessel may be the party held in violation. Disputes will be handled on a case-by-case situation by CARB's enforcement team, who will investigate the situation through an established audit process.

**Comment:** "Methodology for the Introduction of Marine Terminal and Port Responsibility Is Counterproductive, Costly, and Unnecessary. The universal experience at all of California's seaports under the current rule is that the berths with the highest levels of compliance are operating with existing shared responsibility by contract between ports and terminals with ocean carriers, not by regulatory requirement assigning specific costs or liability amongst the parties. The current regulation and complementary incentive programs provide that the marketplace shall drive Ports and marine terminals to provide an effective set of infrastructure facilities and safe, competent, reliable labor shoreside in order to allow oceangoing vessels to be compliant with the current regulation. The current numbers demonstrate that this model is not only effective at delivering compliance, but it effectively generates over-compliance.

While there are gaps in the provision of shoreside power at certain berths, and some recurring crowding or repositioning issues exist, the number of vessel calls which are impacted by these issues has proven to be very small. For example, year to date in 2019 at the Port of Oakland, "timing and crowding" issues only impacted 1.6% of all vessel calls. In some instances, the best remedy for these types of issues may be an investment in additional new substations and vaults or cable-reel systems when safe and available for use. To that end, CARB holds the purse for any number of funds for which at berth investments are eligible, but it remains to be seen if CARB would want to prioritize these types of multi-million dollar investments to try and capture emissions from an additional 19 vessel calls out of 1,175.

PMSA believes that there is a role for enhanced marine terminal and port responsibility on a check-list basis, but that such responsibility should be limited only to circumstances within the control of the port or marine terminal, and should avoid the hallmarks of an Indirect Source Regulation. The parallel corollary to this is, of course, that a vessel should also only be held liable for the circumstances under the control of the vessel. The proposal is set up in a manner which creates unnecessary and counterproductive conflict and competing interests between marine terminals and vessels, will result in enforcement conflicts, disputes over the proper uses of TIEs and VIEs, and yield unnecessary and costly divergences in interests between customer and service provider. None of these changes improves emissions or air quality

outcomes – all of them create new commercial complications, costs, and uncertainty that should be studiously avoided.” (52.37)

**Agency Response (52.37):** CARB staff made no changes based on the received comment. CARB staff recognizes the small number of vessel calls that are impacted by timing, crowding, and scheduling issues. This is a large part of the reason that staff designed the TIE/VIE provision; TIEs and VIEs are designed to be used for a small number of operational situations such as those mentioned in this comment.

Regarding incentives, CARB has provided funding in the past through Carl Moyer, and Proposition 1B, and continues to provide incentives for cable-reel systems in the form of Clean Off-Road Equipment (CORE) vouchers. CARB has also released a solicitation to fund a capture and control system project for tanker vessels under the Low Carbon Transportation Investments and the Air Quality Improvement Program. In regards to the terminal and port responsibilities, see the response to comment 50.5.

**Comment:** “The VIE/TIE structure proposed in the draft regulation is extraordinarily problematic and compounds problems in the existing regulation. One of the primary shortcomings of the existing regulation is that it unintentionally holds regulated parties responsible for outcomes outside their control. So far, industry and CARB staff have successfully managed this shortcoming. The proposed regulation does not solve this issue; instead it formalizes it.

One example of this is impacted schedules. For example, the Port of Oakland is very busy, with more vessel calls than either the Port of Los Angeles or Port of Long Beach. A vessel’s time at berth is, however, much shorter in Oakland with a typical duration of less than 24 hours. It can be reasonably expected that a terminal in Oakland will plan to berth a vessel in a way that it will be able to connect to shore power. However, if a vessel is delayed by 24 or 48 hours, another vessel is likely to be at that same berth during its scheduled time. The terminal operator has two choices, move the vessel to anchorage to wait for that berth to become available or serve the vessel at an available berth where it may or may not be able to connect to shore power. If it is unable to connect to shore power directly, there are no alternatives. CARB has determined that alternative control strategies are not viable in Oakland and the proposed cable reel management systems has not been deemed safe for use (see prior attached comment letters). The proposed regulation holds the terminal responsible for the vessel’s late arrival if the vessel is unable to connect, thus incentivizing the terminal to put the vessel to anchorage and resulting in a net increase in emissions. This is an absurd outcome if a terminal has taken the necessary steps to schedule and plan for vessels to connect to shore power.” (52.46)

**Agency Response (52.46):** CARB staff made no changes based on the received. The shared responsibilities in the Regulation are designed to hold

parties with direct responsibility for reducing emissions liable for their roles in the process. The 2007 At-Berth Regulation did not provide for the ability to hold parties outside of vessel fleets responsible for their actions, even though those actions may directly result in a lack of emissions reductions from the vessel at berth. Disputes will be handled on a case-by-case basis by CARB's enforcement team, who will investigate the situation through an established audit process.

With respect to the scenario where a vessel is delayed by 24 or 48 hours, the terminal operator has a third and fourth choice. The terminal operator can work with the vessel operator to use a VIE or can choose to use a TIE in order to berth the vessel regardless of the availability of a shore power equipped berth. This is one type of situation that TIEs and VIEs are designed to be used for. In regards to the use of barge-based capture and control systems at the Port of Oakland, staff's Berth Analysis was not intended to prohibit or eliminate the use of any specific CAECS at any terminal, but merely to reflect CARB staff's educated assumptions about needed infrastructure improvements and the most likely paths to compliance at each terminal. See response to comment 17.5 for additional details.

**Comment:** "The proposed regulation even engenders disputes between ocean carriers and terminal operators. When no one is at fault, how will CARB resolve the dispute? Because the proposed regulation still attempts to hold a terminal or ocean carrier responsible for actions outside their control, disputes will invariably arise. What dispute resolution process will CARB put in place? How will it adjudicate the use of VIEs/TIEs when ocean carriers and terminals do not agree on fault? What will be the timeline for such a process?" (52.48)

**Agency Response (52.48):** CARB staff made no changes based on the received comment. When an enforcement action is warranted, each situation will be resolved on a case-by-case basis and will follow the settlement process outlined in CARB's enforcement policy. The timeline for this process will depend on the individual circumstances. Disputes between regulated parties regarding compliant visits will be left up to the parties to resolve themselves.

**Comment:** "Rather than holding parties responsible for issues outside their control, a checklist approach that establishes clear lines of responsibility should be used to manage compliance. Such an approach was detailed in an alternative submitted (and attached) by PMSA in 2017. Any approach that holds a party responsible for actions the party cannot reasonably control is likely to be unenforceable." (52.50)

**Agency Response (52.50):** CARB staff made no changes based on the received comment. This comment was submitted prior to the release of the Regulation and then again during the formal comment period. The Regulation does include a checklist for compliance for both terminal and vessel operators. The

checklist submitted by the commenter was considered in the development of the vessel and terminal checklists for the Regulation.

**Comment:** "CARB staff have proposed a complex rule that imposes both certification and warranty requirements with multiple emissions standards for alternative control technologies that could be used in place of shore power. Yet the rule places the burden of equipment failure on the vessel and/or terminal operator. The rule does not establish any VIE/TIE restrictions on alternative control technology operators. CARB-certified and -warrantied technology operators should be held to the same punitive standards as terminal operators and ocean carriers." (52.58)

**Agency Response (52.58):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff agrees that responsibility needs be on the CAECS operator to provide a properly functioning system. CAECS operators must report information regarding any equipment malfunction or failure to CARB and language was added to the Regulation to reflect that CAECS operators may be held responsible for violations of the Regulation, depending on the situation and CARB enforcement determination. Staff have also added provisions to the Regulation allowing CAECS operators to utilize the remediation fund during qualifying circumstances as a compliance pathway.

**Comment:** "Shared Responsibility. PMSA and its members agree that there can be shared responsibility for compliance under the At-Berth Regulation. However, that shared responsibility must reflect the history of the rule, the role of port authorities, and decision by CARB to initially bifurcate the compliance pathway resulting in the industry overwhelmingly selecting electrification as the compliance option. This will be especially important as CARB extends this rule beyond the discrete applications of container ships, cruise ships, and refrigerated ships. Not all carriers, stevedores, terminals, and port authorities have the same operating and business models, but all public Port authorities are ultimately responsible for all landside infrastructure and Port operations. To the extent that this regulation intends to create new landside liabilities and responsibilities, it should not seek to further limit, isolate, or pick winners and losers between particular landside operating models.

These amendments must also be mindful of the fact that the largest and most glaring obstacle to compliance at present is not a lack of preparation by ocean carriers, or operating restrictions by terminals and stevedores, but it is the inadequate infrastructure necessary to meet compliance with the existing rule. Under the current rule, this will become acute in 2020, much and once fleets are required to meet an every vessel/every visit standard, as proposed in the new regulatory concept, the infrastructure deficiency will be an unavoidable barrier to compliance.

Before trying to write a rule to address the many variable market dynamics of the ever-changing maritime industry, CARB should identify the fundamental responsibilities of infrastructure. Shoreside electrical infrastructure is public infrastructure constructed and owned by the port authority and either operated directly by the port authority, or a public utility, or a marine terminal subject to a lease, or some combination of these and other relationships, contracts and agreements.

As this rule is intended to be expansive to all commercial vessels at all California ports and harbors, it is critical to note that many facilities do not have private marine terminal operators. And, even at most facilities where marine terminal operators are tenants of the public port authority, they cannot control any modification or expansion of the shoreside infrastructure that may be necessary to comply, as these are public works infrastructure projects requiring the port authority's direct involvement. As such, while Port authorities may choose to enter into contracts with stevedoring and marine terminal operators, these will vary from port to port and terminal to terminal. Therefore, if CARB intends a provision of this Rule to apply to landside infrastructure and operations, it should be designated as the responsibility of a port authority. However, PMSA would also note that nothing in this proposed Rule should impose new and distinct requirements on ports that would prohibit them from agreeing to manage the infrastructure or conduct their operations through a third party, either by lease or contract." (52.C.143)

**Agency Response (52.C.143):** CARB staff made no changes based on the received comment. This comment is in response to an earlier proposal from August 2018 and is no longer relevant. The Regulation is structured to provide regulated entities with the flexibility to utilize whichever emissions control strategy works best for their operations. Updates were also made to add additional flexibility to the Regulation to account for any necessary additional infrastructure needed for currently regulated container, reefer, and cruise terminals in the early years of the Regulation.

CARB staff undertook an extensive public process for this rulemaking, which included numerous discussions with stakeholders about the varying differences and complex responsibilities of regulated vessel operators, terminal operators, and ports. The Regulation is structured with flexibility to consider these unique differences, and allows terminals and ports to delineate specific responsibilities for each entity through submittal of terminal and port plans. To ensure consistency between the plans, and agreement on the responsible parties, terminals must sign off on the port plans and ports must sign off on the terminal plans. The Regulation is not designed with any intention to restrict ports from agreeing to manage infrastructure or conduct operations through a third party.

**Comment:** "Terminal capable / Vessel capable. ITS has 4 single berths vs one single linear berth. At ITS, Port is responsible for installing SPOs & all berth infrastructure. ITS berth SPO is damaged. Several other SPOs available. Ship is too large to shift in single berth design. Unable to reach bollards. Ship does not connect to shorepower. Who is at fault? Who is responsible for calling alt solution? What if barge is not available? How is this reported to CARB? Can you use BIE/PIE/TIE/VIE or Remediation?" (50.36)

**Agency Response (50.36):** CARB staff made no changes based on the received comment. In the case outlined by this commenter, where the berth shore power is damaged and the ship is not able to connect to shore power the terminal operator would be responsible (Section 93190.18). The visit could use a TIE/VIE or the remediation fund to comply in a situation such as the one described here.

**Comment:** "Terminal capable / Vessel capable: ITS has always supported Port side shorepower control technologies. Ship arrives with Starboard side control technology. Operationally impossible to turn ship around. Ship does not connect [sic]. Who is at fault? What if last visit, control tech was on Port side? Who is responsible for calling alt solution? What if barge is not available? Can you use BIE/PIE/TIE/VIE or Remediation?" (50.37)

**Agency Response (50.37):** CARB staff made no changes based on the received comment. A vessel will need to commission to a system before emissions control requirements begin. Thus in the case provided by the commenter, a vessel that only has the ability to berth starboard because of shore power location would not be commissionable to the portside only capable terminal. The vessel would need to arrange for alternative control or install shore power on the portside. In the case they do not, the vessel may need to need to use a VIE or the remediation fund.

**Comment:** "Terminal N/A / Vessel capable: ITS berth vault is not accessible due to Crane under repair. ITS planned to complete repairs and move crane to access vault 2nd Shft [sic]. Ship was suppose [sic] to arrive on 2nd shift, but instead arrives on 1st shift. ITS crane has not been repaired, but ship comes along side & connects. Ship not connected during 1st shift, but does connect during 2nd shift. Who is at fault for uncaptured emissions on 1st shift? Does CARB expect Vessel to remain at anchor? Does CARB expect Terminal to delay loading/unloading? Who is responsible for calling alt solution? What if barge is not available? Can you use BIE/PIE/TIE/VIE or Remediation?" (50.38)

**Agency Response (50.38):** CARB staff made no changes based on the received comment. As can be seen Section 93130.17 Table 5: Summary of Responsibilities, if a vessel is shore power capable it is the responsibility of the terminal to provide a shore power berth. In the case that the terminal cannot

connect, or shore power connection is delayed due to terminal construction, the vessel stay may need to use a TIE or the remediation fund. In the case outlined by the commenter, where shore power is not available for the entire vessel stay a portion of the stay may need to utilize the hourly remediation fund.

**Comment:** "Terminal capable / Vessel capable Ship authorizes Terminal to send power to SPO vault. Ship is unable to sync up to SPO for 4 hrs. After 4 hrs, ship connects. Do you use VIE or Remediation penalty for missed 4 hrs?" (50.39)

**Agency Response (50.39):** CARB staff made no changes based on the received comment. For a scenario like the one described by the commenter, a vessel not able to connect would have the option of using either a VIE or the remediation fund. See section 93130.18 for more guidance on responsibilities, TIE/VIES and remediation fund use.

**Comment:** "Terminal NOT capable / Vessel capable ITS SPO vault damaged by previous ship who connected to SPO vault. Previous ship sails away and next ship arrives, but unable to connect. Who is at fault? Who is responsible for calling alt solution? What if barge is not available? Can you use BIE/PIE/TIE/VIE or Remediation?" (50.41)

**Agency Response (50.41):** CARB staff made no changes based on the received comment. As can be seen Section 93130.17 Table 5: Summary of Responsibilities, if a vessel is shore power capable but the berth is not, it is the responsibility of the terminal to provide an alternative control system. In the case they do not, the terminal may need to use a TIE or the remediation fund.

**Comment:** "Terminal capable / Vessel NOT capable ITS SPO vaults are available. Ship is not shorepower capable. Ship calls barge company. Barge does not show or there are no barges available for their time. Who is at fault? What if barge shows up next day? Who is responsible uncaptured emissions? What if barge is available on Day 2? Can you use BIE/PIE/TIE/VIE or Remediation?" (50.42)

**Agency Response (50.42):** CARB staff made no changes based on the received comment. As can be seen Section 93130.17 "Table 5: Summary of Responsibilities," if a vessel is not shore power capable but the berth is, it is the responsibility of the vessel to provide alternative control measures. In the case where the vessel does not utilize an alternative measure, the vessel may need to need to use a VIE or the remediation fund. In the case where alternative technology is not available for the entire vessel stay, a portion of the stay may need to utilize the hourly remediation fund.

**Comment:** "Terminal capable / Vessel capable. Unable to connect Regardless of who's at fault. What if you're out of BIE/PIE/TIE/VIE? Everything falls under Remediation penalties?" (50.43 ITS)

**Agency Response (50.43):** CARB staff made no changes based on the received comment. If the event preventing connection is not an emergency event and the responsible party is out of TIEs/VIEs the remediation fund may be available for use (see Section 93130.15(b) Remediation Fund Use). If the event is excluded from remediation fund use, then one or both responsible parties will be out of compliance with the Regulation.

**Comment:** "Shared Responsibility. PMSA has many reservations about the implementation of a "shared responsibility" approach. As we previously commented, not all carriers, stevedores, terminals, and port authorities have the same operating and business models, but all public Port authorities are ultimately responsible for all landside infrastructure and Port operations. If this rule expands applicability to every vessel/every visit at all California ports and harbors, it is important to reiterate that CARB is essentially capturing every conceivable commercial waterfront berthing arrangement and business transaction possible, including many at facilities do not have private marine terminal operators. And, even at most facilities where marine terminal operators are tenants of the public port authority, they cannot control any modification or expansion of the shoreside infrastructure that may be necessary to comply, as these are public works infrastructure projects requiring the port authority's direct involvement.

As CARB's presentation acknowledged, many responsibilities may be modified as a result of a contract. The proposed regulation cannot imagine every contractual permutation and should recognize that these requirements lie with the port authority, or more broadly the facility owner (which would also encompass private facilities), unless contracted to a third party. PMSA refers CARB staff to our comment letter of August 4, 2017 (attached) for our proposal on the breakdown of responsibilities. If a shared responsibility approach is implemented despite these concerns, it must contain two clear components. First, the ocean carrier and the terminal operator should not be held responsible for matters outside their direct control. Second, if a vessel is unable to connect as a result of issues outside the ocean carrier's control, then that visit should still count as a compliant visit in any compliance calculation under the regulation. To not do so, would be to hold the ocean carrier responsible for the actions of others. The regulation should also consider some sort of Force Majeure provision. As CARB knows, there can be industry-wide events, such as the labor slowdown of 2014/2015. In such instances, the regulation should be able to provide broad relief to parties experiencing compliance difficulties that are the result of the event." (52.C.127)

**Agency Response (52.C.127):** CARB staff made no changes based on the received comment. The Regulation is designed to hold regulated entities

responsible for the direct roles they have in compliance. Any case where emissions are not reduced by regulated entities in accordance with the Regulation would be investigated and assessed by CARB enforcement staff on a case-by-case basis. The Regulation does have an emergency event exception that is designed for use during force majeure events. Industry-wide events, such as the labor slowdown mentioned in this comment, would be evaluated on a case-by-case basis by CARB enforcement staff.

#### *ix. Implementation Dates*

This subcategory contains comments focused the implementation dates of the Regulation. Some comments are broken out further into two categories, those who request an accelerated timeline and those who request that the timeline be extended. Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** "PLEASE, re-draft this rule to implement the requirement to use shore power at Chevron's Richmond wharf within 2 or 3 years. And make sure that any regulation with a slower implementation schedule is fully justified by actual required lead times rather than simply Chevron's preferences. Thank you for addressing this area of major possible improvement." (5.1)

**Agency Response (5.1):** CARB staff made no changes based on the received comment. CARB notes the comment and recognizes the significance of emissions from tanker vessels and the need to reduce impacts on communities in and around port and terminal operations. As noted in the ISOR and Draft EA, staff considered several tanker terminal projects and generally found that construction required years to complete, depending on the size and scope of new or modifications to a facility. Thus, tanker terminals would need longer than two to three years to be able to comply with the Regulation. In the 15-day changes released in May 2020 CARB staff accelerated the tanker implementation timeline from 2027 to 2025 for Ports of LA and Long Beach tanker terminals and from 2029 to 2027 for all other terminals. For reasoning behind why is CARB staff proposing requirements for tanker vessels in two separate years, see page ES-30 of the ISOR.

**Comment:** "I encourage the Board to make the compliance deadline for oil tankers January 1, 2025. ARB staff, in recommending a 2029 compliance date for Bay Area refineries, refer to lengthy regulatory approval processes for construction over or adjacent to bay waters. While approvals from multiple agencies are necessary and can add to design and construction [sic] timelines, I believe this concern is overstated. Terminal operators will submit implementation plans by December 2021. An inter-agency group can assist ARB staff in reviewing the plans. This early consultation will help identify any concerns that can be addressed prior to the submittal of permit applications to the regulatory agencies and make compliance by 2025 more feasible.

This approach has been used successfully in the Bay Area in coordinating multiagency review and approval of maintenance dredging in the region. Air District staff is available to assist ARB with this inter-agency review. Additionally, the proposed 2023 interim evaluation of the regulation provides ARB the opportunity to maintain or extend the 2025 compliance deadline." (12.1)

**Agency Response (12.1):** CARB staff modified the proposed regulatory language in response to the received comment. The Regulation plays an important role in reducing harmful emissions from impacted nearby communities such as the City of Richmond. Staff carefully considered implementation dates for tankers in Northern California, which has been accelerated from 2029 to 2027 and from 2027 to 2025 for tankers visiting ports in Los Angeles and Long Beach. CARB staff carefully evaluated the emission reduction benefits of accelerating implementation, while still allowing ample time for the development and construction of CARB-approved emission control strategies. CARB staff believes tanker terminals will be able to meet these accelerated time and will result in public health and air quality benefits while still allowing for needed infrastructure and planning to take place. For further discussion on the differences between Northern California tanker terminals and Southern please refer to response to comment OC-2 Kilbreth.

**Comment:** "[D]on't make the same timeline for the Richmond Chevron Long Wharf, as you make for the Carquinez Strait." (OC-2 Kilbreth)

**Agency Response (OC-2 Kilbreth):** CARB staff made no changes based on the received comment. CARB analyzed infrastructural needs for different California ports, including the port of Richmond. The analyses considered different challenges for infrastructure projects that support emission control systems. Staff determined that the Richmond Long Wharf and other similar tanker terminals in the Carquinez Straight should have a different compliance schedule than other tanker terminals (those in Southern California) because of the complexity in infrastructure required and the length of time construction of such projects will take (T-shaped terminals that extend over water rather than along the wharf). See more about the reasoning for the implementation dates for tankers in Chapter III of the ISOR.

**Comment:** "If delays are thought necessary, you know, to be reasonable for industry, it would be good if there was a full explanation of that." (OC-3 Kilbreth)

**Agency Response (OC-3 Kilbreth):** CARB staff made no changes based on the received comment. This commenter is making the point that any delay necessary for implementation dates should be fully explained to the public for transparency. CARB understands the commenter's concerns and agrees with the commenter. Staff intends to be as transparent as possible when conducting the interim review in 2022, and will summarize the analysis and findings in a

report and make it available for public review. If staff finds that the compliance deadlines for ro-ro or tanker vessels warrant adjustment, the report will include explanations as to why any adjustment of the implementation dates are necessary and may provide recommendations to CARB's Board to proceed with regulatory amendments.

**Comment:** "The Ports support the changes incorporated into the latest regulatory proposal, specifically:

- The new rule would go into effect in 2021, but additional emission reduction requirements of the regulated fleet would be delayed until January 1, 2025." (23.1)

**Agency Response (23.1):** CARB staff made no changes based on the received comment. It was determined in the second 15-day changes released in July 2020 that implementation of emissions reduction requirements stated in the Regulation would begin on January 2023. The adjustment in implementation date was due to the unprecedented economic situation which had occurred. It was already determined by CARB staff that vessels regulated under the 2007 At-Berth Regulation would be able to comply with the Regulation by 2021 thus 2023 was more than ample time.

*a) Accelerate Timelines*

This subcategory summarizes comments that support CARB accelerating the implementation timelines of the Regulation. The comments do not contain additional concerns or recommendations.

**Multiple Comments:** The following comments support the objectives and goals of the Regulation and support CARB to accelerate implementation dates: (18.1), (9.1), (21.1), (OC-1 Martien), (OC-1 Rees), (OC-1 Kropke), (OC-2 Wilski), (OC-1 Magavern), (OC-1 Kilbreth), (OC-1 Puleo), (OC-1 Harvey), (OC-5 Marquez), (OC-1 Gray), (OC-1 Thomas), (OC-1 Zizi), (43.3), (43.5), (6.1), (13.1), (10.2), (14.1)

**Agency Response (to all comments on timeline accelerated):** CARB staff modified the proposed regulatory language in response to the received comments. CARB appreciates the support and agrees that greater emission reductions are needed as quickly as possible. In response to requests to accelerate the benefits of this Regulation, staff accelerated tanker vessel timelines to 2025 for tanker terminals at the Ports of Los Angeles and Long Beach and 2027 for Northern California tanker terminals, as tanker vessels represent nearly half of the remaining emissions from vessels at berth (as shown in the ISOR, Chapter I). See Master Response 6 for a detailed discussion on

why CARB staff did not accelerate implementation dates for any of the additional vessel categories.

*b) Lengthen Timelines*

**Comment:** “Marine projects routinely face regulatory hurdles and engineering constraints not found in land-based construction. These hurdles and constraints translate into long program schedules. I believe the timeline being considered for the proposed Control Measure is unrealistically short and doesn’t consider the unique nature of designing, entitling, and constructing over-water structures and facilities.” “...a full project timeline of 8-10 years for a standard over-water marine facility. This timeline includes work from concept, through entitlement, to construction and operation.”

The commenter included “three example projects demonstrate only a small sample size, these projects provide similarities to the work required to implement an At-Berth Emission Capture program.

“...[T]he Proposed Emission Control Measure projects at California Marine Oil Terminals will likely take more than 10 years to design, permit, and construct when one considers the added on-going operational and safety issues. I ask the CARB staff to consider proposing on a minimum 10-year timeline for design, entitlement, and construction of an At-Berth Emission Control program in California Marine Terminals. This timeline should begin once a feasibility study is completed and appropriate emission control technology is proven to be readily available.” (3.1)

**Agency Response (3.1):** CARB staff made no changes based on the received comment. See Master Response 3 for discussion on implementation timelines.

**Comment:** “The Ports remain concerned with the following key elements of the proposed regulation:

- Future compliance with the timelines remains too difficult for the Roll-on/roll-off (RoRo) vessels and tanker vessels, which are currently proposed to comply with a 90% control requirement in 2025 and 2027, respectively. Given the technology to control emissions from RoRos and tanker vessels does not exist today, and the significant safety concerns associated with tanker vessels, we request at a minimum two additional years with each category. RoRos should be required to comply in 2027 at the earliest, and tankers at the San Pedro Bay Port should be required to comply in 2029 at the earliest.” (23.4)

**Agency Response (23.4):** CARB staff made no changes based on the received comment. See Master Response 3 for further discussion on implementation dates.

**Comment:** “The Proposed Control Measure should analyze and demonstrate technological and financial feasibility. We support comments by WSPA, PMSA, and other groups that requested a feasibility evaluation study for technology alternatives prior to setting an implementation schedule for specific vessel classes. Feasibility evaluations would ensure thorough analysis of all relevant factors (e.g., safety concerns, technology availability, vessel class certifications, local land use permitting, cost-effectiveness, etc.) and ensure emission reductions are real and achievable. BPC encourages CARB to continue to work with stakeholders (i.e. ports, refineries, agencies, and others) to conduct the applicable feasibility studies, especially in the identification, validation and review of assumptions and data as a precursor to developing a new Proposed Control Measure.” (28.1)

**Comment:** “An objective, fact-based study by the Air Resources Board of how much time it would take to retrofit vessels and deploy new infrastructure is needed to set a reliable timeline in place.

Timelines for compliance currently proposed in the Regulation - 2021 for 100% compliance to use shore-based power or an alternative for container, refrigerated cargo, and passenger vessels and 2025 for 100% compliance for auto carriers, or "ro-ro" vessels - are particularly challenging. Comments at the December 5, 2019 meeting of the Air Resources Board suggested an even more stringent deadline that would put the goals farther out of reach. Unfortunately, this would not provide the District and its maritime customers enough time to plan, design, locate, bid/build, and install customized compliant equipment and vessels before being in violation of the regulation. Such an option is not viable. As quickly as the District desires to modernize technology at the waterfront, a viable timeline - no more, no less - is still necessary. Expanding the shore power capacity requires comprehensive planning and design, and external permitting processes that are outside its control, and flexibility on the essentials in order to meet firm goals is the best pathway forward.” (48.2)

**Agency Response (28.1) and (48.2):** CARB staff made no changes based on the received comment CARB staff disagrees with the commenter’s assertion that the Regulation requires 100 percent compliance because that statement does not account for TIEs, VIEs, and other flexibility provisions staff built into the Regulation. The Regulation also allows the use of an Innovative Concept (IC) that provides a pathway for regulated vessel fleets to continue using fleet averaging methods to comply with the Regulation.

CARB staff does agree with the need for fact-based studies to support timelines for the Regulation. Indeed, the Regulation was developed over many years with the support of research and collaboration between CARB, industry and the public. As explained in the ISOR, staff discussed the need and justification for the Regulation as well as why the timelines were proposed. In support of accelerated timelines, staff prepared a health risk assessment (HRA) to identify

the risks of exposure to OGV emissions on public health and the air quality benefits of further reducing emissions.

Further, DOF requires state agencies to prepare a SRIA when a regulation may result in a potential economic impact exceeding \$50 million. CARB prepared the SRIA as part of this rulemaking and submitted to DOF for review in August 2019. CARB has posted the HRA and SRIA, and other materials, found its rulemaking website <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>. For a detailed discussion on implementation timelines and feasibility, see Master response 3.

**Comment:** “BPC welcomes interagency collaboration between CARB, Air Pollution Control Districts, and other relevant regulatory bodies that would result in real efficiencies.

...BPC believes that work to align key agency decision makers should take place before adopting any implementation schedule. Since this work has not yet begun, it may be unrealistic to expect meaningful impacts on the currently proposed implementation schedule. If CARB takes the step of organizing an inter-agency group to accelerate implementation of the Proposed Control Measure, BPC would appreciate the opportunity to contribute its expertise and perspective on how to make such an inter-agency forum as effective as possible.” (28.2)

**Agency Response (28.2):** CARB staff made no changes based on the received comment. CARB appreciates the Bay Planning Coalition’s (BPC) willingness to collaborate and look forward to working with them in the future.

**Comment:** “P. 23 (b) Start Date for Vessel Auxiliary Engine Compliance vs No Timeline for Terminal Shorepower Infrastructure: This section requires compliance start dates for container and passenger vessels to begin January 1, 2021. However, as explained below, the terminals will not be required to install the infrastructure necessary to be able to accommodate every container and passenger vessel by that specific date, and actually not until years later.” (41.11)

**Comment:** “We have a major problem with the timing of these plans and the complete lack of compliance dates for the terminals to actually comply with the components of the plan so that vessels can hook up as intended by the rule. Here is what this section contemplates:

1. Terminal and Port Plans for container and passenger terminals are due July 1, 2021 that will identify how the terminals and ports will provide the electricity and infrastructure to allow vessels to hook up to shorepower or an alternative to meet the requirements of the rule.

2. Although the list of terminal and port plan information includes a “Schedule for implementing equipment” for the terminals and a “schedule for installing equipment and/or any necessary construction projects” for the port plans, there is absolutely no deadline by which that equipment must actually be installed.
3. CARB then has another 90 days after the plans are due to determine any deficiencies in the contents of the plans or making good faith efforts to facilitate the use of a CARB-approved control strategy at each berth, to October 1 of 2021.
4. If CARB does not notify the applicable terminal operator or port of any deficiencies, the plan shall be deemed acceptable on the 90th day following submittal, or October 1st of 2021, but there is still no actual date by which implementation must be completed. If the plan, however, does have deficiencies, there is no timeline at all for completion of the plan or actual implementation of the plan.
5. Vessels, however, must actually plug in or use the alternative for each visit to a berth by January 1, 2021. This is a complete disconnect between the timeline for vessels to comply with the rule and the timeline for terminals and ports to actually provide the infrastructure to the vessels to make sure they can plug in. A set implementation date should be established for the terminals and ports to provide the shorepower infrastructure for each vessel visit and the compliance timeline for the vessels should match that date. Just relying on TIEs if infrastructure at the terminals isn’t available will not remedy this issue.” (41.15)

**Comment:** “[W]e have concerns with CARB’s proposed implementation timeline. Substantial additional technical work, planning, approvals and investments in ship and shoreside infrastructure and alternative emissions control strategies will be required to meet the proposed rule’s requirements to control at-berth emissions for each regulated vessel call to California. If the CARB Board approves the proposed regulation in April 2020, that would leave 8 months for the industry to try to be prepared to comply with the rule starting on 1 January 2021. The rule already acknowledges that the ports and terminals cannot realistically submit their infrastructure plans within that timeline (their earliest infrastructure plan deadline is 1 July 2021). Equally important, CARB-approved infrastructure expansion plans also requires time for the on-shore infrastructure to be built and permitted. We therefore recommend that the rule be modified so that it takes effect once the port and terminal infrastructure plans have been approved by CARB and the terminals and/or port authorities have built out the infrastructure needed and obtained the necessary permit approvals.” (45.4)

**Agency Response (41.11), (41.15), and (45.4):** CARB staff made changes to the implementation and terminal/port plan due dates for the Regulation through the 15-day change process in response to the ongoing pandemic

situation. As such, compliance under the Regulation is now scheduled to begin on January 1, 2023 for container, reefer, and cruise vessels, with initial port and terminal plans now due prior to the first implementation date. Port and terminal plans will now be submitted no later than December 1, 2021 and CARB approval will be within 90 calendar days of submittal (see section 93130.14 of the Regulation for more details). This allows additional time for plans to be carried out before emission reduction requirements begin.

As discussed in the ISOR, ports, terminals and vessels operators all have responsibilities to reduce emissions. CARB developed the Regulation in anticipation of effective enforcement and an entity's ability to meet compliance obligations. The Regulation also is written in a way so that individual entities clearly understand their requirements for controlling emissions. As part of their responsibilities under the Regulation ports and terminals must ensure that a CAECS is available at any regulated terminal receiving a regulated vessel category by the required implementation date. As can be seen in Section 93130.18 "Summary of Responsibilities," if a vessel has functional shore power their obligations for the Regulation have been met. It is the terminal and/or port's responsibility to ensure that a CAECS is available for the vessel's use whether that be shore power or another CAECS like capture and control. In the case where it is not provided by the port or terminal the vessel would not be held responsible and would not receive a violation.

Because the majority of container, reefer, and cruise vessels are already regulated under the 2007 At-Berth Regulation, VIEs and TIEs as designed, are expected to cover the small percentage of vessels without control systems in these already regulated fleets until the necessary infrastructure is installed. However, CARB recognizes that new infrastructure may not be available for some newly regulated container, reefer, and cruise vessels in advance of the deadline. To help facilitate the transition from the 2007 At-Berth Regulation 80 percent vessel visit requirement to the Regulation's per vessel visit requirement, CARB has allowed for a 15 percent TIE allocation for the years 2023 and 2024. The additional TIEs will reduce the amount of vessel visits obligated to control emissions to approximately 85 percent (100 percent compliance minus 15 percent TIEs) while infrastructure is being built out. Starting in 2025, TIEs are reduced to 5 percent as staff expects any necessary additional infrastructure already to be in place.

**Comment:** "While we agree that a deliberate and reasoned approach to the implementation of shore power is warranted we do not believe this proposal meets those criteria both in the timelines established and across all regulated entities" (47.1)

**Agency Response (47.1):** CARB staff made no changes based on the received comment. See Master Response 3 for a discussion on implementation dates.

**Comment:** “[T]he District would appreciate your help with ensuring that any deadlines for compliance are phased to the time it takes to make available the mechanism for compliance. The District, its Terminal Operator, and Carriers need to assess the appropriate options for compliance with the proposed regulation. This may include exploring options to install shore power infrastructure or seeking an alternate control strategy. As there are no currently approved control strategies for auto carrier and ro-ro vessels, a proper cost-benefit analysis of various solutions cannot presently occur. An adequate timeline for implementation - or Air Resource Board's approval of alternative compliance methods for controlling vessel emissions - would allow the District to plan and design long-term solutions for berth infrastructure.” (48.4)

**Agency Response (48.4):** CARB staff made no changes based on the received comment. See Master Response 3 for discussion on implementation dates.

**Comment:** “Ensure implementation of the infrastructure improvement projects required to deliver high levels of control for the future and provide mechanisms to enable vessel and terminal compliance during construction while minimizing total environmental impact (all modes). This has been addressed under Scenario 1 of the 2015 Regulatory Advisories, which discourages diversions to other modes such as trucking.” (46.21)

**Agency Response (46.21):** CARB staff made no changes based on the received comment. CARB recognizes that some new infrastructure projects may have to occur in order to help facilitate the transition from the 2007 At-Berth Regulation’s 80 percent vessel visit requirement to the Regulation’s per vessel visit requirement. As such, CARB has allowed for 15 percent TIE allocation for years 2023 and 2024, in addition to the 5 percent VIE allocation for vessel fleets to allow time for permitting and construction. Starting in 2025, TIEs are reduced to 5 percent as staff expects any necessary additional infrastructure to be in place by that time. However, if needed terminals and ports can also use the remediation fund to comply with the Regulation during periods of infrastructure construction (section 93130.15(b)).

**Comment:** “Phase in the new requirements in alignment with availability of infrastructure and alternative control systems.” (46.22)

**Agency Response (46.22):** CARB staff made no changes based on the received comment. See Master Response 3 for a discussion on implementation dates.

**Comment:** “There is no rush to get a rule that's imperfect back in front of this Board, if a better rule could be happening—I’m sorry—be constructed if this Board meeting happens a couple months later.” (OC-2 Jacob)

**Agency Response (OC-2 Jacob):** CARB staff made no changes based on the received comment. CARB appreciates the collaboration with industry partners

during this rulemaking process. Emissions from OGV operating while at berth are a significant and growing contributor to community air pollution. As explained in the ISOR, projected emissions for given scenarios illustrate the need for reducing emissions at California ports. The HRA prepared for the Regulation further support the need to accelerate implementation schedules and achieve greater public health and air quality benefits. The Regulation is a product of hard work and dedication of numerous organizations, agencies, and individuals that participated in the regulatory development process that began in 2014 and CARB believes the Regulation reflects those efforts.

**Comment:** The commenter suggests that the submitted Bay Area Air Quality Management District's (BAAQMD's) letter (comment letter 12), that mentions that interagency partnerships with CARB could shorten review of individual projects, is incorrect because partnerships could require additional time that would hinder meeting the Proposed Regulation's compliance deadlines. (22.5) (EA 22-10 and EA 22-11)

**Agency Response (22.5):** CARB staff made no changes based on the comment received below. The comment is outside the scope of this rulemaking and not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB notes the comment. CARB staff supports engagement with other regulatory agencies to identify and satisfy permitting requirements, and to help streamline permitting processes where possible. CARB staff disagrees with the commenter's premise that such engagement and coordination would increase, rather than decrease, permitting timelines. See Master Response 3 for more information on implementation timelines. See also, the *Responses to Comments on the Draft Environmental Analysis* comments 22-10 and 22-11 for discussion on potential environmental impacts.

**Comment:** "The Proposed Implementation Timelines Are Too Aggressive - Of particular concern to the Ports, and our respective engineering staffs, is the implementation timeline for the proposed at-berth regulation. Expansion of shore power infrastructure, either through additional shore power outlets (SPOs) or via cable reel management systems, to meet the updated regulation requirement of 100% compliance for container, refrigerated cargo (reefer vessels) and cruise ships by 2021 will be a near impossible task for the Port or the terminal operators to achieve due to the requisite planning and construction process for capital construction projects. The Port of Long Beach has estimated both the cost and timeline required to maximize compliance with the proposed draft regulation in the attached document, "Potential Strategies and Costs to Address the At-Berth Regulation" (Attachment A). The potential completion date for infrastructure required at the Port of Long Beach to accommodate the proposed regulations for container terminals is December 2025 at the earliest, depending on the extent of infrastructure required. Port of Los Angeles Engineering staff estimates the timelines and costs would be similar.

Further, given the lack of proven and available shore power or alternative options for at-berth controls that can be utilized by Tankers and Auto/Ro-Ros, it is highly unlikely that technically feasible, cost-effective technologies will be available for implementation by 2025. Additional time is needed to allow for the necessary capital improvements and/or technology advancements that will be required. (60.12)

**Agency Response (60.12):** CARB staff made no changes based on the received comment. CARB's proposal does not require 100 percent compliance. The Regulation provides a 15 percent TIE allocation for the years 2023 and 2024 for terminal operators and 5 percent VIE allocation for vessels, effectively mimicking the 80 percent requirement of the 2007 At-Berth Regulation requirements. The TIE/VIE allocation is intended to allow time for the installation of new infrastructure that can service additional vessel visits requiring emission control. The Innovative Concept provision in the Regulation also provides a pathway for regulated entities to comply with the Regulation by utilizing lower cost emissions reduction projects. These alternatives are acceptable, as long as they achieve equivalent or greater benefits to the same communities as would otherwise be achieved by reducing emissions directly from vessels at berth, and meets all the other requirements found in section 93130.17 of the Regulation. See Master Response 3 for more detail on implementation timelines.

**Comment:** "The Proposed Implementation Timelines are Still Too Aggressive – In the updated concepts, container terminals are still required to control ship emissions for every visit, with 5% flexibility for Terminal Incident Events (TIEs), by 2021. This timeline is unreasonable based on lack of infrastructure needed to support such a high level of plugin so quickly. In addition, there is considerable doubt regarding the ability of terminal operators, and/or third party vendors to develop and deploy a sufficient number of alternative emission control devices on a stringent time line of one year." (60.20) (52.C.82)

**Agency Response (60.20) and (52.C.82):** CARB staff made no changes based on the received comments. In response to the ongoing pandemic situation, CARB staff adjusted implementation timelines for container vessels and terminals to 2023 as part of the 15-day change package released on July 10, 2020. And, to ensure successful implementation of regulatory requirements, CARB staff designed the Regulation such that terminal operators will receive a 15 percent TIE allocation in the years 2023 and 2024 (not 5 percent as noted by the commenter here) and vessel operators will receive 5 percent VIE allocation in those same years, for a total of 20 percent. This results in a similar level of emissions reductions as required by the 2007 At-Berth Regulation, which will remain in place for the years 2021 and 2022. The additional TIE allocation is intended to allow time for any new equipment, infrastructure, and related permitting needed for container, reefer, and/or

cruise terminals prior to implementation in 2023. If additional time is needed for infrastructure to be built, the remediation fund can be used for visits made during construction those periods.

**Comment:** “The Proposed Implementation Timelines Are Still Too Aggressive-In the May 8, 2019 draft regulation, container terminals are still required to control ship emissions for every visit by 2021, with 10% flexibility split evenly between Terminal Incident Exception (TIEs) and Vessel Incident Exception (VIEs), by 2021, with further reduction to 6% flexibility split between TIEs and VIEs for 2022 and beyond. This timeline is unreasonable. While the TIEs and VIEs provide some flexibility for terminals and vessels to avoid compliance action for a limited number of unforeseen circumstances that result in a vessel not being able to plug in, that flexibility does not avoid the need for infrastructure to be installed to allow for access to shore power for 100% of all calls. Given the anticipated schedule for finalization of the proposed regulation, there will be less than a year from adoption to when this implementation requirement comes into effect, which does not allow for any of the necessary shore power improvements to be constructed.

If CARB hopes terminals and fleets will opt for shore power, a GHG reduction strategy, to meet their increased compliance requirements rather than the alternative emission control devices, which are known to increase GHGs, this timeline does not allow for that compliance path to materialize for at least several years. The Ports have provided documentation in their previous letter dated May 20, 2019 that shore power projects take 5 years on average to complete. In addition, there are still considerable feasibility concerns regarding the ability of terminal operators, and/or third party vendors to develop and deploy alternative emission control devices on a stringent time line of one year.” (60.25)

**Agency Response (60.25):** CARB staff made no changes based on the received comment. The comment addresses a previous draft of the implementation timeline, not the timeline that was proposed to the Board in December 2019. CARB agrees that, absent compliance flexibility in the form of TIE/VIEs, the remediation fund and the Innovative Concept compliance option, regulatory implementation timelines could be challenging to reach. See Master Response 3 for further discussion on implementation dates.

**Comment:** “Updated Tanker Implementation Schedule. This updated implementation table for tankers cites 2027 and 2029 as deadlines for the installation of control systems for DPM and NOx at POLA/LB and other marine terminals, respectively. It is understood that the two different dates was an attempt by CARB staff to stage implementation. Given that no technology has been design, demonstrated or certified by an international authoritative body, neither implementation date (2027 or 2029) allows sufficient time for development, design, approval, CEQA review, multiple agency permitting, procurement, construction, and commissioning of any emission

reduction system, regardless if the marine terminal is located in a port or other locations.

As specified in the Industry Coalition Alternative Proposal, WSPA supports tankers to report in a similar fashion as bulk fleets along with Ports and Marine Terminal Operators serving currently unregulated fleets. If a date were to be retained in the Tanker Implementation Schedule, the proposed implementation date (subject to re-evaluation) should be no earlier than 10 years following the identification of a feasible technology.” (22.17)

**Agency Response (22.17):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. See Master Response 3 for more information on implementation timelines.

**Comment:** The commenter believes compliance with the tanker implementation dates of 2027 and 2029 is infeasible and implementation should not be expected before mid-2034 in most cases and 2035 for complex installations. (22.4a)

**Agency Response (22.4a):** CARB staff made no changes based on the received comment. CARB notes the comment and supports continued dialogue with WSPA for the successful completion of the 2022 Interim Evaluation. See Master Response 3 for more information in implementation timelines.

**Comment:** “In general, larger and more complex terminals will need more time to complete each step due to the larger scale of the engineering, design and construction effort. Real-world experience demonstrates that, for complex installations, it is difficult to anticipate precise timelines for each step at the outset of the process, and timelines typically lengthen as the project proceeds. With unknown permitting timelines and delays, contracting and vendor timelines, the earliest compliance demonstration for most facilities is not before 2033 (i.e., a minimum of four to six years later than the proposed 2027 and 2029 deadlines). Some of the steps in the process may partly overlap, as shown in the Estimated Timeline. However, numerous dependent steps exist and are unavoidable. Construction cannot begin until construction contracts are in place. The terms and conditions of construction contracts cannot be finalized until all necessary permits and approvals are issued. State and local permits and approvals cannot be issued until CEQA review is completed. CEQA review cannot begin until at least 30-60% of the design is complete, in order to provide an accurate and stable project description as the basis for review. Detailed design and engineering cannot begin until the preliminary project scoping, feasibility evaluation and supporting technical studies are conducted.” (22.4b) (EA 22-2)

**Agency Response (22.4b):** CARB staff made no changes based on the received comment. See master Response 3 for discussion on implementation dates and see *Responses to Comments on the Draft Environmental Analysis* response for

comment 22-2 for a response to the comment regarding environmental impacts.

**Comment:** “The Timeline Survey Summary provides additional detail on the necessary steps to achieve compliance and their estimated durations. These necessary steps include technical and feasibility studies, site-specific design, engineering, CEQA review, regulatory agency permitting and approvals, contracting, construction and commissioning. Moreover, no construction can begin without all required permits and approvals from numerous state and local regulatory agencies including the California State Lands Commission, the California Coastal Commission (where coastal permitting is not delegated to the local city or county), the California Department of Fish and Wildlife, the San Francisco Bay Conservation and Development Commission (for northern Californian terminals), the local Regional Water Quality Control Board, and the local city or county, as well as federal permits and approvals from the U.S. Coast Guard, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and National Marine Fisheries Service. The operators have no control over the duration of environmental review and permit processing by these agencies. Some responsible agencies will not even begin processing applications until the lead agency completes CEQA review. Even if the many agencies could promptly process applications for a few projects, their limited resources would be overwhelmed when facing the simultaneous application for projects throughout the state as required for all applicants to achieve compliance by the deadlines in the At Berth Regulations. It is highly likely that the agencies would need to stagger permit processing, so that regulated entities at the end of the queue would again be at risk of noncompliance.” (22.4c) (EA 22-3)

**Agency Response (22.4c):** CARB staff made no changes based on the received comment. See Master Response 3 for implementation date discussion and see *Responses to Comments on the Draft Environmental Analysis* response to comment 22-3 a response to the comment regarding for environmental impacts.

**Comment:** The comment states “real world evidence” refutes CARB’s claim that implementation dates for tankers is feasible. The commenter believes “the ISOR presents only a truncated picture of the anticipated timelines that would be needed for wharf infrastructure projects to comply with the At Berth Regulations by including minor projects taking far less time than At Berth Regulations projects, and by presenting only subsets of the time required for the remaining, more substantial projects.” (22.4d)

**Agency Response (22.4d):** CARB staff made no changes based on the received comment. CARB disagrees project examples used in the ISOR are not representative. See Master response 3 for more information on implementation dates and how they were developed.

**Comment:** "1. Two of Staff's Cited Projects are Far Smaller Than the Scale of Infrastructure That Would Be Required By the At Berth Regulations.

Two of the projects cited in the ISOR – the Chevron Richmond Long Wharf MOTEMS compliance project and Green Omni Terminal ShoreKat Demonstration Project – were limited to repairs of existing structures and minor equipment installation. The timelines for those two projects are not properly comparable with those for planning, permitting and constructing substantial new wharf infrastructure, such as the large cranes and other major equipment installation on new or expanded wharf decking with new supporting piles required by the At Berth Regulations. Moreover, the ShoreKat project appears to have been exempt from CEQA review, while the modest Chevron MOTEMS project did not require a full-scale EIR, only a limited Negative Declaration allowing a much shorter CEQA review timeline." (22.4e)

**Agency Response (22-4e):** CARB staff made no changes based on the received comment. CARB agrees that depending on the terminal, construction timelines will vary. In response, staff has included an Innovative Concept compliance option to allow for flexibility to achieve compliance until the necessary infrastructure is in place. See Master Response 3 for further discussion on timelines and how they were developed. CARB staff also understands that the ShoreKat project, as mentioned here by the commenter, was exempt from the California Environmental Quality Act (CEQA) and that some projects will not require a full EIR; however, staff have accounted for full CEQA reviews in their timelines, and have used the best available data in developing the regulatory timeframes.

**Comment:** "Moreover, the Draft EA (p.9) acknowledges that: "Adding berth-side equipment may require ports and/or terminals to upgrade wharf infrastructure. This may include the addition of new pilings and new surface area to existing piers/ports and/or terminals to allow for additional weight or space for vault and cable systems... Increasing power loads for vessels to use while at berth may require electrical and support infrastructure, which would be installed by existing utility service providers. It is reasonably assumed that additional power would require the installation of new or additional high-voltage lines and substations to increase the power supply required by vessels while at berth. Construction equipment, workers, and material deliveries for power utility modifications would be needed at the ports/terminals, as well as in areas subject to upgrading along the utilities' existing infrastructure." However, the consequences of that scope of work are given short shrift." (22.4f) (EA 22-5)

**Agency Response (22.4f):** CARB staff made no changes based on the received comment. See Master Response 3 for discussion on implementation dates and see *Responses to Comments on the Draft Environmental Analysis* comment 22-5 for a response to the comment regarding environmental impacts.

**Comment:** "To further clarify the scale of infrastructure projects needed to comply with the At Berth Regulations, additional information was provided to Staff by Chevron in a presentation on June 10, 2019 (attached hereto as Exhibit 4). As shown in slides 2 and 3 of Exhibit 4, the existing wharf at Chevron's Richmond Long Wharf contains no space to accommodate installation of an emission control system and cranes. At a minimum, installation of equipment at those sizes would require construction of half an acre of new deck structure as well as 4,000 to 6,000 feet of new piping. Slides 4-6 illustrate the scale of heavy pile driving activities for Chevron's MOTEMS project, which would be multiplied by the estimated 700 to 800 concrete piles, driven deep into the sea floor, necessary to provide support for an At Berth Regulations compliance project. Slide 7 illustrates the magnitude of required electrical infrastructure improvements, including miles of new electrical cable, replacement of two transformers and changes to the utility interconnection. Nor is Chevron's wharf configuration unusual; other tanker terminal wharves have similarly narrow linear designs with comparable space constraints, and likely would require a comparable magnitude of expansion, as demonstrated by the aerial photographs of Shell's Martinez dock and Marathon Petroleum's Amoco and Avon facilities in Martinez; see Exhibit 5, slides 1-3. Moreover, available space is heavily utilized and potential locations for new equipment are highly constrained even at terminals where berths are not located at the end of narrow linear docks, as illustrated by Marathon's Terminal 2 at the Port of Long Beach and Valero's Berth 164 at the Port of Los Angeles; see Exhibit 5, slides 4 and 5." (22.4g)

**Agency Response (22.4g):** CARB staff made no changes based on the received comment. See Master Response 3 for more information on implementation dates.

**Comment:** "Staff's Discussion of the Other Three Project Timelines Ignores the Additional Time Those Projects Incurred for Planning, Design, Permitting and Project Delays. The other three projects cited in the ISOR are more comparable to the scale expected for At Berth Regulations compliance projects, but ISOR reports only part of their timelines:

- The ISOR describes the Chevron Richmond Wharf Maintenance and Efficiency Project ("WMEP") as starting in 2014, when Chevron submitted its initial permit applications. However, the ISOR omits the necessary steps of project scope development following the MOTEMS audit, planning, design and technical studies, which preceded the applications.
- The ISOR describes the Port of Richmond IMTT Terminal Project as starting in 2011 and quotes an estimated completion date from a 2014 document. The ISOR again omits scoping and planning following the MOTEMS audit and also the delay in actual project completion.

- The ISOR describes only the construction period for the Berths 167-169 Shell MOTEMS Wharf Improvement Projects at POLA, omitting all planning, design and permitting steps prior to construction.”

The average duration for the project stages reported in the ISOR is 5.2 years, with a range of 3 - 9 years. Even based on Staff’s reported information, a project taking 9 years would exceed the “five to seven years” claimed in the ISOR, p. III-21, and would be unable to meet the 2027 deadline.<sup>5</sup> Additional project steps omitted from the ISOR are included in the attached “Timelines for Projects Involving Substantial New Wharf Infrastructure Comparable to At Berth Regulations Compliance Projects” (attached hereto as Exhibit 6). (22.4h)

**Agency Response (22.4h):** CARB agrees that, depending on various circumstances (including which terminal and berth is being considered), construction timelines will vary. The timeline for each project is case specific. In response to concerns about projects that may take longer timeframes, staff has included an Innovative Concepts pathway to allow for flexibility to achieve compliance until the necessary infrastructure is in place. See Master Response 3 for further discussion on implementation dates and the Innovative Concept compliance option.

**Comment:** “Below are examples of other agency approvals, construction and commissioning not discussed by Staff in the ISOR, but that likely would hinder further progress on an infrastructure project until completed:

- For any pilot test of the equipment installed at a terminal, permitting, design and construction will require additional time.
- Detailed engineering cannot begin until the feasibility evaluation study is completed, and the risks associated with the control technology are well understood, to allow for design of appropriate mitigation.” (22.4i)

**Agency Response (22.4i):** CARB staff made no changes based on the received comment. CARB staff agrees that, depending on the terminal, construction timelines will vary. Control technology is currently being evaluated for feasibility and safety for other vessel categories and will take additional time to receive CARB approval. To re-evaluate delays in technology availability and infrastructure construction, staff will prepare an Interim Evaluation for new technologies and applications in 2022 (Section 93130.14(d)). The evaluation will assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. If staff finds that the compliance deadlines for ro-ro and/or tanker vessels warrant adjustment, staff may propose formal regulatory amendments.

Additionally, to allow for more flexibility, the Innovative Concept option is available as a compliance pathway. See Master Response 3 for more discussion on implementation dates and the Innovative Concept compliance option.

**Comment:** "CEQA review cannot begin until a lead agency is assigned and at least 30-60% of the design is complete, in order to provide an accurate and stable project description as the basis for review." (22.4j) (EA 22-6)

**Agency Response (22.4j):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. See *Responses to Comments on the Draft Environmental Analysis* at response to comment 22-6.

**Comment:** "Building and other permits are dependent on completing the CEQA analysis and certifying a final Environmental Impact Report (EIR) or Negative Declaration. Many responsible agencies with permit or approval authority will not begin processing applications before the CEQA document is approved." (22.4k) (EA 22-7)

**Agency Response (22.4k):** CARB staff made no changes based on the received comment. See *Responses to Comments on the Draft Environmental Analysis* document at response to comment 22-7.

**Comment:** "Contracting for construction and installation cannot be finalized until the permits and approvals are received; before that time, the conditions under which construction will occur remain yet unknown. Additionally, construction cannot commence until contracting is complete." (22.4l)

**Agency Response (22.4l):** CARB staff made no changes based on the received comment. See Master Response 3 for discussion on implementation dates.

**Comment:** "CEQA lead agencies and responsible regulatory agencies may require completion of some mitigation measures before construction commences." (22.4m) (EA 22-8)

**Agency Response (22.4m):** CARB staff made no changes based on the received comment. See the *Responses to Comment in the Draft Environmental Analysis* at response to comment 22-8.

**Comment:** "In some cases, commissioning of individual pieces of equipment can occur in parallel with the construction; however, overall commissioning cannot begin until all construction is completed." (22.4n)

**Agency Response (22.4n):** CARB staff made no changes based on the received comment. CARB notes and appreciates the comment. For more information on how staff developed the timelines, please refer to Master Response 3.

**Comment:** “C. Real-World Experience With Terminal Infrastructure Projects Shows That Compliance With the At Berth Regulations Is Unattainable By 2027/2029  
In addition, two other MOTEMS compliance projects at tanker terminals, involving substantial new wharf infrastructure, are included in Exhibit 6 for comparison. Based on the full timelines in Exhibit 6, the actual average duration of projects comparable to At Berth Regulations projects is 11.6 years, with a range of 7-15 years. Exhibit 6 also demonstrates that, more often than not, actual project completion dates are later than the projected completion dates on schedules in planning and CEQA documents, suggesting that the ultimate timelines for projects not yet completed will run still longer, resulting in an average duration of more than 11.6 years.

Moreover, even the larger scale MOTEMS projects listed in Exhibit 6 may not fairly represent the magnitude of new wharf infrastructure for compliance with the At Berth Regulations. For example, large cranes will be needed to reach tanker stacks, but no cranes have been installed for any MOTEMS work, and none of the projects described in the ISOR involved installing cranes. Major wharf expansions necessary to provide room and support for such large and heavy cranes will not only take longer to design and construct; they will also entail greater environmental impacts (as discussed in CEQA comments below), potentially involving longer CEQA review and permitting timelines including approval by additional agencies – again resulting in an average duration of more than 11.6 years.” (22.4o) (EA 22-9)

**Agency Response (22.4o):** CARB staff made no changes based on the received comment. . It is CARB staff’s understanding that MOTEMS projects, as referenced by this commenter, are required by the California State Lands Commissions and often require terminals to make substantial structural improvements to wharfs to bring them into compliance with the latest MOTEMS standards. These projects can thus be widely varying in scope. Given the scope and average timelines for completion of the projects CARB staff analyzed as part of rulemaking (see ISOR, Chapter III), staff disagrees that upgrades needed to install an emissions control strategy (and crane(s), if needed) are likely to require the same invasive and intensive overhaul and extended timeline that a large-scale MOTEMS project would require. As noted in Master Response 3, CARB staff considered several types of projects (as detailed in the ISOR, Chapter III), including MOTEMS projects as referenced by this commenter, and generally found that construction involving new infrastructure at tanker terminals required five to seven years to complete, depending on the size and scope of new or modifications to a facility. Staff understands that the timing and completion of construction projects at individual tanker terminals will likely vary substantially from project to project, depending on the scope of the work being done. However, in general, more complex projects involving extensive changes are anticipated to have the longest construction timelines. See Master Response 3 and Agency Response

(22.29) for additional discussion on the feasibility of the tanker implementation timelines.

**Comment:** “Comments from Power Engineering Construction Co. (“Power”), attached hereto as Exhibit 7, provide independent confirmation for these concerns. Power has experience with all phases of preconstruction, design, entitlement and construction of a wide variety of marine engineering projects. Based on that experience, and on several examples of non-oil terminal projects, Power concludes that “empirically, all but the most basic construction projects prove to track into an 8 to 10-year timeline.... [d]ue to the complexity of regulatory review, the challenges of over-water design, and the limitations and work windows imposed during construction.” In addition, Exhibit C to the Power comments describes timelines for projects involving large container cranes (average duration 33 months) and dock-mounted marine hydraulic cranes (average duration 17 months per crane). As noted above, the At Berth Regulations compliance projects require installation of between one and eight cranes. Cranes will need to be installed one at a time due to space limitations and to allow partial operation of the marine terminal during construction, so for some terminals, total installation time could take as long 22 years.

Finally, and perhaps most importantly, the project timelines in the ISOR, as well as those described in Exhibits 6 and 7, all involve deployment of existing technology. As the ISOR notes, the technology for land based capture and control systems for tanker vessels does not yet exist and would be “more complex than the existing demonstration system at POLA . . . need[ing] to be scaled up from the existing systems in order to handle higher exhaust flow rates from tanker vessels.” ISOR, p. III-19. In particular, designing emission controls for tanker vessels presents unique safety issues. See Exhibit 2, Letter from Woodbridge Marine, Inc. No technology is currently tested and proven safe for tankers, as was communicated to CARB staff by vendors during the CARB vendor meeting on April 16, 2019 and also discussed in WSPA’s comment letter of June 14, 2019. Significant work is needed up front to assess the risks and ensure that technology is safe, feasible and available, which will take additional time before individual projects can begin to be developed. (22.4p)

**Agency Response (22.4p):** CARB staff made no changes based on the received comment. See Master Response 3 for discussion on implementation dates and the Innovative Concept compliance option.

**Comment:** “Timeline for Implementation of the At Berth Regulation for Tankers. Even under ideal conditions, WSPA does not believe that any marine terminal can meet the proposed compliance deadlines of 2027 for the Port of Long Beach (POLB) and Port of Los Angeles (POLA), or 2029 for all other marine terminals where tankers are berthed. Based on information received from WSPA member companies, we believe that the earliest a marine terminal could comply with the proposed regulatory requirements is 2033. Additional time would be needed, at least up to two years, for larger and more complex terminals requiring a compliance date no sooner than 2035

for those facilities due to in-water work window limitations and operational construction constraints.

As was discussed and requested by CARB during our meeting on July 18, 2019, enclosed with this letter are the aggregated results from our member companies showing the estimated timelines to meet compliance with the proposed regulatory requirements. Included in the enclosure is a chart showing how long (as a range) each major step is expected to take and what timeframe (as a range) that each of those steps is expected to occur within. In general, larger and more complex terminals will need more time to complete each step due to the larger scale of the engineering, design and construction effort and because additional time needed to complete each individual step compounds over the life of the project. Also included is a table which describes in more detail what activities are include in each major step.

The major steps for any facility to meet compliance with the proposed regulation are as follows:

- General and Site-specific Feasibility Evaluation Study
- Site-Specific Design
- Engineering
- CEQA Review
- Permitting and Other Approvals
- Contracting
- Construction (Crane, Emission Control System, and Support Systems)
- Commissioning

While there are several factors that drive a longer timeline for facilities than the timeline that CARB has proposed, the single largest factor is that, at present, the technology proposed is untested and unproven as safe for tankers. This means that significantly more work is needed up front to assess the risks and ensure that the project is feasible. If there existed a proven, off-the-shelf technology that was safe for use on tankers and boilers, many of the early steps could be bypassed or the timeline shortened. But that is not the case, as was communicated by vendors during the CARB vendor meeting held on April 16, 2019, as well as in the WSPA comment letter of June 14, 2019.

Based on our conversations with you and CARB staff, WSPA also believes that CARB has underestimated the time it takes to complete many of the steps needed to meet compliance with the proposed regulation. For example, WSPA believes that CARB has significantly underestimated the time it will take a facility to apply for and receive all the required permits for a project of this nature.

At a minimum, facilities will need to receive permits or regulatory and land use approvals from the local air quality control/management district, the California State Lands Commission, the San Francisco Bay Conservation and Development

Commission (for northern Californian terminals), the United States Army Corps of Engineers, the local Regional Water Quality Control Board, the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service (if protected species are affected), the National Marine Fisheries Service (where marine mammals may be present), the United States Coast Guard, building permits and/or coastal development permits from the local city/county, and (if not delegated to the local city/county) coastal development permits from the California Coastal Commission, in addition to going through the California Environmental Quality Act (CEQA) environmental review process prior to receiving any permits and approvals.

Note that, separate from WSPA's timeline, many facilities are also in the process of updating terminals to comply with the Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) -- projects that have been in permitting, design and construction for many years. Due to the large variety of timelines for each terminal, WSPA has not included ongoing and proposed MOTEMS construction projects in our timeline.

While many of the activities can occur in parallel, those that must occur in series often will dictate the timeline. The most basic example of this occurs during permitting and construction. Construction cannot begin until permitting is complete, and permits cannot be issued until the CEQA review is complete. Construction and installation of any equipment on terminal cannot begin until such time that the support structure (foundation) is complete.

The nature of the proposed equipment, weights and locations can result in a terminal having to complete a seismic retrofit, which would extend well beyond the actual footprint of the equipment foundations. As you may recall, during our meeting WSPA members provided examples of how long it has taken to obtain permits and implement construction on marine terminal projects, such as MOTEMS. For one of our member companies, the MOTEMS initial audit was conducted in 2009 and, after design, California State Lands Commission peer review, and CEQA review and resource agency permitting, construction was able to begin in 2018 – nine years later - for a project that is much smaller than the size and scope proposed in the At Berth Regulation.

It is important to note that the aggregated timeline that WSPA has attached to this communication is only an estimate. The results of the feasibility evaluation study will be necessary to refine the estimated timeline.

WSPA believes the Government Code, Health and Safety Code and other California laws and regulations require CARB to revise its current rulemaking timetable to allow for proper preparation and consideration of feasibility, cost effectiveness and timelines. See, e.g., Cal. Health & Safety Code §§ 38560, 39602.5, 39665, 43013; see also Gov. Code § 11346.36 & 1 C.C.R. §§ 2000- 2004 (SRIA requirements to assess proposed regulation's cost impact on public health and safety, fairness and social equity, state's economy and other criteria). We would request that, at the very least,

CARB include in its proposed At Berth Regulation language that allows for a feasibility evaluation study and an appropriate delay in regulatory implementation in the event the feasibility evaluation study concludes that shore-based technologies and/or other elements of the At Berth Regulation are not feasible in the regulatory timeframes provided. (22.26)

**Agency Response (22.26):** CARB staff made no changes based on the received comment. CARB agrees that large and complex terminals may require new or upgraded facilities to comply with the Regulation. The vessels and terminals not already included in the 2007 At-Berth Regulation may need new infrastructure starting in 2023. However, CARB disagrees on several points raised in the comment.

First, as discussed in the ISOR, CARB conducted extensive research and met with numerous stakeholders to establish implementation dates. In support of the implementation schedule, CARB conducted analyses on needed infrastructure improvements and potential emission control technologies. Notably, shore power equipment and infrastructure is already installed at the majority of container, reefer, and cruise vessels visiting California and at the terminals and ports they visit, in order to comply with the 2007 At-Berth Regulation. Shore power is generally the most cost effective option for container, reefer, and cruise vessels, as these vessels typically make regular calls to the same ports in California. Staff's analysis included an assessment of additional shore power infrastructure improvements and potential emissions control technologies (land- or barge-based alternative capture and control systems) that would be necessary to support the Regulation (Berth Analysis, ISOR, Appendix E).

Second, staff evaluated several terminal construction projects to assess the feasibility of emission control systems. The evaluations and findings support staff's proposed implementation schedules. Staff also considered a range of projects, including the following:

- Shore power at POLB Pier T for tanker vessels
- Shore power upgrades for POLB Pier A and Pier J
- Tanker infrastructure projects
- Chevron Richmond Long Wharf MOTEMS and Wharf Maintenance and Efficiency projects
- The Port of Richmond International-Matex Tank Terminals (IMTT) Wharf Modification project
- The POLA Berths (Shell) Marine Oil Terminal Wharf Improvements project
- The ShoreKat land-side capture and control demonstration project.

For more information on staff's evaluations, see ISOR Chapter III. CARB staff have committed to working with other agencies that play a role in permitting the types of infrastructure projects that may be needed to support compliance with this Regulation. This includes the Bay Area Air Quality Management District (BAAQMD), the San Francisco Bay Conservation and Development Commission (BCDC), and BCP, be it through an interagency collaboration and/or individually, to increase communication and understanding of permitting processes and for assistance with project reviews. This collaboration is expected to help streamline and expedite the installation of necessary emissions control technologies and infrastructure needed to meet regulatory timelines.

As the commenter and CARB staff acknowledged, not all terminals or construction projects face the same issues or challenges, and some projects require extended construction schedules for a variety of reasons. In light of uncertainty, staff considered relevant factors given the potential range of projects that may take years to construct. To address that uncertainty, the Regulation provides that staff will prepare an Interim Evaluation for new technologies and applications (Section 93130.14(d)). Briefly, the evaluation will assess the progress made in adopting emission control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. If staff finds that the compliance deadlines for ro-ro or tanker vessels warrant adjustment, staff may propose formal regulatory amendments.

In addition, during the first 15-day changes released in March 2020, staff introduced the "Innovative Concept Compliance Option." This alternative compliance option may be used in lieu of meeting the vessel control requirements, if the Innovative Concept meets or exceed emissions reductions otherwise achieved by controlling vessel emissions while at berth (Section 93130.17). With the built-in flexibility and compliance options, CARB believes the Regulation provides feasible pathways for tanker vessels to achieve necessary emission reductions and comply with the Regulation by the first implementation date of 2025 set to begin at the Southern California tanker terminals.

Third, the commenter recommends further evaluation to assess feasibility and refine the implementation timeline. CARB believes that the years of research and development of the Regulation, with the supporting regulatory documents and appendices, sufficiently address the questions raised by the commenter. Further evaluation would not likely yield an abundance of additional or new information concerning the feasibility of technological developments at this time. As previously mentioned, CARB staff will prepare an Interim Evaluation to assess the compliance pathways and technological options available to regulated entities. Thus, CARB declines to perform further evaluation that will

delay implementation of proven strategies and technology that achieve public health and air quality goals.

Fourth, the commenter asserts "Government Code, Health and Safety Code and other California laws and regulations require CARB to revise its current rulemaking timetable to allow for proper preparation and consideration of feasibility, cost effectiveness and timelines. See, e.g. Cal. Health & Safety Code §§ 38560, 39602.5, 39665, 43013; see also Gov. Code § 11346.36 & 1 C.C.R. §§ 2000- 2004 (SRIA requirements to assess proposed regulation's cost impact on public health and safety, fairness and social equity, state's economy and other criteria)." Staff does not agree with the commenter.

In satisfying HSC 39665(a) and HSC 43013, staff met with multiple industry associations and stakeholders as well as other government agencies that would be potentially affected by the Regulation. CARB also held further discussions with representatives from the International Longshore and Warehouse Union, who play a vital role in the shore power connection process for vessels calling at California seaports, and manufacturers of engines, vessel emissions reductions technologies, and shore power equipment. Staff further consulted with multiple government agencies throughout the development of the Regulation, including U.S. EPA, U.S. Coast Guard, California Office of Spill Prevention and Response, California local air districts, California Ports, California State Land Commission, and Harbor Safety Committees in San Francisco, Los Angeles, and Long Beach. Lastly, staff engaged with manufacturers of alternative capture and control systems as well as emerging engineering companies. More information on CARB's public process to develop the Regulation is detailed in Chapter XII of the ISOR.

These and other outreach efforts helped to identify the data used for the economic analysis (cost effectiveness and technology feasibility) including assessing the availability, effectiveness, reliability, and safety expected of the proposed technology in a representative application (HSC 43013).

Pursuant to HSC 39665(c), CARB is required to prepare and publish a staff report (i.e., "ISOR") 45 days prior to the Board hearing for public review and comment. CARB released the ISOR for review from October 18, 2019 to December 9, 2019. Part of HSC 38560 states, "The state Board shall adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions from sources or categories of sources, subject to the criteria and schedules set forth in this part." The Regulation, as written, satisfies the requirements of Section 35860 because the Regulation was developed only after an extensive, open public process, and the vessel emission controls have been demonstrated in similar applications and determined to be feasible. Indeed, HSC 39602.5(b) provides, "If necessary to carry out its duties under this section, the State Board

shall adopt and enforce rules and regulations that anticipate the development of new technologies or the improvement of existing technologies. The rules and regulations shall require standards that the State finds and determines can likely be achieved by the compliance date set forth in the rule.” CARB considered other measures already being implemented to reduce vessel emissions and determined the Regulation is necessary to help the State attain ambient air standards in a cost effective and feasible manner for vessel categories (HSC 39602.5(a) and HSC 43013).

In support of that determination, CARB developed and submitted the required Standardized Regulatory Impact Analyses (SRIA) to DOF on August 1, 2019. (See Government code 11346.3 and 1 CCR 2000-2004.) On August 29, 2019, DOF responded with comments on the SRIA (available at [http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf)).

DOF stated,

“[W]ith one exception, [DOF] generally concurs with the methodology used to estimate impacts of proposed regulations. The SRIA clearly lays out for the public the proposed regulatory impacts. The methodological appendices are particularly valuable, as they clearly identify distribution of costs across geography, vessel type, and class of regulated party.”

CARB addressed the DOF comment in the ISOR, found in Appendix C-2.

In summary, as required by HSC 43013(h), CARB intends to “act as expeditiously as is feasible to reduce nitrogen oxide emissions from diesel vehicles, marine vessels, and other categories of vehicular and mobile sources which significantly contribute to air pollution problems.” The Regulation includes a new implementation for previously unregulated container, cruise, reefer, ro-ro and tanker vessels to achieve public health and air quality goals.

**Comment:** “We look forward to continuing to work with your staff on the -- this rule. And we ask that you give them the opportunity to work through some of these issues before you actually go finish and complete your rulemaking process.” (OC-3 Cannon)

**Agency Response (OC-3 Cannon):** CARB staff made no changes based on the received comment. Staff understood this commenter to be requesting CARB’s Board to give staff more time to work with regulated stakeholders to address concerns raised about the Regulation. This rulemaking process was an open and iterative process that began in 2014 and was finalized in 2020 with the adoption of the Regulation. The process included a total of three Board Hearings and numerous workshops, during which CARB staff and stakeholders had ample opportunities to work through concerns related to the Regulation. CARB’s Board directed staff not to further delay the rulemaking process in

order to address the health burdens being placed on California's port communities by vessels at berth. However, CARB staff have committed to continue working with to ensure that any new or existing concerns are addressed with the Interim Evaluation in 2022.

**Comment:** "First, given the technology to control emissions, specifically from the ro-ros and the tankers, we need a lot of technological advancement to get them where they need to be...The Port believes at least two additional years to comply would be necessary for both vessel categories." (OC-1 Caswell)

**Agency Response (OC-1 Caswell):** CARB staff made no changes based on the received comment. See Master Response 3 for more information on the implementation timeline.

**Comment:** "The staff proposal would require substantial over-water infrastructure, including the likely rebuilding of docks at several marine terminals that would take years to complete, long after staff's proposed compliance deadlines." (OC-3 Umenhofer)

**Agency Response (OC-3 Umenhofer):** CARB staff made no changes based on the received comment. See Master Response 3 for more information on the implementation timeline.

**Comment:** "The timeline proposed in the regulation is unachievable, particularly for the existing regulated fleet. In many cases CARB identifies additional improvements that must be completed in order to meet compliance obligations. In other instances, CARB identifies infrastructure inadequacies but fails to include them in their analysis or consideration of improvements that are necessary to achieve compliance under the Regulation. These issues are addressed in more detail in the Technical Analysis conducted by Starcrest Consulting Group attached to this letter. However, in all circumstances, it is impossible to deploy the necessary infrastructure within the seven to nine months that would be available from the adoption of the regulation. As Starcrest documents, the lead time for this infrastructure is measured in years, not months." (52.17)

**Comment:** "The proposed compliance schedule is unrealistic to achieve for the existing regulated fleet. Under the current rule, implementation was phased in beginning with 50% in 2014, increasing to 70% in 2017, and allowing three years for the industry to improve compliance by 10% to 80% in 2020. From the time the final rule becomes effective to January 2021, there will be less than a single year to increase compliance by 20%. Staff has argued that this is achievable because nearly the entire fleet will need to be retrofitted to achieve the 2020 requirements and that there are significant emission reductions to be gained through the requirement. But these two positions are incompatible with each other; only one can be true. Because the existing rule has a requirement that all equipped vessels must use shore power,

either the vessel fleet needs additional retrofitting to meet the proposed requirements resulting in additional emission reductions or the fleet is already equipped to meet the proposed requirements in which case few additional emission reductions can be achieved.

In either case, the certainty that the proposed rule requires means that either additional shoreside infrastructure or alternative control options will be necessary. The less than one-year timeframe from the time the rule becomes effective until January 2021 is unrealistic. The ports of Long Beach and Los Angeles have submitted two extensive letters discussing the additional infrastructure necessary to come into compliance with the proposed regulation. In short, years of additional preparation is necessary. The proposed rule must reflect this reality.” (52.C.32)

**Agency Response (52.17) and (52.C.32):** CARB staff made no changes based on the received comments. The Regulation is scheduled to begin on January 1, 2023 allowing time for necessary infrastructure to be built. In addition, terminals will be given a 15 percent TIE allotment to use at their discretion in the years of 2023 and 2024. The allotment will help bridge the gap as new infrastructure and control systems are established at ports and terminals.

To provide further flexibility, as part of the 15-day changes released in March 2020, staff developed the “Innovative Concept Compliance Option” (Section 93130.17). The concept was developed in response to concerns that comparable emission reductions could be achieved at lower cost or to use while technology for vessel categories such as tanker vessels is developed. CARB staff agrees that the Regulation should provide flexibility for entities to select the most cost effective strategy while ensuring it meets or exceeds the required emissions reductions.

**Comment:** “For tankers, CARB has established a schedule that a primary manufacturer of emissions control equipment has told CARB staff is unrealistic. In an apparent effort to force the short circuit of the technology development timeframe, the proposed regulatory concept has established unrealistic goals for developing new technology for the tanker industry.” (52.C.33)

**Agency Response (52.C.33):** CARB staff made no changes based on the received comment. See Master Response 3 for more information on the implementation timeline.

**Comment:** “CARB identified the need for 5 new shore-power vaults statewide to improve the connection rate. CARB assumes 4 months to construct a new vault (Draft EA); however, this estimate omits design, permitting, and procurement and understates construction time. Vault installation projects take closer to 31 months,

including design, procurement, and construction, according to publicly available documents describing actual projects of this scope.” (52.A.15a)

**Agency Response (52.A.15a):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. As can be seen in the Berth Analysis (ISOR Appendix E) the additional five vaults may be needed in locations already possessing shore power equipment and vaults. Adding additional vaults to preexisting infrastructure will take considerably less time than if it was a new shore power installation.

**Comment:** “The Port of San Francisco requires a new shore power berth to accommodate cruise vessels. These projects take roughly 4 years based on publicly available data for projects of similar scope.” (52.A.15b)

**Agency Response (52.A.15b):** CARB staff made no changes based on the received comment. CARB notes the additional information provided by the commenter. The Port of San Francisco and all regulated parties have the flexibility to implement shore power or other compliance options, such as utilizing an Innovative Concept. To help with construction and permitting CARB has allowed for 15 percent TIEs in the years 2023 and 2024. The additional TIEs are intended to help transition from the 2007 At-Berth Regulation’s 80 percent visit requirement to the Regulation’s every vessel visit requirement. CARB staff believes this should provide enough time for infrastructure build out. Additionally, the remediation fund may be used.

**Comment:** “CARB identified the need for 1 additional barge-based control system in Long Beach/Los Angeles for infrequent container/reefer callers. CARB estimates it takes at least 2 years for construction of these systems (ISOR).” (52.A.15c)

**Agency Response (52.A.15C):** CARB staff made no changes based on the received comment. To account for the deployment of new technology and additional capture and control systems, CARB pushed back the implementation date from 2021 to 2023 in the 15-day change released in July 2020 and allows for 15 percent TIEs in the years 2023 and 2024.

x. *Terminal and Vessel Incident Events (TIEs and VIEs)*

This subcategory contains comments focused the Terminal and Vessel Incident Events (TIE/VIE). A VIE or a TIE accommodates a limited number of situations where a vessel does not reduce emissions during a visit (Section 93130.11). Where appropriate, similar comments are grouped and are provided a single response.

**Comment:** “To be most useful, VIEs and remediation fees should be reviewable and adjustable if needed and valid for at least 18 months.” (46.27)

**Agency Response (46.27):** CARB staff modified the proposed regulatory language in response to the received comment. CARB agrees that vessel calls may fluctuate from year to year and may need adjustment. To account for substantial increases, staff proposed language in Section 93130.11(c) "Request for TIEs and VIEs." If either a fleet or terminal operator anticipates an increase in activity in the following year, the Regulation allows for requesting additional TIEs or VIEs from CARB. Upon request, CARB will consider the need for additional TIEs/VIEs.

However, CARB staff disagrees that TIEs/VIEs should be valid for more than one year. TIEs/VIEs are intended for exceptional circumstances or when emissions control strategies are otherwise unavailable, for example, due to construction or maintenance. Therefore, if not needed the VIE/TIEs will expire after a year. By allowing additional time for use, there is a greater likelihood all TIE/VIEs will be used leading to an increase in emissions.

Staff is not clear on how the commenter proposes a review of the remediation fee be achieved for the Regulation and therefore cannot respond. However, more information on how the remediation fees were established can be found in response to comment 24.6.

**Comment:** "[T]here will be instances when ships cannot plug in, due to circumstances on the vessel or at the terminal, hence the inclusion of alternative compliance options and a complex regime of Terminal Incident Events ("TIEs") and Vessel Incident Events ("VIEs"). The Port understands the goal of the TIE and VIE regime, but it creates more problems such as record-keeping and dispute resolution, than it solves. The Proposed Control Measure has no clear grievance or dispute resolution process when conflicts arise." (17.7)

**Agency Response (17.7):** CARB staff made no changes based on the received comment. CARB notes the comment and recognizes the complexity of port operations. In order to provide flexibility, staff developed TIEs and VIEs as compliance options that a vessel or terminal operator may consider. The Regulation identifies situations for when either may be used and how entities assume or share responsibility (Section 93130.18). Since circumstances warranting a TIE or VIE may vary, CARB elected not to assign responsibility in every instance. Rather, vessel and terminal operators, and in some cases ports or CAECS operators, will need to collaborate to ensure that the emissions control strategy selected will achieve the required emission reductions or be subject to a violation.

In regards to reporting concerns, CARB recognizes that the option of using TIEs and VIEs will increase the reporting burden on regulated entities. However, CARB believes the benefit of adding flexibility to the Regulation is necessary to ensure emission reductions are verifiable.

It is intended that ports, terminals, CAECs, and vessel operators continue to work together to resolve disputes. In cases where a resolution cannot be achieved, CARB enforcement staff will review the case and determine the violator or violators.

**Comment:** "The proposed regulation does not address how or whether VIEs will be granted for new fleets entering the California market, or for fleets that expand. New entrants should be allowed to estimate their annual ship calls and be granted the associated number of VIEs for the coming year. Otherwise, this is a barrier to entry for new fleets because they will be granted zero VIEs in their very first year of operation. This puts California ports at a competitive disadvantage compared to ports in Oregon, Washington, Canada, Mexico, and on the U.S. Gulf and East Coast." (17.11)

**Comment:** "Also concerning is that CARB is proposing no VIEs for new fleets entering the market. Without a doubt that will put new entrants at a significant disadvantage. New fleets are seen entering markets throughout California. Those fleets should be granted the opportunity to compete with existing fleets on an equal playing field. In the same vein, existing fleets serving California markets would be at a competitive disadvantage if it chose to make a significant expansion within an existing market. If two different fleets serving California offered the same level of service in a given year but one fleet had fewer calls in the prior year, the fleet with fewer calls would be at a measurable competitive disadvantage even though the two fleets were now offering the same level of service. The same scenario is equally applicable for terminal operators. For either new services or expanded services, the allocation of VIEs/TIEs should not create such distortions that favor dominant incumbents over others." (52.C.39)

**Agency Response (17.11) and (52.C.39):** CARB staff modified the proposed regulatory language in response to the received comments. CARB agrees that the Regulation should allocate VIEs to new fleets entering the California market. Staff revised Section 93130.11 so a fleet operator may request VIEs to accommodate a new fleet. The allocated VIEs will be based on a percentage of the current year's anticipated vessel visits. At the end of the year, CARB will review fleet activity to determine whether the VIE allocation should be adjusted. If a fleet relied on VIEs in excess for compliance, any excess emissions will need to be remediated or the associated visit(s) will be noncompliant. Additionally, if a terminal is expecting increased activity the following year, the terminal can request additional TIEs. CARB will review the request and allocate TIEs as necessary.

**Comment:** "TIEs constrain a terminal operator's ability to grow. Terminal operators compete vigorously for cargo. The decision of a single ocean carrier can result in the shift of dozens of vessel calls between terminals. The ability of terminal operator to capture business will be directly constrained by basing their number of TIEs to a prior

year's cargo volume. This is particularly true when so many reasons that a terminal operator would use a TIE are for events outside their ability to control or influence." (52.C.98)

**Agency Response (52.C.98):** CARB staff modified the proposed regulatory language in response to the received comment. With the 15-day changes released in March 2020, staff included a provision that allows terminal operators to request additional TIEs from CARB if the facility is planning for substantial growth in vessel visits (Section 93130.11(c)).

**Comment:** "TIEs/VIEs. Some non-compliant scenarios split responsibility between carriers, port authorities, and marine terminal operators. Who decides how to split a TIE or VIE? Will CARB put arbitration machinery in place to hear arguments when disagreements occur between regulated entities? This is a recipe for endless claims, legal cost, and wasted money." (24.4)

**Comment:** "When there is a failure to connect shore power, there may be disagreement between terminal operators, ports, and ocean carriers as to the cause. If the parties cannot come to agreement to cause, how will such disputes be resolved. The mechanisms associated with the use of VIEs/TIEs engender finger-pointing. This is due in part to the fact that the regulatory framework continues to hold parties responsible for actions outside their control (as described above). It is also due to the fact that there may not be clear cut answers in all situations. A focus on clear lines of responsibility, as proposed in the industry alternative, as opposed to an attempt to micromanage all possible circumstances would avoid these problems inherent in the proposed structure." (52.C.38)

**Agency Response (24.4) and (52.C.38):** CARB staff made no changes based on the received comments. The Regulation is designed with flexible compliance pathways (VIEs/TIEs or remediation fund, for example) for a vessel visit. In the event emissions are uncontrolled and the visit is not eligible for an exception, all parties could be held liable. As highlighted in these comments, if neither party agrees to fault, the visit would be considered noncompliant and could be subject to enforcement action on a case-by case basis. For more information on the industry alternative and why CARB staff does not agree it provides clear lines of responsibility see ISOR Chapter X.

**Comment:** "The VIEs and TIEs system is most punitive to vessels making fewer calls and those without an option to use alternative compliance options. They are also based on the calls occurring in the previous year, leaving new vessels without any options including scouting voyages for companies pursuing or adding new markets in the state." (41.6)

**Agency Response (41.6):** CARB staff modified the proposed regulatory language in response to the received comment. CARB agrees that solely using

previous vessel visit data to allocate VIE/TIEs would not account for new fleets or industry growth. In response to comments received on this topic, the Regulation was revised allowing a vessel fleet or terminal operator to request additional VIEs or TIEs based on the anticipated visits for that year (Section 93130.11(c)).

In addition, CARB staff has tried to make the Regulation as fair as possible to all parties. Vessels that are not frequent visitors would be allowed to use fleet VIEs or have an agreement with a terminal to use a TIE. It is CARB staffs expects that alternatives will be available for all vessel categories by the time of implementation as technology is rapidly being developed.

**Comment:** “The allotted VIEs and TIEs for vessels other than Container, Reefer, and Passenger vessels in Sections 93130.7(g)(1)(A) and 93130.8(h)(1)(A) of the Proposed Control Measure reduce from 5% to 3% after only one year. Port staff note that at the advent of the ATCM, the requirement was 50% of all calls in the first year. An initial expectation of 90% usage does not accommodate the fact that the Proposed Control Measure is the first-of-its-kind requirement for Ro-Ro and Tanker vessels in the world, and the technologies and equipment required do not exist at this time and have not been tested.” (17.28)

**Agency Response (17.28):** CARB staff made no changes based on the received comment. The TIE and VIE rates for terminals and each vessel category can be found in Section 93130.11(b). At this time, no TIE or VIE rate will fall below five percent. In addition, as part of the second 15-day changes released in July 2020, during the first two years of implementation (2023 and 2024) terminals will be given a TIE rate of 15 percent in order to account for planning and infrastructure construction.

To account for development and deployment of technologies for ro-ro and tanker vessels, the implementation for those categories is extended to 2025 for ro-ro vessels and tankers will have until 2025 and 2027, respectively.

**Comment:** “S. 93130.11 Vessel Incident Events (VIEs) and Terminal Incident Events (TIEs): Rather than using a fleet average to allow the flexibility that vessels need to deal with normal incidents beyond their control, this rule sets up a complicated and limited number of passes each year through VIEs and TIEs. In (1), it states that CARB, by February 1 of that year, will determine the number of VIEs and TIEs – meaning that almost 10% of the year will have passed before the number of VIEs and TIES available will be known. What happens during January?” (41.4)

**Agency Response (41.4):** CARB staff made no changes based on the received comment. TIE and VIE allocations are granted February 1 per calendar year and do not expire until January 31 of the year after they are allocated. For example, in January 2025, terminals and vessel fleets may utilize any still available TIEs

and VIEs that were allocated February 1, 2024. Therefore, the commenter is mistaken that there will not be TIE/VIEs available in January months.

**Comment:** "VIEs and TIEs are also provided for just one port, even if vessels call 3 different terminals - for instance in SD-LA/LB-SF - severely limiting their number, availability or usefulness." (41.5)

**Agency Response (41.5):** CARB staff made no changes based on the received comment. The Regulation is designed to discourage vessels from calling multiple terminals at a port in order to avoid regulatory requirements. The nature of impacts on nearby communities is best characterized as cumulative, and thus, it is important to maximize and maintain emissions controls while allowing for some operational flexibility.

**Comment:** "93130.11(a)(l) Terminal volumes and vessel calls fluctuate. The TIE's should be based on current year and not previous year. The entire VIE/TIE proposal needs to be reconstructed. It simply does not match with the reality of industry and there are numerous considerations that need to be inserted into the program including what if CARB technology fails; other circumstances outside the control of a Terminal and Vessel Operator." (44.14)

**Comment:** "Other limitations of the VIEs/TIEs scheme are that it creates market problems. New entrants to the California market would have no VIEs/TIEs under the proposed scheme creating a significant barrier to entry. There have been several new entrants to the transpacific container market in the past few years. Under the proposed regulation, it would be almost impossible for them to enter the California market and grow their business due to the uncertainty new markets bring. Other issues include companies going bankrupt (which, again, has recently happened) that results in competitors attempting to claim that business, but would be virtually impossible without an increase in VIEs/TIEs to match that unexpected growth opportunity." (52.51)

**Agency Response (44.14) and (52.51):** CARB staff modified the proposed regulatory language in response to the received comments. CARB agrees that vessel calls may fluctuate from year to year and basing TIE/VIE allocations strictly by the previous year's activity might not reflect the actual TIE/VIEs needed. To account for substantial increases in vessel visits, during the 15-day changes in March 2020, staff changed language in Section 93130.11(c) to add a "Request for TIEs and VIEs." If either a fleet or terminal operator anticipates an increase in activity in the following year, the Regulation allows for requesting additional TIEs or VIEs. Upon request, CARB will consider the need for additional TIEs/VIEs and will approve or deny the request in writing.

TIEs and VIEs are still calculated by using the previous year's fleet or terminal visit data. Using the previous year's visit data to calculate TIEs and VIEs will

allow regulated entities to know how many TIEs/VIEs they possess prior to visiting a regulated terminal. Knowing how many TIE/VIEs will be granted by using known data should also allow for better planning for terminal and vessel operators. However, should a terminal or vessel fleet increase visits at any point in the year they are allowed under this provision to request more TIEs or VIEs.

**Comment:** “Opportunity Cost of the Novel Regulatory Structure. The concept of a VIE is a new concept. Based on comments by CARB staff at the May workshops, VIEs would be granted to fleets based on the number of calls to a California port in the prior year. CARB staff confirmed that fleets not previously calling California ports would be ineligible to receive VIEs. This would appear to block new entrants from serving California ports by making them uncompetitive to fleets that have access to VIEs, particularly for vessels that may not have access to alternative controls like cruise ships. How has CARB assessed these opportunity costs to California marine terminals, ports, and the California economy due to this novel regulatory structure?” (52.C.80)

**Agency Response (52.C.80):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff agreed with commenters to allow for new fleets to receive VIEs. See Section 93130.11(c). Since language has been altered to allow new fleets VIEs, CARB staff believes an “opportunity costs” analysis is not needed.

**Comment:** “VIES WILL NOT ADEQUATELY COVER NON-FREQUENT FLIERS OR CRUISE FLEETS ENTERING MARKETS IN CALIFORNIA: The VIEs (Vessel Incident Exceptions) as structured are not adequate to ensure that all non-frequent fliers can avoid violation should they come into California. The calculations that CARB will use to determine the number of VIEs available to a fleet will particularly disadvantage smaller fleets which will not be able to receive in some cases any VIEs, and the VIEs would be non-existent for vessels that did not call on California in the previous year, including scouting voyages for companies pursuing or adding new markets in the state. The CARB decision to treat the Ports of Long Beach and Los Angeles as separate ports is also a major impediment to the usefulness of VIEs for non-frequent fliers or for any other purpose for which the VIEs are allowed to be used.” (52.C.62)

**Agency Response (52.C.62):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. Staff developed the concept of TIEs/VIEs in consultation with vessel and terminal operators and port personnel. To compliment that effort, CARB prepared an extensive analysis of berth activities (ISOR Appendix E) and examined its own enforcement data from the 2007 At-Berth Regulation to determine TIE/VIE needs.

As explained in the ISOR, the concept of TIEs and VIEs as compliance options recognizes instances where operational needs of a terminal or vessel may result in not being able to connect with an emissions control strategy. The number of TIEs and VIEs are intentionally capped and should be sought in the event of

unexpected situations, not as a primary reliance. If shore power is unavailable, for example, the remediation fund is another compliance pathway. TIEs and VIEs may also be available in other instances, such as equipment failures, labor delays, routine maintenance activities, and for unequipped vessel visits. If fleets plan ahead for unequipped vessels by using the remediation fee when able and saving TIE/VIEs for other uses such as infrequent visitors, there should be no compliance issues.

For large fluctuations in business, such as with a change of ownership, or when a new fleet is entering the California market, a terminal or fleet will be allowed to request more TIEs or VIEs. This language has been added to the Regulation in section 93130.11(c).

While the Ports of Los Angeles and Long Beach are in close proximity, for the purposes of the Regulation, they are considered to be separate. If a vessel operator moves its services from one port to another, the fleet or terminal operator could request an increase in VIEs from CARB (see Section 93130.11(c)). However, CARB staff is unclear as to why the commenter believes the ports being considered as separate is a disadvantage for VIEs.

**Comment:** "VIEs needs to be flexible within a port complex like LA/LB since vessel services may move from terminal to terminal as business changes." (46.26)

**Agency Response (46.26):** CARB staff made no changes based on the received comment. CARB recognizes the complexity of marine operations and proposed VIEs as a compliance option based on a per port annual visit calculation. While the ports of Los Angeles and Long Beach are in close proximity, for the purposes of the Regulation, are considered to be separate and thus, would have separate VIE allocations. See response to comment 41.5 for why VIEs are not terminal specific.

**Comment:** "A greater flaw in the VIE/TIE scheme is the fact, as demonstrated in the Starcrest analysis, that there are insufficient VIEs/TIEs available to ensure compliance for known issues identified by CARB. As discussed earlier, VIEs/TIEs will be needed to for unknown and unexpected changes in trade, vessel deployments or equipment failures and maintenance. This can only be corrected by greatly increasing the number of VIEs/TIEs, at the cost of reduced emissions reduction. A fleet average approach would avoid all of this." (52.49)

**Comment:** "93130.11 There will need to be more % for TIE's issued the way the current proposed language is written. This still does not match with the reality of industry and there are numerous considerations that need to be inserted into the program including what if CARB technology fails; other circumstances outside the control of a Terminal and Vessel Operator." (44.15)

**Comment:** "93130.11 A TIE should not be utilized for uncontrollable events. This still does not match with the reality of industry and there are numerous considerations that need to be inserted into the program including what if CARB technology fails; other circumstances outside the control of a Terminal and Vessel Operator." (44.16)

**Agency Response (52.49), (44.15), and (44.16):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. While the allotment of VIEs and TIEs may not sufficiently account for all unforeseen circumstances, the Regulation is designed to provide flexibility with multiple compliance pathways. See ISOR pages IV-76 through IV-81 for the purpose and rationale for TIEs and VIEs.

During the implementation of the 2007 At-Berth Regulation CARB staff were made aware of multiple circumstances where a vessel visit would be unable to comply with emission reduction requirements. Absent an exemption, staff developed the concept of TIEs and VIEs to address unexpected instances. As a compliance pathway, TIEs are available to use when a terminal operator cannot control emissions for unforeseen circumstances or emissions control strategies are unavailable due to construction or routine maintenance. If TIEs are insufficient to reduce emissions the remediation fund may possibly be used. CARB staff disagrees a fleet averaging approach would alleviate the need for TIEs and VIEs. The 2007 At-Berth Regulation, which was based on fleet averaging, required the issuance of advisories to provide compliance relief for some of the operational events that can prevent emissions reductions from vessels at berth, including alignment issues, equipment failure, construction at the terminal, etc. TIEs and VIEs are designed to account for operational issues such as these and provide flexibility in the Regulation while limiting the number of uncontrolled visits. However, fleet averaging may be considered a compliance option as part of an Innovative Concept plan (see Section 93130.17). If the commenter believes, and reasonably demonstrates fleet averaging can achieve equivalent or better emission reductions than the conventional pathways, a vessel operator may apply to use that option as an Innovative Concept.

**Comment:** "93130.11 (c) A TIE should be able to be carried over to the next year and so forth. This would provide an incentive for Terminal Operators and reward them for compliance. This still does not match with the reality of industry and there are numerous considerations that need to be inserted into the program including what if CARB technology fails; other circumstances outside the control of a Terminal and Vessel Operator." (44.17)

**Comment:** "Marine terminal operators that perform highly with coordinating shore power usage should be able to retain TIEs for at least 3 years. This is an incentive for the hard work by terminal management and labor to comply with the at berth regulation and can be used in situations where terminals experience uncontrollable

issues prohibiting the use of shore power connections. Let's reward terminal operators for their efforts to reduce emissions." (24.5)

**Comment:** "VIE and TIE Expiration: The proposed rule states that VIEs and TIEs would expire on January 31 of the year after they are granted. To address frequently challenging market conditions during the winter months, we recommend that CARB allow companies to carryover any unused TIEs or VIE until June 30 of the year after they were granted." (45.29)

**Agency Response (44.17), (24.5) and (45.29):** CARB staff made no changes based on the received comments. CARB disagrees with these comments. TIEs/VIEs are intended for exceptional circumstances or when emissions control strategies are otherwise unavailable, for example, due to construction or maintenance. If the Regulation were to allow banking, there is less certainty that emissions would be reduced and could undermine efforts to reduce health impacts on nearby communities. With yearly caps on TIEs/VIEs, this ensures emission reductions to the surrounding communities. Banking TIEs or VIEs to use at a later date could result in a high percentage of uncontrolled visits in a year.

**Comment:** "Reporting is required within 7 days, however VIEs and TIEs are granted annually. This incompatibility in time spans means vessel operators must make decisions with very significant annual cost and operational impacts without knowing the annual impact and without the ability to plan for the full year.

- The Terminal TIEs may not be available for some needs, and could be provided preferentially to fleets with ownership interest
  - VIEs at 5% mean only 2 calls per year in some small ports
  - The VIE structure does not provide a mechanism to address the periodic business changes and disruptions mentioned above.
- Recommendation: Allow adjustment of VIE and TIE visit allocations on an annual basis to enable cost controls and effective planning." (46.15)

**Agency Response (46.15):** CARB staff modified the proposed regulatory language in response to the received comment. TIEs and VIEs are intended to be used for equipment failure, construction, emission reduction delays, and any other unforeseen circumstances for when emission reductions cannot be achieved. Planning to use TIEs and VIEs are an option for fleets and terminals but this means they might not be available for use when other circumstances occur. At all times terminals and vessels should be trying their hardest to reduce emissions from every vessel visit and forgo using a TIE or VIE. In some cases, the remediation fund can be used to make up emissions reduction shortfalls in lieu of using a TIE or VIE. This option allows for more circumstantial issues to occur while still being in compliance, as detailed in Section 93130.15

of the Regulation. However, emission reductions in the communities affected will still be achieved by other emissions reduction strategies. Additionally, CARB staff does agree with the commenter that for large fluctuations in business, such as with a change of ownership, a terminal or fleet should be allowed to request more TIEs or VIEs. As part of the 15-day changes released in March 2020 the language was added to the Regulation in section 93130.11(c).

**Comment:** “The Port requests that the number of TIEs and VIEs be rounded up to the nearest whole number instead of rounding to the nearest whole number for instances where the number of TIEs or VIEs is calculated at a fraction of ship call as stated in Section 9310.11(a)(2). Any fractional call should be counted as a whole all. For example, if a carrier made 49 calls to a California port in 2019, the VIE calculation would award 2.45 VIEs at the 5% level. This should be rounded up to three, not down to two.” (17.16)

**Agency Response (17.16):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The intent of the Regulation is to control emissions from vessels and reduce impacts on nearby communities. While the method to estimate TIEs and VIEs may be conservative, rounding could inappropriately permit uncontrolled emissions visits due to mathematical, not practical, reasons. Further, staff foresees the potential for misapplication, inadvertently or intentionally, by vessels self-classifying themselves as “fleets,” which could undermine the Regulation and result in a higher level of uncontrolled emissions than anticipated.

**Comment:** “[T]he proposed rule continues to hold marine terminals and ocean carriers responsible for issues completely outside their control. At large terminals, berth space is assigned based on a planned schedule. Those berth assignments allow the terminal to provide shore power and the vessel the ability to reach the shore power connection point. Unfortunately, schedules can be impacted by weather, prior port delays, labor issues, extra loaders, or a host of other issues. However, in the base case, the ocean carrier arrived ready to connect and the terminal assigned space ready to connect the vessel. Impacts such as weather delays (or any issue outside the direct control of the parties) that result in an inability to make a shore power connection should not result in either party being held responsible. While the concept of Terminal Incident Exceptions (TIEs) and Vessel Incident Exceptions (VIEs) may prove useful in a final regulatory framework, the concept should not be used as a bandage for areas that the proposed concept holds regulated parties responsible for issues outside their control.” (52.C.36)

**Agency Response (52.C.36):** CARB staff made no changes based on the received comment. Staff notes the comment and recognizes the complexity of marine operations. As explained in the ISOR, vessels, terminals, ports, and CAECS operators will all have responsibilities for compliance. The Regulation

provides multiple compliance pathways, one being a TIE for unexpected instances on the terminal-side. TIE/VIEs by definition are “an exception provided to terminal [or vessel] operators to allow for a limited number of incidents where a vessel does not reduce emissions as required during a visit” (Section 93130.2(b)). They were developed to cover instances when a vessel or terminal is not able to connect to a control system whether that be due to an unexpected event, such as vessel delays or scheduled construction.

If a previously commissioned shore power capable vessel is calling to a terminal, it is the terminal operator’s responsibility to connect a shore power capable vessel. CARB anticipates a terminal to provide enough infrastructure for each shore power vessel to plug in regardless of delays. However, to account for uncertainty TIEs/VIEs and the remediation fund may be used in lieu of controlling vessel emissions.

**Comment:** “VIEs/TIEs may prove useful in the regulatory framework. Unfortunately, the current proposal uses VIEs/TIEs to hold carriers and terminals responsible for actions outside their control. As an example, a carrier would need to expend a VIE when a CARB-sanctioned alternative control technology fails. The ocean carrier relies on CARB to verify alternative control technology as the carrier does not have the flexibility to use non-CARB sanctioned equipment. The ocean carrier should not be held responsible for third-party operator equipment failure, nor should they be required to “remediate” any impact through the fees. Any mitigation should be the responsibility of the third-party provider, after all that is the service they are providing.” (52.C.37)

**Agency Response (52.C.37):** CARB staff modified the proposed regulatory language in response to the received comment. Section 93130.18 was revised so that shared responsibility was extended to CARB approved emission control strategies (CAECS) operators. If found responsible, CAECS would be required to pay into the remediation fund or could be held in violation. In the case outlined by the commenter, a VIE, nor payment by the vessel operator would be necessary.

**Comment:** “Another concern regarding VIEs/TIEs is the requirement of reporting prior to vessel departure. In some cases, that would give responsible parties less than 10 hours to complete the reporting requirements. In other cases, it may simply be impossible because the cause of a failed connection may not be known immediately. In general, the reporting requirements of the proposal cannot rely on the assumption that the port, terminal, and vessel operators have perfect knowledge. As has been demonstrated multiple times, circumstances outside the control of any of the parties can arise and will leave the responsible parties working to identify all the necessary details to provide a complete report to CARB. At a minimum, responsible parties should have seven days to complete reporting, which would allow time for internal review of the reports.” (52.C.40)

**Agency Response (52.C.40):** CARB staff modified the proposed regulatory language in response to the received comment. Staff extended the reporting requirement for a vessel visit including use of TIEs/VIEs from 7 to 30 calendar days (Sections 93130.7(e)(4) and 93130.9(d)(5)).

**Comment:** “The declining availability of VIEs/TIEs does not seem to consider the impact of aging equipment over time. Today, the shore power equipment is still relatively new. As it continues to age in a harsh marine environment, equipment failures and the need for repairs/replacements will increase, not decrease. CARB staff should evaluate the foreseeable impact of equipment aging on the need for VIEs/TIEs and propose a VIEs/TIEs schedule that reflects that need. Separate from aging equipment is the fact that many vessels that have been retrofit are approaching their mandatory five-year drydocking. There will be difficulty in finding shore power-capable charter vessels for a short-term substitution. The proposed rule should account for this within the allocation of VIEs/TIEs. In addition, vessels should not be automatically prohibited from remediation fees when a vessel is not shore power-capable as it is not always possible to secure shore power-capable vessels for short-term charters.” (52.C.41)

**Agency Response (52.C.41):** CARB staff made no changes based on the received comment. CARB disagrees with the comment to the extent that the comment suggests shore power is “relatively new”. The U.S. Navy pioneered this system decades ago, and a subset of commercial vessels visiting California have been using shore power since about 2010 under environmental mitigation requirements and CARB’s 2007 At-Berth Regulation.

While CARB agrees that shore power systems will require maintenance over time, the allocation of TIEs and VIEs considers maintenance and construction needs. CARB recognizes the initial need for TIEs and VIEs to help with inadequate terminal infrastructure and vessel equipment deficiencies. However, as infrastructure and equipment are installed, staff anticipates TIEs and VIEs will be used for instances where emissions control systems are unavailable due to construction or maintenance.

In addition to maintenance, TIEs and VIEs can be used for uncontrolled visits such as from charter vessels not equipped with shore power or another CAECS. With regards to the five-year dry docking schedule, this is a planned and scheduled event and proper preparation should be in place to assure vessels visiting California will be shore power capable, use a CAECS or use a TIE/VIE.

**Comment:** “TIEs and Redundancy. The revised regulatory concept attempts to resolve the redundancy issue through the introduction of a concept termed “Terminal Incident Events” (TIEs). While TIEs would provide a five percent buffer in some situations, it does not eliminate the need for redundant equipment. It has not been

demonstrated that a terminal can remain in compliance within the five percent margin provided by TIEs. The data available, such as CARB's most recent enforcement report and the analysis conducted by the ports of Long Beach and Los Angeles, would indicate that a five percent margin is an insufficient margin. It is quite possible that all TIEs would be used simply managing scheduling problems that arise from weather, prior port delays, and unscheduled vessels calls that would impact berth assignments and ability to reach a shore power outlet. As a result, if industry always wants to ensure compliance (which we expect is CARB's goal), industry will need to begin investing in alternative technologies." (52.C.93)

**Agency Response (52.C.93):** CARB staff made no changes based on the received comment. CARB disagrees with the comment that the TIE percentages are not sufficient for compliance nor that the Regulation requires redundant control strategies. On the contrary, staff's analysis of enforcement data as well as collaboration with numerous terminal operators support that proposed TIE percentages will be sufficient to account for unforeseen circumstances that may prevent emissions control from a vessel visit.

A terminal operator has the responsibility to ensure each of its berths provide methods to control emissions. In most cases, this system will be shore power that CARB reasonably anticipates will be utilized. Most container, reefer and passenger vessel fleets calling California are subject to the 2007 At-Berth Regulation and many operators have already installed shore power infrastructure on their vessels, thus additional infrastructure needed will be minimal for most vessel categories. In addition to TIEs/VEs, CARB also included a remediation fee to use when emissions are uncontrolled at berth (Section 93130.15). CARB staff believes that these flexibilities there will not be a need for redundant technology as the commenter claims.

**Comment:** "TIEs are an Inadequate Substitute for Vessel or Terminal Checklist Approaches TIEs are an unworkable solution to the problem of inadequate infrastructure. The terminal operator typically has no control over the issues that impact berth availability. The terminal operator will plan vessel berth assignments around schedules provided by the ocean carrier. The vessel schedule can be impacted by issues outside the vessel and/or terminal's control:

- Vessel delayed arrival due to weather
- Vessel delayed arrival due to prior port delays
- Vessel early arrival due to quicker turnaround at prior ports
- Vessel departure delay due to the union dispatching insufficient labor
- Vessel arrival/departure delay due to tide
- Unscheduled vessel arrival (extra loaders)

None of these factors are within the control of the terminal operator in any fashion, yet the terminal operator would be liable in each of these circumstances for the number of

chance occurrences that impact their facility in addition to the 5% TIE buffer. One of the fundamental problems of the existing At-Berth Regulation is that it holds ocean carriers responsible for issues outside their control. CARB's draft regulatory concept does not resolve this issue. The concept turns the issue on its head and holds terminal operators accountable for issues outside their control. Questions of enforceability plague the existing rule as a result of these issues. TIEs only shift this problem to terminal operators." (52.C.95)

**Agency Response (52.C.95):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The Regulation's vessel and terminal checklists are provided in Sections 93130.7(e) and 93130.9(d).

CARB recognizes that in some instances a vessel may not be able to comply with the Regulation, including as a result of the issues listed in this comment. However, a vessel being noncompliant with the Regulation does not relieve the terminal operator from the responsibilities they have under the Regulation. Each vessel visiting a regulated terminal should have access to emissions control equipment. Thus, even if a vessel is off schedule, due to weather, prior port delays, early arrivals due to quick turnarounds, and tide delays it should still be assigned to an equipped berth or have an alternative control system available for use. To further facilitate, all berths are equipped and terminals are able to comply with the Regulation, CARB increased TIEs to 15 percent per year for the years 2023 and 2024 to allow for infrastructure build out.

**Comment:** "TIEs ignore the relationship that landlords/port authorities may have with terminals in ensuring a proper connection. In several ports, port staff are responsible for providing power, energizing the shore power connection, and maintaining infrastructure. TIEs ignore this fundamental relationship and place responsibility solely with the terminal operator with the expectation that can manage other, independent entities. As an example, if a port is responsible for maintaining shore power infrastructure and there is an equipment failure, it will be the port's responsibility to conduct repairs. The terminal operator has no ability to influence the speed of its public works contracting process or establish a schedule for repairs. Yet, the draft regulatory concept would hold the terminal operator responsible for this equipment failure. Should an equipment failure occur after a terminal has exhausted its annual TIE allocation, the terminal would be non-compliant as a result of actions by others – an untenable situation." (52.C.96)

**Agency Response (52.C.96):** CARB staff made no changes based on the received comment. As explained in the ISOR, CARB recognizes the range of possible responsibilities between terminals operators and port authorities. Some ports act only as landlords, others engage in direct operations and are involved in every aspect of emissions control equipment. Given the wide range of management scenarios, the Regulation requires terminals and ports to

specifically list, and agree upon, the division of responsibilities. This aspect of the Regulation is critical for holding the proper parties accountable for potential violations. To inform enforcement, terminal operators and ports are required to submit plans that advise CARB as to what is being done at their regulated terminal to ensure compliance. Staff would consider the delineation of responsibility for installing, maintaining, and operating emissions control equipment at berth too since responsibilities are not consistent and uniform across all terminals and ports. Ports would be required to show proof that the necessary infrastructure modifications are being developed or have been completed and/or report any modifications still required in order for all of the Port's terminals with control requirements to reduce emissions of vessels at berth.

The TIE concept is intended to provide exception to general requirements. CARB developed TIEs for use in exceptional instances where unplanned events or scheduled maintenance prevents a vessel from connecting to an emissions control strategy. As the commenter acknowledges, CARB developed the Regulation to provide multiple compliance pathways given the ranging circumstances and responsibilities involving marine operations. Indeed, issues may arise on the terminal or vessel side of operations. CARB expects parties to anticipate, to the extent possible, and address issues by coordinating efforts. The Checklists serve to help parties identify possible issues and encourage close coordination so vessels that visit a terminal are able to use a CARB-approved emissions control strategy. In the event of a terminal emissions controls strategy being unavailable, the Regulation provides alternative pathway compliance methods such as the remediation fund which is available for use by ports and terminals.

Specifically, to address the commenters concern about who would be held responsible if port supplied and maintained equipment was inoperable leading to uncontrolled emissions, a TIE could be used, or the port or terminal could use the remediation fund if available.

**Comment:** "At the outset, there may be a shortage of TIEs/VEs owing to known infrastructure deficiencies and infrequent vessel visits not likely to retrofit for shore power. Although CARB allows fleets and terminals to use TIEs/VEs or potentially pay into the remediation fund if a vessel cannot connect to shore power, there are some terminals and container/reefer fleets projected to exhaust these exceptions at the outset, as shown in Table 3. These exceptions owe to the known infrastructure deficiencies at some terminals, which could limit shore power access, and to the infrequent callers unlikely to install shore-power equipment. Of note, the following information was taken from CARB's Berth Analysis, which represents CARB staff's research; Starcrest has not independently validated this information, and terminal operators may have different information not reflected in CARB's Berth Analysis and thus not known to Starcrest." (52.A.13)

**Comment:** “Known Infrastructure Deficiencies: In the Berth Analysis, CARB notes that several terminals do not have sufficient shore-power infrastructure at the berth. In Long Beach, G235 has a shore-power installation built for a very specific vessel type, which is not compatible with all vessels, and Pier G may need to use TIEs for these 25 calls. At Pier T, the berth can only provide shore power to 3 ships at once, resulting in the potential for TIE usage. In Los Angeles and Oakland, CARB has identified the need for 5 new vaults total; until these vaults are constructed, it is likely these terminals will need to use TIEs. In total, 412 visits are at risk of using TIEs early on due to limited shore-power infrastructure, yet these terminals only have 253 TIEs to use.” (52.A.14a)

**Agency Response (52.A.13) and (52.A.14a):** CARB staff made no changes based on the received comments. See response to comment 52.C.93 for more information on terminal infrastructure needs. Additionally, to allow for infrastructure to be built terminals will receive 15 percent TIEs for the years 2023 and 2024.

**Comment:** “CARB has calculated the number of infrequent callers unlikely to install vessel-side shore power equipment (less than 3 calls annually in Long Beach and Los Angeles and less than 4 calls annually for all other ports; all vessels calling Oakland are assumed to install shore power). These calls will need to use VIEs, or a barge-based control system, which as discussed in Comment 0., may not be available right away. As shown in Table 3, at many terminals, there is projected to be a shortage of VIEs.” (52.A.14b)

**Agency Response (52.A.14b):** CARB staff made no changes based on the received comment. CARB disagrees that there will be an insufficient number of VIEs for infrequent vessel callers, as infrequent callers to a port can use TIEs/VIEs, and possibly the remediation fund while infrastructure is being built. Additionally, regulated entities were given sufficient lead time to plan and install emissions control technologies and supporting infrastructure, with timelines set as 2023 for container, reefer and cruise vessels, 2025 for ro-ro and LA/LB tanker vessel visits and 2027 for all other tanker vessels.

#### *xi. Port and Terminal Plans*

**Comment:** “Terminal and Port Plans required for Container terminals in Section 93130.14, the deadline of July 1, 2021 is confusing because the Compliance Start Date listed in Section 93130.7(b) is shown as January 1, 2021. Shouldn’t the Plans and associated 90-day review window be completed prior to requiring compliance?” (17.8)

**Agency Response (17.8):** CARB staff made adjustments to the Regulation implementation date for container vessels based on several comments

received concerning the January 1, 2021, implementation date. With the second 15-day changes issued in July 2020, staff extended the implementation date to January 1, 2023, with all initial port and terminal plans now due on December 1, 2021, over one year prior to the dates control requirements are set to begin for container vessels. As such, no further revisions are needed to address this commenter's concern.

**Comment:** "93130.14. This is another administrative burden. Further, it isn't practical for a terminal to develop a plan that they have no to limited control over. Carriers decide what will happen to their respective vessels. Carriers develop and control vessel schedules and these schedules change throughout the year. We do not see a value or reason to develop and maintain a plan. There will be regulations in place that will need to be followed, that would be the plan." (44.19)

**Agency Response (44.19):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The goal for submitting both the port and terminal plan is to provide CARB with information regarding the division of responsibilities between the terminal operator and the port, including contractual limitations applicable to the terminal, relevant to enacting the infrastructure required by each terminal's plan. There are no restrictions to resubmitting plans to reflect any changes in the plan. This provides terminals with the flexibility to notify CARB of any changes in carrier and control vessel scheduling. Please refer to ISOR Page III-33 and III-34 for additional details on why the port and terminal plans are a necessary part of the Regulation (staff note: dates in the ISOR reflect a previous version of the Regulation, but the rationale for needing this information remains valid).

**Comment:** "Terminal and Port Plan Requirements (Section 93130.14): WSC strongly supports the provisions that require CARB approval of shore-side infrastructure plans applicable to ports and terminals. This is a critical element of the new rule. How well these obligations are implemented will have a significant impact on the future program and whether the rule delivers the expected air quality benefits. In this context, WSC believes that there would be value in explicitly articulating in the revised rule that plans should include, among other things: a) appropriate changes to existing infrastructure design (e.g., inadequate electrical sub-station/electrical vault configurations); b) expansion of existing electrical infrastructure in container ports to accommodate future rule requirements to enable 95% of all shore power equipped container ship calls to be accommodated through shore-side power; and c) that approved plans include a realistic timeframe for design and construction consistent with the final regulatory dates promulgated in the final rule." (45.31)

**Agency Response (45.31):** CARB staff made no changes based on the received comment. Although CARB agrees with the need to articulate the changes and expansions needed for existing terminals to be able to accommodate the additional electrical infrastructure within a realistic timeframe, these milestones

have already been included in the ISOR. As demonstrated in ISOR Pages III-9 to III-22, CARB staff have already included in the list of items to be analyzed, the construction timelines for a variety of terminals that went through the Prop 1B and the MOTEMS process in order to get an appreciation for the differences in timelines between modifying different types of terminals.

**Comment:** “The timeline is so compressed as to produce some absurd and unrealistic results. For example, the plans for how terminals will meet the infrastructure needs for providing shore power to container, cruise, and refrigerated vessels are due six months after terminals must comply with the regulatory requirements. CARB has another three months to review the plans. As a result, the plans for ensuring compliance may not be approved for nine months after compliance is required. If the regulatory paper exercise cannot be completed before the compliance deadline, how can all the necessary infrastructure and alternative control technology that CARB identifies (though underestimates – see Starcrest analysis) be deployed by the compliance deadline in 2021?” (52.18)

**Agency Response (52.18):** CARB staff made adjustments to the Regulation implementation date for container, cruise, and reefer vessels based on several comments received concerning the January 1, 2021, implementation date. With the second 15-day changes issued in July 2020, staff revised the implementation date for container, cruise, and reefer vessels to January 1, 2023, with port and terminal plans now due December 1, 2021, over one year before the compliance dates are set to begin for these three vessel categories. As such, this comment is no longer relevant and no further revisions are needed to the Regulation.

**Comment:** “Terminal plan reporting includes a requirement to list each berth with geographic boundary coordinates. Berths are not so precisely defined. As discussed in the Starcrest analysis, what constitutes a berth is dependent on the vessels that call a terminal. As the Starcrest analysis points out, the CARB assessment assumes a static world where vessel sizes do not change, and this reporting requirement reflects that. This reporting requirement should be eliminated and CARB should update the ISOR consistent with the attached analysis.” (52.56)

**Agency Response (52.56):** CARB staff made no changes based on the received comment. Identifying the land-side facility geographical boundary coordinates is necessary for keeping track of land-side intermodal freight related emissions from trucks, reefers, and locomotives operating within the ports and terminals. CARB staff does understand that a vessel may utilize more than one berth at any given time, depending on the variety and alignment of different sized vessels visiting the terminal. It is not staff’s intention to use the berth geographical locations for anything more than ensuring that a terminal has an emissions control strategy capable of reducing emissions at each berth. If berth

definitions change, a terminal or port can submit an updated terminal/port plan as needed.

**Comment:** "Port staff object to the text in Section 93130.14(a) that "[a]s an alternative, Ports may submit plans for their terminal operators." Ports should not be expected to submit plans for terminal operators. In addition, the statement in Section 93130.14(b)(1) that "Ports should use terminal plans as [the] basis for developing port plans" seems to indicate that the deadline for Port Plans should be adjusted to come after the deadline for Terminal Plans." (17.9)

**Comment:** "Regarding the Terminal and Port Plans required for Container terminals in Section 93130.11 of the Proposed Control Measure, the deadline of June 1, 2020 does not allow for sufficient time after the anticipated adoption of the Proposed Control Measure for ports and terminals to submit plans. Port staff object to the text in Section 93130.11(a) that "[a]s an alternative, Ports may submit plans for their terminal operators." Ports should not be expected to submit plans for terminal operators. In addition, the statement in Section 93130.10(b) of the Proposed Control Measure that "Ports should use terminal plans as [the] basis for developing port plans" seems to indicate that the deadline for Port Plans should be adjusted to come after the deadline for Terminal Plans." (17.23)

**Comment:** "All Terminals Should Be Required to Submit Terminal Plans - The proposed regulation language allows terminals to have the ports submit plans on their behalf. The Ports should not be responsible for the submission of each terminal's plans on their terminal operators' behalf. All terminals should submit their own terminal plans. Ports do not have control over the financial and operational decisions terminals will have to make in order to comply with the regulation, and Ports cannot be liable for terminal infrastructure deployment under the new rule. In addition, if the terminal operator intends to install the shore power infrastructure themselves, they should be required to provide the elements outlined in the proposed port plan requirements rather than the Port.

In the past, the Ports have supported shore power deployment by providing the design, bid, build, and services. In some cases, the investment was recouped through terminal leases. This was a service to our terminals, particularly for the initial installations under the original 2007 shore power regulation, but is not necessarily the path forward given the Ports' current capital project commitments and the extensive electrical infrastructure required to achieve the zero emission goals of the Clean Air Action Plan (CAAP) at the terminals.

If the Ports are still required to submit port plans in the proposed regulation update, then the terminal plan deadlines must be set at least six months prior to port plan deadlines to allow the Ports sufficient time to review the submitted terminal plans, negotiate lease terms with their terminals, and compile the necessary information CARB has requested for the Ports to submit port plans. There is no guarantee that

agreements will be reached in time to meet the timeline for this part of the proposed regulation. Many of these leases have several years remaining and terminals may be reluctant to renegotiate lease terms, especially for strategies that have no CARB certification.

If terminals determine they need to construct more infrastructure, project initiation will not commence until the proposed At Berth Regulation goes into effect. It is unrealistic to expect terminals or the ports to have design or schedules for equipment installation completed by June 2020. The earliest date according to CARB's timeline for project initiation is January 2020, assuming terminals do not use the first six months to evaluate their best compliance option. Given that project initiation, consultant selection for design, preliminary design, CEQA approval, and final design can take 23-30 months, it does not make sense to anticipate a schedule and estimation of the electrical infrastructure required at a terminal in just six months. If the terminals/Ports submitted plans solely based on preliminary design, which is a vastly premature estimate of project scope and timeline, it would take 11-15 months. This challenge once again points to the impossibility of meeting the 2021 timeline with shore power, the most mature, emission-efficient, technological solution" (60.28)

**Comment:** "[T]here is insufficient time to prepare terminal and port plans. From the effective date of the rule, until June 2020, will leave less than six months' time to prepare appropriate plans. Terminals and ports will need to coordinate on the development of any plan in order for the plan to be credible. In order to complete the plans, port and terminal operators will likely need to retain outside consulting services. Any such work will be subject to a public contracting process. Any port that does not have such services available through on-call contracts would be subject to the State-mandated process to retain outside expert consulting services, which will likely take nearly the entire six months available: preparing a request for proposals, solicitation, proposal review and selection, and contracting. It has been estimated that the design work alone will take 12 months. From plans through every aspect of implementation, CARB staff has established an unrealistic timeline for implementation that will be impossible to successfully complete." (52.C.34)

**Comment:** "The Ports also believe that adequate time should be built into the schedule for submittal of terminal operator and Port plans, well in advance of the compliance deadline, in order to provide ample opportunity to adjust their plan given CARB feedback. It would also be helpful to see more details on what the required elements of such plans would be in the regulation." (60.13)

**Agency Response (17.9), (17.23), (60.28), (52.C.34), and (60.13):** CARB staff made changes to the implementation and terminal/port plan due dates for the Regulation through the 15-day change process in response to the ongoing pandemic situation. As a result of these changes, the concerns expressed in these comments about the short timeline to submit terminal and port plans are

no longer relevant. See Master Response 6 for details about the changes made to the implementation dates for the Regulation.

Regarding the concerns about ports submitting plans on behalf of terminal operators, CARB staff would clarify that ports are not expected to submit plans for terminal operators, but have the option to submit them on behalf of terminals if that is the agreed upon plan between the port and terminal operator(s). This language is designed to provide flexibility to ports and terminals who may have different relationships. See ISOR Page III-34 for more information. While staff anticipates the port plans to be generally based on the terminal's plans for reducing emissions from vessels at berth, there is no requirement stating that a port plan must match a terminal's plan exactly and staff does not see a necessity for having separate plan submission dates. CARB encourages terminal and port staff to collaborate in the development of plans and expand upon existing relationships, as terminal operators and port staff are required to sign off on one another's plans prior to submitting to CARB.

The primary purpose of port and terminal plans is to demonstrate that ports and terminals are prepared for reducing vessel emissions and to have, in writing, the division of responsibilities between the terminals and the ports in regards to any infrastructure and equipment installation, maintenance, and operation necessary to meet the control requirements at each terminal. This is a key detail for CARB's enforcement staff, as the delineation of responsibility for installing, maintaining, and operating emissions control equipment at berth is not consistent and uniform at all terminals and ports. CARB staff anticipates port and terminal plans being fairly generic in nature, and details to the extent that comment 60.28 propose are not necessary for port and terminal plans. If under further evaluation a port or terminal operator decides to go a different route than what was stated in the initial plan, an updated plan can be submitted to CARB.

**Comment:** "Exceptions to Delays in Port Plan Schedules - If ports are still required to submit port plans, then CARB should provide exceptions to any possible enforcement action if port plan schedules are not met. The port plans can only provide an estimated schedule of installing equipment and/or necessary construction projects. Delays can and will happen outside of the control of the Ports. For example, delays due to permitting, equipment acquisition, environmental assessment, and other events that may cause schedules to not be met should be given exemptions to enforcement action in this regulation. It is unfair to hold the Ports liable for mobile source operators' actions and emissions outside of our direct control." (60.29)

**Agency Response (60.29):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff agrees with the commenter that port plans may be subject to delays outside their control, and removed the language stating that ports would be subject to enforcement

action if port plan schedules are not met as part of the 15-day package released March 26, 2020.

*xii. Additional Vessel Categories*

**Comment:** "CARB staff made a prudent decision to exempt bulk and general cargo vessels based on a significant economic impact versus the amount of emissions captured, and therefore terminals that receive this category of ships are not required to arrange for a CARB approved emission control strategy for their visit. Our experience is that the cost benefit analysis and margins in the Ro-Ro business are not dissimilar from general cargo vessels, and it is not inconceivable that these unknown variables could have a significant impact and jeopardize our ability to operate. We urge CARB to also exempt Ro-Ro vessels from proposed alternative at-berth control measures when shore side power capabilities fail to exist." (37.1)

**Agency Response (37.1):** CARB staff made no changes based on the received comment. Exclusion of bulk and general cargo vessels was determined for multiple reasons including, but not limited to, the aforementioned cost effectiveness. For more information on the exclusion of bulk vessels refer to Chapter III of the ISOR. In addition, as part of the first 15-day changes, CARB included bulk and general cargo vessels in the Interim Evaluation. The Interim Evaluation will take into account the state of technologies and CARB may at that time, decide to include those vessel categories in the Regulation.

**Comment:** "We have serious concerns, however, with CARB's proposal to both substantially revise the current at-berth regulatory system and expand the applicability of that system to new classes of vessels, particularly ro-ro vessels, which comprise a large number of discrete vessels, only a small percentage of which make infrequent and very short port calls (on average 14 hours and short as 9 hours) in California. No evidence has been presented or reviewed that demonstrates that a cost-effective pathway exists for controlling ro-ro vessels' auxiliary emissions." (45.1)

**Comment:** "Applicability to Roll-on/Roll-off (ro-ro) Vessels (Section 93130.7(b)): ... The proposed rule and its supporting analyses have failed to provide an adequate explanation and cost-benefit analysis that demonstrate that controlling auxiliary emissions for ro-ro vessels is any more practicable and cost effective than for general cargo ships, which the rule has chosen not to regulate. It is also worth noting that ro-ro competes with general cargo and some bulk cargo vessels for the transport of construction and agricultural machinery and a lot of "breakbulk" cargo. Imposing requirements on ro-ro would create a market distortion..."

There has been no considered analysis of the costs and benefits of regulating ro-ro auxiliary emissions versus the operational realities associated with regulating this class of vessels, which is comprised of a large number of discrete vessels, only a small

percentage of which make infrequent and very short port calls (on average 16 hours and short as 8 hours) in California.” (45.11)

**Agency Response (45.1) and (45.11):** CARB staff made no changes based on the received comment. Excluding ro-ro vessels from the At Berth Regulation was considered by CARB staff as an alternative. It has been included in the EA and SRIA as an alternative considered but was ultimately rejected. Removing ro-ro vessels from the Regulation would exclude emissions reduction requirements from approximately 1,000 ro-ro visits per year (around 10 percent of all vessel visits to California) and roughly 11 out of 33 terminals would be eliminated from the Regulation’s emission reduction requirements. Removing ro-ro vessels from the requirements of the Regulation was an alternative considered in both the EA and the SRIA. The alternative analysis found that while removing ro-ro vessels from the Regulation resulted in a lower cost overall, it would also result in fewer emission reductions and would not greatly reduce the environmental impacts of this Regulation. The lost emissions reductions would have a negative health impact on the communities surrounding the ports due to higher exposure to cancer causing DPM.

As part of the 15-day changes, CARB will include bulk and general cargo vessels in the Interim Evaluation. The Interim Evaluation will take into account the state of technologies and CARB may, at that time, decide to include those vessel categories in the Regulation. In order to maximize the health and environmental benefits from this Regulation, it is CARB staffs’ intention to include other vessel categories such as general cargo and bulk as soon as feasible.

**Comment:** “Shore power infrastructure for ro-ro vessels is not emerging in California ports or in any other U.S. or international ports where ro-ros call. There are many reasons for this, including: the fact that ro-ros increasingly operate like tramp vessels and less like liner vessels, making shore-side power infrastructure difficult to set up; that ro-ros would need to go through expensive electrical system retrofits because container-based shore power units (e.g. AMP’s) are not a realistic option; and ro-ro’s don’t typically carry dedicated electricians that container vessels have (to handle reefer units).” (45.12)

**Agency Response (45.12):** CARB staff made no changes based on the received comment. CARB agrees with the commenter that ro-ro vessels do operate more like tramp vessels than liner vessels and as such, would likely not choose shore power as a control option. Fortunately, the Regulation allows for multiple strategies for compliance. Ro-ro vessels may benefit from using emission capture systems or on-board control systems rather than using shore power.

As mentioned in the ISOR, ro-ro and tanker vessels could potentially use shore power, but numerous vessel operators and industry representatives for these

vessel types stated during public workshops and meetings that capture and control systems are a more attractive option than shore power. This is largely because shore power requires an infrastructural modification to the vessel, and there are far fewer vessels in the ro-ro and tanker categories that make regular or frequent calls to California.

**Comment:** “[CARB is] basing regulation of ro-ros on the premise that barge-based capture and control equipment is or will become a viable and practicable emissions control option. Experience to date with the two existing barge-based capture and control service providers has demonstrated that those services are often unreliable, are exceedingly costly, and pose substantial operational and safety problems for ro-ros - namely that the systems cannot be used in windy weather, cannot always reach ro-ro stacks (which may be 40 meters laterally and 40 meters above the waterline), and often prevent simultaneous alongside bunkering operations. If ro-ros cannot bunker in port, they may be forced to bunker at anchorages. Neither ro-ro auxiliary emissions at anchor for bunkering nor the additional emissions from tugboats used to move bunkering barges to and from the anchorage have been accounted for in CARB’s analyses.” (45.13)

**Comment:** For Ro-ro vessels “...no commissioned land-based systems exist today and we understand that land-based systems would not be a practicable control option at many existing California ro-ro terminals because the piers on which the shore-based control systems would sit could not support the weight of the systems. Furthermore, such systems would obstruct cargo operations as ro-ro stacks are located near the stern where the ramp is located. Ro-ro operators need to be able to stage, maneuver and park cargo all along the quay side. Even if this technology could be built and deployed, the limitations related to use of the systems in inclement weather remain as does the need to factor in the generator GHG emissions the control systems would produce.” (45.18)

**Agency Response (45.13) and (45.18):** CARB staff made no changes based on the received comment. While the general technology for controlling ro-ro vessel emissions via a barge-based capture and control system exists, CARB staff recognizes that there are not barge-based capture and control systems approved for use on ro-ro vessels at the time of this rulemaking. This was addressed by delaying the implementation date for ro-ro vessels until 2025. An implementation date of 2025 allows additional time for technologies and infrastructure to be adapted and installed to suit ro-ro vessels at ro-ro terminals.

Additionally, to allow for any uncertainty, staff will conduct an Interim Evaluation to assess the progress in adopting emission control technologies applicable to tanker and ro-ro vessel operations, as well as the status of land-side infrastructure improvements that may be needed to support emission reduction systems at ro-ro and tanker terminals (Section 93130.14(d)). If CARB determines, after evaluation, that the compliance deadlines for ro-ro or tanker

vessels warrant an adjustment, staff may propose formal regulatory amendments.

Alternatively, staff developed an “Innovative Concept Compliance Option.” This approach may be used in lieu of meeting required emission reductions from a vessel, if the Innovative Concepts meet or exceed required emissions reductions otherwise achieved by controlling vessel emissions while at berth (Section 93130.17).

Staff believes these provisions and upcoming advancements in technology should help regulated entities meet compliance obligations by their implementation dates.

Refer to Master Response 1 regarding the analysis of GHG emissions and barge-based systems operating with ro-ro vessels.

**Comment:** “[R]ecommend that CARB not proceed with plans to regulate ro-ro auxiliary emissions in 2025 and instead monitor ro-ro emissions and the ongoing development of technologies that may in the future provide a viable and economically achievable compliance option for these vessels.” (45.20)

**Agency Response (45.20):** CARB staff made no changes based on the received comment. See response to comment 45.13 for more information on provisions made for ro-ro vessels to comply and why CARB staff believes emission reductions from ro-ro vessels is achievable.

**Comment:** “The proposal to include Ro/Ro vessels is not supported by the evidence. PMSA has commissioned a review of Ro/Ros by Starcrest Consulting Group (see report, Attachment B) that reveals the deep and fundamental flaws in the analysis supporting the inclusion of Ro/Ros within the expanded regulation. Broadly, the issues lie in two broad areas: the presumed emissions benefit and cost analysis.

The emissions benefit presented in the ISOR are overstated. It is expected that Ro/Ro vessels will use alternative control technologies that will result in excess emissions due to tug and bunkering activity. Every use of a barge-based system will require up to six tugboat moves. Those moves would occur only because of the Proposed Regulation resulting in significant emissions when compared to emissions the regulation seeks to control. The analysis presented by Starcrest conclusively shows that once these factors are taken into account, the emissions benefit is reduced to a net benefit of only 40%. Potentially worse, GHG emissions increase by 50%. If properly accounted for, these emissions would reduce the cost-effectiveness of such systems.

These emissions have not been included in the assessment or accounted for in either the emissions benefit analysis, cost-effectiveness analysis, SRIA, health risk analysis, or

incidences per ton analysis. These additional emissions cause cost-effectiveness values to rise, reduce mass emissions benefits, and reduce health benefits. These emissions are significant compared to the source and directly undercut the analyses presented in the ISOR.” (52.28)

**Comment:** “Ro-ro controls actually increase GHGs by 50 percent. We think that’s significant and should be avoided by the Board. Emissions reductions after accounting for all the alternative and requisite logistics actually have an effective reduction rate of DPM of only 40 percent not 80 percent as required by the rule.” (OC-3 Jacob)

**Agency Response (52.28) and (OC-3 Jacob):** CARB staff made no changes based on the received comments. CARB disagrees with these comments. In support of the Regulation, staff conducted research on additional emissions from capture and control systems, as well as from tugs and did not find significant GHG increases from using these systems on ro-ro vessels. Findings were included in the Draft EA released in October 2019. Also, see Master Response 1 for further discussion.

**Comment:** PMSA is deeply concerned by the proposed expansion of the At-Berth Regulation to other vessel categories. The proposed amendments would also expand the regulation to currently unregulated vessel types. The impact to non-liner services, especially in small ports, will potentially be devastating. In the absence of the scheduled service that is the mainstay containerships, other vessel types can visit any port that provides the most cost-effective service, and the commodities they often carry are extremely price sensitive. In comparison, the hoteling emissions from non-liner ships are relatively small, in line with their much smaller auxiliary engines.

Despite being verified by CARB, the existing technologies are not mature. Making other vessel categories captive to start-up companies will create regulatory and business uncertainty in California. Along with potential economic impacts (discussed further below), price sensitive break bulk, dry bulk, and ro-ro vessels could stop calling California ports. The bulk commodities in particular have very small profit margins and very competitive global markets. California’s agricultural industry would be heavily impacted. In addition, most ports in California do not have the financial wherewithal to provide the necessary shoreside infrastructure in relation to the level of maritime business that they service. (52.C.147)

**Agency Response (52.C.147):** CARB staff made no changes based on the received comment. See response to comment 45.1 for the need for including ro-ro vessel in the Regulation and 37.1 for more information on the exclusions of bulk and general cargo vessels.

Additionally, as can be seen on page III-8 of the ISOR, to help alleviate impacts on small ports, there is a 20-visit terminal threshold. This threshold includes the largest active container, reefer, cruise, ro-ro, and tanker terminals in California. The threshold was chosen because, as terminal visits decrease, so does the cost effectiveness of installing emissions control equipment. The 20-visit threshold is designed to be the most health protective option while also reducing cost impacts on the state's smallest terminals.

*xiii. CARB Approved Emission Control Strategies (CAECS)*

**Comment:** "A greater emphasis by ARB on the role of emission capture and control systems, as a supplement to grid-based shore power in reducing harmful vessel air emissions, particularly in light of the preceding criticisms of the proposed rule, is warranted. Concerns about cost-effectiveness of capture and control systems for certain vessel categories should, of course, be taken into account; however, these systems could likely be scaled to desired sizes and capacities, thereby improving these calculations. And, on issues such as vessel emission reductions at anchorage, emission capture and control systems are a viable option—as opposed to shore power, for instance—and ought to be integrated in a comprehensive proposed rule." (21.5)

**Agency Response (21.5):** CARB staff made no changes based on the received comment. The Regulation provides flexibility for regulated parties to implement any strategy that achieves the required emission reductions. Staff is already committed to conducting an Interim Evaluation for new technologies and applications.

**Comment:** "The Ports remain concerned with the following key elements of the proposed regulation:

- The industry has raised significant concerns regarding the potential alternative emission capture and control technologies upon which this regulation depends, including cost, operational viability, safety, and the reality that utilizing these technologies will increase greenhouse gas emissions. The technology for controlling at-berth emissions for RoRo vessels or tanker vessels has never been demonstrated and a prototype does not exist. The technology feasibility assessment proposed for 2023 should require CARB staff assess the state of technology, the readiness to deploy it at each port, safety considerations, and cost-effectiveness. The rule should specifically call out these elements as required components of the feasibility assessment. In addition, there should be a mechanism for staff, without returning to the CARB Board for approval, to make the necessary changes to the implementation timeline should the feasibility assessment demonstrate the technology is not feasible or the costs too great per ton of emissions reduction." (23.5)

**Agency Response (23.5):** CARB staff made no changes based on the received comment. CARB has considered costs of capture and control technologies in the SRIA, specifically, land and barge-based systems direct costs can be found in sections 4(b) and 4(c). GHG emissions resulting from the use of capture and control technologies were considered in the EA released in October 2019. For further discussion on additional GHG emissions see Master Response 1. The technology to control emissions on ro-ro and tanker vessels needs to be adapted to this new application, but have been successfully used on other vessel types and in other land-side applications. As the technologies are adapted, developers will need to overcome all related safety issues. However, the Regulation has provisions to address any safety concerns and physical constraints that need to be overcome to implement CAECS at a terminal. CARB anticipates that these technologies can be implemented safely.

For the Interim Evaluation CARB will utilize port and terminal plans and will also consider other public information provided to CARB including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies (93130.14(d)). All information submitted will be considered, including data on the state of technology, readiness to deploy, safety considerations, and cost-effectiveness. If the Interim Evaluation leads staff to consider changes to the Regulation, the only mechanism for change is to return to the Board through a new public process to implement any modifications to the Regulation.

**Comment:** “P. 28 – (c) Visits by Vessels with On-Board Control Strategies: It isn’t clear what on-board strategies are envisioned. Does this text contemplate exhaust gas cleaning systems? How would the terminal operator assess these on-board options?” (41.13)

**Agency Response (41.13):** CARB staff made no changes based on the received comment. On-board emissions control technologies may also be an option for reducing emissions from an OGV at berth. Many emissions control technologies, including exhaust gas scrubbers, exhaust gas recirculation (EGR), and selective catalytic reduction (SCR), have long been effective for reducing emissions from land-based diesel-fueled engines, but there is still limited use and experience applying these technologies to marine OGV engines. Although there are currently no on-board emissions control strategies verified by CARB for marine ocean-going applications, CARB staff believes they could be developed more widely on a global scale in the coming years as international air quality regulations tighten.

If the CAECS is operated solely on the vessel, vessel operators shall confirm in writing with terminal operators, prior to the vessel’s arrival at a California berth, that the equipment is operational and will be used per section 93130.7 (d) of the Regulation. Once the vessel visit is complete, the terminal will report to

CARB within 30 calendar days of the vessel's departure, that a CAECS was used during the vessel visit. Any approved on-board strategies will have a corresponding EO. It is not the terminal operators' responsibility to assess on-board technologies. They will be verified and approved by CARB prior to use for compliance.

**Comment:** "P. 30 – (f) Lack of Alternative for Cruise Vessels During Terminal Shorepower Construction or Repair: Again, this rule requires the terminal operator to provide an alternative CARB approved emission control strategy for a berth that is unavailable due to construction or repair. What will happen to ships that can't use alternative control strategies, particularly if TIE's or VIE's are not available? If the cruise ships will be charged a very costly remediation fee for each of these instances, it places a significant burden on cruise vessels not faced by other vessel types." (41.14)

**Agency Response (41.14):** CARB staff made no changes based on the received comment. Although an alternative for cruise vessels does not exist today, the Regulation does not prohibit one from being developed. As mentioned in the comment, both terminal and vessel operators receive a number of TIEs or VIEs each year to accommodate for a limited number of uncontrolled visits. Staff agrees that in cases where the terminal is undergoing construction or repair, remediation is an option. Remediation is intended to ensure the emission burden the community experiences can be lessened through a remediation project. The higher remediation fee for cruise vessels is proportional to the higher emission levels from these vessels while at berth.

**Comment:** "The requirements identified under Section 93130.5 are potentially self-defeating in allowing additional control technologies to supplement shore power for rule compliance. The proposal envisions emission control systems operating interchangeably across different vessels, hopefully lowering capital costs. However, the rule establishes different allowable emission rates depending on vessel type ensuring that such systems cannot be used interchangeably. This requirement alone would drive up the number of units necessary and therefore costs and was not analyzed by CARB staff." (52.39)

**Agency Response (52.39):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. Section 93130.5 allows any control technology that receives CARB approval to be used for compliance with the Regulation. CARB does not use different emission rates for different vessel types. Vessels come in different shapes and sizes so not all solutions will work interchangeably with all vessels – but control strategies should be able to work interchangeably to the extent that a system can control emissions meeting the operational requirements of the vessel type. Even with shore power, the gold standard for emission reductions for vessels at berth, there is not a one size fits all solution. Cruise vessels have significantly higher power demands than container vessels and the shore power equipment for cruise vessels is

incompatible with container vessels. Because CARB is flexible with the allowable compliance technology, the market can dictate which technology to implement and seek the lowest cost solution and not just the solution that might be mandated by a more prescriptive regulation.

**Comment:** "CARB grants an effective five-year monopoly to the two existing alternative control strategies allowing them to continue to operate under existing Executive Orders (EO), while subjecting any competitor for the first five years to more stringent and costly requirements. It is also unclear whether existing alternative control technology suppliers would be allowed to build additional, identical equipment and be subject to the same five-year advantage or that advantage is only limited to extant equipment. In other situations, CARB provides the EO to the equipment type, not to individual pieces of equipment." (52.40)

**Agency Response (52.40):** CARB staff made no changes based on the received comment. Existing EOs represent a substantial effort made by technology developers in implementing and deploying compliance solutions for ocean-going vessels at berth. The grandfathering of existing EOs, and any associated competitive advantage, is temporary. The five-year period ensures that these companies can continue to use their technology to control emissions on vessels while they work to develop a means to meet all the new requirements of this Regulation. A manufacturer can make additional units under an approved EO as long as those units are identical and meet all the reporting and recordkeeping requirements of the EO.

**Comment:** "One of the requirements that CARB demands for alternative control technologies is a warranty. Similar to other air quality programs, warranties ensure long-term emission reductions. However, a warranty is only as good as the financial assets behind the company offering the warranty. CARB should require a demonstration of the financial wherewithal to provide a 10-year warranty or require a performance bond to ensure that warranty obligations can be made. The provisions for emissions testing upon selling or leasing an approved emission control system are unnecessarily burdensome. The proposed regulation already includes a requirement for annual source testing. It is unclear why additional testing is necessary if the equipment changes ownership or leaseholder. Such a requirement would also discourage short-term leasing options as it would add costs every time the system is leased to a new user." (52.41)

**Agency Response (52.41):** CARB staff made no changes based on the received comment. Please refer to ISOR Pages IV-39, "Rationale for Section 93130.5(d)(5)(A) and (B)." The ten-year warranty requirement was selected by CARB staff based on the useful life of emissions control equipment and to remain consistent with other CARB funding program warranty requirements, such as the Proposition 1B funding guidelines. CARB did not regulate warranties because we regularly monitor the effectiveness of the units. CARB believes this is a more

robust method of ensuring that the control strategies operate at appropriate levels. We do not preclude manufacturers from offering warranties and expect that this could be a requirement between private parties, for example, in a bill of sale or an offer to lease or operate. Furthermore, under "Rationale for Section 93130.5(d)(6)," the Regulation includes language to ensure that other parties buying or leasing an emissions control strategy, and relying on that technology for compliance purposes, will have equipment that meets the requirements of the Proposed Regulation. Regular testing and monitoring is already required under the Regulation. We think that it is important to ensure the integrity of control systems that are sold or leased, to avoid any issues with a system that is used compliance.

**Comment:** "Need for Electrical Infrastructure: Land-based capture and control systems are going to be built for the 2025 standard of grid-neutrality, which means they are likely to be powered by electricity to take advantage of fuel cost savings." (52.A.20b)

**Agency Response (52.A.20b):** CARB staff made no changes based on the received comment. Certainty, using grid electricity to power the control system would be considered grid-neutral.

#### xiv. Definitions

**Comment:** "The definition of "Fleet" in Section 93130.2(b)(29) does not explain how fleets will be established. What will CARB require at the beginning of each compliance year to establish fleets? How will this work?" (17.10)

**Agency Response (17.10):** CARB staff modified the proposed regulatory language for the definition of a fleet as part of the 15-day changes in response to the received comment. It now reads:

"'Fleet' means a group of vessels of the same vessel type that have agreed to utilize their combined Vessel Incident Events (VIEs) at a port or marine terminal and are registered with CARB by a person who is designated as that fleet's representative. Vessel operators shall designate their fleet for each visit in the vessel visit reporting requirements of section 93130.7(e)(4) of this Control Measure. Only the fleet's representative may authorize the use of a VIE for a visit by a vessel in the fleet."

Each time a vessel visits, they are required to report visit information within 30-days of departure. Part of the vessel visit information required is reporting which fleet representative, if any, the vessel is under. A fleet representative will need to contact CARB to establish themselves as a fleet representative.

**Comment:** “The Port requests that the definition of “Vessel Commissioning” in Section 93130.2(b)(76) of the Proposed Control Measure be expanded to include the port authority as the commissioning agent, as is the case at the Port of Oakland. The same language is found in Section 93130.7(e)(2) (“Ensure the vessel is commissioned as required by terminal operator”), Section 93130.8(c)(2) (“The terminal requires that the vessel be recommissioned”), and Section 93130.9(a)(2) “The terminal operator is responsible for commissioning vessels equipped with shore power.”). The commissioning requirement should be determined by the port authority or the terminal operator.” (17.14)

**Comment:** Port staff request that the definition of “Vessel Commissioning” in Section 93130.2(b)(61) of the Proposed Control Measure be expanded to include the case in which the port authority is the commissioning agent, as is the case at the Port of Oakland. Likewise, in Section 93130.7(d)(1) (“If applicable, commission vessel as required by terminal operator”), Section 93130.8(a)(4) (“It is the terminal operator’s responsibility to commission vessels equipped with shore power”), and Section 93130.8(d)(1) (“If applicable, commission vessel for use of shore power”), the commissioning requirement should be determined by the port authority or the terminal operator. (17.26)

**Agency Response (17.14) and (17.26):** CARB staff made no changes based on the received comment. In general, ensuring that a vessel is commissioned is the terminal’s responsibility in the Regulation. However, CARB staff understands that some ports may take on the responsibility of commissioning vessels, instead of terminals, as this commenter notes here, and there is nothing in the Regulation that prevents a port from taking on this responsibility instead of the terminal operators. In this case, the terminal and port staff can make that distinction in the terminal and port plans. CARB staff will utilize any defined responsibilities in the terminal and port plans to assess where responsibilities lie in the event that a vessel is unable to control emissions during a visit, including in respect to commissioning for shore power.

**Comment:** P. 22-23 – S. 93130.7 (a) Compatible Shorepower Berth Definition for Side of Ship Where Connection is Available. This section should definitively define a “compatible shore power berth” to mean one that will accommodate the on-board shorepower connection on the side of the ship that the connection is available. (41.10)

**Agency Response (41.10):** CARB staff modified the proposed regulatory language in response to the received comment. Staff removed references to “Compatible Shore power Berth” and emphasized compatibility being based on the vessel’s previous commissioning (Sections 93130.7(a) and 93130.9(a)).

**Comment:** “Defining ‘Ready to Work’. We feel this definition is narrow in scope. Simply because a vessel has been cleared, by a government entity, to board does not necessarily demonstrate that a vessel is “ready to work”. Other variables must be

considered for a ready to work definition: labor and cargo handling equipment availability, environmental/weather factors, no work holidays, etc. This definition must capture all aspects of being "ready to work". Also, the vast majority of vessels use AMP containers that are stored on terminal and are required to be loaded onto vessels prior to shore power utilization. A vessel is not ready to plug in until the AMP container is in position and ship's crew making the necessary preparations." (24.1)

**Comment:** "93130.2 (b)(SS) We recognize that the definition for 'Ready to Work' has been revised but still is missing information regarding labor. We would recommend that the following definition be considered and read: "Ready to Work" means that the vessel is tied to the berth, the gangway has been lowered with netting down, U.S. Coast Guard and U.S. Customs and Border Protection have cleared the vessel, and the labor is available, and the labor shift has started." (44.1)

**Comment:** "Ready to Work: ... recommend that CARB insert in this definition the following after "netting down" and before "United States Coast Guard": ", the ramp is down and secure (if applicable), required shore side labor technicians are present, and the". Finally, we wish to note that changing the "Ready to Work" definition does not solve the problems with the proposed 1-hour connection timeline." (45.6)

**Comment:** "PMSA appreciates that CARB staff is revisiting the definition of berthing time. In order to address the many issues that have been discussed, PMSA proposes the following definition: "Berthing Time" (or Visit) means the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance." (52.C.136)

**Agency Response (24.1), (44.1), (45.6) and (52.C.136):** CARB staff made no changes to the definition of "Ready to Work" based on the received comment, but did make change to the connection window referenced in comment 45.6. The phrase "Berthing time" (as referenced in comment 52.C.136) is from the 2007 At-Berth Regulation and has been replaced by "Ready to Work." As defined by the Regulation, "Ready to Work" means that the vessel is tied to the berth, the gangway has been lowered with netting down, and the United States Coast Guard, United States Customs and Border Protection, and other government authorities have cleared the vessel. Other variables such as terminal labor and cargo handling equipment does not fit under this definition by design, as the vessel itself is ready. This amount of time was decided upon after numerous discussions with stakeholders as the time in which the process of connecting a vessel to a CAECS could begin.

For cases when a terminal is not able to provide labor or equipment by the time the vessel is "Ready to Work" the remediation fund option in Section 93130.15

may be available for use. And separately, any weather event that is severe enough to preclude the safe operation of equipment on either the vessel or terminal would fall under a safety and emergency event and during this time the vessel and terminal would be exempt from emission reduction requirements. To address numerous comments received about 1 hour from 'Ready to Work' not being enough time to connect to a CAECS, CARB staff revised the connection window to 2 hours with the release of the first 15-day change packaged dated March 26, 2020.

**Comment:** ATB Classification. With the proposed expansion of the At-Berth Rule, Articulated Tug-Barges (ATBs) may now fall under both the At-Berth Regulation and Harbor Craft Regulation. It is likely that this was an unintended consequence resulting from the peculiarities of how the rules were separately constructed. CARB staff should revisit the rule construction with regard to ATBs to ensure that the vessels are not captured under both rules. (52.C.59)

**Agency Response (52.C.59):** CARB staff made no changes based on the received comment. For the purposes of this Regulation "Ocean-Going Vessel" means a commercial, government, or military vessel, excluding ATBs (Section 93130.2(b)(7) and Section 93130.2(b)(49)). ATBs will continue to be regulated as CHC. See Master Response 5 for more details.

**Comment:** The At-Berth Rule arbitrarily excludes ATBs from the definition of Ocean-Going Vessels and capriciously classifies ATBs as Commercial Harbor Craft, which they are not. This arbitrary classification of ATBs as Commercial Harbor Craft will result in the control of emissions from two types of vessels with nearly-identical operational profiles – ATBs and tank ships – under separate regulatory schemes, causing an illogical, inefficient, costly patchwork regulatory scheme applicable to the movement of petroleum products in bulk between California ports. The disparate regulation of ATBs and tank ships introduces unnecessary complications into the regulatory compliance burden imposed on ATB and tank ship operators. It is not clear what benefits the people of California and the broader environment of California will receive in exchange for these burdens and extra costs being imposed on vessel operators. (36.1)

**Comment:** "The Initial Statement of Reasons (ISOR) provides the following rationale for the exclusion of ATBs from the definition of Ocean-Going Vessels as follows:

*"When an articulated tug barge is fully connected, it may meet the definition of an ocean-going vessel, as defined in this chapter (Section 93130.2(b)). However, despite being defined as a subcategory of tankers, articulated tug barges are considered a barge and a tug separately. As such, they are considered a harbor craft instead of an ocean-going vessel, and must comply with the requirements of CARB's Commercial Harbor Craft Regulation and not of this Proposed Regulation."* [T]he explanation implies that ATBs only meet one of the three conditions to classify as an Ocean-Going

Vessel when those ATBs are fully connected. This argument is erroneous. Crowley currently operates 17 ATB units, comprised of a total of 17 ATB tugboats and 17 ATB barges, for a total of 34 individual vessels. Over seventy percent of those vessels (25 tugs or barges) meet one of the conditions to classify as an ocean-going vessel, individually. Stated differently, the majority of the tugs and barges in Crowley's ATB fleets classify as ocean-going vessels, individually, based on the conditions that CARB itself has outlined for ocean-going vessels (i.e., length, tonnage, or per-cylinder displacement). Regulatory treatment of ATB components as individual vessels by the Federal Government was first set forth in Coast Guard Inspection Guidance Regarding Integrated Tug Barge Combinations, NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 2 - 81 (NVIC 2-81), which classifies the type of ATBs operated by Crowley as "Dual Mode ITBs". For purposes of regulation of ocean-going vessels, NVIC 2-81 applies

Federal statutes and Coast Guard regulations to tug barge combinations. To the extent CARB's proposed classification of ATB tugs as Harbor Craft, therefore, treats ocean-going ATB tugs as other than "ocean-going vessels", CARB's proposed rule is preempted by federal law. (36.2)

**Comment:** The exclusion of ATBs from the definition of ocean-going vessels appears to be based on an inaccurate understanding of the length, tonnage, and per-cylinder displacement of many tugs and barges in ATB units, and to be based on circular logic. The mistaken application also in conflict with applicable federal law and regulation administered in the fields of marine safety, vessel operation and design by the U.S. Coast Guard.

Crowley's ATBs are, from a trading perspective, the effective equivalent of ocean-going tankers. Crowley operates Medium Range and Aframax tank ships, as well as ATBs, in California. Crowley therefore knows from direct experience that Crowley ATBs:

- Call the same petroleum terminals in California that are called by Crowley managed tank ships (for example, Chevron Richmond, Shell Martinez, Phillips Rodeo, Shell Mormon Island).
- Carry the same cargoes that are carried by Crowley-managed tank ships. Both ATBs and tank ships carry refined petroleum products and (in some cases) crude oil.
- Conduct operations in a manner equivalent to those conducted by Crowley managed tank ships. Both ATBs and tank ships transit California waters bound to a petroleum terminal, conduct cargo operations at the terminal, and then depart California waters for their next port of call.

For these reasons, Crowley asks that CARB remove the exclusion of ATBs from the definition of Ocean-Going Vessels in the final At-Berth Rule and regulate ATBs as Ocean-Going Vessels – not as harbor craft. (36.3)

**Agency Response (36.1), (36.2), and (36.3):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “The proposed regulation also contains a number of problematic elements that make implementation difficult and will subject entities to non-compliance risks even when taking all reasonable steps possible to comply.” As an example:

**“Distributed Generation**

The proposed regulation includes restrictions on “Distributed Generation” that are problematic starting with the definition. Distributed generation is defined as power produced near the place of use. In industrial areas like ports that could refer to power plants sharing a fence line. The definition also does not include any element of control. If a terminal ends up using distributed generation, even if better defined, because their port authority or utility distributes the power to the terminal facility, the terminal operator likely has no ability to modify that. Additionally, if CARB envisions distributed energy as an alternative control technology, there should be no difference between the emission limits set for distributed generation over other alternative control technologies, apart from already existing CARB and local air district rules for permitting such distributed power. There is no logical basis to prefer similar emission profiles from alternative control technologies over distributed generation systems.” (52.38)

**Agency Response (52.38):** CARB staff made no changes based on the received comment. If a regulated entity is using a technology that relies on distributed generation, the power source must meet emission requirements in section 93130.5(c) of the Regulation. This is necessary to ensure that the technology is achieving the emissions reduction requirements of the Regulation. Along with distributed generation, CAECS also have requirements to meet GHG emissions equivalent to the California grid using the grid emission rate for the year that the technology is granted an EO (section 93130.5(d)). Regulated entities using distributed generations are required to find electricity that is equivalent to grid-based power for shore power. Port plans submitted to CARB should demonstrate the ability to bring sufficient electricity to the terminal.

**Comment:** “Physical Constraints. CARB has defined a “Physical Constraint” as an avoidable barrier that the U.S. Coast Guard has, in writing, made a safety determination that prevents the use of a CARB approved control strategy. Has CARB affirmatively established that the U.S. Coast Guard is willing to provide such letters? Government agencies are often reluctant to prospectively provide an opinion on a set of circumstances and may only provide consultative guidance. Since the definition

relies upon the action of another government agency, it is incumbent upon CARB to affirmatively establish that the U.S. Coast Guard will provide such documentation.” (52.C.50)

**Agency Response (52.C.50):** CARB staff made no changes based on the received comment. This comment is in response to a prior proposal. The definition of a “Physical constraint” in the Regulation no longer requires U.S. Coast Guard to provide any determination in writing. The definition was updated to read more broadly by stating that a “Physical constraint” at a terminal means an unavoidable barrier to provide a service due to the layout of a terminal or waterway where a state or federal public agency with jurisdiction over the resources effected by this Control Measure has made a safety determination that prevents the use of a CARB approved control strategy. As such, no further revision to the Regulation is needed to address this commenter’s concerns.

**Comment:** “California Voyage. The draft regulatory language includes a definition for a California Voyage that could cause confusion with the term visit. The industry coalition recommends that definition be modified to state: “‘California Voyage’ means a vessel trip to the West Coast of North America that includes one or more vessel calls to California ports or marine terminals.” In the revisions to the proposed regulatory language, the use of the term “California Voyage” has been dropped from the regulation. The regulation should use the term to make clear that any corrective action that is needed would be required for a subsequent California Voyage. Otherwise, shifts within a single port or visits to a subsequent California port during the same California Voyage may be subject to penalty before corrective action is possible.” (52.C.53)

**Agency Response (52.C.53):** CARB staff made no changes based on the received comment. This comment pertained to a previous version of the draft Regulation. There is not a definition for, or reference to “California Voyage” in the Regulation.

**Comment:** Necessary Infrastructure. Within the section on Terminal and Port Plans, the draft regulatory language includes a concept of “necessary infrastructure”. What does this mean? How is it measured? How will it be enforced? (52.C.54)

**Agency Response (52.C.54):** CARB staff made no changes based on the received comment. A terminal and port plan should include a description of necessary infrastructure modifications needed to control emissions. For example, a terminal may determine they are going to comply with the Regulation by installing a land-side capture and control system. During development it was determined that the wharf would need additional support, conduit lines installed etc. In this case, the additional support infrastructure

would be required and is necessary for the successful installation of the control system.

The terminal and port plan deadlines are enforceable, but a port or terminal's best guess on necessary infrastructural needs is not something that CARB staff would likely seek a violation for as staff understand that infrastructure plans and needs may change. If a terminal or port finds that their infrastructure plans need updating, they can submit updated plans to CARB at any point. However, if a port or terminal does not succeed in completing their required infrastructure in time to comply with the Regulation there could be enforcement action, unless the port or terminal utilizes an alternative strategy for compliance such as VIE/TIE, Innovative Concepts, or the remediation fund.

**Comment:** "A TYPO SHOULD BE FIXED RELATED TO "READY TO WORK" AND "VISIT": The following definitions appear to have a typo that should be corrected: (44) "Ready to Work" means that the vessel is tied to the berth, the gangway has been lowered with netting down, and U.S. Coast Guard and U.S. Customs and Border Protection have cleared the vessel. (66) "Visit" means the time period when the vessel is "Ready to Work". The visit begins once the vessel is tied to the berth with gangway down and netting secured and has been cleared by U.S. Customs and Border Protection. The visit ends when "Pilot on Board." As noted in the above definitions, the USCG is listed under "Ready to Work." However, the USCG is not listed under "Visit." The USCG should be deleted from the "Ready to Work" definition since they do not actually clear the vessel upon arrival (this is what CBP does). (52.C.65)

**Agency Response (52.C.65):** CARB staff modified the proposed regulatory language in response to the received comment. The definition of "Ready to Work" has been changed to "'Ready to Work" means that the vessel is tied to the berth, the gangway has been lowered with netting down, and all government authorities with jurisdiction over the vessel visit have cleared the vessel."

**Comment:** "Emergency Events. The definition of an Emergency Event has been unreasonably limited to utility related issues. The definition of an Emergency Event, in regard to both vessel and terminal operators, should preserve the judgement of the operator to identify an emergency and take appropriate steps to protect people and property." (52.C.52)

**Agency Response (52.C.52):** CARB staff made no changes based on the received comment. The definition of safety and emergency event is as follows.

"Safety and emergency events" means an event where a responsible official reasonably determines that compliance with this Control Measure would endanger the safety of the vessel, crew, cargo, passengers, terminal, or terminal staff because of severe weather conditions, a utility

event, or other extraordinary reasons beyond the control of the terminal operator or vessel operator.

The commenter seems to be referring to a definition that was not included in the Regulation and the comment is no longer relevant.

xv. *Pollutants (GHG, ROG, DPM, PM, NO<sub>x</sub>, BC)*

**Comment:** “How will CARB monitor GHG emissions after implementation of the Proposed Control Measure? What is the GHG emissions baseline?” (17.19) (17.34)

**Agency Response: (17.19) and (17.34):** CARB staff made no changes based on the received comment. GHG emissions will only be measured for control options other than shore power. As specified in section 93130.5(g)(1) NO<sub>x</sub>, nitrous oxide (N<sub>2</sub>O), CO<sub>2</sub>, carbon monoxide (CO), methane (CH<sub>4</sub>), and DPM or PM<sub>10</sub>, shall be measured using ISO 8178 Test Procedures: ISO 8178-1: August 15, 1996(E) (“ISO 8178 Part 1”); ISO 8178-2: August 15, 1996(E) (“ISO 8178 Part 2”); and ISO 8178-4: August 15, 1996(E) (“ISO 8178 Part 4” August 15, 1996), respectively. The testing and results will be submitted as part of the application for an EO.

The baseline GHG emissions for an alternative control strategy is “grid-neutral” and is determined by calculating the ratio of carbon dioxide equivalent (CO<sub>2</sub>e) (see 93130.5(g)) to the measured MWh of the control system. The CO<sub>2</sub>e value must be lower than the state output emission rate. This emission rate can be found in the most recent eGRID Summary Table for State Output Emission Rates as the California CO<sub>2</sub>e emissions rate (<https://www.epa.gov/energy/egrid-summary-tables>).

**Comment:** “Reduction of PM (including PM<sub>10</sub>, PM<sub>2.5</sub>, and DPM) and NO<sub>x</sub> emissions in the 36%- 40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO<sub>2</sub>e, SO<sub>x</sub> and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based C&C systems.” (52.B.1)

**Agency Response (52.B.1):** CARB staff made no changes based on the received comment. See Master Response 1. Additionally, capture and control generators have been considered in the Draft EA (see EA page 54).

**Comment:** “Inconsistency with GHG Goals and Plans. The proposed regulation is also inconsistent with California’s greenhouse gas (GHG) goals. The proposed rule will increase GHG emissions in the Ro/Ro fleet by 50% (see Starcrest analysis attached). This is an enormous increase in emissions that is contradictory to the California goals. This increase would be achieved for only a 40% reduction in criteria and toxic pollutant emissions. The regulatory uncertainty associated with the rule also has the potential

to significantly increase the use of barge-based systems by the existing regulated fleet in order to ensure compliance can be met. Every additional use of the barge-based equipment will significantly increase GHG emissions.” (52.9 PMSA) (EA 52-4)

**Comment:** “The emissions analysis scenario assumes that the use of a barge system would require additional emission-producing activities that would reduce the overall effectiveness of the system. These activities include the following:

- Additional trips by harbor craft between home base with other locations
- Harbor craft idling time
- Presence of additional gensets to provide electrical power to the barges
- Additional time at anchorages for bunkering” (52.B.7)

**Agency Response (52.9) and (52.B.7):** CARB staff made no changes based on the received comment. See Master Response 1.

**Comment:** “Overall, auto carrier and RoRo at berth emissions made up approximately one percent (1%) of all OGV emissions in the SPBP’s 2018 inventory or between 2% to 4.5 % of all at-berth emissions.” (52.B.2)

**Agency Response (52.B.2):** CARB staff made no changes based on the received comment. CARB staff disagrees. Per CARB’s inventory, Ro-ros are projected under the 2007 At-Berth Regulation to make up approximately 10 percent of NOx, and 12 percent of diesel PM in 2021 for OGV emissions. See Appendix H of the ISOR for more details on the emissions inventory.

**Comment:** Reactive Organic Gases. In the latest draft regulatory proposal, control for Reactive Organic Gases (ROG) has been added. This is the first time ROG has been included as a targeted pollutant within the At-Berth Regulation. It does not appear that any of the normal supporting information that addresses the need to control specific emissions has been prepared. That leaves industry stakeholders with multiple questions regarding the need and feasibility of the proposal. What is the demonstrated need to control this pollutant? What are the benefits of the control? How will control equipment be impacted by the need for control? What is the cost-effectiveness of control for ROGs? Neither of the currently approved alternative control systems are verified to control ROG. Upon the amended rule coming into effect, the existing alternative control systems will no longer meet the regulation’s requirement, eliminating the systems as a viable option. What is the potential impact of the inclusion of ROG on the availability and viability of alternative control systems? (52.C.51)

**Agency Response (52.C.51):** CARB staff made no changes based on the received comment. ROG was included in the proposal as a pollutant because it is a criteria pollutant that contributes to the formation of ground level photochemical smog and combined with NOx increases ambient ozone formation and can be attributed to negative health impacts in high

concentrations. Emissions of ROG, NO<sub>x</sub> and PM were used to determine the remediation fund amounts so that the remediation fund aligns with the Carl Moyer cost effectiveness for zero emission projects based weighted tons of emissions, but there is no cost-effectiveness done for ROG alone. The need for reducing criteria pollutants like ROG which result in the formation of ozone is discussed in the Executive Summary of the ISOR. It is correct that both existing approved alternative control systems are not certified and approved for ROG or GHG control. However, while staff believes that achieving ROG reductions will be possible through current existing control technologies, this is addressed in the Regulation by allowing the current EO's to remain effective for compliance purposes for a period of time before they must be certified to the new requirements.

*xvi. Boiler Emissions*

**Comment:** “[B]oiler emissions, with the exception of emissions from boiler-powered, steam-driven pumps of tankers, are not included in the proposed rule. While particular matter emissions from vessel boilers are not considered diesel particulate matter, they are by no means benign and should be mitigated further. Another ship category ripe for boiler emission reductions is the containership segment, which produces more than 0.04 tons per day of PM<sub>2.5</sub>, an amount greater than its auxiliary engine PM<sub>2.5</sub> output. Between 2021 and 2031, containership boiler PM<sub>2.5</sub> emissions are anticipated to rise from 19.5 to 26.6 tons per year, an increase of 36 percent.” (21.4)

**Agency Response (21.4):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as most OGVs have small on-board auxiliary boilers that do not significantly contribute to the emissions profile of an OGV. However, some tanker vessels (often carrying crude oil) use on-board auxiliary boilers to produce steam that drives pumps used to off-load cargo. Tanker vessels using steam-driven pumps to discharge cargo may have a boiler power usage at berth that is several magnitudes higher than other vessels. For more information on the effective power for boilers by vessel type please refer to Appendix H (Table 10 and 11) of the ISOR.

While shore power is the primary compliance option for the Regulation, it is not capable of reducing boiler emissions due to the fact that boilers are not electrical systems. Requiring emissions reductions from both auxiliary engines and boilers could result in redundant technologies for shore power equipped vessels, with vessels using shore power to reduce auxiliary engine emissions as well as a bonnet type capture and control system to reduce the boiler emissions. As can be seen in CARB's OGV emissions inventory, boiler emissions from non-tanker vessels make up a small percentage of boiler emissions from vessels at berth, meaning any reductions would be small and not cost effective at this time. CARB staff believes that focusing on the reduction of diesel PM,

which is produced from vessel auxiliary engines but not boilers, provides the most benefit to portside communities

*xvii. Opacity Requirements*

**Comment:** "Opacity is clearly the fastest and most efficient means for CARB and other Port enforcement to identify potential non-compliance events. However, the proposed regulation continues to perpetuate the 1970 vintage Method 9, human means to measure opacity using calibrated eyes. Most other states have realized that enforcement of human measured opacity violations has become very difficult do to the variations inherent to human eye sight, e.g. vision is a function of rest, eye pressure, sobriety, and many other factors to include the use of allergy, inflammation, and other medications, such as Erectile enhancement and disfunction [sic] medications used widely throughout California.

Due to these reductions in vision consistency, many states have abandon Method 9 as unenforceable, LA DEQ and AZ DEQ as examples. US EPA has promulgated a Broadly Applicable Alternative Method 082, (Digital Camera Method), which uses common consumer grade digital cameras and computer software to perform stand off Opacity Measurements, create validated error free Visible Emission Observations, bringing credibility back to the stand off measurement of Opacity from Stationary, Mobile and Fugitive Sources. In fact the FerroAlloy NESHAP at <https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0895-0280> defines the Digital Camera Method USEPA Broadly Applicable Alternative Method 082 and its supporting ASTM D7520-16 standard as the Best Available Technology for the measurement and analysis of process fugitive emissions, (roof vents) and source opacity.

Suggest that CARB insure the Best Available Technology for the measurement of Opacity NOT be excluded from the community and enforcement tool box, by specifically calling out the Legacy Method 9 and thus effectively eliminating the ability to use the best measurement technology.

The Digital Camera Method, preserves pictorial evidence of the opacity event, verifies method procedural compliance, e.g. sun behind the camera, perpendicular to plume travel and a reading every 15 seconds for the observation period, (normally 6 minutes). Why would the most progressive Air Pollution control agency in world use out dated methods, that drive absorbent litigation cost, do [sic] to the reliance entirely on human honesty.

The Digital Camera Method is commercially available today, it has been reviewed and validated to be as accurate and more consistent and repeatable than Method 9 by the CARB smoke school program. 2011-2013, and recognized by CAPCOA as the Best Available Opacity Measurement capability.

Thank you, I hope CARB finds the wisdom in including the Best Available Technology for Stand off Opacity measurement, (The Digital Camera Method, ASTM D7520-16 and/or US EPA Broadly Applicable Alternative Method 82). Most all citizens carry cell phones with cameras these days and the ability to find and measure opacity sources is as simple as snapping a picture and uploading it to a cloud based platform for results. All 617 identified communities could benefit from a simple to use and operate, not training required means to measure opacity.” (29.1 and 30.1)

**Agency Response: (29.1) and (30.1):** CARB staff made no changes based on the received comment. CARB staff agrees with the comment of using the best available technology for the measurement of opacity and are open to allowing alternative methods of measurement if they can measure as accurately and consistent as the proven, established methods. This particular method was considered and not used due to the fact that the test method is not applicable to stacks with internal diameters greater than seven feet. While the Regulation does specify the California time aggregate method and the United States Environmental Protection Agency Opacity Test Method 9 will be the method CARB uses to analyze the opacity readings and determine compliance, alternative test methods may be used upon written approval from the Executive Officer.

**Comment:** “The proposed rule establishes an opacity limit for vessels at anchorage. Such a requirement conflicts with established International Maritime Organization (IMO) and USEPA emissions standards for vessels. USEPA rules preempt state and local emissions standards for oceangoing vessels. While not quantified as a typical numerical standard but a limit based on Ringelmann values, an opacity limit is clearly an engine emissions standard for an operating vessel – even if that operation is at anchorage. Such standards should be promulgated for new engines and done so through existing IMO/USEPA framework. Accordingly, CARB should eliminate the proposed emissions standard from the regulation.” (52.43)

**Agency Response (52.43):** CARB staff made no changes based on the received comment. The At Berth Regulation requires vessels to maintain opacity levels that are consistent with California’s general opacity standards under Health and Safety Code section 41701. Opacity standards are not the same as emission standards. An opacity limit is setting a visible darkness limit (Ringelmann number) for discharge (smoke) during a specific observation period this is different from setting emissions standard for engines. Besides helping to reinforce existing opacity standards and ensuring that OGVs do not have excess visible emissions, this provision would also assist CARB enforcement staff with the authority to enforce the standards while a vessel is at berth or anchor in California regulated waters.

**Comment:** “Ocean-going Vessel Opacity Requirement. The industry coalition opposes the inclusion of an opacity requirement for ocean-going vessels at anchorage.

Establishing such a standard infringes upon the exclusive jurisdiction of the International Maritime Organization and the international engine standards established by treaty through MARPOL Annex VI to which the United States is a party. CARB does not have the jurisdiction or authority to implement such requirements. Finally, it is inappropriate to include such a requirement in an At-Berth Rule. There has been no demonstration of need, no estimation of benefit, and no cost to implement. Basic questions on enforceability have not been discussed such as how enforcement would occur or even how an inspector would distinguish smoke from steam. Such a requirement needs its own rule with evaluation of impacts, benefits, and costs.” (52.C.49)

**Agency Response (52.C.49):** CARB staff made no changes based on the received comment. CARB disagrees with the commenter’s statement that the agency does not have the necessary authority to implement opacity standards. The requirement is not a new rule, it reinforces a current requirement that is already existing under HSC 41701. The opacity requirement is not establishing an engine standard, which the IMO has authority to set. It is appropriate and necessary to include the opacity standard in the Regulation as it provides additional benefits in the form of transparency of the requirements for regulated parties, ensures that OGVs do not have excess visible emissions and also assist with current enforcement efforts. Since there are no additional opacity requirements resulting from the Regulation, there would not be any additional costs associated with the opacity requirement.

*xviii. At Anchor Vessel Emissions*

**Comment:** “I've been following this closely and while I'm very impressed with CARB's clean air initiatives so far I'm wondering if you're going to include vessels at anchor as well. As you know in Long Beach, Los Angeles, San Diego, and the bay area numerous vessels are in close proximity to population centers while at anchor waiting a turn at berth, bunkering, or other reasons. While at anchor they run their high polluting auxiliary engines; I would like to inquire if you're going to place the requirements for vessels at berth and at anchor?” (8.1)

**Comment:** “[T]he proposed rule does not apply to ships at anchorage. A considerable number of these vessels are using anchorage sites that are, relatively, proximate to the California coastline and affected communities.” (21.3)

**Comment:** Coalition for a Safe Environment “...request the measure include both At-Berth and At-Anchor” (43.1)

**Comment:** There's no reason whatsoever not to have "and at anchor" included in mitigation of pollution. (OC-1 Wilske)

**Comment:** We request that the measure include both at berth and at anchor. (OC-1 Marquez)

**Agency Response (8.1), (21.3), (43.1), (OC-1 Wilske) and (OC-1 Marquez):**

CARB staff modified the proposed regulatory language in response to the received comments. CARB staff understands that emissions from vessels at anchor contribute to a decline in regional air quality and can have adverse health burdens on port communities. However, reducing emissions from vessels at anchor, while theoretically possible, is technically difficult at this time. Vessels at anchor do not have structures nearby to support land-side equipment, such as electrical infrastructure, and must deal with harsher weather conditions (stronger winds and waves) outside of the sheltered waters at berth. Vessels are also using their anchor to stay in place, versus being tied to a berth. This makes connecting something like high voltage shore power equipment or a capture and control system to a vessel's stack more difficult while at anchor. Despite the difficulties, CARB staff has added language to the Regulation committing to re-assessing the latest available technologies for controlling at anchor vessel emissions during the Interim Evaluation in 2022.

## 5. REGULATION LANGUAGE CLARIFICATIONS

**Comment:** "P. 28 – (b) Visits to Terminals without Shorepower When Alternative Isn't Feasible: This section requires that if neither the vessel nor the terminal has shore power, then it is the shared responsibility of both parties to arrange a CARB-approved emission control strategy for this visit. This section should clarify what happens if an alternative doesn't exist, which is the case for cruise ships, or the alternative is not available, or not feasible." (41.12)

**Agency Response (41.12):** CARB staff made no changes based on the received comment. All cruise terminals in California (with the exception of Pier 35 at Port of San Francisco) currently have shore power available. An instance where there is an unavailability of shore power for a cruise vessel would be very limited. In the case where neither vessel nor terminal has shore power available, a TIE or VIE could be used to allow non-shore power cruise vessels to call California.

Although there are not any alternative controls currently approved by CARB for cruise vessels specifically, there is nothing in the Regulation preventing the development of one and submitting it for CARB approval using the process laid out in section 93130.5 of the Regulation. Alternative controls for cruise vessels may also be possible in the form of on-board controls. Strategies like cleaner engines with PM scrubbers or even alternative fuels (e.g. LNG and liquefied petroleum gas or LPG), once certified through CARB, could be used as compliance options.

**Comment:** “Port staff request clarification from CARB of what constitutes a failure to achieve “full emission reductions” as referenced in Section 93130.12(a)(3) of the Proposed Control Measure, regarding when the Remediation Fund may be used.” (17.30)

**Agency Response (17.30):** CARB staff made no changes based on the received comment. “Full emissions reductions” means the amount of reductions that are expected to be achieved if a vessel is complying with the requirements in section 93130.5 of the Regulation (including meeting connection and disconnection time requirements). The hourly remediation fund may be used if the full emission reductions required are not met this can be due to a delay or interruption in controlling emissions, such as labor delays or equipment issues (Section 93130.15(b)(3)).

**Comment:** “The reduction in VIEs and TIEs for Container, Reefer, and Passenger vessels from 5% each to 3% each discussed in Sections 93130.7(g)(1)(A)(ii) and 93130.8(h)(1)(A)(ii) of the Proposed Control Measure serves to increase the usage of the Remediation Fund [Section 93130.12(a)] in and after 2023. Port staff request further information from CARB on when and where the Remediation Fund will be deployed, given that CARB anticipates zero-emissions regulation on trucks, transport refrigeration units, forklifts, and cargo-handling equipment in the time frame of enhanced usage of the Remediation Fund, making those categories ineligible for incentive-funded emissions reductions.” (17.27)

**Agency Response (17.27):** CARB staff made no changes based on the received comment. This comment was based on an old draft of regulatory concepts that was shared with stakeholders for discussion in May 2019; the 3 percent VIEs and TIEs rate mentioned by the commenter was not part of the final regulatory package. The number of TIEs and VIEs available to terminals and vessel fleets was ultimately set at 15 percent TIEs and 5 percent VIEs for the initial two years of implementation (2023 and 2024), then at 5 percent TIEs and 5 percent VIEs from 2025 onward. This increase in the number of permitted TIEs and VIEs in the early years of the Regulation is expected to provide terminals with the flexibility needed to handle operational or construction events that might prevent the connection of vessels to shore power or other CAECS without increasing usage of the remediation fund.

The remediation fund will be available at any port in which there is an air district or non-profit agency willing to administer the program. The funds can be used for projects in and around the port as dictated by section 93130.16. Remediation funds may be combined with funds from other incentive programs as long as the reductions achieved from the project can be calculated and attributed to the remediation fund and are not claimed by one of the other sources of funding.

**Comment:** “The Port requests that maintenance events of landside shore power equipment be included in Section 93130.9(f) along with “construction or repair” so that maintenance events also have the option of using a TIE.” (17.20)

**Agency Response (17.20):** CARB staff made no changes based on the received comment. TIEs can be used for any reason, including maintenance events. Terminal and vessel operators have full control over how their TIEs and VIEs are used, respectively (as per section 93130.11). The language in section 93130.9(f) was given for example only.

**Comment:** “Port staff request clarification on the definition of ‘necessary infrastructure...that will enable a terminal to comply with this Control Measure’ in Section 93130.10(b) of the Proposed Control Measure and what, in this context, ‘subject to verification by [CARB] enforcement staff’ means.” (17.21a)

**Agency Response (17.21a):** CARB made no changes based on the received comment. CARB staff assumed the commenter meant to reference section 93130.14(b), not section 93130.10(b), as that section references the exclusion of bulk and general cargo vessels in the Regulation language that was released on October 15, 2019. For section 93130.14(b), “necessary infrastructure” means, in this context, any infrastructure that would be needed to allow a port or terminal to connect to a vessel to an emissions control technology, including, but not limited to, shore power vaults, substations, cable reel management systems, or wharf upgrades to support a shore-side capture and control system. Separately, “subject to verification by [CARB] enforcement staff” in this context means that port may be subject to CARB enforcement actions upon further investigation if there is an issue with non-compliance due to a violation of the port and/or terminal plan.

**Comment:** “Definition of Emergency Event for a Utility: Notwithstanding the definition, we would like to see further clarification regarding what qualifies as an Emergency Event for power outages due to a failure on the Utility's end. Power outages are not uncommon in the Ports and this may result in a failure to utilize an emissions control strategy. In cases of power outages, would this be considered an exemption and no requirement to use a TIE or a VIE? If TIEs are to be utilized, in the event of a power outage, multiple vessels could be impacted while at berth. Would this result in the need to use multiple TIEs for a single event, or a requirement to pay into the Remediation Fund for the multiple vessels that were impacted by the outage?” (37.3)

**Agency Response (37.3):** CARB staff made no changes based on the received comment. As defined in Section 93130.2 (b), “Utility Event” means the period of time during which any of the following events occurs; the utility event begins when such an event begins and ends when the event is over:

(A) The utility serving the port or terminal cannot provide electrical power to the port because of a failure of equipment owned and maintained by the utility, a transmission emergency, distribution emergency, a California Independent System Operator (CAISO) or Los Angeles Department of Water and Power (LADWP) Stage 3 emergency, or the utility needs to reduce power to the port and/or terminal because of a sudden and reasonably unforeseeable natural disaster, such as, but not limited to, an earthquake, flood, or fire; or

(B) When the utility providing electrical power notifies the terminal operator(s) to reduce the use of grid-based electrical power in response to a transmission or distribution emergency, a CAISO or LADWP Stage 3 emergency, or to avoid a Stage 3 emergency if one is anticipated. The emergency event ends when CAISO or LADWP cancels the Stage 3 emergency or the utility notifies the terminal operator(s) that reduction in the use of grid-based electrical power is no longer necessary. The port may contact the terminal operator(s) on behalf of the utility if such an agreement exists between the utility and the port.

A utility event is covered under a vessel safety and emergency exception. Neither a TIE nor VIE would be required to be used during the time of the utility event, nor would it be necessary to use the remediation fund.

**Comment:** “The definition of Fleet and the requirements for VIEs also need to be responsive to changes in the shipping industry, for example when businesses merge or alliances change. It is not clear whether VIEs will be granted on a port-specific or State-wide basis. It is also not clear how disagreements will be resolved on whether a specific instance should use a TIE or a VIE. Will CARB adjudicate these?” (17.12)

**Comment:** “Port staff request an initial accommodation for new fleets entering the California market. New entrants should be given an opportunity to estimate the coming year’s ship calls and estimate the number of VIEs to be awarded for the coming year.”

“The definition of Fleet and the requirements for VIEs also need to be responsive to changes in the shipping industry, for example when businesses merge or alliances change. Likewise, CARB should clarify what provisions will accommodate changes in the terminal industry, such as new terminals or changes in ownership, in the allocation of TIEs.”

“The definition of “Fleet” in Section 93130.2(b)(22) of the Proposed Control Measure does not explain how fleets will be established. What will CARB require at the beginning of each compliance year to establish fleets? Will this be part of the online Freight Regulations Reporting System (“FRRS”) mentioned in the presentation from the May 14, 2019 and May 16, 2019 public workshops?” (17.24)

**Agency Response (17.12) and (17.24):** CARB staff modified the proposed regulatory language in response to the request to accommodate new fleets and to add the ability to adjust TIEs/VIEs. CARB staff added language with the 15-day package that allows fleets and terminals to make a request for additional TIEs and VIEs for new fleets and terminals entering the California market and for instances where the fleet or terminal expects they will have a substantial increase in activity based in the upcoming year.

Separately, CARB staff would like to clarify that VIEs, as specified in section 93130.11, are granted on a “per port” basis, not a statewide basis. TIEs and VIEs are up to terminal and vessel operators, respectively, to manage between themselves. If there is disagreement about if a TIE or VIE is used and neither party will agree, disputes will be handled by CARB’s enforcement team, who will investigate the situation through an established audit process.

**Comment:** “93130.15 There should not be a fine or 'pay for remediation' if equipment fails or is being repaired, or parts are on order. If equipment is in good order and proper maintenance has taken place and equipment fails, there should not be a penalty. Further, if there are required repairs or maintenance that is needed, that should not be penalized. This regulation is expecting perfection and that simply is not reality in any industry. What if the failure is due to a weather event or act of god? These should be identified as the exceptions allowed.” (44.20)

**Agency Response (44.20):** CARB staff made no changes based on the received comment. TIEs and VIEs ensure that terminals and fleets are able to account for a small percentage of visits that do not reduce emissions, for example from equipment that has failed and is being repaired. In addition to TIEs and VIEs, maintenance and repair does not result in a violation with the rule as long as the emissions associated with these visits are remediated through the remediation fund. There is an exception for circumstances where a severe weather condition or an act of god results in a situation where a responsible official reasonably determines that compliance would endanger safety.

**Comment:** “93130.15 What if the control strategy is delayed because of the third party or weather? Again, there shouldn't be penalties/ enforcement on operators for things that are out of their control.” (44.21)

**Agency Response (44.21):** CARB staff made no changes based on the received comment. Vessels that use strategies that are delayed because of a third party are eligible to remediate the lost emissions by using the remediation fund. There is an exception for circumstances when a severe weather condition or other extraordinary reason beyond the control of the terminal operator or vessel operator results in a situation where a responsible official reasonably

determines that compliance would endanger safety (see the definition of "Safety and emergency event" in section 93130.2(b)(70)).

**Comment:** "93130.15 If the construction project is CARB approved then why would the operator have to 'pay for remediation'. What if the reason for the construction is a result of action/inaction of a third party? Again, there shouldn't be penalties/enforcement on operators for things that are out of their control." (44.22)

**Agency Response (44.22):** CARB staff made no changes based on the received comment. The remediation fund is an option for compliance for certain situations, including a terminal construction project, and ensures that the emission reductions required by the Regulation are still achieved. Staff agrees that vessel operators are only in control of their vessel side infrastructure and will not be penalized when visiting a berth for which the vessel is commissioned to use the shore power infrastructure. When a vessel has commissioned shore power, it is the terminal's responsibility to provide the shore power or a CAECS. Contractual actions or inactions between the terminal and a third party do not have an effect on the use of the remediation fund. Using the remediation fund does not involve an enforcement action. However, if the remediation fund is not available due to administrative reasons, an enforcement action is possible.

**Comment:** "93130.13 Exceptions should be expanded to handle various other scenarios that have been previously mentioned in this document. There are not enough TIE' s/ VIE' s and the percentage needs to be increased. Responsibility should not be the Terminal Operator, as previously mentioned in this document. It simply does not match with the reality of industry and there are numerous considerations that need to be inserted into the program including what if CARB technology fails; other circumstances outside the control of a Terminal and Vessel Operator." (44.24)

**Agency Response (44.24):** CARB staff made no changes based on the received comment. In the first two years of implementation, TIEs are set at 15 percent to transition terminals into the Regulation. This is intended to help terminals identify any areas of responsibility that need addressing before the Regulation caps at the 5 percent TIE rate for container, reefer, and cruise terminal and vessel operators beginning in 2025. Extrapolating data received from CARB enforcement for the 2007 At-Berth Regulation, 15 percent TIEs and 5 percent VIEs along with the remediation fund are expected to cover the likely scenarios where reducing emissions were not possible. Instances deemed outside of a vessel and terminal operator's direct control will be dealt with on a case-by-case basis by CARB's enforcement team.

**Comment:** "California Approved Emission Control Strategy (CAECS) Operator: We support the inclusion of this new definition and note that it will be essential not only for CARB to approve the types of CAECS technologies, but also the parties that are approved to operate them. This is particularly important given the problems carriers

have faced in obtaining reliable and quality services from the existing barge-based capture systems operators.” (45.5)

**Agency Response (45.5):** CARB staff made no changes based on the received comment, however, the information is noted. Staff wrote the Regulation with the intention of identifying and including responsibilities for those parties that are critical to achieving emissions reductions on vessels at berth. Please note that the application process for CAECS is for the technology, not the operators. Although we do not approve specific operators, we agree with the need for requirements on the CAECS operator as well. These requirements are in section 93130.12 of the Regulation.

**Comment:** “CARB Approval of Emissions Control Strategy Operators (Section 93130.5): ... recommend that the text of 93130.5(a) be slightly amended as follows: delete the words “at a port or terminal” from line 2 and replace “it” in line 2 with “that person”. The first change will eliminate confusion about the provision’s applicability to emissions control strategies that are deployed not from the terminal or port property but from a barge. The second change would make it clear that the emissions control strategy operator must be approved by CARB.” (45.7)

**Agency Response (45.7):** CARB staff included the modifications as suggested here in the 15-day changes that were released on March 26, 2020.

**Comment:** “Already Approved Strategies (Section 93130.5 (d) (3)): ... recommend that CARB affirmatively approve operators of emissions control strategies, not just the technologies used in those strategies. Therefore, if the existing CARB approvals referenced in this sub-section already include approval of the parties operating the strategy, then we have no objection to this provision. If, however, the existing CARB approvals referenced in this sub-section are only for the strategies and would allow any person or company to operate those strategies, then we recommend that this provision be deleted.” (45.8)

**Agency Response (45.8):** CARB staff made no changes based on the received comment. The purpose of section 93130.5 (d)(3) is to provide a pathway for already approved alternative strategies to transition into the approval process of the Regulation. It is written to provide certainty until 2025 for operating systems under an existing CARB EO as a compliant technology before needing to reapply for the more stringent GHG standards of the Regulation. The CAECS process is an approval of a technology or strategy, and not an approval to operate. The requirements for operating an existing strategy are in the EO issued for the technology. The requirements for operators of CAECS are in section 93130.12.

**Comment:** “General Requirement (Section 93130.7): ... Section 93130.7 contains checklist items that a commissioned shore power equipped ship will not be able to

complete unless the terminal/port completes its obligations under the rule. Section 93130.7's statement that "Any failure to perform any specific items in this section shall constitute a separate violation..." could thus be used to penalize a shore power equipped ship that cannot complete all of the vessel checklist items in 93130.7(e) because the terminal/port failed to meet its rule obligations.

To correct this misalignment between proposed Sections 93130.7 and the "Summary of Responsibilities" section, we recommend that the second sentence in the opening paragraph of Section 93130.7 be replaced with: "Any failure to perform any specific items in this section shall constitute a separate violation for each day that the failure occurs, except to the extent a vessel operator cannot perform any requirement due to (1) a terminal and/or port's failure to comply with the portions of this Control Measure that impose requirements upon terminals and/or ports, and/or (2) a CARB Approved Emission Control Strategy Operator's failure to comply with the portions of this Control Measure that impose requirements upon CARB Approved Emission Control Strategy Operators." (45.9)

**Agency Response (45.9):** CARB staff made no changes based on the received comment. CARB staff recognizes that a vessel or terminal operator may not be able to complete their respective checklists if a connection to a CAECS does not occur during a regulated visit at the fault of another party. However, CARB staff did not change the wording of this specific section of the regulation to avoid giving a "blanket pass" to vessel operators. A lack of emissions reductions is a potential violation of the regulation and would require a CARB enforcement investigation of the situation to assess what occurred. If a vessel operator has done everything needed to comply, including bringing a shore power capable vessel to California that had commissioned at the terminal previously and they notified the terminal ahead of time that it needed a shore power berth as required, then CARB enforcement may determine the vessel was not at fault. But this would need to be a case-by-case determination.

**Comment:** "Shore Power Requirements (Section 93130.7 (a)): This provision states that commissioned shore power vessels shall plug in to shore power on each visit to a "compatible" shorepower berth. CARB staff indicated in discussions with industry that "compatible" relates only to electrical standards, not to terminal or vessel characteristics such as berth location, space, side of vessel fitted with shore power, or other factors. We therefore recommend that CARB amend this provision by inserting the words "functioning, electrically" before "compatible". We also recommend that reference be made to the technical standards of the international organizations, which are IEC/ISO/IEEE 80005-1/80005-2 and IEC 62613-1." (45.10)

**Agency Response (45.10):** CARB staff modified the proposed regulatory language as part of the 15-day changes released March 26, 2020 to remove the word "compatible" in response to comments received expressing uncertainty about the meaning of the word "compatible" in the wording of the original

proposal (released October 15, 2019). In the revised definition, staff clarified the wording to state that a commissioned shore power vessel is compatible with a terminal when it has completed commissioning at a terminal. As such, the word "compatible" is redundant and no longer necessary and was removed to avoid confusion.

**Comment:** "Vessel Compliance Checklists (Section 93130.7 (e)): ... Before Arrival Communications: We recommend that the requirement in § (1) to communicate "in writing" be eliminated from this provision, as it would impose a method of communication that may not be practicable between a vessel operating at sea and a marine terminal. Electronic communication should be encouraged." (45.21)

**Agency Response (45.21):** CARB staff made no changes based on the received comment. The Regulation does encourage communication via electronic means; in this case, "in writing" can mean by email. The reason for correspondence to be in writing is to have documentation of correspondence for enforcement in cases of discrepancy between regulated parties.

**Comment:** "We recommend that CARB make the following changes to Section 93130.9 to provide additional clarity regarding the terminal operators' responsibilities under this rule:

- Section 93130.9(a)(3): Replace the current text with the following to make it clearer and eliminate confusion about whether a TIE or VIE should be used: "If the commissioned shore power vessel is berthed in a way that prevents it from connecting to shore power, the terminal shall either: 1) use a TIE, or 2) provide an alternative CARB approved emissions control strategy that is compatible with the vessel." (45.26a)

**Agency Response (45.26a):** CARB staff made no changes based on the received comment. The Regulation already reflects this language in 93130.9(a)(3).

**Comment:** "We support the allocation of VIEs based on company vessel fleets. We note, however, that allocating VIEs based on the fleet's previous year vessel calls to California fails to account for growth in services to California over time. An easy way for CARB to address this would be to set VIEs based on the previous year vessels calls plus a percentage of those calls that accounts for annual growth in the arrival of at-berth regulated vessels." (45.27)

**Agency Response (45.27):** CARB staff modified the proposed regulatory language in response to this comment and other similar comments requesting there be a provision to allow new or growing fleets an opportunity to receive more VIEs based on their projected growth in visits. See response to comment 17.11 for further discussion.

**Comment:** “VIE and TIE Rates: The table on page 33 of the proposed rule indicates that all vessels would be granted VIEs for 5% of their previous year vessel calls. Terminals, on the other hand, would initially be granted TIEs for 15% of the terminal’s annual vessel visits. That allocation would fall to 5% in 2025. We understand based on discussions with CARB staff that the total percentage of visit exceptions (i.e. VIEs plus TIEs) should not exceed 20% because the current at-berth regulations are set to increase to 80% compliance in 2020. While we understand that reasoning, we note that the proposed rule is substantially different from the current rule in that it would require each regulated ships’ auxiliary emissions to be controlled, whereas the current rule is based on 80% fleet compliance.

We therefore think that the VIE percentage needs to be increased to account for the fact that this proposed rule will require all containerships and refrigerated cargo vessels to use at-berth power when the rule becomes effective. While many of the issues that have previously prevented commissioned vessels from connecting to at-berth power have been shore side infrastructure-related, we anticipate, based on historical compliance data, that more than 5% of vessel fleets will be unable to comply due to onboard equipment problems, the need to rotate vessels into and out of California services for required surveys and dry-dockings, and due to unpredictable commercial demands that may require shipping companies to deploy or phase-in non-commissioned vessels to meet U.S. import and export trade needs. Furthermore, there are only two CAECS currently in operation and they offer services only in the Ports of Los Angeles and Long Beach. The lack of available CAECS reinforces the need to temporarily increase the VIE percentage.

With the above considerations in mind, we recommend that CARB increase the VIE allocation for 2021-2024 to 10 percent per year.” (45.28)

**Agency Response (45.28):** CARB staff made no changes based on the received comment. The VIE amount of 5 percent was set based on CARB staff evaluation of past enforcement data for the 2007 At-Berth Regulation. CARB staff determined that a majority of the reasons emission reductions did not occur at berth was the result of a shore side problem (including lack of an available shore power berth, no labor to connect the vessel, or terminal equipment failure) all of which are terminal based issues that would require a TIE to remedy. As such, the percentage of VIEs granted are expected to provide enough flexibility to account for operational uncertainties that may result in failing to meet the emissions reductions required by the Regulation at the fault of the vessel, without sacrificing substantial emissions reductions that are necessary to reduce the impacts of vessel at berth emissions on port communities. Vessel operators may also utilize the remediation fund (section 93130.15) for qualifying events, which include on-board equipment problems.

**Comment:** “CAECS Operator Requirements (Section 93130.12): We commend CARB for including in this proposed rule responsibilities and requirements for CAECS operators. Since these operators will provide essential emissions control services, it is logical that the operators themselves will be subject to checklist obligations and penalties for failing to meet those obligations under the rule. This is particularly important given the historical problems vessel operators have encountered with CAECS operators who, despite having a confirmed booking and contract with a vessel operator, may not show up on time, may cancel a booking on short notice or may breakdown during control operations. When a vessel or marine terminal contracts for CAECS services, the vessel or marine terminal cannot control whether and when the CAECS operator shows up or provides proper control services.

We therefore recommend that, when a CAECS operator fails to provide contracted emissions control services to a vessel or marine terminal, the compliance burden and any penalties for noncompliance be initiated solely against the CAECS operator. We also recommend that CARB amend the visit reporting deadline for CAECS operators consistent with our recommendations for vessel visit reporting.” (45.30a)

**Agency Response (45.30a):** CARB staff made no changes based on the received comment. CAECS operators have compliance responsibilities in the Regulation under section 93130.12. The responsibility for compliance with a CAECS is on all parties involved. Individual circumstances will be taken into consideration if non-compliance occurs. The Regulation allows for CAECS operators to report 30 days after the vessel visit, which was changed from 7 days in the initial release of the Regulation text.

**Comment:** “Interim Evaluation of Ro-Ro and Tanker Control Technologies (Section 930130.14(d): [W]e think an adequate case has not been made to include ro-ro vessel auxiliary emissions in this regulation. We hope that CARB staff will carefully consider our arguments regarding the operational problems and costs versus benefits of regulating ro-ro vessel auxiliary emissions. Should CARB proceed with plans to regulate ro-ro auxiliary emissions, we think the interim 2023 evaluation control technologies will be critical in understanding if technology solutions that may facilitate operationally practicable controls of ro-ro (and tanker) emissions are commercially available and cost-effective. We also recommend that CARB include in this interim evaluation comprehensive cost-benefit and practicability analyses for controlling ro-ro auxiliary emissions using available technologies.” (45.32)

**Agency Response (45.32):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as staff did perform a comprehensive analysis as part of the rulemaking process. Ro-ro vessels proportional cost are within the realm of other vessel categories and these vessels have a collective impact on the emissions coming from OGVs at berth and, subsequently, the health of California’s port communities. See response to comment 45.1 for more information on the cost effectiveness of ro-ro vessels.

Separately, CARB staff plans to consider cost-effectiveness and feasibility analyses as part of the Interim Evaluation. Language was added to the Interim Evaluation section of the Regulation to ensure that CARB staff considers public information provided to CARB including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies (see section 93130.14(d)).

**Comment:** "Summary of Responsibilities (Section 93130.17): We generally find the "Summary of Responsibilities" matrix on pages 48-49 to be helpful in defining which party or parties are responsible for what actions under a given scenario. We have two recommended changes to the matrix, as follows:

- One row of the matrix improperly assigns responsibility to the vessel operator for a situation entirely outside of the vessel operator's control. The last row of the matrix on page 48 suggests that in the case of a CAECS failure, the vessel and the CAECS operator would be held responsible. We note that nowhere else in the matrix is a party held responsible for a circumstance completely outside of its ability to control. An arriving vessel has absolutely no ability to control whether a CAECS system will work properly. The proper function and maintenance of a CAECS is up the CAECS operator. We therefore recommend that "vessel" be removed from the list of responsible parties when a CAECS has a failure. The CAECS operator must be solely responsible for these situations.
- We recommend that CARB change the statement "No shore power, but has other CAECS" in the "Berth" column of the matrix to: "No shore power available, but has other CAECS". This change will address situations in which a terminal that is equipped with shore power cannot for one reason or another connect a shore power equipped vessel to power." (45.34)

**Agency Response (45.34):** CARB staff made no changes based on the received comment. In regards to the commenter's first suggestion, CARB staff left both vessel and CAECS operator in the table, as both parties could potentially be liable depending on the situation. In a case where a CAECS failed to achieve the emissions reductions required for the visit, CARB enforcement staff will investigate and make a case-by-case decision depending on the individual circumstances of each event. In regards to the commenter's second suggestion, staff is concerned with visits where the terminal has shore power and does not connect a shore power vessel. If it happens infrequently, then the terminal is likely to use a TIE. If it happens more frequently, then that may be an indication that the terminal infrastructure is insufficient to meet the needs of shore power vessels.

**Comment:** "Compliance Examples: We recommend that CARB consider publishing a list of situations vessel operators (and other parties with responsibilities under the rule)

may face, with a discussion of what happens when that situation occurs. For example, it would be helpful if CARB described how vessel operators should deal with the following situations:

- What happens when labor delays prevent a vessel from connecting to shore power?
- What happens when a booked CAECS operator does not show up?
- What are specific examples of circumstances that would qualify for use of the remediation fund (please note our recommendations in point 11 of these comments)?” (45.35)

**Agency Response (45.35):** CARB staff made no changes based on the received comment. CARB staff agrees that such a list would be useful to regulated entities, and intends to publish a “Frequently asked Questions” (FAQ) document prior to the first implementation dates of the Regulation to assist with clarifying many of the questions staff received that are similar to this comment. This document does not need to be part of the Regulation text.

**Comment:** “93130.7 Vessel Compliance Checklist. Who will identify the time when 'Ready to Work' starts and who will monitor to ensure connection is completed within 60 min? Who will identify the time when 'Pilot on Board' and who will monitor to ensure connection is completed within 60 min?”

Terminal logs date/time power sent to vault and date/time power is disconnected. Terminal is not manned to stand by and determine when the 60 minutes start, when the Terminal sends power and when the Ship connects to the shorepower vault. Vessel operator already logs this information and should solely [sic] provide this data to CARB.”

Recommend: “Keep and modify existing language. Remove Terminals of responsibility for enforcing time constraints. OGV At Berth rule was made for the Vessel Operators and the existing language should remain the same with an increase in the total hrs on Aux engines. If looking for responsible party, consider Port involvement.” (50.2)

**Agency Response (50.2):** CARB staff made some modifications in response to the received comment and others similar to it. CARB agrees that ports have involvement, and have strengthened responsibilities for ports in the Regulation text. See response to comment 24.3. However, staff have left the reporting requirements for vessels and terminal operators. Vessel and terminal operators will each be responsible for recording and reporting specific information as outlined in sections 93101.7(e) and 93130.9(d). The Regulation does not dictate who is required to record and monitor specific information; that decision is between the vessels, terminal operators, ports, and CAECS operators and may

vary from terminal to terminal. See response to comment 24.2 for additional details on the necessity of receiving reporting information from both vessel and terminal operators.

**Comment:** "93130.8 Vessel Visit Exceptions. How about vessels that are under repair and not loading/unloading cargo? Do these qualify under this rule?" Recommend: "Add language stating that some exceptions not listed will be considered on a case-by-case basis. TIEs/VIEs should not be used for these scenarios." (50.3)

**Agency Response (50.3):** CARB staff made no changes based on the received comment. Vessels that are at berth for repair are still emitting pollution, and it is not staff's intention to issue exceptions for this type of vessel activity. TIEs and VIEs are designed to be used for scheduled or unscheduled activities that prevent the reduction of emissions from a vessel during its time at a regulated California terminal. CARB enforcement staff will also consider each situation where the requirements of the Regulation are not met on a case-by-case basis.

**Comment:** "93130.8 Vessel Visit Exceptions. Are weather related damages to the cold ironing equipment during sailing fall under Force Majeur [sic] and considered an exception? If not, how would CARB treat this situation? When ship arrives with damage equipment, who will coordinate the bonnet barge? What if bonnet barge is not available? Will Exception be applied under Force Majeur [sic]? If not, how would CARB handle this?" Recommend: "Add weather damage to exception. VIEs/TIEs and Remediation penalties should not be applicable." (50.4)

**Agency Response (50.4):** CARB staff made no changes based on the received comment. CARB disagrees with the commenter's recommendation to add a weather damage exception to the Regulation as ships are still emitting pollution if equipment is damaged. If a terminal is ready and prepared to plug a vessel in but the vessel is unable to control emissions due to damaged equipment, then it would be the vessel operator's responsibility to arrange for an alternative CAECS to reduce the vessel's emissions at berth, or use a VIE or remediation fund in order to comply for that visit.

**Comment:** "93130.9 Terminal Operator Requirements. Adding to the above. CARB must understand that the Vessel Operator and the Terminal Operator have a service relationship only. Vessels come along side and Terminal operator loads/unloads the containers. Terminal Operators are not expose to Vessel side decisions and do not have any input on the type of ships purchased or control technologies used. Therefore, it is not the Vessels best interest for another party to coordinate bonnet barges. Just not good business sense. However, Terminals will reimburse Vessel operators if it's been mutually agreed that the Terminal was at fault.

Coordinaton [sic] of the bonnet barge should always fall on the Vessel operator who knows their ship specs and already has a relationship with the barge company. If it's

been determined that the Terminal is responsible, Terminal will reimburse [sic] Vessel Operator. Note: It is rare that the Terminal has any involvement with the bonnet barge operations. In many cases, the barge crew boards the ship on the water side and is never seen by the Terminal.

Recommend: "All bonnet barge or alternative solutions should be coordinated by the Vessel operator. Terminals are not trained, experienced or deal with ships. However, if the Terminal is found to be at fault, Terminal operator will reimburse Vessel operator." (50.6)

**Agency Response (50.6):** CARB staff made no changes based on the received comment. There is already at least one container terminal in California (TraPac at Port of Los Angeles) that successfully contracts out a barge-based capture and control system for vessels that are not able to reduce emissions through the use of shore power while at berth at their terminal due to lease requirements. The responsibility for regulated terminals under the At Berth Regulation is that they must make a CAECS available for a vessel to use; this does not prevent a terminal from establishing a system with their vessel-side customers in which the vessel contracts a CAECS and the terminal reimburses the vessel operator(s).

**Comment:** "93130.9 Terminal Operator Requirements. Language states shared responsibility. However, the landlord Port and potentially the barge companies could be at fault. If finding the responsible party is a top priority for this At Berth Amendment than CARB must look at the Ports, Barge companies, utilities, etc. Under represented Terminals should not be the default for liability."

Recommend: "If trully [sic] a shared responsibility, CARB must add language that states Ports and Barge companies are liable for Remediation penalites [sic] and be given Port Incident Exceptions (PIE) and Barge Incident Exceptions (BIE). Revise language that states responsibility depends on the who's at fault. WARNING: With several parties potentially liable, this will cause numerous 'finger pointing' and CARB will require an Arbitration process that will rival a small claims court. Determing [sic] who's at fault will takes months if not years. Attorneys, consultants, etc will cost hundreds of thousands if not more. Costs/Time/Peronnel [sic] required to run this CARB Arbitration Dept will be enormous." (50.7)

**Agency Response (50.7):** CARB staff made no changes based on the received comment. Staff did not include the concept of a PIE or BIE. See agency response (50.11). If the Regulation included PIE or BIE, then it would reduce the number of TIEs a terminal has. TIEs can be used for any situation the terminal chooses, and the remediation fund option can be used for situations described in section 93130.15. To the extent that a port is responsible for compliance, the terminal and port should outline these responsibilities in their

port and terminal plans. See response to comment 50.5 for additional discussion on shared responsibilities.

**Comment:** "93130.9 Terminal Operator Requirements. Terminal operators have no control or any say relative to the control technologies. Vessel operators decide which control technologies to install.

Terminal Operator Requirements. Vessel operators control [sic] their ships and sailing schedule. Vessel Operators should notify Terminals via email with approved emission control strategy status.

Terminal have limited access to Vessel information, schedules, etc. Terminal do not have the man power to obtain this information. All this information is already held by the Vessel operator.

All notifications should be driven by the Vessel operator who owns and operates the ship. Terminals are completely blind of the Vessel status."

Recommend: "Terminal's do not have the man power or expertise to determine if control technologies are approved or operational. Vessel operators own the control technologies and have full knowledge of status/condition of equipment. Vessel operator must take the lead and discuss with Terminal operator." (50.8)

**Agency Response (50.8):** CARB staff made no changes based on the received comment. Terminal operators are required by the Regulation to ensure that CAECS operated by the terminal are CARB approved. If a vessel calling a terminal opts to use a CAECS that is not owned or operated by the terminal, then the vessel operator and CAECS operator bears that responsibility, and the vessel operator must provide the terminal and CARB with the name or EO number of the approved system. The terminal operator would then report this information as the compliance strategy being used for that visit.

**Comment:** "93130.9 Terminal Operator Requirements. Positioning is the responsibility of the Vessel Operator, Pilots and Agents." Recommend: "Delete this language. This does not apply to ITS in Long Beach." (50.9)

**Agency Response (50.9):** CARB staff made no changes based on the received comment. The responsibility for positioning the vessel is placed on the terminal in the Regulation, at least to the extent that the vessel is equipped to receive vessels and connect them to shore power. CARB staff does recognize that there are situations in which a pilot might position a vessel differently at a terminal for safety reasons; in this example, a terminal could use a TIE to account for that visit if the positioning placed the vessel in such a way that the vessel could not connect to a CAECS.

**Comment:** "93130.10 Terminal Exceptions (d). Who/Where do we send request for testing? What kind of information does CARB need to request the test? Once

submitted, how long before approval or rejection is received? In the meantime, vessel is an exception?"

Recommend: "CARB to confirm that TIE/VIE and Remediation penalties [sic] are not applicable in this scenario. Testing alt tech should fall under exception. Connection and disconnection should still be reported, but aux use during these tests should be an exception. TIE/VIE and Remediation penalties [sic] are not applicable." (50.14)

**Agency Response (50.14):** CARB staff made no changes based on the received comment. Section 93130.10(d) (now subsection (e) in the final version of the Regulation) is an exception for vessels participating in a CARB approved research project. This provision was created to support testing new CARB approved emission control strategies. However, the provision was expanded to include other projects on a case-by-case basis. Any entity wishing to apply for approval of a new research project should contact CARB staff for more information on what is required for submitting a research test plan, as the information needed and approval timeframe may vary depending on the scope of the research project being requested. The commenter is correct that TIEs/VIEs or the remediation fund do not need to be used in order to comply with the Regulation if a vessel and/or terminal is actively participating in a CARB approved research project.

**Comment:** "93130.10 Terminal Exceptions General scenarios: What if the previous ship damaged the Terminal shorepower vault prior to sailing? Repairs will take weeks to complete. What happens to the next ship who can't plug in because the previous [sic] ship damaged the vault?"

There are clearly exceptions and there should be language that states request for exceptions will be considered by CARB on a case-by-case basis."

Recommend: "Add sentence or paragraph that states unusual circumstances (definition required) will be addressed on a case-by-case basis by CARB. All parties are subject to liability. CARB to add Port and Barge company PIE/BIE including being subject to Remediation penalties [sic] for these unusual circumstances." (50.15)

**Agency Response (50.15):** CARB staff made no changes based on the received comment. It is the responsibility of the terminal to have working shore power equipment. If equipment is damaged, to be compliant the terminal would need to repair the equipment, and use TIEs or the remediation fund until it is repaired. Damage caused by another party is a civil matter between the terminal and that party.

**Comment:** "91130.11 VIE/TIE (a)(1). 1) Applying previous years ship calls to determine TIE/VIE is not in line with reality. Ship calls should be derived from current year. Depending on the Alliance, calls to each Terminal may vary. Please consider TIEs

based on current year and not based on previous year. Volumes could drastically change from one year to the next. 2) On another note, adding BIE/PIE/TIE/VIE language is another layer of complexity. It will surely require CARB to set up an Arbitraion [sic] dept and possibly an Appeals process which will cost CARB more staffing and more money. All the Remediation penalties will go to this and not the emission reduction. 3) BIE/PIE/TIE/VIE will become a highly sought commodity. Does CARB want to deal with this?

What if Terminal has 100 calls in the previous year, but the current year to date is projecting 200 calls? Past year would only give Terminal 5/15 TIEs vs 10/30 TIEs for 200 ships. It is simply illogical to use past year data."

Recommendation: "Eliminate BIE/PIE/TIE/VIE and Remediation penalties all together. Go back and modify existing language to a higher % of required connections. Treat exceptions as excpetions [sic]. OR 2) Let Ports, Barges, Terminals and Vessels accumulate PIE/BIE/TIE/VIE through the year. CARB reconciles at end of year after total vessel calls are confirmed, CARB will reconcile qualified PIE/BIE/TIE/VIE and notify Ports, Barges, Terminal and Vessels with applicable PIE/BIE/TIE/VIE. Anything in excess would be subject to Remediation penalties. Appeal machinery begins. All cases pending Arbitration will be reconciled with the actual year or the year CARB decisions is made. OR 3) Modify existing quarterly data submission language. When Ports/Barges/Terminals and Vessel operators submit their data, CARB can reconcile and determine which PIE/BIE/TIE/VIE are applicable. Remediation penalties will than [sic] be applied. Appeal machinery begins. All cases pending Arbitration will be reconciled with actual year or the year CARB decision is made." (50.16)

**Agency Response (50.16):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff based the amount of TIEs/VIEs granted to each terminal and vessel operator based on the previous year's vessel visit activity because CARB staff does not have the ability to track vessel visits in real-time and it is not within CARB staff's ability to forecast vessel visit patterns. Staff agrees that there should be a mechanism to account for increasing business at California ports. Staff modified the Regulation language to include a provision that will allow terminal and vessel operators to petition CARB for an increased number of TIEs or VIEs in order to accommodate a new fleet or terminal, or an anticipated growth in visits is expected for an existing fleet or terminals if they can show a need due an increase in vessel visit activity (section 93130.11(c)). When a request for additional TIEs and VIEs is made, the TIEs and VIEs shall be based on a percentage of the upcoming year's anticipated visits instead of the current year's visits. When CARB staff reviews the actual activity by the fleet or to a terminal that requested TIEs or VIEs, the number of TIEs or VIEs used must be less than or equal to the VIE and TIE rate multiplied by the fleet or terminal activity. Any visits not covered by a VIE, TIE or Innovative Concept will be noncompliant.

**Comment:** "91130.11 TIE (b) Table: 2025-2028 reduction from 15% to 5% is too drastic. 5% is too small. 10% should be the default %." Recommend: "2024-2026 reduction changed to 10%. Replace 5% with 10% going forward." (50.17)

**Agency Response (50.17):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. Additional TIEs were given to terminals until 2025 to assist with any necessary infrastructure upgrades and to help acclimate terminal and vessel operators to the new Regulation requirements. The number of TIEs and VIEs granted to terminals and vessel operators from 2025 onward is 5 percent. This number was calculated by evaluating enforcement data available from the 2007 At-Berth Regulation and determining the amount of operational flexibility that would be needed for terminal and vessel operators to comply with the Regulation.

**Comment:** "91130.11 VIE/TIE (c) BIE/PIE/TIE/VIE should not have a shelf life. It should be used to reward those who do follow the OGV At Berth rule. What does it hurt? Either the stakeholders are so good at following that the allowances will not be used OR every BIE/PIE/TIE/VIE will be all used up so there won't be anything to carry over. Recommend: "Allow excess BIE/PIE/TIE/VIE to be carried over to the following year without expiration. Older BIE/PIE/TIE/VIEs must be used first." (50.18)

**Agency Response (50.18):** CARB staff made no changes based on the received comment. The Regulation is ultimately designed to reduce public health burdens associated with emissions from OGVs. TIEs and VIEs were explicitly capped at a limited number so as to keep the amount of uncontrolled emissions from OGVs at berth limited. Allowing TIEs/VIEs to be banked and used at a later date could potentially result in a large amount of uncontrolled emissions which could negatively impact the health of the communities surrounding the berth(s) where the uncontrolled emissions are occurring.

**Comment:** "91130.11 VIE/TIE (d) TIEs should be traded to other Terminals if legally related or part of a consortium through Carrier alliances. Based on pg 43 Remediation Fund Hourly Account, a 24 hr BIE/PIE/TIE/VIE is worth \$45,600. Expiring or not, these should be made available to others." Recommend: "Add language that states companies who have legal relationships will be able to exchange TIE/VIE. Each TIE/VIE will need a s/n or tracking number recorded by CARB." (50.19)

**Agency Response (50.19):** CARB staff made no changes based on the received comment. CARB staff structured the Regulation such that vessel fleets can define a fleet in any way they choose; i.e., several fleets that are part of a carrier alliance can choose to designate themselves as a fleet and may share VIEs. As such, the Regulation already achieves what the commenter is requesting for vessel fleets. TIEs, however, cannot be shared between terminals in order to

prevent an undue pollution burden on community members living near a terminal that might elect to buy TIEs to comply instead of reduce vessel emissions.

**Comment:** "91130.11 VIE/TIE For those that comply each year and stay under the CARB radar, how will these ports, barge, terminals or vessel [sic] operators [sic] be rewarded? Regulation/Amendment focuses on failures.

All spend millions of \$ on shorepower. Very little happens for those who comply. The private sector is afraid of CARB. Is this what CARB wants? CARB needs to reach out and support those who meet the regulations targets."

Recommend: "Add an annual incentive program i.e., additional BIE/PIE/TIE/VIE and Remediation credits to those who meet rules. This should be awarded annually and should not expire." (50.20)

**Agency Response (50.20):** CARB staff made no changes based on the received comment. CARB appreciates the efforts of regulated entities to support the Regulation. However, the Regulation is necessary to reduce the health burdens being placed on community members living and working in and around California's ports. As such, reducing emissions to their lowest achievable level is the focus of this Regulation.

**Comment:** "31130.14 Terminal and Port Plan Interim Eval (a)(3) Terminal Interim Evaluation Plan: Current rule provides a template to complete. Will this be available on line or downloadable to be completed? What time line i.e. past/projected, 12/24/36 months is the basis of our information?"

Technical feasibility study? What does this mean? Who is responsible for this? How much will it cost? Terminals do not have the manning or budget to complete feasibility studies. Ports own the land. Ports should be liable for this."

Recommend: "Involve the Ports and when necessary the utility company. Make the land owner/utility company accountable. Ports should lead any project that require any construction on their property." (50.21)

**Agency Response (50.21):** CARB staff made some modifications to the proposed regulatory language in response to this comment and similar others received by strengthening the language addressing port responsibilities in the 15-day version released on March 26, 2020. The information required to be submitted to CARB for terminal and port plans can be found in section 93130.14(a) and (b). The plans are required to be submitted to CARB before the control compliance requirements go into effect.

The purpose of the terminal and port plans is to provide CARB with information about the strategy the terminals and ports will implement to comply with the

Regulation. It also includes a requirement for the terminal and the port to specify the division of responsibilities between each other. CARB does not have a required form to use to submit this information, but may provide some guidance in the form of a template on our website.

As to which party undertakes any necessary feasibility study, it will be up to the regulated ports and terminal operators to make this decision. The feasibility study referenced by this commenter only needs to be submitted as part of the terminal or port plan if a terminal claims a physical or operational constraint that could delay the ability to control emissions from vessels at berth as required for the Regulation. Most terminals should be able to implement a CAECS, and will not be required to conduct a feasibility study. The feasibility study is the terminal's responsibility to complete and is used to provide CARB with information demonstrating that no other strategy could be operational before the implementation date. If the port is responsible for the terminal's CAECS project, this could be specified in the division of responsibilities as part of the terminal and port plans. Because each port and terminal relationship is unique, CARB staff provides flexibility for terminals and ports to define their relationship including which entity will lead construction projects on the property. CARB staff did not involve the utilities in these responsibilities as the construction and maintenance of CAECS is the responsibility of the terminals and ports, not the utilities. The electric utilities provide power, and there are provisions in the Regulation if there are power interruptions caused by the utilities.

**Comment:** "31130.15 Remediation Fund Use (a) Who is the Remediation Fund Administrator [sic]? 3rd party, public/private, gov't entity? Can BIE/PIE/TIE/VIE be used in place of Remediation penalties or visa versa? What happens when all the BIE/PIE/TIE/VIE are used up? Does it automatically go to Remediation penalties? How will this money be used? Could the Port, barge, Terminal or Vessel operator offset Remediation penalties by leveraging other green projects? In this case, emissions are being reduced immediately and not stuck in some dept who has to go through a grant process that will take years before any emission reductions, if any, takes place.

Recommend: "Add language that states BIE/PIE/TIE/VIE are interchangeable with Remediation penalties. All Remediation penalites [sic] can be offset by Port, Barge, Terminal or Vessel operator capital expense projects that show emission reductions. Projects open, but not limited to, the following: near zero RTGs, Tier4F THs, electric small forklift, replacement of diesel generator with battery or alt fuel, building additional shorepower vaults, retrofitting existing vehicles to near zero or zero emission, solar, wind, renewables, etc." (50.22)

**Agency Response (50.22):** CARB staff made no changes based on the received comment. CARB staff disagrees that TIEs/VIEs should be interchangeable with the remediation fund. The remediation fund is intentionally a separate

provision in the Regulation from TIEs/VIEs. A TIE/VIE can be used for any event that results in uncontrolled emissions, which is why they are limited to a small amount. Separately, the remediation fund may be applied for an unlimited amount of times, but only for specific circumstances (as defined in section 93130.15(b)). Remediation funds cannot be applied for a project directly because the remediation funds must be overseen by a fund administrator. If a regulated vessel visit does not control emissions as required by the Regulation and there are no available TIEs or VIEs to use, a terminal or vessel may elect to use the remediation fund if experiencing a qualifying event. If neither TIEs/VIEs or the remediation fund are available, then the situation would be handled on a case-by-case basis by CARB's enforcement team and the regulated entity responsible for the uncontrolled emissions could potentially face penalties, depending on the outcome of the enforcement team's investigation.

Regarding the remediation fund administrator, this entity may be an air district, CAPCOA, or a non-profit organization in the region (as described in section 93130.16(a) and (f)).

Regarding remediation fund penalties, monies collected in this fund are expected to be used in projects benefiting the port communities that are experiencing the health burdens from uncontrolled at berth emissions; these potential projects include, but are not limited to, many of the projects mentioned by the commenter. CARB staff elected to use a remediation fund administrator instead of allowing regulated entities to offset at berth emissions directly through other projects on a one-off basis because those pathways would be very difficult to track to ensure the necessary emissions reductions are being achieved. Regulated entities can apply to use the Innovative Concept Compliance Option, which was added to the Regulation during the 15-day changes released on March 26, 2020, to comply with the Regulation through projects other than directly reducing vessel emissions at berth if that is their preferred pathway (see section 93130.17).

**Comment:** "31130.15 Remediation Fund Use (b) Penalty qualified circumstances: What about ships who come along side for repairs? No cargo being loaded/unloaded. How does CARB treat this ship if it does not have cold ironing capability. Do all the At Berth rules apply?"

What if some kind of scenario occurs that is not covered by any of the conditions of this At Berth rule?"

Recommend: "Add sentence or paragraph that states unusual circumstances (definition required) will be addressed on a case-by-case basis by CARB. All parties are subject [sic] to liability. CARB to add Port and Barge company PIE/BIE including

being subject to Remediation penalties [sic] for these unusual circumstances. Utility companies should be added to potential responsible parties.” (50.23)

**Agency Response (50.23):** CARB staff made some modifications based on part of this received comment. CARB staff agrees that ports and CAECS operators (barge-based capture and control operators fall under this category) should be able to apply to use the remediation fund during qualifying circumstances. The Regulation was updated during the March 26, 2020 15-day changes package, which included additional language (see section 93130.15(a) and (b)). However, staff does not agree that ports and CAECS operators should have Port Incident Events (PIEs) and Barge Incident Events (BIEs) as suggested here by this commenter as this would increase the amount of uncontrolled emissions occurring.

Regarding the commenter’s question about a regulated vessel berthing at a regulated terminal to undergo repairs or some other non-cargo related activity, a vessel would still be expected to comply with the Regulation as they are still producing emissions that are affecting local port communities, especially if the vessel is staying for a prolonged period. Regulated entities can however, use a TIE or VIE for the visit or apply to use the remediation fund if the visit falls under a qualifying circumstance (as defined in section 93130.15(b)). All cases where emissions are not controlled as required by the Regulation are already subject to a case-by-case investigation by CARB’s enforcement team; as such, no further revisions to address this part of the comment are needed. In regards to the commenter’s request to add utility companies to the Regulation, see response to comment 50.21.

**Comment:** “31130.15 Remediation Fund Use (c) 7 calendar days to submit request. Assuming parties agree who will pay penalties, 7 days may still be difficult. If parties disagree, than what happens? What is the CARB grievance process for disagreements?”

Sounds like another layer of bureaucracy [sic] will cause additional CARB administrative [sic] nightmare. Companies will end up with costly attorneys and delays will push settlements and payments into the future with only the Attorneys [sic] profiting [sic] and emissions still not being addressed.”

Recommend: “Change Amendment language to quarterly. CARB to provide simple excel spreadsheet to be completed, but uploadable [sic] to CARB website without all cells filled. CARB website to email reminders of missing/pending data.” (50.24)

**Agency Response (50.24):** CARB staff modified the proposed regulatory language in response to this and other similar comments received from stakeholders by changing the remediation fund request time from 7 days to

within 30 days of a vessel's departure. In regards to disagreements, CARB's enforcement team would investigate the situation on a case-by-case basis. Regarding reporting, CARB staff is in the process of developing an online reporting tool to help streamline reporting for the Regulation. The system is expected to have the ability to accept data uploads from Excel documents as requested by the commenter. Although using the online reporting system (FRRS) is preferred by CARB staff in order to streamline and expedite the audit and compliance determination process, the Regulation does not require regulated entities to report using any specific mechanism, application, or format, as long as all of the required information from section 93130.7(e)(4), 93130.9(d)(5), and 93130.12(b)(3) for vessel operators, terminal operators, and CAECS operators, respectively, is submitted to CARB in the required timeframe. CARB staff does not at this time, plan on sending regulated entities a reminder to submit reporting information.

**Comment:** "31130.15 Remediation Fund Use (d) Will there be one person or a dept(s) deciding if the Remediation request is eligible? What dept(s)? Is there an appeals process? "

Recommend: "CARB to create and fund another department to handle the Remediation penalties, appeals process, settlement process." (50.25)

**Agency Response (50.25):** CARB staff made no changes based on the received comment. CARB staff will be responsible for determining whether the requirements to use the remediation fund are met. There is no appeals process established in the Regulation. CARB has existing departments to handle legal and enforcement processes, so no further revisions to the Regulation are needed. CARB's Enforcement policy was designed to give all regulated parties due process in resolving violations. Once potential violations are identified and the party notified, CARB will initiate discussions with the responsible party to explain the enforcement process and to obtain additional information. Usually this information is collected through a cooperative process with the responsible party. See CARB's entire Enforcement policy here: <https://ww2.arb.ca.gov/resources/documents/enforcement-policy>.

**Comment:** "31130.15 Remediation Fund Use (e) Remediation penalty payment within 30 days. If CARB allows liable parties to offset penalties with emission reduction projects, how would CARB administer this? Payment program?"

Recommendation: "CARB to issue an invoice or payment voucher to the Port/Barge/Terminal or Vessel operator responsible. CARB to publish where Remediation penalties will be spent. CARB adds Remediation penalty payment option for liable party that will replace direct payments to CARB. Such options would leverage emission reduction project for that year i.e., purchase Tier4F, NZ, ZE or alt power vehicles, retrofits, renewables, shorepower vault investments, etc." (50.26)

**Agency Response (50.26):** CARB staff made no changes based on the received comment. The administration of the remediation fund monies will be handled by a remediation fund administrator (see section 93130.16), so it will be up to each administrator to determine how monies are doled out to qualifying projects. The fund administrators must report to CARB under 93130.16 (h)(6), so CARB can be sure the funds were spent appropriately. CARB staff intentionally set up the remediation fund to be paid to a third party so that there is no conflict with CARB receiving any money directly. It is likely that many of the options to reduce emissions at the port could be funded through remediation fund monies. The focus of these funds is for projects to remediate emissions in and around the community where the remediation fund was generated with projects that reduce emissions earlier or in excess of what is required.

**Comment:** "31130.15 Remediation Fund Use (f) Kindly confirm how rates were determined. For example, \$1900 x 24 hrs = \$45,600 per day. How did CARB determine that ship emissions are equivalent or cost \$45,600 per day?"  
Recommendation: "Reduce hourly rate." (50.27)

**Agency Response (50.27):** CARB staff made no changes based on the received comment. As detailed in the ISOR Chapter IV, p.96:

*"The hourly remediation fund rate was calculated based on the Carl Moyer Advanced Technology Limit for cost effectiveness for consistency with other CARB programs. Staff estimated the typical hourly emissions of pollutants that would need to be mitigated by vessel type, using default power and emission factors. The hourly pollutants were weighted by the Moyer formula,  $NO_x + ROG + 20 \cdot PM$  to determine an hourly rate. The rate was then further increased by 10 percent to cover potential administrative costs."*

That hourly rate is then multiplied by the number of hours in which the uncontrolled emissions occurred (except for the allotted two hours to connect and one-hour to disconnect) to determine the total amount of the remediation fund payment. For more details on the remediation fund, including how the hourly rates were determined for each vessel type, see ISOR Chapter III, p.32 and Chapter IV, p.96-97. For a description of how the remediation fund fees were included in CARB staff's cost analysis, see page 88 of the SRIA (Appendix C-1).

**Comment:** "31130.15 Remediation Fund Use How is the rate divided if multiple parties are responsible? On pg 48, Summary of Responsibilities, multiple parties are mentioned. How is Remediation divided [sic] between Ports/Barge/Terminal/Vessel?"

On pg 48, Summary of Responsibilities, Ports and barge companies are responsible parties, but not mentioned in the Remediation penalties. Ports and barge require incident exceptions i.e.,PIE/BIEs. What if utility company is unable to install infrastructure? How do they get penalized?"

Recommendation: "Add language that states utility companies may be subject to penalties. Remediation penalties can be divided between responsible parties. Once total penalties are calculated and liability % is determined by CARB, responsible parties shall pay their % portion." (50.28)

**Agency Response (50.28):** CARB staff made changes based on the received comment. The remediation fund fee can be applied for by any regulated party, including a vessel operator, terminal operator, CAECS operator, or port; it will be up to the regulated entities to decide whether or not they want to apply to use the remediation fund for compliance. CARB staff will not make the determination of how the remediation fund is divided; that will be up to the regulated entities to determine which party will pay the remediation fund, and how, or if, that payment will be divided. If no party applies to use the remediation fund and emissions are uncontrolled, then the regulated entities will need to use a TIE/VIE or potentially face penalties. Each regulated visit that does not meet the emissions reductions required by the Regulation will be investigated on a case-by-case basis by CARB's enforcement staff. In regards to the comment about ports and barge-based CAECS operators, see response to comment 50.23. In regards to utility companies needing responsibilities in the Regulation, see response to comment 50.21.

**Comment:** "31130.15 Remediation Fund Use Remediation Fund will scare Vessel Operators who are considering calling LA/LB. Vessel Operators will shift towards OR, WA, Canada, East Coast and Mexico. Remediation penalties should be removed all together. Eliminate the complication.

Recommend: "Eliminate any use of BIE/PIE/TIE/VIE and Remediation penalties. Use and modify existing language and raise the % of ships that need to connect." (50.29)

**Agency Response (50.29):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The intent of the Regulation is to have all vessel visits reduce emissions reductions, however, staff understands that operational challenges may occur occasionally and will need an exception. Staff believes that the flexibility that comes with the option of using TIE/VIEs or the remediation fund will help fleets comply while still obtaining high levels of emissions reductions. See Master Response 2, which specifically addresses cargo diversion concerns.

**Comment:** "93130.16 Remediation Fund Administration [sic] (18) Kindly apply the Remediation Administrator [sic] Force Majeur [sic] language to the Vessels, Ports and Terminal Exceptions."

Recommend: "Add similar Force Majeur [sic] language to Vessel, Ports and Terminal Excpetions [sic] language." (50.30)

**Agency Response (50.30):** CARB staff made no changes based on the received comment. The commenter appears to be asking staff to add a force majeure clause, similar to that listed in section 93130.16(h)(18) detailing the administration of the Remediation Fund. CARB staff believes the exceptions for vessels, ports and terminals, which includes exceptions in the case of emergencies or safety events (as defined in section 93130.2(b)(70)) is clearer and more direct and thus force majeure is not necessary to include as a separate exception in the Regulation.

**Comment:** "93130.16 Remediation Fund Administration [sic] Ports, Barge, Terminals and Vessel operators should have other options to settle the Remediation penalties." Recommend: "All Remediation penalites [sic] can be offset by Port, Barge, Terminal or Vessel operator capital expense projects that show emission reductions." (50.31)

**Agency Response (50.31):** CARB staff made no changes based on the received comment. Regulated entities do have alternative pathways to the remediation fund. Regulated entities can control emissions at berth as required by the Regulation or use TIEs/VIEs or an Innovative Concept to comply with the Regulation. The remediation fund is designed to offer another pathway to compliance when emissions are unable to be controlled by a regulated entity during a vessel's visit to a regulated berth, and is not required to be used.

**Comment:** "93130.17 Summary of Responsibilities Based on table, multiiple [sic] parties can be responsible. How does CARB divide up BIE/PIE/VIE/TIE between responsible parties. Who determines the %?"

When parties share responsibility, only % of responsibility should be applied to BIE/PIE/TIE/VIE or Remediation penalty. Using a whole BIE/PIE/TIE/VIE for a 1 or 2 hr delayed connection is poor use of the exception. BIE/PIE/TIE/VIE and Remediation penalties should be interchangeable options."

Recommend: "Add language that states BIE/PIE/TIE/VIE and Remediation penalties will be pro rated to % of responsibility to be Adminstered [sic] by CARB." (50.32)

**Agency Response (50.32):** CARB staff made no changes based on the received comment. CARB staff is unclear what the commenter means when asking how "CARB divides up BIE/PIE/VIE/TIE between responsible parties". As seen in section 93130.11, TIE percentages are set at 15 percent for each regulated

terminal during 2023 and 2024 then TIEs are reduced to 5 percent in 2025 onward. VIEs are set at 5 percent beginning on 2023 onward. Whichever entity is responsible for a vessel visit unable to reduce emissions as required by the Regulation can use a TIE or VIE in order to remain compliant with the Regulation.

TIEs and VIEs are available for terminal and vessel operators to use at their discretion. If a regulated entity chooses to use a TIE or VIE for a one or two hour delayed connection, then that is their choice. Alternatively, a delayed connection is also a qualifying circumstance in which the remediation fund can be used. The Regulation is structured such that a whole TIE/VIE must be used for and cannot be used in fractions. Ultimately, it is up to the responsible parties to decide who will use a TIE or VIE and in the case of disagreements, the case may be investigated by CARB enforcement staff on a case-by-case basis.

**Comment:** "93130.17 Summary of Responsibilities BIE/PIE/TIE/VIE and Remediation should be interchangeable. If whole days, BIE/PIE/TIE/VIE should be applicable, but if emissions are in hours, Remediation should be applied or some kind of offset CapEx project."

Recommend: "BIE/PIE/TIE/VIE and Remediation penalties should be interchangeable options. Remediation penalties [sic] can be offset by Port, Barge, Terminal or Vessel operator capital expense projects that show emission reductions." (50.33)

**Agency Response (50.33):** CARB staff made no changes based on the received comment. TIEs/VIEs and remediation fund are not interchangeable, because they are two separate provisions in the Regulation. TIEs/VIEs are offered in a limited amount to regulated terminals and vessel fleets in order to provide operational flexibility and can be used for any circumstance. This is designed to keep uncontrolled emissions limited to a small amount.

The remediation fund, however, can be used as often as needed but only during qualifying circumstances. Because the remediation fund monies collected will go back into projects that reduce emissions within the community, there is not a limit on the number of times it can be used. However, because the ultimate goal of this Regulation is to reduce the health burdens associated with vessel at berth emissions, the remediation fund can only be used in certain qualifying circumstances so as to avoid regulated entities from simply paying money to pollute at berth. See response to comment 50.22 as to why CARB chose to use a remediation fund administrator to handle remediation fund monies as opposed to allowing for direct offsets from regulated entities.

**Comment:** "93130.17 Summary of Responsibilities Compliance Eval: Scenario 2: Remove Terminal responsibility from Berth with No Shorepower (SP) and Vessel [sic] has SP. Depending on the Lease, the Port is the landlord and responsible for the

property and constructing shorepower assets. Should be Table 6 since different condition.”

Recommend: “Remove Terminal and add the Port on Scenario: No Shorepower, but has other CAECS. Change to Table 6.” (50.34)

**Agency Response (50.34):** CARB staff made no changes based on the received comment. CARB staff intentionally left both terminal and port as potential responsible parties in the Summary of Responsibilities table because of the fact that the terminal/port relationships differ from port to port. If a violation of the Regulation occurs in the situation described by this commenter, CARB enforcement staff would investigate the issue and make a case-by-case determination as to which party is at fault.

**Comment:** “93130.17 Summary of Responsibilities. Compliance Eval: Scenario 3: Remove Terminal responsibility from Berth with No Shorepower (SP) and Vessel [sic] with No SP. Vessel is responsible [sic] for the ship and coordinating CAECS. The Port is the landlord and responsible for the property and installing shorepower assets. Should be Table 6 since different condition.”

Recommend: “Remove Terminal and add the Port on scenario: No Shorepower, but has other CAECS. Change to Table 6.” (50.35)

**Agency Response (50.35):** CARB staff made no changes based on the received comment. There was no Table 6 in the Regulation when CARB staff received this comment, but staff assume this commenter is referring to the second half of Table 5 from the original draft Regulation language that was released October 15, 2019, and what became Table 7 in the draft 15-day Regulation language and the final Regulation. CARB staff disagrees with this request to change Table 7 in the Regulation. Both the vessel and terminal operators have responsibilities under the Regulation to ensure that emissions are being reduced while a vessel is at berth and both parties must play a role in ensuring a plan is in place to reduce emissions. The port is already included as a responsible party under both circumstances in the table that are labeled “No shore power, but has other CAECS” (see section 93130.18).

**Comment:** “Please clarify that ‘compatible’ and ‘compatibility’ refer to shore power electrical standards and are not related to physical vessel configurations (e.g., not intended to require installation of shore power on the second side of the vessel).” (46.24)

**Agency Response (46.24):** CARB staff modified the proposed regulatory language in response to multiple similar comments expressing confusion about the usage of the word “compatible” in regards to shore power. See response to comments 41.10 and 45.10 for details on this change.

**Comment:** “Please clarify a vessel operator’s options and responsibilities if the master or CAECT provider believes the available CAECT cannot safely connect to the vessel’s stack due to height, configuration or presence of a scrubber.” (46.25)

**Agency Response (46.25):** CARB staff made no changes based on the received comment. CARB expects vessel and CAECS operators to confirm that a CAECS technology will be safe for use on a vessel prior to relying on the technology for compliance if it is part of their main strategy to comply. However, CARB staff understands that there may be occasional uses of alternative CAECS when shore power or a vessel’s primary CAECS may be out of commission for a variety of reasons. If a vessel master or CAECS (same as CAECT in this received comment) provider feels that there is a true safety concern with using a CAECS, there is an exception in the regulation for safety and emergency events that can be used (section 93130.8(a) and 93130.10(d)). The definition of safety and emergency events can be found in section 93130.2(b)(70) and reads:

“Safety and emergency events” means an event where a responsible official reasonably determines that compliance with this Control Measure would endanger the safety of the vessel, crew, cargo, passengers, terminal, or terminal staff because of severe weather conditions, a utility event, or other extraordinary reasons.”

**Comment:** “Clarify whether a VIE covers a vessel visit to one port or a full California voyage. It appears that as written a vessel scheduled to make calls in 3 ports that experiences a malfunction could be required to expend VIEs in each port called until repairs can be made. The operational alternative would be to omit vessel port calls, potentially requiring that containers be trucked to the other ports.” (46.28)

**Agency Response (46.28):** CARB staff made no changes based on the received comment. One VIE (or TIE) covers one vessel visit to one regulated terminal, not a full California voyage with multiple port stops. Staff structured the Regulation such that each vessel fleet gets a percentage of their visits as VIEs at each port to account for the fact that some maintenance repairs cannot be completed prior to other California port calls. Maintenance repairs also may qualify the vessel for use of the remediation fund as a compliance pathway (section 93130.15(b)). The uncontrolled emissions from a vessel visit will impact different communities along a vessel’s full voyage in California; as such, staff designed this structure to limit the amount of uncontrolled emissions while taking into account the need for some operational flexibility.

**Comment:** “Clarify the mechanism for the managing the situation where a vessel experiences a major mechanical problem and is moved to a “lay by” berth for repairs. We are checking to determine whether such occasionally-used berths have shore power capability. If shore power is not available could this be covered under the

original TIE/VIE, or would a second TIE/VIE be required? An unintended consequence could be prolonging repairs by making them at anchorage instead of at berth.” (46.29)

**Agency Response (46.29):** CARB staff made no changes based on the received comment. In this case it would depend on whether or not the vessel is laid up at a regulated terminal. If the vessel is placed at a berth that is not part of a regulated terminal, then the vessel would not have requirements to reduce emissions, unless both the lay berth and vessel had compliant shore power connections. But if a regulated vessel is laid up at a regulated terminal to undergo repairs or some other non-cargo related activity, they would still be expected to comply with the Regulation as they are still producing emissions that are impacting local port communities, especially if the vessel is staying for a prolonged period of time. Regulated entities can use a TIE or VIE for the visit or apply to use the remediation fund if the visit falls under a qualifying circumstance (as defined in section 93130.15(b)). One TIE or VIE would be valid for a prolonged visit as long as the vessel did not shift berths; a vessel move from one berth to another berth is considered a new visit at each subsequent berth (section 93130.2(91)).

**Comment:** “[I]f a vessel “double calls” – visits one terminal in a port complex and then makes a brief stop in another terminal in the same port (e.g., to load empty containers). Is there a *de minimis* visit?” (46.30)

**Agency Response (46.30):** CARB staff made no changes based on the received comment. A vessel will be expected to reduce emissions as required by the Regulation for each visit to a regulated terminal, regardless of how many stops the vessel makes at the same port or port complex. This is to keep the amount of uncontrolled emissions limited in order to reduce the health burdens on the communities surrounding the port or port complex. The Regulation specifies that a vessel move from one berth to another berth is considered a new visit at each subsequent berth (section 93130.2(91)).

**Comment:** “Is there a way to address the regulatorily[sic]-required 5-year vessel dry dockings? A service with 5 identical vessels will almost certainly include vessels of the same class, with dry dockings bunched rather than being spaced evenly at one per year. For a short rotation service, (e.g., 5vessels in 5 weeks) such dry dockings may require a replacement vessel for 2 to 3 visits. Replacement vessels with shore power can be difficult to charter and are not available in some sizes. Thus, dry dock replacement could exhaust or exceed all VIEs at each port, leaving no VIEs for extra loaders, redeployments or operational issues. Would remediation fees be an option in this case?” (46.31)

**Agency Response (46.31):** CARB staff made no changes based on the received comment. A vessel without a pathway to compliance would not be able to use

the remediation fees. Remediation fees may only be used in qualifying circumstances: vessel or terminal equipment repairs, terminal or port construction events, delays connecting to a CAECS, or at berths in which there is a known physical constraint preventing the use of a CAECS (section 93130.15(b)). CARB staff structured the Regulation such that predictable events could be planned for through the use of VIEs/TIEs and to prevent vessels without a pathway to compliance from paying to pollute while at berth. If there are known dry dock needs with replacement vessels that does not have shore power equipment, a vessel operator may use VIEs (or request a terminal use a TIE) to comply or contract with an alternative CAECS operator to reduce emissions on the vessel during non-shore power visits.

**Comment:** “The Port frequently receives military cargo for the U.S. military which arrives on civilian vessels. The Port requests that CARB clarify if this situation would result in the vessel being exempt from the regulations due to the nature of its cargo.” (53.28)

**Agency Response (53.28):** CARB staff made no changes based on the received comment. As specified in the definition of a “government or military vessel” (section 93130.2(b)(36), a commercial vessel that also carries some military cargo is not a government or military vessel unless the military is the operator. As such, a commercial civilian vessel carrying military cargo, as described here, would be subject to the requirements of the Regulation.

**Comment:** “The Port requests clarification on the size of tanker vessels which will be subject to the regulations.” (53.30)

**Agency Response: (53.30):** As defined in Section 93130.2.(b) “Ocean-Going Vessel” means a commercial, government, or military vessel, excluding ATBs, meeting any of these criteria:

- (A) A vessel greater than or equal to 400 feet in length overall as defined in 50 CFR § 679.2, as adopted June 19, 1996;
- (B) A vessel greater than or equal to 10,000 gross tons under the convention measurement (international system) as defined in 46 CFR § 69.51-.61, as adopted September 12, 1989; or
- (C) A vessel propelled by a marine compression ignition engine with a per-cylinder displacement of greater than or equal to 30 liters.

Tanker vessels meeting any of these criteria would be subject to control requirements.

**Comment:** “We also note that there seems to be a typo in §93130.18 (a) which should be corrected or clarified. PMSA presumes that the reference to Health and Safety

Code §39764 is intended to be a reference to Health and Safety Code §39674.” (52.27)

**Agency Response (52.27):** CARB staff modified the proposed regulatory language in response to the received comment. The commenter is correct and the transposed numbers have been corrected.

**Comment:** “The proposed regulation also contains a number of problematic elements that make implementation difficult and will subject entities to non-compliance risks even when taking all reasonable steps possible to comply.

...The requirements identified under Section 93130.5 are potentially self-defeating in allowing additional control technologies to supplement shore power for rule compliance. The proposal envisions emission control systems operating interchangeably across different vessels, hopefully lowering capital costs. However, the rule establishes different allowable emission rates depending on vessel type ensuring that such systems cannot be used interchangeably. This requirement alone would drive up the number of units necessary and therefore costs and was not analyzed by CARB staff.” (52.39)

**Agency Response (52.39):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. Section 93130.5 of the Regulation provides a pathway for regulated entities to choose the CAECS that works best for their unique situation to comply with the Regulation, but does not set different emissions rates for different vessel categories. All auxiliary engine controls, regardless of vessel type, must meet the same emissions rates to receive CARB approval. Separately, all tanker auxiliary boiler controls must meet an emissions rate that is specific to tanker boilers due to their unique characteristics resulting and a different emissions profile than auxiliary engines. This allows any CAECS that is appropriately scaled and tested on multiple vessel types to be approved by CARB and used on multiple vessel types for compliance with the Regulation. CARB foresees this happening with container, reefer, and ro-ro vessels in particular due to their similar power loads at berth, but the Regulation leaves open the possibility for a CAECS to be approved for other vessels as well.

**Comment:** “Regarding the annual emissions testing, the proposed regulation is unclear as to which entity is responsible for conducting the emissions testing: the manufacturer, warranty provider, owner, lessee, or operator.” (52.42)

**Agency Response (52.42):** CARB staff made no changes based on the received comment. Testing must be done by certified third party source tester as specified in section 93130.5(g). The applicant requesting approval of the CAECS is required to submit the testing results annually to CARB’ Executive Officer (section 93130.5(j)).

**Comment:** “The proposed language states that ‘[p]rior to entering into any agreement or contract, vessel operators or terminal operators shall follow due diligence in selecting third party control operators.’ It is unclear what this language requires. CARB is the sole determiner of whether a technology is verified or not. In addition, ocean carriers and terminal operators are not experts on CARB-certified control technology and would need to rely on the word of the CARB-certified third party operator that the operator can provide the needed service. If such language remains in the regulation, the onus should be on the third-party operator to seek vessel operating parameters and certify that they are capable providing service consistent with the CARB Executive Order verifying their technology.” (52.C.43)

**Agency Response (52.C.43):** CARB staff made no changes based on the received comment. This comment was submitted to CARB in June 2019 and is no longer relevant to the final Regulation. As such, no further revisions were required. However, CARB staff will note that CARB approval of a CAECS represents confirmation of a CAECS ability to successfully reduce emissions to the level required by the Regulation, but does not guarantee the reliability or reputability of a CAECS operator. While a CAECS operator may be the party submitting the application for CARB approval, it is still the responsibility of vessel and terminal operators to ensure that any third party CAECS they contract with are using CARB approved systems as they are the ultimately the primary regulated entities under this Regulation.

**Comment:** “Impact of Harbor Craft Emissions. The draft regulatory language includes many instances where increased tug activity will be necessary, sometimes significant increases. However, there is no analyses of the impact of these emissions or how the emissions reduce the effectiveness of the rule.

In one example, four tug movements would be required for the placement (two movements) and removal (two movements) of a barge-based alternative control system for a Ro/Ro vessel. Main tug engines are significantly larger than auxiliary engines on a Ro/Ro vessel. Given the short visit of Ro/Ro vessels, typically 10 hours, the tug emissions will significantly erode the benefit of the control system, increase greenhouse gas emissions, and reduce the cost-effectiveness of the effort. CARB staff has not shown the impact of these tug emissions for Ro/Ro or any other vessel category. Before proceeding, the analyses should be re-run to determine what emissions benefit remains after the impact of tug emissions.

In another example, there could be significant impact from the requirement that vessel be relocated to a shore power capable berth if one becomes available. Depending on the remaining time of the vessel call, the combined excess emissions from delaying the vessel through the move and the tug emissions to support the move, may exceed any benefit resulting in a net increase in emissions. While terminal operators have taken steps to relocate vessels to ensure the use of shore power whenever possible, a blanket requirement may result in negative as well as positive outcomes. The

proposed language should reflect this reality or be removed from the regulation.” (52.C.55)

**Agency Response (52.C.55):** CARB staff made no changes based on the received comment. See Master Response 1 on ro-ro and tug emission calculations completed by CARB staff.

**Comment:** “Regulatory Language Ambiguities. The draft regulatory language contains several ambiguities in the Ocean-going Vessel Requirements, Terminal Operator Requirements, and the Terminal and Port Plans sections. Due to the regulatory construction it is not always clear what categories are subject to what requirements. This is often due to placement of requirements for vessels or terminals in a parallel structure to the applicability of provisions to vessels and terminals in a given section. Instead, the regulatory language should place requirements in a subsection to applicability. Throughout these sections, the regulatory language should be revised to make clear the relationship between requirements and applicability.” (52.C.57)

**Agency Response (52.C.57):** CARB staff made no changes based on the received comment. However, throughout the regulatory process CARB staff attempted to clear up any ambiguity. CARB staff believes the final Regulation is as clear and concise as achievable.

**Comment:** “THE REGULATIONS SHOULD CLARIFY THAT THE DEFINITION OF “COMPATIBLE” AND “COMPATIBILITY” DO NOT REQUIRE INSTALLATION OF SHOREPOWER ON THE SECOND SIDE OF THE SHIP: Ships should not be required to have shorepower equipment on both sides of the ship -- nor should ships already in compliance with the current regulation to be shorepower-capable be penalized or required to pay a mitigation fee should a berth not be available that can connect to the shorepower already installed on the ship on a specific side. Shorepower connections are located in proximity to electrical panels and cannot easily cross over the bow of the ship. The current practice of assigning berths to accommodate the location of vessel shorepower connections is financially and logistically manageable by industry and is essential for maximizing utilization of shorepower equipment required only in California. (Pages 18, 20 and 26).” (52.C.63)

**Agency Response (52.C.63):** CARB staff modified the proposed regulatory language in response to multiple similar comments expressing confusion about the usage of the word “compatible” in regards to shore power. See responses to comments 41.10 and 45.10.

**Comment:** “Notification for Malfunction. The proposed regulatory language includes a “Notification for Malfunction” section. The section is indicative of the many fundamental problems with the proposed regulatory language. The proposed Notification language is typical for stationary sources. However, the draft rule

proposes to impose operational controls on a mobile source. The application of stationary source approaches to emissions control is inappropriate and unworkable. The entire section should be removed from the draft.” (52.C.56)

**Agency Response (52.C.56):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking and irrelevant therefore, CARB is not required to respond. The comment appears to be referring to draft regulatory language that was not included in the Proposed Regulation.

## 6. TECHNOLOGICAL FEASIBILITY

**Comment:** “Alternative Technology. The workshop presentation continues to point to alternative technologies as necessary to the expansion of the rule. In order for alternative technologies to be a viable solution, CARB must address two issues. If such technology is to be a replacement for shorepower under the future regulatory approach, CARB must define the emission reduction parameters that the technology must meet to be considered a replacement. Will current technology meet the requirements of the future rule? If not, what level of emission reduction will be necessary for the technology to be considered viable?

The second issue that CARB must address is feasibility and cost-effectiveness. As stated earlier, CARB has acknowledged in the Sustainable Freight document and Mobile Source Strategy that these technologies are not currently up to par for meeting future regulatory needs, stating that expansion of the rule is dependent on “if the systems prove to be feasible and cost-effective”. How will CARB determine whether the technology has become feasible and cost-effective? Finally, PMSA refers CARB staff to our comment letter of August 4, 2017 (attached) for our concerns regarding alternative technology.” (52.C.128)

**Agency Response (52.C.128):** CARB made no changes based on the comment received. In response to the request for emission reduction parameters that technology must meet for compliance under the Regulation staff has defined requirements, see section 93130.5 (b) of the Regulation that clearly lays out the requirements for CARB approved emission control systems. Regarding the issue of feasibility, there are current available technologies for vessels to reduce emission at berth and staff believes that technology will continue to develop and be available for new vessel types. As part of the Regulation, staff has included an Interim Evaluation which will assess the progress in adapting control technologies for use with tanker and ro-ro vessels and as a result may make changes to compliance deadlines for these vessel categories if deemed necessary.

In regards to cost-effectiveness, CARB does not require that regulations be cost-effective, only that the costs and economic impacts of the regulation are weighted and considered appropriately. However, CARB staff believes this regulation is cost-effective, with the health benefits valuation outweighing the

overall cost of the Regulation. CARB is held accountable to accomplish the goals adopted through the Mobile Source Strategy and Sustainable Freight documents, but the regulations adopted by CARB are in no way limited or capped at those goals. See response to comment 52.C.119 for more discussion on this issue.

**Comment:** “[T]he Port is concerned that landside emissions control approaches were never contemplated for use in the container fleets, have not been analyzed by CARB staff for use in the container shipping trades, and by CARB’s own analysis can result in an increase in greenhouse gas emissions, which would seem to be an unacceptable outcome given the purpose and intent of this rulemaking.” (17.6)

**Agency Response (17.6):** CARB staff made no changes based on the comment received. CARB staff learned through discussions with container vessel operators that land-side emissions capture and control systems are not generally usable for container vessels due to the positioning shore-side gantry cranes. CARB staff however, do recognize that the usage of such a system may be possible in some locations, and the structure of the Regulation permits container vessels and terminals to use land-side capture and control technology if that is the technology that best fits their unique needs.

Because the overwhelming majority of container vessels utilize shore power and barge-based capture and control systems to comply with the 2007 At-Berth Regulation, these were the only two types of systems analyzed by CARB staff for the purposes of estimating container vessel compliance with the Regulation. Any future land-side capture and control system used on a container vessel will be required to mitigate their GHG emissions to ensure they are emitting no more GHG emissions than if the system were powered by the California electricity grid. As such, the small amount of container vessels anticipated to use capture and control technologies represents a very small portion of the container vessel traffic to California. The Regulation achieves GHG emissions over the fleet of vessels and CARB staff does not anticipate overall GHG emissions increase resulting from the use of capture and control systems.

**Comment:** “CARB’s analyses fail to address the major operational, safety and cost issues the proposed “capture and control” systems pose for ro-ro vessels or to account for the emissions generated by these control systems and the tug boats need to maneuver them to and from the vessels.” (45.2)

**Agency Response (45.2):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. CARB staff assessed both the technical and operational feasibilities of control technologies for ro-ro vessels. Additionally, CARB staff conversed extensively with vessel operators, terminal operators, and Port staff to better understand the major operational, safety and cost issues the proposed “capture and control” systems may pose for ro-ro

vessels. Further, the cost analyses show the cost impacts from the Regulation to the ro-ro industry, please refer to the SRIA, Attachment C-1 of the ISOR. For more discussion on tug emissions please refer to Master Comment 1.

**Comment:** “Alternatives are very limited in LA/Long Beach, and completely unavailable in other ports. Feasible compliance options need to be available and clearly defined for all ports prior to implementation of a more stringent requirement.” (46.9)

**Agency Response (46.9):** CARB staff made no changes based on the received comment. By using existing Proposition 1B information, and having conversations with terminal operators, CARB staff had different findings compared to the Ports’ assessments regarding the amount of infrastructure needed to comply with the Regulation. After multiple conversations with Port staff, CARB staff understand the infrastructure challenges with regard to construction timing. In addition to emissions reduction requirements beginning in 2023, CARB staff have also provided flexibility in the form of TIEs and VIEs (Section 93130.11) which give terminals and fleets a higher percentage of visit exceptions in 2023 and 2024 to allow for some additional flexibility in the initial two years of the Regulation. This additional time and added flexibility should allow for infrastructure build out and control systems to be developed and constructed.

**Comment:** “We find that the proposed hourly rental rate of a barge-based emission control and capture system to be dubious, particularly since few service providers exists.

- Inasmuch as a monopoly or, at best, an oligopoly will be created by this proposed rule if adopted, the hourly estimates to rent a barge-based system are significantly underestimated.
- We encourage CARB to explore other options that allow it to achieve emissions reductions. It is more likely that harbor emissions will be increased from tugs and other harbor craft, nullifying any measurable gains by including Ro-Ro vessels in the rulemaking.
- The cost effectiveness of CARB's Carl Moyer program limit of \$30K per ton exceeds both the hourly or barge based purchase option proposed by CARB
- Indeed, it would be far more prudent for CARB to exempt Ro-Ro vessels and capture more emissions from tugs and other harbor craft.
- Most of these harbor assets need to be re powered, and requiring Tier 3 engines is more cost effective and will allow CARB to capture a greater reduction in emissions as compared to Ro-Ro vessels, which amount to approximately one percent of the overall ocean-going vessel emissions in the San Pedro Bay Ports /SPBPs/ 2018 inventory.” (37.2)

**Agency Response (37.2):** CARB staff made no changes based on the received comment. As described in the ISOR on page VI-4, CARB staff estimates more than 30 capture and control (either land or barge-based) systems may be needed for the Regulation. In order to meet this demand, staff anticipates more entrants to the market. CARB staff has also engaged with the technology providers to strongly consider employing zero emission technologies, and if unavailable, “grid-neutral” fuels to power their barges with the expectation of reducing the emissions generated by capture and control systems while in operation. For more discussion on tug emissions, ro-ro vessels and capture and control devices see Master response 1.

The hourly rate for capture and control systems were assumed in the cost analysis and was based on current rates for both available control systems. However, in response to the commenter’s assertion that capture and control systems hourly rates are underestimated, staff would like to remind the commenter that the Regulation does not prescribe a control system for vessels, rather operators are allowed to choose an option which best suits their operations, including alternative measures, such as with the Innovative Concept compliance option (Section 93130.17).

**Comment:** “Technology, such as in the field of batteries and hydrogen power systems, is developing at a rapid pace. Hence, the implementation of any future at-berth requirement should be preceded by a technology review that would defer the implementation if it was found that a new and superior technological solution was nearing readiness.” (55.3)

**Agency Response (55.3):** CARB staff made no changes based on the received comment. Staff has included a technology review as part of the Regulation, for specifics please refer to section 93130.14 (d) of the Regulation. Hydrogen and batteries, if proven to be effective can be considered as compliance options for the Regulation, however waiting for “superior” technology would do little to help the significantly impacted communities around the heavily polluted ports.

**Comment:** “[I]n regard to greenhouse gases (GHG), CARB has defined an approved emissions control strategy as one that is “grid-neutral, emitting no more carbon emissions than if the strategy were powered by the California grid for the year that the technology is granted an Executive Order.” Currently, no alternative control technology can meet this standard today. As a result, upon the effective date of the proposed rule, no alternative control technology will be available. The language also implies that Executive Orders will only be granted on an annual basis. A temporary Executive Order will create uncertainty about the future availability of alternative control systems. It is unlikely that any company will be able to plan not knowing what the following year’s GHG standard for an alternative control technology will be and whether a given technology will be granted an Executive Order.” (52.C.45)

**Agency Response (52.C.45):** CARB staff made no changes based on the received comment. Yearly testing of CAECS is needed to prove that the required level of emissions reductions of each pollutant when using these strategies is achieved. CARB staff foresee alternatives such as batteries, hydrogen or even bio fuels as possible future options for grid-neutral capable emissions control systems. The current control systems are operable (granted they met emissions control requirements) until 2025. This allows years for innovation, development and construction for systems that are grid-neutral capable. Additionally, if technology is not available for a visit an operator may use a TIE/VIE or in some cases the remediation fund. Additionally, to account for the need for additional time for technology to be developed as part of the 15-day changes released in March 2020, staff included the Innovative Concept compliance option (Section 93130.17).

**Comment:** “Grid-neutral barge-based control systems may require batteries or fuel cells, which will make these systems larger and heavier than today’s generation. No new control system will be approved unless it is grid-neutral, and even the existing grandfathered systems will need to be grid-neutral by 2025. Technology developers may design for this requirement using batteries or fuel cells (ISOR, ES-26). These power systems may result in larger barges that pose a more significant navigational hazard, forcing some terminals to shift toward land-based systems, which is not contemplated in the regulatory analysis.” (52.A.6)

**Agency Response (52.A.6):** CARB staff made no changes based on the received comment. CARB staff is aware that the control technologies scaled for other vessel categories and built with zero emission technologies, may not necessarily be have the same footprint as the barge systems used for compliance with the 2007 At-Berth Regulation. CARB staff has considered the likely footprint of storage and refueling/charging infrastructures for alternative powered emissions control systems however, the decision to install or use these systems is entirely up to vessel and terminal operators. The Regulation does not prescribe the use of any one technology and thus, any CAECS system may be used. Alternatively, to account for additional time for technology to be developed CARB staff introduced the Innovative Concept compliance option into the Regulation during the 15-day changes released in March 2020 (Section 93130.17).

**Comment:** “Charging Infrastructure: CARB has not accounted for the potential need to recharge battery-powered systems when not in use. The barge-based systems will need wharf space with electrical outlets, and these costs are not reflected in the analysis.” (52.A.7a)

**Agency Response (52.A.7a):** CARB staff made no changes based on the received comment. The Regulation does not prescribe compliance systems. Thus, any terminal and any vessel is free to choose an option which is best

suiting for their operational needs. This includes the unlimited options that can be applied for the Innovative Concept compliance option. Thus, CARB only accounted for cost information which were determined necessary for systems such as those used by the 2007 At-Berth Regulation.

**Comment:** "Should CARB assume that renewable fuels will sufficiently meet the grid-neutral requirement, CARB should provide an assessment of the availability of renewable diesel or renewable natural gas with the technical specifications required for marine engines and include renewable fuel infrastructure in the cost analysis and implementation timeline." (52.A.7b)

**Comment:** "CARB assumes control systems at RoRo terminals will be similar in size and scope to the existing land-based and barge-based control systems. CARB should further evaluate the significant technological and infrastructure modifications that will be necessary to make today's systems grid-neutral by 2025. CARB projects these technologies will shift to grid-tied electric, battery- or fuel-cell powered to meet this requirement (ISOR, I-33), or transition to renewable fuels, but neither the cost analysis nor timeline reflects this assumption." (52.A.8)

**Agency Response (52.A.7b) and (52.A.8):** CARB staff made no changes based on the received comments. As described in ISOR Page ES-25, vessels may be able to utilize alternative fuels and power sources and/or on-board emissions controls as part of a strategy to reduce emissions at berth. Staff is aware that renewable fuel pathways will take time to develop. Hence, this is the reason why staff has not prescribed a specific control technology for compliance, in order for emerging technologies to prove their success (see CARB Approval Section 93130.5), and for fuel pathways to become available. In the meantime, staff will continue to collect further information on the cost and footprints of these systems as part of the Regulation's Interim Evaluation in 2022 that will assess the progress in adapting control technologies for use with tanker and ro-ro vessels and as a result may make changes to compliance deadlines for these vessel categories if deemed necessary.

**Comment:** "CARB is seeking to apply requirements for further emissions reductions which would be nearly completely reliant upon a technology that is not currently commercially available and is not yet approved for use by CARB. This alternative control system (ACT) will likely be a system which captures emissions from OGV and physically or chemically removes the pollutants from the exhaust gases. These systems are large, heavy, and technically complicated in their design and operation. The implementation of one of these systems at the Port will take substantial resources and time. This is not to imply that the Port is in opposition to the use of an ACT system for emissions reductions in any way! However as a steward of public funds the Port does not take lightly the responsibility of investing in a yet unproven technology which may have a cost equivalent to a third of its annual revenue." (53.1)

**Agency Response (53.1):** CARB staff made no changes based on the received comment. CARB staff acknowledges that the costs and physical footprint of alternative control systems and agree they are not insignificant. As described in ISOR Page III-16, staff anticipates the process for building, testing, and approving these systems may become more streamlined as more of the systems come to market, and that the costs depend on the technology and manufacturer's ability to increase production of the barge- and land-based systems. While staff anticipates that technology will be readily available by 2023 the Interim Evaluation will allow implementation dates to be altered if needed.

**Comment:** "The CARB Board seemed during the December 5th meeting to favor moving the date of compliance for requiring an ACT for Roll On Roll Off (RORO) vessels from 2025 to 2023. At the present time the Port presumes that the State of California will require that the ACT system operate as a zero emission system which will require it to be powered by electrical power. Current barge based emissions capture systems use diesel fuel and produce significant emissions through the use of heavy machinery and generators to power the emissions filter process. Presently the Port is nearly at the maximum of its available electrical power ceiling as it seeks to continue the implementation of zero emission technologies on Port. Adding additional power load to the Port will require additional power supply from its utility provider Southern California Edison (SCE). SCE has notified the Port that the regional circuitry upgrades needed to supply the Port with additional power will be of such scale as to take three to five years to complete and cost \$30-50 million dollars. This utility upgrade would preclude the Port from being able to operate a zero emissions ACT by 2023." (53.2)

**Agency Response (53.2):** CARB staff modified the proposed regulatory language in response to the received comment. The ro-ro vessel control requirement was pushed back to 2025 from 2023 to allow for additional time for technologies to be developed for the ro-ro industry. Regarding the statement that the ACT system operate as a zero emission system that will require it to be powered by electrical power, CARB does not require the ACT system to use electrical power strictly. As described in ISOR Page I-32, future versions of the capture and control systems could be zero-emissions by use of alternative fuels, hydrogen cells or even batteries.

**Comment:** "Sock-on-a-stack solutions are not operationally viable for RoRo if quay-based due to obstruction of cargo operations. The barge-based alternative is also not viable due to safety concerns and the threat to effective port operations. Moreover, the net benefit of a barge solution is highly doubtful when the emissions related to repositioning the barge are considered." (55.6)

**Agency Response (55.6):** CARB staff made no changes based on the received comment. Based on conversations CARB staff have had with industry

stakeholders, staff anticipates that capture and control systems (a mixture of both barge-and land-based) will be the primary pathway for compliance for ro-ro vessels in the near term. As ro-ro berths are generally large, wide-open spaces with sufficient wharf strength to support the off-loading of cars and other large equipment on wheels, wharf infrastructure improvements are not anticipated to be necessary for ro-ro terminals and systems should be developed with safety and operations in mind. No specific infrastructure needs were expressed to CARB staff during conversations with terminal operators and port staff for any of the ro-ro berths anticipated to be included in the Regulation. For a discussion on the benefits from barge-based systems, tugs, and ro-ro vessels see Master Response 1.

**Comment:** “In addition, the proposed rule relies on technologies – such as the bonnet system – that are still being proven for different vessel categories, and for which the cost effectiveness of widespread use remains to be confirmed. Given the proposal’s potential negative impacts on employment, both at the ports and in the communities they serve (which are often in economically-challenged areas), it is important that we get this right.” (59.3)

**Agency Response (59.3):** CARB staff made no changes based on the received comment. CARB acknowledges in ISOR Page IX-29 that the Regulation is anticipated to result in a relatively small decrease in total employment growth in most years of the assessment. Overall, the change in total employment is small relative to the baseline employment for the California economy, being less than 0.02 percent in all years.

**Comment:** “In the Initial Statement of Reasons (“ISOR”) for the At Berth Regulations, CARB Staff notes that it “assumed that the majority of tanker visits will use land-based capture and control systems based on industry feedback.” ISOR, p. III-19. However, at numerous points in this rulemaking, WSPA and its members have informed Staff that land-based emission capture and control systems have not been designed, tested, or demonstrated to be a feasible, safe or reliable option for tankers. To date, WSPA is not aware of any real-world examples of such land-based systems being successfully implemented on tankers at the scale typically seen at California marine terminals. This real-world evidence reflects that the majority of marine terminals would be poorly situated to feasibly install and safely operate land-based capture and control systems at marine terminals. At a minimum, very large shore cranes would need to be constructed at each berth in order to reach all vessel designs, considering many tanker vessel exhaust stacks sit nearly 160 feet above the wharf. These cranes’ connections to the vessel stack are not designed with the emergency break away coupling required for all tanker vessels, nor do they come with an engineered working safety margin for movement between vessels. Indeed, no emergency protocols exist at all for the type of connection the At Berth Regulations would mandate.

There is no data to support the concept that a land-based system can operate safely at a marine terminal. At the very least, the land-based systems currently required by the At Berth Regulations would create several significant safety concerns at California terminals:

- Exhaust systems and combustion control systems are not designed for connection to external capture devices. Such connections change the fluid dynamics of gas flow from the stack and increase the risk of an unsafe combustion space. Additionally, establishing and safely maintaining connections can be extremely difficult at night and in adverse weather conditions.
- Executing emergency disconnection procedures (which have not been developed) for such land-based systems would add steps and delay tankers in responding in an emergency (e.g., to allow safe disconnection from power, removal of shore-side equipment, engine start up, etc.). Federal anchorage regulations (33 C.F.R. § 110.215(a)(2)(B)(iv)) and California State Lands Commission regulations (2 Cal. Code Regs. ("CCR") § 2340(c)(28)) enforced by the U.S. Coast Guard (and included in local fire codes and standards under the International Safety Guide for Oil Tankers and Terminals) require all tankers moored alongside an oil terminal to be capable of safely vacating the berth within 30 minutes in order to minimize risks from dangerous flammable materials on the vessel or shore-side and avoid escalation of an incident. The additional steps required to disconnect from the capture and control system would likely extend the disconnection process to longer than 30 minutes.
- Third party owners and operators are not manned with crews and officers properly trained on how to safely operate shore-side control systems and facility operators do not have the legal authority to regulate crews aboard third-party vessels.
- Concepts for a shore-based capture and control system have not undergone a safety evaluation to assess potential fire and explosion risk associated with collection, pressurization, and transportation of gases in a crowded terminal. Additionally, no standards or procedures exist to conduct such a safety evaluation for a shore-based system.
- A wide equipment operating window would be required to account for vibrations and wind. No standards exist to assess how to define that window for a shore-based control system.
- Safety standards related to any required manual operation of the control system must be considered, especially in relation to immediately dangerous to life or health (IDLH) environment and nighttime operation.
- As no technology has been proven in practice, the ability to control key connections at the shore-based omissions control to boilers is unknown. This includes the possible inability to adjust for changes in load and while controlled, as well as the unknown effect of a control technology on the boiler combustion space.

- No tanker industry standards exist for the safe operation of this technology while transferring hazardous cargo.

See Exhibit 1, WSPA's March 29, 2019 comment letter, Enclosure B, "Proposed CARB At Berth At Anchor Regulation – Limitations and Issues Presented by Shore Based Emission Controls", which details many other dangers and complications that would be associated with the attempted operation and interface of a shore-side emissions control system with a tanker carrying hazardous and flammable liquid. Moreover, all interfaces between any emission control strategy and a tanker must be designed in conformance with an international standard endorsed by a classification society to safely and feasibly accommodate all vessels, and vessel interfaces then must be certified to that standard. To date, there is no such standard or certifications available for safe operation of shore-based emissions control during the transfer of hazardous cargo, and manufacturers have not yet designed or built systems that would qualify under such a future standard. Even if there were such a standard, boiler manufacturers have informed WSPA that in order to connect a capture and control system, modifications would be required on board every ship to be connected to the system, in order to install higher capacity blowers and modified control systems. Woodbridge Marine, Inc., an independent marine consultant engineering firm specializing in safety inspections on oil tanker vessels, has provided a letter (attached hereto as Exhibit 2) containing further detailed discussion of feasibility and safety issues, including electrostatic hazard, handling inert gas in cargo tanks and exhaust stack pressure maintenance, emergency disconnection, the need to develop equipment suitable for all tank vessel types that visit California, safety standard certification and the need to consult standards organizations and develop new standards for emission control system safety, and review for compliance with California's Marine Oil Terminal Engineering and Maintenance Standards ("MOTEMS"). To date, none of these issues has been addressed for tanker exhaust gas capture systems.

In addition, Woodbridge points out specific operational concerns that must be resolved, such as the need for the system to maintain a secure and safe connection accommodating both a wide range of vertical motion (during tidal movement and vessel draft changes during cargo discharge) and a wide range of lateral distances (due to variation in vessel widths and the fact that vessels can be docked either with port or starboard side facing the wharf). Thus, as Exhibits 1 and 2 demonstrate, by mandating a shore-based control system before such systems have been developed and proven feasible and safe at scale, the At Berth Regulations create a host of safety and feasibility problems with no immediate solutions yet available.

CARB Staff also incorrectly assumes that existing marine terminal berths can accommodate such mandated land-based capture and control equipment. Again, real-world evidence contradicts this assumption in many instances. For example, contrary to Staff's assertions, the existing wharf structures may not be large enough to accommodate all the equipment that would be required to install a land-based capture and control system, meaning significant and costly structural upgrades would

be required. In several cases, wharfs may have to be rebuilt entirely to accommodate the weight and movement of the crane (as vessel stack locations may vary from vessel-to-vessel).

Indeed, given these numerous concerns, WSPA and other industry stakeholders have repeatedly urged Staff to delay this rulemaking and have invited Staff to partner with industry to conduct a study. This study would evaluate the technical feasibility, safety, reliability and operability of shore-based emission capture and control systems for tankers at real-world scale, and the feasibility of permitting, constructing and commissioning such a system in the timeframes in the At Berth Regulations. Staff have repeatedly declined this invitation, proposing instead to mandate compliance dates knowing a feasible real-world compliance path does not exist. This has made it impossible for Staff to point to any empirical evidence justifying the ISOR's assumption that land-based capture and control systems are feasible for tankers at California terminals. Regulations requiring tasks that cannot be practically implemented in the time periods provided are not equitable, do not minimize costs for Californians, and do not demonstrate technological feasibility as required by California law." (22.3) (EA 22-1)

**Comment:** "The staff's proposed land-based control technology approach has not been designed or tested for the complex tanker or marine terminal application. It poses a number of unanswered significant safety risks." (OC-1 Umenhofer)

**Comment:** "We have looked at the concept of exhaust gas capture for tankers and have identified additional immediate safety concerns. These include our greatest concern, which is that when safety issues are not thoroughly investigated, we are potentially introducing a high risk of fire explosion and pollution." (OC-1 Stashower)

**Comment:** "Shore-Based Emission Control Systems. The conclusion of the review by CARB for some tanker marine terminals should be able to rely on land-based capture and control systems. As WSPA has clearly stated in previous documentation (Enclosure B) provided to CARB staff, there are significant safety concerns with land-based capture and control systems as a strategy to reduce or eliminate emissions at berth.

The following list highlights some significant concerns:

- In most if not all cases, two cranes would be required at each berth, to allow vessels to berth port or starboard side to. These cranes would need to be very large to accommodate reach for all vessel designs.
- Similar to barge systems, the shore crane and connection to the vessel's stacks have no emergency break away coupling and no engineered working safety margin for movement between vessels. All interfaces to tankers must be designed and regulated to a standard. There is no standard available.

- As with the barge-based system, there are concerns on how a balanced combustion path will be maintained to prevent dangers like boiler explosions. Boiler manufacturers have indicated that it may be possible to connect a capture and control system if proper modifications are carried out on board each ship, to include higher capacity blowers and modified control systems. In practice, third-party internationally traded vessels will not upgrade on board systems for a call on a single port.
- Emergency protocols (and likely systems) between the shore and the tanker need to be developed.” (22.19)

**Agency Response (22.3), (OC-1 Umenhofer), (OC-1 Stashower) and (22.19):**

CARB staff made no changes based on the received comment. As a result of regular conversations with the tanker industry, staff is aware of many of the points raised by these comments regarding land based emissions capture and control systems, especially concerning the lack of space, structural stability, fire/explosion safety, and electrical safety of these systems. Although it is true there has yet been a control system tested and approved for tanker vessels, CARB staff believes the technology, as proven on other vessel categories, can be adapted for tanker vessels. Specifically, the rationale for CARB to select the land-based systems for tanker vessels was due to a lack of preference for shore power as expressed to CARB staff by the tanker industry throughout the rulemaking period. Because of the way the tanker industry operates, many tanker vessels may visit California only once or twice per year (or in the lifetime of the vessel). And because specific equipment must be installed on each vessel in order to connect to shore power, industry expressed that shore power may not be the most cost effective option for reducing emissions from many of their vessels. Additionally, capture and control systems can also treat boiler emissions whereas shore power cannot be used to operate boilers in order to reduce emissions. Furthermore, an absence of in-use systems in no way indicates that such systems are infeasible or cannot readily be adapted from existing control technologies. Prior to the Regulation, such systems were not required in any other jurisdiction. By their very nature, many emissions control regulations are technology-forcing, as without such regulations industry lacks incentives to develop the controls. The situation is no different here. As noted elsewhere in this FSOR, existing vessel emissions control manufacturers, who are highly knowledgeable in this field, have informed CARB that similar controls can be adapted for use on tankers.<sup>5,6</sup>

Furthermore, the additional time allowed for implementation of tanker vessel control requirements (2025 and 2027) will provide the opportunity for the

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<sup>5</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>6</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for “To Consider Proposed Control Measure for Ocean-Going Vessels At Berth” on December 5, 2019. Available at: <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

development, construction and deployment of safe control systems to use on tanker vessels. In addition to developing and deploying safety protocols and establishing operational requirements. However, that does not preclude a tanker vessel from selecting other options for compliance using the Innovative Concept compliance option as described in Section 93130.17, including a barge-based capture and control system, where feasible.

For further discussion on tanker emissions control feasibility and safety, see the *Responses to Comments on the Draft Environmental Analysis Master Response 4*.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

- The presentation implied that roll-on, roll-off (RoRo) vessels could utilize the current emission capture and control technology. This is not true. The technology for RoRo vessels will need to be engineered to accommodate the greater reach requirements of the RoRo vessels and different stack configurations. A technology capable of scrubbing RoRo emissions has never been demonstrated to date.” (60.1)

**Comment:** “Certified land-based capture and control systems do not exist today. Compliance for RoRo terminals is predicated on the development of certified land-based capture and control systems, which do not exist today. CARB references a single “prototype” unit at the Port of Los Angeles (ISOR, I-33). Although CARB states the various component parts already exist, these components have not been integrated or maritized for use in the harsh port environment. Additionally, these control systems must be able to reach RoRo vessels of various sizes and configurations, which has not been evaluated, nor have such systems been tested in different terminal operating configurations; some RoRo terminals use the entire wharf for staging, maneuvering, and parking cargo, leaving little room for control systems. Technology developers will need to design, construct, test, and certify these new systems in a 5-year window; today’s barge-based systems took nearly 10 years to complete this path.” (52.A.5)

**Agency Response (60.1) and (52.A.5):** CARB staff made no changes based on the received comments. CARB staff acknowledges that the capture and control technology for ro-ro vessels has not been implemented before, and that engineering will be needed to ensure these systems meets all performance and safety constraints. CARB believes the additional time for the implementation of requirements on ro-ro vessels will be enough for technologies to be adapted to this vessel category. The commenter points out that design and deployment of the current systems took several years. However, that technology was the first of its kind. CARB staff believes the time it will take to adapt already existing

systems to other vessel categories, such as ro-ro vessels, will be significantly less than the original systems development.

Further, conversations with the ro-ro terminals has, so far, indicated a preference by the terminals for capture and control systems, as these systems do not require modifications to be made to both the vessels (many of which are not on a dedicated loop) and the terminals (which may not have a large amount of existing electrical equipment at the wharf). In 2022, CARB staff will conduct an Interim Evaluation to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels. This assessment will also include the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. If staff concludes that implementation dates warrant adjustment, staff may recommend formal amendments to the Board. Additionally, to provide for the time needed to develop the technology and infrastructure, the Innovative Concept compliance option may be used in lieu of conventional vessel emission control as required by the Regulation, see Section 93130.17 of the Regulation language for more information on this provision.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

- The T121 Marathon terminal does have shore power capability that is being utilized by one tanker vessel. The single vessel capable of shore power is unique, using diesel-electric engines. The rest of the current tanker fleet visiting the Ports are not capable of shore power retrofits, as their boilers cannot be electrified. Thus, it is inappropriate to point to this example and extrapolate the possibility to the rest of the tanker fleets in California.” (60.2)

**Agency Response (60.2):** CARB staff made no changes based on the received comment. CARB staff understands that T121 is a unique example of shore power for a tanker vessel and that not every tanker and tanker berth in California would be able to utilize shore power in the same way. However, the successful use of shore power at T121 does demonstrate that shore power is a feasible strategy for reducing auxiliary engine emissions from tanker vessels. While shore power does not reduce boiler emissions (as discussed in the ISOR, Chapter I, page I-31), the Regulation is designed such that, if a tanker vessel chooses to use shore power, the tanker only needs to reduce auxiliary engine emissions due to the high level of emissions reductions shore power achieves (section 93130.5(d)(2)).

**Comment:** “CARB staff overlooked the engineering assessment, which was based upon real data. In addition, the CARB OGV Technology Assessment referenced in the Board Hearing looked at the technologies available to date - and did not include a formal engineering assessment to address the readiness to control emissions from

other vessel types. Previous letters from the ports, provided in the attachments, described the information that should be included in a feasibility assessment.” (60.3b)

**Agency Response (60.3b):** CARB staff made no changes based on the received comment. Please refer to the response to comment 60.32 for discussion on the industry provided analysis referred to in this comment.

**Comment:** “The Ports are encouraged that CARB plans to have an interim evaluation in 2023 for tankers and Ro-Ros, but this evaluation should not replace a technical feasibility assessment to better inform this regulation, as described below. We also believe more than one evaluation maybe necessary. We ask that a feasibility assessment be updated in 2025 and beyond to evaluate the state of the technology and industry's ability to comply with the regulation. The Port of Los Angeles has specific concerns for tanker terminals as detailed in Appendix A.” (60.26)

**Agency Response (60.26):** CARB staff made no changes based on the received comment. CARB staff understands that each ro-ro and tanker terminal may need a more detailed design and engineering evaluation prior to selecting and installing a particular emissions control technology. However, CARB staff believes that the technology to control emissions from ro-ro and tanker vessels is feasible at the time of this rulemaking (see ISOR Chapter III, pp. III-14 to III-20 for further discussion), and that the Regulation provides ample time for technologies and infrastructure to be adapted and installed to suit tanker vessels. Additionally, CARB staff has committed to an Interim Evaluation in 2022 to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals.

**Comment:** “A Technology Feasibility Assessment Process Is Needed - As you know, the CAAP relies on a process for preparing regular feasibility assessments to assess the state of technology development and its readiness to be deployed in the marketplace to support efforts to achieve air quality benefits consistent with our CAAP goals. Given the reliance of the proposed regulatory amendment on emerging technologies, we believe a similar process would be appropriate and helpful for understanding the state of the technologies that would be needed to meet the requirements of the proposed regulatory language. This feasibility assessment should include an evaluation of:

- i. The state of technology for both shore power and alternative emission control devices and deployment readiness;
- ii. the requisite timeline for design, build, testing, and deployment of shore power and alternative control technologies for each California port and identification of any associated constraints such as wharf space;

- iii. safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types;
- iv. number and types of alternative control technologies, which would be needed at each California port;
- v. and the availability of incentives to encourage early demonstration of such technologies.

Attachment A provides very useful information about the many technical challenges associated with the compliance options available today. These include immaturity of shore power for the non-container fleet, the safety concerns associated with using shore power and alternative emission control technologies to control emissions from tankers, and the navigability, space, and wharf integrity challenges associated with alternative emission control technologies. It is our finding that alternative compliance options may increase greenhouse gases, and cable reel management systems, which are needed for instances where ships do not line up with their requisite shore power outlet, are not in the shore power standard today (IEC/IEEE-80005), posing safety risks to ships and terminal equipment.

In order to accelerate the development and deployment of shore power and alternative control options, including infrastructure, for non-container terminals and vessels, the Ports would like to see CARB prioritize funding in their investment plan, as they did for the currently regulated fleet through Proposition 1B in 2006. This funding would assist with economic feasibility and ensure this regulation is not an unfunded state mandate." (60.14)

**Agency Response (60.14):** CARB staff made no changes based on the received comment. The "CAAP" referred to by this commenter is in regards to the Clean Air Action Plan by the Ports of Los Angeles and Long Beach. CARB staff understand the CAAP has a process for preparing feasibility assessments to determine market readiness for new technologies designed to achieve air quality benefits. CARB staff performed a feasibility assessment as part of the rulemaking process for this Regulation that included the requested elements detailed here by this commenter. This assessment is detailed in the ISOR and SRIA documents and associated appendices. As such, CARB staff did not publish a separate study assessing feasibility, as that work would have largely been redundant to the work performed for the Regulation. Regulated entities may find it necessary or desirable to perform a site-specific engineering analysis to assess the technical, safety, and operational needs specific to their operations, however, that type of site-specific analysis will be dependent on the location and emissions control technology and is beyond the scope of CARB staff's required analysis.

CARB staff discussed the current control technologies that exist in the ISOR (see pages ES-25 and III-13). This Regulation is technology forcing, and technologies chosen will depend on each individual Port and marine terminal's

characteristics, limitations, and operational needs. While the technology to control emissions from all vessel types exists, not all of the technologies have been adapted for use, or are physically available for all vessel types in California at the time of adoption of the Regulation. Due to the highly variable differences between each California Port and marine terminal's operations and needs, Staff expects regulated entities to perform feasibility studies on the technologies that they wish to use to achieve compliance under the Regulation.

In addition, shore power has been shown to be technically feasible for tanker vessels. In 2005, cooperation between POLB Green Port Program and British Petroleum voluntarily started to work on a shore power project at Berth T121. The project included land-side shore power infrastructure and vessel infrastructure for two tankers (the Alaska Frontier and Alaska Navigator, both operated by Alaska Tanker Company). Power demand analysis determined that the electrical grid infrastructure was sufficient to meet the anticipated shore power demands and did not warrant additional expansion. In 2008 the installation was finished and completed. After extensive testing, required by strict regulations for tanker vessels, the official use of the shore-side power has been safely and successfully operating at T121 since 2009. Many discussions took place throughout the rule development process where various stakeholders indicated that adaptation of capture and control technology on tankers can be done with a willing participant.

Further, the Port and Terminal Plans that are due to CARB in 2021 will help to inform the Interim Evaluation that staff will conduct in 2022 and will provide the information listed in the commenter's points ii through iv above. The Interim Evaluation establishes requirements for CARB staff to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. This will be a continuation of the feasibility studies that would be conducted to address the concerns raised in points (i) through (v).

In addition, the grid-neutrality requirements (see ISOR Pages IV-15 to IV-16 under "Grid Neutrality") were written to address the emissions generated by the existing emissions capture and control technologies. It is CARB's intention that this requirement would incentivize the technology developers to adopt GHG mitigating technologies. Regarding incentivizing cable reel management to be included in the IEEE shore power standards, CARB staff recognizes the need to harmonize design and performance standards by governing organizations, especially when ports outside the United States adopt CARB-approved compliance strategies (see ISOR Page VI-6).

Regarding incentives, numerous funding sources exist for shore power and capture and control systems. CARB has provided funding in the past through

Carl Moyer and Proposition 1B, and continues to provide incentives for cable-reel systems in the form of Clean Off-Road Equipment (CORE) vouchers. CARB has also released a solicitation to fund a capture and control system project for tanker vessels under the Low Carbon Transportation Investments and the Air Quality Improvement Program. Funding from the Volkswagen Mitigation Trust could be used to fund the purchase of shore power equipment. In addition, AB 617 portside communities can choose to utilize program funding towards the purchase of shore power or capture and control systems.

**Comment:** “We urge CARB to produce a feasibility assessment to better inform this regulation as described below.

A Technology Feasibility Assessment Process Is Needed – The Ports still urge CARB to develop a technology feasibility assessment, which would look at the state of Technology development and its readiness to be deployed in the marketplace to support efforts to achieve public health benefits. Through conversations with stakeholders, it is clear there are challenges associated with the technologies upon which this regulation depends that may be too costly, technologically and operationally infeasible in some cases, or unsafe to use. For example, the Los Angeles/Long Beach Harbor Safety Committee has many substantial concerns regarding the use of barge-based emission capture systems for tankers. This feasibility assessment should include an evaluation of: (i) state of technology for both shore power and alternative emission control devices and deployment readiness (ii) the requisite timeline for design, build, testing, and deployment of shore power and alternative control technologies for each California port to achieve at minimum 95% compliance, and identification of any associated constraints such as wharf space (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types (iv) number and types of alternative control technologies, which would be needed at each California port (v) and the cost of the various types of technologies and availability of incentives to encourage early demonstration of such technologies.” (60.21)

**Comment:** “In addition, this necessary feasibility assessment should include an evaluation of: (i) state of technology and deployment readiness for both shore power and alternative emission control devices; (ii) the requisite timeline to design, build, test, and deploy shore power and alternative control technologies for each California port to achieve at minimum 95% compliance, and identification of any associated constraints such as wharf space; (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types; (iv) number and types of alternative control technologies, which would be needed at each California port; (v) the cost of the various types of technologies and availability of incentives to encourage early demonstration of such technologies; and importantly, (vi) the appropriate remediation fee to encourage investment in ship- and shore-side

infrastructure and alternative emission control devices, while not driving business out of California.” (60.27b)

**Agency Response (60.21) and (60.27b):** CARB staff made no changes based on the received comments. Please refer to the first paragraph of the response to comment 60.14. Regarding the cost of the various types of technologies and the availability of incentives, it is the intention of the AB 617 program (see ISOR Page VIII-2) to develop new incentive funding options as part of a broader list of strategies to offset some of the costs of developing new technologies. Staff is currently involved in soliciting potential industry partners for demonstration projects that would test new emissions capture and control technologies for use on marine tanker vessels. Finally, CARB acknowledges the sensitivity of setting the remediation fee amount, and staff has been exploring options such as lowering the hourly dollar amount that would be applied to vessels with lower emissions at berth either due to lower power needs or the vessel already has a cleaner engine installed (see ISOR Page IV-96).

**Comment:** “The CARB Staff Analysis indicates in several instances that sufficient space may be available to accommodate shore power equipment. WSPA has been clear in past communications with CARB (Enclosure C) on the many limitations and concerns related to electrification of tankers including:

- There are no broad tanker industry standards that exist for safe operation of electrification technology while transferring hazardous cargo.
- International trading tankers are not fit with shore power connections. These internationally regulated vessels will not be compelled to upgrade systems to call on a single port in the world.” (22.20)

**Agency Response (22.20):** CARB staff made no changes based on the received comment. Please refer to the first paragraph of the response to comment 55.3, that developing infrastructure to support the electrification of marine tanker terminals would take considerable time, which is compounded by the lack of board tanker industry standards at the current point in time. Staff attempted to provide a provision to provide a pathway to compliance during periods of unavoidable and extended uncontrolled emissions, while ultimately achieving emissions reductions for the surrounding communities (see ISOR Page IV-93, “Purpose for Sections 93130.15(b)(1) and (2)”). CARB also recognizes the need to engage with the international standards organizations such as the ISO and IEEE (see ISOR Page VI-6) to harmonize design and performance standards if the shore power is to adopted across the broader tanker industry ranging from the internationally regulated vessels to the terminals.

**Comment:** The commenter believes a feasibility of shore-based emissions control for tankers be completed. The commenter notes that the Regulation cannot succeed without first ensuring that it can be technically, feasibly, cost-effectively, and, as

important, safely implemented within the timeline proposed. The commenter believes the study should be conducted with the numerous parties that will be involved including local and state permitting agencies.

The commenter proposed the study be undertaken and completed within 3 years from the adoption of the At Berth Regulation. At completion of the study, the commenter proposed that a detailed evaluation report be produced, and finding be addressed in public workshops as necessary. The commenter continues on to list a number of critical questions that should be answered by the proposed feasibility studies. (22.25)

**Agency Response (22.25):** CARB staff made no changes based on the received comment. Please refer to the response to comment 60.14. The Interim Evaluation provides the opportunity for all stakeholders (including the local and state permitting agencies) to assess the progress being made towards the adaptation of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. This will be a continuation of feasibility studies already conducted.

Staff believes the proposed date of 2022 for the Interim Evaluation should provide sufficient time prior to the 2025 implementation date for POLA/POLB tanker terminals, and the 2027 implementation date for remaining tanker terminals. Staff feels that conducting a feasibility study, followed by periodic studies for tankers would delay the implementation of needed emissions reductions past 2030. This would have an unacceptable impact on the public health of disadvantaged communities neighboring the marine terminals (see ISOR Page X-9).

**Comment:** "POLA had provided specific information about our tanker terminals in our previous joint letter with Port of Long Beach on May 20, 2019. Many of our tanker terminals are being redesigned to meet California State Lands Commission (CSLC) Chapter 31.F 2016 California Building Code, Title 24, Part 2, Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) requirement. MOTEMS is a comprehensive set of codes and standards for analysis, design, inspection/maintenance, and operation of existing and new marine oil terminals in the State of California. MOTEMS requirements will ensure better resistance to earthquakes, protect the public and the environment, and reduce the potential of an oil spill, while maintaining the operation and viability of the marine oil facility.

The new terminal designs will limit the number of emission control strategies that our tanker terminals will be able to utilize. A majority of the new designs do not leave any space for a land-side alternative emission control technology strategy. There is also no shore power infrastructure in the design drawings at this time, nor have there been any discussion from our tanker terminals to install shore power. Finally, as stated in POLA's appendix in the joint letter to CARB on May 20, 2019, there are various areas

throughout the Port where navigation of the waterways would preclude the use of a barge-based system.

Two of our terminals have completed their environmental document and design (Shell and PBF). Construction will soon begin at these terminals and is unlikely to be halted due to this regulation to redesign the terminals. CSLC would be averse to any delays to these construction projects as they are meant to protect the public and the environment.

Other terminals currently working on their environmental documents and designs are also unlikely to redesign their terminals for CARB's At Berth regulation, as there is currently no CARB certified emission control technology for tankers. The terminals would not be able to wait for the technology to become available in order to design their terminals, as they already need to meet MOTEM standards.

The Port stresses the need for CARB to conduct a feasibility assessment to better inform this regulation, especially for tankers due the many variables and restrictions associated with this industry." (60.35)

**Agency Response (60.35):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as CARB staff conducted a series of site visits and in-person meeting with the tanker industry in order to arrive at the analysis described in ISOR Pages III-20 to III-21. Through this process, CARB staff acknowledges that the MOTEMS upgrades would result in less available space for tanker berths to accommodate alternative emission control strategies and their supporting infrastructure, and that a considerable amount of time would be needed to arrive at a design that meets industry and permitting acceptance, while still maintaining MOTEMS standards.

In recognition of these infrastructural and permitting challenges, CARB included an "Interim Evaluation" Section 93130.14(d) (see ISOR Page IV-91) that provides CARB staff a mechanism to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. The information in this Interim Evaluation is critical for CARB staff to make future recommendations to the Board if amendments are needed to the implementation timeline. On the matter of feasibility studies, please refer to response to comment 60.14.

**Comment:** "As well as just conduct feasibility studies to evaluate and identify the most effective and most economical application of any future at-berth controls, as it expands to any additional ocean-going vessels." (OC-2 Miller)

**Comment:** "We just want to make sure that whatever you enact is feasible." (OC-1 Cannon)

**Comment:** "WSPA believes the Government Code, Health and Safety Code and other California laws and regulations require CARB to revise its current rulemaking timetable to allow for proper preparation and consideration of feasibility, cost effectiveness and timelines. See, e.g., HSC §§ 38560, 39602.5, 39665, 43013; see also Gov. Code § 11346.36 & 1 C.C.R. §§ 2000-2004 (SRIA requirements to assess At Berth Regulations cost impact on public health and safety, fairness and social equity, state's economy and other criteria). We would request that, at the very least, CARB include in its proposed At Berth Regulations language that allows for a feasibility evaluation study and an appropriate delay in regulatory implementation in the event the feasibility evaluation study concludes that shore-based technologies and/or other elements of the At Berth Regulations are not feasible in the regulatory timeframes provided." (22.14)

**Comment:** "Marathon sees the need for a feasibility study, but asks CARB to go further. In the case of a land-based control system, by reserving the inclusion of this technology until it has been demonstrated as safe and feasible on a sufficient number of tankers." (OC-1 McDonald)

**Comment:** "A Technology Feasibility Assessment Process Is Needed – The Ports still urge CARB to develop a technology feasibility assessment, which would look at the state of technology development and its readiness to be deployed in the marketplace to support efforts to achieve public health benefits. Through conversations with stakeholders, it is clear there are challenges associated with the technologies upon which this regulation depends that may be too costly, technologically and operationally infeasible in some cases, or unsafe to use. For example, the Los Angeles/Long Beach Harbor Safety Committee has many substantial concerns regarding the use of barge-based emission capture systems for tankers.

This feasibility assessment should include an evaluation of: (i) state of technology for both shore power and alternative emission control devices and deployment readiness (ii) the requisite timeline for design, build, testing, and deployment of shore power and alternative control technologies for each California port to achieve at minimum 95% compliance, and identification of any associated constraints such as wharf space (iii) safety and navigation of harbor waters space due to applications of new technologies for unregulated vessel types (iv) number and types of alternative control technologies, which would be needed at each California port (v) and the cost of the various types of technologies and availability of incentives to encourage early demonstration of such technologies." (52.C.83)

**Agency Response (OC-2 Miller), (OC-1 Cannon), (22.14), (OC-1 McDonald), and (52.C.83):** CARB staff made no changes based on the received comments. Please refer to the response to comment 60.14 regarding feasibility studies. The Interim Evaluation provides the opportunity for all stakeholders (including the local and state permitting agencies) to assess the progress being made towards the adaptation of existing control technologies for use with tanker and

ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies, and this will be a continuation of feasibility studies already conducted. Staff does not agree with the need to include language to delay the regulatory implementation, because the findings in the Interim Evaluation will be used to develop future recommendations to the Board if amendments are needed (see ISOR Page IV 91 "Rationale for Section 93130.14(d)").

**Comment:** "[T]he proposed regulatory concept relies on a number of assumptions regarding the availability of additional alternative control technology options. It is impossible for sufficient additional alternative control technology options to be available by January 2021 in order to support the increased connection requirements proposed for the existing regulated fleet. In addition, no technologies currently exist that can serve the needs of cruise ships or the proposed expansion fleets of tankers and roll-on/roll-off vessels. CARB staff is aware of the limitations of the currently available control technology providers. In addition, CARB staff has heard directly from the manufacturers of the emissions control technology that the horizon for developing control technology is well beyond the proposed compliance dates for the tankers and roll-on/roll-off vessels. CARB is betting the compliance of an entire industry on technology that has not been proven sufficiently reliable over the past five years." (52.C.44)

**Agency Response (52.C.44):** CARB staff made no changes based on the received comment. Staff is aware that, for many terminals, procuring additional alternative control technology options by January 2023 to meet the anticipated increase in demand will be challenging. The delay in implementation dates should allow enough time for technology providers to ramp up production of alternative control technologies, and for terminals to secure lease contracts or purchase agreements. The Regulation contains provisions for technology providers (see ISOR Page IV-62, Rationale for Section 93130.8(d)) and for terminals (see ISOR Page IV-75, Rationale for Section 93130.10(d)(1) through (3)) to make it easier to test new technologies on vessels.

**Comment:** "Vessel Shore Power Equipment. Shore power connections are located in proximity to electrical panels, therefore, cruise ships and cargo ships currently in the regulation are not typically equipped to connect from both Port and Starboard side. The industry coalition opposes a provision in the draft regulatory language that could be used to require a vessel to have shore power equipment on both the starboard and port side of a vessel. The current practice of assigning berths to accommodate the location of vessel shore power connections is manageable by industry and essential for maximizing utilization of shore power." (52.C.47)

**Agency Response (52.C.47):** CARB staff made no changes based on the received comment. Staff recognizes that the decision about vessel orientation is based on factors such as the physical structure of the channel and wharf, the

presence of vessels at adjacent berths, and the tides. This decision can impact the ability of a vessel to successfully connect to an emissions control system, depending on the vessel and berth configurations (see ISOR Page I-8). Shore power connection is a multi-party process that takes several key players to make it successful. The lack of direct accountability on the ports and terminals under the 2007 At-Berth Regulation (see ISOR Page II-10) has played a role in missed opportunities for vessels to use shore power. CARB staff sees shared responsibility (which should lead to improved communication between all parties that facilitate shore power connection) as the key in resolving shore power misalignment issues. This would be more effective than requiring vessels to retrofit their vessels to be shore power capable on both port and starboard sides.

**Comment:** "Alternative Technologies. The creation of a single compliance pathway will ease the way for the use of alternative technologies. However, the bifurcated pathway of the original rule drove ocean carriers to invest hundreds of millions of dollars to accommodate successful electrification of their vessels – an outcome that was intended and supported by CARB. The availability of alternatives under the regulation should not be used as a reason for port authorities to avoid the construction of additional shoreside infrastructure or to create a stranded asset problem or to put those carriers who have invested the money to comply with the existing rule at a further competitive disadvantage in the marketplace.

The use of alternative technologies should be viewed as a way to accommodate vessel redeployment or vessels not already outfitted for shoreside electrification equipment. The first goal of the regulation should be to ensure that port authorities have provided sufficient infrastructure in their ports. Failure to provide sufficient shoreside infrastructure should not result in the ocean carriers facing non-compliance and ocean carriers that have elected to retrofit their vessels for shorepower should not be obligated to shoulder additional costs for alternative control technologies. Additionally, alternative technologies also have the potential to exacerbate berth congestion/misalignment issues that terminals and vessels contend with. Some thought will need to be given for conflicts that could arise from using different technologies at the same facility.

Of course, for some of the smaller ports with infrequent vessel calls, alternative technology paths may be the only viable option for compliance. These situations must be directly and fully analyzed and unnecessary costs must be avoided."  
(52.C.148)

**Agency Response (52.C.148):** CARB staff made no changes based on the received comment. CARB staff recognizes that shore power has always been the primary option for vessels to achieve zero emissions, and that the alternative technologies were to provide an alternative in the event that

shore power is not available or operational, particularly for vessels already outfitted for shore power. CARB is also aware of the risk of existing infrastructure upgrades becoming stranded assets as described in ISOR Page III-8. As a precaution, staff developed the “once in, always in” concept to ensure ports that meet the threshold, and have invested the money to build out shore power infrastructure, will still have control requirements and avoid having their investments rendered as stranded assets (see ISOR Pages IV-73 to 74). Furthermore, the Regulation has placed a shared responsibility for all parties (particularly the terminals) involved in the connection process. The shared responsibility was included in the Regulation to ensure that, if emissions are not being reduced, an enforcement action can be taken against the appropriate party (see ISOR Page III-23, Table III-7 and IV-81 “Section 93130.12(a)(1) and (2)”).

**Comment:** “As has been demonstrated at terminals to CARB staff, shore power cables must be dropped perpendicular from the vessel to the vault containing the shore power outlet. As a result, if there is a misalignment between the vessel and the berth – as there has been hundreds of times – it is not possible to make the shore power connection. CARB staff needs to work with PMSA, its members, and ports (the owners of this infrastructure) to evaluate how many additional shore power outlets are needed per berth. Short of turning the entire wharf face into a continuous connection point, which appears to be both technically and financially infeasible, it will not be possible to match every berthing position to a connection point.” (52.C.110)

**Agency Response (52.C.110):** CARB staff made no changes based on the received comment. CARB staff understands that it is not likely that a terminal will be able to match every berthing position to a connection point, but disagrees with the comment on the need to turn the entire wharf face into a continuous connection point in order to solve the alignment challenges. As described in ISOR Pages III-12, the majority of terminal operators expressed to CARB staff that, with the exception a few additional or re-positioned vaults and a few cable management systems to help with flexibility, the shore power infrastructure already in existence would be sufficient to connect every vessel. The Port of Los Angeles and Long Beach’s Infrastructure Analysis (ISOR Page III-13) estimated that an additional 42 vaults and 22 cable reel management systems would be needed to comply with the Regulation. However, staff believes that with the flexibility provided by the Regulation in the form of TIEs and VIEs, the Innovative Concept Compliance Option and the remediation fund, ports, terminals and vessels will be able to comply using the best suited compliance mechanisms for their operations, not only by adding additional vaults.

**Comment:** “CARB cites cable-reel management systems as a potential solution with limited evidence. Although CARB references cable-reel systems to potentially enhance shore-power access (ISOR, III-12), the Berth Analysis identifies that nearly

every existing cable-reel system has not or cannot be used due to design flaws, wharf restrictions, or other operational constraints. Additionally, these systems have not been certified to longshore labor requirements or international shore-power standards. Absent additional technology development and wharf improvements, cable-reel systems may not provide additional compliance options. (52.A.9)

**Agency Response (52.A.9):** CARB staff made no changes based on the received comment. CARB disagrees with this comment, please refer to ISOR Pages III-12, which indicates that CARB staff asked terminal operators about their existing shore power infrastructure, and if they believed additional infrastructure (such as vaults or cable management reels) would be required to meet the regulatory requirements. The majority of terminal operators expressed to CARB staff that, with the exception a few additional or re-positioned vaults and a few cable management systems to help with flexibility, the shore power infrastructure already in existence would be sufficient to connect every vessel. Because terminal operators are the parties responsible for connecting vessels to shore power, CARB staff took into account their feedback when determining the earliest feasible implementation date for the already regulated vessel categories.

**Comment:** “Lack of Electrical Infrastructure: Of note, RoRo terminals do not have a large amount of existing electrical equipment at the wharf, as noted by CARB (ISOR, page III-14). As a result, there are likely to be substantial electrical improvements needed to support land-based capture and control systems at RoRo terminals, including bringing additional power down to the terminals, which has been proven to be extremely expensive and time consuming to date, totaling tens of millions of dollars in San Pedro Bay alone.” (52.A.20c)

**Comment:** “Structural Improvements: Additionally, wharves are likely to need additional structural support to carry the weight of such systems, as CARB notes here for RoRo terminals: “Land-side systems may require some wharf infrastructure improvements due to the weight of the system (around 120,000 pounds) if existing wharf infrastructure is not adequate” (ISOR, III-16). The CARB-funded demonstration of a land-based control system at the Pasha Terminal points to the need for wharf strengthening at RoRo terminals. Land-based control systems will require large cranes to reach the ship stacks, and even at the Pasha terminal, which was designed for heavy on- and off-loading cranes, the Port of Los Angeles required a special permit to ensure the ShoreKat system did not damage the dock. Most RoRo terminals do not use cranes and are thus unlikely to have sufficient wharf support for this additional weight. Despite this evidence, CARB does not account for wharf improvements in the cost analysis or timeline. CARB assumes more than \$50 million in wharf upgrades per berth for tanker-terminal land-based systems; RoRo terminals will likely incur similar costs.” (52.A.20d)

**Agency Response (52.A.20c) and (52.A.20d):** CARB staff made no changes based on the received comment. Staff acknowledges that installing electrical infrastructure on ro-ro terminals will be expensive. However, ro-ro berths are generally large, wide-open spaces with sufficient wharf strength to support the off-loading of cars and other large equipment on wheels, as described in ISOR page III-16. Hence, the extent of wharf infrastructure strengthening is not anticipated to be as comprehensive for ro-ro terminals, when installing either electrical infrastructure or land-side emissions capture and control systems, as compared to tanker terminals, which generally have less space to work with.

**Comment:** "Proposed CARB At Berth At Anchor Regulation Limitations and Issues Presented by Barge-based Emission Control Enclosure A.

The following points represent dangers and complications identified that would be associated with the operation of a shore-side emissions control system. Regardless of the below points, any consideration of barge-based control mechanisms must operate within the existing system of safeguards and standards associated with the hazards of managing tanker cargoes. It is essential that a complete set of physical and operational standards for this category of technology be developed prior to more detailed discussions surrounding safety, siting, costs, implementation and regulatory parameters.

1. Safety
  - a. There are no broad tanker industry standards that exist for safe operation of barge-based emissions control technology while transferring hazardous cargo.
  - b. Significant safety concerns must be considered including the risks of attachment to another ship while offloading. Federal anchorage (33 CFR 110.215 (a)(2)(B)(iv)) and CA State Lands Commission (Article 5 §2340 (c)(28)) regulations enforced by the USCG require all tankers moored alongside an oil terminal to be capable of vacating the berth within 30 minutes.
    - i. Significant time may be required to disconnect bonnet, stow bonnet arm, unmoor barge, connect tug, and secure the barge for sea if the vessel must vacate the berth under USCG orders or for the safety of the vessel and crew.
    - ii. Potential for bonnet to ignite due to high exhaust gas temperatures
    - iii. The hulls of the vessels are not flat at the longitudinal stack location – this creates a potential for the bonnet barge to be pinned underneath the vessel and rupture ship’s fuel tanks.
    - iv. Barge would sit within the containment boom area required for the transfer of persistent oils. Risk of fire and explosion is high in the event of spill.

- c. Restricted evacuation; barge presents a barrier for vessel egress in case of emergency either on shore-side, the vessel, or on the barge itself. Above referenced regulations to vacate berth within 30 minutes must be complied with.
- d. Safety standards related to any required manual operation of the control system must be considered, especially in relation to immediately dangerous to life or health (IDLH) environments and night-time operation.
- e. As no technology has been proven in practice, the ability to control key connections of the shore-based emissions control to boilers is unknown. This includes the possible inability to adjust for changes in load and while controlled as well as the unknown effect of a control technology on boiler combustion space.
- f. No tanker industry standards exist for safe operation of this technology while transferring hazardous cargo. Regardless of the dangers and complications identified.

## 2. Path to Implementation

- a. Design and permitting will take a significant amount of time and resources and can only be considered following the development of physical and operational industry standards for shore-based control technologies.
- b. Should physical and operational standards be developed and accepted industry-wide, ships vary greatly in physical layout and capabilities that make it difficult to apply to one static barge-based emission control setup.
- c. Third-party staffing for continuous (24 hours per day, 7 days per week) availability of tugs and barges. The implementation of a barge-based control system (whose feasibility for tanker applications has yet to be developed, much less deemed feasible) will require significant resources including training and regulation of systems under standard operational procedures to be developed.
- d. Given that no tanker industry standards exist for safe operation of this technology, industry will require time to examine and develop safe practices if possible.

## 3. Siting

- a. Due to large variety in locations of terminals, barge-based controls are not available for all berths such as in area-restricted ports and within bays that are subject to waves and tides.
  - i. Equipment operating window must be wide to account for motion on both barge and ship. Waves, wind and current limit barge operations alongside a loaded tanker including the potential for collision and damage to barge or ship with a possible

subsequent pollution event and/or injury to personnel.

- ii. There is a probability of increased traffic and spacing concerns due to physical layout of some shore-side setups. Traffic and spacing concerns must be taken into account in development of physical and operational standards for this control technology.

#### 4. Real Emissions Reductions

- a. The additional time required for barge connections and disconnections will result in increased vessel port call duration.
  - i. Bonnet barge delays could impact vessels' schedules and force them to wait at anchorage or alongside for 12+ hours when tide and current windows are missed.
  - ii. This would increase hotel load emissions and could result in significant impacts to the logistics relative to supplies and/or products.
- b. Additional emissions due to tug, barge, and control system operation.
- c. Additional emissions (including GHGs) due to tug transit and maneuvering.

#### 5. Costs

- a. Retrofitting of ships to be compatible with barge-based controls as well as the implementation of the control technology will be costly.
- b. Costs will be incurred by third party owners and operators of vessels who have the option to take their business elsewhere.
- c. Additional personnel resources as well as training of personnel to operate new systems and interfaces will result in significant costs." (22.21)

**Comment:** "Proposed CARB At Berth At Anchor Regulation Limitations and Issues Presented by Shore-Based Emission Control. The following points represent dangers and complications identified that would be associated with the operation of a shore-side emissions control system. Regardless of the below points, any consideration of shore-side control mechanisms must operate within the existing system of safeguards and standards associated with the hazards of managing tanker cargoes. It is essential that a complete set of physical and operational standards for this category of technology be developed prior to more detailed discussions surrounding safety, siting, costs, implementation and regulatory parameters.

#### 1. Safety

- i. There are no broad tanker industry standards that exist for safe operation of shore-based emissions control technology while transferring hazardous cargo.

- ii. The additional time to respond, including the disconnection from power, engine start up, etc. in an emergency is a significant safety concern. Federal anchorage (33 CFR 110.215 (a)(2)(B)(iv)) and CA State Lands Commission (Article 5 §2340 (c)(28)) regulations enforced by the USCG (and included in local fire codes and ISGOTT standards) require all tankers moored alongside an oil terminal to be capable of vacating the berth within 30 minutes.
  - i. Significant time may be required to disconnect bonnet, stow or remove bonnet arm, and remove shore-side equipment.
  - ii. Emergency concerns and speed of vacating berth are increased for tankers due to flammable material on board and safety standards associated with operation within dangerous and hazardous areas.
- iii. Third-party owners and operators are not manned with crews and officers properly trained on how to safely operate shore-side control systems and facility operators do not have the legal authority to regulate crews aboard 3rd party vessels.
- iv. Safety evaluation of capture and control system, including but not limited to fire and explosion risk, must be conducted accounting for the collection, pressurization and transportation of gases in a crowded terminal.
- v. A wide equipment operating window is required to account for vibrations and wind.
- vi. Safety standards related to any required manual operation of the control system must be considered, especially in relation to immediately dangerous to life or health (IDLH) environments and night-time operation.
- vii. As no technology has been proven in practice, the ability to control key connections of the shore-based emissions control to boilers is unknown. This includes the possible inability to adjust for changes in load and while controlled as well as the unknown effect of a control technology on boiler combustion space.
- viii. No tanker industry standards exist for the safe operation of this technology while transferring hazardous cargo.

## **2. Path to Implementation**

- a. Design and permitting will take a significant amount of time and resources and can only be considered following the development of physical and operational industry standards for shore-based control technologies.
- b. Marine Terminals will not commit to this control option until physical and operational standards are developed and accepted industry wide and permits are acquired.

- c. Space and utilities for shore-based systems in ports may be under the ownership and control of the port authorities.
- d. Should physical and operational standards be developed and accepted industry-wide, ships vary greatly in physical layout and capabilities, making it difficult to apply shore-based emission controls as shore-side controls must be configured for a specific setup.
  - i. This issue is compounded if all ports and terminals do not choose to implement exactly the same setup.
  - ii. Third-parties operate and own the vast majority of ships calling at California terminals and the retrofit of vessels to hook up to shore-side control is not under the control of any California-based stakeholder
- e. Shore-side set ups vary widely (port based, open water berth, long wharf) causing available options for emissions control to vary greatly between situations.
- f. Given that no broad tanker industry standards exist for safe operation of this technology, industry will require time to examine and develop safe practices if possible.

### **3. Compliance Determination and Regulatory Responsibility**

- a. It is currently unclear how a “compliant visit” will be determined.
- b. Phased control percentage goals currently proposed do not assist in allowing for compliance with proposed implementation timelines as the shore-based control system (which will require a long lead time to develop will yield the same emission control level, regardless of when it is implemented.
- c. If shore-based emissions control is unavailable or incompatible with a vessel, it is currently unclear who will bear the responsibility and possibility of enforcement action.

### **4. Siting and Function (without an interface standard)**

- a. The ability to install shore-based capture and control options may be significantly limited by plot space demands.
  - i. Infrastructure under the authority of ports (not marine terminals or vessel operations)
  - ii. Infrastructure requirements including allocation or procurement of land (the natural consequence of increasing “project” scope) and facility (wharf, port) improvements including (bay in-fill, pile driving, land-use re-designation, etc.)
- b. Additional electrical load to power shore-based control systems is not always available during demand response period times.

- c. The capacity of Booster Pumps may be limited due to a number of factors including: available plot space, length of piping run, elevation change, pipe diameter and rating, pipe material and thickness, type of crude, etc.
- d. Varying setup of ports versus open water berth and long wharf terminals present unique siting issues that are not "one size fits all".

## 5. Real Emission Reductions

- a. Booster pumps are driven by electricity or steam and will result in NOx and PM emissions. The quantity of these emissions must be taken into account when evaluating emissions reductions.
- b. Booster pumps can help reduce, but will not eliminate, the amount of fuel burned on a ship.

## 6. Costs

- a. Shore-based control options require significant up-front investment due to high capital cost of infrastructure development and land costs.
- b. Costs of port will be passed onto tenants, making calling at California ports cost-prohibitive to international shipping companies.
- c. Additional personnel resources as well as training of personnel to operate new systems and interfaces will result in significant costs." (22.22)

**Comment:** "Proposed CARB At Berth At Anchor Regulation Limitations and Issues Presented by Electrification of Tankers. The following points represent dangers and complications identified that would be associated with the operation of an electrification system for tankers. Regardless of the below points, any consideration of electrification systems must operate within the existing system of safeguards and standards associated with the hazards of managing tanker cargoes. It is essential that a complete set of physical and operational standards for this category of technology be developed prior to more detailed discussions surrounding safety, siting, costs, implementation and regulatory parameters.

### 1. Safety

- a. There are no broad tanker industry standards that exist for safe operation of electrification technology while transferring hazardous cargo.
- b. The additional time to respond, including the disconnection from power, engine start up, etc. in an emergency situation is a significant safety concern. Federal anchorage (33 CFR 110.215 (a)(2)(B)(iv)) and CA State Lands Commission (Article 5 §2340 (c)(28)) regulations enforced by the USCG (and included in local

fire codes and ISGOTT standards) require all tankers moored alongside an oil terminal to be capable of vacating the berth within 30 minutes.

- c. High voltage electrical connections and equipment required may not be suitable for hazardous zones:
  - i. Hazardous zone concerns are unique to tankers as the same risks associated with cargo do not exist for container vessels or cruise ships.
  - ii. In IMO evaluation of On-shore power supply safety standards, it was determined that there are “no unified technical requirements for high-voltage shore connection systems and no consideration is given to the electrical surge impact of cold ironing on power networks”<sup>1</sup>.
  - iii. International Safety Guide for Oil Tankers and Terminals (ISGOTT) Section 4.4 standards for the management of electrical equipment and installations in dangerous areas must be complied with in the implementation of any electrification system including the ability to isolate electrical equipment should a hazardous situation arise.
- d. Third party owners and operators are not manned with crews and officers properly trained on how to safely operate a “Cold Ironing” or other shore-side electric power systems.
  - i. Safety concerns regarding the expansion of CARB’s OGV rule to include tankers were expressed by Intertanko in 2017 comments to CARB. Intertanko concerns included safety risk associated with electrification of tanker with hydrocarbon cargo and proximity to hydraulic pumps.
- e. IMO safety evaluation of on-shore power determined that while shore-side power systems are grounded electrical systems, power systems for most ships are ungrounded. IMO concluded that without unified isolation, grounding and operational procedures, tanker hookups to shore-side power systems could lead to significant hazards for the power system.

## **2. Path to Implementation**

- a. Given that no broad tanker industry standards exist for safe operation of this technology, industry will require time to examine and develop safe practices if possible.
- b. Third parties own and operate the vast majority of the global tanker fleet and the retrofit of these vessels to utilize shore-side electricity systems is not under the control of California operators or ports. Unique issue to tankers due to global fleet composition.

### **3. Siting**

- a. Existing tanker shore power connections are designed only for shipyard electrification and for hotel sources. The vast majority of tankers are not designed to run pumps off shore power.
- b. Tankers vary greatly in physical layout and capabilities that make it difficult to apply electrification to all ships as often the shore-side is configured for a specific setup.
- c. Unlike cruise ships or container vessels, tankers do not dock at exact same berth point every time – poses issues in siting of electric connections.
- d. Siting limitations due to available plot space, length of electric run, elevation change and others.
- e. Substantial time and cost related to California Environmental Quality Act (CEQA) environmental impact assessment and permitting electrical infrastructure with local and state agencies.

### **4. Real Emission Reductions**

- a. The majority of oil tankers are fitted with steam driven cargo pumps. On these ships, “Cold Ironing” would only offset the house electrical loads.
- b. Electrical losses over long distances to shore would decrease the effectiveness of this option as the unique situation to northern California remote marine terminals that cannot utilize port infrastructure.

### **5. Electricity Demand**

- a. Additional electrical load is not always available during demand response time periods.
- b. Electricity infrastructure at ports will have to be upgraded to meet demand during peak hours, which is not under the control of the vessel owner or the company utilizing the vessel for transport.

### **6. CARB Authority**

- a. In direct conflict with existing safety regulations (see point 1.a.i.).
- b. As demonstrated in *United States v. Locke*, Governor of Washington, et al, state legislation of “tanker personnel equipment and operations would cause inconsistency between the regulatory regime of the US Government and that of an individual State of the US”<sup>4</sup>. The case law presents jurisdictional issues related to California’s ability to regulate equipment for vessels engaged in interstate/international commerce.
- c. Intertanko submitted comments to CARB in 2017 regarding the “possible conflict of responsibilities and liabilities in case of a

shore power break during cargo operations which may result in a cargo spill event”.

## 7. Costs

- a. Space constraints and required distance of electrical runs will result in significant costs to accomplish.
- b. Retrofitting of ships will be costly and costs will be incurred by third party owners and operators of vessels who have the option to take their business elsewhere.” (22.23)

**Comment:** “Barge-Based Emission Control Systems. The conclusion of the review by CARB for some tanker marine terminals should be able to rely on single or shared barge-based capture and control systems. As WSPA has clearly stated in previous documentation (Enclosure A) provided to CARB staff, there are significant safety concerns with barge-based capture and control systems as a strategy to reduce or eliminate emissions at berth. The following list highlights some significant concerns:

- Docking pilots indicate that environmental conditions (current, wind, etc.) combined with increased vessel activity in the limited maneuvering basin may raise risks (e.g. collision, allision, grounding, line failure, etc.) to higher than acceptable levels.
- The mooring system may not be adequate for handling additional loads created by mooring a barge alongside a tanker at berth. The current barge-based emission control systems operating in California are too small to process tanker boiler emissions. Thus, barge-based systems 3-4 times larger than exist today would need to be designed and constructed. A robust analysis of mooring loads will consequently need to take place.
- Currently available undersized barges have not been tested with large marine boilers.
- There are concerns on how a balanced combustion path will be maintained to prevent dangers like boiler explosions. Boiler manufacturers have indicated that it may be possible to connect a capture and control system if proper modifications are carried out on board each ship, to include higher capacity blowers and modified control systems. In practice, third-party internationally traded vessels will not upgrade on board systems for a call on a single port.
- Further, currently available barge-based systems are not built to any government standard relating to capture operations. They have no certifications and are not endorsed by a class society. There is no industry vetting standards for these barges. Until industry safety standards are developed, such vessels are not allowed by responsible operators to come alongside their tankers when combustible liquids are on board.
- Per 2 CCR 2340, a tanker must be able to depart berth within 30 minutes. Whether barges of this size can be safely moved a sufficient distance by tugs

in time to allow safe tanker departure in emergency conditions will need to be tested and analyzed.

- The current design uses a crane and connection to the vessel's stack and has no emergency break away coupling. Further, there exists no engineered working safety margin for movement between vessels. All interfaces to tankers must be designed and regulated to a standard. There is no standard available.
- Emergency protocols and associated systems between the barge and tanker need to be developed." (22.18)

**Comment:** The commenter provided an overview of perceived safety and installation issues they believe are likely to be encountered through the design and implementation of tanker vessel controls.

Key safety issues:

- All equipment must be certified as Class I, Div. I intrinsically safe if it is open to the atmosphere. Non-intrinsically safe equipment would need to be housed in enclosed structures.
- Hazard of static electricity generation that could be caused by the exhaust gas capture system and vessel interface.
- Technology in use must include a means for emergency disconnection. (Noting that 2 CCR 2340 ( c )(28)(A) calls for a tank vessel to be capable of moving away from a berth within 30 minutes.)
- Oil tankers are required to maintain most cargoes in an inerted [*sic*] atmosphere. The use of inert gas is a key safety measure, and mandated by both U.S. regulations, and international standards. Change of pressure in the exhaust stack would therefore affect this process and could negatively the oxygen content of the exhaust gas.
- The use of an exhaust gas processing interface is a new concept, and has yet to be vetted from a safety aspect.
- OCIMF has not been consulted concerning the safety issues that may be encountered through the use of this new technology. Without OCIMF guidance, there is no universal set of safety guidelines available to the tanker industry for the safe use of the proposed equipment.

Other Key Issues:

- For existing marine oil terminals, all proposed new, substantially modified or redesigned structural, berthing and mooring (including Terminal Operating Limits [TOLs]), fire, piping/pipeline, mechanical or electrical systems or components are also subject to MOTEMS compliant review by the Commission, and shall be MOTEMS compliant prior to use or reuse. "As-built" re-verification may be required.
- The location of a tanker's manifold (cargo piping termination) determines the location of a vessel alongside a berth.

- The vessel's draft during discharge will have to be safely taken into account.
- The full range of tides would need to be accounted for
- New structures would be required in order to install the equipment. In addition to the engineering challenges, there would be environmental challenges to ensure wetlands safety.

The commenter requests that they be "allowed to conduct a detailed and thorough feasibility study covering the wide range of terminals in use State wide." (22-24)

**Agency Response (22.21), (22.22), (22.23), (22.18) and (22.24):** CARB staff made no changes based on the comments received. Many of these comments revolve around the technical, operational, navigational, and safety concerns related to adapting both barge-based and land-based alternative control strategies for marine tanker vessels, and these concerns have already been raised in prior "feasibility study" comments. See response to comment 60.14.

Staff has also included language in the Regulation recognizing that tanker steam driven pumps cannot be electrified. This is reflected in ISOR Page III-2 "Tanker Boiler Control Requirements" which proposes a Remediation Fund as a way to mitigate the emissions generated in order to achieve the public health benefits.

In addition, the grid neutral requirement addresses industry concerns about barge- and land-based emissions contributing additional emissions. See ISOR Pages IV-15 to IV-16 under "Grid Neutrality," which addresses the emissions generated by the existing emissions capture and control technologies. It is CARB's intention that this requirement would incentivize technology developers to adapt GHG mitigating technologies.

Pertaining to standards for alternative compliance strategies, please refer to ISOR Page VI-6. CARB also recognizes the need to engage with the international standards organizations such as the ISO and IEEE (see ISOR Page VI-6) to harmonize design and performance standards if shore power and alternative control strategies are to be adopted across the broader tanker industry ranging from internationally regulated vessels to terminals. Staff is also soliciting potential new entrants to the alternative control strategy market to encourage more competition. An example would be the upcoming CARB tanker incentive project where applicants will design and test emissions capture and control systems for tanker vessels, with part of the objective of the solicitation being the involvement of the international class societies' input in the design process and approval.

Pertaining to infrastructure, MOTEMS, and available space concerns, please refer to response to comment 60.35. CARB staff acknowledges that the MOTEMS upgrades could result in less available space for tanker berths to

accommodate alternative emission control strategies and their supporting infrastructure. Additional modifications may be needed to arrive at a design that meets industry and permitting acceptance, while still maintaining MOTEMS standards. However, CARB staff expects any necessary modifications could be made within the implementation timelines. Additionally, the Interim Evaluation in 2022 will allow CARB staff to reassess how the adaptation and installation of emissions control technologies and infrastructure is progressing, and if any revisions to the implementation timeline are necessary.

With respect to comments pertaining to regulatory authority, CARB does have authority under HSC Sections 39660 et seq., 43013, 43018, and SB 605 to regulate diesel auxiliary engines and auxiliary boilers on OGVs (including tanker vessels) docked at California ports. We are confident that the technology exists to do so safely with the proper vessel and/or berth specific modifications. See the ISOR, Chapter I, pp. I-1 to I-3 for more discussion on CARB's authority.

## 7. COSTS AND ECONOMICS

**Comment:** (Comment is about the CARB cost survey) "The variability in the responses from bulk and Ro-Ro vessel operators is also substantial. The high value response for Ro-Ro vessels is five times the value of the low value. The high value response for bulk vessels is over four times the value of the low response. The most likely reason for these significant variances appears that there may have been issues in interpreting the questionnaire among the responders. These unbelievably low costs will skew any analysis in which they are used. CARB staff should exclude any costs below \$600,000 from their analysis." (52.C.103)

**Agency Response (52.C.103):** CARB staff made no changes based on the received comment. CARB staff acknowledged that there were discrepancies in the way vessel survey data was reported, however, staff conducted extensive follow up with respondents upon receiving surveys from vessel operators to understand the data provided and ensure the results were interpreted and represented as intended by the survey participant.

**Comment:** "The ISOR presents a cost of \$900 per hour for alternative control strategies based on an anonymous conversation. The analysis presented by Starcrest includes actual redacted invoices that show the cost is substantially more. Because every \$100 per hour change in the cost of alternative control technologies can swing the cost-effectiveness analysis by more than \$12,000 per weighted ton, it is critical that the proper value be used.

Actual invoices show multiple different rates, but also show minimum charges and mobilization/demobilization costs. When considering all costs, the effective rate presented in the available invoices range from \$1,100 to \$1,522 per hour. This results in a substantially higher cost effectiveness approaching \$200,000 per weighted ton.

For comparison, the acceptable Carl Moyer cost effectiveness threshold for non-zero-emission technologies is \$30,000 per weighted ton making Ro/Ros some of the most expensive emission reductions possible.” (52.29)

**Comment:** Port of Long Beach and Port of Los Angeles, Starcrest report data

“Table 6: RoRo Control Costs With Varied Hourly Rates

RoRo Visit	
San Pedro Bay Ports Average - 17-Hr Call	
Rate	Rate Source (assumes/indicated all inclusive)
-	-
-	-
-	-

(52.A.19c)

**Comment:** With respect to cost analyses as applied to other fleets, port complexes, and alternative technologies and alternative compliance methodologies, the assumptions used are also suspect and rely on weak or non-existent data. For instance, with respect to the barge-based alternative compliance systems proposed, the SRIA assumes that the cost is a bare \$900 per hour. It appears that this estimate is based solely on phone conversations with a potential vendor of this technology. However, this methodology and estimate was contested by regulated parties who provided both specific billing and cost evidence to the contrary, in addition to methodological concerns including the lack of accounting for capital costs, standby costs, tug costs, variability of access up and down the coast, and unclear use of average costs across large fleet and geographic discrepancies. (52.C.10)

**Comment:** “CARB has calculated a total cost of the proposed regulation as \$2.164 billion, as articulated in the Standard Regulatory Impact Assessment (SRIA) with data inputs provided in the Cost Analysis Spreadsheet.

➤ CARB has underestimated the hourly costs for barge-based capture and control systems. CARB assumes \$900 an hour for barge-based capture and control systems. This cost is based on an anonymous quote from one technology vendor to CARB; however, actual invoices provided by shipping lines indicate much higher rates (Attachment A). In addition to straight hourly rates as high as \$1,100, these invoices point to additional charges and vendor imposed 24-hour minimums, which effectively raises the hourly rate on short calls. At these higher rates, using CARB's assumption of a 20-hour average RoRo call statewide, the cost for a visit is as much as \$28,440, far higher than the \$18,000 CARB would assume. Additionally, at the highest effective rate, the total cost of the proposed regulation [sic] for RoRos (not assuming growth) is \$231 million compared to CARB's assumption of \$128 million, assuming a 20-at-berth average. Further, in a separate study of barge-based control system costs at the Port of Long Beach and Port of Los Angeles, Starcrest found even higher hourly rates based on a 17-hour at-berth time, which is the average in San Pedro Bay. This study suggests that per-hour costs will be even higher for some fleets and ports with shorter calls." (52.B.3 See table 6 of Attach B of PMSA comment) (52.A.19a) (52.A.19b)

**Agency Response (52.29), (52.A19c), (52.C.10), (52.B.3 see table 6 of Attach B of PMSA comment), (52.A19a), and (52.A.19b):** CARB staff made no changes based on the received comment. Best available information was used by CARB staff to develop the SRIA cost estimates. The \$900 hourly barge fee CARB assumed for container/reefer and ro-ro vessel types is established from two published emails to CARB from a well-known technology provider (see Table II of SRIA Appendix A). Ahead of the May 14 and 16, 2019 public workshops, a draft of the SRIA Appendix A, included reference to the \$900 cost input, was posted on CARB's "Shore Power for Ocean-going Vessels" webpage. During the May public workshops, staff requested that stakeholders provide cost information to CARB for inclusion in the SRIA.

The invoices the commenter refers to were provided to CARB staff during a meeting with the industry meeting held at the California Environmental Protection Agency (CalEPA) Headquarters on October 22, 2019, subsequent to the posting of the 45-day notice package on October 15, 2019. Staff was not provided invoices at any point prior to the 45-day comment period, despite repeated formal and informal requests for cost information from stakeholders during the year-long development of the cost analysis.

Additionally, the commenter provided only three invoices with much of the data redacted. CARB does not believe the provided information better represents the capture and control marketplace. However, the additional information provided may be considered in the Interim Evaluation (Section 93130.14(d)).

**Comment:** “The preliminary cost analysis includes a cost of \$1,000 per hour for the use of barge-based emission capture systems. The bases for these costs are anecdotal at best and there is significant evidence that they do not represent the true cost for such systems. There is no accommodation for the capital costs of these systems or the associated costs of affiliated infrastructure.

In addition, given the limited marketplace that currently exists and the small number of suppliers that should ever be expected to enter into such a relatively small customer venue, the monopsony factors associated with these costs cannot be underestimated, as there will inevitably be market pressure to drive up costs and reduce customer service.”

“[T]here have already been instances when, due to modest vessel schedule changes, a barge based system has had to leave one vessel it was servicing to provide service to another vessel. If the rule requires that barge-based systems be present for the entire length of the vessel visit, there will need to be more barge-based systems. More systems will require a lower utilization rate per barge and, in turn, will necessitate a higher hourly cost. There have been other instances of ocean carriers competing to schedule the same barge-based system. Yet, such demand has not been sufficient to result in the construction of additional systems. For all these reasons, the cost of \$1,000 per hour most likely grossly underestimates the true future cost. CARB staff should conduct a bottom-up approach, estimating the cost to construct and operate such a barge, at a profit, and amortize those costs over the life of the equipment. Such an approach can be based on documented data, rather than anecdotal information. (52.C.114)

**Agency Response (52.C.114):** CARB staff made no changes based on the received comment. CARB disagrees with this commenter that the information used is anecdotal. The estimated hourly usage fee for barge-based capture and control systems (\$1000 in the preliminary cost analysis posted in May 2019 and \$900 per hour in the SRIA) is based on staff communications with one of the technology providers, as noted in SRIA Appendix A, Table II. Staff assumes that the hourly fee charged by the owner of the barge-based system would be sufficient to cover costs associated with its construction and operation. Therefore, staff did not include the capital costs or other costs associated with the barge-based system that would be incurred by the technology developer and/or barge system owner because including these costs in addition to the hourly fee would amount to double-counting the costs.

**Comment:** “We find the lack of equality of shore power solutions objectionable. Such systems require an investment of 1mUSD per vessel for a benefit that cannot be enjoyed by any port community in the world outside of California. Furthermore, a capital outlay of that magnitude will invariably thwart or delay the investment in at-berth solutions that could provide a health and environmental benefit wherever the vessel calls. (55.4)

**Agency Response (55.4):** CARB staff made no changes based on the received comment. CARB disagrees with this comment because as can be seen in the ISOR Chapter VI, there has been,

“[g]rowing interest in the use of shore power, namely for container, cruise, and ro-ro vessels, is occurring at other ports both in the U.S. and globally (including major ports in Canada, China, and Northern Europe). This may positively benefit shipping companies calling California, if they are able to utilize shore power equipment used for compliance with regulatory or incentive programs in other ports. Several ports in China have taken action to install shore power infrastructure for container terminals (including Shenzhen, Yantian, Ningbo-Zhoushan, Hong Kong, among others) as an emissions reductions strategy to combat air pollution. The development of shore power in China is particularly beneficial due to the large number of container vessel fleets traveling back and forth between California and China. The utilization of shore power beyond California may not only help the cost impact for a given ocean carrier, but could also contribute to added health benefits for port communities in other countries. Successful adoption of the Proposed Regulation would incentivize more countries to adopt shore power, which provides enormous potential for additional health benefits in port communities worldwide.”

Additionally, since the release of this ISOR staff has been contacted by numerous other parties interested in implementing shore power programs of their own.

**Comment:** “In addition to the 1mUSD per vessel capital cost to equip a vessel to receive shore-power, there are the direct operational costs of connection and electricity, as well as the indirect costs due to the delays and maintenance. Given that approximately 90% of our fleet visit a CA port within a 2 year period, and that vessel deployment cannot be constrained based on a vessels ability to comply, an at-berth requirement would effectively [sic] be a fleet requirement. Allied to that, vessels in our fleet typically call CA ports only 2-4 times a year and for a short as 12hours at a time. The upshot is the total cost of compliance would be very great relative to the benefit and the operating time of the vessel in California. The cost of equipping RoRo berths to provide shore power is particularly high both since there is no existing power infrastructure to avail of and because of the large amount of power required. It is also not a given that sufficient surplus clean and renewable electrical power would be available nearby.” (55.5)

**Agency Response (55.5):** CARB staff made no changes based on the received comment. The commenter implies that the “direct operational costs of connection and electricity, as well as the indirect costs due to the delays and maintenance” are not accounted for in staff’s cost analysis. However, staff

quantified direct operational costs, which include labor and energy costs, for shore power in Table C5 of the SRIA document (ISOR Appendix C-1) and maintenance costs for vessel shore power equipment in Table C6 of the SRIA. The June 2018 surveys requested information on “other” costs, which could have included any additional costs including indirect costs for delays. Staff did not receive any specific information regarding indirect costs for delays from survey respondents, nor at any point during the extensive stakeholder engagement undertaken during the year-long development of the cost analysis. The commenter mentions the high cost of equipping ro-ro berths for shore power, however the Regulation would not require ro-ro vessels or berths to use shore power as a compliance option, and staff’s cost analysis assumes that ro-ro terminals and vessel operators would not opt to use shore power due to the high estimated cost relative to capture and control systems for this vessel category.

The capture and control systems provide an option for vessels that are not frequent visitors and who have short stays an alternative to retrofitting their vessels. Additionally, vessels within a fleet will have access to VIEs. VIEs can be used for instances when vessels are not frequent visitors and are not equipped with control equipment. Further, as part of the first 15-day changes to the Regulation released on March 26, 2020 staff included an “Innovative Concept Compliance Option” (Section 93130.17). In summary, the Innovative Concepts approach may be used in lieu of meeting the vessel control requirements, if the Innovative Concept meet or exceed emissions reductions otherwise achieved by controlling vessel emissions while at berth.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

“[T]he costs used by CARB in the ISOR are based on conversations with technology developers, rather than real quotes. The Port provided CARB invoices from previous shore power construction projects and cost estimates for future shore power work required by the rule in the joint Port of Los Angeles and Port of Long Beach comment letter dated May 20, 2019.” (60.4)

**Agency Response (60.4):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the majority of cost inputs for shore power infrastructure were derived from responses to staff’s June 2018 cost survey (see SRIA Appendix A Table XIII). This includes the data contained in the Port of Long Beach’s 2018 survey response.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

- Some of the costs incorporated into the ISOR were gathered from casual conversations with terminal operators, technology developers, and vessel operators. In many cases, these parties were not briefed that the estimates would be used in the rule development, nor were the estimates verified. Additional vetting is necessary to ensure the cost analysis is robust and defensible.” (60.10a)

**Agency Response (60.10a):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. Staff obtained the cost information incorporated into the ISOR and SRIA from a variety of sources, which are detailed in Appendix A of the SRIA. In every case, staff used the best information available at the time of the analysis, and made an effort to reach out to stakeholders when staff believed that additional conversations could help refine certain cost inputs. In every case where staff cited a conversation with a terminal operator, technology developer, or vessel operator, staff obtained either verbal or written permission to use the input in the cost analysis. Staff also made every effort to gather estimates from multiple stakeholders to further validate each cost input.

**Comment:** “In addition to concerns regarding the number for alternative control systems, the cost per control system is underestimated. The cost analysis has a capital cost for a barge-based system at less than \$5,000,000. However, the most recent example of funding for similar equipment is the Bay Area Air Quality Management District award of funding for a barge-based system at a cost of \$8.8 million<sup>1</sup>. This is consistent with previous funding efforts in the past. Each system is a unique build and there are no economies of scale that can be expected. The CARB analysis relies on “[c]laimed confidential data obtained from industry sources that requested non-attribution”. However, there is public data available based on public funding for existing systems. Why does CARB rely on confidential data when publicly available data can be obtained?”

The costs of barge-based alternative control technologies do not appear to account that under the CARB staff proposal additional barges would be necessary to meet peak demand, but that more alternative systems would result in lower utilization rates. Lower utilization rates can only be accounted for with a higher hourly rate. The ports of Long Beach and Los Angeles provide a discussion of this effect in their May 20, 2019 letter. Why does the analysis not appear to account for system utilization impacting hourly costs of barge-based systems?” (52.C.71a)

**Agency Response (52.C.71a):** CARB staff made no changes based on the received comment. Staff is aware of the funding example the commenter cites. The \$8.8 million cost for the project in Benicia, California includes costs of the emission control system as well as other costs that would not apply to a land-based system, including acquisition and preparation of the barge, overhead, profit, and other charges specific to that project. Additionally, the cost for that

unit represents the cost of one of the first systems developed. CARB disagrees with the commenter's assertion that no economies of scale can be expected, staff was told by technology developers that capital costs per unit would decrease as more were built.

**Comment:** "Demand Charges Do Not Appear to Be Accounted. The cost analysis does not appear to account for electricity demand charges and only accounts for the average delivered cost of electricity. Shore power results in spikes in electricity demand. Utilities charge for that uneven electrical demand through a cost commonly termed a "demand charge." Given the high demand of shore power compared to a facility's base electrical demand, demand charges can impact the cost of electricity delivered during times when shore power is not in use. This will result in an overall increase in the cost of electricity. This happens only because of the need for shore power and demand charges should be reflected in the cost impact of the proposed regulation. This impact will be most pronounced at marine terminals that have generally low electricity needs like auto terminals. Also, added facilities charges, assessed by a utility when electrical infrastructure is added, also does not appear to be included in the cost assessment. What accounting exists in the cost analysis for electricity demand charges?" (52.C.72)

**Agency Response (52.C.72):** CARB staff made no changes based on the received comment. It is Staff's understanding that the situation at the Port of San Diego is unique and at many other terminals throughout the state, demand charges would not significantly affect the overall electricity costs due to vessels arriving on a reasonably consistent basis year-round. SRIA Appendix A, Table VIII describes the sources of the electricity rates used in the cost analysis. Prior to the May 2019 workshops, staff posted a preliminary version of Appendix A to CARB's website called "Draft Cost Inputs and Assumptions." This document contained the cost input for electricity rates used in the draft cost analysis, which was the California Energy Commission (CEC) Mid Case Revised Demand Forecast values used to produce an average statewide rate.

In response to the preliminary cost analysis and inputs document, staff received feedback from the Port of San Diego regarding electricity rates for cruise vessels plugging into shore power. The Port of San Diego explained to staff that because they are a special district, they do not qualify for municipal utility rates, and that their electricity rates for shore power would rise substantially in the coming years. The Port of San Diego provided CARB staff with documentation of their pending case with the California Public Utilities Commission (CPUC) requesting rate relief, from which staff was able to cite an effective electricity rate for cruise ships at the Port which was much higher than the statewide average calculated from the CEC data. Port staff explained to CARB staff that the high effective rate was a result of demand charges for the summer months, when cruise ships did not call the Port. In response to this information and a documentable reference provided by the Port, staff adjusted

its cost analysis to reflect the higher effective rate for cruise ships at the Port of San Diego.

Pacific Merchant Shipping Association (PMSA), California Association of Port Authorities (CAPA), Cruise Lines International Association (CLIA), Western States Petroleum Association (WSPA) and World Shipping Council (WSC) also submitted a joint letter to CARB staff dated May 29, 2019 in response to the preliminary cost analysis and inputs document. While the joint letter contained this same paragraph claiming that demand charges were not accounted for, it did not provide any specific information, references, or even an estimate that staff could use to for demand charges on top of the projected cost of delivered electricity. Staff did not receive any feedback from stakeholders other than the Port of San Diego regarding electricity rates or demand charges for other vessel types or locations in response to the preliminary cost inputs, including in letters that POLA/POLB, Port of Oakland, and Port of San Francisco submitted to CARB staff in late May through early June 2019 timeframe.

**Comment:** “Wrongly Assume Electricity Costs Will Not Increase. The cost analysis appears to assume that California electricity rates will remain flat through 2032. That analysis ignores that California has some of the fastest accelerating electricity rates in the nation. In fact, for the period 2011-2017 California industrial electricity rates increased nearly 30% (see chart below). Since then, the California Legislature has imposed additional requirements for California’s renewable portfolio that will by most accounts ensure an increase in costs. Is there a basis for the assumption that electricity rates will not increase for a decade?” (52.C.73)

**Agency Response (52.C.73):** CARB staff made no changes based on the received comment. As stated in Appendix A, Table VIII of the SRIA, the basis for the electricity rates in the cost analysis is the CEC Mid Case Revised Demand Forecast dated February 21, 2018. This specific dataset was recommended to CARB staff by CEC staff in August 2018 to approximate electricity rates through 2030. The methodology the CEC used to develop this case, which includes requirements for increased renewables, is detailed in Chapter 1 of the Commission Final Report document (CEC-200-2018-002-CMF). The chart the commenter included in their letter uses Energy Information Administration (EIA) data, which is a statewide average, and shows only historical data rather than projecting into the future. Staff’s calculated average from the CEC data uses projections through 2030 and only considers utilities where ports that would be impacted by the Proposed Regulation are located.

**Comment:** “The cost analysis makes the following statement for land-based capture and control systems, “[C] According to Tri-Mer statements at 4/16/19 CARB meeting, no additional labor would be required to run capture-and-control system”. This statement is problematic for multiple reasons. First, Tri-Mer does not employ labor on marine terminals and has no knowledge of the requirements of negotiated labor contracts. Second, CARB staff is fully aware that the level of manning of similar

demonstration equipment as part of the Pasha Omni-Terminal Demonstration is the subject of discussions with the labor union. Third, CARB staff is also fully aware that labor considerations are part of the deployment sensitivities and limitations on other compliance methodologies, including certain cable-reel systems. Lastly, it is just simply unrealistic that there would be no labor costs associated with any component to any application of any equipment on the waterfront no matter what. Given that there is no clear reason why there would be no added labor costs for such equipment, which metrics for labor costs will be included?" (52.C.74)

**Agency Response (52.C.74):** CARB staff made no changes based on the received comment. This comment refers to staff's assumption that no additional labor costs would be incurred for land-based capture and control systems at ro-ro terminals. CARB disagrees that assuming no additional labor costs at ro-ro terminals is unrealistic. The commenter's quote is from a footnote found in the "Cost Inputs" tab of staff's cost analysis workbook, which is page 6 of SRIA Appendix B. Page 80 of the SRIA addresses this assumption in more detail. As stated on Page 80, Tri-Mer told CARB staff and the numerous industry stakeholders present at a CARB meeting on April 16, 2019 that no additional labor is required to operate existing capture and control systems at container terminals beyond existing crane mechanics. Staff did not have any information to indicate that additional labor would be needed, and no information contrary to that assumption was provided to staff subsequent to that meeting. Furthermore, staff understands that at present, union discussions are still occurring regarding the use of existing longshore labor to operate capture and control systems at ro-ro terminals.

**Comment:** "CARB assumes no labor costs for operating land-based capture and control systems. Similar to shore power, terminals are likely to use longshore labor to connect land-based capture and control systems. That has been the case at the Pasha terminal in Los Angeles, which is demonstrating the state's only land-based control system for non-container vessels and has seen a net labor increase as a result of its operation. For land-based systems at tanker terminals, CARB assumes \$1 million annually per berth (Cost Analysis Workbook). There is no reason to believe RoRo terminals would be any different. Thus, at minimum, CARB should assume \$1 million per berth annually for the 3 RoRo land-based control systems included in the Berth Analysis, which equates to an additional \$24 million over the 8-year regulatory analysis period." (52.B.5) (52.A.21)

**Agency Response (52.B.5) and (52.A.21):** CARB staff made no changes based on the received comment. This comment refers to staff's assumption that no additional labor costs would be incurred for land-based capture and control systems at ro-ro terminals. CARB disagrees that the labor cost assumption of \$1 million per berth for tanker terminals should also be used for ro-ro terminals. Staff arrived at the \$1 million per berth assumption for tanker terminals through consultation with multiple tanker terminal operators. As described on page 84

of the SRIA and Table III-B of SRIA Appendix A, the \$1 million per berth assumption takes into account factors that do not apply to ro-ro terminals, including the need for multiple crews to operate large dedicated cranes to operate capture and control systems for tanker vessels, and the inability to use existing labor due to the need for dedicated personnel to ensure safe operation of the capture and control unit in proximity to hazardous cargo, continuously throughout the visit.

**Comment:** “Maintenance Costs. Concern has been raised that all the costs submitted as part of CARB staff’s surveys are not fully reflected in the assumptions document. For instance, Maintenance costs for shore power maintenance infrastructure show an average cost of \$24,285 with a range of \$4,000 to \$44,571. However, it is understood that maintenance cost data has been submitted to CARB that exceeds the stated range in the assumptions document. How can stakeholders be confident that their data was incorporated into the analysis?” (52.C.75)

**Agency Response (52.C.75):** CARB staff made no changes based on the received comment. The commenter does not specify what information they understand CARB to have received that exceeds the stated range in the assumptions document. Staff maintains that the range of values the commenter cites in SRIA Appendix A, Table XII encompasses all data CARB received in June 2018 survey responses for container and reefer terminals, aggregated on a *per-berth* basis.

**Comment:** “Planning costs of [sic] appear to be underestimated. The proposed regulation requires significant changes for both the existing regulated and unregulated fleets. Even prior to conducting design planning, ocean carriers, terminal operators, and ports will have to do detailed preliminary planning to determine the most effective compliance mechanisms. Those decisions will be necessary to support planning submittals to CARB. Why has CARB accounted for \$10,000 per plan or less when prior experience indicates that coordinated pre-planning between ports and terminals can cost millions?” (52.C.76)

**Agency Response (52.C.76):** CARB staff made no changes based on the received comment. The “\$10,000 per plan or less” figure the commenter cites refers to the values in SRIA Appendix A, Table VII. As stated in the table, these are plan costs per-terminal and per-berth that Staff anticipates would be incurred, therefore the actual estimated cost of each plan would be the unit cost multiplied by the number of terminals or berths as applicable. This cost refers to the plan documents that ports and terminals would be required to submit to CARB, not for any additional coordination between ports, terminals, and vessel operators that these parties may choose to engage in to determine their compliance pathway.

**Comment:** “Shore power connections are located in proximity to electrical panels, therefore, cruise ships and cargo ships currently in the regulation are not typically equipped to connect from both Port and Starboard side. The current practice of assigning berths to accommodate the location of vessel shore power connections is essential for maximizing utilization of shore power. The draft regulatory language could be used to require that a vessel have shore power equipment on both the starboard and port side of a vessel, but most vessels in the current regulated fleet are not equipped with shore power equipment on both sides. Retrofitting ships to connect on both sides would double the cost of new retrofits, create new expenses for vessels in the currently regulated fleets, and be very difficult, since cabling would need to cross plumbing, electrical and communications lines. Why are the added cost of adding new shore power equipment to the existing regulated fleet, which will run into the tens if not hundreds of millions of dollars, not included in the cost assessment?” (52.C.68a)

**Agency Response (52.C.68a):** CARB made changes to the Regulation based on this comment to clarify the roles of vessels and terminals in plugging shore power equipped vessels into commissioned shore power berths. A shore power equipped vessel that has commissioned at a terminal is not required by the Regulation to put shore power on both sides of the vessel. The act of successfully commissioning ensures that the vessel is capable of using shore power at the terminal, and the terminal operator has to plug the vessel in. If a vessel changes to a different terminal, or is new to a terminal and unable to connect to shore power because the vessel is not equipped with it on the side the terminal can accept, then the vessel operator will need to make the vessel compatible such that it can successfully commission with the terminal's shore power equipment. The intent of the Regulation did not change from ISOR Appendix A to the changes proposed in the first 15-day notice, however, the language was updated in the Regulation to make this point more clear. Costs to install shore power on both sides of a vessel were not included because the Regulation is intentionally structured in such a way that does not require vessels with shore power to install a shore power connection on both sides of the vessel. Terminal operators are required to commission and plug in vessels in order to comply with the Regulation. As such, the only time a vessel would need shore power on both sides is if they are visiting a terminal that cannot turn the vessel around due to some kind of physical constraint. In these cases, the terminal must give advance notice to the vessel of the berthing requirements, and the vessel can make the decision to install shore power on both sides or use an alternative solution (including use of a TIE or VIE).

**Comment:** “The cost analysis assumes that only a single barge-based capture and control systems is required for San Pedro Bay. It appears that this assumption was made for service to the currently unregulated fleet, given that there are already occurrences that the existing two systems in San Pedro Bay today are overbooked. In order to be ready for a more stringent regulatory framework which requires

redundancy of control in the future, why aren't the costs of the many more new barges which would be needed to meet existing demand from the currently regulated fleet evaluated? Relatedly, why is there a cost associated with only one alternative control system predicted for LA/LB but none in other ports?" (52.C.68b)

**Agency Response (52.C.68b):** CARB staff made no changes based on the received comment. Staff assume the estimate of one barge-based system for San Pedro Bay referenced in this comment is from CARB staff's Berth Analysis for container and reefer vessels. This assumption is based on the low number of infrequently visiting vessels that are not likely to install shore power, as well as on conversations staff had with terminal and vessel operators who expressed shore power would continue to be the likely choice for most of the container and reefer vessels. The Berth Analysis does not preclude a vessel or terminal operator from using a barge-based system, but instead used best available information to provide an educated assumption of the most likely compliance pathway at each terminal. Staff's analysis does include additional barge-based capture and control systems for ro-ro vessels at the San Pedro Bay ports. Staff assume that barge-based capture and control systems used for ro-ro vessels could potentially also be used for container vessels, given that the required loads are similar and the vessel visit activity for ro-ro vessels is much lower than container vessels. At ports outside of San Pedro Bay, barge-based capture and control systems were not anticipated by CARB staff based on the low numbers of infrequently visiting vessels to these terminals. As such, no cost analysis was needed for barge-based systems outside of the San Pedro Bay ports.

**Comment:** "CARB staff should demonstrate how the annualized costs for compliance with a 100% rule, as outlined in staff's proposed concepts, would only reach \$7.5 million per year at Full Implementation for the entire container and refrigerated vessel fleets. For a rule with outsized capital and operational costs, which CARB initially pegged at approximately \$1.8 billion through 2020 for all vessels and terminals impacted, this is an unrealistically low expectation of annualized costs (see related comments below). The carrying costs on existing capital alone will dwarf this number, not including the costs of additional retrofits and new-builds." (52.C.108)

**Agency Response (52.C.108):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The annualized costs as outlined in the Regulation are demonstrated by the SRIA and detailed cost analysis included as Appendix C-1 to the ISOR, including the 39-page SRIA Appendix A, which contains the cost analysis inputs and assumptions, and SRIA Appendix C, which contains staff's analysis of potential emission reduction strategies specific to every berth expected to be regulated under the Regulation. CARB disagrees with the commenter's assertion that the Regulation is a "100 percent rule" because that statement does not account for TIEs, VIEs, and other flexibility provisions staff built into the Regulation,

which would allow for fewer than 100 percent of vessel visits to control emissions. Also, the Regulation allows the use of an Innovative Concept (IC) that provides a pathway for regulated vessel fleets to continue using fleet averaging methods to comply with the Regulation.

**Comment:** “CARB’s cost analysis of these [alternative technology] systems should also note whether or not the existing costs reflect actual market pricing or are more reflective of extensive government subsidies for the provisioning of such systems. Industry is unaware of the full extent to which the current system infrastructure and operations are more truly reflective of real-world market conditions or of subsidies. Industry is also unaware of whether there have been any independent evaluations of the quality of services that have been or could be provided by alternative technology systems, or of the financial durability and capitalization strength of such system providers, absent such subsidies. Such an evaluation by a party independent of public agencies, such as CARB or local air districts which are administering the subsidies in question, would be worthwhile evaluations of the true costs of these types of systems.” (52.C.115)

**Agency Response (52.C.115):** CARB staff made no changes based on the received comment. Staff’s cost assumption for capture and control systems reflect the information provided by the developer of existing units. Staff did not ask for technology developers to include subsidies when providing their cost estimates to CARB, and staff’s discussions with technology developers did not indicate that subsidies were included in the costs provided.

**Comment:** “The non-annualized costs of this regulation point to a significant, concentrated expense in three 1-year periods, which may not be feasible for the industry. In 2020, the industry will incur nearly \$170 million in costs; in 2024, the industry will incur nearly \$580 million in costs; and in 2026, the industry will incur \$1.1 billion in costs. Contrary to CARB’s methodology, previous at-berth projects, including shore power, were not financed over time but rather were incurred as one-time expenses partially offset with public subsidies (e.g., Proposition 1B, Carl Moyer Program, grants for barge-based systems).

- As the Department of Finance notes, considering the costs as one-time expenses in a given year rather than annualized costs dramatically changes the impacts. CARB cites two example ports – Port of Long Beach and Port of Hueneme. Using annualized costs, CARB asserts the proposed regulation would amount to 5% of Long Beach’s annual operating revenues and 2% of Hueneme’s annual operating revenues. But when considering the years in which most costs would incur (2026 for Long Beach and 2024 for Hueneme), the proposed regulation would amount to 23% of Long Beach’s operating revenue and 15% of Hueneme’s operating revenues in that year.” (52.B.6) (52.A.22a) (52.A.22)

**Agency Response (52.B.6), (52.A.22a) and (52.A.22):** CARB staff made no changes based on the received comment because this comment was already addressed. In its comments to CARB on the SRIA, DOF stated that the SRIA must include non-annualized capital costs. In response to this comment, staff provided up-front costs calculated as one-time expenses, which are included as Appendix C-2 to the ISOR.

**Comment:** “CARB does not account for the capital costs of barge-based capture and control systems. For purposes of the cost analysis, CARB assumes a \$900 per hour rate for vessel operators to use these systems; however, in the direct cost analysis, CARB omits the capital costs of developing these systems (\$4.9 million according to CARB’s estimates), which are borne by some entity: either the technology developers, terminals, or ports. These costs should be factored into the direct cost analysis.

- To date, no at-berth capture and control system has been privately funded; all of the existing systems have received significant public subsidy. CARB should evaluate the lack of private investment for these systems, which could be a major impediment to implementation.
- Additionally, CARB should analyze the capital costs of 14 barge-based units (not 6), which represents the number of barge-based systems needed for full coverage.” (52.B.7), (52.A.23b), (52.A.23a), (52.A.23)

**Agency Response (52.B.7), (52.A.23b), (52.A.23a), and (52.A.23):** CARB staff made no changes based on the received comment. CARB assumed that capital costs for barge-based control systems will be incurred by system developers. Following the example of barge-based system operations currently in place, the system’s capital, labor, and maintenance costs will be passed along to customers of the system via an hourly rate.

CARB recognizes that at the time of regulatory development of this Regulation there have been no privately funded capture and control systems. However, staff does not believe that this impedes implementation of the Regulation. Additionally, staff disagree that 14 barge-based systems will be required (for more information, see ISOR Appendix E).

**Comment:** “CARB has not forecasted the statewide increase in energy use (or costs) resulting from electric- or battery-powered capture and control systems. Using CARB’s estimates, more than 30 barge-based and land-based control systems will be needed to comply with the regulation. The land-based systems are almost certain to tie into the grid (as noted in the draft EA), and the barge-based systems may similarly turn to electricity given the limited availability of renewable fuels. These systems will require designated charging locations. CARB has not projected the increased energy usage or costs associated with these systems.” (52.B.10)

**Agency Response (52.B.10):** CARB staff made no changes based on the received comment. Energy demand has been addressed in the draft EA (ISOR Appendix D, pages 72-77). The increased energy demand in response to the full compliance of the Regulation is estimated to be 291 gigawatt hours (GW/hrs), which is equivalent to 0.001 percent of the total power used in California. In summary, the impact of the Regulation on the energy system in California would be minimal. Additionally, CARB disagrees with the commenter's assertion that most land-based systems will tie into the grid. Staff acknowledged in the draft EA that in some cases land-based systems would be electric and if they were, it would cause a large level of ground disturbance to build.

**Comment:** "Table VIII. Electricity and Fuel Cost Inputs and the associated Cost Estimates in Excel format show that CARB expects 100% of any Low Carbon Fuel Standard ("LCFS") credits would be reinvested into shore power. It is not guaranteed that the credits would all be reinvested into shore power. What assumptions did CARB staff make in projecting the LCFS credit value through 2032?" (17.38)

**Agency Response (17.38):** CARB staff made no changes based on the received comment. The commenter's assertion that CARB expects 100 percent of LCFS credits would be reinvested into shore power is inaccurate. LCFS credits are expressed as cost savings for ports and terminals, thus ultimately lowering the cost impacts of the Regulation (see SRIA).

Staff projected annual LCFS credit values of 0.10 to 0.11 \$/kW-hr for shore power electricity throughout the cost analysis period based on an analysis from LCFS staff dated April 12, 2019 (see SRIA Appendix A, Table VIII and Appendix B, "Electricity & Fuel" and "SP Labor & Energy").

**Comment:** "Related to the duration of emission control at berth in Table VI, Port staff would like to reiterate that shore power usage at the Port is billed based on hours of use, not kWh drawn. This affects the assumptions in Table VIII. Electricity and Fuel Cost Inputs, as well. While the cost of Pacific Gas & Electric electricity is relevant to the Matson Terminal and the overall discussion of electricity costs, the Port is the utility serving shore power at all but the Matson Terminal." (17.39)

**Agency Response (17.39):** CARB staff made no changes based on the received comment. This comment was made prior to the release of the SRIA and then resubmitted during the formal comment period. Staff included the provided information in the updated Electricity Rate Tables (see SRIA, Appendix A).

**Comment:** "CARB assumes no vessels will pay into the remediation fund as a result of vessel control equipment repair for container/reefer, cruise, or RoRo vessel types. CARB did not provide a basis for why vessels would not undergo equipment repair necessitating remediation payments (SRIA, costanalysisworkbook.xlsx). In fact, as seen

in Comment 0., some fleets will exhaust their VIEs at the outset of the regulation and need to pay into the remediation fund. CARB should assume some level of vessel payments into the remediation fund; the current omission understates the remediation cost.” (52.A.25) (52.B.9)

**Agency Response (52.A.25) and (52.B.9):** CARB staff made no changes based on the received comment. For information on how the remediation was developed see chapter IX of the ISOR (page 15). Additionally, since the release of the SRIA and costanalysisworkbook.xlsx in August 2019, VIEs and TIEs have been increased further removing the need of the remediation fund for ro-ro vessels. See more information on the allocation of TIEs and VIEs in Section 93130.11 of the regulatory text.

**Comment:** “Costs for Existing Fleet Are Not Addressed. The proposed rule dramatically re-writes the existing rule for the existing regulated fleet, but the Cost Analysis focuses only on a small number of currently unregulated vessels and an even smaller residual delta of landside costs associated with the currently unregulated fleet alone.

Given the lack of analysis of these costs, it is not possible to assess the scope, scale, and costs of the proposed rule’s new operational requirements, duplication of compliance by existing fleets, shoreside and alternative control technology infrastructure, and the impacts on the cost estimate of other new concepts. What is the CARB staff’s justification for only including costs for newly regulated vessels in this cost analysis when the latest revision of the proposed rule imposes costs on all currently regulated vessels?” (52.C.66)

**Agency Response (52.C.66):** CARB staff made no changes based on the received comment. CARB disagrees with this comment stating that costs for existing fleets are not addressed. The cost of the Regulation is considered to be additional costs over the business as usual baseline. A baseline is defined as the best assessment of the world absent the Regulation or policy action. Absent the Regulation existing requirements would be in place via the 2007 At-Berth Regulation. Therefore, for the purposes of the Regulation’s economic analysis, costs that would have occurred regardless of this Regulation have been omitted. On-going costs, including maintenance, not anticipated to occur without the Regulation were appropriately considered by the staff and are included in the cost analyses.

**Comment:** “Thresholds for Regulating New Vessels. While the cost estimates include costs for controlling emissions from new classes of vessels, the estimates provide no information on CARB’s threshold, on a cost per ton of emissions reduced basis, for including Ro-Ro and tanker vessels and excluding general cargo vessels from the expanded rules.” (52.C.69)

**Comment:** “[T]he proposed rule and its supporting analyses fail to provide an adequate explanation and cost-benefit analysis that demonstrate that controlling auxiliary emissions for ro-ro vessels is any more practicable and cost effective than for general cargo ships, which the rule has chosen not to regulate. Instead of expanding the applicability of this rule to new classes of vessels such as ro-ros, we recommend that CARB first consider other, more cost-effective and feasible approaches to achieving further emissions reductions.” (45.2)

**Agency Response (52.C.69) and (45.2):** CARB staff made no changes based on the received comments. The commenters appear to assume that bulk and general cargo vessels are excluded from the Regulation solely because of costs. However, during the development of the Regulation, staff determined to exclude bulk and general cargo vessels from emission control requirements for many reasons. As discussed in the ISOR, staff identified several factors including the relatively low emissions rates from these sources when compared to other vessel categories, high costs and commodity markets sensitivity, and unique complications with controlling emissions while at berth (See Chapter III, pg. 4). However, staff recognizes that bulk and general cargo vessels do contribute to the overall emissions in and around the State’s ports and terminals. As part of the first 15-day changes, staff added a re-evaluation of the feasibility of control technologies for bulk and general cargo vessels to the Interim Evaluation (Section 93130.14(d)) to determine if further advancements in technology or reduced costs would allow for inclusion in the Regulation. Staff does acknowledge that there may be more cost-effective ways to achieve emissions reductions from sources in and around Regulation ports and terminals. During the first 15-day changes staff included an Innovative Concept compliance options (Section 93130.17). In summary, the Innovative Concepts approach may be used in lieu of meeting the vessel control requirements, if the Innovative Concepts meet or exceed emissions reductions otherwise achieved by controlling vessel emissions while at berth.

**Comment:** “Cost/Health Benefit Analysis Deeply Flawed. Taken together, the flawed cost analysis with regard to alternative control technologies and flawed emissions analysis results in a flawed cost analysis. As the Starcrest analysis lays out, CARB has calculated the total cost of this regulation as \$2.164 billion with \$2.245 billion in health care benefits, which amounts to a thin margin of only \$81 million. A more realistic hourly rate for barge-based control systems, based on actual invoices rather than anonymous conversations, alone would add \$231 million to the costs of the Proposed Regulation for a total cost of \$2.4 billion, exceeding the health benefits. If the emissions analysis properly accounted for excess emissions in its calculation of health benefits the cost/benefit analysis would swing even more negative.” (52.35) (52.B.21)

**Agency Response (52.35) and (52.B.21):** CARB staff made no changes based on the received comment. CARB disagrees that staff’s cost and emissions analysis is flawed. Hourly rates used by CARB staff for the barge-based control

systems were based on best available data at the time as received directly from the technology manufacturers and operators. Staff anticipate costs for barge-based control system to decrease as demand and production increase in response to the Regulation, and have not received sufficient information from technology manufacturers or vessel operators to consider adjusting these rates across the board. DOF also generally agreed with CARB staff's cost methodology (as can be noted in the response letter from DOF to CARB dated August 29, 2019, published on DOF's website at: [http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf)). Staff received minor feedback from DOF and incorporated responses to that feedback with the ISOR package (DOF's comments and CARB's response can be found in ISOR Appendix C-2).

CARB's emissions analysis was also performed to standard agency procedures. CARB staff worked with ports and industry members throughout the rulemaking process to improve the emissions inventory, and CARB emissions inventory staff made adjustments to the emissions inventory for OGVs based on these conversations where prudent.

Additionally, 15-day changes made to the Proposed Regulation called for early implementation dates for tanker vessels, ultimately resulting in increased Regulation costs. However, the cumulative value of the health benefits from the Regulation continue to exceed the total costs of the Regulation. Specifically, the Regulation cost is calculated to be \$2.23 billion from 2021 through 2032 and the statewide valuation of avoided health impacts is valued at \$2.32 billion from 2021 through 2032.

**Comment:** "Starcrest Analysis reveals that CARB is using two inconsistent data sets, particularly in regard to the existing regulated fleet. One set for analyzing the cost of the rule appears to minimize the additional infrastructure and vessel retrofits necessary to comply with the proposed regulation. The other set appears to maximize the number vessels not subject to the rule, increasing the emissions benefit of the proposed regulation. Both of these circumstances cannot be true. Even worse, when the two sets are brought together to compare the total regulatory costs to the value of the health benefits, the discrepancy is magnified. A consistent data set should be used throughout the ISOR and its supporting documents. Please confirm if the data set used to determine costs is the same data set used to evaluate emissions." (52.36)

**Comment:** "Vessel Visits and Newly Regulated Visits: In the cost analysis, CARB presents one set of numbers for total container/reefer vessel visits and newly regulated container/reefer visits; in the ISOR Table III-6, another set of numbers is used, as seen in Table 1. Additionally, CARB uses still another set of numbers to estimate emissions, assuming that roughly 25% of container/reefer at-berth hours are currently unregulated and will become newly regulated under the proposed regulation. The issues associated with these numbers, namely the inconsistency of

these data with other publicly accessible datasets, is described in Section 0. All of these numbers vary significantly and using one set of numbers over the others will change the impacts. If the dataset used for the emissions analysis is correct, a large percentage of the fleet is currently unregulated and the proposed regulation will significantly increase emission reductions; however, this also means that a large number of vessels will need to control emissions at berth, driving up costs. If the dataset used for the cost analysis is correct, and most of the fleet is already regulated, the costs will be lower, but the emissions benefit also will decrease. CARB needs to clarify which numbers it used and remain consistent throughout all analyses.

**Table 1: Data Inconsistencies in Annual Container/Reefer Vessel Visits and Newly Regulated Visits**

Port	All Annual Vessel Visits	B. Newly Regulated Annual Vessel Visits - Unadjusted	All Annual Vessel Visits Proposed Regulation	New Visits with Control Requirements
Los Angeles	1029	123	1039	80
Long Beach	909	89	854	45
Oakland	1597	191	1481	127
San Diego	52	0	51	0
Hueneme	155	0	108	0
<b>Total</b>	<b>3742</b>	<b>403</b>	<b>3533</b>	<b>252</b>

(52.A.1)

**Agency Response (52.36) and (52.A.1):** CARB staff made no changes based on the received comment. The two data sets referenced in this comment were not used to compare cost and emissions. CARB staff’s cost analysis is based on the visit information shared in staff’s Berth Analysis, and is based on data received from the 2017 California State Lands Commission (CSLC) as well as data received from ports and terminals. More details about how the visit information was sourced for the cost analysis and Berth Analysis can be found in the ISOR (Chapter III, starting on page III-9). The visit numbers shared in CARB staff’s Cost Estimates Workbook (ISOR Appendix C-1, SRIA – Appendix B) reflect consistent numbers with the Berth Analysis. Table III-6 shared in ISOR Chapter III was based on 2017 visit information provided by CSLC, and was for informational purposes only. Table III-6 differs from the data in the Berth Analysis, because the Berth Analysis was updated using information provided by individual ports and terminals, but was not used in any cost or emissions analysis.

Separately, CARB’s emissions inventory uses 2016 data from IHS-Markit and the South Coast Marine Exchange as a basis for vessel visits and time at berth. More details regarding these databases can be found in ISOR Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and

Results (starting on pg. H-14). Staff found that visit information varies depending on the source supplying the data due to differences in the way different entities (such as ports, CSLC, Marine Exchange, and IHS-Markit classify vessels and vessel movement), however, trends were consistent even if total visit numbers were not identical between data sets due to differences in calendar years and vessel visit classification parameters.

**Comment:** “Cost: The rule as currently structured increases costs and the risk of non-compliance, particularly at ports with few or no alternatives (assuming payment to the remediation fund is allowed at these locations). This will increase costs per container more at these ports, further disadvantaging these smaller ports.” (46.12)

**Agency Response (46.12):** CARB staff made no changes based on the received comment. CARB disagrees that the structure of the Regulation increases the risk of non-compliance and disadvantages small ports in particular. The Regulation has specifically been designed to allow for operational flexibility, and allows for each regulated entity to choose the most cost effective option of emission reductions whether that be from vessels at berth or an Innovative Concept (Section 93130.17).

**Comment:** “[T]he annual revenue of the Port is approximately \$16-18 million dollars annually. It is estimated that additional shoreside power capacity at the Port would cost approximately \$20million dollars. An ACT system for the Port is estimated to cost \$5-7 million dollars.” (53.3)

**Agency Response (53.3):** CARB staff made no changes based on the received comment, which is informational in nature. Staff agrees that the cost for some systems may be high, and as such, the Regulation is structured in such a way that allows each regulated entity to choose the most cost effective option of emission reductions whether that be from vessels at berth or an Innovative Concept (Section 93130.17). In short, a regulated entity is allowed to choose a compliance option that best fits their operations and budgets.

**Comment:** “The costs of proposed emissions reductions should be grounded in emissions costs generated for other similar State programs such as the Carl Moyer technology retrofit program.” (53.10)

**Agency Response (53.10):** CARB staff made no changes based on the received comment, as CARB staff cost analysis already reflects an agreement with this comment. For the Regulation (and Alternatives), staff used a cost-effectiveness method provided in the Carl Moyer Guidelines (see ISOR Appendix C).

**Comment:** “The Port operates a distribution hub for liquid fertilizer product which is an essential tool for the massive agricultural industry of Ventura County. This \$2 billion industry relies of timely delivery of fertilizer which is delivered to the Port by tanker vessel currently service by the Champion Tankers line. Champion operates about

20 tankers globally approximately six of which may visit the Port annually. This vessel category is subject to many of the same global economic challenges as any other ocean carrier and thus would reflect the same business challenges in justifying an expensive vessel retrofit or the risks of developing a fleet of captured California-only tankers." (53.23)

**Agency Response (53.23):** CARB staff made no changes based on the comment received. This comment is outside not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff will note that any tanker terminal receiving fewer than 20 vessel visits will not be subject to control requirements of the Regulation as per section 93130.10(a) of the Regulation. As such, these vessel visits referenced by this commenter (Port of Hueneme) would not be affected by the Regulation.

**38. Comment:** "A Cost Effectiveness Assessment Is Needed - An increase in at-berth control levels for currently regulated fleets and the addition of at-berth control requirements for other vessel categories will result in considerable costs to ports, terminals, and shipping lines.

The Ports of Long Beach and Los Angeles have already spent more than \$400M in infrastructure to meet the current shore power rule. Both Ports estimate that it would take at least another \$100M per port to bring their container terminal infrastructure to a level to meet the 100% requirement proposed by the at-berth rule. Additional costs, which have not yet been defined, will be associated with implementing at-berth controls for Tankers and Auto/Ro-Ros. In addition, millions more dollars would be needed to outfit unregulated ships for shore power." (60.15)

**Agency Response (60.15):** CARB staff made no changes based on the received comment. This comment is informational and not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

However, it is worth noting that CARB staff disagrees with the estimated costs to the Ports of Long Beach and Los Angeles to meet the requirements of the Regulation. See response to comments 60.9 and 60.23 for additional explanation. Additionally, staff's cost analysis did account for anticipated costs to outfit unregulated ships for shore power, which is a vessel side cost attributed to a vessel operator, not ports or terminals.

**Comment:** The commenter states that the regulation will be more costly and less cost effective than staff claims. The commenter goes on to give examples of how the analyses done for the regulation fails to fully address law and ignores key adverse impacts. The commenter believes the costs are underestimated and all subsequent claims are based on flawed assumptions and thus inadequately supported.

Key issues are:

- annual industry growth factors do not appear to account for any input from operators on real-world expected growth.
- staff also significantly underestimates the total and per-unit indirect costs of the At Berth Regulations and overestimates the percentage of those costs that are likely to be passed on to consumers.
- staff inflate emissions benefits while understating future direct and indirect compliance costs, meaning that the Regulation will be far less cost effective than claimed
- SRIA baseline is 2017 but inventory baseline is 2016 they should be the same (22.12)

**Agency Response (22.12):** CARB staff made no changes based on the received comment. CARB disagree with this comments. Regarding the first key issues listed here, CARB staff released the draft emissions inventory in February 2019, nearly a year in advance, in order to allow comment, review and a collaborative interaction with the industry and other stakeholders. CARB also held a public workshop focused on emissions inventory on February 26, 2019 where staff walked through all the major updates to the 2019 OGV emissions inventory and solicited stakeholders' feedback. Following this comprehensive public process, changes were made throughout 2019, and future updates and additional research are already under consideration. In general, it is reasonable to assume that just as the industry changes each year, the inventory will require consistent updates and revisions and should be considered in flux on an ongoing basis. These changes are made to continually reflect the latest and best available data.

In regards to the second bullet, CARB staff used the best available information to develop the SRIA cost estimates. Staff obtained cost information incorporated into the ISOR and SRIA from a variety of sources, which are detailed in Appendix A of the SRIA. Staff did not make assumptions on the percentage of costs that will be passed on to the consumer, rather provided the total estimated costs to industry without specifying what portions of those costs are passed along or through to consumers.

Regarding the third bullet, CARB also disagrees that emissions benefits are inaccurate, indeed from 2023 to 2040 the Regulation is projected to reduce 31,800 tons per year (tpy) of NOx and 800 tpy of PM2.5. See the second 15-day changes inventory document released on July 10, 2020 (Attachment C) for more information on emissions benefits of the Regulation. CARB agrees the cost of the Regulation is considerable, but the benefits continue to outweigh the costs. See the second 15-day changes attachment B for more information on the costs of this Regulation.

The emissions inventory development for OGVs began in 2017, and 2016 was chosen as it was the latest full calendar year for which data was available. The SRIA used the best available data which at that time was data from 2017. Differences in 2016 and 2017 vessel visits were minimal therefore the SRIA and inventory baselines do not need to be the same.

**Comment:** “With respect to the limited vessel cost data that you included in the initial report, there is a surprising and significant variability in the responses from ocean carriers on the cost of shore power retrofits and new builds. For example, the cost of retrofits among 14 containership responders ranges from a low of approximately \$250,000 to a high of approximately \$1,750,000. This range is surprisingly large and reflects a number of unreasonably low estimates. During previous meetings with CARB staff and PMSA and its members, initial discussions indicated that costs were upwards of \$1 million per vessel; and, we know from discussions with ocean carriers and ports, that cable reels represent the most expensive portion of these installation costs, at between \$300,000 and \$600,000. Yet, half the responses indicate the cost of retrofit at \$500,000 or less. PMSA believes that actual costs are still relatively in line with the original estimate used for the current regulation, where “In the cost-effectiveness analysis, staff used \$1,500,000 as the cost to add shore-power equipment to each vessel, which is  $\frac{3}{4}$  of highest reported cost.” (ISOR, Appendix E, page E-2). (52.C.102)

**Agency Response (52.C.102):** CARB staff made no changes based on the received comment. Costs for shore power retrofits and new builds came directly from industry and port staff. CARB staff issued a survey to gather cost information from port/terminal operators and vessel operators in April 2018 and June 2018, respectively, to understand the costs associated with the Regulation. The information that staff received from the entities was limited and highly variable, and required significant follow up to understand the costs given by each entity. Follow up discussions with the parties submitting the data were crucial to staff understanding why some costs were high and others were low; many times the discrepancies were the result of misinterpretations of the data being asked for. CARB staff were not able to validate information that was submitted anonymously.

**Comment:** “Checklist – 1-Hour Connect Requirement. While the new time allotted for connecting vessels to shore power is measured from a more reasonable “ready to work” time, one hour is not an adequate time for connections to be made, particularly for vessels that use cable reel management systems that have to be lifted on and off using a crane. We note that the cost analysis has not been updated to assess the cost impact for the proposed change in the connection times. Given the number of fleets that rely on “lift on/lift-off” strategy, where is the analysis of the added cost of this provision for the existing fleet?” (52.C.67)

**Agency Response (52.C.67):** CARB staff made no changes based on the received comment. As mentioned in the response to comments 50.1, 50.10, 17.15, 31.4, 45.23, 46.5, 46.13, 46.23, 48.6, 51.1, 52.44, and 52.C.42), regulated companies who invested in lift-on/lift-off AMP containers do so as a cost-savings versus installing a shore power AMP container on every vessel. In addition to not meeting the new requirement to plug in within two-hours of “ready to work,” this method of compliance often results in vessels not meeting the existing three-hour requirement for the 2007 At-Berth Regulation. Because of this, CARB did not analyze the costs for installing additional infrastructure as the change in the Regulation does not impact the ability for vessels to use this technology for compliance.

Staff did add a level of additional operational flexibility to the Regulation by extending the time the vessel has to connect to a control strategy from 1-hour to 2-hours during the first 15-day package (as published on CARB’s website on July 10, 2020). For visits that are unable to meet the connect/disconnect time of 2 hours, the Regulation allows the use of the remediation fund as a compliance option to remediate excess emissions resulting from a vessel visit missing connection or disconnection timeframes.

**Comment:** The regulation “[i]gnores Costs Associated with the Dynamic Nature of Shipping. In addition, the analysis does not appear to account for disruptions that regularly occur in international trade (for various reasons) that would result in ships not normally serving California, and therefore not retrofitted for shore power, arriving in California ports. At the end of the last year, San Pedro Bay had 34 “extra loaders”, previously unscheduled vessel calls. What cost analysis is associated with having the necessary number of emission controls systems that would need to be evaluated for these circumstances? The fact that the cause was a one-off event should not discount the need for additional control systems as required by the proposal. While the causes of extra loaders being deployed are typically one-off, the result of extra loaders responding to such events is a regular occurrence. As a result, how are these costs anticipated and accounted for?” (52.C.70)

**Agency Response (52.C.70):** CARB staff made no changes based on the received comment. CARB did not include costs for vessel calls that were previously unscheduled in the cost analysis of the Regulation because it is assumed VIEs would be used. For more information on VIEs see Section 93130.11 of the Regulation Order.

**Comment:** “Application of Vessel Costs to Affected Fleets to Find Total Container Vessel Costs Raise Questions. It is fundamentally unclear how CARB came to the conclusion that only 20 additional container vessels are necessary to be addressed in order to comply with an expanded At-Berth Rule statewide. This number is surprisingly small and likely unrealistic. It was disclosed during the meeting that one of the assumptions that CARB staff have made to arrive at this number was that 94%

of all container vessels calling California will have already been retrofitted by 2021. There is no discussion of this assumption in the cost workgroup background, there was no data cited to support this assumption, nor were there any questions posed in the vessel surveys which would lend credence one way or the other to such an assumption." (52.C.104)

**Agency Response (52.C.104):** CARB staff made no changes based on the comment received. This comment was originally submitted to CARB in September 2018 in response to a previous regulatory concept and CARB staff's initial cost analysis that has since been revised, but was submitted again during the 45-day comment period. As such, the comment is irrelevant and CARB is not required to respond. However, staff would like to note that the Regulation is projected to affect more than 20 container vessels based on the finalized cost analysis, as can be seen in the ISOR and SRIA (ISOR Appendix C-1).

**Comment:** "CARB's staff concept at this point is to eliminate fleet-based compliance and its related applicability thresholds, and to substitute a 100% compliance standard across all container vessels operating statewide, CARB must demonstrate what new costs are associated with the capture of smaller container fleets, if any. Under the present concept of total statewide costs presented by staff at only 20 total vessels, it is unrealistic to conclude that there are any smaller fleets which are currently not participating that might be included in this cost basis." (52.C.107)

**Agency Response (52.C.107):** CARB staff made no changes based on the comment received. This comment was originally submitted to CARB in September 2018 in response to a previous regulatory concept and CARB staff's initial cost analysis that has since been revised, but was submitted again during the 45-day comment period. As such, the comment is irrelevant and CARB is not required to respond.

Staff would like to note that, as can be seen in the ISOR and SRIA (ISOR Appendix C-1), the Regulation does not require 100 percent compliance and is projected to affect more than 20 container vessels based on the finalized cost analysis. Additionally, the Innovative Concept compliance option, which was included in the first 15-day changes in section 93130.17, leaves open the option for fleets to continue to use fleet averaging which could provide fleets with similar benefits and dis-benefits of the 2007 At-Berth Regulation where the compliance responsibility primarily falls on the fleets.

**Comment:** "One of the more troubling aspects of CARB's preliminary cost analysis is the complete dearth of estimates of the well-known, significant additional infrastructure necessary to support 100% shore power use by containerships and refrigerated vessels statewide. According to the preliminary cost estimates, the only additional infrastructure necessary across the entire State to accomplish this goal is

the improvement of one, single berth. This is just simply not a credible conclusion. CARB's own enforcement report for 2016 indicates that ocean carriers had to make use of Advisory Scenario 1 ("Equipped vessel not able to receive power from shore") 327 times in 2015 and 284 times in 2016. During numerous meetings over the past year, PMSA and its members repeatedly discussed the insufficient infrastructure at berth as the primary hurdle to increasing the use of shore power for containerships." (52.C.109)

**Agency Response (52.C.109):** CARB staff made no changes based on the comment received. This comment was originally submitted to CARB in September 2018 in response to a previous regulatory concept and CARB staff's initial cost analysis that has since been revised, but was submitted again during the 45-day comment period. As such, the comment is irrelevant and CARB is not required to respond.

However, staff would like to note that the Regulation also does not require container and reefer vessels to reach 100 percent compliance with shore power. Detailed information regarding the requirements for container and reefer vessels can be found in ISOR Chapter III, starting on pg. II-2.

Staff would also like to address the comment of insufficient infrastructure across the State. This comment incorrectly states that staff's assumptions are that no more than one berth would need improvements. Staff's current berth and cost analysis shows the assumed need for 5 vault installations to better accommodate shore power connection for container/reefer vessels, which reflects more updated information given to CARB staff by terminal operators. This information was workshopped in February 2019, where terminal operators and port staff had the ability to comment and advise if any additional infrastructure would be necessary.

The 2007 At-Berth Regulation requires 80 percent of visits by regulated fleets to connect to shore power. Some specific terminals at ports in California also require up to 100 percent of visits be controlled under separate lease agreements and 90 percent for Proposition 1B funded berths. As such, the infrastructure to connect upwards of 80+ percent of container, reefer, and cruise vessels to shore power should have already been made prior to this new Regulation, and any upgrades to correct deficient infrastructure for the 2007 At-Berth Regulation are not considered in the cost estimates for this Regulation. The Advisory Scenario usage from 2015 and 2016 that the commenter references further supports the need for the Regulation to contain requirements on the terminal and port side to ensure the necessary infrastructure is installed at their berths.

**Comment:** "Added infrastructure will improve the opportunity to connect substantially. The question of how to invest in additional infrastructure and its

associated cost will be dependent on the allowance that the regulation will grant for the inevitable berth/vault mismatch. While connections may be feasible the vast majority of time, that fraction of time they are not, even if it is only in a tiny percentage of cases, poses unacceptable regulatory jeopardy for marine terminal operators. In addition, the only way to assess the needed infrastructure cost is to understand what level of regulatory certainty CARB expects from this regulation. In the absence of such an allowance for the rigidity shore power connections impose, it will be impossible to properly assess costs.” (52.C.111)

**Agency Response (52.C.111):** CARB staff made no changes based on the comment received. This comment is in response to an earlier proposal from August 2018 and is no longer relevant, as updates have been made to add clarity of expectations and additional flexibility (in the form of TIEs/VIEs and the remediation fund) to the Regulation. As such, the comment is irrelevant and CARB is not required to respond. See section 93130.11 and 93130.15 for more information on TIEs/VIEs and the remediation fund, both of which provide flexibility for vessel and terminal operators in the event that a connection to a CAECS is not possible.

**Comment:** “In assembling its preliminary cost analysis, CARB staff has aggregated data state-wide despite the fact that each port has very different physical and operational constraints and emissions profiles. These variances are even more critical to assess if the basis for the promulgation of this rule is focused on the need for community impact mitigation or local air basin criteria pollutant compliance purposes. As a result, the costs and benefits of implementing the measure will vary wildly between ports. Without analyses on a port-by-port measure, it will be impossible to weigh the value expanding the rule to each port. Smaller ports more likely need significant infrastructure improvements that this rule would require, but such ports also have much smaller emissions profiles. To the degree that smaller ports must rely on alternative technologies for compliance under the regulatory proposal, it is likely that nearly all of the GHG emission increases associated with the use of alternative technologies takes place at these smaller ports. Without a port-by-port analysis, it is impossible to understand the cost versus benefits of an expanded rule, both in terms of monetary and potential GHG impact, and make an informed decision.” (52.C.113)

**Agency Response (52.C.113):** CARB staff made no changes based on the received comment. CARB staff’s Berth Analysis is done on a berth-by-berth level and does consider costs for equipment and infrastructure on a micro-scale level, including location and vessel type. For other costs outside of emissions control equipment and supporting infrastructure, staff were not provided with detailed enough information to assess port specific costs. Staff also completed a health analysis at a representative small and large port complex in order to assess the health impacts on both.

Regarding potential for GHG emission increases with the use of alternative technologies at smaller ports, there are stipulations in the Regulation to limit GHG emissions increases from CAECS. Despite anticipated use of non-shore power technologies, the Regulation is projected to achieve reductions in GHG emissions from the 2007 At-Berth Regulation as a result of more vessels plugging into shore power statewide. Because GHG is not a local pollutant, there is still an advantage to using non-shore power alternatives to reduce emissions from OGVs at berth, as they do reduce NOx, PM2.5, diesel PM, and ROG, which have proven negative health impacts on people living and working near the State's ports.

**Comment:** "Preliminary Cost Estimates Must Be Reconciled With The Regulatory Cost Context of the Existing Rule. Under the current At-Berth regulation, the regulated container, cruise, and refrigerated vessel fleets must reach emissions reductions of at least 80% by 2020. To achieve this 80% reduction, CARB estimated the total cost of compliance to be approximately \$1.8 billion to cover the 2014-2020 phase in period.

Compare this scope and scale with the preliminary cost estimate for this amendment: to reach the additional 20% of vessel emissions reductions from these same fleets by 2021, CARB's staff analysis shows a cost of approximately \$11.3 million in one year.

This is simply and fundamentally not a credible conclusion. Even if one were to annualize an average annual cost of the \$1.8 billion over the full 6-year phase-in of the current rule's phase-in of participation of vessel fleets at 50% compliance in 2014, then 70% compliance in 2017, and then 80% compliance in 2020 at \$300 million per year, it is only one year later that achieving the last 20% compliance benchmark has annualized costs of only \$10 million in 2021 under this analysis. The preliminary cost estimates demonstrate no credible basis or evidence for the belief that the cost for the achievement of the final 20% would be so radically different (order of magnitude smaller!) as to be almost negligible. In the past 10 years none of the many factors of cost that could be the reason for a reduction, including the following, have become appreciably cheaper: equipment costs, equipment technology, port real estate, electrical supply, labor.

Additionally, because the existing rule is pervasive at 80%, the vessels and related port and terminal infrastructure left to retrofit and equip for the final 20% are those for whom it was the most costly to comply in the first place. In other words, the reasonably prudent person at this point must assume that the cheapest vessels for compliance have been addressed first and that the more expensive vessels have been avoided. This would point towards higher average and marginal costs of compliance per unit, not lower.

This is consistent with economic realities known to CARB, other regulators, and regulated entities as the law of diminishing returns. That the marginal and average

costs (and resulting cost-effectiveness) for having achieved the first set of first, broad, and significant emissions reductions are almost always much lower than the marginal and average costs for achieving the final, smaller, and potentially less than significant emissions reductions, is so well known as to be a truism.

The staff analysis here presents a theory which (is prima facie and by orders of magnitude) the precise opposite. Without a comprehensive and well-documented explanation as to why this should be the case there is simply no logical basis upon which the public should assume that these costs for the final 20% of compliance should have total costs and average costs which are some 95% lower for the industry than the achievement of the first 80%." (52.C.116)

**Agency Response (52.C.116):** CARB staff made no changes based on the received comment. CARB disagrees with this comment that the costs incurred under the Proposed Regulation would cover "the final 20 percent of compliance" for the vessel types already covered under the 2007 At-Berth Regulation. The Regulation provides flexibility in the form of TIEs and VIEs amounting to a total of 20 percent of vessel visits for the first four years of implementation, and 10 percent in subsequent years, for container, reefer and cruise vessels. As explained in the ISOR and SRIA, staff's berth analysis specifies the location and extent of additional infrastructure staff believes would be required to meet the proposed requirements, and the costs are assessed on this basis.

**Comment:** "In the ISOR, CARB states that roughly 36 container/reefer/cruise vessels are in fleets not subject to the existing at-berth regulation and would require shore-power equipment retrofits (ISOR, III-11); however, in the Cost Analysis Workbook, CARB assumes that 57 additional unique container/reefer vessels and 26 additional cruise vessels would install shore-power equipment due to the new regulation (tab: "Berths, Terminals, Vessels"). It is possible the delta between these two numbers (47) represents the number of vessels in currently regulated fleets that would require retrofit, but it is not clear. CARB should clarify its estimates." (52.B.2) (52.A.2)

**Agency Response (52.B.2) and (52.A.2):** CARB staff made no changes based on the received comment. The commenter is correct. The 36 vessels referenced in the ISOR on p. III-11 represent the number of vessels in container, reefer, and cruise fleets not subject to the 2007 At-Berth Regulation that staff anticipate will make enough calls to justify installing shore-power equipment on-board the vessel. The remainder of the 47 vessels assumed to need retrofits are container, reefer, and cruise vessels in currently regulated fleets that do not have shore power, but that staff anticipate will make enough calls to justify installing shore-power equipment on-board the vessel.

**Comment:** "If CARB were to include capital costs for barge-based control systems, at CARB's assumption of \$4.9 million per barge and 6 barges needed, it would add another \$29.4 million to the Proposed Regulation. If we were to assume a more

realistic number of 14 barge-based systems to ensure full coverage (assuming 3 terminals use land-based systems as projected by CARB), the cost would be \$68.6 million (Comment 0.).” (52.B.7)

**Agency Response (52.B.7):** CARB staff made no changes based on the received comment. CARB staff did factor capital costs of the barge-based control system into the cost analysis. Following the example of barge-based system operations currently in place, staff assumes the system’s capital, labor, and maintenance costs will be passed along to customers of the system via an hourly fee.

**Comment:** “Starcrest conducted a detailed emission reduction evaluation for CARB’s Proposed Regulation for auto carriers and RoRo ships at Los Angeles and Long Beach using actual data from both ports’ 2018 emissions inventories.

Key findings:

- Reduction of PM (including PM10, PM2.5, and DPM) and NOx emissions in the 36%-40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO<sub>2</sub>e, SO<sub>x</sub> and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based systems.
- Cost effectiveness (CE) calculations resulted in cost effectiveness between \$115k and \$200k for the barge rental scenario (varies based on effective hourly rate) and \$54,987 for the scenario that includes the purchase of four barge-based systems to serve 100% of calls made to POLA and POLB. Both scenarios are far less cost effective than CARB’s Carl Moyer Program (CMP), which has an upper CE limit of \$30,000 per weighted ton of emissions reduced.
  - It is noted that the CMP also allows for a second tier CE limit for the higher cost of advanced/emerging technology projects; this second tier CE limit is \$100k per weighted ton. The \$100k/ton limit is only applied to the small increment between today’s technology and the advanced technology level, which in practice is zero-emission or near-zero emissions (i.e., 90% cleaner than current technology). Since barge-based systems are not using technology that is 90% cleaner than today’s clean-up technology, these systems should be evaluated at the \$30k/weighted ton CE limit.

Currently most of the auto carrier and RoRo ships bunker while operating at berth. If rental barges are utilized during at-berth operations, bunkering will most likely take place at anchorage, resulting in emissions increases at anchorage. In addition to emissions increases due to use of harbor crafts to move barges and generators used on the barges, CARB should address the displacement of at-berth RoRo bunkering and associated emissions.” (52.B.1) (52.A.32b)

**Agency Response (52.B.1) and (52.A.32b):** CARB staff made no changes based on the comments received. These comments are outside the scope of this rulemaking and not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. Staff notes the additional information provided.

However, in support of the Regulation, staff conducted research on additional emissions from capture and control systems, as well as from tugs and did not find significant increases from using these systems on ro-ro vessels. Findings were included in the Draft EA released in October 2019. The \$100k/ton limit was used to determine the calculated remediation fund hourly rates to ensure there is adequate funding available for zero-emission projects in and around the port to help advance technology beyond what is currently regulated.

**Comment:** "[W]e urge CARB to consider the potential of very real impacts to local economies and pursue a cost-benefit analysis of the socio-economic impacts of the proposed amendments prior to promulgation of regulations mandating requirements on all vessel calls. Further, the true air quality benefit to a given air quality basin coupled with the actual costs of the expanded amendments needs to be fully understood to ensure the enactment of sound public policy consistent with the Governor's Executive Order B-32-151 which calls for transitions to zero emission, efficiency and increased competitiveness." (53.12)

**Agency Response (53.12):** CARB staff made no changes based on the comment received. The SRIA provided a detailed description of all the estimated direct costs associated with compliance with the Proposed Regulation. It also provided detailed discussion of benefits, including emissions benefits, localized cancer risk reduction benefits, regional non-cancer health benefits, GHG benefits, and other unquantified benefits (Section B).

CARB staff also conducted analysis of the costs specific to two California ports to better understand the potential impacts to local economics. For example, Section D.1.a.ii discusses estimated compliance costs directly associated with the Port of Hueneme.

**Comment:** "RECOMMENDATION: Perform a robust cost-benefit analysis to understand the impacts of the proposed Amendments to the At-Berth Regulations to both the economy and the environment for the various business segments proposed to be regulated." (53.17)

**Agency Response (53.17):** CARB staff made no changes based on the received comment. The Regulation was developed after years of research and collaboration between CARB, industry and the public. From this staff

developed the ISOR describing in detail the need and justification for the Regulation. An HRA was conducted showing the dangers of OGV emissions to human health and the benefits of further reducing those emissions. An EA was completed to disclose potential environmental impacts resulting from the Regulation. Finally, DOF requires a SRIA when it estimates that a proposed regulation has an economic impact exceeding \$50 million which was completed and submitted to DOF in August 2019. All these comprehensive documents can be found on the CARB rulemaking page at <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>.

**Comment:** “[A]utomobile transportation is a competitive business in which margins are small and competition is significant between carriers and amongst ports seeking to attract new business. In addition, many global carrier companies have large fleets of roll on roll off (RORO) vessels which travel on global routes that frequently change following the demand for specific product.

...Often, one vessel will call on the Port once a year, or once every two to five years. Due to the high costs to retrofit even a single vessel, this company would be very unlikely to retrofit all sixty vessels in order to comply with the proposed amendments. Thus, two choices would remain: the Port could purchase an emissions capture system for use by this company, or they could choose to move some portion of their automobile business to ports outside of California. The emission capture system would likely have to be a shore-side system as the Port does not have the space to be able to operate a barge mounted system and continue normal vessel operations. Yet, no shore-side systems are available as of yet, nor are any approved for use by CARB. This is an uncertain option to base compliance plans upon.” (53.18)

**Agency Response (53.18):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking and is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB notes the comment and appreciates the additional information provided. Additionally, there is at least one shore-side capture and control system in demonstration at the Port of Los Angeles today, and manufacturers of the barge-based capture and control systems have expressed the desire and ability to develop more on demand. The Regulation allows for several pathways to compliance including, an Innovative Concepts compliance option (Section 93130.17), which allows for alternative emissions reduction projects outside of reducing vessel emissions at berth. Further, the Regulation includes an Interim Evaluation (Section 93193.14(d)) that will allow CARB staff to assess the progress made in adopting emissions control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals.

**Comment:** “John Martin, a nationally recognized maritime economist, conducted a study on the economic impact of the Port of Hueneme. He concluded that the Port is responsible for over 13,633 jobs, and \$1.5 billion in economic activity for the region. The study also highlighted the Port’s \$93 million annual contribution to state and local taxes. If our customers decide to ship to other states, these jobs, economic activity, and tax revenues will be lost. Being located in a disadvantaged community where the city of Oxnard has a 24% poverty rate, higher than the state’s average, makes the economic opportunity of the Port paramount to the citizens of this region. The Port not only provides jobs, but family sustaining jobs.

The Port’s customers are not exempt from property taxes because they purchase property off Port. This means that all those imports and exports are generating the \$93 million that is then reinvested in the schools, fire, police, healthcare, social services, and even our local AQMD. The Port services three automobile shipping lines. For just one of those to relocate means a loss of one third of the jobs, economic impact, and tax revenues over night. The Martin study found that the At Berth amendments as analyzed could have the potential impact on the local economy of the loss of:

- More than 2,700 jobs; and
- \$300 million in economic activity annually; and
- More than \$200 million in salaries and local consumption; and
- \$25 million in of State and local taxes” (53.20)

**Agency Response (53.20):** CARB staff made no changes based on the received comment. Staff notes the comment and appreciates the additional information provided. CARB understands that there may be high costs for some regulated entities but has done extensive research and determined the benefits justify the costs.

CARB staff has included several avenues in the Regulation to help offset some costs including, adding TIEs/VIes, a remediation fund and Innovative Concept compliance option (sections 93130.11, 93130.15 and 93130.17).

**Comment:** “Container Vessel Diversion and Related Economic and Greenhouse Gas Impacts Not Analyzed. As discussed above, CARB staff has been presented data documenting cargo diversion from California ports over the past decade. Regulations that increase cost and compliance uncertainty will also increase cargo diversion. With cargo diversion ultimately comes vessel rerouting, and CARB has not addressed diversion in its analysis.

PMSA has submitted data to CARB showing that when vessels reroute or are diverted from California ports it results in significant increases of greenhouse gas emissions. On average, these GHG emissions will increase 22%. None of these offsetting

emission increases have been analyzed in the SRIA, even though such market competitiveness is a specific component of SRIA analysis.” (52.C.24)

**Agency Response (52.C.24):** CARB staff made no changes based on the received comment. Staff notes the comment and additional information provided. See Master Response 2.

**Comment:** “Ports of Los Angeles and Long Beach Analysis. During the May workshop, CARB staff revealed that the detailed analysis prepared by the ports of Long Beach and Los Angeles submitted in their letter dated February 6, 2019, was discounted in favor of conversations with terminal operators. The ports of Long Beach and Los Angeles and other port authorities throughout the State were responsible for installing existing shore power infrastructure and are well-placed to understand the needs and limitations of existing infrastructure. It is also understood based on comments from the workshop that responses provided from the terminal operators were anecdotal and provided without the benefit of the most recent regulatory concept language. What aspects of the LA/LB analysis did CARB discount in developing its cost analysis?” (52.C.78)

**Agency Response (52.C.78):** CARB staff made no changes based on the received comment. See response to comments 60.9, 60.23, and 52.C.85 discussion on the LA/LB analysis. CARB staff also disagrees with the commenters assertion that conversations with terminal operators were anecdotal and provided without context. More information about CARB staff’s conversations with terminal operators that helped form the basis for staff’s Berth Analysis can be found in ISOR, Chapter III (pg. III-12).

**Comment:** “[T]he current staff proposal fails to provide a clear and comprehensive cost-benefit analysis for each class, assumes that capture and control technology, which barely functions today, is a viable control option, and omits needed pre-regulatory feasibility determinations.” (19.2)

**Agency Response (19.2):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. A full cost and benefits analysis was done for all vessel categories. See the SRIA for costs for each vessel category and the ISOR (Chapter VI) for the benefits. Staff also performed standard feasibility assessments during the rulemaking process, as detailed in ISOR Chapter III.

*i. Standardized Regulatory Impact Assessment (SRIA)*

**Comment:** “[T]he draft SRIA understates the potential negative impacts on jobs that could accompany the burdens discussed above. Consideration of the creation or elimination of jobs in the draft SRIA appears to be limited only to those construction jobs created by the requirement to install emission control systems and retrofit ports

and terminals. The SRIA then minimizes the impact of anticipated lost jobs by pointing out that it will be small (0.01%) compared to the entire California economy. What the SRIA ignores is the potential impact of lost business or industry jobs associated with the extremely high costs of compliance for stakeholders, and/or potential loss of commerce due to cargo diversion. As stakeholders have pointed out to CARB, these impacts are likely to be significant and felt deeply, particularly to the thousands of Californians who rely on the business of the Ports and terminals for their livelihood. These impacts are real. They must be fully assessed and should not be minimized or dismissed by a simple comparison to the statewide economy at large.” (52.C.13)

**Agency Response (52.C.13):** CARB staff made no changes based on the received comment. The comment asserts that the job impacts considered in the SRIA are limited only to those construction jobs created by installation of control systems and retrofits at ports and terminals. The California employment impacts discussed in the SRIA are not limited only to construction jobs created by requirements to install emissions control systems and retrofit ports and terminals. The SRIA describes the costs associated with each of the anticipated compliance actions in Section C and Appendices A and B of the SRIA, as well as the estimated costs of compliance, including costs to vessel operators, terminals, and ports. All of the costs were input into the REMI model as described in Appendix F of the SRIA and detailed in Table F2. The impacts to employment growth are summarized in Table E2 of the SRIA. This includes estimated employment impacts to the support activities for transportation sector (NAICS 488) which is used to represent port and terminal operators.

**Comment:** “Cruise Ship Diversion and Related Economic Impacts Not Analyzed. In addition to failing to analyze cargo diversion, CARB staff did not analyze lost economic benefits as a result of cruise ships avoiding California ports. Due to the nature of cruise ships, alternative control technologies are not a feasible compliance strategy, making shore power the only compliance option.

Vessels that regularly visit California ports are retrofitted for shore power. But other cruise vessels may call a California port as part of a repositioning move; these vessels would not be equipped for shore power. To the degree that these vessels are forced to avoid California ports there will be significant economic impact that has not been analyzed. For instance, each Port of San Diego turn around cruise call generates almost \$2 million. A single stop of a transiting cruise ship generates nearly \$600,000 for the San Diego region. In 2017, the Port had 88 cruise calls, generating a total of \$46 million in direct economic output and 460 direct jobs. The SRIA should properly analyze these economic impacts.” (52.C.25)

**Agency Response (52.C.25):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. CARB staff agrees that most likely compliance option for cruise vessels would be shore power, however disagree that it is the only option for compliance. Cruise vessels have the

option to use any compliance strategy as long as it is CARB approved. Additionally, CARB staff has included an Innovative Concepts compliance option. In brief, the Innovative Concept can be used in lieu of vessel emissions reduction as long as the reduction made are equivalent to the vessel emissions control option.

Vessel not equipped with shore power could use a VIE or possibly a TIE for the stay. As the commenter mentions each cruise vessel visit to California generates a substantial amount of money for cruise industries. Therefore, staff does not believe the Regulation would result in cruise vessels avoiding California especially with alternative compliance pathway as an option. The commenter requests the lost economic benefits of cruise vessels avoiding California, however for the aforementioned reasons staff did not believe this to be necessary.

**Comment:** “Industry Coalition Comments on the Proposed Measure SRIA. After release of CARB’s Standardized Regulatory Impact Assessment (SRIA) and prior to the initiation of the formal rulemaking process, PMSA along with the California Association of Port Authorities (CAPA), Cruise Lines International Association (CLIA), Western States Petroleum Association (WSPA), and World Shipping Council (WSC) submitted extensive comments to the Department of Finance regarding outstanding issues and questions regarding the SRIA and economic considerations regarding the development of the Proposed At Berth Control Measure.

PMSA has attached that letter, SRIA – Air Resources Board, Proposed Control Measure for Ocean-Going Vessels At Berth, August 26, 2019, with enclosures here as Attachment C. As part of our comment letter on the ISOR, we incorporate by reference here all of the observations made in our SRIA filing and, to the extent that the issues raised therein are not already otherwise addressed in this comment letter, PMSA requests that each of the issues raised in the SRIA comment letter be addressed and responded to formally in response to their inclusion here.” (52.4)

**Agency Response (52.4):** CARB staff made no changes based on the received comment. This comment only introduces subsequent comments.

**Comment:** “In reviewing the SRIA for the Proposed Regulation, the Coalition’s assessment is that it is lacking much of the analysis mandated by the SRIA regulations, and many of the conclusions are not accurate because they are based on flawed methodologies and flawed data on costs, emissions, and health benefits. Furthermore, in the absence of a feasibility evaluation study demonstrating that the required emissions controls are actually achievable and cost-effective at scale for the terminals proposed to be regulated, the conclusions of the SRIA are speculative at best.” (52.C.1)

**Agency Response (52.C.1):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as CARB fully assessed the potential for adverse economic impact on California business enterprises and individuals and submitted the required Standardized Regulatory Impact Analyses (SRIA) to DOF on August 1, 2019. (See Government code 11346.3 and 1 CCR 2000-2004). On August 29, 2019, DOF responded with comments on the SRIA (available at: [http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf)). DOF stated,

“[w]ith one exception, [DOF] generally concurs with the methodology used to estimate impacts of proposed regulations. The SRIA clearly lays out for the public the proposed regulatory impacts. The methodological appendices are particularly valuable, as they clearly identify distribution of costs across geography, vessel type, and class of regulated party.”

CARB addressed the DOF comment in the ISOR, at Appendix C-2.

**Comment:** “Given that existing regulations already provide significant emissions reductions, CARB’s Statement of Need in the SRIA (pg. 28) is inadequate. This is especially true because all current and relevant policy setting documents previously adopted by CARB that address the reduction of emissions from vessels at berth acknowledge these existing rules and limit the nature of an expansion to exploring the viability of additional technology which may offer the potential of new fleet controls and minor amendments to fix compliance for existing fleets.” (52.C.2)

**Comment:** “The SRIA claims that the Proposed Regulation is necessary to achieve the state’s goals in multiple contexts, but the Proposed Regulation is inconsistent with those plans and policies. The Proposed Regulation goes beyond these existing enunciated policy aims or specific emissions reductions needed to achieve Clean Air Act, GHG, or community benefit targets already established.” (52.C.3)

**Comment:** “The SRIA asserts that the goals of this Regulation are necessary to meet NOx reductions standards in impacted areas (pg. 28, 34, 37), however the Proposed Regulation is not part of the State Implementation Plan, is not part of any localized Air Quality Management Plan, does not represent specific emissions reductions targets to meet under the Clean Air Act, and is inconsistent with the policy statement regarding vessel at berth provisions that were adopted by the CARB Board in the Mobile Source Strategy and adopted in the California Sustainable Freight Action Plan.” (52.C.4)

**Comment:** “The SRIA references that this is intended to implement emissions reductions under SB 32 (pg. 28-29, 34-35, 38), but the Proposed Regulation is also inconsistent with the few at berth provisions in the SB 32 Scoping Plan.” (52.C.5)

**Agency Response (52.C.2), (52.C.3), (52.C.4) and (52.C.5):** CARB staff made no changes based on the received comments. The plans referenced here in this comment are an important guiding map for programs and the work that CARB staff ultimately develops, however these plans are not meant to be exact, or in any way limiting in the amount of reductions or program scope that they discuss. The plans help to set benchmarks and goals that need to be achieved but they must not limit the scope of work and therefore are not meant to be bounding if CARB staff can go beyond what is set out in the plans. CARB is held accountable to accomplish the goals they adopt but are in no way limited or capped at those goals. The At Berth Regulation development has taken place through plans such as the Sustainable Freight Plan and Mobile Source Strategy but also through a public regulatory process working with all affected and interested parties to develop a regulation that is cost effective and best protects the public health of the communities around the ports. CARB staff believes the policy and goals that have been outlined in the Mobile Source Strategy SIP, March Board Resolution Addendum, Sustainable Freight Action Plan, SB 32 Scoping Plan, and AB 617 Blueprint have been addressed and fulfilled through the adoption of the At Berth Regulation.

**Comment:** “The SRIA also asserts the need to reduce specific community emissions in part based on AB 617 (pg. 37), but the Proposed Regulation is once again inconsistent with the recently-adopted AB 617 Blueprint.” (52.C.6)

**Agency Response (52.C.6):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. AB 617 directs CARB to assess and develop measures to reduce air pollution in disproportionately burdened communities across the State. It is well known that many portside communities are heavily burdened by freight related emissions. Indeed, on page 14 of the Final Community Air Protection Blueprint for AB 617, the Proposed Regulation is called out as a statewide measure already underway helping communities heavily impacted by freight sources.<sup>7</sup>

**Comment:** “The SRIA is deficient in that it systematically understates the anticipated costs of complying with the At Berth Regulation. For example, the Ports of Long Beach and Los Angeles have substantial experience with the deployment of shore power infrastructure and alternative control strategies. Together, the two ports have installed more shore power infrastructure than the rest of the world combined. Additionally, the two ports are the only California ports that have experience testing and deploying alternative at berth control technologies at the scale required by the Proposed Regulation.” (52.C.7)

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<sup>7</sup> CARB, Community Air Protection BLUEPRINT, October 2018, [https://ww2.arb.ca.gov/sites/default/files/2018-10/final\\_community\\_air\\_protection\\_blueprint\\_october\\_2018.pdf](https://ww2.arb.ca.gov/sites/default/files/2018-10/final_community_air_protection_blueprint_october_2018.pdf)

**Agency Response (52.C.7):** CARB staff made no changes based on the received comment. In this comment the commenter neither provides specific changes for the Regulation nor provides any recommendations on CARB’s rulemaking process for adopting the Regulation.

**Comment:** “In response to the proposed regulatory language the two ports prepared detailed assessments of the additional costs that would be required if the Proposed Regulation were implemented. (see “Port of Los Angeles and Port of Long Beach Comments on February 22-23 Workshops for the “Control Measure for Ocean Going Vessels Operating At Berth and At Anchor”, May 20, 2019”). The Ports conservatively estimated the total costs between the two Ports at nearly \$300 million just for their portion of capital costs required to maximize vessel participation under the Proposed Regulation. (pg. 3, “In summary, the POLB and POLA estimates approximately \$106 million and \$147-\$193 million respectively for additional electrical infrastructure. These estimates are rough orders of magnitude, with many exclusions and limitations, so the actual cost could be much higher.”)” (52.C.8)

**Agency Response (52.C.8):** CARB staff made no changes based on the received comment. See response to comments 60.9 and 60.23 for an explanation of why CARB staff disagree with cost estimates submitted by the Ports of Los Angeles and Long Beach.

**Comment:** “The comment letters are included in the Appendices as back-up documentation of the real-world engineering costs the ports have actually incurred in deploying existing at berth technologies as a basis for their estimates. For instance, in Appendix B, the Port of Long Beach’s extensive engineering review concluded that \$106 million in additional costs were necessary in order to maximize electrification of its waterfront.

The SRIA unfortunately does not consider the POLA and POLB assessment. CARB’s assessment simply assumes no additional infrastructure costs, citing to no evidentiary support, even though that is not consistent with the evidence and data in the record. For example, with respect to the Port of Long Beach (SRIA, pg. 99-100):

‘Staff has assumed no additional shore power capital projects would be required at POLB to meet the incremental increase of visits controlled with shore power under the Proposed Regulation. This is because the shore power infrastructure needed to meet the Existing Regulation’s 80 percent requirement in 2020 and Proposition 1B’s additional 10 percent requirement would provide sufficient shore power capacity to meet the requirements of the Proposed Regulation.’” (52.C.9)

**Agency Response (52.C.7) and (52.C.9):** CARB staff made no changes based on the received comment. These comments are noted. See response to

comments 60.9 and 60.23 for an explanation of why CARB staff disagree with the cost estimates submitted by the Ports of Los Angeles and Long Beach.

**Comment:** “CARB assumes cargo growth factors can address uncertainty. CARB acknowledges a significant amount of uncertainty in implementing this proposed regulation. Rather than refining the assumptions to minimize uncertainty, CARB applies the growth factors for vessel activity to all costs in an attempt to account for potential changes in vessel size, technology platforms, vessel at-berth duration, and terminal operations. This approach assumes a 1-to-1 relationship between costs and vessel activity, which has not been established, and overlooks the fact that costs are unlikely to increase gradually over time but rather accrue as large, onetime expenses.” (52.B.8) (52.A.24)

**Agency Response (52.B.8) and (52.A.24):** CARB staff made no changes based on the received comment. As stated in SRIA Appendix A, Table I, staff intended the growth factors to account for multiple individual factors including the potential for increased vessel visits, vessel sizes, infrastructure requirements due to increased economic activity, labor, and energy costs. Staff believes that the uniform application of growth factors year-over-year represents the best way to assess overall uncertainty given the uncertainty regarding how these individual factors could impact actual costs during the implementation period. This methodology is also consistent with how growth factors are applied in the emission inventory, thus ensuring the costs and benefits of the Proposed Regulation are assessed on a similar basis to account for industry growth.

**Comment:** “The SRIA fails to account for the benefits of the emissions reductions that will result from the investment of Proposition 1B bonds and attributes Proposition 1B emission reductions to the proposed rule. Under Proposition 1B, the State made investments in shore power infrastructure that will ensure shore power emission reductions exceed the emission reductions required by the current At Berth rule. In funding the project, CARB determined that the emission reductions were real, surplus, quantifiable, and enforceable.

The SRIA, however, contains no accounting of those emission reductions. CARB acknowledges the fact that Proposition 1B infrastructure provides emissions benefits (see comments above), but has refused to quantify the emissions benefits or specify how grant compliance will be achieved. By failing to include the benefits of the Proposition 1B investment, the SRIA attributes the benefits to the proposed rule, overestimating future benefits and cost-effectiveness.” (52.C.14)

**Agency Response: (52.C.14):** CARB staff made no changes based on the received comment. The SRIA incorporated CARB’s emissions inventory, which was updated for OGV with a 2016 baseline that includes fleet shore power compliance information. Prop 1B data was not considered and modeled separately in CARB’s OGV emissions inventory; however, any actual shore

power usage that occurred at a Prop 1B berth that was submitted to CARB's enforcement staff by regulated fleets for compliance was included in the forecasting calculations of shore power usage.

Because berths funded by the Prop 1B program have already been funded and require 90 percent of vessels to control emissions, both the cost and benefits should be removed from the At-Berth assessment. As such, there should be no significant change to the overall cost effectiveness of the program. Information on the vessel traffic specific to the Prop 1B berths compared to the rest of the port would be welcomed. CARB emissions inventory staff have committed to continue working with stakeholders to ensure Prop 1B information is properly reflected in future inventories.

**Comment:** "Emissions Benefits. The SRIA analysis also understates the documented emissions benefits resulting from the existing rule.

The existing rule requires that if a vessel is capable of connecting to shore power it must do so. As a result, the current rule requires over compliance. CARB staff have repeatedly acknowledged that under the existing rule, fleets must over comply to meet the 80% emission reduction requirement in 2020. No attempt to model this over compliance has been made. Future emission benefits would be lower and the Proposed Regulation would not be cost-effective.

This trend is amplified by the time at berth for modern containerships, particularly in San Pedro Bay. Looking at the Port of Los Angeles' 2017 Emissions Inventory, the average time at berth for all containerships is 58 hours. Assuming the full three-hour allowance for connect and disconnect is taken under the current rule, the average vessel at the Port of Los Angeles would be connected for 55 hours out of 58 hours. Put another way, the average vessel would achieve a 94% emission reduction under the existing rule. Instead, by contrast, the forecast assumes without evidentiary support that after full implementation emission reductions will amount to only 65% for the ports of Long Beach and Los Angeles, with some vessel categories actually decreasing emission reductions as the existing rule tightens.

By minimizing the benefits of the existing rule, the SRIA overestimates future emissions, overestimates future emission reductions from the proposed rule, resulting in an unreasonable emission cost effectiveness." (52.C.15)

**Agency Response (52.C.15):** CARB staff made no changes based on the received comment. The requirement for shore power equipped vessels to use shore power exists in the new At Berth Regulation, as it did in the 2007 At-Berth Regulation. CARB inventory staff modeled the emission reduction estimates, as well as shore power usage based on fleet decisions and Prop 1B berth utilization by using actual compliance data to inform the inventory model. The 2016 baseline in the SRIA incorporated actual compliance

data from the Regulation to determine emissions reductions achieved at the compliance rate in 2016. CARB staff's emission inventory estimates project that in the South Coast, at full implementation in 2031, NO<sub>x</sub> emissions would be reduced from 12.88 TPD to 6.97 TPD, a 50 percent reduction from the 2007 At-Berth Regulation.

**Comment:** "The SRIA also does not discuss (and largely dismisses) the potential safety and reliability issues associated with land-based emissions control systems, and the additional costs that may be borne by regulated facilities to mitigate those concerns. Again, this is an area in which Coalition member WSPA and others have articulated serious concerns to CARB – concerns which further underline the need for a feasibility study. Without first conducting a feasibility study to determine if the proposed control systems can be safely and reliably operated at scale and under real-world conditions, the proposed At Berth Regulation risks creating unintended dangers that would need to be addressed or mitigated by regulated ports and terminals. The SRIA contains no discussion or analysis of the potential impacts of these issues." (52.C.16)

**Agency Response (52.C.16):** CARB staff made no changes based on the received comment. As discussed in the draft EA, staff assumes use of capture and control technology would be similar to activities already occurring at California ports and that the same safety practices would continue to be used. The systems could result in increased safety management efforts but predicting what these efforts may entail and cost (if anything) is speculative at best and is outside the scope of the SRIA analysis. Additionally, the SRIA is required to inform the "public of the economic consequences of regulatory choices, not reassess statutory policy." (see Government Code Section 11346.3). Therefore, impacts from safety and feasibility of control systems are rightly not considered in the SRIA. They are, however, considered throughout the ISOR.

**Comment:** "Analysis of Harbor Craft Emissions. As discussed above, the SRIA cost-effectiveness conclusions depend on overestimations of the emission reductions predicted to be achieved under the Proposed Regulation versus the existing baseline. Unfortunately, they also depend on ignoring emissions increases likely to result from the Proposed Regulation. For example, the Proposed Regulation envisions expanded use of barge-based emission control systems. The use of barge-based systems requires the use of tugboats. Typically, tugboats use engines several times the size of the auxiliary engine the regulation seeks to control. Stakeholders have repeatedly pointed out that no information has been provided about the increased emissions that will result from increased harbor craft use.

During workshops, CARB staff has assured stakeholders that these emissions have been examined and an analysis would be presented. Unfortunately, however, tug emissions and costs are not reflected in the SRIA.

Every use of a barge-based system will require up to six tugboat moves. Those moves would occur only because of the Proposed Regulation resulting in significant emissions when compared to emissions the regulation seeks to control. In some areas, like the San Francisco Bay, a three-hour tugboat transit may be required. These emissions have not been included in the assessment or accounted for in the SRIA. These additional emissions cause cost-effectiveness values to rise, reduce mass emissions benefits, and reduce health benefits. These emissions are significant compared to the source and directly undercut the Incidences per Ton (IPT) analysis presented in the SRIA.

If the regulation results in emissions increases that offset emissions benefits, those emission increases should be deducted from the claimed health benefits presented in the SRIA. Given how small changes in the emissions benefit produce enormous changes in the cost of health outcomes, the IPT analysis needs to be reworked. None of the benefits assessed in the SRIA are accurate without inclusion of offsetting harbor craft emission increases." (52.C.17)

**Agency Response (52.C.17):** CARB staff made no changes based on the received comment. CARB disagrees with this comment, see Master Response 1 for discussion regarding tug boat and GHG emissions resulting from use of barge-based control systems.

**Comment:** "No Analysis of Industry Alternatives Presented for Purposes of SRIA Analysis. The CARB SRIA notes that at industry work group meetings "staff specifically requested stakeholders to submit proposed regulatory alternatives for the economic analysis" and "staff again requested suggestions for regulatory alternatives" and "solicited alternatives for this SRIA" at its meetings in 2018 (pg. 43).

In February, the Coalition submitted a formal Alternative proposal in response to the solicitation of an industry alternative from the CARB program staff. This was in addition to at least four different alternatives which were presented to CARB staff for consideration prior to the formal solicitation by individual coalition members after previous workshops in 2017.

The SRIA does not acknowledge or analyze any of the alternatives submitted. Indeed, the SRIA's section on Public Engagement all but implies that in response to its requests for alternatives that none were received. This is not accurate. Instead of analyzing the Coalition Alternative proposal, or the other submitted industry alternatives, only theoretical alternatives developed internally were considered (pg. 128-147), those were incorrectly analyzed (see comments regarding Harbor Craft and Ro/Ros), and summarily dismissed.

If CARB had evaluated the alternatives presented in the comment letters, we believe it could have found some of them to be superior to the Proposed Regulation, in that some or all of these alternatives would avoid unnecessary safety risks, reliability concerns, excessive costs, implementation delays and operational inefficiencies

associated with mandating the potentially infeasible control strategies required by the Proposed Regulation.

The SRIA must be re-tuned in order to acknowledge the multiple alternatives that industry stakeholders have submitted through this ongoing process. The SRIA must then analyze and weigh those alternatives in a comprehensive manner, taking into account the issues raised in this letter and prior correspondence.” (52.C.18)

**Agency Response (52.C.18):** CARB staff made no changes based on the received comment. The SRIA requires a description of each regulatory alternative that addresses the stated need for the proposed major regulation, the cost and benefits of each alternative and the reasons for rejecting each alternative. If the alternative does not achieve the need, which for this Regulation is emission reductions and health benefits, then it is not a feasible alternative that is required to be identified in the SRIA.

The “Coalition Alternative” and other alternatives mentioned by commenter were not analyzed for the purposes of the SRIA. However, the “Coalition Alternative” was included as an alternative in the ISOR released October 15, 2019. This comment was originally made in August 2019 then resubmitted during the 45-day comment period October 19, 2019 through December 2, 2019. Therefore, the commenter’s claim that industry-provided alternatives were not analyzed is incorrect.

However, for the purposes of transparency, CARB staff determined the alternatives the commenter mentions were not considered as feasible for the purposes of the Regulation, as many of these alternatives consisted of merely administrative changes with less additional regulatory actions to ensure further emissions reductions. All of the commenter’s submitted alternatives fail to meet the objectives of the Regulation found in Chapter II of the ISOR, such as the need to reduce exposure to impacted communities, reduce emissions of NO<sub>x</sub>, PM, ROG and GHG and to meet federal and state mandated State Implementation Plan goals.

The alternatives submitted neither provided specific regulatory commitments for additional vessel categories and port/terminals nor did they provide the additional health benefits needed.

As mentioned, the Industry Coalition-provided alternative was considered and discussed in Chapter X of the ISOR. Additionally, other alternatives that were submitted to CARB but that were not included as an analyzed alternative to the Regulation, can be found in Section IV(A)(17): Alternative Regulatory Proposals.

**Comment:** “The CARB SRIA examines the impact of the regulation on the cost of a TEU, cost of a vehicle, or cost on a gallon of gas, but the proper analysis would examine the impact on the cost of transportation, not the impact relative to the value of the item being ultimately transported.

The impacted parties provide transportation services on a diverse array of economic activities which range from agricultural exports, to petroleum distribution, to automobile import and export, to tourism.

As a result, by not examining the impact to the cost of transportation, CARB staff failed to accurately account for the economic impacts to the industries regulated. These costs are concentrated at seaports, but the CARB SRIA analysis looks only at the downstream distribution of costs across the entire supply chain. This is improper.” (52.C.19)

**Agency Response (52.C.19):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. As can be seen in the SRIA Macroeconomics section, cost impacts were not as the commenter describes, derived based on the cost of a TEU, cost of a vehicle, or cost on a gallon of gas. For example, for shore power the SRIA states:

*“[P]art of any Increases in costs faced by vessel operators would initially be borne by the water transportation industry and would be passed on to all other industries that rely on water transportation. The increased costs faced by vessel operators are input into REMI as an increase in production cost in all REMI industries in proportion to each industries use of water transportation as an intermediate input.”*

The TEU, vehicle cost and cost of gasoline calculations the commenter mentions are in reference to direct costs to individuals (see SRIA page 96). It is assumed that much of the costs will eventually be passed on to final consumers. The SRIA correctly accounts for the cost of the Regulation to Ports, terminals, and vessel operators and final consumers (SRIA Section D Fiscal Impacts).

**Comment:** “[P]er TEU metrics used in the CARB SRIA also seem to be focused exclusively on impacts to containerized imports and not to California’s exports. This makes it difficult to fairly assess impacts to California agriculture and manufacturing sectors with respect to downstream impacts of this rule and is incompatible with the baseline requirements of the SRIA guidelines which require full competitiveness analyses on imports and exports.” (52.C.21)

**Agency Response (52.C.21):** CARB staff made no changes based on the received comment. This comment claims that it is difficult to fairly assess the impacts to California agriculture and manufacturing sectors with respect to downstream impacts of this rule. While impacts to these sectors were not

presented explicitly in the main body of the SRIA, the REMI model that was used to model the broad economic impacts of the Proposed Regulation does include the impacts to all California sectors. Impacts to these sectors are therefore a subset of the impacts described in Section E of the SRIA.

As mentioned in Section E.2 of the SRIA, costs borne by California port and terminal operators were input into the REMI model as an increase in production cost in the support activities for transportation industry (NAICS 488). The REMI model translates these direct costs into impacts to all other sectors in the economy. These industries may also support industries that see positive or negative changes in final demand and the REMI model estimates the total statewide impact to all industries through macroeconomic modeling.

The direct impacts to these sectors are described in the SRIA. For example, in macroeconomic modeling, costs to vessel operators are input directly into REMI as an increase in production costs to all REMI industries in proportion to each industry's use of water transportation as an intermediate input to account of the impact of this Regulation on both domestic and international vessels. Table F3 in the SRIA presents costs to all California industries specific to this element of the Regulation. This includes costs for some agriculture related industries as well as several manufacturing sectors.

**Comment:** "In order to clearly demonstrate the actual costs and benefits, the SRIA must be revised to demonstrate comparative analyses applied on a port-by-port basis and on a vessel-type basis within each port." (52.C.22)

**Agency Response (52.C.22):** CARB staff made no changes based on the received comment. See response to comment 52.C.113.

**Comment:** "The analysis contained in the SRIA relies on selective analysis to achieve predetermined outcomes. As described in other sections, the analysis ignores the emissions benefits of Proposition 1B, the impact of harbor craft and bunkering operations, and the emissions benefit of the existing regulation that occurs as a result of the requirement that vessels capable of shore power must connect. But the analysis also does this at the macro level as well. In choosing to aggregate some analysis and segregating the analysis in others, the SRIA analysis hides the true cost and true benefits that would occur at the local level. For example, most benefits are analyzed on a statewide basis. The Port of Hueneme is not comparable to the San Pedro Bay ports in size, impact, or resources. Yet, the SRIA does not analyze the benefits or impacts to a port like Hueneme.

The difference between ports make the benefits of the Proposed Regulation extraordinarily disproportionate. Relying on average growth factors or state-wide cost-effectiveness masks the regulations effects in places like the Port of San Diego or Benicia. A port-by-port analysis would reveal if some ports could be excluded from

the regulation while maintaining emission reductions. It is impossible to make that determination without that level of analysis. Similarly, an analysis that examined the benefits and costs of the Proposed Regulation on the different vessel types (i.e., current regulated fleet, tankers, Ro/Ros, and bulk), would reveal what vessel types could be cost-effectively controlled at each port. None of that crucial information on impacts, benefits, or costs are included in the SRIA.” (52.C.23)

**Agency Response (52.C.23):** CARB staff made no changes based on the received comment. See the response to comment 53.7 for port-by-port discussion.

**Comment:** “Analysis and Alternative Consideration of Ro/Ros Costs vs Benefits Is Incomplete. The Coalition continues to believe that if the costs of controlling Ro/Ro at berth emissions using shore based or barge based control technologies are adequately assessed and compared to the very short time Ro/Ros are at berth, CARB would reach the conclusion not to regulate Ro/Ro auxiliary emissions in the expanded at berth regulation.

Ro/Ros have incredibly short times at berth, as little as 9 hours and on average less than 14 hours at the Port of Long Beach. Individual Ro/Ro vessels also operate similarly to tramp bulk vessels in that they make inconsistent and often infrequent port calls to California. Since Ro/Ros would be unable to use installed shore-power equipment in other ports, CARB has considered the use of shore and barge-based emissions capture devices for Ro/Ro visits. These options also pose problems. Ro/Ros sometimes use older, shared berths that may not be adequate for land-based emission control systems. Barge-based emission control systems pose operational problems because they impact a Ro/Ro’s ability to take on a bunkering barge and some Ro/Ro stack configurations may not be accommodated by a barge-based emissions control technology.

The use of barge-based systems results in additional GHG emissions from the barge-based system itself and increased criteria and toxic emissions from the tugboat required to position the barge. Typically, a tugboat will use engines two to four times larger than the target auxiliary engines to be controlled. As a result, any tugboat activity can significantly offset emissions from Ro/Ro vessel calls.

CARB staff has not taken these offsetting emissions into account. The SRIA includes an alternative analysis that excludes Ro/Ros from the Proposed Regulation. By not taking tugboat emissions into account, emissions that would only occur as a result of the Proposed Regulation, the alternative analysis does not accurately report the impact of the exclusion of Ro/Ro vessels. A significant number of Ro/Ro vessels bunker at berth. But the analysis does not consider the impact on bunkering operations for Ro/Ro vessels and the increase in emissions that will occur as a result of bunkering taking place at anchorage instead of at berth.” (52.C.26)

**Agency Response (52.C.26):** CARB staff made no changes based on the comments received. See Master Response 1 for discussion about tug emissions and GHG resulting from use of barge-based capture and control systems.

**Comment:** “No Consideration of the Impact on Bunkering. The San Pedro Bay ports are among the busiest bunkering ports. Vessels not even destined for San Pedro Bay will take advantage of the port complex to bunker. As result, many vessels that do visit San Pedro Bay will take on bunker while at berth. It is an efficient and safe way for a vessel to refuel within the protection of the harbor.

As mentioned, the Proposed Regulation envisions significantly increased use of barge-based emission control systems. The use of the barge-based system prevents a vessel from bunkering at berth. As a result, a vessel needing bunker will need to move to anchorage after discharging the vessel in order to receive fuel. While at anchorage, auxiliary engines will run uncontrolled. These emissions would not have occurred in the absence of the Proposed Regulation. For vessels like large containerships, the time bunkering at anchorage would be a portion of the time at berth, resulting in net emission reductions but less than if shore power was used. For a vessel with short visits like small containerships or especially Ro/Ro vessels, the entire emissions reduction of a barge-based system can be fully offset by the time spent at anchorage. This would result in a net increase of emissions from the tugboat and excess GHG emissions from the barge-based system itself.

None of the offsetting impacts from bunkering activities were analyzed as part of the SRIA. These activities directly impact the claimed emissions benefits, the claimed health outcomes, and the claimed cost-effectiveness. The alternative would be a net decrease in bunkering activity in San Pedro Bay and other California ports which would have an enormous economic impact, which was also not analyzed.” (52.C.28)

**Agency Response (52.C.28):** CARB staff made no changes based on the received comment. Staff is aware that bunkering activities can occur while a vessel is at berth, but the information provided to staff during the rulemaking period about this type of activity was entirely anecdotal. Staff requested additional information from stakeholders about the frequency that vessels require bunkering while at a California berth, however, no specific information was received. As such, an analysis of emissions impacts from any change in bunkering activity is too speculative for consideration. Nonetheless, staff do note barge-based systems may impede bunkering in some cases. Bunkering challenges could be avoided by using a land-based system or a control system designed to be used simultaneously with bunkering. In addition, vessels may choose to disconnect early from control systems to allow for bunkering. Bunkering could occur when using a VIE.

Generally, anchorages are further from shore and as such, further from sensitive receptors and impacted communities. As of publication of this staff report, no

control system has been demonstrated to CARB as being able to reduce emissions at anchor, although barge-based systems appear a promising technology. However, at anchor emissions still contribute to health and environmental impacts. As such, as part of the second 15-day changes to the Proposed Regulation, CARB staff added language to the Interim Evaluation that will require staff to review potential requirements for control technologies for use with bulk and general cargo vessels, and for OGVs at anchor (Section 93130.14(d)).

**Comment:** “The SRIA fails to include the analysis and methodology used to determine (correctly) that the application of this rule with respect to bulk and general cargo vessel fleets would not be cost-effective and should be avoided. All industry stakeholders have asked for this analysis and methodology to be included in order for the assumptions and conclusions applied to this specific fleet to be revealed and then compared to its potential application to other fleets, including the other currently non-regulated Ro-Ro and Tanker fleets.

Since the SRIA does not explain what the cost per ton of emissions reduced threshold is for determining whether a vessel class should or should not be covered by the at berth requirements it is impossible to discern how and by what standard of application CARB has decided to leave bulk and general cargo vessels out of the expanded list of regulated vessels but has proposed to keep Ro/Ro vessels and tankers on this expanded list. What threshold and other factors did CARB consider to justify these decisions?

Given the very similar fleet dynamics, economics and costs of compliance, and infrastructure challenges, it is likely that the same methodologies, and potentially the same conclusions, would reveal that the expansion of the rule is as similarly problematic for other non-regulated fleets as it was for bulk and breakbulk vessel fleets.

The SRIA continues the silence around this fundamental analysis, and it is conspicuous by its absence.” (52.C.29)

**Agency Response (52.C.29):** CARB staff made no changes based on the received comment. The requirement of the SRIA is to assess the potential for adverse economic impact on California business enterprises and individuals. Therefore, including information on the methodology for excluding bulk and general cargo vessels was not included.

The exclusion of bulk and general cargo vessels was determined for multiple reasons including, but not limited to, the aforementioned cost effectiveness. For more information on the exclusion of bulk vessels refer to Chapter III of the ISOR. In addition, as part of the first 15-day changes, CARB included bulk and general cargo vessels in the Interim Evaluation. The Interim Evaluation will take into

account the state of technologies and CARB may, at that time, decide to consider rulemaking to include those vessel categories in the At Berth Regulation.

ii. *Cost Effectiveness*

**Comment:** "We just want to make sure that whatever you enact...gets the most bang for the buck." (OC-2 Cannon)

**Agency Response (OC-2 Cannon):** CARB staff made no changes based on the received comment. CARB does not require that regulations be cost-effective, only that the costs and economic impacts of the regulation are weighted and considered appropriately. However, CARB staff believes this Regulation is cost-effective, with the health benefits valuation outweighing the overall cost of the Regulation. CARB staff also input a provision into the Regulation as part of the 15-day package called the "Innovative Concept Compliance Option" (Section 93130.17). The Innovative Concept compliance option allows facilities or vessel operators to submit to CARB alternative emissions reductions strategy that may be less expensive to operate but reduce equivalent emissions to shore power or capture and control systems.

**Comment:** "[E]ven if the technology were feasible for tankers, the cost by staff's own analysis is enormous, relative to the emission reductions. And that's at an estimated \$1.7 billion - it will probably be more - if we were to do this." (OC-2 Umenhofer)

**Agency Response (OC-2 Umenhofer):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. For more detailed information on cost, please refer to the second 15-day cost analysis released on July 10, 2020 (Attachment B).

**Comment:** "[W]e think there's a more cost effective way of getting those final incremental emissions through some of the projects that we've presented through PMSA." (OC-1 Sinkoff)

**Agency Response (OC-1 Sinkoff):** CARB staff modified the proposed regulatory language in response to the received comment(s) regarding this concern and have included an "Innovative Concepts" provision in the Regulation. This Innovative Concept provision allows regulated entities to propose emissions reductions projects that achieve equivalent or greater emissions reductions as reducing emissions from vessels at berth in the same impacted communities in a more cost-effective way.

Economic impacts of the At Berth Regulation were analyzed between 2020 and 2032 as part of CARB's SRIA. The At Berth Regulation results in estimated costs to regulated entities of \$2.23 billion. However, the Regulation will provide many benefits. It may increase demand for businesses such as capture

and control system manufacturers, crane manufacturers, barge manufacturers, component suppliers (including ducts and piping), electrical suppliers, design, engineering, and construction firms. The Regulation will also provide benefits to individuals in the form of localized cancer risk reduction and decreases in incidence of cardiopulmonary mortality, hospitalizations, and emergency room visits. The health benefits of the Regulation are estimated to be \$2.32 billion as a conservative estimate. The Regulation is also expected to achieve a nearly 55 percent reduction in cancer risk from OGVs at berth, which CARB, as an agency, does not monetize as standard practice at this time, meaning the current valuation of health benefits is likely underestimated. In addition, the Regulation will provide benefits through decreased GHG emissions.

For the At Berth Regulation, staff used a cost-effectiveness method provided in the Carl Moyer Guidelines (see SRIA for further details) which is calculated by dividing the cost over a period of time by the weighted emissions reductions (in tons per year or TPY) over the same period of time (\$/weighted ton). In the SRIA, staff estimated the cost effectiveness of the At Berth Regulation to be \$83,159 per weighted ton. This cost effectiveness value is well within the normal range of cost effective emission reduction programs for advanced freight related controls.

**Comment:** "Port staff note that the cost of compliance with the existing At-Berth Regulation is high and requires frequent vessel retrofits. In 2018, the Port commissioned or re-commissioned nearly 100 vessels, or about 25% of the ever-commissioned vessel list. The ongoing costs of retrofitting vessels when the line rotation changes, maintaining vessel equipment, and commissioning vessels with the current At-Berth Regulation apply equally to comply with the Proposed Control Measure and should be included in the cost estimates as they are real and necessary costs of compliance with the Proposed Control Measure. The Proposed Control Measure is not additive and incremental to the At-Berth Regulation, but rather a replacement and as such the entire cost to comply with the Proposed Control Measure needs to be factored into the cost effectiveness." (17.41)

**Agency Response (17.41):** CARB staff made no changes based on the received comment. A baseline is defined as the best assessment of the world, absent the proposed regulation or policy action. Absent the Regulation, existing requirements would be in place via the 2007 At-Berth Regulation. Therefore, for the purposes of the Regulation's economic analysis costs that would have occurred regardless of this Regulation have been omitted. On-going costs, including maintenance, not anticipated to occur without the Regulation were appropriately considered by the staff and are included in the SRIA.

**Comment:** "The cost effectiveness of the proposed ro-ro rule is nearly \$200,000 per weighted ton, making it an exceptionally expensive place to go for emissions." (OC-4 Jacob)

**Agency Response (OC-4 Jacob):** CARB staff made no changes based on the received comment. CARB disagrees with the cost effectiveness number of \$200,000. See response to comment OC-1 Sinkoff.

**Comment:** “The ISOR completely omits cost-effectiveness comparisons between the current regulation as applied to container, cruise and refrigerated vessels with the additional costs of the newly proposed regulation. We believe that this is a significant omission given the \$400+ million price tag for the currently regulated fleets when compared to the relatively minuscule scale of remaining at berth emissions subject to control.” (52.61)

**Agency Response (52.61):** CARB staff made no changes based on the received comment. CARB’s analysis for the cost effectiveness of the Regulation considers the overall net costs of the Regulation compared to the overall benefits or emissions reductions from the Regulation. The analysis did not compare the cost effectiveness of the 2007 At-Berth Regulation, as it was not an alternative for the Regulation.

**Comment:** “It should be noted that the CMP also allows for a second tier CE limit for the higher cost of advanced/emerging technology projects; this second tier CE limit is \$100k per weighted ton. The \$100k/ton limit is only applied to the small increment between today’s technology and the advanced technology level, which in practice is zero-emission or near-zero emission (i.e., 90% cleaner than current technology). Since barge-based C&C systems are not using technology that is 90% cleaner than today’s clean-up technology, these systems should be evaluated at the \$30k/weighted ton CE limit.” (52.B.5)

**Comment:** “It is noted that the CMP also allows for a second tier CE limit for the higher cost of advanced/emerging technology projects; this second tier CE limit is \$100k per weighted ton. The \$100k/ton limit is only applied to the small increment between today’s technology and the advanced technology level, which in practice is zero-emission or near-zero emissions (i.e., 90% cleaner than current technology). Since barge-based systems are not using technology that is 90% cleaner than today’s clean-up technology, these systems should be evaluated at the \$30k/weighted ton CE limit.” (52.A.32c)

**Agency Response (52.B.5) and (52.A.32c):** CARB staff made no changes based on the received comment. The commenter is correct, the Carl Moyer Program (CMP) second tier cost effectiveness limit of \$100k/weighted ton is allowed for advanced technologies, and this usually refers to 90 percent cleaner than today’s technologies for most source categories. However, for the OGV category, control technologies are not equivalent to other more advanced source categories like on-road sources. As such the barge based 80 percent control for OGVs is considered advanced technology and should be allowed the higher, second tier CE limit.

**Comment:** “PMSA compared CARB’s cost effectiveness at different hourly rates. Compared to CARB’s hourly rate of \$900, Starcrest looked at excerpts of four actual capture and control service transactions, which ranged from \$1,100 per hour to \$1,552 per hour. Converting these hourly rates to cost effectiveness (\$/weighted ton), this yielded a range from \$141,419 per weighted ton to \$199,530 per weighted ton. This is much larger than CARB’s cost effectiveness value of \$115,707 per weighted ton.” (52.B.8)

**Agency Response (52.B.8):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on capture and control rates. The \$900 hourly rate for capture and control services was used to determine the costs based on the best information provided to CARB at the time of the analysis. See also response to comment 52.29 for further discussion. The materials provided by the commenter neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation.

**Comment:** “Although there is a lack of purchase and operational cost data available, CARB was still able to estimate the cost effectiveness of purchasing and operating four units is estimated as \$54,987 per ton, nearly double CARB’s Carl Moyer Program (CMP) limit of \$30k per ton. Compared to the only publicly available documentation of a barge-based C&C system from the Bay Area Air Quality Management District (BAAQMD) contract with Advanced Environmental Group, LLC for a project to design, build and operate a barge-based C&C system in Benicia. The total project cost is \$8.844M. At this total project cost, assuming that this cost includes operation pursuant to contract requirements, the cost effectiveness exceeds \$73,012 per ton, well beyond the CMP limit of \$30k per ton.” (52.B.10)

**Agency Response (52.B.10):** CARB staff made no changes based on the received comment. Cost effectiveness for the Regulation is not tied to Carl Moyer cost effectiveness limits but considers the Carl Moyer cost effectiveness limit for zero-emission projects of up to \$100,000 per weighted ton to ensure the benefits of the Regulation exceed the costs. See response to comment 52.C.71a for more information about the barge-based capture and control system under contract with Advanced Environmental Group, LLC (AEG).

**Comment:** “CARB uses the CMP cost effectiveness methodology to evaluate the CE of the proposed amendment. While this methodology accounts for the increase in hydrocarbon (and therefore ROG) emissions, it does not take into consideration the increase in CO<sub>2</sub>e, SO<sub>x</sub> and CO. The regulatory amendment should address associated increases in other pollutants.” (52.B.11)

**Agency Response (52.B.11):** CARB staff made no changes based on the received comment. Known potential increases in emissions (e.g. from

tugboats) are accounted for and disclosed in the Draft EA. Associated increases were considered to be minimal and would not affect the cost effectiveness of the Regulation.

**Comment:** "Economic Analysis & Cost effectiveness. PMSA believes that it is important that CARB conduct a thorough economic analysis and evaluation of cost-effectiveness of the proposed rule. The escalation in costs for the proposal will be significant and in excess of the criteria to make this a regulation of significant economic impact to the state. For those already regulated under the rule, adequate infrastructure does not exist to support shorepower for every vessel/every visit. Tens of millions of dollars will need to be spent to add infrastructure, cable management systems, or alternative control technologies." (52.C.150)

**Agency Response (52.C.150):** CARB staff made no changes based on the received comment. The Regulation was developed over many years with the support of research and collaboration between CARB, industry, and the public. Staff prepared an HRA to identify the risks of exposure to OGV emissions on public health and the air quality benefits of further reducing emissions. DOF requires state agencies to prepare a SRIA when a regulation may result in a potential economic impact exceeding \$50 million. CARB prepared the SRIA as part of this rulemaking and submitted it to DOF for review in August 2019. CARB has posted the HRA and SRIA, and other materials, found its rulemaking website <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>. Collectively, these support documents illustrate the need and cost effectiveness of the Regulation.

**Comment:** "Growth Overestimated. The cost and cost-effectiveness analysis rely on overly optimistic growth trends. This overestimated growth increases future emissions and reductions making the proposed concept appear more cost effective than it is. In addition, growth in vessels does not match growth in cargo volumes. As vessels grow larger, more cargo can be handled without increasing the number of vessel calls. In fact, the number of vessel calls has declined over time due to this phenomenon. Why doesn't the analysis provide a more realistic lower bound to growth and properly reflect declining vessel calls?" (52.C.79)

**Agency Response (52.C.79):** CARB staff made no changes based on the received comment. The growth rates used for the cost analysis were the same as those used for emissions inventory. They are based on the most up to date and reputable sources available, including industry provided information. For more information on growth factors and costs see the ISOR Chapter XI and for more information on marine vessel growth and forecasting see ISOR Appendix H.

**Comment:** “[S]upporting shore power requires ongoing investment, as a result of needed maintenance and vessel redeployments. If the amended At-Berth Regulation requires the investment in alternative technologies, the industry will likely gravitate over time to the technology that provides greater flexibility. While this is more expensive than shore power alone, it would be more cost-effective than supporting both pathways simultaneously, likely resulting in less reductions of criteria and toxic pollutants and an increase in greenhouse gas emissions. Simply put, a five percent margin cannot ensure the industry can remain in compliance with the proposed regulatory concept and would necessitate the investment of a redundant technology control pathway.” (52.C.94)

**Agency Response (52.C.94):** CARB staff made no changes based on the received comment. Staff notes the additional information, however, the commenter neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. CARB staff will note that the Regulation allows for 15 percent TIEs and 5 percent VIEs through 2024, then 5 percent TIEs and 5 percent VIEs from 2025 onward to provide a limited amount of flexibility for operational needs, along with the remediation fund and the Innovative Concepts Compliance Option. See sections 93130.11, 93130.15, and 93130.17 of the Regulation for more details about each provision, respectively.

**Comment:** “Further frustrating efforts at potential comparison, the ISOR for the current rule did not use in 2007 a weighted cost-effectiveness methodology, but the 2019 proposed rule ISOR does use a weighted cost effectiveness. So a casual comparison of the two ISORs for these rules do not yield an apples-to-apples or oranges-to-oranges basis for evaluation. If one were to look at these two ISORs on their face, as apples-to-oranges, the public might conclude that the current regulation is much less cost-effective than the proposed regulation at reducing emissions from container and cruise vessels, even though the proposed regulations reduce only a very small amount of emissions in comparison to the existing rules.

PMSA has attempted to do an apples-to-apples cost-effectiveness comparison of the two rules. Utilizing the 2007 methodology, which is unweighted and instead assigns half costs to NOx control and half costs to DPM control to acknowledge the dual purposes of and effects of the rule. By our estimation the cost effectiveness of the current regulation for container vessels calling at the Port of Oakland is roughly 10x more costly under the proposed rule than under the existing regulation. See Attachment E.

PMSA respectfully requests that CARB perform new cost-effectiveness calculations for all Ports, fleets, and sources utilizing the same methodology as the 2007 ISOR, to yield an apples-to-apples comparison, or reperform all 2007 cost-effectiveness data to the 2019 ISOR methodology, to yield an oranges-to-oranges comparison, in order to

effectively allow the public and Board to see the actual cost effectiveness levels of the proposed regulation.” (52.62)

**Comment:** The comment is what the commenter calls an “apples to apples” comparison of DPM cost effectiveness. The calculation shows the 2007 At-Berth Regulation cost methodology applied to the Regulation.

Key Finding: DPM Cost-Effectiveness \$2.9m - \$11.2m per ton. See full calculation spreadsheet in 45-day comment letter 52. (52.C.155)

**Comment:** “The ISOR for the current regulation estimated cost-effectiveness values by attributing roughly half of the rules benefits to NOx emissions reductions and half to PM emissions reductions. In that ISOR, it was concluded that the “cost-effectiveness values using that method are \$6,400 per ton of NOx reduced and \$345,000 per ton of PM reduced.” The preliminary estimates of the costs-effectiveness for this rule are weighted and considered together rather than segregated and evaluated. These conclusions are apples and oranges between the current rule and the proposed rule and don’t allow for an evaluation of the costs of controls for achieving completely separate emissions goals. For instance, if this is a DPM control rule, versus a NOx control rule, or a GHG control rule, the relative cost-effectiveness of this versus pursuing other types of regulatory efforts is impossible to manage using a weighted cost-effectiveness factor. Moreover, it predicts fantastically large and unrealistic expectations for DPM emissions reductions, given that the weighting in the Moyer process is NOx based at 20x PM2.5. Will CARB evaluate NOx, PM and GHG emissions cost-effectiveness separately and provide a true benchmark against the cost-effectiveness of the current rules?” (52.C.77)

**Agency Response (52.-62), (52.C.155) and (52.C.77):** CARB staff made no changes based on the received comments. Cost-effectiveness is a measure of the cost of an emissions reduction project or program per ton of expected emissions reduction. There are multiple approaches to calculating cost-effectiveness. For the new Regulation, staff used a cost-effectiveness method provided in the Carl Moyer Guidelines. The Carl Moyer cost-effectiveness metric is useful because it is widely used and therefore, straightforward to compare between programs, and reflects the emissions reductions of multiple pollutants (NOx, PM2.5 and ROG). The cost effectiveness (in \$/weighted ton) is calculated by dividing the total net cost of the Regulation over a period of time by the weighed emissions reductions (in tons per year or TPY) over the same period of time. Additionally, CARB staff provided estimates for emissions reductions and costs in the ISOR and updated in the attachments to the 15-Day Changes. The published estimates provide the necessary information to determine other cost effectiveness metrics that the commenter finds useful for evaluation.

## 8. INCENTIVE FUNDING

**Comment:** “We are also requesting that CARB allocate additional funding to identify, develop, demonstrate, and certify new and improved technologies for tankers, as well as for other non-regulated vessel types.” (OC-2 Rees)

**Comment:** “The Port suggests that CARB allocate at least 200 million for tanker and ro-ro emission capture and control technology or shore power statewide.” (OC-3 Caswell)

**Comment:** “And another piece of it is going to be funding ultimately, funding that is -- that is scalable and -- or scaled, stackable, and strategic.” (OC-1 Yow)

**Comment:** “[W]e request that CARB allocate additional funding to identify, develop, demonstrate, and certify these technologies. We suggest a more coordinated effort among our agencies, U.S. EPA, technology providers and the ports for these projects and we are fully committed to support these efforts.” (13.2)

**Comment:** “Technology Demonstration and Certification. In order to accelerate deployment of new or improved control technologies for tankers (with a 2027 compliance date for POLA/POLB) and to identify feasible technologies for other vessel types not subject to control requirements under the proposed regulation, expeditious development and demonstration of these technologies will be critical. Robust funding coupled with a streamlined certification process is key to the success of these demonstration projects. Given the significant contribution of OGV emissions, funding for demonstrating OGV technologies has been limited compared to other mobile sources (e.g., heavy-duty trucks). Therefore, we request that CARB allocate additional funding to identify, develop, demonstrate, and certify these technologies. We suggest a more coordinated effort among our agencies, U.S. EPA, technology providers and the ports for these projects and we are fully committed to support these efforts.

New Incentive Programs. While the proposed At Berth Regulation would achieve substantial emission reductions, there are still opportunities for additional reductions. Development of new and innovative OGV incentive programs will be critical for achieving near-term reductions through early compliance for regulated vessels and through voluntary actions by non-regulated vessels. The accelerated development and certification of new technologies will be the key in implementing these new incentive programs and achieving early reductions. We fully support these efforts and offer our assistance to CARB in this area.” (13.13)

**Comment:** “[I]n order to accelerate the development and deployment of shore power and alternative control options, including infrastructure, for non-container terminals and vessels, the Ports would like to see CARB prioritize funding as they did for the currently regulated fleet through Proposition 1B in 2006. CARB has not prioritized

funding for shore power in their latest Cap-and-Trade Auction Proceeds Third Investment Plan, posted in January 2019. We urge CARB to work cross-divisionally on finding opportunities to invest in the nascent technology required for tankers and RoRos.” (52.C.84)

**Comment:** “The Ports remain concerned with the following key elements of the proposed regulation:

- CARB previously provided funding on the scale of hundreds of millions of dollars through Prop 1B to support shore power investment for the currently regulated fleet. The ISOR estimates compliance under the proposed regulation will cost the shipping industry \$2.2 billion. To reduce the likelihood of cargo diversion, which could result in greater emissions overall, and to support the development and deployment of the requisite alternative emission capture and control technologies for tanker and RoRo vessels, the Ports request CARB allocate at least \$200 million for tanker and RoRo emission capture and control technology or shore power statewide.” (23.6)

**Comment:** Technology solutions need time for proper planning and design, and funding is always a necessary ingredient. Historically, state monies provide vital assistance for infrastructure that benefits the San Diego region, particularly on projects where local and state interests are both at stake.

The large-scale, statewide effort to implement a new At-Berth Regulation is an extraordinary lift, especially for self-sustaining public agencies. Funding streams should flow to where they are needed. For that reason, the District believes an equitable and strategic distribution of state support is critical so that District projects located next to AB 617 communities such as Barrio Logan and National City are properly resourced. No single entity can meet these goals alone - collaboration is essential. A needs-based approach built from honest timelines and needs and size of the job is the responsible way to design and build large, custom-made infrastructure in specialty ports like San Diego that lack the capital program capabilities of megaports. For example:

- The District has already laid infrastructure for increased shore powering for its cruise business and faces an additional cost estimate of \$5m for the transformer and ensuring the utility provider can supply the power - and at a sustainable rate.
- At the auto carrier facility - the Ro-Ro terminal - the District is currently in the process of analyzing cost estimates and infrastructure improvement needs for the auto carrier facility and anticipates having those costs by the end of 2020.
- In addition to shore power preparations, the District has issued a formal Request for Information for bonnet providers and is now preparing a Request For Proposal.” (48.5)

**Agency Response (OC-2 Rees), (OC-3 Caswell), (OC-1 Yow), (13.2), (13.13), (52.C.84), (23.6) and (48.5):** CARB staff made no changes based on the received comments. These comments suggest changes to funding programs and are not directed at the At Berth Regulation because this Regulation does not govern funding requirements or policies, and those provisions were not proposed to be considered. Regardless, CARB recognizes the challenges industry is facing and the commitments that agencies, local government, and the State must make to help facilitate compliance. The staff cost analysis did not include grants or funding, but recognizes that shore power and alternative controls are expensive. At this time incentive funding is available for shore power, capture and control, and cable reels through these programs:

- Low Carbon Transportation
- Advanced Technology Demonstration and Pilot Projects
- Carl Moyer Program
- VW Mitigation Trust
- AB 617 Community Air Protection
- Clean Off-Road equipment Voucher Incentive Project
- Prop 1B Good Movement Program

CARB agrees with need for additional funding opportunities for OGV emission control projects to support the regulatory program and has been working with CARB incentive program staff. For example, CARB recently approved \$10 million in funding to demonstrate a capture and control system for oil tankers to capture at berth vessel emissions. The funding was approved in the 2019-2020 FY Funding plan for Clean Transportation Incentives under CARB's Low Carbon Transportation Investments and the Air Quality Improvement Program.

**Comment:** "As stated in our previous letter, in order to accelerate the development and deployment of shore power and alternative control options, including infrastructure, for non-container terminals and vessels, the Ports would like to see CARB prioritize funding as they did for the currently regulated fleet through Proposition 1B in 2006. CARB has not prioritized funding for shore power in their latest Cap-and-Trade Auction Proceeds Third Investment Plan, posted in January 2019. We urge CARB to work cross-divisionally on finding opportunities to invest in the nascent technology required for tankers and RoRos." (60.22)

**Agency Response (60.22):** CARB staff made no changes based on the received comment. The Third Investment Plan lays out the multiple priorities identified by the Legislature for Cap-and-Trade Auction Proceeds. These priorities include those listed in AB 1532 as well as AB 398. AB 1532 requires projects to, where feasible: facilitate GHG emission reductions; maximize economic, environmental, and public health benefits; foster job creation; and complement air quality efforts. AB 1532 also lays out investment priority areas including

“Low Carbon Transportation, Freight, and Advanced Technology Vehicles and Fuels” and “Research, Development, and Deployment of Innovative Technologies and Practices.” AB 398 augments the foundational priorities with complementary funding priorities that provide additional direction for future investments including “Air Toxics and Criteria Pollutants” and “Low and Zero-Carbon Transportation.”

The specific priorities identified in the Third Investment Plan and described above have a clear nexus with the suggested investments for development and deployment of shore power and alternative control options. Investments in shore power and alternative control options would be consistent with many of the objectives outlined in the Investments Plan and underlying legislation. The Legislature considers the recommendations in the Investment Plan when making appropriations from the Greenhouse Gas Reduction Fund. These appropriations may be for specific projects (i.e., advanced technology freight demonstration projects) or for general categories (i.e., low carbon transportation). Prioritization of appropriated funds and ultimate project selection is typically the result of a public process and/or competitive solicitation. In contrast, Proposition 1B identified specific project categories, including ships at berth, within the implementing legislation. Additionally, the FY 2019-20 Funding Plan for CARB’s Low Carbon Transportation Plan calls for an OGV demonstration project.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

Technology advancement for the RoRo and tanker technologies will be critical, and the industry needs more than the proposed \$10 million for a tanker demonstration to foster market growth and acceptance for alternative emission capture and control technologies. It is clear from the hearing and from discussions with industry that there are considerable engineering and safety hurdles, and across California, the operational constraints are different from port to port. As we have requested in our previous comment letter, we believe \$200 million will be needed statewide to support technology advancement and deployment, which is on the scale of the Prop 1 B funds allocated to support the 2007 At-Berth Regulation. The Ports have significant experience successfully managing grant dollars and pushing technology innovation with the support of state grant funds.” (60.5)

**Agency Response (60.5):** CARB staff made no changes based on the received comment. CARB is providing \$10 million in Fiscal Year (FY) 2019-2020 funds from the Low Carbon Transportation Investments, through California Climate Investments. The intent is to develop and deploy an emission capture and control system in order to address engineering and safety hurdles, operational constraints, and to foster market growth. This project would serve as an early demonstration project to show the viability and effectiveness of the technology,

eventually leading to further advances and cost reductions. In addition, it would provide incentives for deploying the technology on a more widespread basis and for use on additional vessel types in the years ahead. The Low Carbon Transportation Investments represent just one of several sources of state funding that can support such an endeavor.

**Comment:** “The Port’s customers encourage CARB making available grant funding or other incentive to offset the significant labor costs associated with shore power connections, which can total over \$5,000 per call and at times exceed the cost of electricity used during the call.” (53.32)

**Agency Response (53.32):** CARB staff made no changes based on the received comment. CARB continues to work with ports, technology providers, and other stakeholders to identify and promote more efficient, less costly ways to mitigate emissions from ships at berth. CARB’s annual Funding Plan for Clean Transportation Incentives is developed from and based on the Governor’s budget, direction from the Legislature, and input from stakeholders through a transparent public process. The Funding Plan, as approved by the CARB Board, takes all of these inputs into account as it focuses incentives on the projects that will help the State to achieve its air quality, climate, and equity goals.

## 9. EMISSIONS INVENTORY

**Comment:** “Port staff (along with other public seaport authorities and shipping partners that operate in the State) have struggled to understand the inventory results and implications for both Oakland and the State as a whole. Based on the collective feedback that has been received from stakeholders, CARB staff continues to revisit the baseline and forecasted emissions assumptions with updated calculations and results even as this Proposed Control Measure is being put before the CARB Governing Board. In other words, the methodology and analysis upon which the Proposed Control Measure is based, are still in flux.” (17.1).

**Agency Response (17.1):** CARB staff released the draft emissions inventory in February 2019, nearly a year in advance, in order to allow comment, review and a collaborative interaction with the industry and other stakeholders. CARB also held a public workshop focused on emissions inventory on February 26, 2019 where staff walked through all the major updates to the 2019 OGV emissions inventory, and solicited stakeholders’ feedback. Following this comprehensive public process, changes were made throughout 2019, and future updates and additional research are already under consideration. In general, it is reasonable to assume that just as the industry changes each year, the inventory will require consistent updates and revisions and should be considered in flux on an ongoing basis. These changes are made to continually reflect the latest and best available data.

**Comment:** “To highlight just one particularly notable example, the 2020 estimated total hours at berth divided by typical call durations by vessel size indicate that there will be 2,580 calls for the Port of Oakland in 2020, which is a dramatic departure and increase (a deviation of over 40%) from observed operational realities and shipping trends. For context, the Port of Oakland had 1,175 calls in the first 10 months of 2019, 1,543 calls in 2018, and 1,598 calls in 2017. The same calculation applied to CARB values for the Ports of Los Angeles and Long Beach predicts 2,405 calls in 2020, which means Oakland would see 175 more calls than the Ports of Los Angeles and Long Beach combined. Such an order of magnitude difference has implications for evaluating the effectiveness and potential impact of the Proposed Control Measure and any marginal benefits that could be achieved by it.

Port staff compared the 2016 baseline values used by CARB in the inventory to 2016 actual values recorded at the Port. It appears that CARB’s 2016 values for total time at berth are about 8% higher than actual, and that CARB’s estimates for average power by ship size (which were derived from values at the ports of Los Angeles and Long Beach) are about 9% higher than actual for Oakland. Additionally, it seems that CARB has underestimated the total activity for the regulated fleet in 2016 by about 11%, which makes it appear that the Proposed Control Measure overestimates projected reductions. These over- and under-estimates do not balance out.” (17.2).

**Agency Response (17.2):** CARB staff made no changes based on the received comment. The best available information was used by CARB staff to develop the emission inventory for this rulemaking and it accurately represents the activity and emissions estimates for the statewide fleet as described in the following. On growth and forecasted vessel visits, the inventory does not forecast individual vessel calls as suggested by the Port of Oakland; instead it forecasts the total power of vessels visiting the port. To forecast the total power, the inventory grows the base year power of all vessels against a growth surrogate. In this inventory, the Freight Analysis Framework (FAF) forecast for container goods moved by ocean going vessels in the Bay Area was used to forecast growth of container ships at the Port of Oakland. FAF, as described in the inventory documentation, is used in forecasts by California Statewide Freight Forecasting Model (CSFFM) developed by CalTrans, as well as the Bay Area Metropolitan Transportation Commission for San Francisco Bay Area Goods Movement Plan. Additionally, CARB staff compared the FAF forecast against the historical Port of Oakland growth rates, and found that the Port has had numerous periods of expansion (1990 to 2007) with sustained growth very reasonably matching the inventory forecast, and other periods (2002 to 2006) where actual growth was almost twice the inventory forecast. These comparisons are detailed in the inventory report, and combine to show that the forecast uses dependable sources and compares very well against historical data.

On initial vessel visits and activity, (further described in the inventory documentation) the inventory vessel visits and times are based on IHS Fairplay data which tracks vessel transmitters (using the Automatic Identification System, or AIS) through vessel shipping lanes, anchorage, and times within a port (at berth). The AIS system is reliable enough to be used for both vessel collision avoidance (in addition to radar) and detailed vessel tracking by the US Coast Guard. Most ports do not use the same data source, but instead have an internal tracking system for vessel visits. Notable in these two approaches is that overall at-berth times (in the base year) between CARB's inventory and Oakland's appear to be within 5 to 10 percent based on discussion with the port staff. Staff selected the AIS because it is both more uniform and more relevant than the specific way each port selects at-berth times for each vessel. For example, if a vessel is waiting (not maneuvering or at anchorage) near a berth, but is not moored, connected to shore power, cleared by customs, and is in transition, the AIS will show that vessel "at-berth", while a port tracking system may not. It is appropriate in the emissions inventory to include these periods as the auxiliary engine is running and producing emissions in each case at the specified port, even if the port does not consider that vessel to be "at-berth" in their systems. Although each period is short, the differences compound across each visit. For emission's inventory, the AIS data is the more reliable source.

Lastly, on vessel power by size category, the emission inventory uses the vessel boarding program data from the Ports of Los Angeles and Long Beach. For background, inventories in other categories use the maximum horsepower of the engine (which is very easy to determine in most cases) multiplied by a load factor (a unitless number which represents the fraction of maximum power that is used on average) to determine the average power output of an engine. Load factors are often difficult to determine, because they vary by vessel types, engine sizes, and even individual vessel operations. The Port of Los Angeles and Long Beach vessel boarding programs collect data directly from vessel while they operate, in the field, using measurements taken individual vessels. In comparison, load factors used in emission inventories are often estimates, averaged out across different types of vessels based on limited information. The vessel boarding program represents, by far, the best available information on the actual power output of marine vessels in California, and that is why it was used in the emission's inventory.

**Comment:** "Table 4 of the Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results shows vessel visit counts to California ports and MTCs in 2016 only. However, current trends are for fewer calls by larger vessels for a given amount of containerized cargo. The discussion on page 25 of the draft clarifies that "vessel practice changes" are not considered, even as the total number of calls is dropping in real time. Since 2013, total annual calls to the Port have been decreasing. Container cargo throughput is thus decoupled from vessel call activity. CARB should expand the vessel growth forecasting for the baseline scenario to include the effects of larger vessels and fewer calls for the same amount of containerized cargo." (17.43)

**Comment:** “The growth rates in the Freight Analysis Framework (“FAF”) for ports and MTCs outside of the San Pedro Bay are at odds with current trends. The FAF assumption for container cargo at the Port of Oakland is a 5% year-over-year growth rate between 2016 and 2020. Actual growth rates between 2016 and 2018 have not kept pace, with current Oakland planning documents estimating about half the FAF compound annual growth rate. CARB should adjust the FAF growth forecasting for the baseline scenario to align with actual trends.” (17.45)

**Comment:** “CARB does not account for efficiency changes in the growth analysis. As stated in Appendix H, updated inventory, “CARB staff do not assume any vessel practice changes or system efficiency changes in the growth analysis except for POLA and POLB as discussed in section 4.2. Therefore, if tonnage increases 35 percent over 20 years for a vessel type in a specific region, the total activity from that vessel type was modeled as increasing 35 percent over the same period” (H-29). Applying growth factors without taking into account efficiencies will overestimate future at-berth emissions and thus overstate the emissions benefit of the proposed regulation.” (52.B.16) (52.A.33)

**Comment:** “The growth assumptions in Table IX. Growth Factors overestimate actual TEU growth for the Port between 2016 and 2018 and continue to use a 3.9% compound annual TEU growth rate between 2018 and 2032. Port staff request that in addition to this high estimate of TEU growth, CARB prepare an estimate of emissions using a realistic growth estimate. For reference, the Port’s CAGR between 2008 and 2018 was 0.4%. Port staff understand that the growth estimates CARB is using for emissions and costs for the Port will align with the vessel fleet projections (such as larger vessels each year) that are being used for the Ports of Long Beach and Los Angeles.” (17.40)

**Comment:** “CARB did not account for changes in vessel size over time for most ports. CARB states: “This change in container vessel sizes was included for POLA and POLB as they were the only ports included in the study. Other ports may see a shift over time but could be limited by berth size and channel depth, port space and capacity, and other limiting factors. Any shifts in vessel sizes for other ports will be reviewed in future inventories” (H-32). Nearly all vessels calling San Pedro Bay also call the Port of Oakland; thus, the POLA and POLB container forecast by size will also apply to the Port of Oakland forecast and should be contemplated in the analysis. CARB could validate this approach by comparing the Port of Oakland liner service schedule to the POLA and POLB schedules.” (52.B.17) (52.A.34)

**Agency Response (17.43), (17.45), (17.40), (52.B.16), (52.A.33), (52.B.17) and (52.A.34):** CARB staff made no changes based on the comments received. The comments above relate to two issues, (1) the 2019 growth forecast for the Port of Oakland completed for the Bay Conservation and Development Commission (BCDC) by the Tioga Corporation, and (2) the efficiency gains seen as

ocean-going vessels increase in size over time, specifically container vessels. Larger vessels can transport an increased number of containers, without significantly increasing auxiliary power. It should be noted that they may be at dock longer to unload the increased number of containers though.

As noted in the inventory documentation, the growth forecast for Oakland in the current inventory is based on the Freight Analysis Framework (FAF), which forecast container goods delivered to Northern California and specifically the Bay Area. The container goods are moved by container vessels, which (almost completely) pass through the Port of Oakland if they come through Northern California. The forecast uses the increase in containers as a surrogate for forecasting the total power of vessels visiting the Port of Oakland.

CARB's emission inventory team is currently evaluating both the new forecast as well as the efficiency gains, and plans to incorporate relevant portions in the next OGV inventory. The Tioga forecast was not included in the previous version as the BCDC Board had neither reviewed nor approved the forecast by the time of the initial CARB Board hearing for OGV (the review date was set on the same day as CARB Board date, later in the afternoon). It would be neither scientific nor a good policy to use Tioga's updated draft growth rates before the commission sponsoring the study had a chance to review and possibly request changes. Using the forecast prior to BCDC's approval would place the CARB's emissions inventory and Board members in the position of making the Tioga's cargo growth rates official prior to the BCDC. The growth rates that are currently used by CARB for the Ports of Oakland matches the previous Tioga report within 0.2 percent per year, and actually falls slightly below the previous Tioga growth rate (which would be the Port of Oakland's officially adopted growth rate at the time of inventory development and initial CARB Board hearing). Additionally, page 37 of the Tioga report clearly states that the port of Oakland has seen an annual growth of 3.8 percent between 2015 and 2018. The efficiency gain was not included for Oakland as it was based on a study specific to the Ports of Los Angeles and Long Beach, and no similar studies have been completed for Oakland. CARB inventory staff are evaluating methods to apply the projected efficiency gains from Ports of Los Angeles and Long Beach to similar large container ports such as the Port of Oakland, for inclusion in future emissions inventories.

A draft of the emissions inventory used to support the At Berth Regulation has been available for review and comment since January 16, 2019. In a data-rich environment such as container vessel shipping, new data and reports are available not only every year but every few months. CARB inventory staff will continue to update the inventories with the best available information, and these future updates will be completed and included in the inventory prior to the Board review of the progress in port infrastructure and technologies scheduled for 2022.

**Comment:** “The Port appreciates CARB staff’s willingness to apply an “efficiency factor” that acknowledges efficiency gains produced by moving more cargo on fewer, larger ships. One point of caution is that the layering of percentages makes it extremely difficult to follow the logic and relate CARB’s forecasted activity and emissions to any real-world metrics. Small errors and invalid assumptions with an initial set of data points can be magnified as these results are extrapolated into later forecast years, which lead to unrealistic and unreliable conclusions. The Port understands the complexity of the task, but a regulation as important and expensive as the one being proposed needs to be based on data that can be fact-checked, and must include forecasts that are grounded in factual operational data.

As an alternative, the Port of Oakland prefers and requests that CARB re-evaluate the inventory using 2016 baseline values provided by the Port and a Port-specific growth forecast. The Port further requests that the forecast activity levels be related to ship calls, which can be readily understood by all ports, regulatory agency staff as well as by the public. This would be consistent with how the Port tracks shore power usage and compliance. Lastly, and most importantly, the Port asks that these changes be made and the inventory fully peer-reviewed before the CARB Governing Board contemplates further action on the Proposed Control Measure.” (17.3)

***Agency Response (17.3):*** CARB staff made no changes based on the received comment. CARB will consider using vessel visits as a metric for future forecasts based on the points raised here, however CARB staff disagree that forecasting the growth in total vessel power is overly complex compared to the alternatives. Currently, the inventory forecasts that the freight tonnage at the Port of Oakland will grow at 4.6 percent annually, based on the Freight Analysis Forecast analysis (described in the inventory report and in other responses in this document), and subsequently forecasts the exact same increase in total power for all vessel visits in future years.

Increasing the total power of all vessel visits ties both overall activity and power directly to freight forecasts. Using a vessel visit forecast combined with a TEU forecast would require building in more complexity and assumptions, such as the exact TEU capacity per vessel in the future (during a period in which vessel sizes are clearly shifting), the average TEUs delivered per vessel size category (which will vary from capacity), and how the vessel visit length relates both to the vessel size bin and TEUs delivered. This would significantly increase both the complexity and assumptions needed in the forecast.

As noted in the comment, CARB staff look forward to working with the Port of Oakland on overall growth rates, efficiency of ship visits, and method of forecasting moving forward, but disagree that the current method is either less accurate or less complex than the alternatives suggested.

**Comment:** “Why was 2016 selected as the baseline calendar year for the emissions inventory? Does CARB plan to conduct in-depth emissions inventories for 2017 and 2018?” (17.42)

**Agency Response (17.42):** CARB staff made no changes based on the received comment. The emissions inventory development for this category began in 2017 and 2016 was chosen as it was the latest full calendar year for which data was available. Additional years will be incorporated in future inventories, as they are updated and released periodically.

**Comment:** “7 of the Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results relies on the assumption that for all ports and MTCs, container vessel effective power will match that of the Ports of Los Angeles and Long Beach in 2016. The effective power does not appear to be a function of vessel size bin, so the level of detail with which the effective power is classified by CARB-defined size bin is not appropriate. In addition, given the variation between data from the Port of Los Angeles and the Port of Long Beach within the same CARB-defined size bin, the data may not be meaningful when averaged by CARB-defined size bin. CARB should use an average effective power for container vessels regardless of size.” (17.44)

**Agency Response (17.44):** CARB staff made no changes based on the received comment. CARB staff agree there is neither a direct or linear relationship between vessel size and auxiliary power at all points, however it is unclear how averaging across vessel sizes would increase accuracy. Currently the average for each vessel bin is based on real world data on the installed power for those vessels that visit the Ports of Los Angeles and Long Beach (the only available data source for California ports at present). The fact that there is no clear relationship between vessel size and auxiliary power does not make the data invalid or current specificity inaccurate; it simply means that there is no trend relative to vessel size. If the Port of Oakland can elaborate what it sees as the benefits of less granularity, CARB staff will certainly consider averaging across vessel size bin in future inventories.

**Comment:** “Page 27 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* discusses statistical significance in the context of the emission forecasting. If CARB staff have conducted an uncertainties analysis, it should be included in the methodology and results document.” (17.46)

**Agency Response (17.46):** CARB staff made no changes based on the received comment. The emissions inventory document references comparative analysis completed by CARB staff, while the Federal Highway Administration conducts uncertainty analysis on the inputs and outputs of the FAF model itself. One such comparative analysis from CARB staff is detailed at the top of page 32 in the noted report, where the growth surrogate (FAF) is compared favorably against an independent study of the same metrics. In another comparison on

page 35, the FAF rate is compared against historical Port of Oakland growth rates, showing the forecast reasonably matches the 17-year growth phase seen in the Port of Oakland from 1990 to 2007.

**Comment:** "Table 15 of the *Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results* does not treat all ports and vessel types equally when assuming "Projected 2020 and Later Time on Shorepower," without justifying the differences. For instance, CARB assumes container vessels at the Port of Hueneme spend 80% of their time on shore power after 2020, while CARB assumes at the Ports of Los Angeles and Long Beach container vessels spend only 65% of their time on shore power. Impossibly, CARB-defined size bins 7, 9, and 12 container vessels at the Port of Oakland are assumed to spend 100% of their time at berth on shore power.<sup>3</sup> Port staff request further justification for and synchronization of the assumptions for "Projected 2020 and Later Time on Shorepower." (17.47)

**Agency Response (17.47):** CARB staff made no changes based on the received comment. CARB's entire shore power methodology has been updated from the time of this comment and the results it references. However, different ports still have different total times at-berth, from different vessel size bins, as different portions of their total at-berth hours are made up by regulated vessels. Both the Port of Oakland and the Ports of Los Angeles and Long Beach have their forecasted time on shore power set to 80 percent of the shore power hours of the regulated fleet, on average. However, the difference between each port are maintained.

For example, in the base year, for vessels carrying between 7,000 and 8,000 containers (vessel size bin 7), in Oakland 70 percent of the hours at shore power were controlled. In the Ports of Los Angeles and Long Beach, only 45 percent of shore power hours from this size bin were controlled. Simply setting all size bins to 80 percent of time on shore power in the future would ignore the real world trends at different ports where vessels do not uniformly use shore power (or other emission controls)

In early versions of the inventory, staff did apply more equal application of shore power to each vessel size bin, however after comments from both industry and ports, changed the shore power to be more specific to each vessel size bin.

Outliers, such as the Port of Hueneme, which have over 80 percent of hours on shore power in the forecast, already had over 80 percent of hours on shore power in the base year.

**Comment:** "In the discussion of the "static age distribution model" versus a survival and turnover model, CARB staff do not consider the abnormally high number of OGV

keels laid in 2015. How did CARB decide that the spike in keels laid in 2015 was not material to estimating NOx emissions through 2050?" (17.48)

**Agency Response (17.48):** CARB staff made no changes based on the received comment. CARB used a forecast of vessel visit age distribution (which includes Tier distribution) completed by Starcrest for the Ports of Los Angeles and Long Beach. The Starcrest forecast includes an assessment of keels laid on the future Tier distributions, along with international shipping patterns and current Tier distribution.

**Comment:** "CARB should revise its assumption that sulfur content in fuel is 0.1% based on the results of enforcement analyses of in-use fuel sulfur. The sulfur content of in-use fuel as sampled by the CARB enforcement team in calendar years 2017 and 2018 is lower than 0.1% by 30% and almost 50%, respectively, presenting information that actual emissions are lower than those estimated by CARB. (As stated on page 12, information from CARB's enforcement team is already used to determine reduced emissions from reduced engine activity time.)" (17.49)

**Agency Response (17.49):** CARB staff made no changes based on the received comment. However, this is an excellent suggestion and will be incorporated in future inventories. Currently the sulfur content testing from CARB's enforcement team shows a large range of content varying from below the standard to multiple times higher than the standard for sulfur. More testing and research is likely needed to determine the impact of this range on emissions, however both the concept Oakland presents and the need to reflect it in future inventories are sound.

**Comment:** "CARB should elaborate in the text on the Particulate Matter ("PM") emission factor for Marine Gas Oil ("MGO") at 0.1 % sulfur. The 2007 Initial Statement of Reasons for At-Berth Regulation rulemaking used a value of 0.25 g/k.W-hr for 0.1 % S MGO. The Draft 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results uses a PM emission factor of 0.18 g/k.W-hr for the same fuel. The root source for OGV auxiliary engine emission factors is stated in both cases as the 2002 Entec study, with no description of why two different values of PM emission factors are used for the same fuel." (17.50)

**Agency Response (17.50):** CARB staff made no changes based on the received comment. The PM emission factors (EF) used in the inventory were based on the US EPA 2009 emission factor update (see page 2-14 of 2009 EPA report<sup>1</sup>). Specifically, they use the following equations:

- For Residual Oil PM10 EF =  $1.35 + \text{BSFC} \times 7 \times 0.02247 \times (\text{Fuel Sulfur Fraction} - 0.0246)$
- For Marine Diesel Oil (MDO) & Marine Gas Oil (MGO) PM10 EF =  $0.23 + \text{BSFC} \times 7 \times 0.02247 \times (\text{Fuel Sulfur Fraction} - 0.0024)$

These equations were used to adjust the previous emission factors for fuel sulfur content. To be consistent with US EPA emissions inventory, CARB staff updated the PM emission factors using the 2009 US EPA reports<sup>8,9</sup>.

**Comment:** “Please add References to the Table of Contents and to the document (Sources of emission factor information are only included at the end of Appendix A).” (17.51)

**Agency Response (17.51):** CARB staff made no changes based on the received comment. Source material is linked directly in footnotes to maintain proximity to the pertinent information rather than at the end of the document.

**Comment:** “On page 42, should the last sentence read ‘it excludes emissions from boilers,’ not ‘it excludes emissions from auxiliary engines?’” (17.52)

**Agency Response (17.52):** CARB staff modified the proposed regulatory language in response to the received comment. This has been updated in the 15-day package.

**Comment:** “CARB needs to identify the quantified emission reductions it is seeking to achieve via the implementation of the new regulations. This targeted volume reduction should then be applied to the modelled emissions of each port, on a port by port basis to determine what is the scientifically calculated emission reduction goal. Bringing verified, valid emissions data into the analyses for this regulatory process will ensure that the cost benefit analysis, which must accompany this effort, is as accurate as possible. The emissions of each port are different as well as the basin status and these characteristics should be reflected in CARB’s analyses.” (53.8)

**Agency Response (53.8):** CARB staff made no changes based on the received comment. Emissions are modeled separately for each port, based on vessel visit data and ship characteristics for that port. Emissions reductions in the model are based on applying the best available, and cost effective control technologies and strategies to those port specific vessel visits.

**Comment:** “CARB estimates of port emissions for each port subject to the regulations should be scientifically valid, using the best available science and valid methodologies that both CARB and the subject ports concur are valid. CARB’s reduction target should be applied to the agreed upon inventory emissions amount to ensure fair calculation of responsibility.” (53.9)

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<sup>8</sup> U.S. Environmental Protection Agency, Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories - Final Report (April 2009), <https://www.epa.gov/sites/production/files/2016-06/documents/2009-port-inventory-guidance.pdf> [Accessed June 13, 2018].

<sup>9</sup> U.S. Environmental Protection Agency, Estimation of Particulate Matter Emission Factors for Diesel Engines on Ocean-Going Vessels, Memo Docket EPA-HQ-OAR-2007-0121 (September 12, 2007).

**Agency Response (53.9):** CARB staff made no changes based on the received comment. CARB has applied a lengthy public review process for this inventory from Since January 16, 2019 through November 2019, making multiple adjustments and improvements based on reviews from other scientific agencies and the ports. CARB consults not only with ports, but impacted companies, US EPA, and any available research on the specific industry or related fields. In each case, staff has made their best effort to respond and reflect the necessary changes where it is scientifically sound.

**Comment:** “CARB’s ongoing emission inventory analysis makes assumptions about growth rates of OGV business at California ports. CARB is applying estimated growth in OGV traffic in various vessel classes to calculate growth in emissions, rationalized by the assumption that more OGV activity means more engine use, which equates to proportional increases in emissions. During this process, the ports were lumped into regions for simplified assessments. The Port was thus included in the same region as LA/LB. Consequently, the growth rate of a significantly larger port complex with extremely different growth estimates was used in the emissions calculations as a surrogate for the Port. Due to a number of reasons, including the size constraints of the Port’s berths and shore-side area, the growth rates of LA/LB are in no way accurate for the Port, and would grossly overestimate the anticipated growth of the Port and its future emissions. This would in turn overestimate the potential for impact on local air quality and potential for human health effects. The inaccurate growth numbers CARB used for the Port were: an increase in refrigerated carriers by almost 44% and roll-on roll-off vessels of over 80% by 2025. The Port has calculated as part of its own business planning a more modest growth rate of approximately 30% over 30 years. The emissions associated with this growth forecast should be applied to any policy impacting the Port.”

“Within the air basin of Ventura County, the Port is a fairly small contributor of pollutants as evidenced in Table 3. The Port’s emissions of all of the assessed criteria pollutants, except NOx, contribute less than one percent of the Ventura County SCC air basin’s totals! The Port has worked in the last decade to implement operational changes and new technologies to reduce emissions, such as the addition of shore power, and through investments in efficiencies to reduce delays in cargo movement. In comparison to the Port’s 2008 emissions, and despite an increase in vessel calls and goods throughput, the Port has seen a reduction in nearly all of assessed criteria pollutants including CO2, VOCs, particulate matter and SOx.

Port of Hueneme Compared to Port of LA, VCAPCD, SCAQMD Emissions						
Criteria Pollutants	VOC tons/day	CO tons/day	NOx tons/day	PM 10 tons/ day	PM 2.5 tons/day	SOx tons/day
Port of Hueneme Total	0.05	0.2	1.6	0.02	0.01	0.01
Total VCAPCD Emissions	45	169.5	60	29.1	10.5	17.0

Port of Los Angeles	1.1	5.2	22	0.4	0.4	0.4
SCAQMD Total Emissions	640	2,735	673	346	127	70
Port of Hueneme % of VCAPCD	0.1%	0.1%	2.7%	0.06%	0.1%	0.1%
Port of LA % of SCAQMD	0.2%	0.2%	3.2%	0.12%	0.3%	0.5%

(53.16)

**Agency Response (53.16):** CARB staff made no changes based on the received comment. CARB agreed with the Port of Hueneme early in inventory development and worked with the commenter on a port specific growth rate (not included with the Port of Los Angeles and Long Beach), as noted in numerous emails, calls, in person meetings, and explicitly stated in the emissions inventory documentation. The Port of Hueneme growth in the inventory was supplied directly by the Port of Hueneme staff.

As to the size of the ports, it is unclear what the Port of Hueneme is asking or suggesting. Regulatory and inventory staff are available for discussion if the Port has specific suggestions or concepts based on their size.

**Comment:** “The Emissions Inventory Contains Incorrect Assumptions and Methodology A. Staff’s Tanker Emissions Growth Assumptions are Not Realistic and Contradict CARB’s Own Regulatory Objectives Related to Fossil Fuel Use in California WSPA asks Staff to re-evaluate the results of their analysis and assume more realistic trends in the shipping industry, consistent with real-world data and CARB’s own statewide fossil fuel regulatory policies and goals.

Staff also incorrectly applies inflated growth factors to expected future tanker traffic at POLA and POLB. In an attempt to identify long-term shipping trends and the risks of cargo diversion from POLA and POLB, Staff again relies on the Mercator Report. The Mercator Report forecasts increases of roughly 50% in exports of non-crude oil (identified in the report as “refined products”) between 2015 and 2040. See Mercator Report, pp. 17-18. Importantly, over that same period, the Report also forecasts modest declines in both crude oil and non-crude oil imports. *Id.*, pp.17, 126. In the SRIA, Staff claims that these results support an estimated 57% growth in all “activity” at POLA and POLB between 2021 and 2032. See SRIA, p. 31.

Attempting to apply these numbers to anticipated future tanker traffic in California misapplies the Mercator Report and ignores real-world data. Based on 2016 data from the U.S. Energy Information Administration for Petroleum Administration for Defense District (PADD) 5, nearly 77% of all imports to the West Coast are crude oil. Even the Mercator Report reflects that, as recently as 2014, more than 68% of all liquid bulk volume at POLA and POLB was attributable to crude oil imports. See Mercator Report, p. 110. Given that tanker activity at the Ports predominantly represents crude oil imports, the Mercator Report does not support the notion that all

tanker “activity” in California will grow by anything approaching 57% through 2032. Indeed, according to the Mercator Report, crude oil imports into POLA and POLB are forecasted to decline through 2032 and beyond. See Mercator Report, pp. 117-119.

The result of this incorrect reading of the Mercator Report is a dramatically overestimated growth rate for tanker emissions. Pumping emissions associated with tanker traffic should be generally declining as crude oil imports decline over time, not increasing at the rate Staff has asserted. This incorrect assumption is a fundamental flaw in Staff’s analysis of claimed emissions savings associated with the At Berth Regulations.” (22.8)

**Comment:** “At the Port of L.A. and Long Beach, staff calculations overestimate emission growths by nearly 50 percent, despite CARB's own source showing that tanker imports will decline over time.

Additionally, staff applies growth rates to the 2016 base vessel count for all regions, despite each of the sources indicating growth is in cargo volume, resulting in a near doubling of the number of vessels required to move the indicated volume in the reports. These mistakes inflate the estimated emission benefits of the proposal and should be addressed before the next Board hearing on this proposed regulation.” (OC-2 McDonald)

**Agency Response (22.8) and (OC-2 McDonald):** CARB staff made no changes based on the received comment. The current emissions inventory reflects a forecasted growth rate of tankers in the Ports of Los Angeles and Long Beach of approximately 0.5 percent annually from 2025 onward. This growth rate is based directly off of the Mercator forecast for tanker-carried commodities, a report generated specifically for the ports. CARB staff generally agree it would be an improvement to use more specific values for the types of commodities from tankers, and whether the tanker is importing or exporting product, and plan to make this improvement in future inventories. It is also more accurate to characterize CARB as having used the aggregate growth for tankers instead of growth by tanker activity type (importing, exporting), rather than “misread” or “incorrectly” read the report. Currently vessel visits are not modeled based on whether they import or export product, and new analysis will be necessary before staff can apply growth rates with increased specificity. Ultimately, as the growth rate is already extremely low, any changes to the growth rate would not change total tanker activity and emissions.

**Comment:** “Staff Incorrectly Assumes That No Tier III Vessels Will Be in Service By 2030. As one of its fundamental justifications for the At Berth Regulations, Staff assumes that no marine vessels meeting the International Maritime Organization’s Tier III emissions standards will be calling at California terminals until 2030 at the soonest. Staff Report, App. H (“2019 Update to Inventory for Ocean-Going Vessels at Berth: Methodology and Results”), pp. H-6, H-36 to H-37. Comments submitted to CARB

earlier in this rulemaking document that this assumption is incorrect and ignores real-world evidence to the contrary. For example, Chevron's Richmond Long Wharf (RLW) acquired two Tier III-equivalent vessels in 2018. See Staff Report, Appx. H, p. H-25. Specifically, Chevron operates two Suezmax-sized tankers that lighter nearly 70% of the Richmond Refinery's deliveries of crude to RLW. These tankers use superheated steam auxiliary boilers and turbogenerators to generate electricity in low-emission mode, which yield no diesel particulate matter (DPM) and emit NO<sub>x</sub> emissions lower than those produced by Tier III-qualifying diesel engines (i.e., on the order of 0.78 g/kWh, versus the Tier III 2.31 g/kWh NO<sub>x</sub> limit for a 900 rpm diesel generator). Chevron expects that fully one third of Chevron's fleet will meet the Tier III standards by 2021 – more than nine years before Staff's assumed first date of Tier III vessel service at California terminals. Chevron anticipates that 55% of vessels visiting RLW will be Tier III compliant by 2030, and 80% will be compliant by 2035 – conclusions consistent with a separate third-party study estimating roughly 50% Tier III vessels visiting RLW by 2030.

The available evidence contradicts Staff's assumption of zero Tier III vessel visits at terminals before 2030. Because Tier III-compliant vessels emit substantially less NO<sub>x</sub> per kilowatt-hour on average than Staff's assumed future vessel mix, Staff's assumption of future NO<sub>x</sub> emissions at terminals also is at odds with actual real-world experience. Indeed, based on these facts, the At Berth Regulations would be relevant in meeting targeted emissions reductions for less than 5 years at most, before the influx of Tier III vessels will yield overall fleet NO<sub>x</sub> reductions that meet or exceed the reductions coming from the At Berth Regulations. Moreover, the types of on-board emission control associated with Tier III compliance would provide emissions reductions throughout the entire Emission Control Area (ECA) (i.e., during vessel transit and maneuvering), while the benefits anticipated by the At Berth Regulations would only accrue while vessels are at berth.

Neither the ISOR nor the At Berth Regulations account for these facts. Were Staff to apply the correct assumptions consistent with real-world data, it would be forced to conclude that the cost effectiveness of the At Berth Regulations is far less than that claimed in the Staff Report materials. It is also likely that alternatives to the At Berth Regulations would prove to be far more cost effective in achieving real-world NO<sub>x</sub> emissions reductions." (22.9)

**Agency Response (22.9):** CARB staff made no changes based on the received comment. CARB has worked with Chevron to specifically include these two vessels into the emissions inventory during the summer update period. These vessels however do not have Tier 3 certified engines and as such are not actual Tier 3 vessels, so they are not factored in CARB's forecast of Tier 3 vessels. If there are reductions from new technology that stakeholders would like to apply towards regulatory compliance, they can apply as a CAECS or as a component of an innovative concept.

However, it should be noted that the HRA is based on DPM, and not NOx emissions. Tier 3 vessels do not have tighter DPM controls, and so would not likely impact DPM assessments (the basis of the Regulation).

**Comment:** “Staff Overestimates Pumping Activity of Tankers At Berth at Terminals Staff’s at berth emissions inventory is also unrealistically high because it overestimates actual tanker pumping activity at berth. Specifically, Staff makes the incorrect assumption that tankers that berth at marine terminals have the same activity mode profile as tankers that berth at POLA/POLB (i.e., actively pumping product 85% to 100% of the time they are at berth). See Staff Report, Appx. H, pp. H-21 to H-25. This is contradicted by evidence Chevron submitted to staff concerning real-world experience at Richmond Long Wharf (“RLW”). See Exhibit 8, p. 4. This data shows that vessels at berth (particularly non-Suezmax vessels) actually spend significant periods of time either loading by gravity feed or idling – two modes with lower overall emission rates versus times of active pumping. Thus, rather than simply assuming only two operating modes for tankers at berth – “Discharging” and “Other/Loading” – Staff should gather additional information from the ports and terminals to account for the different emissions occurring during pumping, ballasting and idling/hoteling, and use this information to arrive at a more accurate estimate of actual at berth emissions.

While Staff acknowledges the RLW data, it apparently refuses to accept the data as illustrative of any terminal’s operation besides RLW. See Staff Report, Appx. H, pp. H-24, H-25 (separately listing discharging/loading times and resulting boiler effective power for tankers for “Richmond” and for “Rest of CA (based on POLA/POLB)”). Rather, Staff simply assumes that vessels at all other California terminals will have the same effective power loads as vessels calling at POLA/POLB – i.e., pumping 85%-100% of the time. See Staff Report, Appx. H, p. H-21, H-24.

This assumption does not find support in real-world practice. The mix of vessel types and operations calling to service refineries varies. Due to draft limitations, the POLB has California’s only deepwater berth that can accept Very Large Crude Carriers (VLCCs) and Ultra Large Crude Carriers (ULCCs), which Staff notes engage in discharge pumping 100% of the time while at berth. In contrast, most of California’s other marine terminals cannot host VLCCs and ULCCs, and vessels that do call on the terminals typically spend less of their time at-berth in an active pumping mode. This real-world evidence belies Staff’s assumption that the other California’s marine terminals see identical vessel types and operations as those found at the POLA/POLB.” (22.10a)

**Agency Response (22.10a):** CARB staff made no changes based on the received comment. CARB inventory staff worked with Chevron on this issue to update the pumping and non-pumping times at Richmond to reflect operations there. Power used during those times is still based on the only real world data

available for California, from the Ports of Los Angeles and Long Beach. CARB staff would enthusiastically agree that it would be beneficial to all parties to collect power use data specific to ports and terminals for use in future inventories and is willing to work with WSPA and Chevron to do so. Until that time, the data source that is currently used in the emissions inventory will remain as the only real-world data available on tanker power rates in California.

**Comment:** “Moreover, it appears that there is an error in Staff’s adjustment of the emissions inventory to account for the two Chevron Tier III-equivalent ships that started service in 2018. See Staff Report, Appx. H, p. H-25. Staff refers to the vessel class of the two ships as “Seawaymax.” This is incorrect; the vessel class introduced was actually Suezmax. Since it appears Staff estimated adjusted effective power incorrectly assuming these two vessels to be Seawaymax, Staff must correct their calculations to properly reflect that the two vessels are Suezmax.” (22.10b)

**Agency Response (22.10b):** CARB staff made no changes based on the received comment. The reference of Chevron’s two “Tier 3 equivalent” vessels as being Seawaymax was an error within the methodology paper. The calculations made in the inventory used the correct size of the vessels of Suezmax. This labeling error and correction was noticed as part of the March 26, 2020, 15-day package (Attachment C, Updates to Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results). The updated document is available on CARB’s website at: <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/15dayattc.pdf>

**Comment:** “Staff Overestimates Future Growth of Vessel Visits at Terminals. Staff also continues to assume unrealistically high future vessel traffic growth at California terminals, predicting that tanker visits will grow between 25.4% and 318.2% by 2050. WSPA requests Staff include a section of the inventory report illustrating why growth was applied as it was. First, real-world data simply does not support such extreme predictions in growth at California terminals. For example, actual vessel calls at RLW between 2007 and 2017 experienced net growth of closer to 1% over that ten-year period, with fairly cyclical growth and declines in vessel visits within that period year-to-year. See Exhibit 8, p. 8. Using this data as a guide, total vessel growth rate at RLW by 2050 would be expected to be around 4% in aggregate. This growth assumption is very different than that assumed by Staff and yields a much lower forecast of future growth at the terminals based on real-world data.

Moreover, it appears Staff have not considered the carrying capacity of a tanker when applying the growth factor. Equating growth in tanker vessel visits to growth in total tonnage throughput neglects the fact that different vessels carry a range of different volumes.

- To illustrate this issue, a 400,000-ton increase in freight throughput in a year could represent 1% growth in overall tonnage, but based on vessel DWT, it

- would be possible for just two Suezmax vessels to carry that additional volume. Applying a 1% growth factor to a baseline number of vessels as Staff has done could yield a higher number than 2 additional vessel visits (for example, for the Richmond Complex, which had 400 tanker visits in 2016, a 1% growth factor would assume four additional tanker trips per year).
- As Staff's proposed methodology is applied over a longer period (e.g., 10 years), the difference between the anticipated number of vessels and actual vessel calls could compound, as Staff continues to ignore the larger carrying capacities of each vessel. In the example of the Richmond Complex, applying Staff's proposed method would yield an estimate of 4,627 vessels needed to physically carry the anticipated volume between 2016 and 2026, rather than 4,510 vessels that would actually be required to physically carry the volume." (22.10c)

**Agency Response (22.10c):** CARB staff made no changes based on received comment. The growth rate for the Richmond Long Wharf (RLW) in the inventory is 1.1 percent per year annual compound growth, based on the FAF forecasts specific to petroleum and oil movement growth in the Bay Area. The FAF growth rates account for a future product demand, international trade shifts, transport logistics, and provide a more robust source for growth forecasts than using historical trendlines. However, CARB staff will carefully monitor the real world growth experienced at RLW at adjust the forecast as necessary in future inventories.

It is also notable that the inventory growth rate provides an approximately 11 percent net growth from 2020 to 2030. During the development of the inventory, CARB staff heard various proposals from both WSPA and Chevron for using 0.5 percent annual growth rate (as heard in comments in the initial Board hearing on this measure), a growth rate that would provide 5.5 percent net growth between 2020 and 2030. This would result a difference from CARB's inventory of only 5.5 percent by 2030. The fact that CARB staff and industry used two completely different methodologies for growth but arrived at only a 5.5 percent difference, when forecasting a decade into the future, serves closer to corroboration than disagreement.

CARB staff did not intend or attempt to predict a shift in the class of tanker vessels visiting RLW, and therefore did not attempt to distribute future growth to specific vessel classes. If WSPA is aware of a study or assessment of future tanker class sizes, CARB staff would be interested and will work with WSPA to determine how those could be incorporated in the inventory. Currently, it could equally be stated that the inventory underestimates future vessel visits if all additional visits were of the smallest tanker class (with the lowest capacity). Barring a study or analysis of future tanker class sizes, assuming that growth will be equally shared by all current vessel sizes

proportional to their existing representation is the least biased methodology.

**Comment:** “CARB should undertake a thorough analysis of the proposed measure and feasible alternatives to ensure that the measure selected maximizes net benefits to society. A final rule that inadvertently diverts cargo to ports outside California would result in the cargo being trucked back to California markets and actually increase air emissions and GHG concerns. In crafting a suitable approach, it is critical that CARB utilize the best available scientific and technical information. For instance, CARB forecasts a 5% year-over-year growth of cargo for the next decade, whereas our ports have voiced that a 2-2.5% growth rate is realistic. Accordingly, the forecasted emissions assumptions that CARB is relying on do not appear to be supported by the data and, as a result, they distort CARB’s analysis of the proposal’s effectiveness, impact on regulated entities, and benefits.” (59.2)

**Agency Response (59.2):** CARB staff made no changes based on the received comment. CARB agrees using the best information, science and methods are very important. If the commenter would like to suggest an alternative source, CARB will fully investigate for future inventories. A background of the current growth rates and why they were chosen is available in Section 4.1 of the CARB’s 2019 OGV emissions inventory technical support document (Appendix H to the ISOR). For further discussion on cargo diversion see Master Response 2.

**Comment:** “The Port would like to provide the following comments to improve the integrity of the ISOR: The ISOR utilizes a report by the Mercator International in 2016, which estimates activity at the Port of Los Angeles and Port of Long Beach will grow by 57% between 2021 and 2032 as measured in 20-foot equivalent units (TEU). CARB staff used this to estimate emissions without the implementation of the new At Berth regulation. The results are a significant overestimation, as the TEU growth metric does not account for the fact that while cargo increases, the ships are getting larger and fewer ships are calling the Port. Since 2005, container throughput is up 21% at the Port of Long Beach, while containership calls are down 25% according to the 2018 Emissions Inventory. TEUs per call are up 60%.” (60.6)

**Agency Response (60.6):** CARB staff made no changes based on the received comment. CARB inventory staff included the shift of vessel sizes forecast for the Ports of Los Angeles and Long Beach, along with their respective growth rate, as described in Section 4.1 of the CARB’s 2019 OGV emissions inventory technical support document.

**Comment:** “The Port would like to provide the following comments to improve the integrity of the ISOR: The ISOR does not adequately capture the emissions benefits associated with RoRo vessels. The Port in partnership with the Port of Los Angeles and the Pacific Merchant Shipping Association (PMSA) asked a third party consultant to develop a cost-effectiveness analysis for RoRo ships in the San Pedro Bay Ports

(SPBP) which must comply with the proposed regulation. Given CARB's assumption that the RoRo industry will opt for barge-based emission capture and control technology, the analysis considers the emissions benefits of this technology, and the additional emissions produced from the harbor craft responsible for moving and placing the barge-based system. The anticipated benefits are shown below. The analysis identified that greenhouse gases and sulfur oxides will increase as a result of this regulation. The NOx and DPM benefits are small considering the respective Ports emissions inventories. Overall, auto carrier and RoRo at-berth emissions made up approximately 1 % of all OGV emissions in the SPBP's 2018 inventory, or between 2-4.5% of all at-berth emissions. Furthermore, the analysis estimates cost effectiveness to range between \$115k and \$200k for the utilization for four, third party barge-based emission capture and control systems. The analysis is included in the attachments and a summary of the results is available in Table A 1 below." (60.7)

**Table A1: RoRo Vessel Reductions from Barge-Based at-Berth Capture and Control, tpy**

Port	PM <sub>10</sub> tpy	PM <sub>2.5</sub> tpy	DPM tpy	NO <sub>x</sub> tpy	SO <sub>x</sub> tpy	HC tpy	CO tpy	CO <sub>2e</sub> mt/yr
<b>Emission Reductions (or increases)</b>								
POLB	0.40	0.38	0.38	19.61	-0.66	-0.73	-5.04	-1,615
POLA	0.22	0.20	0.18	8.98	-0.37	-0.43	-3.30	-1,005
<b>Total</b>	<b>0.62</b>	<b>0.58</b>	<b>0.56</b>	<b>28.59</b>	<b>-1.03</b>	<b>-1.15</b>	<b>-8.33</b>	<b>-2,620</b>
<b>Percent Reduction (or increase)</b>								
POLB	36%	36%	38%	40%	-28%	-44%	-113%	-49%
POLA	39%	38%	39%	40%	-35%	-52%	-151%	-53%
<b>Total</b>	<b>37%</b>	<b>37%</b>	<b>38%</b>	<b>40%</b>	<b>-30%</b>	<b>-47%</b>	<b>-125%</b>	<b>-50%</b>

**Comment:** "With regard to the expansion fleet, the inventory analysis overstates the benefits of the proposed rule by ignoring offsetting emissions from tug and bunkering activity as described in the Starcrest Analysis. The attached Ro/Ro analysis demonstrates that effectiveness of the rule is reduced to a 40% emissions reduction for pollutants while increasing GHG emissions by 50%. These emissions impacts are attributable to known, unavoidable consequences of the proposed regulation: increased tug activity and at-anchorage fuel bunkering. Whether you consider the net impact to be an increase in excess emissions or a decrease in the net benefit, the impact is the same to reduce cost effectiveness, reduce risk reduction, reduce benefits described in the Incidences per Ton analysis, and reduce the cost to benefit ratio. The ISOR does not properly account for any of these foreseeable outcomes in these analyses." (52.34) (EA 52-7)

**Comment:** "CARB should conduct a comprehensive GHG analysis related to barge-based control systems that includes the totality of GHG emissions, from the vessel and barge-based control system itself to the likely shift in bunkering activities. First, vessels will continue to burn fuel and emit GHGs while connected to the system; these emissions must be taken into account. Second, barge-based systems will

require a fuel source; even if this fuel source is grid-neutral, it may result in additional emissions not contemplated in CARB's current analysis. Third, barge-based systems will require harbor craft to move them into place, and these harbor craft will emit GHGs that must be included. Lastly, vessels that use barge-based systems may not be able to bunker at berth. These vessels will need to make additional trips to anchorage for bunkering; these emissions should be included in the analysis. Lastly, CARB should include power plant emissions owing to the switch to grid-based electricity. Only after including all of these parameters and likely impacts can CARB determine the net effect on GHG emissions.

- Additionally, by 2025, there is a requirement for grid-neutral control systems; however, GHG emissions increase for tankers and RoRos in 2027 and 2031. CARB should clarify the reason for the emissions increase." (52.B.19)

**Agency Response (60.7), (52.34), and (52.B.19):** CARB staff made no changes based on the received comment. CARB will consider the effectiveness and possible negative impacts of the bonnet systems, but included them to increase flexibility and provide potentially cost effective alternatives for some vessels. The built-in review period (i.e Interim Evaluation) of the Regulation will allow consideration of whether the bonnet system (i.e., the tugs moving the bonnet systems) creates adverse emissions impacts comparable with the benefits of controlling at-berth emissions from OGV.

See also Master Response 1 for discussion on tug vessels and GHG emissions related to barge-based capture and control systems. See also *Responses to Comments on the Draft Environmental Analysis* comment 52-7 for environmental discussion.

**Comment:** "The Port would like to provide the following comments to improve the integrity of the ISOR: The emissions inventory for the ISOR takes credit for Prop 1 B emissions benefits which are already anticipated to occur. 12 berths at the Port of Long Beach received Prop 1 B funding for shore power installations, and thus, must meet the strict requirement that 90% of vessels visiting these berths control at berth emissions. The ISOR should only take credit for incremental emission reductions above and beyond the requirements in place today." (60.8)

**Comment:** "The presentation also understates the benefits of the existing rule and overstates the benefit of the proposed rule for the existing regulated fleet by not including the benefits associated with Proposition 1B for shore power infrastructure. Proposition 1B provided funding to Ports and marine terminals for shore power infrastructure in return for contractual commitments that the emissions reductions from vessels calling on those facilities would exceed the requirements of the existing At-Berth Regulation. As a result, many of the emissions benefits attributable to the existing rule under the emissions inventory are largely attributable to vessels already captured under the existing rule but not accounted for, as described previously, and the Proposition 1B contractual commitments. Without properly accounting for these

two major elements, the CARB staff analysis provides an inaccurate presentation of emissions benefits of the proposed rule from the existing regulated fleet.” (52.32)

**Comment:** “The overall compliance rate under the existing regulation is unclear. From looking at ‘Table 20: Percent of Time on Shore Power by Year’ (H-41), it is unclear what CARB assumed as the overall compliance rate in 2020 and 2030 under the existing regulation. Also, it is not clear whether Table 20 accounts for additional shore power usage (beyond 80%) for Proposition 1B-funded berths. CARB should confirm that for the existing rule, the analysis assumes that container and cruise vessels are meeting the 80% at-berth shore power requirement in 2020 and 90% requirement for Proposition 1B berths.

- Additionally, CARB should clarify why there appears to be an increase in the percentage of time using shore power between 2020 and 2030 under the existing rule when the regulation stops at 80% in 2020.
- CARB should clarify why the overall compliance rate for cruise ships at POLA and POLB is 54% in 2020 as well as in 2030.
- Additionally, CARB should clarify whether it took into account the difference in average at-berth time between container/reefer/cruise vessels covered under the existing regulation versus those vessels not covered. Per Table H-20, small container vessels have a lower compliance rate under the existing regulation, and these vessels have a lower average time at berth compared to larger vessels. Depending upon the assumption of what container size vessels are covered under the proposed regulation that are in addition to those covered under the existing regulation, the emissions benefit of the Proposed Regulation will vary. A table similar to Table 20 showing compliance rate by vessel type and size will help understand how CARB estimated emissions reduction or increases due to the Proposed Regulation.” (52.B.13) (52.A.29)

**Agency Response (60.8), (52.32), (52.B.13) and (52.A.29):** CARB staff made no changes based on the received comment, however, do acknowledge that there is room for updates in the emissions inventory in regards to how Proposition 1B funded berths are factored into the inventory, and will work to better reflect this in future inventories. The overall percentage of shore power does not increase, but is maintained at 80 percent of the total regulated fleet (in the baseline). Due to requests by the Ports of Los Angeles and Long Beach, the inventory reflects shifting vessel sizes from 2020 to 2030, which requires shifting the compliance rates in those years to maintain a set percent of time on shore power. As different vessel size bins reflect negative growth in visits, others show increase, and new (larger) vessel bins are created in the forecast, it requires a rebalancing of shore power hours in each year to maintain the same total percent of time on shore power hours. Although shore power in specific bins is growing over time, the overall average remains steady at 80 percent of the regulated fleet.

**Comment:** "Introduction of Tier III Compliant Vessels prior to 2030. At the core of CARB's" proposed regulation is the assumption that there will be zero Tier III-compliant vessels in service before 2030, and consequently, CARB asserts the only mechanism to achieve emission reductions by OGVs is through regulation of OGV at berth emissions. CARB cites a study by Starcrest (2017), which concludes that there will be no Tier III vessels in service in the world's fleet, and Starcrest's study is based on vessels with the potential to call at the Port of Long Beach (POLB) and Port of Los Angeles (POLA).

As a marine terminal, Chevron RLW receives a distinctly different population of tanker vessels than POLA/POLB. In short, marine terminals operations and the vessels that call at them are distinctly different than port operations. In particular, the RLW and other Northern California marine terminals lack the capability to accommodate ULCC and VLCC vessels.

Further, Chevron implements vessel clearance procedures to ensure that all vessels calling at RLW are suitable to fit our fender spacing at berth, and meet our operational, health and safety standards or "OE" standards. Consequently, our vessel vetting criteria effectively prohibits foreign-flagged tankers older than 18 years to call at RLW. There may be other vessel types with a longer useful life up to 25 years, such as chemical carriers that carry only clean refined products, or US-flagged Jones Act vessels. Nevertheless, the vast majority of ships that can call at RLW, and that meet our vessel clearance standards, will be 18 years of age or younger. These age guidelines for vessels calling at marine terminals are common to the industry. Using an industry vessel database purchased from Clarksons, Chevron Shipping assessed the portion of the world's fleet that has the capability to call RLW. For existing vessels, one can estimate the keel laid date and determine what engine tier level was installed in the ship. As of 2018, 1-2% of the world fleet meets Tier III requirements. In fact, Chevron took delivery of 2 Tier III vessels in 2018, and one third of our total fleet will be Tier III by 2021. This is significant because there are currently more than zero Tier III vessels, indicating large errors in Starcrest's forecast that Tier III tanker vessels will not exist until 2031 at the earliest (Figure 3.8, Starcrest 2017).

More specifically, Chevron built two Suezmax-sized tankers that are used to lighter nearly 70% of Richmond Refinery's crude deliveries to the RLW. These two lightering vessels have keel-laid dates in 2013 but were designed to be able to operate their electrical generation at RLW in low-emission mode by using superheated steam auxiliary boilers and turbogenerators, which do not produce diesel particulate matter (DPM) and have a much lower NOx emissions than Tier III diesel engines. In fact, according to a boiler burner maker, marine boiler NOx emissions are 0.78g/kWh, significantly lower than the Tier III limit for a 900 rpm diesel generator which is 2.31 g/kWh [www.volcano.co.jp/english/pdf/Nolcano\\_TCS\\_Bulletin\\_004PB.pdf](http://www.volcano.co.jp/english/pdf/Nolcano_TCS_Bulletin_004PB.pdf). As of 2018, these vessels, with NOx emissions below Tier III levels, represent a considerable

amount of our annual at berth emissions (70% of our crude deliveries are via Suezmax-sized vessels).

Our study concluded that 55% of vessels calling at RLW would be expected to be Tier III compliant by 2030, and 3<sup>rd</sup> 80% of vessels would be Tier III compliant by 2035. In addition to our analysis, an independent party conducted a similar analysis and demonstrated similar results - about 50% of vessels by 2030. With two independent data evaluations, we believe the Starcrest (2017) report is erroneous and calls into question the entire purpose of the if proposed at berth regulation nearly 80% of vessels calling at Northern California Marine Terminal Complexes owned/operated by major oil companies will be Tier III-compliant by 2035, then this regulation will have less than 5 years of relevance toward achieving its target emission reductions before vessel-side technologies meet or exceed the 80% control factor. Further, on-board emission controls will exceed the magnitude of reductions capable with at berth controls, because on-board controls will benefit the entire Emission Control Area (ECA) during transit and maneuvering. Consequently, the cost-effectiveness of this proposed at berth regulation appears to be very low.” (22.30)

**Agency Response (22.30):** CARB staff made no changes based on the received comment. In summer of 2019, CARB updated the inventory to include these two unique tanker vessels which can be seen in section 3.3 of the CARB’s 2019 OGV emissions inventory technical support document as well as in the 15-day change packages. However, as these vessels are not Tier III certified vessels, they are not factored into CARB’s Tier III forecasts.

The Starcrest analysis did not conclude that there would be no Tier III vessels in the worldwide fleet, only that (1) their arrival would be delayed based on the large amount of keels laid in the last year that Tier II vessel engines could be applied, and (2) the majority of newer vessels were used on routes within or between Europe and Asia.

Unfortunately, Tier III vessels and auxiliary engines have no additional PM control requirements. Tier III standards provide significant NO<sub>x</sub> reductions (on the order of 75 percent below Tier II) but do not control PM, one of the driving forces behind the proposed regulatory amendments. CARB staff will continue to evaluate the penetration rates of Tier III vessels, however even a significantly faster Tier III penetration rate would provide no reduction in PM emissions, and therefore would unlikely change the need for tighter controls proposed by this regulatory amendment.

**Comment:** “The table below (Table 2-1) summarizes the vessel categories and auxiliary and boiler loads as a percentage of pumping load for pumping, loading and idle activities. Using this methodology, Table 2-2 compares the energy used per vessel type for vessels calling at RLW against CARB's calculated energy per vessel type assuming POLA/POLB engine loads, and corresponding emissions. CARB's current

methodology appears to over-estimate the at berth emissions at RLW by at least a factor of two or more, depending upon vessel type.

As mentioned previously, VLCCs and ULCCs do not call at marine terminals in Northern California. For the remaining vessel categories, there are distinct differences between the load factors seen in POLA/POLB and those at RLW. In addition to the load factors, the actual activities performed by the vessels calling at RLW and, likely, other marine terminals are significantly different than the way CARB has represented the activities in their calculations." (22.31a)

**Agency Response (22.31a):** CARB staff made no changes based on the received comment. Engine loads are applied on a visit by visit basis. For example, if a vessel that makes a visit to a port is a Seawaymax size, only the Seawaymax power loads are used to calculate the emissions for that ship. If no vessels that are VLCC or ULCC make a visit to a port, then engine loads for those vessel sizes are not used for any emissions calculations for that port.

**Comment:** "The largest difference appears to be that CARB's calculation of "Average Engine Effective Power" assumes vessels are pumping 100% of the time that they are at berth, when in fact, at RLW, vessels except Suezmax spend significant amount of their time at berth loading by gravity feed. The pumping rates/discharge rates are generally higher than the gravity-fed loading rates. Vessels are also idle for a substantial period while at berth, when they are neither pumping nor loading. Consequently, the assumption that the vessels are pumping continuously leads to over estimating emissions at berth. Vessels at berth pump to two primary destinations within Chevron Richmond Refinery:

1. Crude deliveries are pumped directly to low-elevation crude tanks,
2. Non-crude deliveries are pumped to the base of the RLW causeway, where electric booster pumps move delivered products to tanks higher in the refinery tank field.

The non-crude ships discharging feedstocks or blendstocks use only enough energy to push the product from the cargo hold and fill the pipeline, but not to move the product up hill. Using electric pumps in the refinery pump stations is a low-emission means of offloading vessels and distributing product to the refinery tankage. To achieve a more accurate estimate of actual at berth emissions, CARB should follow the calculation methodology proposed below by ship type to reflect that vessels at berth are performing different activities during their visit, namely pumping to discharge feedstocks, and then loading to take refined product which is at the vessel idle' or hoteling' load:

1. [Average Pumping Duration] x [Average Pumping Load] x [Emission Factor] = Pumping Emissions

2. [Average Ballasting Duration) x (Average Ballasting Load) x (Emission Factor) = Ballasting Emissions
3. [Average Hoteling Duration) x [Average Hoteling Load] x [Emission Factor] = Hoteling Emissions
4. Total Vessel at Berth Emissions = [Pumping Emissions] + [Ballasting Emissions]+ [Hoteling Emissions]

NOTE: The pumping load is correlated to the pumping rates by vessel type at RLW. The pumping rates at each terminal are unique to the piping and tank configuration, geography and operational constraints of each terminal.

**Table 2-1: RLW Vessel Type, Activities and Associated Loads Represented as % of Pumping Load.**

Vessel Type	Pump Type	Percent of Calls	Average Hotel Time			% of Auxiliary Load during pumping			% of Boiler Load during pumping			
			(hrs)	Loading	Discharge	Idle	Loading	Discharge	Idle	Loading	Discharge	Idle
SeaWayMax	Diesel	54%	42.70	43%	37%	20%	70%	100%	55%	100%	100%	100%
	Steam	2%	54.96	64%	0%	36%	100%	100%	80%	100%	100%	100%
PanaMax	Diesel	3%	69.47	0%	75%	25%	55%	100%	36%	100%	100%	100%
	Steam	4%	58.98	9%	59%	32%	100%	100%	64%	45%	100%	45%
AfraMax	Steam	7%	57.37	31%	38%	31%	100%	100%	63%	33%	100%	33%
SuezMax	Steam	30%	28.09	0%	63%	37%	100%	100%	69%	45%	100%	37%
Averages		100%	40.90	27%	46%	27%	82%	100%	60%	77%	100%	74%

**Table 2-2: Emission Inventory Comparison for RLW – Chevron vs. CARB values.**

Vessel Type	Engine Type	Energy Used (kWh)		NOx (tpy)		PM10 (tpy)		PM2.5 (tpy)		DPM (tpy)		SOx (tpy)		CO2eq (tpy)	
		Chevron	ARB	Chevron	ARB	Chevron	ARB	Chevron	ARB	Chevron	ARB	Chevron	ARB	Chevron	ARB
SeaWayMax	Auxiliary	7,088,183	10,003,056	98.84	138.07	2.03	2.01	1.88	1.85	2.03	2.01	3.91	4.68	5,429.0	7,451.4
	Boiler	1,360,426	32,994,774	2.98	72.56	0.21	5.96	0.19	5.49	-	-	0.90	21.33	1,409.5	33,978.7
PanaMax	Auxiliary	1,144,086	1,175,238	15.39	15.81	0.33	0.24	0.30	0.22	0.33	0.71	0.63	0.55	876.3	875.5
	Boiler	1,084,622	6,147,537	2.33	13.52	0.16	1.11	0.15	1.02	-	-	0.70	3.97	1,098.5	6,330.9
AfraMax	Auxiliary	956,242	1,046,180	12.36	13.69	0.27	0.21	0.25	0.19	0.27	0.21	0.53	0.49	732.4	779.3
	Boiler	951,820	7,268,350	1.84	15.98	0.13	1.31	0.12	1.21	-	-	0.55	4.70	867.5	7,485.1
SuezMax	Auxiliary	1,411,786	5,702,957	19.53	69.76	0.40	1.15	0.37	1.05	0.40	1.15	0.78	2.67	1,080.4	4,248.1
	Boiler	6,909,414	13,281,139	11.42	29.21	0.80	2.40	0.74	2.21	-	-	3.43	8.59	5,394.6	13,677.2

Chevron will transmit the underlying data and calculations to CARB as confidential business information, however, the main drivers for the differences are likely due to the following:

- a. Chevron's estimate is based upon (discharge pumping rate) x (discharge time plus hoteling load) x (hoteling time plus ballasting load) x (ballasting time) because vessels are not continuously pumping, sometimes they are simply idle, and some vessels load via gravity feed from shore tankage for a longer duration than they pump while at berth.
- b. ARB uses same boiler and auxiliary loads for steam and diesel pumpers which were most likely measured (or determined through interviews) on steam pumpers at berth in Starcrest's Vessel Boarding Program while pumping. Almost all SeawayMax vessels and a large portion of PanaMax vessels that stop at RLW are diesel pumpers.
- c. The ratio of crude versus product carriers is incorrect for SeawayMax and PanaMax vessel types.
- d. Boiler emissions are lower because the vessels are not pumping the entire time at berth.

- e. SuezMax auxiliary engine emissions are lower because of Chevron-owned lightering vessels, which use the boilers and turbogenerators to deliver electricity and account for 70% of refinery crude feedstock deliveries. No DPM is emitted and NOx emissions are lower than Tier III diesel auxiliaries.
- f. For all crude carriers, 25% of boiler exhaust is pumped into cargo tanks as inert gas and not released at berth during discharge. When these vessels lighter with the VLCC in Southern California, they vapor balance with the VLCC ship. The inert gas in the SuezMax vessel is pumped into the VLCC as inert gas.

Vessel Activity Databases San Francisco Marine Exchange is a suitable database and would use assumptions/processes consistent with those employed in South Coast area, but it needs supplemental data from Chevron to estimate at berth activities. Chevron will transmit its operational summary tables as confidential information for at berth activity as an output from our proprietary database.

### 3.1. Base Year Vessel Visits and Time At Berth.

The inventory updates for vessel visits and time at berth are based on:

- 2016 IHS Markit Vessel Registry data for vessels that visited California
- 2016 IHS Markit at berth times for California
- 2016 South Coast Marine Exchange Arrival and Departure Data

The IHS-Markit data is used for the majority of California territorial waters, and the South Coast Marine Exchange is used specifically for the Ports of LA/LB." (22.31b)

**Comment:** "Comparison of POLA/POLB to RLW. As discussed on January 24, 2019 with CARB, there are significant differences between the vessels calling at POLA/POLB and those calling at RLW. Because of the significant differences in vessel particulars and operations, the data from POLA/POLB cannot be used to accurately represent operations or emissions at RLW and other Northern California marine terminals." The differences being.

"a. Installed Power. The installed power (determined from the U.S. Army Corps of Engineers Foreign Vessel Entrances and Clearances data as calls time propulsion power in MW) for vessels calling at POLA/POLB is nearly a factor of 3 greater than RLW." And

"b. The Vessel Distribution at POLA/POLB is Significantly Different than RLW" (22.32)

**Agency Response (22.31b) and (22.32):** CARB staff made no changes based on the received comment. CARB inventory staff have worked with Chevron and WSPA to reflect the unique details of RLW within the inventory. The only data

that is being used in RLW from the POLA/POLB ports is the effective power values for auxiliary boilers and auxiliary engines that were calculated by StarCrest through their Vessel Boarding Program. These effective power values are determined by vessel size as well, with tankers having five different values for different vessel sizes, as seen in Table 9 and Table 11 of ISOR Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results. The inventory also utilizes information received from the Chevron Richmond location detailing their loading and unloading differences to create unique effective power values specific to RLW as seen in Table 13 of Appendix H. The inventory includes the information of the individual vessel visits and the length of those visits of all ports, including RLW. Any distribution differences between the ports are nullified due to the effective power values being specific to size bins, and the ports utilizing the individual vessel visits.

**Comment:** "Freight Analysis Framework (FAF) Forecast for Future Vessel Traffic Growth is Unrealistic. As mentioned during the January 24, 2019 in person meeting, Chevron stated that a 46.5% growth rate by 2050 is not feasible and does not reflect the mass balance and operational constraints that exist for Richmond Refinery. Any small growth in marine traffic is likely to be in way of product leaving the facility which does not require vessels to pump, so additional at berth emissions would be limited to hotel and ballast water treatment loads, significantly less than pumping loads."

"Consequently, CARB should not rely upon the FAF Report as a future forecast for vessel activity for RLW and the Richmond Refinery. Based on our past 10 years operation, we would not expect greater than 1 % growth over a 10-year period. Forecasting it to 2040, that would equate to a vessel growth rate of 1.03 (3% relative to 2016)." (22.33)

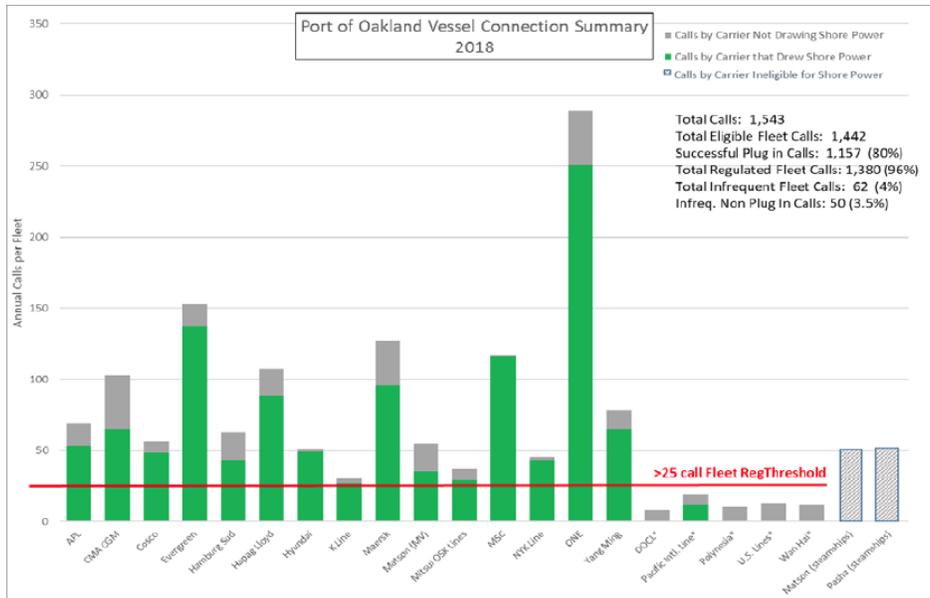
**Agency Response (22.33):** The emissions inventory documentation includes a description of the growth source for tankers (and all other categories) in Section 4.1. If WSPA has a recommendation for an alternate source of forecasting, CARB staff would certainly consider them in future inventories (as has been done for the Ports of Los Angeles and Long Beach, Port of Hueneme, and is being considered for the Port of Oakland). However, simply using historical trends without any forecasting methodology ignores the projected demand for imports and exports, as well as the shifts in production location and pathways, change in value and costs of transport, and other aspects explored in-depth in the FAF forecast.

The emissions inventory does not forecast vessel visits specifically; it forecasts power use of visiting vessels. Therefore, if vessel visits do not increase, but more product is delivered on tankers closer to capacity or larger tankers, the time loading or unloading product will increase and the power will increase relative to the baseline.

**Comment:** “The emissions inventory for At-Berth emissions raises serious issues with the way it presents the emissions projected under the existing rule and the benefits of the proposed rule. As can be seen in the Starcrest Analysis, the emissions inventory does not accurately estimate the future emission reductions under the proposed rule. Under publicly available data from the ports, approximately 95% of vessel visits are subject to the existing rule. The emissions inventory assumed that only 77% of vessel hours are subject to the existing rule in the Port of Los Angeles and only 74% in the Port of Oakland. The result of this underestimation is twofold. First, the emissions benefit under the current rule is significantly underestimated. Second, the emissions benefit of the proposed rule is grossly overestimated. In fact, the net benefit of the proposed rule for the existing regulated fleet is largely illusory. The rule moves from 80% fleet emission reduction to an 80% individual vessel approach. The rule largely sacrifices flexibility for the existing regulated fleet in return for no meaningful emissions benefit.” (52.31)

**Agency Response (52.31):** CARB staff made no changes based on the received comment. The emissions inventory makes no assumptions about compliance rates, and instead relies on reports directly from vessel owners and the time at-berth from the Marine Exchange (for Southern California) and AIS data from IHS Fairplay (for the rest of California). CARB’s enforcement reports include each vessel’s total time at each port, and time on shore power, providing a highly accurate and detailed picture of shore power hours. The other data sources provide a detailed picture, by vessel visit, of total hours for all vessel visits. These two data sources combined provide the percentage of shore power hours covered under the Regulation. The vessel hours that are not subject to the existing rule include the hours at berth from vessels not subject to the 2007 At-Berth Regulation, as well as the three-hours of uncontrolled emissions permitted for each regulated visit.

**Comment:** “To illustrate the limited availability of additional emissions to seek to control from existing regulated fleets as well as from emissions from current vessels connecting to shore power which are under the current fleet threshold, consider the 2018 vessel visits at the Port of Oakland – the Port which plugged in the most vessels in California (and in the entire world) that year – below:



In 2018, the scope of non-regulated vessel calls represented only 4% of total calls of non-steamship container vessels. And, after accounting for those vessels which also plugged in, the remaining potential scope of additional capturable vessel emissions left to address through potential rule expansion is further reduced to only 39 vessel calls out of 1,442 total calls, or 3.5%. Control of these emissions at an 80% control factor and application of some percentage of TIEs/VIes (as these are the smaller, non equipped vessels) are exceptionally small. PMSA has estimated that these calls represent a grand total of additional emissions to capture of only about 340 lbs/year DPM, or approximately 0.0005 tpd.” (52.33b)

**Comment:** “CARB understates the at-berth hours subject to the Existing Regulation, which in turn, overstates the projected emission reductions under the Proposed Regulation. According to CARB’s OGV Emissions Inventory, there are roughly 104,000 at-berth hours in Los Angeles and Long Beach covered by the Existing Regulation (based on CARB enforcement data) compared to 136,000 total at-berth hours (based on State Lands data); in other words, according to CARB, only 77% of at-berth activity in Los Angeles/Long Beach is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 0, showing coverage rates nearing 100%. Similarly, CARB’s OGV Emissions Inventory assumes only 74% of at-berth activity at Port of Oakland is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 7.1, showing coverage rates nearing 100%. This difference will significantly understate the benefits of the Existing Regulation, and, as carried forward through the forecast methodology, significantly overstate the benefits of the Proposed Regulation. CARB should consider the data described in Comment 7.1 and reassess its assumptions about vessel hours subject to the Existing Regulation.” (52.A.28)

**Agency Response (52-33b) and (52.A.28):** CARB staff made no changes based on the received comment. The number provided by PMSA reasonably match the total at-berth hours seen by CARB, but are significantly different in the total shore power hours (the Port of Oakland's values are approximately 33 percent higher). CARB staff are willing to work with PMSA and the Port of Oakland to determine the source of the difference. Currently, it is very unlikely that any vessel would use shore power as required by the At Berth Regulation and not report that information to CARB. There is no cost to report the hours on shore power and failing to report the hours would result in expending all of the effort to comply with the Regulation, and then risking non-compliance simply for failure to note the event. Additionally, industry has noted they are sure to report every last minute of shore power as it provides additional flexibility for future visits. Consequently, CARB staff have no reason to doubt the validity of the shore power data, nor the overall hours. However, CARB staff are willing to explore these differences with industry and make adjustments wherever appropriate.

**Comment:** "The inventory analysis also does not model the existing rule's requirement that a vessel capable of connecting to shore power must do so. Again, if the at-berth inventory model did so, it would attribute more emission reductions to the existing regulation and fewer emissions benefits to the proposed rule impacting the results of subsequent supporting analyses, such as health risk, cost-effectiveness, and overall levels of emissions reductions." (52.33a)

**Agency Response (52.33a):** CARB staff made no changes based on the received comment. The inventory analysis used the real world data provided from fleets to determine the rate at which vessels are connecting to shore power. It seems unlikely that inventory could reflect a more accurate number by making assumptions of which vessels were or were not capable of connecting to shore power on a case-by-case basis.

**Comment:** "In Table V. Auxiliary Engine Effective Power Values, CARB states that it is relying on "the same power values cited in Table 7 of the emission inventory methodology <https://ww3.arb.ca.gov/msei/ordiesel/draft2019ogvinv.pdf>. Values used in cost analysis for container/reefer and tanker vessels are calculated as one kW-average per vessel type, weighted by average vessel kW at each port/terminal and vessel visits to each port/terminal."

As noted in the Port's February 15, 2019 letter to CARB regarding the emissions inventory, the emissions inventory relies on the assumption that container vessel effective power is a function of vessel size bin. Will this assumption in the emissions inventory be modified to align with the cost estimate?" (17.36)

**Agency Response (17.36):** CARB staff made no changes based on the received comment. The inventory would lose specificity by applying the same power to

all vessel size bins. As there is no direct relationship between vessel size and auxiliary power, there is no reason to average across bins and lose granularity. It is also unclear why the commenter believes that this approach would be an improvement over the existing methodology.

In regards to cost-effectiveness, unlike emissions inventory, the effective power values have very little influence on the overall Regulation cost. Effective power values were only used to calculate electricity/fuel, which are less than 1 percent of the overall calculated cost. Because of this and the fact that quantifying these costs for each port and vessel size bin would have made the cost analysis significantly more complicated, CARB staff used the less specific method for the cost analysis.

**Comment:** "In Table VI. Duration of Emission Control at Berth, CARB shows that it is estimating statewide emissions reductions based on average duration of emission control at berth per vessel visit. The Port requests an emissions and cost analysis specific to each port or marine terminal and each vessel type. The stated average Container/Reefer duration of emission control at berth of 38.8 hours is about twice the average time for shore power connections at the Port. The difference between Port data and the average shows that the statewide average is not meaningful for the Port, and the conclusions of the averaging analysis may not apply to the Port." (17.37)

**Agency Response (17.37):** CARB staff made no changes based on the received comment. CARB staff disagree with the commenter's claim that the difference in vessel stays at their specific port versus the statewide average renders the statewide averaging method CARB used to determine costs irrelevant. The methodology for calculating emissions inventory is different than the method used for calculating the costs of the Regulation. The emissions inventory uses vessel visit averages that are specific to port, vessel type, and vessel size. The emissions inventory also applies a control factor (which directly relates to the time on shore power) based on the same level of specificity.

Separately, as explained in staff's SRIA document (Appendix C-1 of the ISOR), statewide averages were used for cost analysis as CARB staff were not provided with detailed enough information to assess port specific costs. CARB staff's cost methodology was also supported by DOF, as can be noted in the response letter from DOF to CARB dated August 29, 2019, published on DOF's website at:

[http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf).

**Comment:** "In 2021, under the Proposed Regulation, CARB projects changes in the emissions from currently regulated container/reefer and cruise vessels even though there should be no significant difference between the Existing and Proposed Regulation for these vessel types. CARB should provide further explanation for the significant changes in emissions in 2021 (for most ports, there are fewer emissions, but

for other ports, there are more emissions), as shown in CARB's OGV Emissions Spreadsheet, as the publicly available data suggest there should not be any significant change. First, most vessel visits are already covered under the Existing Regulation. Based on publicly available 2018 data for Los Angeles and Oakland, 98% of the Los Angeles calls and 96% of the Oakland calls are from vessel operators covered under the current regulation and subject to the 80% reduction requirements for at-berth auxiliary engine power because they made at least 25 calls in 2018. Second, the Proposed Regulation is comparable to the Existing Regulation for currently regulated fleets given the availability of TIEs, VIEs, and exceptions in the early years, equivalent to 20% of calls. As stated by CARB: "If all TIEs/VIEs are used by both terminals and vessels in these four years, the Proposed Regulation would capture no less than 80 percent of the visits, which aligns with the Existing Regulation at full implementation in 2020" (ISOR, III-31). Thus, the increased emission reductions attributed to the Proposed Regulation over the Existing Regulation as calculated by CARB need further justification. Similarly, CARB should explain the increase in emissions from the Proposed Regulation over the Existing Regulation for the ports of Hueneme and San Diego." (52.B.11)

**Agency Response (52.B.11):** CARB staff made no changes based on the received comment. The shift in emissions in these years is due to the fact that the baseline emissions inventory uses the reported shore power hours for each vessel category and size bin (i.e., the real world distribution), while forecasting the increased shore power to 80 percent of the regulated fleets at berth hours. The regulatory proposal is modeled on each regulated visit meeting the updated requirements, without the overall fleet-averaging of time on shore power.

The proposal was not intended to increase or decrease stringency overall in the initial years, however the emissions results show that the fleet-based approach resulted in slightly higher emissions than the visit-based proposal. In some cases, such as Hueneme, the percent of time for regulated fleets exceeded 80 percent in the base year, and when these ports were modeled under the new proposal, slightly fewer shore power hours were controlled. The emissions model shows a small and temporary disbenefit in early years, with a larger benefit in future years as the additional provisions of the Regulation take effect.

**Comment:** "The projected compliance rate for 2030 does not look accurate, particularly for large container vessels; CARB should clarify its assumptions. In 2030, under the existing regulation, CARB assumes less than 50% shore power compliance for POLA and POLB container vessels size 13000 TEU through 18000 TEU (14000 TEU is an exception). For Container 16K, 0% compliance is assumed in 2030. According to tables on H-71 and H-72, these vessel types have the highest growth rates and yet they are assumed to comply 0% under the existing regulation. CARB needs to clearly articulate how it calculated the compliance rate assumption for future years. Although it could be due to CARB's at-berth shore power time forecast methodology, a lower

percentages of at-berth shore power time for larger vessels is not realistic because these are newer vessels operated by vessel operators making 25 or more calls and more likely to be equipped with shore power capability. The benefit of the Proposed Regulation could be overestimated because larger vessels tend to stay longer at-berth.” (52.A.30)

**Agency Response (52.A.30):** CARB staff made no changes based on the received comment. The compliance modeling is outlined in Attachment H of the ISOR starting on page H-39. In short, the regulated fleet is modeled with 80 percent of their hours on shore power. Different vessel size bins will vary from that amount based on the hours of the regulated fleet compared to the total hours in the bin. For instance, two vessel sizes might each have 100 hours of total hours at-berth, but the first have only 70 hours from regulated vessels and the second have 90 hours from regulated vessels. At 80 percent compliance, the first vessel size bin would have 56 hours ( $80\% * 70 = 56$ ) on shore power, and the second would have 72 ( $80\% * 90 = 72$ ) hours on shore power.

This approach to the compliance modeling are based directly on PMSA’s previous comments. This initial version of the emissions inventory assumed an equal compliance factor across each vessel size bin at a port. The updated version is likely more accurate, but vastly more complex and requires greater time to understand and characterize.

**Comment:** “CARB needs to provide the overall compliance rate under the proposed regulation in the same format as provided in Table 20 for the existing regulation. CARB should clarify the inputs used in the “atberth\_OGV\_port\_specific\_emissions” spreadsheet, specifically the following:

- For each year, what is the compliance rate by vessel type assumed for the existing and proposed rule?
- For each year, by vessel type, what percent of vessel calls was assumed to meet the 20 visits per terminal threshold and are not subject to proposed regulation?
- What percent of calls by vessel type and vessel size were assumed for TIE/VIE?
- In 2021, why is there an increase in POLA at-berth cruise emissions with proposed rule?” (52.B.15)

**Agency Response (52.B.15):** CARB staff made no changes based on the received comment. The compliance rate in all categories is assumed to be 100 percent. Discussions with industry, ports, and CARB enforcement staff suggest there are no large shipping companies intentionally non-compliant on an ongoing basis with the 2007 At-Berth Regulation. If the commenter is referencing the percent of total time on shore power out of the total vessel

time at ports (potentially another description of compliance rate), the 2007 At-Berth Regulation and the Regulation and reduction factors are within the publically available emission inventory input database, posted (initially in draft form) in January 2019. CARB staff would be willing to email the specific table within the model if requested.

**Comment:** "CARB should include a table showing statewide NOx emissions by vessel and engine type. In Figure 10, CARB displays "2016 Statewide At-Berth PM 2.5 Emission by Vessel and Engine Type" (H-46). A similar figure should be added for NOx, showing the magnitude of boilers NOx emissions reduced from tankers." (52.B.18)

**Agency Response (52.B.18):** CARB staff made no changes based on received comment. The full emissions inventory at full detail has been available online from January 16, 2019 onward (initially in draft form) at: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-documentation-road>. A figure with the information requested above may be created by querying the detailed inventory that is publically available.

**Comment:** "CARB understates the at-berth hours subject to the Existing Regulation, which in turn, overstates the projected emission reductions under the Proposed Regulation. According to CARB's OGV Emissions Inventory, there are roughly 104,000 at-berth hours in Los Angeles and Long Beach covered by the Existing Regulation (based on CARB enforcement data) compared to 136,000 total at-berth hours (based on State Lands data); in other words, according to CARB, only 77% of at-berth activity in Los Angeles/Long Beach is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 0, showing coverage rates nearing 100%. Similarly, CARB's OGV Emissions Inventory assumes only 74% of at-berth activity at Port of Oakland is subject to the Existing Regulation, which conflicts with the publicly reported data described in Comment 7.1, showing coverage rates nearing 100%. This difference will significantly understate the benefits of the Existing Regulation, and, as carried forward through the forecast methodology, significantly overstate the benefits of the Proposed Regulation. CARB should consider the data described in Comment 7.1 and reassess its assumptions about vessel hours subject to the Existing Regulation." (52.A.28)

**Agency Response (52.A.28):** CARB staff made no changes based on the received comment. CARB staff's assessment is based on three data sources to develop the percent of vessel visits covered by the Regulation. The Marine Exchange and International Maritime Organization (IMO) data compiled by IHS Fairplay (a data management company) provides total hours at berth for all vessels, and both are widely used sources with significant quality assurance and cross-checking against other available data. The time at berth from fleets covered by the Regulation (as well as the time on shore power) are based on

direct reports from fleets to CARB on their hours at berth (both total hours and hours on shore power are reported). For the percent of time covered by the 2007 At-Berth Regulation to be wrong by any significant margin, one of these data sources would have to be significantly in error. This would mean either data collection on vessel locations are significantly in error, or fleets are vastly under-reporting their total time at berth to CARB.

Additionally, CARB staff assessment reasonably matches the data trends available from the ports. For example, for 2020, CARB staff estimated that 75 percent of all time for all vessels at-berth at the Port of Oakland would be covered by the existing rule. This reasonably matches the 75 percent of vessels visits that Port of Oakland reported for 2018<sup>10</sup>, or the 72 percent of vessel visits that Port of Oakland reported drew shore power for May 2020. The inventory also accounts for the roughly 3 hours each vessel visit is at berth where it may be plugging in to shore power or disconnecting, or where the vessel has not been cleared by customs. Including this 3-hour period provides a result of approximately 60 percent of the total *time* (not visits) on shore power. Therefore, the inventory appears to reasonably match the percent of vessel visits covered by the Regulation (75 percent) while reflecting a lower number for time on shore power (60 percent), because even the vessels that draw power are not on shore power for the entirety of the visits. The 60 percent time on shore power is a more accurate way to determine the emissions impacts than vessel visits, and is not in conflict with a higher number of vessel visits covered by the Regulation.

**Comment:** “Reduction of PM (including PM10, PM2.5, and DPM) and NOx emissions in the 36%-40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO<sub>2</sub>e, SO<sub>x</sub> and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based systems.” (52.A.32a)

**Comment:** “Currently most of the auto carrier and RoRo ships bunker while operating at berth. If rental barges are utilized during at-berth operations, bunkering will most likely take place at anchorage, resulting in emissions increases at anchorage. In addition to emissions increases due to use of harbor crafts to move barges and generators used on the barges, CARB should address the displacement of at-berth RoRo bunkering and associated emissions.” (52.A.32d)

**Agency Response (52.A.32a) and (52.A.32d):** CARB staff made no changes based on the received comments. CARB disagrees with these comments. See

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<sup>10</sup> Port of Oakland, Port of Oakland reports more ships than ever plugging into grid, January 22, 2019, Available at: <https://www.portofoakland.com/community/port-oakland-reports-ships-ever-plugging-grid/>

Master Response 1 for discussion on tug boat and GHG emissions resulting from use of barge-based capture and control systems.

**Comment:** "CARB should include a table showing statewide NOx emissions by vessel and engine type. In Figure 10, CARB displays "2016 Statewide At-Berth PM 2.5 Emission by Vessel and Engine Type" (H-46). A similar figure should be added for NOx, showing the magnitude of boilers NOx emissions reduced from tankers." (52.A.35)

**Agency Response (52.A.35):** CARB staff made no changes based on the received comment. CARB staff included what they believe the most relevant information to demonstrate the need and potential results of the Regulation. CARB staff was not able to generate figures for each and every way to look at the emissions inventory numbers; however, staff did make the OGV emissions inventory database available to the public for any stakeholders wishing to generate their own tables in any specific way. Additionally, the commenter fails to include the reasoning for the need of the figure requested.

**Comment:** "The statewide weighted compound annual growth factors used to estimate port growth are simply unrealistic and do not track the data that CARB staff had compiled on their own, much less the actual growth rates on the ground. The SRIA creates a presumption that growth factors would be scaled to growth in cargo and at Annual Industry Growth Factors starting in 2019 for Container, Cruise and Ro-Ro vessels on Table C2 (pg 67) of 8% and 7.5%. These are unrealistic approximations of continuous growth in cargo and of growth in vessels.

These numbers are not compared with the internal analysis provided by CARB staff for the ports of Long Beach and Los Angeles based on the ports' specific forecast, or with the Port of Hueneme, which are identified individually. CARB staff had the same opportunity to do so for the Port of Oakland but chose not to. Instead, CARB staff selected a compound growth rate for the Port of Oakland of 5% based on federal freight statistics that are NOT specific to the Port of Oakland.

This number is not supported by the facts. Looking historically, since 2007, when the original At Berth rule was adopted, the compound growth rate has been 0.59%. The number CARB has selected to use is nearly 10 times greater. Alternatively, CARB could have selected the Port of Oakland forecast which the BCDP Bay Area Seaport Forecast estimated at 2.2% or less than half the CARB estimate.

In either case, the SRIA's use of exaggerated growth rates has the effect of overestimating future emissions which in turn overstates future emission benefits, and significantly overstates the cost effectiveness of the Proposed Regulation." (52.C.11)

**Agency Response (52.C.11):** CARB staff made no changes based on the received comment. The best available information was used by CARB staff to develop the emission inventory for this rulemaking and it accurately represents

the activity and emissions estimates for the statewide fleet. As noted in the inventory documentation, the growth forecast for Oakland in the current inventory is based on the FAF, which forecasts container goods delivered to Northern California and specifically the Bay Area. The container goods are moved by container vessels, which (almost completely) pass through the Port of Oakland if they come through Northern California. The forecast uses the increase in containers as a surrogate for forecasting the total power (i.e., activity) of vessels visiting the Port of Oakland.

To forecast the total power, the inventory grows the base year power of all vessels against a growth surrogate. In this inventory, the Freight Analysis Framework (FAF) forecast for container goods moved by ocean going vessels in the Bay Area was used to forecast growth of container ships at the Port of Oakland. FAF, as described in the inventory documentation, is used in forecasts by California Statewide Freight Forecasting Model (CSFFM) developed by CalTrans, as well as the Bay Area Metropolitan Transportation Commission for San Francisco Bay Area Goods Movement Plan. Additionally, CARB staff compared the FAF forecast against the historical Port of Oakland growth rates, and found that the Port has had numerous periods of expansion (1990 to 2007) with sustained growth very reasonably matching the inventory forecast, and other periods (2002 to 2006) where actual growth was almost twice the inventory forecast. These comparisons are detailed in the inventory report, and combine to show that the forecast uses dependable sources and compares very well against historical data.

In a separate effort to update to update the San Francisco Bay Area Seaport Plan, the BCDC contracted with the Tioga Group to reevaluate growth projections and publish updated growth forecasts for the Port of Oakland (Tioga forecasts). The Tioga forecasts were not included in the CARB inventory as the BCDC Board had neither reviewed nor approved the Tioga forecasts by the time of the initial CARB Board hearing for the OGV At Berth Regulation (the BCDC review date was set on the same day as CARB Board date, December 5, 2019, later in the afternoon). It would be neither scientific nor a good policy to use Tioga's updated draft growth forecasts before the commission sponsoring the study had a chance to review and possibly request changes or approve updated growth forecasts. Using the forecasts prior to BCDC's approval would place the CARB's emissions inventory and Board members in the position of making the Tioga's cargo growth forecasts official prior to BCDC approval. The growth rates that are currently used by CARB for the Port of Oakland match the previous Tioga report within 0.2 percent per year, and actually fall slightly below the previous Tioga's growth rate (which would be the Port of Oakland's officially adopted growth rate at the time of inventory development and initial CARB Board hearing). Additionally, page 37 of the Tioga report clearly states that the Port of Oakland has seen an annual growth of 3.8 percent between 2015 and 2018.

The efficiency gain was not included for that Port of Oakland as it was based on a study specific to the Ports of Los Angeles and Long Beach, and no similar studies have been completed for Oakland. CARB inventory staff are evaluating methods to apply the projected efficiency gains from Ports of Los Angeles and Long Beach to similar large container ports such as the Port of Oakland, for inclusion in future emissions inventories.

A draft of the emissions inventory used to support the At Berth Regulation has been available for review and comment since January 16, 2019. In a data-rich environment such as container vessel shipping, new data and reports are available not only every year but every few months. CARB inventory staff will continue to update the inventories with the best available information, and these future updates will be completed and included in the inventory prior to the Board review of the progress in port infrastructure and technologies scheduled for 2022. See the 15-day changes emissions inventory update (Appendix C) for the most up to date emissions inventory information.

The CARB emission inventory team is currently evaluating both the Tioga forecasts as well as the efficiency gains, and plans to incorporate relevant portions in the next OGV inventory.

**Comment:** “CARB needs to provide the overall compliance rate under the proposed regulation in the same format as provided in Table 20 for the existing regulation. CARB should clarify the inputs used in the “atberth\_OGV\_port\_specific\_emissions” spreadsheet, specifically the following:

- For each year, what is the compliance rate by vessel type assumed for the existing and proposed rule?
- For each year, by vessel type, what percent of vessel calls was assumed to meet the 20 visits per terminal threshold and are not subject to proposed regulation? What percent of calls by vessel type and vessel size were assumed for TIE/VIE?
- In 2021, why is there an increase in POLA at-berth cruise emissions with proposed rule? (52.A.31)

**Agency Response (52.A.31):** No changes were made in response to this comment. This commenter appears to be requesting that CARB staff include a table showing the anticipated percent of time on shore power by year for the new Regulation, similar to Table 20 in Appendix H, however, this is a comment on the method in which CARB staff chose to display the data and is not specifically directed at CARB’s proposed action. As such, no changes to the regulation are necessary to address it.

Regarding the inputs for the “atberth\_OGV\_port\_specific\_emissions” spreadsheet, this spreadsheet is no longer valid as a result of the updates to the emissions inventory in response to the 15-day changes released

March 26, 2020, and July 10, 2020. Assumptions made to calculate the emissions inventory for both the 2007 At-Berth Regulation and new At Berth Regulation can be found in Appendix H of the ISOR: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results, and subsequent updates to that document. The emission inventory projections use the assumption that fleets are in compliance, as staff have generally seen. The compliance data used in calculating the emissions inventory was obtained from CARB's Enforcement Division.

## 10.HEALTH BENEFITS ANALYSES (CANCER AND NON-CANCER IMPACTS)

**Comment:** "The key input to the Preliminary Draft HRA is the estimated emissions from vessels at berth, which are not yet final. Emissions estimates need to be final and the Preliminary Draft HRA updated before the Preliminary Draft HRA results can be used.

CARB conducted two HRAs addressing only the Ports of Long Beach and Los Angeles together and the Richmond Complex. CARB's use of AERMOD and the 2015 OEHHA Risk Assessment Guidelines for HRAs represents current best practices. However, the robustness of the findings is limited by the emissions estimates. Emissions estimates are typically completed before the HRA but in this case are open for public comment and discussion through the end of February 2019, at which point they may be refined. The air dispersion model AERMOD, which CARB selected for the Preliminary Draft HRA is the preferred model from the US Environmental Protection Agency. Required inputs to AERMOD include meteorological data, emissions information for each pollutant considered, and exhaust parameters for release points. Of these inputs, the estimated emissions are key, since emissions have a direct linear relationship with the estimated ambient concentrations and health impacts from each source.

On November 5, 2018, CARB posted the Preliminary Draft HRA. CARB then posted a hardcoded spreadsheet of "Draft At Berth Emissions Estimates" used in the Preliminary Draft HRA on November 9, 2018, and air dispersion modeling files in mid-December with a public comment period for the Preliminary Draft HRA closing January 31, 2019.

CARB also posted the "Draft: 2018/2019 Update to Inventory for Ocean-Going Vessels: Methodology and Results"—for the emissions that were entered into the Preliminary Draft HRA—on January 16, 2019, with a separate public comment period for the emissions methodology and results closing February 16, 2019. Without greater understanding of the emissions used as data inputs to the air dispersion model and risk estimation calculations, the utility of the Preliminary Draft HRA is limited. Port staff are reviewing the emissions methodology released on January 16, 2019, and are comparing it with the spreadsheet posted November 9, 2018. Port staff look forward to discussing the emissions with CARB staff at the public workshop CARB scheduled for February 26, 2019. After that, Port staff anticipate the need for a revised HRA for

the Proposed Control Measure that relies on emissions that have been reviewed and understood by all parties.

The AERMOD input and output files and risk estimation databases CARB provided on December 14, 2018, appear to carry out the methodology discussed in the Draft Preliminary HRA, but further review is not warranted until emissions are finalized. In addition to the wharfinger information provided by the Port to CARB annually as required by grant funding obligations, Port staff are happy to work with CARB staff to refine assumptions made in the emissions estimates. (17.53) (EA 17-1)

**Agency Response (17.53):** CARB staff made no changes based on the received comment. CARB staff have completed the final HRA, which was published as Appendix G of the ISOR. This final assessment is based on the most current version of the emissions inventory data. All files relating to the final version of the HRA have been posted to the At Berth website at <https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation>. See also *Responses to Comments on the Draft Environmental Analysis* comment 17-1 for further discussion on environmental impacts.

**Comment:** “The role of the Preliminary Draft HRA posted November 5, 2018, in rulemaking for the Proposed Control Measure is not clear. The Proposed Control Measure is not an ATCM, in fact its stated purpose is to reduce NOx, PM, and GHG but not the toxic air contaminant DPM—which is the focus of the Preliminary Draft HRA. The inclusion of an HRA for any of the ports in California is therefore not a fundamental driver of the Proposed Control Measure (leaving the CARB Governing Board direction, Mobile Source Strategy, and Sustainable Freight Action Plan as drivers). Thus, any reductions in risk shown in the Preliminary Draft HRA are purely informational. Indeed, CARB’s elimination of the At-Berth Regulation ATCM by focusing on a Proposed Control Measure for NOx and PM but not DPM seems to imply that no further risk reductions are required.

The Preliminary Health Analyses report announces that the risk reductions of the Proposed Control Measure are “significant,” a term defined in the California Environmental Quality Act (“CEQA”) and used in CARB’s Certified Regulatory Program, but not defined in the CARB rulemaking process. While CARB staff present the percentage of reduction in risk of the Proposed Control Measure over the current At Berth Regulation, the total residual risk should be compared to that of other source categories to prioritize the need for the Proposed Control Measure.” (17.54) (EA 17-2)

**Agency Response (17.54):** CARB staff made no changes based on the received comment. CARB staff do not agree with this comment as the Regulation is intended to control airborne toxics as well as other pollutants of concern. As such, an evaluation of the benefits of reducing toxic emissions is appropriate and relevant. See also *Responses to Comments on the Draft Environmental Analysis* comment 17-2 for further discussion environmental effects.

**Comment:** “Health impacts from Criteria Air Pollutants are managed through SIP Planning, which does not require a new Proposed Control Measure for the container fleet.

PM2.5 is a criteria air pollutant, not a toxic air contaminant, and the California Ambient Air Quality Standards (“CAAQS”) and National Ambient Air Quality Standards (“NAAQS”) are the appropriate health-protective standards for PM2.5. Regional ambient air concentrations of PM2.5 are managed to levels below the CAAQS and NAAQS through SIP planning. Even so, CARB’s Mobile Source Strategy calls for an evaluation of emissions reductions from currently unregulated fleets, not the already regulated container fleet which calls Oakland. Thus, SIP planning for PM2.5 attainment does not mandate an amended At-Berth Regulation to reduce statewide emissions through an “every vessel, every visit” control strategy like CARB staff have proposed.” (17.55 Oakland)

**Agency Response (17.55):** CARB staff made no changes based on the received comment. The commenter is correct the general category of PM2.5 is considered a criteria pollutant. However, diesel PM (DPM) which has been identified as a toxic air contaminant, includes PM2.5. Furthermore, the DPM contribution to PM2.5 is captured in the PM2.5 evaluation.

**Comment:** “The Incidents Per Ton (“IPT”) methodology presented for PM2.5, a criteria air pollutant, is not a cost effectiveness metric.

The IPT methodology provides information on health effects assuming ambient PM2.5 concentration is the sole contributor to adverse health effects, with a direct linear relationship. The IPT methodology is not, however, part of a cost-effectiveness evaluation. CARB released a “Preliminary Cost Information” document in August 2018 as part of this rulemaking effort, which relies on the same assumptions as the emissions inventory (which, as discussed above, may need refinement). The preliminary costs data evaluated total costs of the Proposed Control Measure, but not cost effectiveness of proposed measures calculated in terms of cost per ton of emissions removed. CARB has also not yet prepared a socio-economic impact analysis of the proposed rule.” (17.56)

**Agency Response (17-56):** CARB staff made no changes based on the received comment. The commenter is correct that IPT is not a cost effectiveness evaluation. The IPT methodology only evaluates the health impacts associated with CARB’s regulations.

CARB’s IPT methodology and its underlying assumptions are described in the document “CARB’s Methodology for Estimating the Health Effects of Air Pollution” available on CARB’s web site.

(<https://ww2.arb.ca.gov/resources/documents/carbs-methodology-estimating-health-effects-air-pollution>).

It is similar to the method used by USEPA (Fann et al 2012). For example, USEPA employed this approach in the Stationary Spark Ignition (EPA-452/R-13-002) and Residential Wood Heaters (EPA-452/R-15-001) rules.

**Comment:** "Staff's Methodology for Estimating Health Impacts is Flawed.

A. Staff's Assumption that DPM Health Values Can Be Assigned to Emissions from Marine Engines Operating on MGO, MDO or HFO is Inappropriate and Unfounded

In the Health Analyses document for the At Berth Regulations (Appendix G to the ISOR), Staff assumes that the cancer potency factor ("CPF") and chronic reference exposure level ("REL") for DPM are applicable to the particulate emissions from ocean-going vessel marine engines fueled with marine gas oil ("MGO"), marine diesel oil ("MDO"), and marine heavy fuel oil ("HFO"). See Staff Report, Appx. G, p. 3. This is inappropriate. The original DPM CPF and REL established by CARB were based largely on health effects studies looking at the exposure of railway workers to **locomotive** diesel engine exhaust from 1960s-vintage locomotives. Despite this limitation, Staff now seeks to apply the same CPF and REL to **all** modern compression ignition auxiliary engines using diesel fuel on ocean-going vessels, including those compression ignition engines equipped with diesel oxidation catalysts and diesel particulate filters – both of which have been documented to fundamentally change the chemical nature of DPM.

Instead of extrapolating health-effects data based on 50-year-old technologies and fuels, Staff should assess the health impacts of modern auxiliary engines operated on fuels other than diesel fuel based on speciated composition of the exhaust for these engines, as CARB does in its risk assessments for engines using other fuels (such as gasoline, ethanol, and natural gas). The ISOR provides no explanation as to why Staff rely on such old and inapposite data, when more recent data from modern auxiliary engines is available and potentially more probative." ( 22.11a)

**Agency Response (22.11a):** CARB staff made no changes based on the received comment. Appendix G of ISOR, Section I.C , Pages G-3 and G-4 states:

*D. Applicability of DPM Health Values for Marine Auxiliary Engines  
Ocean-going vessel auxiliary engines operating at berth use various diesel fuel types (e.g., marine gas oil (MGO), marine diesel oil (MDO), or marine heavy fuel oil (HFO)). CARB staff, in consultation with the Office of Environmental Health Hazard Assessment (OEHHA), has concluded that PM emissions from ocean-going vessel diesel (compression ignition) engines operating on MGO, MDO, or HFO constitute DPM emissions. As such, the cancer potency factor (CPF) and chronic reference exposure level (REL) for*

*DPM are applicable to exhaust emissions from ocean-going vessel diesel engines using MGO, MDO, or HFO. The reasoning used to support these conclusions is summarized below.*

- *MGO and MDO are distillate fuels with most fuel properties nearly identical to diesel fuel.*
- *The fuel specifications for MGO and MDO are very similar to the diesel fuel specification that existed prior to 1993.*
- *HFO is a blended petroleum product containing the same classes of hydrocarbons as diesel fuel.*
- *HFO contains some diesel fuel.*
- *The emission characteristics of a marine diesel engine using HFO are similar to those of a diesel engine using diesel fuel.*
- *The general classes of PM exhaust components from a marine diesel engine using HFO are similar to a diesel engine using diesel fuel.*
- *The particle size distribution of the exhaust emissions from a marine diesel engine using HFO is similar to the particle size distribution from a diesel engine using diesel fuel.*

For more detailed information regarding the reasons listed above, see Section II. Subsection C of the Initial Statement of Reasons for Proposed Rulemaking - Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline – June 2008.<sup>11</sup>

**Comment:** "B. The Results of the Health Analyses Should be Placed Into Proper Context.

In its 2015 Risk Management Guidance, CARB warns that changes to risk assessment methodologies have resulted in increased calculated risk values, even though a facility has not changed its operations in a way that actually negatively affects public health in the real world.

'One significant area of focus is how best to communicate what impact these methodology changes will have on health risk estimates, what those new risk estimates mean, and how best to manage sources and programs in a reasonable and health protective manner. The procedures in the new OEHHA Manual will typically result in a higher estimated cancer risk from a facility even though they [the facility] use control technology and are actually maintaining or reducing its emissions. As a result, it is a challenge to communicate the new information in a way that ensures the public's right to know but does not imply

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<sup>11</sup> CARB, ISOR for Proposed Rulemaking: Fuel Sulfur and Other Operational Requirements for Ocean Going Vessels within California Waters and 24 Nautical Miles of the California, June 2008, Available at <https://www.arb.ca.gov/regact/2008/fuelogv08/ISORfuelogv08.pdf>

that the facility has changed its operations or emissions in a way that negatively affects public health.'

The Health Analyses document does not present this background information to help the public understand the implications of the calculated risk values. This tends to mislead the average reader into thinking that the risk associated with vessels at-berth is significantly greater than normal, when the evidence actually supports the conclusion that incremental risks are far lower at the California Ports and terminals than those risks faces by an average individual living in California.

In contrast to the 2015 Risk Management Guidance, in the ISOR Staff concludes that "[e]missions from ocean-going vessels operating at berth are a significant and growing contributor to community air pollution and associated health impacts." ISOR, p. VI-1. However, nowhere does Staff compare the emissions or potential health impacts attributable to OGVs at-berth with other sources of criteria air pollutants or toxic air contaminants that Californians are exposed to each day. For example, the ISOR indicates that baseline (2016) maximum exposed individual incremental cancer risk (MEIR) attributable to ships at-berth is 74-in-a-million at the Ports of Los Angeles and Long Beach (POLA and POLB), and 16-in-a-million at the Richmond Complex (the Port of Richmond and the Chevron refinery berths). ISOR, p. V-14. While these incremental risks apply to individuals living within a relatively small distance from these two port complexes, CARB estimates that the average individual living in California is exposed to an incremental cancer risk attributable to diesel particulate matter (DPM) of approximately 520-in-a million.

Furthermore, as the following graphic (from CARB's 2015 Risk Management Guidance) shows, CARB recommends development of a risk reduction plan if calculated risk levels exceed 100-in-a-million. The At Berth Regulations ignore these guidelines by, in effect, imposing a risk reduction plan on a collection of sources (such as a port complex) at much lower levels, when such a plan would not be required for an individual stationary source with the same calculated risk level." (21.11b)

**Comment:** "The results of the Health Analyses should be properly placed into context. In ARB's 2015 Risk Management Guidance, ARB warns that changes to risk assessment methodologies have resulted in increased calculated risk values, even though a facility has not changed its operations in a way that negatively affects public health.

'One significant area of focus is how best to communicate what impact these methodology changes will have on health risk estimates, what those new risk estimates mean, and how best to manage sources and programs in a reasonable and health protective manner. The procedures in the new OEHHA Manual will typically result in a higher estimated cancer risk from a facility even though they [the facility] use control technology and are actually maintaining or reducing its emissions. As a result, it is a challenge to communicate the new information in a way that ensures the public's right to know but does not imply

that the facility has changed its operations or emissions in a way that negatively affects public health.'

The Health Analyses document does not present this background information to help the public understand the implications of the calculated risk values.

In contrast to the 2015 Risk Management Guidance, at page VI-1 of the Initial Statement of Reasons (ISOR), ARB concludes that "Emissions from ocean-going vessels operating at berth and at anchor are a significant and growing contributor to community air pollution and the associated health impacts." However, nowhere does ARB compare the emissions, or potential health impacts, attributable to ocean-going vessels (OGVs) at berth with other sources of criteria air pollutants or toxic air contaminants that Californians are exposed to each day. For example, the PRA [given the context of this comment CARB staff assumed the commenter meant to type HRA here, in lieu of "Health Risk Analysis"] indicates that baseline (2020) MEIR attributable to ships at-berth is 54-in-a-million at the Ports of Los Angeles and Long Beach (POLA and POLB), and 14-in-a-million at the Richmond Complex (the Port of Richmond and the Chevron refinery berths). While these incremental risks apply to individuals living within a relatively small distance from these two port complexes, ARB estimates that the average individual living in California is exposed to an incremental cancer risk attributable to diesel particulate matter (DPM) of approximately 520-in-a million.

Furthermore, as the following graphic (from ARB's 2015 Risk Management Guidance) shows, ARB recommends development of a risk reduction plan if calculated risk levels exceed 100-in-a-million. The proposed rule amendment is inconsistent with these guidelines in that, in effect, it imposes a risk reduction plan on a collection of sources (such as a port complex) at much lower levels, when such a plan would not be required for an individual stationary source with the same calculated risk level." (22.36)

**Agency Response (21.11b) and (22.36):** CARB staff made no changes based on the received comment. CARB's goal is always to achieve the greatest reductions in emissions in the most cost-effective way possible, while accounting for the economic impacts of any regulations adopted. California Health & Safety Code section 39650 gives CARB authority to regulate toxic air contaminants from non-vehicular sources to reduce public exposure/risk. The Regulation will better protect public health by achieving lower emissions in the most cost-effective way possible for each vessel category. As indicated in the comment, the risk to public health from ambient DPM exposure is quite high. Since the sources of DPM are many and varied and span multiple sectors, these emissions sources cannot be addressed through a single rule or regulation. Here, by focusing on the marine sector, CARB staff are working toward the goal of reducing the overall concentrations of DPM in the ambient air and the overall risk to public health that results from those concentrations.

The figure referenced in the comment shows threshold values associated with AB288, which is administered at the air district level and is unrelated to CARB rulemaking actions. As previously stated, CARB's goal is generally to reduce emissions to the greatest extent achievable and cost effective.

**Comment: "C. CARB's Claim That The At Berth Regulations Would Avoid \$2.3 Billion in Health Impacts is Not Supported by Sound Science.**

Staff's Health Analyses (ISOR Appx. G) ascribe a statewide benefit of \$2.245 billion to the avoided adverse health outcomes attributable to the proposed At Berth Regulations. Fully 99.8% of this benefit is claimed to be associated with avoided premature deaths, and 87% of the claimed reduction in avoided premature deaths is associated with reductions in oxides of nitrogen (NOx) emissions. These avoided premature deaths attributable to NOx reductions are, in turn, attributed to the formation of particulate ammonium nitrate in a photochemical reaction that CARB acknowledges occurs well downwind of the emission source (and only after the concentrations have been substantially reduced due to dispersion) – and hence, not in the communities nearest the ports.

Relatively little formation of ammonium nitrate occurs in close proximity to the emission source, where dispersion is relatively low. Formation of ammonium nitrate increases over time (and with distance from the source), as does dispersion. While Staff's analysis is not clearly presented, Staff does not appear to address these factors in calculating reduced ambient concentrations of ammonium nitrate particulates and the associated avoided adverse health outcomes. These factors must be properly accounted for in order to get a true picture of avoided premature deaths." (22.11c)

**Agency Response (22.11c):** CARB staff made no changes based on the received comment. It is correct that most impacts from NOx are expected to occur in areas downwind from the ports where the emissions are occurring. Consistent with the method that has been used for the last 10 years, CARB staff quantify the impacts of the emissions for the air basin, not localized areas near the port. Lower nitrate concentrations over a broad area with a large population can have the same total health effects, as higher nitrate concentrations over a smaller area.

**Comment: "D. Staff's Assumptions as to Ambient Concentrations of PM2.5 are Unexplained and Unsupported.**

In the Health Analyses (ISOR, Appx. G, p. G-15, G-51), Staff indicates that they used the AERMOD model to estimate reductions in ambient concentrations of PM2.5. However, AERMOD does not contain algorithms that model the photochemical reactions that convert oxides of nitrogen emissions to secondary ammonium nitrate. While the Health Analyses document is silent as to exactly how Staff calculates the health benefits of NOx emission reductions, it appears (from the discussion at

pp. G-53 to G-57) that Staff scaled the modeled PM<sub>2.5</sub> concentrations by the ratio of NO<sub>x</sub> emissions from sources subject to the proposed rule to modeled PM<sub>2.5</sub> emissions, with the further assumption that most, if not all, of the NO<sub>x</sub> emissions are converted into secondary ammonium nitrate because “[i]mpacts are assumed to take place over a wide geographic area.”

ISOR, Appx. G, p. G-56. If this was, in fact, Staff’s assumption, it is inconsistent with both the physical science and with the approach used by both CARB and California air districts to model ambient PM<sub>2.5</sub> concentrations for State Implementation Plan purposes. Moreover, Staff’s assumption regarding the expected reduction in ambient nitrate concentrations attributed to the At Berth Regulations is not based on a methodology consistent with current USEPA guidance. USEPA guidance for addressing secondary nitrate formation in dispersion modeling analyses under the Prevention of Significant Deterioration (PSD) program establishes a two-step process for evaluation:

- A simple screening tool based on the use of Modeled Emission Rates for Precursors (MERPs); or
- Direct analysis using a photochemical model such as CMAQ.

The fact that USEPA’s guidance on this point applies to a specific regulatory program (i.e., the PSD permit program) does not undermine the fundamental science – the methodology is applicable both to individual point sources and to “a group of sources in the area.” The ports assessed in CARB’s Health Analysis clearly fall within that second category. However, CARB’s analysis of the potential health benefits of NO<sub>x</sub> emission reductions attributable to the proposed rule is not consistent with either of the two steps EPA recommends.” (22.11d)

**Agency Response (22.11d):** CARB staff made no changes based on the received comment. The comment is conflating primary PM<sub>2.5</sub> and secondary nitrate. The statement “Staff scaled the modeled PM<sub>2.5</sub> concentrations by the ratio of NO<sub>x</sub> emissions from sources subject to the proposed rule to modeled PM<sub>2.5</sub> emissions” is incorrect.

#### Primary PM<sub>2.5</sub>

Staff modeled primary PM<sub>2.5</sub> emissions from at berth sources in POLA/POLB. Staff then calculated the ratio of the concentrations predicted using CARB’s IPT method, to the modeled concentrations. This ratio, or attenuation factor, was then used to adjust the primary PM<sub>2.5</sub> concentrations predicted by the IPT method in other air basins outside of South Coast.

#### Secondary PM<sub>2.5</sub>

Although a photochemical model would likely yield more accurate results for secondary nitrate, photochemical model is very resource and time intensive. As

a result, staff used a simplified method for predicting secondary PM2.5 referred to as the Incidence per Ton or IPT method. CARB's IPT methodology and its underlying assumptions are described in the document "*CARB's Methodology for Estimating the Health Effects of Air Pollution*" available on CARB's web site (<https://ww2.arb.ca.gov/resources/documents/carbs-methodology-estimating-health-effects-air-pollution>).

It is similar to the method used by USEPA (Fann et al 2012). For example, USEPA employed this approach in the Stationary Spark Ignition (EPA-452/R-13-002) and Residential Wood Heaters (EPA-452/R-15-001) rules.

**Comment:** "Although the HRA methodology appears sound, the underlying emissions data inputs are incorrect. This results in incorrect estimates of health risks.

- a. Misrepresentation of Residential Cancer Risk Isopleths Health Risk Assessment Figures 16 through 18 illustrate the locations of the MEIR (based on a 30-Year exposure duration) and the MEIW (based on a 25-year exposure duration). The isopleth illustrating the extent of the cancer risks are based only on a 70-year exposure duration. This mixed presentation can be misleading to the general public. Using the 70-year exposure duration assumes that all populations would be living in this same location for 70 years. Although the Risk Management Plan Guidance (CAPCOA, 2015) states that for the population-based cancer risk calculations one should use a 70-year exposure duration, it also states that "studies show that a 30- year exposure duration is a reasonable estimate of the 90th and 95th percentile of residency duration in the population." A 30-year exposure duration isopleth figure should also be included to represent a more realistic spatial estimate of cancer risk. It is also recommended that separate isopleth figures be added to represent a 9- year exposure period and a 25-year worker exposure duration.
- b. Display the Chevron Industrial Facility Property Boundary. The Chevron property boundary is not delineated on Figures 16 through 18. The Chevron RLW only serves activities for use explicitly by the Richmond Refinery. Chevron recommends that the refinery property boundary be illustrated on these figures along with the RLW boundary as the RLW is part of the facility itself, which is an industrial facility and does not contain residential receptors. As such, risks should not be calculated within property boundaries of the facility sources." (22.34)

**Agency Response (22.34):** CARB staff modified the proposed regulatory documents in response to this comment. It has been addressed in the final health risk analysis and the associated figures presented in Appendix G of the ISOR.

**Comment:** "1. CARB's assumption that DPM health values can be assigned to emissions from marine engines operating on MGO, MDO, or HFO is inappropriate and

unfounded. At page 3 of the Health Analyses document (Appendix G), CARB assumes that the cancer potency factor (CPF) and chronic reference exposure level (REL) for Diesel Particulate Matter (DPM) are applicable to the particulate emissions from ocean-going vessel marine engines fueled with marine gas oil (MGO), marine diesel oil (MDO) and marine heavy fuel oil (HFO). The original DPM CPF and REL established by CARB were based largely on health effects studies looking at the exposure of railway workers to locomotive Diesel engine exhaust in the 1960s. Despite this limitation, CARB applies the same CPF and REL to all compression ignition engines using Diesel fuel, including those compression ignition engines equipped with Diesel oxidation catalysts and Diesel particulate filters – both of which have been documented to fundamentally change the chemical nature of DPM. In the instant rulemaking, CARB assumes that the same CPF and REL that were developed based on DPM emissions from 1960s vintage locomotives operating on Diesel fuel are now applicable to modern-day Diesel engines operated on demonstrably different fuels (MGO, MDO and HFO) when used in auxiliary engines on ocean going vessels. Instead of continuing to expand the applicability of health-effects data based on 50-year-old technologies and fuels, ARB should assess the health impacts of auxiliary engines operated on fuels other than Diesel fuel based on speciated composition of the exhaust for these engines, as CARB does in its risk assessments for engines using other fuels (such as gasoline, ethanol, and natural gas).” (22.35)

**Agency Response (22.35):** CARB staff made no changes based on the received comment. See response to comment 22.11a for discussion.

**Comment:** “CARB’s assertion that the proposed regulation would avoid “health impacts valued around \$2.3 billion” is not supported by sound science. The Health Analyses ascribe a statewide benefit of \$2.245 billion to the avoided adverse health outcomes attributable to the proposed regulatory program. 99.8 percent of this benefit is associated with avoided premature deaths, and 87 percent of the reduction in avoided premature deaths is associated with reductions in oxides of nitrogen (NO<sub>x</sub>) emissions. These avoided premature deaths attributable to NO<sub>x</sub> reductions are, in turn, attributed to the formation of particulate ammonium nitrate in a photochemical reaction that ARB acknowledges occurs well downwind of the emission source – and hence not in the communities nearest the ports, and only after the concentrations have been substantially reduced due to dispersion. Relatively little formation of ammonium nitrate occurs in close proximity to the emission source, where dispersion is relatively low. Formation of ammonium nitrate increases over time (and distance from the source), as does dispersion. CARB’s analysis is not clearly presented, however CARB does not appear to address these factors in calculating reduced ambient concentrations of ammonium nitrate particulates and the associated avoided adverse health outcomes.” (22.37)

**Agency Response (22.37):** CARB staff made no changes based on the received comment. See response to comment 22.11d for discussion.

**Comment:** “CARB does not explain how they calculated they calculated the health benefits attributed to NOx emission reductions in the South Coast Air Basin. At p. G-53, CARB indicates that they used the AERMOD model to estimate reductions in ambient concentrations of PM2.5. However, AERMOD does not contain algorithms that model the photochemical reactions that convert oxides of nitrogen emissions to secondary ammonium nitrate. While the rulemaking document is silent as to exactly how CARB calculates the health benefits of NOx emission reductions, it appears (from the discussion at pp. G-53 to G-57) that CARB scaled the modeled PM2.5 concentrations by the ratio of NOx emissions from sources subject to the proposed rule to modeled PM2.5 emissions, with the further assumption that most, if not all, of the NOx emissions are converted into secondary ammonium nitrate because “[i]mpacts are assumed to take place over a wide geographic area”. If this was, in fact, CARB’s assumption, it is inconsistent with both the physical science and with the approach used by both CARB and California air districts to model ambient PM2.5 concentrations for State Implementation Plan purposes.” (22.38)

**Agency Response (22.38):** CARB staff made no changes based on the received comment. See response to comment 22.11d for discussion.

**Comment:** “5. CARB’s assumption regarding the expected reduction in ambient nitrate concentrations attributed to the proposed rule is not based on a methodology consistent with current EPA guidance. EPA guidance for addressing secondary nitrate formation in dispersion modeling analyses under the Prevention of Significant Deterioration (PSD) program establishes a two-step process for evaluation:

- A simple screening tool based on the use of Modeled Emission Rates for Precursors (MERPs); or
- Direct analysis using a photochemical model such as CMAQ.

The fact that EPA’s guidance on this point applies to a specific regulatory program (i.e., the PSD permit program) does not undermine the fundamental science – the methodology is applicable both to individual point sources and to “a group of sources in the area”. The ports assessed in CARB’s Health Analysis clearly fall within that second category. However, CARB’s analysis of the potential health benefits of NOx emission reductions attributable to the proposed rule is not consistent with either of the two steps EPA recommends.” (22.39)

**Agency Response (22.39):** CARB staff made no changes based on the received comment. See response to comment 22.11d for discussion.

## 11.CARGO DIVERSION

**Comment:** “If Ro/Ros are diverted – either to concentrated docks within the state or to out-of-state alternative ports - due to lack of technology, access to alternatives, or

simply to avoid increased costs, CARB's SRIA needs to analyze the related emissions and costs of the delivery of automobiles by other intermodal methods, principally by rail for long-haul and truck for local distribution. Acknowledging that GHG emissions per ton vary widely by transportation mode, but with ocean going vessels always having the lowest emissions per ton per mile, it is likely that Ro/Ro vessel diversions will not only have significant economic costs to the state in terms of lost employment and activity but also increased criteria pollutants and GHG emissions from the use of alternative transportation for vehicle delivery." (52.C.27)

**Agency Response (52.C.27):** CARB staff made no changes based on the received comment. See Master response 2 for discussion on cargo diversion.

**Comment:** "CARB did not analyze California competitiveness on a macro average as a measure of competitiveness, which is a required step in a SRIA analysis. If CARB had done this, it would have found that this regulation will exacerbate an existing cargo diversion trend in the containerized cargo sector. California's container ports have been steadily losing market share for a decade due to reasons like increased cost and increased regulatory burden. California ports have lost approximately 20% market share over the last decade, that lost market share represents lost jobs, lost economic activity, and lost tax revenue. A proper analysis would compare increased cost against alternative transportation options, namely other port gateways.

The overwhelming majority of containerized cargoes entering California ports are discretionary intermodal and ultimately destined for use outside of California. As a result, other gateways are competitive on a cost-basis against California ports. The SRIA did not examine any of these potential and foreseeable economic impacts. In addition, cargo diversion also has dramatic environmental impacts discussed below. The approach that CARB staff has taken would be the equivalent of assessing the cost of a taxi ride against the net worth of the passenger rather than against other transportation options like public transit or a personal vehicle. Unless the SRIA examines the economic impact on the service being provided, transportation, the SRIA cannot seriously examine the economic impacts." (52.C.20)

**Agency Response (52.C.20):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the SRIA requires analysis on the competitive advantages or disadvantages for businesses currently doing business within the state and to supply quantitative or qualitative estimates of economic variables regarding competitive advantages or disadvantages for businesses currently doing business within the state. It does not as the commenter asserts require analysis on a "macro average as a measure of competitiveness." See also Master Response 2 for further discussion on cargo diversion.

**Comment:** "[T]he impacts on these vessels [*cruise*] of losing the previous exemption involves much more than just the cost of installing the infrastructure on a ship, which

currently is about \$2 million per vessel. And, each cancellation of a cruise visit is a direct and major financial hit to the ports the cruises used to visit in exchange for very small emission reductions anticipated by the rule. These vessels account for a very low percentage of vessel visits. The cost to the port and city economies for these cruise visit departures from CA are in the millions each year. These cruise visits provide economic and employment benefits in the amount of between \$500,000 to \$2 million dollars for each single visit.” ( 41.3) (EA 41-1)

**Agency Response (41.3):** CARB staff made no changes based on the received comment. See Master Response 2 and EA RTC 41-1 for further discussion on cargo diversion and environmental impacts.

**Comment:** “Neither the ISOR nor the SRIA discusses the potential for the At Berth Regulations to impede international and interstate commerce into California, which could easily lead to vessel traffic increasingly finding other ports of call outside California. Indeed, Staff in the SRIA all but abandon any effort to quantify adverse impacts to commerce or competitiveness. See Appx. C-1 (SRIA), p. 126 (claiming that, ‘[t]o date, the available data and research has been insufficient to quantify the impact on the competitive advantage or disadvantage of the Proposed Regulation as it relates to cargo diversion.’)

California law requires Staff to do more than throw up its hands at the prospect of assessing potential adverse impacts to commerce and competitiveness. See 1 CCR 2002 (CARB is mandated to identify and analyze “competitive advantages or disadvantages for businesses currently doing business within the state”). Because real-world direct and indirect compliance costs likely will be significantly higher than staff’s estimates, more capital costs will be needed for At Berth Regulations compliance (instead of potential upgrades designed to keeping the ports and terminals market-competitive), future development and expansion of California ports and terminals could suffer, operation and transportation costs could increase, and cargo may seek other, less costly points of entry (and indeed, documentation presented to CARB to date shows that such diversion is likely to occur).

Regulated ports and terminals have articulated to Staff throughout this rulemaking process that the At Berth Regulations will substantially increase compliance costs for California ports and terminals relative to other freight hubs and ports/terminals in other states. The natural tendency of any free market will be to seek out less expensive freight hubs and modes of transport. If marine vessels seek less expensive ports and terminals outside California, the At Berth Regulations will have resulted in greenhouse gas ‘leakage’ (i.e., a reduction in California greenhouse gases at the cost of more-than-offsetting increases in greenhouse gases outside California.) Indeed, if and when marine vessels are diverted, the result would be a net increase in GHG emissions because of the greater distance vessels would need to travel to (a) get to a non-California port or terminal, and (b) get the commodity from that new state to the consumer. Neither the ISOR nor the SRIA have accounted for or assessed the

potential for these adverse impacts on California commerce, or the potential for 'leakage.'" (22.13)

**Agency Response (22.13):** CARB staff made no changes based on the received comment. As part of the SRIA development, CARB staff analyzed the competitive advantage and disadvantage to businesses and can be found on page 126. The compliance costs that were presented in the SRIA and that were used in the macroeconomic analysis were chosen to be conservative. For example, staff assume for the cost analysis that each tanker terminal exceeding the vessel visit threshold would require an emissions control system, emission control system connections and foundation support structure, piping infrastructure from berth to emission control system, cranes, and crane support structures. Not all tanker terminals will need such extensive infrastructure and thus, in some cases staff have overestimated the costs. See Master Response 2 for more information cargo diversion.

**Comment:** "[T]he SRIA does not discuss potential negative impacts on growth or interstate/international commerce at the Ports and private terminals that may result from the extremely high costs of compliance and resulting cargo diversion (discussed further below). If real-world compliance costs end up being several times higher than CARB's underestimates, future development and expansion of the Ports and terminals could suffer, operations and transportation costs could increase, and cargo may seek other, less costly ports of entry (and indeed, documentation presented to CARB to date shows that such diversion is likely to occur). We are concerned that the SRIA omits any discussion of these risks or their potential impacts on the flow of commerce in and out of the ports and terminals." (52.C.12)

**Agency Response (52.C.12):** CARB staff made no changes based on the received comment. This comment asserts that compliance costs will be several times higher than CARB staff estimates. CARB staff disagrees with this assertion. The compliance costs that were presented in the SRIA, and that were used in the macroeconomic analysis, were chosen to be conservative. See comment 22.13 for an example of conservative assumptions taken.

The comment states that the SRIA does not discuss potential negative impacts on growth at Ports and private terminals that may result from compliance of the Regulation. However, the SRIA does discuss potential negative impacts to growth at ports and private terminals, and the potential negative impacts to growth statewide. For example, in sections E.1.b of the SRIA, CARB discusses potential impacts to California output growth resulting from the Proposed Regulation. The compliance costs to ports and private terminals were modeled in REMI<sup>12</sup> as increases in production costs and changes in labor productivity in the support for transportation industry (SRIA Table F2) and their impacts are

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<sup>12</sup> Regional Economic Models, Inc. (REMI), Policy Insight Plus Version 2.2.8

represented in these REMI modeling results. The REMI model estimates that the increased production costs would result in modest impacts to growth across the sector as a whole.

**Comment:** "P. 9 – (52) "Previously Unregulated Vessels" Definition, Loss of Fleet Average System, and Elimination of "Non-frequent Flier\_Rule": The provision on page 9 in combination with (e) on page 27 will extend the compliance date for non-frequent fliers in currently regulated fleets by two years to 2023, which is appreciated. Unfortunately, this amendment came too late for non\_frequent fliers with cruises scheduled in 2020 and 2021, which has already resulted in changed itineraries to avoid calls in California for at least those two years. This is because world cruises and transitioning cruises begin to sell these voyages years in advance, so the companies had to make a decision this summer whether to pull these visits from California ports. "The ISOR and SRIA do not properly analyze the possibility of vessel diversions and their economic impact. These infrequent cruise vessel calls are particularly subject to diversion. This is especially true without the existing fleet average compliance system, which could allow the cruise lines to accommodate these non-frequent fliers. CLIA has brought this issue up many times in the last few years with CARB staff when the non-frequent flier exemption was discussed. This exemption in the current rule allows vessels calling on CA ports for five or fewer visits each year to be exempt from the mandate to install shorepower infrastructure. Note that this decision to pull out of CA port calls for the cruise lines only applies to world and transitioning cruises and other infrequent cruise vessels without shorepower, and that the decision is not just based on the cost of installing shorepower infrastructure on these ships alone. Other major factors for this decision include:

- The fact that out of the hundreds of cruise vessels worldwide, only a limited number continually visit California. The more specialized world and transitioning cruises and cruise vessels may visit California once every two to four years and only a few ports each visit, using entirely different cruise ships each time. (This means that these vessels would be able to use these \$2 million systems only 8 – 16 hours every one or two years.)
- The required commissioning and maintenance of these systems, particularly if not used regularly.
- Required crew on the ship that are knowledgeable about the systems.
- The inability of cruise vessels to use the only current CARB-approved alternative control strategy, leaving them with a one-shot compliance option." (41.2) (EA 41-1)

**Agency Response (41.2):** CARB staff made no changes based on the received comment. See Master Response 2 and *Responses to Comments on the Draft Environmental Analysis* comment 41-1 for further discussion on environmental impacts.

**Comment:** “[I]f ro-ros are diverted – either to concentrated docks within California or to out-of-state alternative ports - due to lack of control technology, access to alternatives, or simply to avoid increased costs, CARB’s analyses needs to analyze the related emissions and costs of the delivery of automobiles by other intermodal methods, principally by rail for long-haul and truck for local distribution. Acknowledging that emissions per ton vary widely by transportation mode, but with ocean going vessels always having the lowest emissions per ton per mile, it is likely that ro-ro vessel diversions would not only have significant economic costs to the state in terms of lost employment and activity but also result in a net increase in emissions.” (45.19) (EA 45-2)

**Agency Response (45.19):** CARB staff made no changes based on the received comment. See Master Response 2 for further discussion on cargo diversion and *Responses to Comments on the Draft Environmental Analysis* comment number 45-2 for further discussion on environmental impacts.

**Comment:** “[T]he Port has only six major customers which move cargo through the Port enabling those 15,000 jobs. As noted in previous comment letters, some of the communities surrounding the Port are State designated disadvantaged communities and the Port takes seriously its role of providing the types of jobs which can enable individuals to reach ladders of opportunity. Port related jobs can bring families out of poverty and are increasingly uncommon in the state of growing economic disparity in Ventura County and the State in general. The loss of a single customer would have major economic implications to the surrounding region as each direct Port job has a multiplier creating an additional five to six jobs in the community.” (53.4)

**Agency Response (53.4):** CARB staff made no changes based on the received comment. CARB agrees that any loss in jobs and revenue at the ports and portside communities would be devastating. However, the SRIA shows that the Regulation will create jobs. Indeed, as noted in the SRIA a higher demand for capture and control systems from the Regulation will likely lead to increases in manufacturing, engineering, and construction related jobs throughout the state. See Master Response 2 for further discussion cargo diversion.

**Comment:** “It is imperative that CARB identify the potential for real and profound economic impacts (especially at smaller, niche ports) as well as increased state-wide emissions, (from the diversion of cargo to out of state ports) which may result from increased costs associated with the proposed regulation. Without a cost benefit analysis on a port by port basis the real impact of these changes cannot be ascertained. The Port wishes to document its request prior to CARB’s moving forward that the regulation process must include the completion of a full cost benefit analysis at each of the subject ports! These costs should be made clear in comparison against the quantity of emissions that will be reduced at each individual port subject to the new regulations.” (53.7)

**Agency Response (53.7):** CARB staff made no changes based on the received comment. As discussed in chapter XI of the ISOR, fiscal impact to ports varies annually. Largely, costs depend upon what type of compliance projects will occur at the port and who is responsible for the costs. There is inherent uncertainty on what each port will ultimately use for compliance with Regulation. Therefore, an individualized port by port analysis would be speculative.

Staff understands that infrastructure costs for projects occurring at port-based terminals would initially be incurred by the ports, but could be passed on to port tenants through their lease agreements to vessel operators through berthing fees, or would be absorbed by the ports. The annual total direct costs to ports from 2020 to 2032 are discussed in the ISOR in chapter IX and is summarized in Table IX-7 found on page IX-20. Additionally, the SRIA analyzes costs on two representative ports, one large (Port of Long Beach) and one small (Port of Hueneme). See Master Response 2 for further discussion on diversion.

**Comment:** "If shipping lines chose to pursue the retrofit of a few vessels, they would become the only ones capable of calling at California ports. However, this places the company at a disadvantage globally by having the entire state of California only serviceable by a specific set of vessels and not others. This is problematic for air quality as well, as the shipping lines will have to operate inefficiently. When vessels are not being used efficiently it results in greater emissions and high costs to the consumer. Logistically, many shipping lines will begin to look to the Pacific Northwest and Gulf ports to import their automobiles. Once imported, they will simply place them on trucks or rail and send them to California. The demand is in California, and they will find the cheapest way to get the automobiles here. Furthermore, this option leads to much more air pollution, the very consequence CARB is working so diligently to reduce." (53.19)

**Agency Response (53.19):** CARB staff made no changes based on the received comment. See Master Response 2 for more information on cargo diversion.

**Comment:** "The Port strongly encourage CARB to conduct a socioeconomic assessment of the proposed amendments incorporating a full cost-benefit analysis due to the potential impacts of the concepts currently being discussed. As outlined above, the Port cannot emphasize enough the potential of economic harm which could result from the loss of small numbers of customers at the State's smaller ports." (53.27)

**Agency Response (53.27):** CARB staff made no changes based on the received comment. Senate Bill 617 (Chapter 496, Statutes of 2011) established additional regulatory impact assessment standards for major regulations, known as a SRIA. The SRIA requires CARB to analyze things such as; the creation or elimination of jobs within the state; the creation of new businesses or the elimination of existing businesses within the state; the competitive advantages

or disadvantages for businesses currently doing business within the state; the increase or decrease of investment in the state; the incentives for innovation in products, materials, or processes; the benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state’s environment and quality of life, among any other benefits identified by the agency. See Appendix C, SRIA, of the ISOR for further details on socioeconomic impacts of this Regulation.

**Comment:** “[B]usiness leakage from the Port to the Pacific Northwest ports, would have a substantial environmental costs as well. Emissions from the automobiles being delivered to distant markets like Los Angeles and Phoenix are accounted for with a U.S. Department of Transportation emission ton monetization rate. The emissions and subsequent costs resulting from vehicles being driven the increased distances to vehicle markets which are beyond that of delivery from the Port would be a cost of the proposed amendments and are shown in Table 6.

	Truck Miles Portland to: Huneme [sic] to:		Ton Miles Penalty Mileage Penalty Ton Miles		Emissions Cost Annual
San Francisco	645	364	281	21,053,236	\$1,462,071
Los Angeles	975	70	905	225,140,993	\$15,635,232
Seattle	171	1147	-976	-10,791,163	-\$749,407
Portland	0	975	-975	-10,852,054	-\$753,636
Denver	1252	1079	173	1,906,395	\$132,392
Phoenix	1345	444	901	36,290,883	\$2,520,271
Salt Lake City	775	752	23	258,967	\$17,984
Las Vegas, NV	982	325	657	14,125,214	\$980,945
<b>Total Emissions Cost</b>					<b>\$19,245,853</b>

Table 6. Total Emissions Costs for Vehicle Deliveries Resulting from Business Leakage from Port of Hueneme The Martin Study identifies the worst-case scenario, but the true global nature of the Ro-Ro fleets would make the carriers very reluctant to retrofit their vessels when alternatives just up the coast and in Mexico and Canada exist. The competitive threat is very real. The extent to which the regulations could cause such leakage merits further evaluation and study for both the economic and environmental impacts before regulations are promulgated.” (53.21)

**Agency Response (53.21):** CARB staff made no changes based on the received comment. CARB notes and appreciates the additional information provided. However, staff does not agree with the Martin Study as it discussed what would happen *if* diversion were to happen without discussing how it was determined why or how much diversion would occur. See also Master Response 2 for more information on cargo diversion and possible environmental impacts.

**Multiple Comments:** Several comments focused on the topic of goods diversion and leakage. These comments assert that the costs of compliance could potentially cause businesses to divert cargo away from California ports and as a result, CARB should conduct additional analysis on the economic, GHG, and criteria emission impacts. These comments can be subdivided several broad categories.

**Comment:** Some comments assert that cargo diversion may occur because CARB Staff estimates of the compliance costs of the regulation are underestimated (52.C.12), (22.13).

**Agency Response (52.C.12) and (22.13):** CARB staff made no changes based on the received comments. The compliance costs that were presented in the SRIA and that were used in the macroeconomic analysis were chosen to be conservative. For example, staff assumed for the cost analysis that each tanker terminal exceeding the vessel visit threshold would require an emissions control system, emission control system connections and foundation support structure, piping infrastructure from berth to emission control system, cranes, and crane support structures. Not all tanker terminals will need such extensive infrastructure; therefore, in some cases, staff have overestimated the costs.

**Comment:** Some comments assert that cargo diversion and cancelled visits are a likely outcome due to general market trends and increased costs of compliance. (52.C.20), (52.C.12), (22.13), (41.3), (EA 41-1)

**Agency Response (52.C.20), (52.C.12), (22.13), and (41.3):** CARB staff made no changes based on the received comments. As stated in the SRIA, "cargo owners and international cargo transport deliver companies rely on sophisticated propriety models and factors to guide decisions on where to ship goods. The factors include access to consumer markets and intermodal transportation networks; reliability and velocity of transport modes; port and trans-loading infrastructure; the overall efficiency of the supply chain as it is impacted by the availability of labor; congestion delays and other impediments; and costs, including compliance costs for all regulations. To date, the available data and research has been insufficient to quantify the impact on the competitive advantage or disadvantage of the Proposed Regulation as it relates to cargo diversion." (SRIA p. 126)

CARB staff solicited input from various stakeholders regarding the impact that the Regulation may have on cargo diversion. PMSA provided a GHG emissions study<sup>13</sup> prepared by Starcrest Consulting Group, LLC that explored the potential impact to global GHG emissions when cargo being transported by OGVs and originating in the Far East is diverted from the West Coast ports to

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<sup>13</sup> Starcrest Consulting Group, LLC, Greenhouse Gas Route Comparison Tool, August 2017.

East or Gulf Coast ports. A similar study<sup>14</sup> prepared by Martin Associates and provided to CARB staff by the Port of Hueneme examined the potential GHG emissions impacts that could occur if ro-ro cargo was diverted from California ports to Pacific Northwest ports. However, these same reports provided to CARB staff did not provide any feedback on the extent to which the Regulation would cause cargo diversion and instead focused only on impacts *if* cargo diversion were to occur.

**Comment:** Some comments provide examples of possible environmental and economic impacts if cargo diversion were to occur. For example impacts to cruise vessels (41.3), (EA 41-1), Port of Hueneme (53.20), San Diego cruise ships (52.C.25), Ro/Ros (52.C.27), (45.19), (EA 45-2), other regions including Mexico, Pacific North West Ports, East Coast Ports, and Gulf Ports (45.19), (EA 45-2), (53.19), (52.60), (48.3), (52.C.52), (52.C.130), (52.C.151), (53.21).

**Agency Response (41.3), (53.20), (52.C.25), (52.C.27), (45.19), (45.19), (53.19), (52.60), (48.3), (52.C.52), (52.C.130), (52.C.151), and (53.21):** CARB staff made no changes based on the received comments. These comments do not seem to provide any data regarding the extent to which the Regulation would increase costs or otherwise cause diversion. Rather, they focus on the economic and environmental impacts if diversion were to occur in specific areas. Given that supporting data was not provided to CARB staff, it is entirely speculative to conclude that diversion would occur in these areas or to this extent in the first place.

**Comment:** “The ISOR and SRIA do not properly analyze the possibility of vessel diversions and their economic and environmental impacts. The costs of the rule are not limited to on site infrastructure and labor, ship retrofits or electricity rates, but they also include the value of lost business to local port communities and increased GHGs which occur when vessels are diverted away from the US West Coast.

Already the proposed rule has resulted in cancelled cruise calls to California ports based on prior proposals and the current proposal is only likely to continue that trend. The rule creates a level of uncertainty that vessel operators will find difficult to manage. For cruise and container vessels already frequently calling on California ports, compliance has and will continue to be a success story. But not all vessels call California regularly, much less frequently, which is exactly why CARB built the fleet-size thresholds into the current at berth regulation. The first effects of the elimination of the fleet rule and the fleet-size thresholds are being seen in the cruise industry, where passage is booked much earlier than for freight. As a result, cruise vessels are the “canary in the coal mine” of what can be expected across the maritime industry. Cruise calls that are part of world voyages or transitioning /repositioning voyages (i.e., extremely infrequent California port callers) have already been cancelled for 2020 and

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<sup>14</sup> Martin Associates, The potential economic and environmental impacts of the at-berth regulation amendment concepts at the Port of Hueneme, August 9, 2017.

2021. Based on current activity this is expected to impact 19 calls annually (12 in San Francisco, 6 in Los Angeles and 1 in San Diego), resulting in tens of millions of dollars of economic impact to local communities.

The ISOR and SRIA should evaluate these impacts that have now occurred – they are not speculative – as a result of the proposed regulation and can be expected to broaden to other parts of the maritime industry as ocean carriers avoid California ports due to an inability to plan for rule compliance because of a lack of alternative control strategies and a demonstrated insufficiency of VIEs/TIEs. The simplest approach to address this issue of vessel diversion to return the proposed rule to a fleet average approach with an exception for fleets that have few California calls.

Likewise, with respect to diversion in the container industry, the ISOR should evaluate the global GHG increases and impacts which will occur with diversion of vessels away from the US West Coast. With the substitution of an every-vessel, every-call standard rather than a fleet average. CARB is well aware of and helped to affirm the methodology for the study commissioned by PMSA in 2017 which evaluated GHG impacts associated with container vessel diversions away from California's ports. (<http://www.pmsaship.com/pdfs/PMSA%20carbon%20comparison%20context%20piece.pdf>) (52.60) (EA 52-8)

***Agency Response (52.60):*** CARB staff made no changes based on the received comment, however, did make adjustments to the implementation dates for the Regulation in light of the 2020 global economic downturn which may address some of this commenter's concerns in the early years of the Regulation. The initial implementation date for cruise vessels (as well as container and reefer vessels) was adjusted to 2023, which will allow for infrequent visiting vessels to continue calling California without regulatory obligations until January 1, 2023. CARB staff understands that some cruise vessels call California infrequently and may not find installing shore power or another emissions control strategy cost effective for those vessels. In order to accommodate operational realities, including situations such as this, CARB staff added TIEs and VIEs to the Regulation. TIEs and VIEs allow vessel and terminal operators to have a small amount of vessel visits that are uncontrolled, so infrequent vessel visits could utilize TIEs and VIEs to continue calling California. Because cruise vessels have such high power loads, it is important that emissions are reduced from cruise ships whether they are in a fleet that makes frequent or infrequent calls to California, as the focus of this Regulation is to reduce the health impacts on port communities.

CARB staff are aware of the commenter's claim that some cruise visits were canceled for the 2020-2021 cruise years, but no specific information was submitted to CARB from any cruise lines to support this claim. CARB staff also acknowledge the 2017 PMSA study referenced by this commenter, but note that this study focused on what would happen if vessels diverted from California

and did not provide an explanation of the likelihood of diversion. CARB staff also do not believe the 2017 PMSA study has merit for assessing the impacts from cruise vessels, which serve only for pleasure voyages not the transport of essential goods, sail very different rotations, and may have differing reasons for diversion than cargo vessels. See Master Response 2 for further discussion on cargo diversion and response to comment 52-8 in the EA RTC for environmental impacts.

**Comment:** "The District's proximity to Mexican ports of entry is a potential complication with implementing the regulation as proposed. As an alternative to California ports, nearby foreign ports and transportation systems, such as Ensenada, have the capacity to absorb and re-direct trade. This diversion, unregulated by California law, would likely bring a new set of environmental impacts that could affect the region's air quality." (48.3)

**Agency Response (48.3):** CARB staff made no changes based on the received comment. See Master Response 2 for further discussion on cargo diversion.

**Comment:** "Cargo has been diverted from west coast ports for the past decade as evidenced by declining market share and strong growth of east coast and gulf coast ports (see attached chart). This is especially important because CARB's economic projections of future container growth at the time of the adoption of the current At-Berth Regulation were exceptionally aggressive, and relied on assumptions that cargo through California's container ports would double by 2020. Our industry is woefully underperforming when compared to these economic forecasts which were used to underpin the existing program's cost effectiveness and cost-benefit analyses. Revising such rosy scenarios to reflect current conditions in the new economic analysis is crucial for an accurate representation of the regulation's true costs." (52.C.151)

**Agency Response (52.C.151):** CARB staff made no changes based on the received comment. The cost of this Regulation can be found in the SRIA, ISOR and 15-Day changes document Attachment B. For information on how CARB staff projected growth see ISOR Attachment H: 2019 Update to Inventory for Ocean-Going Vessels At Berth: Methodology and Results. See also, Master Response 2 for further discussion on cargo diversion.

**Comment:** "As part of CARB's cost-effectiveness and economic analysis, CARB should also analyze the environmental impacts of diversion. Cargo moved through east coast and gulf coast ports will have a higher greenhouse gas footprint than cargo moved through west coast ports. It is important that any regulation does not reduce California greenhouse gas emissions by increasing them elsewhere. Any proposal resulting in cargo diversion would cause California to lose twice: economically and environmentally. Diversion is even more likely for non-containerships." (52.C.152)

**Agency Response (52.C.152):** CARB staff made no changes based on the received comment. See Master Response 2 for further discussion on cargo diversion.

**Comment:** "GHG Leakage and Impacts of Diversion Must Be Analyzed. An analysis commissioned by PMSA and conducted by Starcrest Consulting Group demonstrates that emissions of greenhouse gasses (GHG) increase as certain cargo is diverted from West Coast ports. The GHG increases are dependent on a number of factors including port of origin, port of destination, inland destination and container vessel sizes moving the cargo. As a result, policy proposals to reduce GHGs could have an opposite effect than intended when shippers and cargo owners, in response to increased costs due to regulation, divert cargo from higher-cost West Coast ports to lower-cost East Coast and Gulf Coast ports. The analysis found that GHG emissions may average up to 22 percent higher, when cargo originating from Asia bypasses California ports in favor of ports on the East Coast and Gulf Coast (see attached infographic, a copy of the report has been previously transmitted and is also available on PMSA's website). CARB must analyze the potential impacts of cargo diversion from California. A poorly crafted regulation could result in the loss of business and increase in GHG emissions, while a well crafted regulation will retain cargo at California ports while reducing emissions." (52.C.130)

**Agency Response (52.C.130):** CARB staff made no changes based on the received comment. See Master Response 2 for discussion on cargo diversion/leakage.

**Comment:** "During the meeting on the 5th, many in the audience and the Commissioners stated that it would be "large multinational corporations" who would be forced to pay for these regulations and therefore the impact would be minimal amongst the "billions" which these corporations make in profits. Unfortunately, the reality is that most of the cost of these regulations will be carried by the State's ports. Goods movement is a global system of connectivity which is structured to move goods from their location of manufacture to their location of consumption. The "large multinational corporations" involved in this process have a growing amount of choice when it comes to choosing a path through this supply chain and the ports of California are not their only choice for offloading their goods. Ports in the Gulf of Mexico and in other states along the Pacific Coast can be significantly cheaper. Rates of cargo diversion away from California will increase as California ports raise their rates to help fund the needed infrastructure improvements required by these new regulations. California ports will continue to lose market share and employment opportunities for local citizens, especially in areas already suffering from a lack of middle class jobs as the costs of doing business in California continues to increase. Additionally, the local demand for goods shipped from overseas will not diminish and that market will continue to demand fast cheap shipping for a plethora of goods from fresh produce to consumer goods. These goods will still have to reach consumers in California and

when shipped into out of State ports will be trucked back into local stores and warehouses resulting in significant net increases in emissions of toxic pollutants and greenhouse gases.” (53.5) (EA 53-1)

**Agency Response (53.5):** CARB staff made no changes based on the received comment. See Master Response 2 for discussion on cargo diversion/leakage.

## 12. INNOVATIVE CONCEPT COMPLIANCE OPTION

**Comment:** “The Port is extremely concerned that the Proposed Control Measure adds a substantial additional regulatory burden and cost to carriers and terminals that are already achieving high levels of plug-ins and emissions reductions. As the Port has discussed with CARB previously along with other California seaports, CARB could achieve more cost-effective emissions reductions from other source categories. In fact, during a conference call with CARB staff on Friday, November 22, 2019, the Port joined its sister ports in proposing potentially preferred emissions reductions project alternatives based upon readily available specific equipment replacements, which will result in a significant reduction of emissions.” (17.4)

**Comment:** “The Ports support including Alternative Compliance Plans for the currently unregulated fleet including Tankers and RoRos in the regulation.” (23.7)

**Comment:** “The Port is in support of alternative compliance plans that can be implemented to achieve equivalent emission reductions more cost effectively.” (OC-4 Caswell)

**Agency Response (17.4), (23.7), and (OC-4 Caswell):** CARB staff modified the proposed regulatory language in response to the received comments. See response to comment 46.7.

**Comment:** “[T]he Port put together a list of potential projects which could achieve significant emissions reductions in the near term future and potentially at a lower cost. These “alternatives” were brought forward in a good faith effort to show the potential for in-lieu emissions reductions which could be financed in part by those customers of the Port in the unregulated fleets. Following months of collaborative communication with CARB staff, it was unexpected to the Port that the discussion at the December 5th meeting centered around these projects in no way being undertaken in lieu of the new requirements and could be required in the interim when direct compliance was infeasible on the short term. Thus it appears that CARB intends to require the Port and its customers operating RORO vessels be required to implement the alternative projects which the Port proposed on an earlier timeline and not in lieu of any of the requirements of the proposed regulations.” (53.6) (EA 53-2)

**Agency Response (53.5):** CARB staff made no changes based on the received comment. This comment is in direct response to the discussion held by CARB Board members at the December 5, 2019 public hearing, and is not a direct comment on the final Regulation text. CARB staff did include an Innovative Concept Compliance Option into the Regulation with the 15-day changes released on March 26, 2020. The option is designed to allow vessel and terminal operators and ports to utilize an alternative compliance project for an unlimited period of time, as long as the project continues to meet or exceed the emissions reductions required by the Regulation, and as long as the regulated entity reapplies and receives approval for the project as specified in the Regulation (section 93130.17).

**Comment:** “Alternative Compliance. One of the limitations of the existing rule is its lack of flexibility and ability to only reduce emissions at berth. An alternative compliance pathway would have the potential to expand the possible scope of emission reductions. The goal of an alternative compliance plan would be to increase flexibility by allowing vessel operators to enter into a voluntary agreement with CARB to reduce emissions using methods beyond those envisioned by the At-Berth Regulation.

For example, ocean-going vessels are responsible for emissions while transiting to ports, anchoring while waiting for a berth, and at berth. Transiting emissions represent a significant opportunity to reduce emissions as compared to other modes of vessel emissions. As a result, it may be possible to reduce emissions significantly from transiting to offset some portion of the required at berth emission reductions, and achieve these results in a much more cost-effective manner. Additionally, a plan that allowed for a voluntary agreement of reductions between ocean carriers could incentivize the reduction of some near-community emissions (and risk reduction) to provide offsetting reductions for other sources further from communities.

Such an alternative compliance pathway should consider the vessel’s engine tier, improved vessel efficiency (e.g., as achieved through larger vessels), cleaner than required fuels, engines with lower verified emissions factors, improved cargo operations (e.g., as demonstrated through reduced berth time) and reduced vessel speeds. Surplus reductions achieved through a voluntary compliance pathway could be tracked and used in a mechanism similar to the existing rule’s Fleet Emission Credit. An alternative compliance pathway has the potential to incentivize the use of higher tier vessels, the deployment of scrubber systems, and induce operational changes that could have substantial impacts on air quality.” (52.C.149)

**Comment:** “While we fully support the goal of increased control of ocean-going ship emissions, we recommend a study be undertaken to determine how the marginal cost of bringing container ship emission controls from 80% to 100% under the proposed

rule compares with other potential efforts to reduce emissions from ocean-going ships, including transiting or maneuvering movements. We also wonder whether emissions reductions from other sources at ports could be identified as more cost-effective investments for control programs, such as incentive programs to retrofit or replace harbor craft engines as an example. Further, we encourage a discussion among stakeholders to determine the sequencing of emission control programs for all of the key source categories that operate in and around ports, in order to identify where money should be spent first to move forward with cleaning the air regionally and throughout California.” (60.16)

**Agency Response (52.C.149), and (60.16):** CARB staff made no changes based on the received comment. CARB staff understand that the largest amount of emissions from vessels occur during transit and maneuvering while the main engines are operating. However, CARB staff does not agree that trading at berth emissions reductions for emissions while transiting or maneuvering are equitable trade-offs. While NOx and GHG are regional and global emission concerns, respectively, PM (including toxic diesel PM) is considered a localized pollutant. As such, NOx and PM emissions reductions efforts from vessels out at sea depend on the proximity of the vessel to the shore, and are not as directly translatable to improved health benefits to portside communities as reducing emissions at berth.

However, CARB staff notes that there may be projects in and around the ports that are capable of achieving the emissions reductions required by the Regulation. As such, staff added a provision called the “Innovative Concepts Compliance Option” to the Regulation with the release of the first 15-day change package on March 26, 2020, with further refinements to the regulatory language issued with the second 15-day package on July 10, 2020. The Innovative Concepts Compliance Option allows facilities or vessel operators to submit to CARB alternative emissions reductions plans that may be less expensive to operate but reduce equivalent emissions to shore power or capture and control systems. In addition to the Innovative Concepts Compliance Option, vessels are permitted to use on-board emissions control technologies to comply with the Regulation, providing they receive advance approval from CARB and meet the emissions requirements of the Regulation (section 93130.5).

Separately, while CARB is seeking emissions reductions in all aspects of the freight sector in the interest of public health, CARB staff agrees that conversations must continue to assess where funding can be allocated to best prioritize these efforts and are committed to continuing these conversations with stakeholders.

**Comment:** “Under the CMP, emission reductions are achieved at far better CE levels. For example, repowering harbor craft such as tug, work and crew+supply boats (from Tier 2 to Tier 3) is far more cost-effective than including auto carriers and RoRo vessels under this proposed regulatory amendment. Specifically, at a one-time cost of about

\$800k-\$900k, a tugboat repower will reduce from 4 to 15 weighted tpy of emissions at a 10-year CE that ranges from \$9k - \$25k per weighted ton. This investment is well below the CMP CE limit of \$30k/ton.” (52.B.14)

**Agency Response (52.B.14):** CARB staff modified the proposed regulatory language in response to this comment. Numerous commenters mentioned, and CARB agrees, that there may be less expensive ways to reduce emissions at a port. As part of the 15-day package, staff proposed another compliance option called the “Innovative Concept Compliance Option” (Section 93130.17). The Innovative Concept Compliance Option allows facilities or vessel operators to submit to CARB alternative emissions reductions plans that may be less expensive to operate but reduce equivalent emissions to shore power or capture and control systems.

Repowering tugboats could be a cost effective option for reducing emissions, however, emission reductions from other sources are only valid as long as they are not a part of other State, federal or international rules, regulations, statutes, etc. Currently, the CHC Regulation team is soliciting concepts for specific in-use and new vessel requirements, potential new compliance dates, anticipated changes to reporting and recordkeeping, and other new requirements. In short, reducing emissions from tugs may already be included in the regulatory amendments and therefore, not allowable to be used in an Innovative Concept.

**Comment:** “[R]ecommend that CARB Staff work with Ports and other stakeholders to evaluate whether other reduction projects could provide earlier and more cost-effective ways to achieve the needed reductions.” (46.7)

**Agency Response (46.7):** CARB staff modified the proposed regulatory language in response to this comment. CARB agrees stakeholders should be allowed to evaluate if more cost-effective ways reduce emissions in and around the port can be achieved. Thus, CARB staff developed an “Innovate Concept Compliance Option”. This approach may be used in lieu of meeting required emission reductions from a vessel, if the Innovative Concept meets or exceeds required emissions reductions otherwise achieved by controlling vessel emissions while at berth (Section 93130.17).

### **13.ENFORCEMENT**

**Comment:** “Proposal Continues to Hold Regulated Entities Responsible for Actions Outside Their Control. The proposed rule continues to be plagued by fundamental problems in its framework. Key among those problems (and with the existing rule) is the rule’s attempt to hold one party responsible for the failure of another party or for issues outside the control of any party. As the industry has repeatedly raised time and again, there are multiple parties that are responsible for ensuring a successful shore power connection. While key among the parties are the ocean carrier and terminal

operator, an incomplete list of other independent parties involved in the process include utilities, union labor, which is independently responsible for dispatching labor, port authorities that at some ports dispatch labor to energize connections, pilots who determine when a vessel is ready to sail, and tug boat operators. Despite repeated discussions on these issues, the CARB proposal holds terminals and carriers responsible for the possible failures of these other parties.” (52.C.35)

**Agency Response (52.C.35):** CARB staff modified the proposed regulatory language in response to the received comment. CARB addressed these concerns in the proposed regulatory text. Utility events are included in the proposed text definition of a safety and emergency event [§93130.2(65)]. Visits that encounter utility events and are unable to reduce emissions can apply for vessel and terminal safety and emergency event exceptions. To address pilot delays, CARB has changed the definition of a visit to end when the pilot boards the vessel. Vessels and terminals are allotted VIEs and TIEs based on previous years’ visit traffic for other unforeseen issues affecting their ability to reduce emissions, such as labor and tug boat operators. Also, terminals and ports now have responsibilities as well.

**Comment:** “The reality is that companies will not ‘plan to be noncompliant’ and be subject to a violation should these issues with non-frequent fliers not be resolved. These issues are of particular concern to cruise vessels because they cannot use the existing approved alternative compliance options.” (52.C.61)

**Agency Response (52.C.61):** CARB staff modified the proposed regulatory language in response to the received comment. The Regulation provides the option to vessel and terminals to use VIEs and TIEs for visits when a vessel is unable to reduce emissions at berth. CARB has also introduced a new Innovative Concept Compliance Option that provides a vessel or terminal operator a way to comply with the Regulation by reducing emissions from other sources around the terminal that would be equivalent to what would be achieved by reducing vessel emissions.

**Comment:** “The unforeseen realities of the maritime industry and waterfront cargo operations have made implementation of the rule difficult. CARB staff should determine if a mechanism for administrative adjustments to the rule could be incorporated in an effort to ‘future proof’ the rule should new issues arise.” (52.C.125)

**Agency Response (52.C.125):** No changes were made in response to this comment. CARB has worked closely with industry, community groups, and other stakeholders throughout the entire rule making process to understand the full scope of the potential issues that could arise and has added flexibilities into the Regulation intended to make administrative adjustments unnecessary.

However, if such issues are discovered during implementation that warrant an adjustment to the Regulation, staff has the ability to recommend amendments to the Regulation to CARB's Board

*i. Penalty Structure*

**Comment:** Requests CARB Clarify and confirm application of proposed fine structure consistent with Health & Safety Code limitations on penalties for violations of air toxics control regulations. §93130.18(b) of the proposed regulation regarding Violations states that "any failure" shall constitute a single violation "for each day that a vessel operates without using a CARB approved emission control strategy" and (c) provides the same for violations of the "recordkeeping or reporting requirements" as a "separate violation of this section for each day." Given the various descriptions of potential violations are in various other time-blocks, for example the one-hour connection window, or other various potential violations may constitute a violation of checklist reporting and a substantive non-compliance, please clarify the application of this violation provision.

Is the fine or penalty based on the provision of one checklist per call or would a checklist with multiple missed criteria result in multiple fines for the same one day of non-compliance activity such that each checklist item is considered a separate violation?" (52.25)

**Agency Response (52.25):** No changes were made in response to this comment. Pursuant to the Health and Safety Code, each action could be a separate violation. For example, section 43016 of the Health and Safety Code states penalties shall not exceed \$37,500 for "each action" subject to this part of the code. Therefore, each item on the checklist is considered a separate action. CARB follows its Enforcement Penalty Policy to resolve violations of any CARB regulation. CARB also considers eight statutory factors that could potentially reduce the maximum violation penalty amount. CARB's Enforcement Policy that outlines these factors can be found here: <https://ww2.arb.ca.gov/resources/documents/enforcement-policy>. CARB encourages regulated entities to work with CARB's Enforcement Division in advance of any known violations.

**Comment:** "Please confirm that the language of a separate violation "for each day" means that the amount of a fine is limited in a manner consistent with the penalties sections of the Health and Safety Code which are codified as "not to exceed" a certain amount "for each day in which the violation occurs." If so, please conform the language of the proposed rule such that violations per vessel per call are not cumulative for the same call in the same day. For example, if a vessel is out of compliance with a checklist item for a call in port that lasts for 10 hours between 9 am and 7 pm on one calendar day, that shall be considered only one event and the fine would be less than or equal to the statutory maximum for that entire call." (52.26)

**Agency Response (52.26):** No changes were made in response to this comment. The Regulation specifies in section 93139.20(i), that each day a violating action occurs is considered a separate violation. This means each calendar day, or portion of, in which violations occur will be a separate daily violation. In the example from the comment above, the port call spanned one calendar day, so it would be considered one day of violation for each violating action. Each item in the checklist is considered a separate action. If the 10-hour visit occurred across two calendar days, it would be considered two days of violation for each action or each item violated in the checklist.

#### 14.STATE POLICIES/PLANS

**Comment:** “Moreover, as a rule adopted in 2007 and as of January 1, 2020 fully phased-in well before any actual implementation of any of the actual community plans under AB 617 – indeed only one Plan, in West Oakland, has been approved by the Board – the ISOR’s characterization of the At Berth regulation as “one of the new statewide regulatory measures that is included under the CAPP to help reduce air pollution in impacted communities” (II-8) is a vast overstatement. Certainly the expansion of the rule to new fleets could be considered a new regulatory measure, but as an existing rule and with respect to currently regulated fleets this is certainly not a new regulatory measure and as there are few additional at berth vessel emissions to capture there is very little additional pollution to reduce.” (52.13) (EA 52-5)

**Agency Response (52.13):** CARB staff made no changes based on the received comment. CARB staff disagrees. The Regulation is a new regulation not merely an amendment to an existing regulation. While some of the affected parties remain the same, the structure and impacts far exceed the 2007 At-Berth Regulation and these reductions are very critical in assisting the goals of the CAPP and reducing the health risk for disadvantaged communities surrounding California’s ports. Even with the existing regulated fleets in compliance, OGVs are projected, in 2020, to make up the largest portion of NOx emissions for off-road port related mobile sources, with at berth the second highest source of NOx and PM2.5. For more discussion on environmental impacts, see the document *Responses to Comments on the Draft Environmental Analysis* comment 52-5.

**Comment:** “Inconsistency with SIP Commitments and Plans. A key purpose for the Proposed Regulation is CARB’s commitment under the State Implementation Plan (SIP) to amend the At-Berth regulation. The SIP strategy calls for a regulation that generates 2 tons per day (tpd) of NOx by 2031; however, the Proposed Regulation analyzed in the Environmental Assessment (EA) achieves 5.9 tpd, nearly triple what is necessary.

However, when analyzing the alternatives, the EA compares air quality benefits to the Proposed Regulation (5.9 tpd) rather than the stated project purpose (2 tpd), dismissing alternatives that might have achieved lesser – but still adequate – reductions.

Such inconsistencies are significant in the context of the actual language of the Mobile Source Strategy as included in the adoption of the 2016 SIP in March 2017. The ISOR correctly identifies (at II-7) that the “proposed measure directs CARB staff to consider increasing reductions by including additional vessel fleets, types, and operations,” however the ISOR’s claim that there is SIP direction that this was to be accomplished by “redevelopment of the Existing Regulation” with respect to the existing regulated fleet is a complete fabrication. No such redevelopment or replacement or other evisceration of the current regulation is mentioned or contemplated in the SIP.

Contrary to the claim that a complete elimination and replacement of the existing rule was consistent with the SIP, the ISOR correctly identifies the policy context for these changes: with respect to the preliminary CARB-staff produced Sustainable Freight Pathways document these were measures which “included amending the Existing Regulation” (II-6); in the ultimately adopted Sustainable Freight Action Plan implementing Executive Order B-32-15, amendments are directed to the Board in order to consider “strengthening the Existing Regulation” (II-7); and, concurrently with the adoption of the SIP in March 2017, the direction given to CARB staff was not to create new rule, but instead “to consider changes to the Existing Regulation” (II-8). PMSA implores CARB to act only in a manner which is consistent with the adopted SIP strategy emissions targets and its adopted SIP Mobile Source Strategy and related regulatory policies.” (52.8) (EA 52-3)

**Comment:** “Curiously, while the ISOR mentions the adoption of the AB 32 Scoping Plan and the general goals of the adoption of SB 32 (II-6), the ISOR completely omits any reference to the fact that consideration of the feasibility and expansion of the existing At Berth regulation is included as a provision of the SB 32 Scoping Plan. This omission is material because, just as with the SIP measures referenced above, the newly proposed measure is inconsistent with the SB 32 Scoping Plan’s description of future consideration of amendments to the current regulation: it does not direct any additional emissions reductions from the existing fleet, does not direct a rewrite or elimination of the current rule or fleet averaging, and it supports the conclusion that the expansion of the current rule to new fleets should occur consistent with the completion of feasibility studies.” (52.10) (EA 52-4)

**Comment:** “Inconsistency with AB 617 Goals and Plans. The ISOR also mischaracterizes the relationship between the At Berth regulation and AB 617 and omits the inconsistencies with respect to the application of the proposed regulation and port communities. While it is true that the concept of the expansion of the At Berth regulation to potential new vessel fleets is a component of the AB 617 Blueprint, like the SB 32 Scoping Plan and SIP Mobile Source Measures and Sustainable Freight

Action Plan, the ISOR materially omits the actual direction included in the AB 617 Blueprint, and therefore misstates the relationship between the At Berth policy and AB 617.” (52.11) (EA 52-5)

**Comment:** “[The Regulation] is not consistent with the provisions proposed as part of the State Implementation Plan (SIP) in the Mobile Source Strategy recently adopted by the CARB Board or in the state’s positions as adopted in the Governor’s Sustainable Freight Action Plan.

#### *Sustainable Freight Action Plan*

The 2016 Sustainable Freight Action Plan included a provision that directed CARB to “develop and propose amendments to the At-Berth Regulation to include other vessel fleets and types.” Nowhere in the proposed action does CARB identify an every vessel/every visit regulatory approach. Nor was an across the board sweeping change such as this even contemplated during the creation of the Plan, which goes on to state that “if the systems prove to be feasible and cost-effective on additional vessel types, the technology could help support an ARB staff proposal to expand the scope of the At Berth Regulation to include other vessel types and/or smaller fleets.” These technologies have not been demonstrated to be “feasible and cost effective.” In fact, CARB is currently funding a further demonstration project of this technology. If staff is proposing to move forward with an every vessel/every visit regulatory concept despite the current immature state of technology, prior to commercial availability, and without cost effectiveness criteria, then such a proposal would be inconsistent with the Governor’s specific provisions for At-Berth Regulation amendments as outlined in the Sustainable Freight Action Plan. PMSA requests that the draft amendments be consistent with the description of action included in the Sustainable Freight Action Plan.

#### *SIP Mobile Source Strategy*

In March 2017, the CARB Board adopted the Mobile Source Strategy for inclusion in the State Implementation Plan (SIP), which lays out the State’s enforceable commitments to reduce emissions. That document reiterates the same statements made in the Sustainable Freight Action Plan regarding amendments to the At-Berth Regulation. The Mobile Source Strategy goes on to say for determining the emissions benefit of the proposal that “the amendments were limited to the ports that are currently offering shore power and implementation was assumed to start in 2022 at 10 percent fleet compliance and to increase to 50 percent fleet compliance by 2032.” Nowhere does the Mobile Source Strategy propose or model an every vessel/every visit approach, and such a proposal was never discussed or ever suggested in the preparation of the SIP. PMSA would respectfully request that the draft amendments be consistent with the SIP Mobile Source Strategy.” (52.C.117)

**Comment:** “March Board Resolution Addendum Direction to Staff. Also in March, the CARB Board adopted a last-minute amendment to an addendum to a Resolution that was neither created by CARB staff nor circulated to the public prior to its adoption.

These addendum additions have since been clarified by CARB to be mere direction to staff (see 9/6/17 Discussion Paper), that they are not amendments to the adopted SIP Mobile Source Strategy or substantive revisions of any other documents, including the Sustainable Freight Action Plan, and that staff will investigate options in future public processes. PMSA agrees with this interpretation of the March Board amendment and addendum actions.

Specifically to this regulatory process, the last-minute addendum amendment directs staff to “develop At-Berth regulation amendments that achieve up to 100% compliance by 2030 for LA Ports and Ports that are in or adjacent to areas in the top 10% of those defined as most impacted by [CalEnviroScreen].” Relying on the wording of the resolution, which did not amend the SIP Mobile Source Strategy, would lead one to the conclusion that the Board direction to staff is to ensure that the regulatory amendments ensure 100% compliance with the proposed At-Berth Strategy contained in the Mobile Source Strategy ONLY at the Ports of LA and Long Beach, and in certain other CalEnviroScreen jurisdictions, NOT for every vessel at every port. Moreover, if one were to interpret “compliance” as meaning “ensure that every vessel on every visit is subject to the rule,” this would either be an amendment to the direction required by the SIP Mobile Source Strategy, or it would be a concept which is inconsistent with the SIP Mobile Source Strategy. PMSA requests that the CARB staff apply an interpretation of the last minute amendments to the uncirculated addendum to the March Board Meeting Resolutions as “direction to staff” as described in the 9/6/17 Discussion Paper. To do otherwise would be inconsistent with the requirements adopted in the SIP Mobile Source Strategy, and that would be an impermissible revision of the SIP, and precisely what the Board specifically clarified in the 9/6/17 Discussion Paper did not occur in March.” (52.C.118)

**Comment:** “To the extent that any portion of the proposed amendments represent significant deviations from the adopted Sustainable Freight Action Plan policy or requirements outlined in the SIP Mobile Source Strategy, staff needs to explain how they came to the current proposal, what is the air quality need for such an expanded approach (even in places in attainment of federal air quality standards or where reductions would border on the trivial), and what is the basis from deviating from adopting policy that has been subject to the public process.” (52.C.119)

**Agency Response (52.8), (52.10), (52.11), (52.C.117), (52.C.118), and (52.C.119):** CARB staff made no changes based on the received comments. CARB staff appreciates the concerns regarding adopted CARB policies and plans, as these plans are an important guiding map for programs and help to set benchmarks and goals that need to be achieved. However, they must not limit the scope of work and therefore are not meant to be bounding if CARB staff can go beyond what is set out in the plans. CARB is held accountable to accomplish the goals they adopt, but are in no way limited or capped at those goals. The At Berth Regulation development has taken place through plans such as the Sustainable Freight Plan and Mobile Source Strategy but also

through a public regulatory process, working with all affected and interested parties to develop a regulation that is the most cost effective and best protects the public health of the communities around the ports. CARB staff believes the policy and goals that have been outlined in the Mobile Source Strategy SIP, March Board Resolution Addendum, Sustainable Freight Action Plan, SB 32 Scoping Plan, and AB 617 Blueprint have been addressed and fulfilled through the adoption of the At Berth Regulation.

## 15.LEGAL AUTHORITY/INDIRECT SOURCE RULE

**Comment:** "Severability. The proposed regulation contains a severability clause. The proposed regulatory framework is very complex. That complexity has given rise to many unanswered questions regarding implementation and enforcement. Should any portion of the rule be rendered inoperable, the remaining rule would likely be unworkable. As a result, the rule should not contain a severability clause." (52.C.58)

**Agency Response (52.C.58):** CARB staff made no changes based on the received comment. CARB staff disagrees. The severability clause is an essential part of the Regulation and cannot be deleted without altering the purpose of the Regulation. Without severability, if any portion of the rule is rendered unenforceable, then the entire Regulation would be declared invalid. As such, it is important to make sure that the Regulation includes a proper severability clause.

**Comment:** "Proposed Rule's Indirect Source Approach to Mobile Source Emissions is Misplaced and Unnecessary. CARB and PMSA have agreed in the past that state attempts to create indirect source rules for mobile sources can be legally problematic. An indirect source rule is a regulation which assigns a liability and responsibility to a facility to reduce indirect mobile source emissions which that facility does not control, when the mobile source can be directly regulated to reduce emissions through a traditional emissions standard, engine standard, or other in-use standard. We are concerned that many of these hallmarks are present in the proposed control measure when they were successfully avoided in the current regulation. While we appreciate that this new measure's provisions are at least in part an attempt by CARB staff to be responsive to the concerns of several of PMSA's ocean carrier members regarding the need for shared responsibility with ports and marine terminals, we believe that such the provision of shared responsibility for the success of the current regulated fleets can be best addressed through amendments that provide for both parties to be responsible for those situations exclusively under their own control. Ports and marine terminals at present are responsible for the provision of shoreside power infrastructure and operational support and manning under the current rule, and that will not change under the proposed rule. These entities can be held accountable for such responsibilities in a new set of amendments to the current rule, but they cannot be held liable for an emissions standard violation by an off-road engine on a vessel over which they have no control.

Assigning a vessel's emissions standard liability to a port or marine terminal must be avoided. The creation of third party liability for vessel emissions for a terminal is just as misplaced as trying to hold a vessel operator responsible for the quality of the workmanship performed by a port in installing a power substation or a marine terminal operator not timely ordering the labor to plug-in a vessel once at berth. These should all be treated as independent bases of responsibility and given independent measures of reporting and review.

In many respects this highlights further the fact that ports are really not a good fit with a traditional view of how indirect sources should be regulated. The main purpose of a port and marine terminal is to provide a location where various parts of the intermodal supply chain can come and transact business and interchange equipment, but that interchange is the business activity which is the purpose of the marine terminal, not the operations of the truck, train, or vessel used to get the equipment to the terminal. Once that container is interchanged and on the premises at the terminal, the cargo handling equipment there is the responsibility of the marine terminal – and subject to direct regulation by ARB, rendering any need for an indirect source regulation unnecessary." (52.20)

**Comment:** "Regulatory Proposal Imposes an Indirect Source Rule. The industry coalition remains strongly opposed to any regulatory framework that establishes an indirect source rule. By creating regulatory liability on one party for the actions or emissions of another party, the regulatory concept creates an impossible regulatory burden. It is important that any regulatory framework only hold entities responsible for actions or emissions under their direct control. Clear lines of responsibilities are the only way an amended At-Berth Rule can be successful and avoid the failures of the existing rule." (52.C.31)

**Agency Response (52.20) and (52.C.31):** CARB staff made no changes based on the received comments. CARB staff disagrees with these comments as the Regulation has been developed under CARB's authorities for regulating air toxics, criteria pollutants, and GHG emissions. The purpose of the Regulation is to achieve emissions reductions from each vessel visit. The compliance obligations under the Regulation involve minimizing emissions from each vessel visit through various potential actions specific to that vessel visit, and reporting information needed to substantiate the required actions for that visit. Unlike an indirect source rule, the Regulation does not "cap" emissions at an entire facility or otherwise seek to reduce emissions below a certain facility-wide level. While the Regulation does regulate ports and terminals, it does so only because regulating those entities has proven essential to ensuring each vessel visit is able to use an approved emission-reducing control technology.

**Comment:** "Responsibilities Under the Proposed Regulatory Concept. The coalition of maritime industries strongly disagrees with an approach that establishes an indirect

source rule (ISR) for the At-Berth Regulation, making terminal operators responsible for the emissions of third-party vessel operators that call their facilities. CARB staff has stated that their intention was not to develop an ISR but was to establish requirements to facilitate additional infrastructure. The proposed regulatory concept does not do this. Instead, it makes terminal operators directly liable for emissions from vessels. In making terminal operators liable for vessel emissions, the proposed regulatory concept makes terminal operators liable for issues outside their control, such as weather, delays at other ports, and schedule changes by ocean carriers. Infrastructure, by its nature, is limited. While a terminal operator can ensure that vessels are connected based on a pro forma schedule for a given set of vessels, schedule, and infrastructure, if any of those parameters change the terminal operator may no longer be able to complete a connection. If arriving vessels are delayed due to weather or delays at a prior port by even a couple of hours, the terminal infrastructure is immediately impacted. Similarly, if ocean carriers add a one-time vessel service to respond to changing trade flows, that will immediately impact a terminal operators infrastructure availability – something that the terminal operator was unable to plan for. Despite the fact that scheduling impacts have been raised as a primary reason why shore power connections are unable to be made (particularly at ports constrained by tight tide windows), the proposed regulatory concept ignores the issue and places responsibility on the terminal operator.” (52.C.100)

**Agency Response (52.C.100):** CARB staff made no changes based on the received comment. CARB staff disagrees that this Regulation is an indirect source rule. The Regulation is designed in such a way that each party that directly plays a role in reducing emissions from a vessel at a regulated berth is responsible for completing their specific roles in the process. Complications with implementing the 2007 At-Berth Regulation show that shared responsibilities are necessary in order to maximize emissions reductions at berth.

CARB staff recognizes that vessel schedules are outside the direct control of a terminal operator; however, the terminal is responsible for ensuring that vessel visits at their terminal can be controlled. The Regulation was drafted in such a way to provide a certain amount of regulatory flexibility for such situations as described by the commenter; if a schedule change necessitates a visit with uncontrolled emissions, that visit may use a TIE or VIE to comply with the Regulation.

## **16.EQUIPMENT CONCERNS**

**Comment:** “While we applaud California’s leadership in addressing vessel emissions and the movement toward shore power or other alternative compliance mechanisms, it must be appreciated that the rest of the world is also struggling with how best to implement similar requirements. Given that shipping is global in nature and the diverse commercial and operating arrangements across multiple ship types and within

ports, it is important to note that the International Maritime Organization's (IMO) Maritime Safety Committee (MSC 98) proposed to develop mandatory and non-mandatory safety provisions for the cold ironing of ships and guidance on safe operation of on-shore power supply service in port, with work being led by the Ship's System and Equipment Subcommittee (SSE). The acceptance of this issue as a work plan item recognizes the importance of global consistency across all ship types and port configurations. A Correspondence Group was established to further develop the guidelines taking into account technical standards established by the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC) and the Institute of Electrical and Electronic Engineers (IEEE) Standards Association. The SSE subcommittee focused initially on the operational safety aspects with further developments to incorporate a much needed uniform set of equipment standards as well as consideration of the need for amendments to SOLAS Chapter II-1 and II-2. The Guidelines are in draft form and further work will continue on this issue at SSE 7 to be held in March 2020. We urge CARB to recognize the complexity of this issue as it relates to multiple ship types and port/berth configurations and allow the IMO process to fully develop these guidelines before implementing CARB regulations for vessels not currently covered under the existing regulations." (47.6)

**Agency Response (47.6):** CARB staff made no changes based on the received comment. CARB is supportive of standardization and anticipates that IMO and IEEE standards will be adopted and implemented globally for emission reduction equipment at-berth. The Regulation is not prescriptive about how to achieve emission reductions at-berth instead relying on industry consensus and global standards to guide technology development and deployment. Therefore, CARB sees no need to delay the Regulation. CARB is supportive of ports and industry working together to develop standards and has hosted a number of international delegations, and attended a number of workshops and meetings with international organizations to share our experiences with developing and implementing the Regulation.

**Comment:** "Another aspect to be addressed is emergency situations when the tanker has to leave the terminal quickly. Such an emergency could be due to an incident on board the ship but also an incident on the shore side. A capture system operated from the shore should be capable of quickly disconnecting, independent of the cause and the nature of the emergency at the terminal.

For capture and control systems based on board barges, the same comments apply. Additional assessments and strict procedures will be needed for a safe ship-to-ship stability of operation and positioning." (20.5)

**Agency Response (20.5):** CARB staff made no changes based on the received comment. See response to comments 22.3, OC-1 Umenhofer, and OC-1 Stashower for further discussion on safety and control systems.

**Comment:** “As documented in Attachment A, C&C system pricing depends on a key factor that drives the hourly cost higher. The vendor requirement to apply a 24-hour minimum charge skews costs higher than those based on CARB’s assumed hourly rate (\$900/hr) for all vessels with calls less than 24 hours. Note that the average call length in 2018 across Auto carrier/RoRo vessels is approximately 17 hours – the need to pay for these additional hours that were not used will drive the hourly rental service costs higher than projected by CARB.” (52.B.9)

**Agency Response (52.B.9):** CARB staff made no changes based on the received comment. Staff disagrees that the hourly rental costs for capture and control systems are not accurate. The assumptions in the SRIA are based on current barge capture and control system operation rates. Please refer to the SRIA for further details on cost assumptions for the Regulation.

## 17.ALTERNATIVE REGULATORY PROPOSALS

**Comment:** “Earlier this year, an industry-sponsored proposal for amending and expanding the At-Berth Regulation was sent to CARB staff for consideration. That alternative proposal establishes a path forward to increase compliance and continue to ensure further emission reductions from vessels while at-berth in California ports. The Proposal includes measures to ensure compliance and emissions reductions consistent with current CARB emissions goals, expand investments in port infrastructure, and increase vessel compliance.

Unfortunately, the industry coalition has not been provided any feedback on the proposal that has been submitted. No comments have been provided and no concerns raised. The industry coalition strongly believes that the proposal produces the emission reduction benefits that CARB staff is seeking while providing a regulatory framework that meets the dynamic needs of the industry. As a result, the industry coalition renews our request that CARB staff consider the alternative proposal and discuss the proposal through a collaborative process.” (52.C.30)

**Comment:** “PMSA Alternatives Not Analyzed. As discussed in attached letters (see Attachment C), the ISOR fails to consider multiple additional alternatives submitted by PMSA. In 2017, PMSA submitted three possible alternatives at the request of CARB staff to consider. Those alternatives were never considered, analyzed, or discussed with stakeholders by CARB staff. The alternatives include a fleet average approach that can achieve equivalent or even greater emission reductions than the proposed alternative. The alternatives also provide clearer lines of responsibility and eliminate the proposed byzantine VIE/TIE regulatory structure. CARB staff should evaluate the proposed alternatives and work with industry stakeholders to develop a structure that does not promote noncompliance.” (52.7) (EA 52-2)

**Comment:** The commenter submitted an alternative proposal and requested that CARB consider the proposal as an alternative to the Regulation. The commenter states the proposal

“[B]uilds on California’s strong regulatory foundation for reducing vessel emissions while at berth. It outlines a program that will increase compliance and bring currently unregulated vessels into the regulatory framework.”

The full proposal can be found in comment letter 52 - PMSA Comments on Proposed Control Measure for Ocean Going Vessels at Berth. (52.C.101)

**Comment:** “[A]n Alternative Proposal was submitted by the industry coalition in February of this year which would have boosted and improved compliance by currently regulated fleets within the parameters of the existing regulations as well as setting a solid foundation for a discussion on how and when to further reduce emissions from all categories of vessels at berth in the near future. Unfortunately, we are disappointed that the ARB staff proposal before you, including the SRIA, did not analyze the benefits of the Alternative Proposal. The industry coalition respectfully requests that the Board further direct the ARB staff to evaluate the Alternative Proposal prior to bringing back the current staff proposal before the Board for approval.” (19.3)

**Comment:** “We are aware that an industry coalition comprised of the Pacific Merchant Shipping Association (PMSA), the California Association of Port Authorities (CAPA), the Cruise Lines International Association (CLIA), the Western States Petroleum Association (WSPA) and the World Shipping Council (WSC) submitted extensive comments regarding the proposed measure SRIA and economic considerations regarding the development of the Proposed At Berth Control Measures in a letter dated August 26, 2019. Furthermore, the industry coalition proposed alternatives to the proposal in a letter dated February 15, 2019. To the best of our knowledge and as of this date, CARB staff has not responded to the submitters of these two documents, failed to include any reference to these documents and most certainly did not include the industry coalition proposed alternative in the SRIA. Therefore, we request that each of the issues identified in the Industry Coalition Proposed Alternative be addressed and responded to formally.” (47.3)

**Comment:** “The industry coalition proposal submitted for CARB’s consideration addresses all of the issues described below. The proposal submitted is consistent with the emissions reduction goals set by CARB staff proposal, streamlines compliance methodologies for currently regulated fleet, expands regulatory framework to include reporting requirements and evaluation benchmarks for currently unregulated vessels, and creates new compliance and reporting requirements for ports and marine terminal operators. In light of the issues raised below, we urge CARB staff to re-examine the industry proposal that avoids the problems discussed and meets the goals outlined by CARB staff.” (52.C.87)

**Agency Response (52.C.30), (52.7), (52.C.101), (19.3), (47.3), and (52.C.87):**

CARB staff made no changes based on the received comments. In developing the Regulation, CARB staff solicited input on potential alternatives, as described in Chapter X, *Evaluation of Regulatory Alternatives*, of the ISOR. To be considered viable, alternatives must be “less burdensome and equally effective in achieving the purposes of the Regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation,” or are, “reasonable alternatives to the regulation that would lessen any adverse impact on small business.” CARB staff analyzed and included all alternatives presented, which were within the standards described above.

CARB staff disagrees with the commenters that previous proposals would be less burdensome and equally effective in achieving emissions reductions. It is our belief that placing shared responsibilities on vessel operators, terminal operators, ports, and CAECS operators will achieve the highest level of emissions reductions possible from vessels at berth, as it would ensure there is a responsible party when uncontrolled emissions occur. We concluded that shared responsibilities would not be possible without an “every visit” regulatory structure. See ISOR, p. ES-35 for more discussion on the need for shared responsibilities. CARB staff disagrees the assertion that the alternative proposals provided clearer lines of responsibility and eliminated the need TIEs/VEs.

CARB staff did evaluate each proposal submitted, unfortunately as can be seen in more detail in Chapter X of the ISOR, Alternative 3, the commenters’ alternative, fails to commit to emissions reductions for tankers, ro-ro vessels and delays emissions reductions for cruise, container and reefer vessels.

**Comment: “Industry Coalition Proposed Alternative.** In response to CARB solicitations for proposed alternatives to the initial proposed versions of the amendments to the current At Berth regulation, as required by SRIA, an Industry Coalition of PMSA, CAPA, CLIA, WSPA, and WSC submitted a construct for a Proposed Alternative for consideration by CARB program staff. PMSA has attached that Alternative submission, Alternative Proposal for Amendments to At-Berth Regulations, February 15, 2019, with enclosures here as Attachment D (see also Attachment C). As part of this comment letter, PMSA incorporates by reference here the comments of the industry coalition proposed alternative.

CARB staff never responded to the Industry Coalition Proposed Alternative. CARB staff also failed to include the Industry Coalition Proposed Alternative in the SRIA – in fact, the SRIA history of the development of the rule does not even mention that any industry Alternative was even produced or shared with the CARB staff.

PMSA hereby requests that each of the issues raised in the Industry Coalition Proposed Alternative be addressed and responded to formally in response to their inclusion here.” (52.5) (EA 52-1)

**Agency Response (52.5):** CARB staff made no changes based on the received comment. See Master Response 3 in the *Responses to Comments on the Draft Environmental Analysis*, and page 191 of the Final Environmental Analysis for a detailed analysis of the “Industry Coalition Proposed Alternative.”

**Comment:** The commenter submitted an alternative proposal and requested the proposal be considered as an alternative to the Regulation. The full proposal can be found in comment letter 52 PMSA Comments on Proposed Control Measure for Ocean Going Vessels at Berth. (52.C.154)

**Agency Response (52.C.154):** CARB staff made no changes based on the received comment. The Coalition submitted alternative was evaluated in Chapter X of the ISOR. It was found to not be less burdensome and equally effective in achieving the purposes of the Proposed Regulation and was rejected by staff as a viable option. See Master Response 3 in the *Responses to Comments on the Draft Environmental Analysis*.

**Comment:** “PMSA agrees with CARB staff that the checklist approach to determining compliance of an individual visit may be the best approach. Starting with the shared responsibility approach discussed below and in our August 4, 2017 comment letter, a short checklist of best practices necessary to ensure timely connection to shorepower could ensure that all parties work together to for successful implementation of the regulation.

As previously mentioned, ocean shipping is simply too complex for one size fits all and requires an approach with more flexibility than “every visit”. Under an alternative pathway that allows fleet averaging, PMSA recommends that CARB measure compliance in the same manner that it uses to calculate emission reductions achieved from the regulation: total time controlled divided by berthing time. Such an approach is both simple and straightforward and consistent with CARB’s emissions inventory methodology.” (52.C.126)

**Agency Response (52.C.126):** CARB staff made no changes based on the received comment. The Regulation does not directly allow for fleet averaging and thus the averaging calculation as described by this commenter is not relevant. However, as part of the Innovative Concept compliance option, fleet averaging might be allowed for equivalent emission reduction projects, if the project can be proven to reduce the same emissions or more than the conventional pathway (Section 93130.17).

**Comment:** “In addition, an alternative compliance pathway for ocean carriers that would allow the flexibility of a fleet average approach should also be included. In the attachment, PMSA provides two options that build on the ideas presented by CARB staff, but also address questions of how to handle low call vessels and ports. An

alternative compliance pathway is also presented that would provide some fleets the necessary flexibility they require and a mechanism to encourage the deployment of cleaner Tier 2 and Tier 3 vessels, alternatively-fueled vessels, early compliance, or more efficient vessels.” (52.C.122)

**Comment:** The commenter submitted an alternative regulatory proposal. The proposal includes two primary pathways and one alternative compliance pathway.

#### Primary Option 1: Simplified Fleet Approach

- Vessel fleets over a set threshold would control visit emissions (except for exemptions)
- Exemptions would be applicable in limited situations such as vessel commissioning, vessel redeployment, equipment failure, other unexpected event, and vessels calling California no more than once per year (applies to all pathways)
- If a vessel is capable of connecting and it is at a berth capable of connecting, then the vessel must connect (applies to all pathways)
- Redefined berthing time to “the period that begins when clearance to work the vessel is granted by Customs and Border Protection (CBP), or other governmental agency, and the gangway is down and safety nets secured. Berthing Time (or Visit) ends when the departure Pilot assumes navigational assistance.” (applies to all pathways)
- Compliance based on the principle that neither ocean carriers nor terminal operators would be held responsible for actions outside their direct control and determined by checklist of best practices
- Failure to connect that is not the fault of the ocean carrier would be considered a compliant visit for any compliance calculation under the rule (applies to all pathways)
- Eliminate 3 hour/5 hour rules (applies to all pathways)
- Maintain exemption for natural gas-fueled auxiliary engines (applies to all pathways)
- 

#### Primary Option 2: Individual Vessel-based Approach

- Require a vessel to be controlled on its Xth visit to a California port, but no sooner than 12 months after the first visit.
- See bullets in primary option 1
- 

#### Alternative Pathway: Fleet-Averaging Approach:

- Allow fleets with vessels subject to the rule select this compliance option
  - Fleet must meet a total time controlled goal of XX%

- Credits to the calculation can be obtained by bringing in Tier 2 or cleaner vessels, alternatively fueled vessels, more efficient vessels or operations, or early compliance.
- See bullets in primary option 1 (52.C.131)

**Agency Response (52.C.122) and (52.C.131):** CARB staff made no changes based on the received comments. In developing the Regulation, CARB solicited input on potential alternatives, as described in Chapter X, Evaluation of Regulatory Alternatives, in the ISOR. To be considered viable, alternatives must be “less burdensome and equally effective in achieving the purposes of the Regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation,” or are, “reasonable alternatives to the regulation that would lessen any adverse impact on small business.” CARB staff evaluated all alternatives presented which were within the standards described above.

The commenter’s alternatives failed to commit to quantifiable emission reductions and allowed for multiple ways for regulated parties to avoid responsibilities, such as by removing the plug-in time requirements (3/5-hour rule). Without having a timeframe for when vessels need to begin reducing emissions (such as plugging into shore power within two hours) there is no guarantee that emissions will be controlled for the duration of the vessel stay, potentially leading to an increase in harmful effects for the surrounding communities.

Additionally, the alternatives provided by the commenter identified no quantifiable limits. Based on this, CARB did not proceed with the submitted industry alternatives.

**Comment:** “Below is the maritime industry’s proposed framework for responsibility under the amended rule. As current infrastructure is inadequate to meet future regulatory needs, it is important that these responsibilities be set out clearly.

#### Ocean Carrier

- Maintain with the Port Authority (or its third party private terminal operator) an up-to-date pro forma vessel schedule, which would include vessel arrival time, vessel size, method and point of connection
- Provide a vessel capable of connecting to shoreside power or, for vessels not fitted to receive shoreside power, the Ocean Carrier shall arrange for the use of a CARB-certified alternative technology
- Advise the Port Authority (or its third party private terminal operator) of the operating requirements and specifications of the equipment on its

vessels that will receive electrical power transmitted from shoreside facilities to the vessels.

- Equipment provided by Carrier shall be capable of protecting itself against damage in the event of a malfunction of the Port Authority's equipment.

#### Port Authority

- Provide sufficient shoreside infrastructure capable of providing electrical power compatible with International Electrotechnical Commission ("IEC") standard 80005-1
- In the absence of sufficient shoreside infrastructure, Port Authority shall provide sufficient equipment to extend connection points (e.g., cable management systems) or provide CARB certified alternative technology
- Provide, as necessary and in conjunction with any third party private terminal operator if applicable, any qualified personnel required to complete the shoreside power connection
- Maintain shoreside electrical equipment as necessary and in conjunction with any 3<sup>rd</sup> party private terminal operator if applicable
- Confirm availability of berth or necessary equipment to connect Ocean Carrier's vessels based on pro forma schedule at the time of receipt of the pro forma schedule" (52.C.144)

**Agency Response (52.C.144):** CARB staff made no changes based on the received comment. The framework of responsibilities provided, and considered by CARB staff prior to the release of the Regulation. The terminal and vessel compliance checklists in the Regulation incorporated many of the commenter's suggestions (Sections 93130.7(e) and 93130.9(d)).

**Comment:** "Alternative 1: Fix Current At-Berth Regulations. Under this alternative the Port recommends that the proposed amendments be shelved until the problems effecting the current regulations are solved. Presently under the existing At Berth regulations, several problems impact compliance attainment for vessels and fleet owners, and the Port believes that air quality would best be served by fixing these challenges before adding significant increases in the breadth of these regulations and thus compounding the level of regulatory complexity and compliance challenges by orders of magnitude. The current three hour plug in rule for shore power seems to be an arbitrary number which is difficult under even the best circumstances for a vessel to comply with. In numerous instances small delays or unforeseen events result in connections taking more than three hours, and missing the mark eliminates any incentive for continuing the attempted connection and thus negates potential emissions reductions. A sliding scale of compliance could be contemplated in which the duration at berth under shore power would be applied to a compliance total. A second confounding factor is the limited availability of technology vendors capable of

providing support, system service and spare parts for shore power systems. Currently one company services all of the shore power systems in the State with one electrical engineer, this scenario leads to significant delays in servicing shore power equipment which results in vessel calls operating off of ship power and resulting emissions. It is challenging to not envision a situation in which these same types of problems will plague the emission reduction technologies which are currently being touted as significant solutions to reducing emissions from vessels including bonnet capture systems or similar technologies with the proposed amendments.” (53.24)

**Agency Response (53.24):** CARB staff made no changes based on the received comment. The Regulation seeks to accomplish two main goals: achieve additional public health and air quality benefits, and address implementation challenges found with the 2007 At-Berth Regulation.

Staff analyzed the problems that were brought to light with the 2007 At-Berth Regulation, such as the difficulties with the aforementioned 3-hour rule, and found that these challenges could be addressed by changing the vessel visit definition and by allowing a mechanism for flexibility in the form of TIE/VEs and remediation fund.

CARB staff included “Implementation Fixes through an Amendment to the Existing Regulation Only,” as one of the formal alternatives considered for this Regulation. The full alternative analysis can be found starting on page X-2 in the ISOR. In short, the “amendment only” alternative was found to provide less NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, DPM, GHG, and black carbon emissions reductions as compared to the Regulation. Meaning, an “amendment only” alternative would fail to provide the significant additional public health and air quality benefits needed for California’s residents, especially in those communities adjacent to ports and terminals.

Staff has been in contact with several shore power system manufacturers and disagree with the commenter’s claim that only one company and one engineer, statewide, is able to service shore power systems. In addition, during discussions with manufacturers. Staff was made aware that spare parts are often required for backup and should be stocked by shore power users, reducing the need for last minute parts orders.

If problems still occur, as mentioned previously, the Regulation has built in flexibility beyond TIEs/VEs. As detailed in Section 93130.15 Remediation Fund use, terminals and/or vessels can use the remediation fund in certain cases where emission reductions cannot be achieved, such as in the event of equipment repair.

Staff agrees with the commenter that problems do occur and are not always easily remedied. This is why several flexible and alternative compliance options are built into the Regulation.

**Comment:** "Alternative 2: Delayed Application of Requirements and Development of Local Air Plans.

Under this scenario, smaller ports would fall subject to the proposed amendments after a set period of time such as ten years. During this intervening period, smaller ports would continue to be subject to the current At-Berth regulations. During this time, larger ports would be working with industry to develop and refine emissions control technologies including bonnet capture equipment and on-board scrubbers to such a degree that initial problems typical of any new technology could be worked out before they are required in all ports. Presently there are already problems with getting the resources needed from technology vendors to support ports with shore-side power systems in need of repair, and it is easy to envision a similar situation occurring with bonnet capture systems in the future. By implementing a delay for small ports, owners of vessel fleets visiting smaller ports would have time to assess new technologies and make informed decisions about retrofitting their fleets with new emission control technologies. In addition, smaller ports would have time to pursue the additional funds needed to invest in emission control technologies such as bonnet capture systems.

In addition, CARB had requested from the Port and its customers estimates of a specific cost point, a "tipping point" at which the burden on complying with the proposed amendments would drive business to leave the Port and move to a less expensive port such as Portland, Tacoma or the Gulf Coast. In discussion with customers of the Port, it has become clear that they are uncomfortable disclosing or even discussing such a cost due to the sensitive nature of disclosing strategic business planning with such detailed proprietary financial information, particularly in the highly competitive business segment of global vehicle shipping. However, one benefit of delaying the application of the proposed amendments to the smaller ports would be that in the interim time market forces would reach equilibrium between vendors of new control technologies and vessel owners and port authorities and make more clear how the increased regulatory costs of the At Berth amendments translate into increased operational costs and a resulting loss of business to other regions with lower compliance costs. This approach creates the opportunity to quantifiably measure leakage without impacting the most vulnerable ports. Delayed implementation would also enable ports time during which to begin coordination with local air pollution control agencies on developing local solutions.)" (53.25)

**Agency Response (53.25):** CARB staff made no changes based on the received comment. CARB staff understands that smaller ports may have different challenges than larger ports. However, many of California's smaller ports are located in close proximity to disadvantaged communities that are already

disproportionately burdened by air pollution and cannot afford a delay in achieving emissions reductions. CARB staff considered several options when developing thresholds for the Regulation. Ultimately, CARB determined that smaller terminals and ports with less than 20 vessel visits a year would not be subject to the emissions control requirements of the Regulation. A statewide regulation that treats all California ports uniformly was considered as the fairest and most health protective. For more information on how thresholds were determined, see Chapter III of the ISOR.

CARB staff disagrees with the commenter that regulating only large ports, at first, will provide a representative sample of leakage rates that can be applied to other regulated ports and terminals. From all the research CARB has completed on the subject of leakage and mode shift, (see Draft EA page 56) the factors determining if a vessel will divert are numerous and unpredictable, varying from company to company and port to port. See also Master Response 2 for further discussion on cargo diversion.

**Comment:** “Alternative 3 - Regional Targets and Solutions. Under this scenario, ports would be allowed to achieve compliance with the proposed amendments through the implementation of a locally developed plan which would achieve reductions in air pollutants equivalent to those of the proposed At-Berth amendments but through other efforts. A large percentage of the emission reductions, such as 75%, would have to take place at the port or adjacent port owned properties so that the benefits of these plans would be felt in the immediate communities around the ports which are most impacted by their emissions. These plans would be tailored specifically to a port’s surrounding air basin, including NAAQS attainment dates, and its community needs and problem pollutants. These plans would be developed in partnership with their local Air Pollution Control District or Air Quality Management District with final approval from CARB.

The Port has begun the collaborative development process of a more comprehensive air quality plan that the Port is calling its Port of Hueneme Reducing Emissions and Supporting Health Plan (PHRESH Plan). The PHRESH Plan will be focused on developing Port specific strategies for reducing air pollutant emissions within the Port’s direct operations or financial control. The PHRESH Plan will be tailored to the Port’s features, equipment and operations and will assess a range of feasible reduction methodologies and source control technologies which could be implemented. The focus will be on achieving the most cost-effective solutions that provide the greatest amount of feasible reductions.” (53.26)

**Agency Response (53.26):** CARB staff modified the proposed regulatory language in response to the received comment. CARB has included a compliance option in the Regulation called the “Innovative Concept Compliance Option” (Section 93130.17). In short, for a limited time this option allows facilities or vessel operators to submit to CARB alternative emissions

reductions plans that may be less expensive to operate but still reduce equivalent emissions reduction as would be achieved through to shore power land/or capture and control systems.

## 18.INDUSTRY ANALYSES

**Comment:** As part of the Ports of Long Beach and Los Angeles joint comment letters, the Port of Long Beach provided a preliminary analysis of the infrastructure needed at each container terminal, the assumptions and caveats related to each method proposed to maximize compliance, the time required to design and install the necessary infrastructure, and the costs for each solution, including estimated the hours of control required and operational costs for both container and non-container vessels visits to meet the proposed regulatory language requirements should alternative compliance strategies such as barge and land-based emission control technologies be utilized. The document included content from a third party analysis and in-house expertise. The full analysis can be found in comment letter 60 under comment 60.32.

Key findings:

- The Port evaluated three potential strategies for maximizing shore power usage:
  - Installation of additional shore power outlets (SPOs)
  - Cable-reel management system - currently under development and assumed to be approved and certified by 2021
  - A combination of the above
- The most promising way to maximize compliance at a container terminal is for the Port to install additional SPOs with additional support from cable reel management systems.
  - The cost to do so would be on the order of \$93.85 million and could not be completed until at least December 2025.
- Even with additional SPOs, there are likely to be instances in which a ship cannot connect.
- Cable reel management systems are not a solution for every terminal port-wide unless there are changes to the National Electrical Code and IEC/IEEE 80005-1 standard and, even with these changes, installation of the systems may require significant infrastructure improvements.
- The Port also evaluated additional strategies not related to landside infrastructure that could improve shore power compliance. These strategies are likely to be undertaken by the terminal operators and shipping lines, not the Port itself, and include:
  - Worker training
  - Alternative compliance systems for ships not capable of connecting to the landside infrastructure

- The Port cannot identify a single method to ensure 100% shore power, but has established internal consensus that a mix of methods may be required to maximize shore power compliance for container vessels.
- Alternative control systems face two key challenges for deployment in the timeframe proposed by CARB, including:
  - Lack of available units
  - Lack of wharf space for barge-based system berthing
- The Port estimates the container terminals will require an additional 15,000 hours of emissions control time from alternative control technologies, with annual operating costs up to \$23.2 million dollars per year for container terminals.
  - At non-container terminals, the Port estimates 42,000 hours of emission control time with an annual operating costs around \$39.4 million dollars per year.
- To ensure a system is always available, and there will be significant upfront costs on the order of \$5,000,000-\$10,000,000. (60.32)

**Comment:** The Port of Los Angeles provided supplementary information in response to CARB’s Berth Analysis in a joint comment letter the Port of Long Beach titled “Potential Strategies and Costs to Address the At-Berth Regulation”, submitted on February 6th, 2019. This analysis included a break-down of estimated infrastructure and costs for each vessel type. The full analysis can be found in comment letter 60 from the Port of Long Beach.

Key findings:

- POLA engineering staff has estimated that a vault would be needed every 200 feet apart per a berth with at least one 100-foot mobile cable reel at every berth.
  - This would be a total of six vaults per a berth, with a total of around 69 new vaults potentially needed.
  - A grand total of \$193,920,000 is projected based on these numbers for electrical infrastructure costs alone.
- The Port’s estimated cost to meet obligations for our container terminals would be \$147-\$193 million, and the soonest this undertaking would be completed is 2024-2025.
- Landside shore power electrical infrastructure life cycle appears to be 15-20 years with required updates, annual maintenance, and frequent cleaning of the equipment during this period.
- Currently Port staff maintenance and recordkeeping costs are about \$625,000 per year. With the increased infrastructure for the new regulation, estimated staff costs for maintenance would increase to over \$1 million.
- The port has doubt that more capture and control systems can be developed and deployed by 2021. The two San Pedro Bay Ports solicited proposals for

alternative emission control systems for ocean going vessels in 2018 as part of our Technology Advancement Program.

- For purposes of POLA engineering assessment the cost of the cable reel system is estimated at \$550,000 based on the currently available system. (60.33)

**Comment:** The Port of Long Beach provided supplementary information in response to CARB's Berth Analysis in a joint comment letter the Port of Los Angeles titled "Potential Strategies and Costs to Address the At-Berth Regulation", submitted on February 6th, 2019. These cost estimates were developed using data from previous shore power installations, such as progress payments, bid analyses, and maps of the shore power infrastructure at the container terminals. Attachments A, B, C, and D provide supporting documentation for container terminal shore power infrastructure cost estimates, Prop 1B shore power infrastructure costs (in 2012 dollars), maps of container terminal shore power infrastructure, and Port of Long Beach vessel visits by berth. The estimated hours of control required and operational costs for both container and non-container vessels visits should alternative compliance strategies such as barge and land-based emission control technologies be utilized has been revised. The full analysis with provided appendices can be found in the attached full version of the associated comment letter).

#### Key findings:

- To maximize shore power connection at the container terminals, Port staff established design criteria, which requires shore power outlets (SPOs) every 200 feet, combined with a 100-foot cable reel system. The port has 75 existing SPOs and 22 berths, and estimates that an additional 42 SPOs would be required for 200 foot spacing given current infrastructure, along with 22 cable reel management systems (1 at each berth).
- The updated estimate for all six piers is approximately \$107 million with a timeline to complete each pier is approximately 5.25 to 5.75 years.
- The Port analysis indicates there will need to be at least 26 barge-based systems online in the San Pedro Bay to meet the 2029, assuming vessel traffic remains at 2017 levels. To keep a fleet of at least 26 barges "viable" the operational cost per hour will have to double to at least \$2,000 per hour due to the costs associated with both active and inactive barges. The operational cost is estimated to be \$81-\$105 million dollars per year. (60.34)

**Agency Response (60.32), (60.33), and (60.34):** CARB staff made no changes based on the comments received. These comments are not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

However, staff notes the information provided. These comments are largely addressed in ISOR Ch. III, part (D). In summary, CARB disagrees with the Ports' assessment regarding the amount of infrastructure and total costs that would

be necessary to accommodate an additional 200-250 visits from newly regulated container vessels between the Ports of LA and LB. CARB also disagrees with the number of alternative control systems required at these ports, particularly when considering the flexibility CARB staff have incorporated into the Regulation to address operational circumstances where connection to a CAECS may not occur. Additionally, CARB staff's analysis did not take into account any infrastructure improvements that are necessary to meet compliance requirements for the 2007 At-Berth Regulation, as these costs were already accounted for during the development of the 2007 At-Berth Regulation. Port staff advised CARB staff, in a June 11, 2019 telephone conference call<sup>15</sup>, that the Port's analysis did not separate the costs of the new Regulation from any costs that might be the direct result of infrastructure improvements needed to meet the 2007 At-Berth Regulation.

**Comment:** Ports of Long Beach and Los Angeles provided a cost effectiveness analysis for auto carriers and ro-ro ships at both ports that was completed by Starcrest Consulting Group on behalf of POLB, POLA, and PMSA. An emissions inventory was developed by Starcrest to aid in the evaluation. The full analysis can be found in comment letter 60 POLB.

Some key findings were:

- Reduction of PM (including PM10, PM2.5, and DPM) and NOx emissions in the 36%-40% range could be achieved from auto carrier and RoRo vessel control, but emissions of other pollutants (CO2e, SOx and CO) are estimated to increase in the range of 28% to 151% due to emissions from increased bunkering activities at anchorage and supporting activities such as tugs and generators needed to operate barge-based C&C systems.
- Cost effectiveness (CE) calculations, discussed below, result in cost effectiveness between \$115k and \$200k for the barge rental scenario (varies based on effective hourly rate) and \$54,987 for the scenario that includes the purchase of four barge-based C&C systems to serve 100% of calls made to SPBP. Both scenarios are far less cost effective than CARB's Carl Moyer Program (CMP), which has an upper CE limit of \$30,000 per weighted ton of emissions reduced. (60.37)

**Agency Response (60.37):** CARB staff made no changes based on the comment received. See response to comments 52.B.1 and 52.A.32b in response to the first bullet regarding the reductions of PM and NOx emissions and response to comments 52.B.10 and 52.A.32c for discussion on cost effectiveness calculations for the Regulation.

## 19.BERTH ANALYSIS

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<sup>15</sup> Berth Analysis Record of Development - Telephone call with the Ports of Long Beach and Los Angeles, June 11, 2019.

**Comment:** “The Port would like to clarify a few items that were discussed during the staff presentation:

The ISOR assumes the regulated terminals at the Port of Long Beach will not require any additional shore power upgrades to meet the proposed regulation. This does not align with information submitted by the Port of Long Beach in our May 20, 2019 comment letter. Port staff provided CARB with an engineering assessment of the infrastructure needed to maximize shore power at the regulated terminals. The Port would need to build an additional 42 shore power outlets and invest an additional \$106 million in infrastructure to ensure nearly every vessel plugs in. This estimate was informed by previous shore power cost estimates and design, and the invoices utilized were provided to CARB staff. It is important to note that even with the additional infrastructure, we recognize that not every vessel would plug in 100% of the time. For example, some vessels which have not been retrofitted for shore power may still arrive. Given the uncertainty of the new framework, which regulates on a per vessel call basis, rather than fleet averaging, it is clear the terminals will need additional shore power outlets to mitigate the risk of noncompliance. It is disappointing that CARB did not utilize the engineering assessment nor the invoices providing true shore power costs. This information was developed based upon the knowledge and expertise of the Ports and our engineering experts. The Ports have more experience with shore power installation than any other entity.” (60.9)

**Comment:** “The Berth-Level Analyses report too few ship calls, and do not accurately reflect the infrastructure needed at each port– CARB provided berth—level analyses of the infrastructure which will be required for each terminal to meet the new proposed concepts at the February 2019 workshops. These analyses are founded upon Google Maps research, interviews with port tenants, and discussion with piloting companies. The analysis is not based on any engineering assessment of what it would take to expand shore power or to accommodate alternative capture and control technologies. Unfortunately, none of the analysis provided by POLB related to container terminal infrastructure was included in this berth-level analysis either. Subsequently to the February workshops, the POLB has updated and refined its estimate. The analysis utilizes costs from previous shore power projects, states the design requirements a terminal would need to maximize plug-in while ships are at-berth, and uses these metrics to quantify the anticipated costs to maximize connection at POLB container terminals. In this letter, POLB has provided more granular detail around the basis of the cost estimates, photographs which demarcate the existing shore power infrastructure, and improved vessel call data from the 2017 Wharfinger Report in Appendix B. In the Ports’ previous letter to CARB POLA engineering staff had agreed with the POLB engineering analysis. Subsequently, POLA developed their own assessment of the infrastructure they will need, the associated cost and timeline, and additional edits to the CARB Berth-Level Analyses, which are included in Appendix A. In summary, the POLB and POLA estimates approximately \$106 million and \$147-\$193 million respectively for additional electrical infrastructure. These estimates are rough orders of magnitude, with many exclusions and limitations, so the

actual cost could be much higher. We are hopeful CARB will utilize this information, particularly in a feasibility assessment, as it is the most informed reflection of the current infrastructure at the POLA/POLB terminals today. The feasibility assessment should go into greater depth than the calculations provided herein.

CARB's Berth-Level Analyses as written today are not founded upon the requisite design and engineering expertise, and should therefore, not be used today to quantify the costs of the newly proposed concepts. These costs can be more adequately captured through the process of a feasibility assessment." (60.23) (52.C.85)

**Agency Response (60.9), (60.23), and (52.C.85):** CARB staff made no changes based on the received comments. In short, CARB staff disagrees with the Ports' assessment that 42 additional shore power outlets and approximately \$300 million in costs would be necessary to accommodate an additional 200-250 visits from newly regulated container vessels between the Ports of LA and LB, particularly when considering the flexibility CARB staff incorporated into the Regulation to address operational circumstances where connection to a CAECS may not occur. CARB staff did update the Berth Analysis to reflect revised visit information provided to the Agency by ports and marine terminals prior to the release of the ISOR Appendix E (Berth Analysis). More details of how the Berth Analysis was developed can be found in the ISOR Ch. III, part (D).

Additionally, CARB staff's analysis also did not take into account any infrastructure improvements that are necessary to meet requirements for the 2007 At-Berth Regulation, as these costs were already accounted for during the development of the initial Regulation. As mentioned in response to comments 60.32, 60.33, and 60.34, Port of LB staff advised CARB staff in a June 11, 2019 telephone conference call that this analysis did not separate the costs of the new Regulation from any costs that might be the direct result of insufficient infrastructure to meet the 2007 At-Berth Regulation.

Separately, the Berth Analysis was based on assessing the need for additional infrastructure, not on a formal engineering assessment. The Berth Analysis was critical in developing the SRIA, as staff had no other comprehensive detailed berth-by-berth resources from industry to rely on for the cost analysis. CARB staff are not in the position to provide a formal engineering assessment for each port and/or terminal that is subject to the Regulation. Staff's Berth Analysis reflects the best available information provided to CARB staff by all available sources that were in the position to best assess infrastructure needs based on daily operations.

CARB staff would also note that CARB staff's Berth Analysis was based on comment letters received from industry stakeholders, extensive discussions with port staff, and numerous port/terminal site visits and tours, and CARB staff did

update the Berth Analysis to reflect revised visit information provided to the Agency by ports and marine terminals prior to the release of the ISOR Appendix E (Berth Analysis). See ISOR Ch. III, part (D) and response to comments 60.32, 60.33, and 60.34 for additional information as to why staff did not use the analysis provided by the Ports of LA and LB as a basis for the cost and infrastructure analysis for the Regulation.

**Comment:** “We appreciate the effort undertaken by CARB staff to evaluate the necessary infrastructure to support the proposed regulatory concept. This analysis is a necessary step in understanding the impact of the proposed concept. Unfortunately, the analysis raises a number of concerns.

The analysis is inconsistent with the analysis prepared by the ports of Long Beach and Los Angeles. In a separate comment letter dated February 6, 2019, the two ports provide an analysis that demonstrates that an additional \$200 million dollars of infrastructure would be necessary to under the original regulatory concept. Yet, the ports conclude, that investment would not ensure 100% compliance. While the updated regulatory concept does create a five percent allowance for terminal incident events, there is no demonstration that such an allowance would obviate the need for additional infrastructure as the CARB analysis essentially finds.” (52.C.89)

**Agency Response (52.C.89):** CARB staff made no changes based on the received comment. CARB staff disagrees that the flexibilities built into the Regulation would not obviate the need for additional infrastructure. This comment is based on an outdated version of the Regulation; the Regulation, as released as part of the official rulemaking process on October 15, 2019, allows for 15 percent TIEs for container, reefer, and cruise terminals in 2023 and 2024. See ISOR Ch. III, part (D) and response to comments 60.32, 60.33, and 60.34 for additional information as to why staff did not use the analysis provided by the Ports of LA and LB as a basis for the cost and infrastructure analysis for the Regulation.

**Comment:** “Costs of Alternative Controls Underestimated. Not even accounting for dynamic events in shipping like “extra loaders”, the most recent analysis by the ports of Long Beach and Los Angeles in their letter to CARB on May 20, 2019, estimate that the San Pedro Bay alone would need 26 barge-based capture and control systems to meet the level of control required by the proposal, which at that time considered 5% TIE allowance. How does CARB account for the difference between its conclusion and that of the ports of Long Beach and Los Angeles?” (52.C.71b)

**Agency Response (52.C.71b):** CARB staff made no changes based on the received comment. CARB staff disagrees that an additional 26 barge-based systems would be necessary to at the San Pedro Bay ports to handle the vessel visits expected to be included in the Regulation. This issue was addressed in the ISOR Ch. III, part (D).

**Comment:** “The analysis was based on discussions with terminal operators, but it does not appear that the discussion was based on the detailed requirements of the revised regulatory concept. Discussions with terminal operators following the CARB workshops indicated that their response to discussions with CARB staff was based on their “we will make it work” culture that defines stevedoring. The specifics of the regulatory proposal have given several terminal operators pause about their ability to meet the requirements.” (52.C.90)

**Agency Response (52.C.90):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. When CARB staff held conversations with terminal operators, staff explained the Agency’s desire and need to understand what amount of equipment infrastructure would be needed to connect 100 percent of vessels to shore power (or an alternative emissions control technology), which goes above and beyond the requirements of the Regulation given the flexibility provided through TIEs and VIEs. CARB staff documented the responses<sup>16</sup> from terminal operators who are on the ground connecting vessels every day, and had no reason to believe that terminal staff were being overly optimistic or untruthful in our conversations. CARB staff updated the Berth Analysis based on comments received about our assumptions prior to the publication of ISOR Appendix E in October 2019, and believes that the Berth Analysis accurately reflects areas in which terminal operators expressed to CARB the need for additional infrastructure in order to make the Regulation workable for their operational needs.

**Comment:** “Long Beach: CARB staff noted that Berth G235 has limited shore-power infrastructure designed for a specific vessel type and berthing position. Still, CARB concludes this berth requires no additional infrastructure.” (52.A.18a)

**Agency Response (52.A.18a):** CARB staff made no changes based on the received comment. CARB staff’s Berth Analysis assumption for Berth 235 was made via information provided by the terminal operator. All terminal operators and port staff were given the opportunity to review and submit corrected information if they found inaccuracies in CARB staff’s assumptions. No such comment was ever received for Berth G235.

**Comment:** “San Diego: Only one cruise vessel can plug in at any given time. Although CARB notes that two vessels are berthed concurrently 13 days of the year, CARB does not assume additional shore-power infrastructure here.” (52.A.18b)

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<sup>16</sup>CARB staff’s Berth Analysis Record of Development is available for public review and includes a record of the conversations and emails provided to CARB staff that formed the Berth Analysis (ISOR Appendix E). For information on how to access these records, see CARB staff’s “Second Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information” released July 10, 2020.

**Agency Response (52.A.18b):** CARB staff made no changes based on the received comment. CARB staff's Berth Analysis assumptions for Port of San Diego were based on conversations with port staff who advised CARB staff at the time of the analysis that the amount of additional vessel calls was not likely to result in the additional installation of new shore power infrastructure. TIEs/VIEs are expected to account for visits with vessels berthed concurrently at this port.

**Comment:** "Access to shared barge-based systems assumes on-time vessel arrivals and departures and harbor craft availability, which may not always occur. Vessels are often delayed due to weather or other scheduling conflicts. Additionally, tugs may not be available to deploy a barge-based system when needed, especially if a vessel is delayed. If a vessel is planning to use a barge-based control system for compliance and is then delayed, that control system may not be available for use. The unpredictable nature of vessel schedules could force operators to use VIEs or pay into the remediation fund despite full efforts to comply, or it may force terminal operators and ports to invest in back-up systems, which are not accounted for in the cost analysis." (52.A.10)

**Agency Response (52.A.10):** CARB staff made no changes based on the received comment. TIEs and VIEs and the remediation fund are designed to eliminate the need for back-up control systems and their associated costs. The unpredictability of OGV operations is a primary reason why CARB staff put this flexibility in the Regulation. Such flexibility ensures a compliance pathway while also ensuring the Regulation achieves the required emissions reductions necessary to protect public health.

**Comment:** "Carquinez: The terminal operator notes that land-side and barge-based control systems may not be feasible due to cargo movement constraints and strong currents; however, CARB cites information from harbor pilots, who did not have concerns about a barge-based system if properly designed. Amid these conflicting accounts, CARB agreed with the harbor pilots to conclude that a barge-based system would be feasible rather than taking a more conservative approach." (52.A.18c)

**Agency Response (52.A.18c):** CARB staff made no changes based on the received comment. CARB staff used conversations with harbor pilots as part of the Berth Analysis but also assessed information received from individual terminal operators. Staff's Berth Analysis was based on the most likely compliance pathway identified by the information gathered, and does not preclude a terminal from choosing a different compliance pathway. More information about how the Berth Analysis was developed can be found in ISOR Ch. III.

**Comment:** “Hueneme: CARB assumes the RoRo terminal will use existing shore power installations at Wharf 1, even though CARB acknowledges the inherent challenges of shore power for RoRo vessels (ISOR, III-15).” (52.A.18d)

**Agency Response (52.A.18d):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. Staff’s Berth Analysis does not assume that ro-ro vessels will use shore power at Hueneme’s Wharf 1. The Berth Analysis simply assumes no additional infrastructure at Wharf 1 will be needed because the terminal/port is compliant with the Regulation by having shore power available at these berths. Separately, the Berth Analysis reflects industry’s preference for a capture and control system. However, shore power remains a viable option for ro-ro vessels, as discussed in the ISOR, Ch. III, pg. III-14.

**Comment:** “Hueneme: CARB assumes no infrastructure at Wharf 3 to control the RoRo vessels, instead proposing “operational changes” to berth these vessels elsewhere.” (52.A.18e)

**Agency Response (52.A.18e):** CARB staff made no changes based on the received comment. Wharf 3 is a joint-use terminal with the U.S. Navy; after conversations with Port of Hueneme staff, CARB staff assumed no additional infrastructure would be installed at this berth due to the fact that the Port does not have total control over the berth space. If the Port of Hueneme wishes to continue utilizing this berth space and does not install emissions control equipment, TIEs/VIEs are available for use to accommodate vessel activity at this berth.

**Comment:** “CARB has not accounted for supportive infrastructure, including berth space, for barge-based control systems. Barge-based control systems must be safely berthed while not in use and will require wharf space for repairs, testing, and exchange of personnel. Many ports do not have vacant wharf space for the significant projected increase in barges, as many as 7 barge-based systems in Los Angeles/Long Beach (2 existing units, 1 new system for container ships, and 4 new systems projected for full coverage of RoRo visits).” (52.A.18f)

**Agency Response (52.A.18f):** CARB staff made no changes based on the received comment. CARB staff did not account for additional barge berth space and supporting infrastructure because that need will vary with each port and is too speculative to estimate on CARB’s end.

**Comment:** “The Port disagrees the staff work to date constitutes a robust feasibility assessment. As stated in the joint Port of Los Angeles and Port of Long Beach comment letter dated July 2, 2019, the berth analysis developed by CARB is not a technical document. It is an aggregation of terminal operator and harbor pilot opinions, and Google Maps research. The ISOR states that it is also

founded upon port conversations; however, the analysis does not reflect Port of Long Beach input. The berth analysis should have been founded upon an engineering assessment of the infrastructure required at the terminals.” (60.3a)

**Comment:** “A Technology Feasibility Assessment Process Is Needed - The Ports continue to urge CARB to develop a technology feasibility assessment of the alternative At Berth technologies, which would look at the state of technological development and their readiness to be deployed in the marketplace to support efforts to achieve public health benefits. The berth analysis developed by CARB should not be misconstrued as a technical document at the level of detail upon which regulation should be formed. It is an aggregation of terminal operator and harbor pilot opinions (no data), and Google Maps research, and is not founded upon any engineering assessment of the infrastructure required at the terminals. Further, there are challenges associated with the technologies upon which this regulation depends which, by all appearances, are too costly, technologically and operationally infeasible in some cases, and/or unsafe to use.” (60.27a)

**Agency Response (60.3a) and (60.27a):** CARB staff made no changes based on the received comment. CARB staff’s Berth Analysis is intended to be an infrastructure assessment, not a technical engineering document. For more discussion on this, see the response to comments 60.32, 60.33, 60.34, and 52.C.85.

CARB also disagrees with the commenter that there are insurmountable challenges with meeting the regulatory requirements. The Regulation is expected to result in health benefits outweighing the total costs, and CARB staff have met with numerous technology manufacturers have documented that the technology is feasible to control emissions from vessel types included in the Regulation.

**Comment:** “The CARB cost analysis assumes no wharf upgrades for land-based capture and control systems at RoRo terminals. Across documents, CARB presents various assumptions for whether RoRo terminals would require wharf upgrades to support land-based control systems. CARB should clarify its assumptions.

- **Contrary Data:** CARB assumes RoRo terminals will not require wharf improvements for land-based capture and control systems (ISOR, IX-11); however, in Attachment B of the Draft Environmental Assessment (Air Quality Calculations), CARB calculates construction-related emissions from land-based control systems assuming these systems will tie into the grid and require wharf improvements and electrical infrastructure.
- **Need for Electric Infrastructure:** Land-based capture and control systems are going to be built for the 2025 standard of grid-neutrality, which means they are likely to be powered by electricity to take advantage of fuel cost savings.

- **Lack of Electrical Infrastructure:** Of note, RoRo terminals do not have a large amount of existing electrical equipment at the wharf, as noted by CARB (ISOR, page III-14). As a result, there are likely to be substantial electrical improvements needed to support land-based capture and control systems at RoRo terminals, including bringing additional power down to the terminals, which has been proven to be extremely expensive and time consuming to date, totaling tens of millions of dollars in San Pedro Bay alone.
- **Structural Improvements:** Additionally, wharves are likely to need additional structural support to carry the weight of such systems, as CARB notes here for RoRo terminals: "Land-side systems may require some wharf infrastructure improvements due to the weight of the system (around 120,000 pounds) if existing wharf infrastructure is not adequate" (ISOR, III-16). The CARB-funded demonstration of a land-based control system at the Pasha Terminal points to the need for wharf strengthening at RoRo terminals. Land-based control systems will require large cranes to reach the ship stacks, and even at the Pasha terminal, which was designed for heavy on- and off-loading cranes, the Port of Los Angeles required a special permit to ensure the ShoreKat system did not damage the dock. Most RoRo terminals do not use cranes and are thus unlikely to have sufficient wharf support for this additional weight. Despite this evidence, CARB does not account for wharf improvements in the cost analysis or timeline. CARB assumes more than \$50 million in wharf upgrades per berth for tanker-terminal land-based systems; RoRo terminals will likely incur similar costs." (52.B.4)

**Comment:** "CARB assumes RoRo terminals will not require wharf improvements for land-based capture and control systems (ISOR, IX-11); however in Attachment B of the Draft Environmental Assessment (Air Quality Calculations), CARB calculates construction-related emissions from land-based control systems assuming these systems will tie into the grid and require wharf improvements and electrical infrastructure." (52.A.20a)

**Agency Response (52.B.4) and (52.A.20a):** CARB staff made no changes based on the received comments. The Draft EA construction emissions analyses developed for the Regulation assumed the most reasonably foreseeable compliance option that has the potential for the most ground disturbance/construction for each terminal type. This allowed CARB to illustrate a reasonable worst case scenario for construction emissions. However, the construction scenarios chosen for the Draft EA are not necessarily the most likely pathways for compliance.

CARB disagrees with the commenter that the likely presumption for meeting grid-neutral requirements for capture and control systems is electricity; alternative fuels are also a strong possibility for both barge- and land-based capture and control systems. No stakeholders expressed plans to CARB staff to

install electrical infrastructure for a land-based capture and control system. As such, it would be too speculative for CARB staff to assume electrical infrastructure would be necessary for land-based capture and control systems. Regarding structural needs for ro-ro terminals, CARB disagrees that ro-ro terminal improvement costs would be on the same order of magnitude as tanker terminals. Ro-ro terminals generally have significantly larger berths than tanker terminals and are built to handle the weight of hundreds of cars being offloaded. CARB does not have the data, nor has any such data been provided, to make an engineering determination of the limits of each ro-ro berth's weight limit; however, CARB staff published the Berth Analysis requesting input from stakeholders to verify all infrastructure assumptions and no specific information was submitted expressing the need for wharf infrastructure improvements at any ro-ro berth or terminal to handle the weight of a land-based capture and control system.

CARB staff also disagree with the commenter's statement that the Pasha Terminal project points to the need for wharf strengthening at ro-ro terminals. CARB staff was not provided any evidence during the formal rulemaking period that stated that the ShoreKat land-based capture and control demonstration (as part of the Green Omni Terminal Project) at Pasha Terminal points to the need for wharf strengthening for ro-ro terminals.

**Comment:** "The berth analysis assumes no change in vessel size or operating conditions over the next 12 years. The berth analysis assumes that shore power infrastructure suitable for today's fleet will be suitable for the 2032 fleet. As the ISOR indicates, since 2014, Ports have had to make significant investments in new shore power vaults and in some cases have lost berths entirely due to the rapid increase in vessel size between the adoption of the original at-berth regulation and implementation. This trend is expected to continue. CARB's berth analysis is based on an average container vessel size of 4,000 to 13,000 TEU in Los Angeles/Long Beach. By 2030, the Mercator report projects an average size of 10,000 to 16,000 TEU ships. Ports will need to modify and potentially add new shore power infrastructure to account for these changes, which should be reflected in CARB's analysis." (52.A.17)

**Agency Response (52.A.17):** CARB staff made no changes based on the received comment. CARB disagrees with the commenter that the Berth Analysis makes assumptions regarding changes in vessel size or operating conditions over the next 12 years, or that the infrastructure today will be suitable for fleets in 2032. Staff's Berth Analysis makes no such claim. As described in ISOR Ch. II, the Berth Analysis reflects staff's best estimate as to the likely compliance pathways and any necessary infrastructure for each terminal to meet the regulatory requirements. CARB staff are well aware of the challenge of properly positioning vessels of varying size to connect to shore power, but are also aware of tools like cable management reels that provide flexibility in making connections to shore power in the event that a vessel

cannot line up directly with a shore power vault. TIEs and VIEs were also added to the Regulation largely to provide operational flexibility in situations such as these where shore power vessels are unable to connect to a vault due to positioning issues.

**Comment:** "Vessel Retrofits: CARB identified that 57 container vessels and 26 cruise vessels (total of 83) would need to be retrofitted for shore power (Cost Analysis Workbook). It is unclear how many of these vessels are in fleets currently subject to the regulation; however, in the ISOR, CARB states that 36 unique vessels without shore power are in fleets not subject to the existing rule (III-11), suggesting that 47 vessels (83-36=47) are in currently regulated fleets and would need to be retrofitted for shore power by January 1, 2021. This conclusion could change should CARB clarify its numbers. CARB allots an extra 2 years for unregulated fleets to install shore power on their vessels, indicating a 2-year retrofit timeframe." (52.A.15d)

**Agency Response (52.A.15d):** CARB staff made no changes based on the received comment. The commenter's numbers as stated here are correct, but CARB staff understands this commenter's main point to be that container, reefer, and cruise vessels with an implementation date of January 1, 2021, would not have enough time to retrofit for shore power. However, CARB staff have revised the implementation date for container, reefer, and cruise vessels to January 1, 2023, as of the second 15-day change package released in July 2020, in response to separate concerns raised by commenters. As such, all container, reefer, and cruise vessels will have until January 1, 2023, to install shore power, making this comment no longer relevant to the latest version of the Regulation.

**Comment:** "A utilization analysis evaluated how many auto carrier or RoRo vessels were at berth in one of the ports during each day of 2018. A maximum of four concurrent calls took place on five days during the year, and three concurrent calls took place on 12 days. This indicates that four barge-based C&C systems would have been needed to accommodate all SPBP auto carrier and RoRo calls in 2018 and would be needed going forward assuming 2018 was representative of future call frequency at these two ports. Because three or four concurrent calls occur so infrequently, the C&C barge fleet would be utilized about 19 percent of the time." (52.B.3)

**Comment:** "Importantly, four barges would have been needed to ensure ALL calls were serviced in 2018, but for a large percentage of the year, most of the barges would have been idle because four (4) vessels were in port simultaneously on only five days. In addition, more than four vessels may call simultaneously in future years so having four barges available would not guarantee full coverage." (52.B.6)

**Comment:** "CARB estimates that just nine C&C systems would be needed statewide (seven of them barge-based), but 2018 call frequency analysis indicates four of these systems would need to be assigned to the Ports of Los Angeles and Long Beach to assure full compliance." (52.B.12)

**Agency Response (52.B.3), (52.B.6), and (52.B.12):** CARB staff made no changes based on the received comments. Low utilization of individual systems and the low amount of days with more than one berth in use at ro-ro terminals is why CARB reflected the use of shared capture and control systems where deemed feasible in the Berth Analysis. In combination with the flexibilities provided by the Regulation through use of TIEs/VIEs and the remediation fund, shared usage of a capture and control system is assumed by CARB staff to be the most practical and cost-effective solution to comply with the Regulation.

**Comment:** “CARB estimates that only 10 additional container and reefer vessels are required to be retrofitted in order to reach the 100% compliance figure and 10 additional ships would use Capture & Control technology. How these assumptions are made are unclear, but moreover the baseline assumption that only 20 ships are going to be responsible for 248 additional visits is also not likely to be realistic. On average, those 20 vessels would then each need to have just over 12 visits a year. The only way that would be possible would be if they were in a high frequency service calling both San Pedro Bay and Oakland. However, those are the vessels that are most likely to be already outfitted for shore power in order to meet current regulatory requirements, especially after the implementation of the 2020 standards. It is far more likely that the vessels that have not been retrofitted for shore power are infrequent visitors to California ports. CARB staff needs to provide the basis for the estimate of how only 20 additional vessels would provide 248 port calls and, most likely, revise the number of vessels significantly upwards using assumptions for infrequent visitors.” (52.C.105)

**Agency Response (52.C.105):** CARB staff made no changes based on the received comment. See response to comment 52.C.104 for further discussion.

**Comment:** “From Table XI Berth and Terminal Counts, Anticipated Infrastructure Needs, and Unique Vessels of the CARB Cost Inputs and Assumptions in PDF format, it appears that CARB believes that three new shore power vaults “would be installed in response to the Draft Regulation [Proposed Control Measure]...” at the Port. Accordingly Port staff request documentation supporting CARB staff’s berth-by-berth infrastructure analysis and determination that three new shore power vaults would be required at the Port in response to the Proposed Control Measure.” (17.22b)

**Agency Response (17.22b):** CARB staff made no changes based on the received comment. Staff’s Berth Analysis assumptions for the Port of Oakland were based on direct conversations with terminal staff as detailed in the ISOR, Chapter III (pg. III-12).

**Comment:** “The berth analysis reveals that a number of RoRo visits will remain uncontrolled and not accounted for with TIEs/VIEs due to overlapping vessel berthing. CARB does not assume one control system for each RoRo berth but rather a mix of

dedicated and shared control systems as well as some berths with no control system at all. As a result, some vessel visits will not be controlled because, as noted in the Berth Analysis, many visits occur at the same time and thus will not have access to a control system. Additionally, there will not be enough TIEs or VIEs to cover all of these exceptions (see Table 5). Note, terminals and vessels will need to use their TIEs/VIEs for other unforeseen events, such as routine equipment maintenance or inspections. As a result, this table understates the shortages.

- To ensure 100% coverage, the state needs at least 17 control systems, not 9, as shown in Table 5, which significantly increases costs and the implementation timeline.
- Or, CARB could assume that some visits, particularly at Port of Hueneme, will be out of compliance at the start of the regulation; such visits should be deducted from the emissions benefits and/or included in the remediation fund costs. (52.A.16)

**Agency Response (52.A.16):** CARB staff made no changes based on the received comment. CARB staff understands that sharing emissions control technologies may not be optimal in every situation, and that there could be some conflicts with overlapping visits. However, the Berth Analysis was based on extensive staff analysis that included visit information indicating one berth is used for the majority of the time at ro-ro terminals, which supports lower barge-based capture and control system assumptions. CARB staff believes this fact, along with the additional flexibility provided by TIEs and VIEs, are sufficient to allow regulated entities to be in compliance. For more details on how this analysis was undertaken, see ISOR Chapter III.

## 20.GENERAL GRIEVANCES

**Comment:** “CARB needs to identify the quantified emission reductions it is seeking to achieve via the implementation of the new regulations. This targeted volume reduction should then be applied to the modelled emissions of each port, on a port by port basis to determine what is the scientifically calculated emission reduction goal. Bringing verified, valid emissions data into the analyses for this regulatory process will ensure that the cost benefit analysis, which must accompany this effort, is as accurate as possible. The emissions of each port are different as well as the basin status and these characteristics should be reflected in CARB’s analyses.” (53.8)

**Agency Response (53.8):** CARB staff made no changes based on the received comment. The Regulation is necessary to reduce harmful emissions, including in heavily-impacted portside communities. The Regulation is not intended to reduce a specific number of emissions statewide, but to reduce emissions to their lowest achievable level while being economically and technologically feasible. However, at a minimum, the Regulation does include specific emissions reductions requirements for each vessel visit, which are listed in section

93130.5(d) of the Regulation for reference. In regards to why CARB did not conduct a port-by-port analysis, see response to comment 52.C.113.

**Comment:** "In response to the suggestion in Section 93130.8(a)(2) of the Proposed Control Measure that a terminal operator should be responsible to interrupt a vessel call to shift the vessel to a berth with shore power if no berth was previously available, Port staff request CARB prepare and share an analysis of harbor craft emissions associated with such a shift at each port. Second to OGV, harbor craft are the second-highest emitting sources of emissions in the Port's 2017 Emissions Inventory. Given the short duration of the average vessel call to the Port, the suggestion to call additional harbor craft to reduce the remaining hours of an OGV call's auxiliary emissions could lead to increased overall emissions." (17.31)

**Agency Response (17.31):** CARB staff made no changes based on the received comment. Staff has considered the additional emissions from tugs, but does not consider the vessel shifting to occur more than it has with the previous rule and thus additional emissions from shifts were not calculated. To better demonstrate tug emissions in comparison to shore power usage staff presented the following calculations.

According to the Port of Long Beach's 2017 Air Emissions Inventory, the average harbor tug boat has 1.94 main engines each running at 943 horsepower and 1.5 auxiliary engines operating at 78 hp each. Emission factors and load factors were obtained from CARB's Emissions Estimation Methodology for Commercial Harbor Craft. Load factors are 0.68 for main and 0.43 auxiliary engines (emission factors were obtained for PM, NO<sub>x</sub>, and ROG in Appendix A). CO<sub>2</sub> emission factors are 529 g CO<sub>2</sub>/bhp-hr for main engines, and 589 g CO<sub>2</sub>/bhp-hr for auxiliary engines, consistent with CARB's 2017 off-road emission inventory. From this a tugs average hourly emissions were calculated. On average a tug emits 11.8 lbs/hour NO<sub>x</sub>, 0.24 lbs/hour PM, 2.0 lbs/hour ROG and 2,605 lbs/hr GHG.

CARB staff used the OGV Emissions Inventory estimates, and as an example, the average container vessel at the Port of Oakland emits 28.8 lbs/hr NO<sub>x</sub>, 0.5 lbs/hr PM (0.4 Pounds DPM/hr), 1.3 lbs/hr of ROG and 2,121 lbs/hr of GHG. As can be clearly seen from these calculations, if a vessel is moved from a berth without shore power to one that does, the extra tug emissions are negated in a short amount of time from the vessel utilizing shore power. Additionally, tug emissions, and those of other commercial harbor craft, will be lower in the years to come due to the full implementation of CARB's existing CHC Regulation and anticipated future requirements currently scheduled to be considered by the Board within the next couple of years.

**Comment:** "Comments and Questions on the presentation from the May 14, 2019 and May 16, 2019 public workshops. On Slide 4 of the presentation for the May 14, 2019

and May 16, 2019, public workshops, CARB staff show OGV at-berth emissions for the entire state. Port staff request to see these emissions totals further tabulated both by port or marine terminal and by vessel type. This is especially important as, per Section 93130.7(g)(2) of the Proposed Control Measure, VIEs are specific to the Fleet-Port pairing they are granted to. On Slides 5 and 29 of the presentation for the May 14, 2019 and May 16, 2019 public workshops, CARB staff show a table of cost effectiveness for this rulemaking” “...Port staff request to see the total cost estimates and cost effectiveness estimates further tabulated both by port and by vessel type.” (17.35)

**Agency Response (17.35):** CARB staff made no changes based on the received comment. This comment was submitted under the Rulemaking comment period but pertains to information presented in public workshops held in May 2019. The comment is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, thus CARB is not required to respond. However, OGV emissions tabulated by port and vessel type is included as a reference to the final rulemaking package and is also available on CARB’s shore power website (at <https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation>, “At Berth Emissions Estimates”). Detailed port by port and vessel specific cost information can be found in the SRIA (Attachment C-1, of the ISOR). Additionally, total costs per port and vessel type can be found in the cost workbook (ISOR Attachment C1).

**Comment:** “We respectfully request that the Board direct the ARB staff to do both of the following prior to bringing this item back for approval at a future meeting:

- work with fleets of existing regulated container, cruise, and refrigerated vessels and the terminals and ports at which they call to create amendments to the current regulation to help improve compliance methodologies and develop checklists for fleets, ports and terminals consistent with current CARB enforcement guidelines
- conduct feasibility studies to evaluate and identify the most effective and most economical application of future At Berth controls to additional classes of oceangoing vessels in a new and separate rule and potentially identify alternative compliance pathways which achieve emissions which are greater than or equal to the existing proposal at a higher level of cost-effectiveness” (19.1)

**Comment:** “One issue, about which we have serious concerns, is CARB's proposal to both substantially revise the current at-berth regulatory system and expand the applicability of that system to new classes of vessels, particularly ro-ro vessels without a clear and comprehensive cost benefit and feasibility analysis for each class, and on the assumption that capture and control technology, which does not --which barely functions today, is a viable control option.” (OC-1 Jacob)

**Agency Response (19.1) and (OC-1 Jacob):** CARB staff made no changes based on the received comments. CARB disagrees with these comments. The Regulation was developed over many years with the support of research and collaboration between CARB, industry, and the public. Included in these discussions were the criteria for the compliance checklists (see Sections 93130.7(e) and 93130.9(d)).

In the ISOR, staff discussed the need and justification for the Regulation, cost information, air quality benefits, as well as the reasoning for the proposed timelines. In support of accelerated tanker timelines, staff prepared an HRA to identify the risks of exposure to OGV emissions on public health and the air quality benefits of further reducing emissions.

Further, DOF requires state agencies to prepare a SRIA when a regulation may result in a potential economic impact exceeding \$50 million. CARB prepared the SRIA as part of this rulemaking and submitted to DOF for review in August 2019. CARB has posted the HRA and SRIA, and other materials, found its rulemaking website <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>. Staff is confident that the ample information collected and released in the Rulemaking is equivalent to a feasibility study as requested by the commenter. Staff also performed a feasibility analysis of the anticipated control technologies for new vessel types, such as ro-ro vessels. Through the analysis, developed by numerous discussions with technology manufacturers and marine emissions control experts, CARB has assessed and determined that control technologies are available and viable for both current, and newly regulated vessel types. Shore power and capture and control are a proven emissions reduction technology for OGVs, and staff have not found any technical reason why the systems would not work on any of the regulated vessel types. However, to account for uncertainty, the Regulation has built in flexibility to allow each regulated entity to choose the emissions control technology that works best for their own operations. Additionally, as part of the 15-day changes released in March 2020, CARB staff included an "Innovative Concept Compliance Option." This alternative compliance option would, for a limited time, allow facilities or vessel operators to submit to CARB alternative emissions reductions plans that may be less expensive to operate but still reduce equivalent emissions reduction as would be achieved through to shore power and/or capture and control systems.

**Comment:** "The proposed amendments are aimed to extend At Berth Measures to tankers. The options suggested are:

- a) vessel based options like use of clean fuels, including dual fuel boilers and
- b) shore side options like "cold ironing", use of shore electric pumps or "emissions capture and control systems" either located on

shore or on barges coming side by side when the tanker is at berth.

As in our previous submissions, INTERTANKO recognises [sic] all these measures could be applied but there are a number of practical and very important safety issues that need to be clearly addressed, defined and implemented.” (20.1)

**Agency Response (20.1):** CARB staff made no changes based on the received comment. Staff agrees with the commenter that all technologies used for emissions reductions on tanker (and other) vessels will need to ensure they do not present any safety issues. Staff assumed use of these new control systems, and those already in use (e.g. shore-power), would be similar to activities already occurring at California ports and the same or newly created safety practices would be practiced. It is also assumed that any use of capture and control technology would result in increased safety management efforts. To help with the development of safe and efficient technologies for each tanker terminal, staff has made implementation dates for tankers longer than existing vessel categories. Tanker terminals in Los Angeles and Long Beach will not need to control emissions until 2025 and all other tanker terminals will not need to control emission until 2027.

Additionally, as part of the March 2020 15-day package, staff proposed another compliance option called the “Innovative Concept Compliance Option” (Section 93130.17). The Innovative Concept compliance option allows facilities or vessel operators to submit to CARB alternative emissions reductions plans that may be less expensive to operate but reduce equivalent emissions to shore power or capture and control systems. This alternative compliance option is intended to allow for any additional time needed to create safe and efficient control systems for tanker vessels and terminals.

**Comment:** “And we do support electric shore power naturally. But then there's also the alternative, which is the ship emissions control technologies, which we call SECT. Both electric shore power and ship emission capture technologies are feasible. They're cost effective. They're proven technologies and they're proven as excellent mitigation measures for addressing all their impacts. In addition, there are options in either purchasing a system or leasing a system, so it can be affordable.

...Port of Los Angeles in the past has had container tariffs, both as a program and both as mitigation. So a container fee or a bulk loading fee can be applied for a short-term time in order to purchase one, so that the ports have them available.” (OC-4 Marquez)

**Agency Response (OC-4 Marquez):** CARB staff made no changes based on the received comment. This comment is outside the scope of this rulemaking and not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not

required to respond. However, CARB staff appreciates and acknowledges the support for capture and control systems and agree they are a useful and viable option for compliance with the Regulation.

**Comment:** "Use of "clean fuels" while at-berth in boilers. According to another CARB regulation, all ships calling at California ports as well as trading within 25 nautical miles from the California shores use distillate fuels which, in accordance with the MARPOL Annex VI ECA regulation have a Sulphur content limited to maximum 0.10% by weight. Use of natural gas as fuel in boilers will only marginally reduce SO<sub>x</sub> and PM emissions versus the significant cost to retrofit and change operations of boilers for use of natural gas at berth. Such a cost should be taken into account versus the emissions from 0.10% Sulphur content (or lower) distillate fuels.

With regard to the NO<sub>x</sub> emissions, California ports are located in a MARPOL Annex VI NECA sea area, meaning that ships with a keel laid on and after January 1, 2016 have to be compliant with NO<sub>x</sub> Tier III emissions level which means a 90% reduction of such type of emissions. Should tanker be equipped in the future with dual fuel boiler and engines, then California ports should develop LNG supply infrastructure." (20.2)

**Agency Response (20.2):** CARB staff made no changes based on the received comment. As referenced by the commenter, the OGV Fuel Regulation requires 0.1 percent a fuel sulfur limit while operating auxiliary diesel and diesel-electric engines, main propulsion diesel engines, and auxiliary boiler on OGVs within Regulated California Waters (all waters within 24 nautical miles of the California baseline). This cleaner fuel is taken into consideration when calculating the emissions emitted from vessels at berth. There are no prescribed control methods for the Regulation, thus a vessel may choose to use clean fuels for complying with this Regulation including alternative fuels such as LNG.

Early research has shown LNG fuel has the potential to greatly reduce emissions, but with limited data available, a vessel wishing to use LNG as a compliance option for the Regulation would first need to apply for CARB approval by showing that the use of LNG meets the emission reductions as required by the Regulation (Section 93130.5(d)). LNG vessels are currently exempt from the "Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline California", which is the CARB regulation mentioned by this commenter, as well as the 2007 At-Berth Regulation. LNG vessels are not, however, exempt from the new Regulation. Tier III vessels are only required to meet specific NO<sub>x</sub> emissions standards, with no other requirements for any other pollutant. While staff believe overall emissions will be reduced by using Tier III engines, the Tier III standard alone will not meet the requirements of the Regulation. Tier III engines along with other controls, such as a technology to reduce PM, may be needed to achieve CARB approval for this Regulation.

Regarding LNG infrastructure, CARB staff also believes if there is an increase in the demand for LNG at ports in California, then more emphasis will naturally be placed on the development of LNG infrastructure in those areas.

**Comment:** "Use of cold ironing. There are three main important issues to be addressed. Firstly, clarification should be sought with Terminals and local Port Authorities of their safety regulations for use of electricity in transfer of flammable cargoes. Secondly, the risk of using electrical power instead of classic steam power in tankers transporting hydrocarbon cargoes should be assessed. Thirdly and very importantly, there has to be a very clear crafted legal scheme to address incidents and consequences of incidents in case the shore power is cut during the cargo operations. INTERTANKO acknowledges that automatically closed systems and procedures can be established, but tankers should not have any liability in the aftermath of an incident caused by such an event." (20.3) (EA 20-1)

**Agency Response (20.3):** CARB staff made no changes based on the received comment. See *Responses to Comments on the Draft Environmental Analysis*, comment number 20-1, for discussion on safety of using shore power or capture and control on tanker vessels.

**Comment:** "If the capture system is based on the shore, this has to be clarified with Terminals and Port authorities first. Costs and operation of such systems also have to be taken into consideration versus the low levels of SO<sub>x</sub>, PM and NO<sub>x</sub> emissions from distillates with ultra-low Sulphur content and from increased number of tankers meeting NO<sub>x</sub> Tier III level of emissions." (20.4)

**Agency Response (20.4):** CARB staff made no changes based on the received comment. CARB staff agrees that the selection of an emission control system is a decision that must be made between the terminal and port, and also the vessel operators. All vessels visiting California ports are required to use 0.1 percent distillate fuels under CARB's OGV Fuel Regulation. As such, the emissions requirements for the Regulation already take into account the use of cleaner fuels. Additionally, vessels using IMO Tier III engines to meet NO<sub>x</sub> standards can use that as a partial strategy towards compliance, along with additional measures to meet the PM, ROG, and GHG requirements of the Regulation. Vessels with IMO Tier III engines also have a lower remediation fund payment to recognize the NO<sub>x</sub> reductions of these cleaner engines.

**Comment:** "Concurrent with implementing robust regulations to address vessel emissions at berth and protect community health, CARB should also continue its work to streamline the process for approving and verifying emissions control technologies that can be used for compliance. CARB should coordinate with other key agencies, like EPA, as well as standards organizations that can help create industry-wide standards and protocols to help accelerate the commercialization for these clean technologies." (25.2)

**Agency Response (25.2):**

CARB staff made no changes based on the received comment. CARB staff agrees that coordination with other key agencies and streamlining the approval of emission control technologies is an important step to having a successful regulation. As part of the Regulation, staff has 30-days to determine if a CARB approved emissions control strategy application is complete. Then CARB staff has 90-days to approve or disapprove the application (Section 93130.6).

**Comment:** "It is still the position of the cruise lines and other industry coalition vessel operators that this new proposed regulation should not go forward for the existing regulated fleet. Instead, we believe the industry alternatives currently being discussed, along with corrections to the existing rule for currently regulated fleets, should be substituted and CARB should allow the next step in the existing rule to be fully implemented for these existing regulated fleets. This rule – by providing no CARB-approved alternative compliance option for many vessels including cruise lines, eliminating the existing regulation after 2023 for vessels that make very infrequent calls to California, and eliminating the fleet average compliance option used by the currently regulated vessels successfully since 2014 -- leaves no margin for error and sets up vessels for failure in spite of all reasonable efforts to comply." (41.1)

**Comment:** "We believe that the industry alternatives currently being discussed, along with corrections to the existing rule for currently regulated fleets, should be substituted and CARB should allow the next step in the existing rule to be fully implemented for these existing regulated fleets. Equally as important is our concerns that this rule, provides no CARB approved alternative compliance options for many vessels especially those making infrequent calls to California and eliminates the fleet average compliance option used by the currently regulated vessels, leaving no margin for error and sets vessels up for failure despite all reasonable efforts to comply." (47.2)

**Agency Response (41.1) and (47.2):** CARB staff made no changes based on the received comment. See response to comments 52.C.30 and 52.C.122 for explanations as to why CARB staff did not use industry alternatives as the basis for the Regulation.

Providing TIEs and VIEs to terminals and vessel fleets is expected to provide the flexibility necessary to allow vessels making infrequent calls to California to continue making visits without having to install shore power. Alternatively, vessel or terminal operators may also utilize the Innovative Concept provision to comply with the Regulation (section 93130.17). The Innovative Concept provision provides a pathway for regulated vessel fleets to continue using fleet averaging methods to comply with the Regulation.

Regarding cruise vessels specifically, although shore power has been the primary pathway for compliance for cruise vessels, and is expected to continue

to be the compliance mechanism of choice, there is nothing in the Regulation that prevents the cruise industry or technology manufacturers from developing a CAECS for cruise vessels should the demand arise.

**Comment:** “WSC also believes, as we have communicated in earlier meetings and comments, that it is important to discourage or restrict the use of alternative control emission control technologies in container ports where the clear objective of the existing rule was to facilitate connections to shore-side power. Encouraging or facilitating further expansion of alternative emission control technologies in container terminals undermines the investments made in retrofitting the container fleet and could lead to an absurd and unfavorable outcome in which shore-power equipped container ships are expected to use alternative emission control technologies that are inefficient, often unreliable, and only available at high cost. In short, expansion of emission capture systems in container terminals and ports undermines existing carrier investments and undermines the rules effectiveness in delivering emission reductions that are achieved through the most cost-effective and efficient pathway.” (45.30b)

**Agency Response (45.30b):** CARB staff made no changes based on the received comment. While shore power is considered the “gold standard” in emissions reductions, staff intentionally structured the Regulation with the flexibility to allow vessels and terminals the ability to choose the method of compliance that works best for their operation. CARB staff agrees that it is important to continue the use of shore power equipment that has already been invested in at California’s ports. However, each terminal will have to determine the solution which works best for them.

**Comment:** “[B]arge-based capture and control systems need to be moved into position, by tugboats, after the ro-ro has been secured fast to the pier. This consumes a substantial amount of time, which increases the cost of control per hour of emissions because ro-ro calls are already very short. A related factor that has not been adequately considered is the impact of the tug emissions generated to move the barge-based capture and control system to and from the ro-ro vessels and other vessels that may require barge-based emissions control strategies. Typically, a tugboat will use engines two to four times larger than the ro-ro auxiliary engines to be controlled. As a result, emissions from tugboat operations can significantly offset the emissions reductions gained by requiring ro-ro to use capture and control systems during their vessel calls. The capture and control systems also use generators for power that need to be factored into the total impact analysis for regulating ro-ro auxiliary emissions. While CARB staff included the cost of obtaining tug services and capture and control services in the SRIA, CARB staff has not included in to the EA, ISOR or the emissions inventory the increased emissions that result from controlling emissions using capture and control system emissions and the tugs that support them.” (45.14) (EA 45-1)

**Agency Response (45.14):** CARB staff made no changes based on the received comment. See Master Response 1 and see also *Responses to Comments on the Draft Environmental Analysis* comment number 45-1 for discussion on tug and GHG emissions resulting from using barge-based systems.

**Comment:** "We'd like to see is that you direct staff to pause on this thing for the currently regulated fleet. Let us get into this 80 percent. Let us get the rule completely implemented and get the data on it." (OC-1 Kindberg)

**Agency Response (OC-1 Kindberg):** CARB staff made no changes based on the received comment. CARB's Board directed staff to move forward with the Regulation for all container, reefer, cruise, ro-ro, and tanker vessels to achieve additional health benefits and further protect public health.

**Comment:** "Affordable Shore Power Rates. One of the earliest adopters of shore power in California, the District now finds itself in a difficult situation, facing shore power electricity rates that will more than double in the next five years - among the most expensive in the state. Equitable rate relief is required to make shore power affordable. To accomplish that, there must be alignment among state agencies that are responsible for shore power standards and costs, the Air Resources Board and Public Utilities Commission. When those agencies conflict but the mandate is clear, coordination and integrated decision-making are key- for the sake of those, like the District, left straddling the gap without any clear option. The District takes seriously the goals of electrification and seeks to expand use of clean technology along the waterfront but is constrained by the cost of electricity. Compliance is linked, and the regulation's requirements should be tethered to the availability of affordable power." (48.1)

**Agency Response (48.1):** CARB staff made no changes based on the received comment. CARB staff understands the commenter's concern regarding the costs of electricity for shore power and acknowledges that the rates for shore power in some regions (like San Diego) are higher than others. These costs are clearly accounted for in CARB staff's cost analysis, as both the SRIA and cost analysis assumed a cost analysis of \$1.16 per kWh (for cruise vessels only) in consideration of the higher electricity costs for the Port of San Diego cruise ship terminal. More information can be found regarding why this rate was used on page 16 of the SRIA (Appendix C-1, Table VIII). CARB does not have the authority to set shore power standards or electricity costs, but have committed to working with the CPUC as the goods movement industry transitions towards zero-emission equipment and requires increasing amounts of electrical infrastructure.

**Comment:** "Any new regulatory requirement must be preceded by a comprehensive review that establishes valid and unequivocal justification for its introduction. The

review must include a health and environmental impact assessment as well as a cost benefit analysis.” (55.1)

**Agency Response (55.1):** CARB staff made no changes based on the received comment. Staff agrees with the commenter. The Regulation was developed after years of research and collaboration between CARB, industry, and the public. From these public engagements staff developed the ISOR describing in detail the need and justification for the Regulation. An HRA was conducted showing the impacts of OGV emissions to human health and the benefits of further reducing those emissions. DOF requires a SRIA when it estimates that a proposed regulation has an economic impact exceeding \$50 million which was completed and submitted to DOF in August 2019. All these comprehensive documents can be found on the CARB rulemaking page at <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>. Additionally, as part of the rulemaking package CARB staff composed an Environmental Impacts Analysis. For more information, all documents mentioned in this response can be found on the Regulation’s rulemaking webpage at <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>.

**Comment:** “The vehicle carrier (alias Ro Ro) segment competes directly with the general cargo and bulker segments for heavy machinery and breakbulk cargo. Therefore to maintain the competitive balance it is vital that any future compliance requirements that would be introduced for vehicle carries, should also apply to those segments.” (55.2)

**Agency Response (55.2):** CARB staff made no changes based on the received comment. CARB staff has not included general cargo and bulk vessels in the Regulation for reasons detailed in the ISOR, Ch. III (beginning on pg. III-4). However, CARB’s Board directed staff at the December 5, 2019, Board Hearing to consider assessing the feasibility of control requirements for bulk and general cargo vessels. As such, staff added a provision to the Interim Evaluation (Section 93130.14(d)) as part of the March 2020 15-day change package. This change requires CARB staff to re-evaluate the feasibility of control requirements for both general cargo and bulk vessels during the Interim Evaluation in 2022.

**Comment:** “Currently-regulated vessel fleet operators have developed sophisticated predictive models and expertise to manage this complex requirement and improve operations. Change to a new structure will make these models obsolete while achieving little to no additional environmental benefit vs the fully-implemented 2020 requirements already in place.” (46.1)

**Agency Response (46.1):** CARB staff made no changes based on the received comment. CARB recognizes that stakeholders have invested time and money into managing compliance requirements for the 2007 At-Berth Regulation and understands that the Regulation may require new approaches to managing

vessel fleets and new reporting mechanisms from vessel operators. CARB is developing an online reporting tool called the FRRS that is expected to streamline reporting obligations and help manage compliance with the Regulation.

CARB staff disagrees with the comment that the Regulation structure will achieve little to no environmental benefits when compared to the 2007 At-Berth Regulation. Additional emissions reductions are expected when new control requirements begin with the addition of small vessel fleets that were exempt from the 2007 At-Berth Regulation, and also from 2025 onward when TIE/VIE percentages decrease from a total of 20 percent to 10 percent. Additional emissions reductions will also be achieved through the addition of new vessel types (ro-ro and tanker vessels) to the Regulation in 2025 and 2027. See ISOR Appendix H for details on the expected emissions benefits of the Regulation.

**Comment:** “[T]he proposed rule still does not provide clear mechanisms to deal with significant operational disruptions, redeployments or market shifts.” (46.4)

**Agency Response (46.4):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. The Regulation allows ample operational flexibility in the form of TIEs/VIEs (sections 93130.8 and 93130.11), a remediation fund (93130.15), and through the Innovative Concept compliance option (93130.17).

**Comment:** “We recommend that staff work with the currently regulated vessel operators to improve the proposed compliance structure for these fleets – based on the current regulation’s EERO pathway (fleet averaging), the per-vessel approach, or some third alternative. The final direction should ensure at least one clear, feasible, reasonably cost-effective compliance pathway for all the typical variations of this business – including the periodic major disruptions (e.g., the 2015 labor disruptions, and the 2018 surge in extra vessels calls due to the threat of new tariffs in 2019, which resulted in a surge of over 30 additional vessels to CA ports in late 2018, few of which were shore power equipped).” (46.6)

**Agency Response (46.6):** CARB staff made no changes based on the received comment. CARB staff worked closely with the vessel operators that have compliance obligations under the 2007 At-Berth Regulation during the rulemaking development period to craft a clear, feasible, and cost-effective Regulation. Flexibilities in the form of TIEs/VIEs and the remediation fund are expected to provide compliance pathways to deal with operational variabilities.

**Comment:** “Ports and government agencies around the world are looking to California as the only place with experience and data. CARB needs to ensure anything published or enacted is accurate, clear and a scalable practice.” (46.16)

**Agency Response (46.16):** CARB staff made no changes based on the received comment. Staff agrees with the commenter. Many countries across the world have shown interest in the 2007 At-Berth Regulation and the success of this Regulation will provide a clear path for others to follow.

**Comment:** “The proposed rule should not go forward as currently designed. This rule, by requiring near 100% connections for shore power or alternatives, no ability to use an alternative (CAECT) for many vessels including very large cargo and cruise vessels, and no fleet averaging leaves no margin for error and sets up vessel operators for failure in spite of all reasonable efforts to comply. Instead, we ask that the Agency “hit pause” and re-evaluate options including the following:

- Other port-specific concepts that could achieve greater reductions
- The “Industry alternatives” which include fleet averaging.
- Allowing the currently regulated fleets to continue under the Equivalent Emissions Reduction Option with technical corrections.
- Another clear and simple approach is a fleet averaging approach based solely on the percent of time the fleet is connected. We believe this is consistent with CARB’s inventory approach.” (46.17)

**Agency Response (46.17):** CARB staff made no changes based on the received comment. CARB disagrees that the Regulation sets vessel operators up for failure. The “per visit” approach of the Regulation allows for vessel and terminal operators, ports, and CAECS operators to share responsibility in reducing emissions from vessels at berth, unlike the 2007 At-Berth Regulation where the onus for compliance was solely on vessel operators. Flexibilities in the form of TIEs/VIEs and the remediation fund were also added to the Regulation to provide compliance pathways to address with operational variabilities.

CARB notes the requests from industry to continue using the fleet averaging compliances structure. Staff added the Innovative Concept Compliance Option to the Regulation with the release of CARB staff’s 15-day package. This alternative compliance option allows for regulated entities to apply to CARB to use substitute approaches for compliance. These could potentially include approaches like fleet averaging, Equivalent Emissions Reduction Option, or port specific emissions reductions plans, providing the applicant can demonstrate to CARB that they will be achieving equivalent or greater emissions as the new Regulation.

Separately, CARB also disagrees that the Regulation does not allow for alternative technologies for many vessel types. The Regulation permits any vessel type to use an alternative technology other than shore power for compliance, as long as the system is CARB approved.

**Comment:** “We ask that the CARB Board direct staff to ensure that any rule changes provide clear feasible pathways for all reasonably foreseeable business events outside the control of the vessel fleet and marine terminal operators.” (46.19)

**Agency Response (46.19):** CARB staff made no changes based on the received comment. CARB believes it has provided a clear, reasonable, and cost effective Regulation.

**Comment:** “Conduct an analysis covering at least the known occurrences encountered in the decade this rule has been on the books (economic and trade disruptions, labor issues impacting productivity, ownership and alliance changes, redeployments, business swings due to carrier bankruptcy, et. al.). Use the results of this analysis to fine-tune the requirements. (46.20)

**Agency Response (46.20):** CARB staff made no changes based on the received comment. CARB staff has used empirical data from the 2007 At-Berth Regulation to calculate TIEs/VIes, develop the remediation fund, set implementation dates, and determine exemptions.

**Comment:** “Many ports statewide, including the Port, are investing in developing air quality plans specifically tailored to their own emissions inventory, physical and logistical characteristics of their cargo and water front setting, as well as their own community inputs and resource availability. These local plans should be recognized when appropriate as real alternatives to the regulations and area venues to emission reduction opportunities not currently contemplated by CARB as they are quantifying strategies to meet emission reduction goals.” (53.11)

**Agency Response (53.11):** CARB staff modified the proposed regulatory language in response to this comment and similar others received from stakeholders. CARB staff understands that different ports/terminals and communities may have different needs and different ways of best reducing emissions. In response to this, staff added the Innovative Concept compliance option in the Regulation as part of a 15-day change, which allows stakeholders to apply to CARB to use alternative approaches for compliance. These alternative approaches could potentially include port specific emissions reductions plans, providing the applicant can demonstrate to CARB that they will be achieving equivalent or greater emissions as the new Regulation. In addition, emission reductions achieved under the Innovative Concept compliance option are only valid as long as they are achieving emissions reductions that are not required by any part of other state, federal or international rules, regulations, and statutes, etc.

**Comment:** “RECOMMENDATION: Apply the attainment status of Ventura County air basin to any regulation impacting the Port and consider the emissions data and

growth rates specific to the Port as opposed to that of the LA/LB air basin or the Ports of LA/LB.” (53.13)

**Comment:** “Air quality regulation respective to a port or similar emission source should begin with a very simple analysis with two major local components:

5. Basin Status - Historical and current air quality within the basin in which the port operates.
6. Emissions - Current and estimated future quantity and quality of the port’s emissions.” (53.14)

**Agency Response (53.13) and (53.14):** CARB staff made no changes based on the received comment. As said in Chapter II of the ISOR, the Regulation intends to address the disproportionate health burden portside communities bear due to their close proximity to the emissions generated from freight activity associated with the seaports, including truck, train, and vessel traffic in and around the ports. Thus, air basin status does not affect the goals of this Regulation.

Appendix H of the ISOR discusses the methodology used by CARB staff to estimate at berth emissions from each port and Marine Terminal Complex from auxiliary engines and boilers. However, CARB inventory staff will continue to update the inventories with the best available information. Future updates should be completed and included in the inventory prior to the Board review of the progress in port infrastructure and technologies scheduled for 2022.

**Comment:** “It is not just the Port’s physical setting and operations which are different from nearby LA/LB, the air quality within its surrounding basin is also very different. Table 1 presents the projected dates of attainment with National Ambient Air Quality Standards (NAAQS) for the air basins surrounding both the Port and LA/LB. The ozone standards are shown as this pollutant has the potential to exacerbate respiratory illness symptoms in sensitive populations including children and the elderly and those with inflammatory airways or asthma, and is of particular concern for community health activists.

Ozone Standard	Attainment Date	
	VC Basin	LA Basin
2008 - 8hr.	2020	2032
2015 - 8hr.	2026	2037

Table 1 Comparison Dates of NAAQS Attainment for Ventura County and Los Angeles Air Basins

Not only is the Ventura County air quality substantially better than that of the LA basin, a great deal of the air pollution within the air basins of Ventura County come from emissions from ocean going vessel (OGV) traffic offshore that is bound for LA/LB.

The air basin over Ventura County extends three nautical miles offshore and is called the South Central Coast (SCC) Basin, while the basin which extends from three to one hundred nautical miles offshore is called the Outer Continental Shelf (OCS) Basin. CARB calculates attainment status for the SCC Basin using a photochemical model which incorporates emissions from both basins, meaning that transitory OGV emissions from LA/LB bound vessels in the OCS directly impact air quality in the SCC. When the pollutant quantities emitted by OGVs in both basins are analyzed, it becomes clear how much of a negative contribution is made by the OCS OGV, passing inside of the Channel Islands, as the majority of trans-Pacific traffic does, in transit to LA/LB." (53.15)

**Agency Response (53.15):** CARB staff made no changes based on the received comment. The comment is not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action; therefore, CARB is not required to respond.

**Comment:** "WSPA continues to have serious concerns that the At Berth Regulations, as currently proposed, are neither technologically feasible nor cost-effective, particularly in the context of operations at marine terminals hosting vessels carrying hazardous materials such as crude oil and other petroleum products." (22.1)

**Agency Response (22.1):** CARB staff made no changes based on the received comment. CARB disagrees with this comment and believes the Regulation to be feasible and cost effective. Additionally, hazards were evaluated in the Draft EA accompanying the ISOR. CARB has also built in an Interim Evaluation into the Regulation that will assess the progress made in adopting control technologies, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions (Section 93130.14).

**Comment:** "WSPA further believes that the At Berth Regulations impose certain unnecessary costs on regulated parties that result in little or no incremental benefit to California's air quality or its greenhouse gas ("GHG") levels. Many aspects of the At Berth Regulations .... also are not likely to produce the real, permanent, quantifiable, verifiable and enforceable emissions reductions Staff claims, and GHG emissions will continue unaffected by the Rule." (22.2)

**Agency Response (22.2):** CARB staff made no changes based on the received comment. CARB disagrees with the commenter as the Regulation is projected to result in real and quantifiable emissions reductions. See "Updates to Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth" (released with the 15-day package on March 26, 2020 and July 10, 2020) for details. The 2007 At-Berth Regulation saw emissions reductions from over 13,000 vessel visits since 2014 through the use of shore power and capture and control systems, and the new Regulation is expected to achieve emissions reductions from around 2,300 additional vessel visits per year. There is no

evidence presented in this comment to support why the Regulation as structured will not increase emissions reductions.

Regarding GHG emissions specifically, CARB staff's document "Updates to Appendix H: 2019 Update to Inventory for Ocean-Going Vessels At Berth" that was released July 10, 2020, shows a total GHG emissions reduction of around 6 percent with the new Regulation versus the 2007 At-Berth Regulation as of 2030. Staff believes this is a worst-case scenario, assuming all new ro-ro and tanker vessel terminals will rely on capture and control systems, which do not achieve the same GHG emissions reductions shore power usage does. If any ro-ro and/or tanker vessels use shore power (or certain on-board vessel controls) instead of capture and control systems, the amount of GHG emissions reduced by the new Regulation may increase this percentage.

In addition to GHG emissions, the reduction of NO<sub>x</sub>, PM (including cancer-causing diesel PM), and ROG emissions are a driving force behind this Regulation, as reduction of these local and regional pollutants are necessary to reduce the impacts of OGVs on California's port communities.

**Comment:** "Compliance Comes First - The proposed At-Berth Regulatory language imposes a substantial infrastructure obligation on the Ports and their tenants. As a result, should the regulation be adopted as is, the Ports and their tenants will need to align their priorities and resources to ensure compliance with the regulation is achieved. As a result, the Port may need to divert funds from other CAAP commitments, including zero-emissions terminal equipment and near-zero and zero-emissions trucks." (60.17)

**Comment:** "Compliance may hinder CAAP efforts – Lastly, the Ports are still concerned the cost of these proposed concepts will hinder the ability to meet their goals under the 2017 CAAP Update given the significant upfront costs of an At-Berth Infrastructure Program. In addition, the staff who are currently designing the near-zero and zero-emission terminal infrastructure for technology demonstration projects, and future full-scale deployments are the same staff members who would be responsible for designing the infrastructure to support the new At-Berth Regulation. This underscores the need for prioritizing programs and funding, as described in the Feasibility Assessment bullet above, in order to determine how to most effectively allocate our resources to participate in the development of your regulatory program." (60.24) (52.C.86)

**Agency Response (60.17), (60.24) and (52.C.86):** CARB staff made no changes based on the received comments. These comments are not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff understands that commitments to comply with the At Berth Regulation are included in the Port's CAAP plan, as well as additional

directives to improve community air quality (including AB 617 and the Governor's EO N-79-20) and that infrastructure obligations for compliance may make it difficult to fund other CAAP commitments. Funding opportunities are available through CARB and other sources to help plan for compliance while making progress on meeting CAAP commitments. See response to comment OC-2 Rees for more information on incentives available. The success of the Regulation is dependent on ports and terminals working together with their clients in order to maximize emissions reductions from OGVs at berth.

**Comment:** "Compliance May Hinder CAAP Efforts - Lastly, the Ports remain concerned that the cost to comply with CARB's proposed Rule will affect our ability to meet the goals under the 2017 CAAP Update given the significant upfront costs of an At Berth Infrastructure Program. The costs shown in the May presentation were annualized, but much of the costs will be upfront rather than spread over the ten years. CARB staff has also assumed that minimal infrastructure changes will be needed to meet the Regulation. Our joint letters to CARB have included cost estimates that we feel are representative of the infrastructure costs that would be necessary to meet compliance and fulfill the Ports' obligations as currently written in this draft regulation. CARB has not included any of these costs in their revisions, even with the provision of invoices and information directly from the Port of Long Beach financial system.

In addition, Port staff resources are limited. The staff that are currently designing the zero emission terminal infrastructure for technology demonstration projects, and future full-scale deployments are the same staff members who would be responsible for designing the infrastructure to support the new At Berth Regulation. This underscores the need for prioritizing programs and funding, as described above and in previous letters, in order to determine how to most effectively allocate our resources to participate in the development and implementation of CARB's regulatory program." (60.31)

**Agency Response (60.31):** CARB staff made no changes based on the received comment. See ISOR Ch. III, part (D) and response to comments 60.32, 60.33, and 60.34 for additional information as to why staff did not use the analysis provided by the Ports of LA and LB as a basis for the cost and infrastructure analysis for the Regulation. See also responses to comments 60.17, 60.24, 52.C.86, and OC-2 Rees regarding the incentives available to comply with the At Berth Regulation.

**Comment:** "PMSA and industry members are not however advocating for the CARB Board to take no action on this rule – to the contrary, we have been actively advocating for amendments to the existing regulation to address administrative and compliance management issues for many years. In chief, we are asking for a rule which codifies the operational results, if not the terms themselves, of the many Advisories and guidance documents which currently help assist both regulated

companies and the CARB enforcement staff work together to avoid unintended violations of the existing rule for vessels that are equipped and plugging in to the full extent of real world practicalities. PMSA in that vein shares the Board's goal of achieving 100% compliance for regulated vessel fleets at California's ports, and asks for consideration of amendments to the existing rule to make it work better, not to end it and throw it out.

Given the overall success of the current regulation at reducing emissions in excess of CARB's targeted 2020 goals and by an additional 40% through 2031 (and as noted below, that emissions outperformance number will grow even larger upon correction of the CARB emissions inventory methodology which predicts larger than reasonable growth in future vessel emission), we are perplexed by the CARB justifications for concluding that the current rule is a failure that needs to be replaced with more draconian measures for the existing regulated fleets.

The ISOR omits a specific comparison of the performance of the current regulation against 2007 projections. It also constructs a narrative of need which refuses to bifurcate currently regulated fleet emissions from fleet emissions not currently regulated, and which then makes sweeping generalizations about ocean-going vessel emissions which confuse the purpose and scope of both the existing regulation and the proposed regulation even further (ES-7 – ES-13). This narrative refuses to answer the unasked question in the ISOR: "Why is CARB proposing to eliminate the current successful regulation for container, cruise, and refrigerated vessels and to instead punish these fleets which are currently projected to outperform the 2020 regulatory baseline by 40% in 2031?" (52.2)

***Agency Response (52.2):*** CARB staff made no changes based on the received comment. CARB staff disagrees with the commenter's assertion that the new Regulation is a result of CARB staff's determination that the 2007 At-Berth Regulation "is a failure" and that CARB is proposing to punish fleets for a successful regulation. There were several factors as to why the new Regulation was developed, including a need for additional public health and air quality benefits to port communities along with the need to address complications with the 2007 At-Berth Regulation. For further discussion, see ISOR Chapter II for why staff developed a new Regulation. Additionally, see Chapter V for air quality specifics on the 2007 At-Berth Regulation compared to the new Regulation and subsequent updated emissions in inventory and health benefits analysis released during the 15-day comment periods in March and July 2020 (available on the rulemaking webpage at <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

Regarding the commenter's statement that the ISOR omits a specific comparison of the performance of the 2007 At-Berth Regulation against 2007 projections, CARB staff does not agree that this analysis is necessary. The 2007 ISOR was written using the best available information that CARB staff had at the

time, and analysis methods and emissions inventories have evolved since the development of the 2007 At-Berth Regulation. Similarly, the Regulation was written with the best information available today, while using the latest methodologies and health science, particularly with respect how health impacts are assessed and how emission inventories are developed. Therefore, comparing 2007 ISOR estimates to current emissions inventory values would not be a good indication of the success of the 2007 At-Berth Regulation, nor would it be useful as a predictor of the success of the new Regulation.

**Comment:** "PMSA has been engaged, and in fact pursued, amendments to the At-Berth rule for many years. During discussions with CARB staff and through workshops, PMSA has raised issues that have been formalized in a series of comment letters on the current At-Berth rule. Unfortunately, many of the issues raised by these letters have not been adequately addressed in the ISOR. Accordingly, that history of correspondence is attached to this comment letter as part of the supporting documentation of the industry coalition letter to the Department of Finance regarding the draft Standardized Regulatory Impact Assessment (see Attachment C)." (52.6)

**Agency Response (52.6):** CARB staff made no changes based on the comment received. CARB staff thanks PMSA for their engagement and efforts spent towards assisting staff with this rulemaking, but disagrees that the ISOR does not address many of the issues raised by PMSA's letters to CARB. There are no specific examples of unaddressed issues given in this comment, and so CARB staff are unable to refer the commenter directly to any specific document.

**Comment:** "Penalty of Doubling Costs on Carriers, Ports, and Terminals Already Invested in Shorepower "Gold Standard" Solutions A regulatory proposal providing no accommodation for those vessels and terminals which have already invested in the infrastructure necessary to comply with the "gold standard" of shore power would continue to maintain the perverse incentive of keeping a vessel at anchorage in the event of any uncertainty. As CARB is well aware, this results in far greater emissions than would have been avoided – a situation we have seen occur many times under the existing regulation. In addition, such a regulatory concept would necessarily incentivize vessels and marine terminals to move away from shore power and to rely on emission capture systems since, in concept, such systems provide the necessary flexibility to accommodate the provisions of the regulatory concept without the fixed overhead expense.

This would also be counter-productive to the ultimate goals of the regulation, since as CARB has acknowledged, such a move would actually decrease overall Air Quality benefits, mute emission reductions, and increase greenhouse gas (GHG) emissions, but it's the logical outcome of a rule which imposes significant cost impacts on terminals, ports and ocean carriers and then penalizes them for making investments in shore power. The penalty is obvious, these carriers, ports and terminals will be required to pay for TWO solutions to remain compliant instead of

just ONE solution. This penalty is not accounted for and is an unreported Cost outcome in the present preliminary cost estimates. In requiring a standby system, the regulatory proposal imposes new costs for vessel operators and terminals operators that have already invested billions of dollars under the current regulatory framework. Again, the cost analysis does not consider the additional costs that every vessel and terminal operator will experience under the proposed regulatory concept.

An illustration of this problem is clear when examining the Port of Oakland. The Port of Oakland leases container terminal facilities only (no bulk/tanker terminals). In addition, the percentage of vessels using shore power is dramatically increasing. If, as expected and CARB staff intends, all future vessels use shore power, vessels at terminals would still need to have a standby solution in the event of equipment failure or inability to make a shore power connection. Yet, what viable business could exist serving exception cases? Further, it is not unforeseeable that there could be an equipment failure at multiple berths simultaneously; for example, at the point where electricity for the shore power system enters the terminal. In such a scenario, every berth will need an alternative control technology at a port where there would be zero demand for such technology otherwise. Terminal and vessel operators would be pushed to maintain multiple systems to avoid regulatory jeopardy.” (52.C.112)

**Agency Response (52.C.112):** CARB staff made no changes based on the comment received. This comment was originally submitted to CARB in September 2018 in response to a previous regulatory concept, but was submitted again during the 45-day comment period. As such, the comment is irrelevant and CARB is not required to respond. However, CARB will note that staff’s proposal was revised after receipt of these (and other similar) comments to eliminate the need for redundant controls. CARB staff disagrees that terminals will abandon shore power for capture and control. Vessels and marine terminals who have already invested in shore power would continue to use it and would not need to move away from shore power. See response to comment 60.11 for more information on unintended events where a vessel is unable to control emissions and how the Regulation allows for these events to occur as part of the allocated TIEs/VIEs.

**Comment:** “Requirements in 2020. The industry coalition remains concerned that the current proposal does not address immediate implementation issues with the current regulation. As has been previously discussed with CARB staff, the existing At-Berth regulation has fundamental problems that makes compliance beginning in 2020 likely impossible. The maritime industry has been raising issues with the structure of the existing rule for several years and has requested amendments to address those concerns. CARB staff have partially addressed those concerns by issuing multiple advisories. But now that the opportunity exists to fully address issues with the existing rule and eliminate the use of the advisories, the draft proposal does not contain any

provisions to address the failings of the existing rule in 2020. CARB's first priority should be to address the current failings of the existing rule before expanding the rule. (52.C.88)

**Agency Response (52.C.88):** CARB staff made no changes based on the received comment. CARB disagrees with this comment, as the first priority of the Regulation is to further reduce the health burdens on port communities that are impacted by vessel at berth emissions. CARB also disagrees with this commenter's statement that the Regulation does not address immediate implementation issues with the 2007 At-Berth Regulation, as it has addressed many of the 2007 At-Berth Regulation's implementation challenges. See pages II-9- II-15 in the ISOR for more information on the specific challenges and the ways the current Regulation addresses the issues with the 2007 At-Berth Regulation.

**Comment:** "This is not surprising giving the outstanding issues already being experienced as described in CARB's latest enforcement report on the At-Berth Regulation (2017 Annual Enforcement Report, June 2018). The report identified 327 instances that Scenario 1 (Equipped vessel not able to receive power from shore) were used in 2015 and another 284 instances in 2016, the most recent year that CARB has published data. Yet, CARB's analysis for container terminals found additional vaults are needed at only one terminal and only one shared barge-based emission control. It is inconceivable that such little infrastructure would be necessary when existing infrastructure is already strained beyond existing needs." (52.C.91)

**Agency Response (52.C.91):** CARB staff made no changes based on the received comment. To clarify, Scenario 1 relief can apply to any visit where the vessel did not connect to shore power, including as a result of equipment breakdown, berthing configuration issues, scheduling, and labor availability, not only for insufficient infrastructure. See also, response to comment 52.C.109 for more detailed information on vault requirements assumed by CARB staff.

**Comment:** "When CARB staff released their original regulatory concept, the industry coalition raised concerns regarding the redundancy of infrastructure required by the regulatory concept. One of the primary concerns was that of infrastructure redundancy. The original At-Berth Regulation required the investment in shore power as means of compliance. The original rule only allowed alternative technologies if they were adopted early. As no alternative technologies were available within the constraints of the original rule, industry made an investment totaling billions of dollars in supporting shore power. It is important to note that this investment is ongoing. There is no dedicated California vessel fleet. Vessels are regularly moved into and out of California service to meet the needs of vessel maintenance and changing trade flows. As a result, shore power equipment must be retrofitted onto vessels entering California service. In addition, shoreside infrastructure requires ongoing investment in the form of costly maintenance.

As a result of these sunk and ongoing costs, a regulatory requirement that would force carriers and terminal operators to maintain new and additional equipment to remain in compliance is concerning.

The original regulatory concept, in essence, required back up control equipment throughout California ports. In the long-term, this would likely necessitate the abandonment of shore power in favor of capture and control systems. While capture and control systems are less than preferable from both an economic and environmental perspective, offering less emissions control (and increased greenhouse gas emissions) for higher costs, the flexibility offered is likely the means of remaining in compliance while only supporting a single control technology pathway.” (52.C.92)

**Agency Response (52.C.92):** CARB staff made no changes based on the received comment. This comment was submitted to CARB on April 10, 2019, and is based on a now outdated version of the regulatory concepts, which was altered in response to the commenter’s concerns regarding the possibility of redundant emissions control systems. The Regulation does not require redundant or “back up” equipment. Briefly, the Regulation requires terminals provide shore power or another alternative control option for vessel’s visiting their berths. Vessels are required to install shore power or another CAECS on-board or arrange for alternative control options such as a barge-based capture and control system if they are visiting a shore powered berth and are not equipped. CARB staff believes shore power to be the most beneficial and will continue to be the most utilized CAECS compliance option. CARB staff added TIEs/VEs (including higher amounts in the initial years of implementation), the remediation fund, and the Innovative Compliance Option to the Regulation to minimize the potential need for the investment in redundant control systems.

CARB staff understands that there is no California dedicated fleet. However, interest in and use of shore power is expanding to other ports around the world, which is expected to increase the cost-effectiveness of shore power equipment used on vessels here in California. See ISOR Chapter VI for more discussion on this topic.

Regarding the commenter’s statement about capture and control technologies increasing GHGs, it is worth noting that CARB staff added a grid neutral requirement to the Regulation for all newly approved capture and control strategies (2025 for existing systems) in order to ensure there is not a GHG increase with the new Regulation (versus the 2007 At-Berth Regulation).

**Comment:** “The revised draft regulatory concept still does not incorporate any meaningful flexibility for ocean carriers. Ocean carriers must regularly make changes to vessels serving California. The worldwide container fleet is not retrofitted for shore

power. A vessel substitution due to maintenance needs or changing trade flows would likely mean a replacement with a vessel that does not support shore power. An ocean carrier needs time to make the replacement vessel ready to connect to shore power. Unfortunately, without a massive shift away from electrification toward alternative technologies, alternative technologies are not a viable solution for the long-term and have a number of drawbacks. The alternative technology is substantially more expensive at its current level of utilization and is expected to become more expensive as the use of shore power increases and the number of alternative technology users supporting high fixed costs drop. The very large container and cruise vessels cannot use the current alternative technology due to the particular structure and constraints of those vessels, leaving those vessels without a viable alternative to shore power. In addition, the technology, whether barge-based or land-based increases greenhouse gas emissions in all cases. Finally, to facilitate peak events (such as extra loaders), there may be a need for a dozen such systems that sit idle most of the year – there is no way to capitalize such an investment with no prospect of return. Rather than pinning regulatory success on such technology, CARB should revise the proposal in a way that recognizes the dynamic nature of international trade and develop an approach consistent with the principles laid out in the industry proposal.” (52.C.99)

**Agency Response (52.C.99):** CARB staff made no changes based on the received comment. CARB disagrees with this comment, as the Regulation significant compliance flexibility while still providing real, quantifiable, and impactful emissions reductions.

The Regulation allows for several ways to comply. These options are intended to address the uniqueness of each terminal, port, and vessel as each regulated party would be able to choose a compliance option that best suits their operations. These options include: 1) TIEs/VIEs for when emissions cannot be controlled, 2) several CAECS options that do not require vessel or terminal modifications (such as barge-based capture and control), 3) an Innovative Concept compliance option for when alternative, but equal reductions can be achieved by another emission source and the remediation fund for occasions such as equipment breaks or for scheduled maintenance.

With several flexible compliance options available, CARB staff believes every vessel visit should be able to comply with the Regulation by their implementation dates. However, CARB has built in an Interim Evaluation into the Regulation that will assess the progress made in adopting control technologies, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions (Section 93130.14).

**Comment:** “The estimate of the number of additional vessel retrofits also appears to assume that the fleet serving California ports is static. As PMSA and its members have discussed with CARB staff, the fleet is not static and redeployments occur as a

normal part of vessel operations. As a result, for any one vessel currently calling California, multiple vessels will need to be retrofitted as maintenance needs and changing trade volumes require existing shore power-capable vessels are rotated out of California service and different non-shore power capable vessels are rotated into California service.” (52.C.106)

**Agency Response (52.C.106):** CARB staff made no changes based on the received comment. CARB recognizes the marine industry is not static. Therefore, staff included operational flexibility within the Regulation. Vessels infrequently calling California may be able to use a TIE/VIE to comply during their visit.

**Comment:** “CARB is proposing what is being called a “single, flexible compliance pathway”. Unfortunately, there is nothing flexible about an every vessel/every visit standard for At-Berth controls. As has been demonstrated over the past several years under the current At-Berth Regulation, different ocean carriers have different operational needs. Some ocean carriers may be able to operate under an “every vessel/every visit” structure, assuming that the appropriate exemptions exist and accommodation is made for inevitable vessel redeployments necessary to meet the needs of changing trade flows. Other carriers, because of more diverse operational needs, may need a fleet average approach. PMSA believes that a different structure is necessary.” (52.C.121)

**Agency Response (52.C.121):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as the Regulation allows for exceptions, TIEs/VEs, a remediation fund, and Innovative Concept compliance option to help with compliance. In addition, fleet averaging may be possible under the Innovative Concept Compliance Option (Section 93130.17). CARB staff believes the Regulation offers significant compliance flexibility that still will achieve real, quantifiable, and enforceable emission reductions.

**Comment:** “The differences between liner and non-liner vessel services are too fundamentally different to accommodate under a single rule or compliance pathway as proposed by CARB. Many non-liner vessels will only call a California port once ever and others so infrequently as to almost never call. To make such vessels comply with California-specific requirements for a single visit or an exceptionally rare visit does not make economic sense, environmental sense, or regulatory sense. There are also practical considerations, if a vessel is allowed an exemption for a commissioning visit, how would that be handled for vessels that call California once ever or that don’t make a return voyage for years at a time? The only way that the same regulatory approach could apply to liner and non-liner services equally, would be to apply similar thresholds to both groups of vessels. In the options that PMSA proposes, a threshold would establish which fleet or vessel is subject to the rule.” (52.C.123)

**Agency Response (52.C.123):** CARB staff made no changes based on the received comment. CARB staff believes liner and non-liner vessels are still considered as part of a designated fleet. Thus, the use of VIEs would be allowed. These infrequent vessel visits would not be required to install or use other control measures. In cases where a vessel is not part of a fleet but visits a terminal, a TIE may be used by the terminal operator for the visit.

Additionally, not all emissions control options require vessel modifications. For example, any vessel could use a land- or barge-based capture and control system. CARB assumes that, similarly to how barge-based capture and control systems are operated currently in the San Pedro ports, infrequent vessel visits could arrange for a CAECS system during their stay.

**Comment:** “This rule and others CARB is considering will directly impact the competitiveness of California’s maritime industry. As you know, the cargo growth in California has stagnated for the past decade; while CARB’s projections called for doubling of cargo volumes at our Ports by 2020, we have actually been losing market share, experiencing no growth while ports around the country have grown strongly. As a result, PMSA puts forward the following thoughts on the proposed regulatory framework in the hope that CARB arrives at a rule that is flexible, predictable, and fair, in order to support the state’s environmental goals in a manner which also supports the renewed economic competitiveness of California’s maritime industry.” (52.C.132)

**Comment:** “The At-Berth Regulation is complex and unlike any other regulation promulgated by CARB, and, in that it directly regulates the highly varied logistics activity of internationally-flagged ocean-going vessels, is also unique worldwide and unlike any other regulation promulgated by any other public agencies. As such, while we understand that CARB staff has direction to return to their Board with regulatory concepts in just over one year, PMSA asks that CARB staff place the substantive requirements of rule development, and the supporting analysis, above meeting an arbitrary fixed schedule for rule finalization. This rule and others CARB is considering will directly impact the competitiveness of California’s maritime industry. PMSA is committed to continuing our current positive working relationship with CARB staff to ensure that this rulemaking process is done as thoroughly and thoughtfully as possible and with the most efficient and cost-effective results.” (52.C.133)

**Agency Response (52.C.132) and (52.C.133):** CARB staff made no changes based on the received comment. Over the years developing this Regulation CARB staff analyzed large amounts of data, presented findings at workshops, and collaborated with multiple parties including PMSA members. The end result of all the research was published as part of over a thousand pages of findings in the ISOR and its attachments supporting the Regulation, which was publicly released on October 15, 2019. Regarding port competitiveness concerns, CARB staff are well aware of

these concerns, but the research staff have been able to find on the subject leads to the conclusion that there are many factors impacting port competitiveness besides regulations, including cost, efficiency, labor, freight system reliability, etc. For more discussion on competitiveness and cargo diversion, see the SRIA, p. 126 and Master Response 2.

CARB staff continues to work with stakeholders and encourage more collaboration as this Regulation is implemented. Included in the Regulation is a commitment to continue researching and working with stakeholders and update the Board annually on the progress of implementation and status of the shipping industry. The 2022 Interim Evaluation (Section 93130.14(d)) also presents an opportunity for staff to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. CARB staff will review the potential requirements for control technologies for use with bulk and general cargo vessels, and for ocean-going vessels at anchor. CARB staff will also consider other public information provided to CARB including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies that inform the implementation timeline.

**Comment:** "Proposed Amendment Structure. We are pleased to see that CARB staff is proposing to eliminate the 3-hour rule. The 3-hour rule created substantial compliance problems due to its lack of accommodation for many factors outside the ocean carrier or terminal operator's control. In its place, CARB is proposing to measure compliance on an individual vessel basis. In concept, the proposal provides an opportunity to simplify compliance and reporting. However, staff has also proposed an, as yet undefined, emission reduction threshold for each visit. PMSA is concerned that, depending on how it is structured, such a threshold would duplicate the problems of the existing 3-hour rule through the creation of a variable connection window requirement. This threshold, which would vary by vessel by visit, would be far harder to administer. If the threshold were based on emission reductions from a hypothetical baseline, every vessel would have a unique maximum connection/disconnection period allowed based upon the hypothetical baseline, auxiliary engine size/load, and forecast berthing time. This would make planning and compliance a nightmare for the regulated community, as well as for CARB." (52.C.134)

**Agency Response (52.C.134):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking, irrelevant, and is not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action; therefore, CARB is not required to respond. The comment seems to

pertain to a previous draft version of the Regulation and thus the comment is no longer relevant.

**Comment:** “Updated Baseline. CARB staff has proposed updating the hypothetical baseline from Tier 0 to Tier 1. PMSA opposes this approach. Changing the baseline ignores the reductions that industry has achieved. In addition, measuring from a hypothetical baseline rather than a simpler metric such as emissions reduced or hours connected needlessly complicates reporting. Finally, because the At-Berth regulation is an operational control measure, it should not set different operational controls for different vessels. It will complicate compliance and create confusion.” (52.C.137)

**Agency Response (52.C.137):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking, irrelevant, and does not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. The comment seems to pertain a draft concept that was not included in Regulation and thus the comment is no longer relevant.

**Comment:** “As you know, PMSA has raised many times the issue of inadequate infrastructure causing most instances when a vessel is unable to connect. The infrastructure, designed and constructed by the port authorities, is rigid and based for a fleet that has substantially changed. Without substantially more infrastructure or tools that make the existing infrastructure more flexible, like cable management systems, the rule will need to provide allowance for prior port delays, weather delays, or other factors that are outside the control of the Ocean Carrier or Marine Terminal Operator and result in inaccessible shorepower connections”. (52.C.145)

**Agency Response (52.C.145):** CARB staff made no changes based on the received comment. CARB has allowed flexibility for the factors mentioned by the commenter as well as other factors in the form of TIEs/VEs, the remediation fund, and the Innovative Concepts compliance option.

**Comment:** “While the ISOR points out that the rule is intended to help reduce emissions in priority neighborhoods, in several of these communities such as Barrio Logan in San Diego and Oxnard in Ventura County, the proposed Rule would actually result in short-term increases in DPM emissions according to current CARB emissions inventory results. (see “DPM Inventory,” [https://ww3.arb.ca.gov/ports/shorepower/atberth\\_ogv\\_port\\_specific\\_emissions.xlsx](https://ww3.arb.ca.gov/ports/shorepower/atberth_ogv_port_specific_emissions.xlsx))” (52.12) (EA 52-5)

**Agency Response (52.12):** CARB staff made no changes based on the received comment. There is no DPM analysis specific to the level of neighborhoods such as Barrio Logan and Oxnard in this spreadsheet referenced by this commenter. However, this spreadsheet did indicate a slight increase in emissions in the air basins that both of these neighborhoods are located in for certain years. Increases in DPM shown in this spreadsheet were likely a result of a growth in vessel activity. However, the spreadsheet referenced here is based on an outdated emissions inventory that has since been updated to reflect both changes in the emissions inventory assumptions and baseline emissions. See the 15-day document “Updates to Appendix H: 2019 Update to Inventory for Ocean-going Vessels At Berth: Methodology and Results” for more details on the updated emissions inventory values for the finalized Regulation. Additionally, as indicated in the update to Appendix H, a significant reduction in DPM emissions is expected in both of these air basins upon full implementation of the Regulation.

**Comment:** “PMSA prefers CARB amend the current rule (as opposed to creating an entirely new regulation in its stead) is to maintain the effectiveness, clarity, and consistency of the existing regulation which already has a waiver from the United States Environmental Protection Agency (U.S. EPA) granted under §209(e)(2) of the Clean Air Act in 2011. Given the tremendous investment in the existing emissions reductions infrastructure on vessels, and on shore by ocean carriers, marine terminals, and ports under the existing waiver and the clear and unambiguous legal status of the existing emissions standard PMSA believes the current standard should be amended as opposed to creating a new standard. PMSA also believes that any newly promulgated emissions standards are unenforceable without the provision of a new waiver and the expediency of CARB being granted such a waiver before the first deadline.” (52.19) (EA 52-6)

**Agency Response (52.19):** No changes were made in response to this comment. CARB understands the commenter prefers CARB retain the 2007 At-Berth Regulation rather than adopt the proposed provisions, but that preference would not achieve the needed benefits attributable to this rulemaking action – the reduction of criteria, GHG, and toxic air contaminants emissions beyond the reductions attributable to the 2007 At-Berth Regulation. These additional reductions are urgently needed given the disproportionate adverse effects from marine vessels on portside communities. Additionally, this rulemaking action is not expected to strand investments and compliance costs that industry expended in complying with the 2007 At-Berth Regulation, because industry will still be able to utilize those previous compliance investments and strategies to comply with the Regulation.

CARB disagrees with the commenter’s assertion that the Regulation “potentially leaves California in a position where all of its regulations for vessels at berth, including specifically any newly promulgated emissions standards, are

legally unenforceable without the provision of a new waiver.” Section 209(e)(2) of the federal Clean Air Act authorizes California to enforce emission standards and other requirements for off-road engines and equipment not conclusively preempted by section 209(e)(1) if California applies for and receives an authorization from the Administrator of U.S. EPA. Provisions that equate to in-use requirements do not require authorization.

The Regulation applies to engines that are already installed on vessels that are operating in regulated California waters. To the extent the Regulation requires a new authorization, CARB will request such an authorization.

The Regulation also contains a clause that supersedes the old regulatory requirements, as specified, on January 1, 2021. Should the new Regulation be repealed or become invalid, the 2007 At-Berth Regulation becomes operative. See proposed section 93118.3 of title 17 of the CCR and proposed section 2299.3 of title 13 of the CCR. As the commenter notes, in 2011 U.S. EPA granted CARB an authorization pursuant to section 209(e)(2) of the federal Clean Air Act to enforce the preexisting At-Berth Regulation. See 76 Fed. Reg. 77515 (Dec. 13, 2011). That authorization does not contain any limitation regarding either time or regulated vessels, and consequently, CARB’s ability to enforce the 2007 At-Berth Regulation.

**Comment:** “As every port and every marine terminal within a port is unique, the infrastructure issues will need to be resolved case-by-case. If a port authority is unable or unwilling to install additional infrastructure, other solutions may be possible to implement, such as cable management systems that extend the reach of the shoreside power receptacle. To that end, CARB, in conjunction with the ports and maritime industry, should assess the need for additional infrastructure at California ports to address the ability of Ocean Carriers to meet future compliance levels. Such an assessment would also inform whether the shift to 100% compliance by 2022 is achievable.” (52.C.146)

**Agency Response (52.C.146):** CARB staff made no changes based on the received comment. The Regulation allows for several ways to comply. These options are intended to address the uniqueness of each terminal, port, and vessel, and each regulated party would be able to choose a compliance option that best suits their operations.

For example, terminals can choose to install shore power or any available CAECS system. Vessels may elect to choose on-board options rather than install shore power. In addition, all parties have access to the Innovative Concepts compliance option.

With the several flexible options available CARB staff believes every vessel visit should be able to reduce their emissions and comply with the Regulation by their implementation dates. Furthermore, CARB staff realizes 100 percent compliance could be difficult to achieve and included TIE/VEs and a

remediation fund option to help with situational incidents that impeded compliance, such as broken equipment. Additionally, CARB has built an Interim Evaluation into the Regulation that will assess the progress made in adopting control technologies, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions (Section 93130.14).

**Comment:** “‘Every Vessel’ Standard and ‘Up To 100%’ Goals and Aspirations. PMSA understands that the CARB Board has given “direction to staff” to seek “up to 100%” emissions reductions as a result of revised At-Berth Regulations. This is an ambitious goal, but one that gives the CARB staff sufficient discretion to explain what level of an aggressive compliance standard of less than 100% is most realistic and achievable. We believe that this does not require CARB to propose an “Every Vessel” standard, and that as a matter of practicality, CARB staff should avoid starting a discussion on setting the new at-berth regulatory discussion with an “Every Vessel” standard. We would recommend that instead of establishing this standard out of the gate, that the final goal for these proposals should initially be listed as “up to 100%” exactly as contemplated by the Board’s direction to staff. This will give CARB staff, industry, ports, and the public the opportunity to talk about what the most realistic regulatory standards should actually be during the rule development process. Nothing in the real world is 100% effective or implementable and even if that is a worthy aspirational goal, it is not a realistic regulatory standard, making this a difficult specific starting point for the informal rulemaking. This would be true for a regulatory proposal that impacted a non-economically dynamic, entirely local industry that was controlled by domestic interests. For an industry that will require substantive capital improvements to mobile assets, subject to coordination of multiple layers of tremendously expensive infrastructure across multiple infrastructure providers, it would still be unrealistic to project levels of 100% emission reductions. Even if 100% compliance is achieved, 100% emissions reductions will not be in any real world application of a rule. We would highly encourage that CARB staff avoid the initial informal rulemaking documents set the wrong expectation and tie your hands to a level of emissions reduction which will not be realistically achievable.” (52.C.153)

**Agency Response (52.C.153):** CARB staff made no changes based on the received comment. The Regulation allows several flexible options for terminals and vessels to comply. The Regulation requires all vessels visits to a regulated terminal reduce emissions (or as the commenter calls it, 100 percent compliance). However, CARB understands that in certain circumstances emission reductions might not be possible. Therefore, CARB staff developed TIEs/VIEs to cover some incidents, as well as developed an alternative option of paying into a remediation fund for certain cases. With TIEs/VIEs, the remediation fund, and the Innovative Concept compliance option, CARB believes every vessel visit should be

able to reduce their emissions and comply with the Regulation by their scheduled implementation dates.

**Comment:** “Fundamentally, the ISOR package should be founded upon real data. It is understood that much of this data does not exist today because the technologies either do not exist, or have not been demonstrated. For this reason, we support the additional evaluation that will be completed for the 2023 feasibility assessment proposed in the regulation.

It is essential that CARB staff communicate the data gaps, the status of the technology, and the true public health benefits to the CARB Board and the public. The ISOR as it stands today overstates the emission and public health benefits of the proposed At-Berth Regulation, and utilizes unvetted data. While the Port of Long Beach supports reducing emissions from vessels at-berth, we do not support the ISOR package due to its limited data sources, and unrealistic assumptions.” (60.10b)

**Agency Response (60.10b):** CARB staff made no changes based on the received comment. CARB agrees that the Interim Evaluation will allow important additional research to be presented, track progress, and to assess if adjustments to implementation dates are warranted. However, staff disagrees with the commenter the ISOR overstates the benefits from the Regulation. The commenter neither provided objections or recommendations specifically directed at the Regulation nor provided recommendations on CARB’s rulemaking process for adopting any amendments. Additionally, the commenter did not provide any information regarding where or how they believe the benefits of the Regulation were overstated.

**Comment:** “Existing Regulation Needs Amendment to Improve Administration and to Codify Current Guideline Outcomes, but It Is Successful at Outperforming and Producing Emissions Reductions Beyond CARB’s Own Expectations, Which Does Not Warrant Elimination and Complete Rewrite.

The current At Berth regulation adopted in 2007 is part of an exceptionally effective and successful suite of emissions regulations efforts adopted by CARB as part of the Goods Movement Emission Reduction Plan. Taken together with the other clean fuel rules, which apply to all vessels while at berth and underway, CARB was targeting an overall emissions reduction from container, cruise, and refrigerated vessels of nearly 88% by 2020 (reduction from 1.43tpd to 0.17tpd DPM) through the full implementation of the current At Berth regulation.

The 2019 ISOR and background materials for the proposed rule projects that not only has the current regulated fleet well outperformed the targets of the current regulated rules, but that by 2031 cumulative container, cruise, and refrigerated vessel emissions are projected to be only 0.1tpd DPM under the current regulations. This is an overall 93% emissions reduction from original levels and an additional 40% DPM emissions

reduction beyond the 2020 CARB target – even if NO ADDITIONAL action is taken to expand or change the current regulation.” (52.1)

**Agency Response (52.1):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. However, CARB staff will note that the expansion of the Regulation builds on the success of the 2007 At-Berth Regulation. By expanding the Regulation to include currently non-regulated container, reefer, and cruise vessels, as well as ro-ro and tanker vessels. The Regulation is expected to result in significant additional emissions reductions as stated in the ISOR and in updates to Appendix H (available at <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

## 21. ENVIRONMENTAL ANALYSIS

All EA comments and responses to those comments are in the *Responses to Comments on the Draft Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth* and *Supplemental Responses to Comments on the Environmental Analysis* documents, both of which were approved by the Board on August 27, 2020. These documents are posted on CARB’s website at <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/rtc.pdf> and <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/supplementalrtc.pdf>, respectively.

### B. Comments Received during the first 15-day comment period and at the Board Hearing on June 25, 2020

*Table 3: Comments Received During the First 15-day Comment Period (March 26, 2020 through May 1, 2020)*

Comment Number (15 – Docket # . Comment #)	Commenter	Affiliation	Date Received/ Added to Database	EA Comments
15-1.1	Joseph Puleo	Individual	03/27/20	n/a
15-2.1	Mizutani Shingo	NYK Line	04/02/20	n/a
15-3.1 *	Mizutani Shingo	NYK Line	04/02/20	n/a
15-4.1*	Mizutani Shingo	NYK Line	04/02/20	n/a
15-5.1*	Mizutani Shingo	NYK Line	04/02/20	n/a
15-6.1*	Mizutani Shingo	NYK Line	04/02/20	n/a
15-7.1	Iain Hart for Rep. Garamendi	Rep. John Garamendi	04/06/20	n/a
15-8.1 – 15-8.2	Bill Magavern	Coalition for Clean Air	04/22/20	n/a
15-9.1	Maureen Decombe	Individual	04/23/20	n/a

<b>Comment Number</b> (15 – Docket # . Comment #)	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Received/ Added to Database</b>	<b>EA Comments</b>
15-10.1	Michael Meagher	Individual	04/23/20	n/a
15-11.1 – 15-11.2	Janis Hashe	Individual	04/23/20	n/a
15-12.2 – 15-12.4	Art Mead	Crowley	04/24/20	12-1
15-13.1	Carol Weed	Sustainable Rossmoor	04/24/20	n/a
15-14.1 – 15-14.3	Rose Strogatz	Individual	04/24/20	n/a
15-15.1	Barry Brian	Individual	04/24/20	n/a
15-16.1 – 15-16.2	Arthur Ungar	Individual	04/25/20	n/a
15-17.1	Lisa Jackson	Individual	04/25/20	n/a
15-18.1 – 15-18.2	Diane Livia	Individual	04/25/20	n/a
15-19.1 – 15-19.2	David Gassman	No Coal in Oakland	04/26/20	n/a
15-20.1	Edie Edelman	Individual	04/27/20	n/a
15-21.1	Elizabeth Dortch	Individual	04/28/20	n/a
15-22.1	Garth Mitcham	CSL Americas	04/28/20	n/a
15-23.1 – 15-23.2	Willie Robinson	NAACP – Richmond CA Branch	04/28/20	n/a
15-24.1 – 15-24.8	Shingo Mizutani	NYK Line	04/29/20	n/a
15-25.1 – 15-25.6	Morgan Caswell	Port of Long Beach and Port of Los Angeles	04/29/20	n/a
15-26.1 – 15-26.7	Ashley Arax for Jack Broadbent	BAAQMD	04/29/20	n/a
15-27.2 – 15-27.7	Lee Kindberg	Maersk	04/30/20	27-1
15-28.2 – 15-28.7*	Lee Kindberg	Maersk	04/30/20	n/a
15-29.1 – 15-29.2	Joy Williams	Environmental Health Coalition	04/30/20	n/a
15-30.28 – 15-30.51	Steven Yang for Henry T. Perea	Chevron	04/30/20	30-1 – 30-24
15-31.1 – 15-31.2	Regina Hsu	Earthjustice	04/30/20	n/a
15-32.1 – 15-32.2	Jan Warren	Interfaith Climate Action Network	04/30/20	n/a
15-33.1 – 15-33.5	Janet Rogers	Embarcadero Coalition	04/30/20	n/a
15-34.1 – 15-34.5	Ann-Marie Piskule	Embarcadero Coalition	05/01/20	n/a
15-35.2 – 15-35.3	Dragos Rauta	INTERTANKO	05/01/20	35-1
15-36.1 – 15-36.2	Paul Herstein	Grande South Condominiums, San Diego	05/01/20	n/a
15-37.1 – 15-37.3	Stephen Kohn	Embarcadero Coalition	05/01/20	n/a
15-38.1 – 15-38.5	Peter Pfau	Embarcadero Coalition	05/01/20	n/a
15-39.1 – 15-39.5	Ann Pfau	Embarcadero Coalition	05/01/20	n/a
15-40.1 – 15-40.5	Adrian Fremont	Individual	05/01/20	n/a
15-41.1 – 15-41.5	Eric Fremont	Individual	05/01/20	n/a

<b>Comment Number</b> (15 – Docket # . Comment #)	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Received/ Added to Database</b>	<b>EA Comments</b>
15-42.1 – 15-42.3	Cynthia Schimpf	Individual	05/01/20	n/a
15-43.1 – 15-43.5	Susan Smith	Individual	05/01/20	n/a
15-44.1 – 15-44.5	Frances and Dave Low	Embarcadero Coalition	05/01/20	44-1
15-45.1 – 15-45.5	Pat Pressel	Individual	05/01/20	n/a
15-46.1 – 15-46.3	Ms. Patricia Lamborn	Individual	05/01/20	n/a
15-47.1 – 15-47.5	Ann Fathy	Embarcadero Coalition	05/01/20	n/a
15-48.2 – 15-48.6	Tracy Fidell	Port of Oakland	05/01/20	48-1
15-49.56 – 15-49.98	Catherine Reheis- Boyd	WSPA	05/01/20	49-1 – 49-55
15-50.1	David Karlman	Meridian Condo Building	05/01/20	n/a
15-51.1	Terry Anne Karlman	Individual	05/01/20	n/a
15-52_53.3 – 15-52_53.5	Marvin Pineda	ILWU	05/01/20	52.1 -53.2 53.1 – 53.2
15-54.1	William Barrett	American Lung Association in California	05/01/20	n/a
15-55.2 – 15-55.4	Giles Pettifor	Port of Hueneme	05/01/20	55-1
15-56.1 – 15-56.5	Elaine Regan	Individual	05/01/20	n/a
15-57.4 – 15-57.25	Doug Schneider	World Shipping Council	05/01/20	57-1 – 57-3
15-58.2 – 15-58.12	Sande George	CLIA	05/01/20	58-1
15-59_62.1 – 15-59_62.2	Peter Warren	Indivisible San Pedro	05/01/20	n/a
15-60.1 – 15-60.11	Becky Vesterfelt	Individual	05/01/20	n/a
15-61.1 – 15-61.7	David Yow	Port of San Diego	05/01/20	n/a
15-63.1 – 15-63.5	Fred Hottinger	Sapphire Tower Home Owner Association	05/01/20	63-1
15-64.1 – 15-64.5	LeAnna Zevely	Individual	05/01/20	n/a
15-65.1	John Husar	Individual	05/01/20	n/a
15-66.1 – 15-66.5	C.H. Fitzgerald	Individual	05/01/20	n/a
15-67.1 – 16-67.5	Chalea Pierce	Individual	05/01/20	n/a
15-68.7 – 15-68.34	Mike Jacobs	PMSA	05/01/20	68-1 – 68-7
15-69.6 – 15-69.36	Thomas Jelenic	PMSA	05/01/20	69-1 – 69-5
15-70.1 – 15-70.2	Robert Piskule	Individual	05/01/20	n/a
15-71.1 – 17-71.2	Igor Tregub	Sierra Club	05/01/20	n/a
15-72.2 – 15-72.7	Brain McDonald	Marathon Petroleum Company	05/01/20	72-1
15-73.1 – 15-73.5	James Nathenson	Individual	05/01/20	n/a
15-74.1 – 15-74.5	Barbara Nathenson	Individual	05/01/20	n/a
15-75.1 – 15-75.6	Steven Wallauch	CAPA	05/01/20	n/a

<b>Comment Number</b> (15 – Docket # . Comment #)	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Received/ Added to Database</b>	<b>EA Comments</b>
15-76.1 – 17-76.5	Mrs. Janet Fox	Individual	05/01/20	n/a
15-77.1 – 15-77.5	Nancy Lietzke	Individual	05/01/20	n/a
15-78.1	Calin Mugurel	Individual	05/01/20	n/a
15-79.1 – 15-79.5	Kent Pryor	Individual	05/01/20	n/a
15-80.1 – 15-80.5	Christopher Cannon	Port of Los Angeles	05/01/20	n/a

\* duplicate comment

*Table 4: Written Comments Received During the June 25, 2020 Board Hearing*

<b>Comment Number</b> (15-B-Docket # . Comment #)	<b>Commenter</b>	<b>Affiliation</b>	<b>Date Received/ Added to Database</b>
15-B-3.1 – 3.10	Marvin Pineda	ILWU	06/25/20
15-B-4.1 – 4.34	Jesse Marquez	Coalition for a Safe Environment	06/25/20
15-B-5.1	Art Mead	Crowley	06/25/20
15-B-6.1 – 6.34*	Jesse Marquez	Coalition for a Safe Environment	06/25/20
15-B-7.1	Ellen Sweet	350Marin	06/25/20
15-B-8.1 – 8.34*	Jesse Marquez	Coalition for a Safe Environment	06/25/20
15-B-9.1	Ellen Sweet	350Marin	06/25/20
15-B-10.1 – 10.9	Tracy Fidell	Port of Oakland	06/25/20
15-B-11.1	Lindy Lavender	Individual	06/25/20
15-B-12.1	Adrian Martinez	Earth Justice	06/25/20
15-B-13.1 – 13.2	Katrinka Ruk	Council of Business & Industries	06/25/20
15-B-14.1	Sonia Sharp	Individual	06/25/20
15-B-15.1 – 15.2	Giles Pettifor	Port of Hueneme	06/25/20
15-B-16.1 – 16.4	Mark Hughes	IACCC	06/25/20
15-B-17.1	Doug Schneider	World Shipping Council	06/25/20
15-B-18.1 – 18.5	Fe Koons	Philippine Action Group for the Environment	06/25/20
15-B-19.1 0 19.5*	Fe Koons	Philippine Action Group for the Environment	06/25/20
15-B-20.1	Jesse Marquez	Coalition for a Safe Environment	06/25/20

Table 5: Oral Comments Received During the June 25, 2020 Board Hearing

Comment Number (15-OT-Comment #)	Commenter	Affiliation	Date Received/ Added to Database
15-OT-1	Bill Magavern	Coalition for Clean Air	06/25/2020
15-OT-2 – 15-OT-5	Catherine Raheis-Boyd	Western States Petroleum Association	06/25/2020
15-OT-6	Peter Warren	San Pedro Homeowners Coalition and Indivisible San Pedro	06/25/2020
15-OT-7	Will Barrett	American Lung Association	06/25/2020
15-OT-8 – 15-OT-12	Jesse Marquez	Coalition for a Safe Environment	06/25/2020
15-OT-13 – 15-OT-14	David Wooley	UC Berkeley Goldman School of Public Policy	06/25/2020
15-OT-15 – 15-OT-18	Regina Hsu	Earthjustice	06/25/2020
15-OT-19 – 15-OT-23	Janet Rogers	North Embarcadero Coalition	06/25/2020
15-OT-24 – 15-OT-25	Pat Pressel	North Embarcadero Coalition	06/25/2020
15-OT-26 – 15-OT-27	Art Mead	Crowley Maritime Corporation	06/25/2020
15-OT-28	Tommy Faavae	IBEW Local 11	06/25/2020
15-OT-29 – 15-OT-32	Douglas Schneider	World Shipping Council	06/25/2020
15-OT-33 – 15-OT-34	Roman Berenshteyn	Bay Planning Coalition	06/25/2020
15-OT-35	Carlo De La Cruz	Sierra Club	06/25/2020
15-OT-36 – 15-OT-41	Heather Tomley	Port of Long Beach	06/25/2020
15-OT-42 – 15-OT-43	Steve Wallauch	California Association of Port Authorities	06/25/2020
15-OT-44	David Gassman	No Coal in Oakland	06/25/2020
15-OT-45	Christine Austria- Lozoya	IBEW Local 11	06/25/2020
15-OT-46 – 15-OT-49	Brian McDonald	Marathon Petroleum Corporation	06/25/2020
15-OT-50 – 15-OT-52	Captain Saul Stashower	Woodbridge Marine	06/25/2020
15-OT-53 – 15-OT-54	Lee Kindberg	MAERSK	06/25/2020
15-OT-55 – 15-OT-56	Erin Rodriguez	Union of Concerned Scientists	06/25/2020
15-OT-57 – 15-OT-60	Elizabeth Yura	BAAQMD	06/25/2020
15-OT-61	Tom Dow	Carnival Corporation	06/25/2020
15-OT-62 – 15-OT-64	Heather Kyrzcka	Natural Resources Defense Council	06/25/2020
15-OT-65 – 15-OT-66	Joy Williams	Environmental Health Coalition	06/25/2020
15-OT-67 – 15-OT-68	AZ Banguis	Little Manila Rising	06/25/2020
15-OT-69 – 15-OT-71	Thomas Jelenic	PMSA	06/25/2020
15-OT-72 – 15-OT-73	David Yow	Port of San Diego	06/25/2020
15-OT-74 – 15-OT-78	Marvin Pineda	International Longshore and Warehouse Union	06/25/2020
15-OT-79	Diane Flowers	Resident near Port of San Pedro	06/25/2020
15-OT-80 – 15-OT-84	Tim DeMoss	Port of Los Angeles	06/25/2020
15-OT-85 – 15-OT-86	Yassmin Kavezade	Sierra Club	06/25/2020
15-OT-87 – 15-OT-90	Richard Sinkoff	Port of Oakland	06/25/2020
15-OT-91 – 15-OT-96	William Koons	Carson Environmental Commission	06/25/2020

## 1. COMMENTS IN SUPPORT

**Comments:** CARB received broad support from a range of organizations and stakeholders. The following comments support the objectives and goals of the At Berth Regulation: (15-9.1), (15-10.1), (15-13.1), (15-14.1), (15-15.1), (15-17.1), (15-20.1), (15-22.1), (15-23.2), (15, 29.1), (15-31.2), (15-32.1), (15-46.1), (15-50.1), (15-54.1), (15-59\_62.1), (15-65.1), (15-8.1), (15-25.1), (15-B-7.1), (15-B-9.1), (15-OT-6), (15-OT-15), (15-OT-18), (15-OT-28) (15-OT-35), (15-OT-44), (15-OT-45), (15-OT-55), (15-OT-57), (15-OT-65)

**Comment:** The form letter excerpt below was submitted by “over 3,400 Californians” and supports the Regulation.

*“I write to request strengthening regulations to clean up harmful air pollution from the freight industry. For decades, this industry has harmed our lungs and our climate. Cleaning up ships, which burn some of the dirtiest fuels in the world while they are at berth, is a critical strategy to protect us from harmful air pollution. In addition, moving swiftly to adopt life-saving regulations to clean up transportation refrigeration units and commercial harbor craft is critical to providing cleaner air to all Californians. As we seek to clean up the air and clean up climate pollution, these three regulations are amongst the most critical - especially because they provide greater protections for the disproportionately harmed Californians living near our major freight ports and warehouses.*

*It has come to my attention that industry lobbyists are fighting hard to prevent your agency from adopting these life-saving and common-sense regulations. We ask that you have the courage to defend our lungs and public health by adopting these regulations, even in the face of these powerful interests. With your leadership, we can make California's skies cleaner and defeat harmful climate pollution.” (15-B-12)*

**Agency Response to All Comments in Support:** CARB staff made no changes based on the received comments. CARB appreciates the support for achieving public health and air quality benefits, and addressing implementation challenges with the 2007 At-Berth Regulation.

**Comment:** “And the point I want to make here is that this is actually a very good time to implement this rule for several reasons. One, typically, you're going to need some infrastructure for electrification or other -- other control measures. Periods of low cargo intensity are the best time to do that. It has less chance of interfering with operations, and so let's get going. We're also in a period of low interest rates, so if there is a capital need, this is the best time to obtain that capital. There's a stimulus potential here from the construction associated with the infrastructure, which we badly need as part of an economic recovery.” (15-OT-14)

**Agency Response (15-OT-14):** CARB staff made no changes based on the received comment. CARB appreciates the support of the Regulation.

**Comment:** “The Port strongly supports additional emission reductions from vessels at berth to address air quality and community health impacts. We appreciate the hard work by CARB staff and we commend the staff for adding flexibility. We also support the inclusion of an interim evaluation, which will inform the timeline.” (15-OT-36)

**Agency Response (15-OT-36):** CARB staff made no changes based on the received comment. CARB appreciates the support from the Ports on the Regulation.

## 2. INFORMATIVE COMMENTS

The following comments are categorized as providing CARB with informational material related to the Proposed Regulation and its rulemaking process. The comments and materials neither provide objections or recommendations specifically directed at the Proposed Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. Although responses are not required, staff provides the following responses.

**Comment:** The commenter provided email correspondence between CARB and the commenter. The correspondence included information on the Wharf Maintenance and Efficiency Project (WMEP). The information provided consisted of schedules, schematics, and permitting requirements. (15-30.42)

**Agency Response (15-30.42):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information.

**Comment:** The commenter provided a fact sheet on the importance of using inert gas systems and an informational paper on inert gas systems. (15-30.43)

**Agency Response (15-30.43):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information. CARB agrees with the commenter that safety is of utmost importance thus any technology used on or with tankers to comply with the Regulation would need to ensure that the inert gas systems are not affected in a way that could cause safety or fire concerns.

**Comment:** The commenter submitted excerpts from *Conditional 401 Water Quality Certification for Chevron Products Company, Chevron Richmond Refinery Long Wharf Maintenance & Efficiency Project, City of Richmond, Contra Costa County* (issued by the San Francisco Bay Regional Water Quality Control Board, June 23, 2017) (15-30.44)

**Agency Response (15-30.44):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the Richmond Refinery Long Wharf MOTEMS improvements and associated environmental documentation.

**Comment:** The commenter submitted excerpts from California Endangered Species Act Incidental Take Permit No. 2081- 2016-056-07 (issued by the California Department of Fish & Wildlife, Apr. 12, 2017) (15-30.45)

**Agency Response (15-30.45):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the Incidental Take Permit and the impacted marine species as part of the Chevron Long Wharf Maintenance and Efficiency Project.

**Comment:** The commenter submitted a Federal Register Notice issued by the National Marine Fisheries Service, *Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Chevron Richmond Refinery Long Wharf Maintenance and Efficiency Project in San Francisco Bay, California*, 82 Fed. Reg. 27240, 27246 (June 14, 2017). (15-30.46)

**Agency Response (15-30.46):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the Incidental Harassment Authorization that was issued by the National Marine Fisheries Service for the Richmond Refinery Long Wharf Maintenance and Efficiency Project.

**Comment:** The commenter submitted excerpts from *Draft Environmental Impact Statement for the Tesoro Avon Marine Oil Terminal Lease Consideration* (issued by the California State Lands Commission, Sept. 2014) (15-30.47)

**Agency Response (15-30.47):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the *Draft Environmental Impact Statement for the Tesoro Avon Marine Oil Terminal Lease Consideration* which includes discussion of the projects impact to various fish, wildlife, and marine mammals.

**Comment:** The commenter provided excerpts from *Final Environmental Impact Statement for the Tesoro Amorco Marine Oil Terminal Lease Consideration* (issued by the California State Lands Commission, Feb. 2014) (15-30.48)

**Agency Response (15-30.48):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the potential environmental and biological impacts as discussed in the *Final*

*Environmental Impact Statement for the Tesoro Amorco Marine Oil Terminal Lease Consideration.*

**Comment:** The commenter provided the *Final Environmental Assessment/Environmental Impact Report, Maintenance Dredging of the Federal Navigation Channels in San Francisco Bay, Fiscal Years 2015-2024* (issued by the U.S. Army Corps of Engineers and the San Francisco Regional Water Quality Control Board, Apr. 2015) (15-30.49)

**Agency Response (15-30.49):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the seasonal work windows that may need to be adhered to in order to protect fish and wildlife species during in-water construction.

**Comment:** The commenter submitted the *Final Integrated General Reevaluation Report and Environmental Impact Statement, San Francisco Bay to Stockton, California Navigation Study* (issued by the U.S. Army Corps of Engineers, Jan. 2020) (15-30.50)

**Agency Response (15-30.50):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the *San Francisco Bay to Stockton, California Navigation Study* and the associated discussion on the projects impacts.

**Comment:** The commenter provided a copy of the *Notice of Preparation (NOP) of a Draft Environmental Impact Report for the Oakland Waterfront Ballpark District Project* (issued by the City of Oakland, Nov. 30, 2018) (15-30.51)

**Agency Response (15-30.51):** CARB staff made no changes based on the received comment. Staff notes and appreciates the additional information on the *Draft Environmental Impact Report for the Oakland Waterfront Ballpark District* and the associated discussion on the projects impacts.

**Comment:** "The World Maritime Organization is working on a variety of technologies, which will be targeting new builds. So let's -- let's use whatever time you allow us going forward to improve this reg, so it's safe, feasible, flexible, provides community reductions as early as possible, and as cost effective as possible." (15-OT-5)

**Agency Response (15-OT-5):** CARB staff made no changes based on the received comment. Staff notes the comment and looks forward to hearing more about the technologies the World Maritime Organization is working on.

### 3. REGULATION STRUCTURE

**Comment:** "Section 93130.3 Applicability. (b) Federal requirements it indicates that "Noting in the control measures shall be construed to amend, repeal, modify or

change any applicable federal laws or regulations, including the USCG regulations or requirements". The synonyms for the word "construed" are "interpreted, read, taken, seen or understood". Based on this, we do suggest that Control Measures for OGV at Berth construe the air emissions limits regulated under the IMO's MARPOL Annex VI which USCG has incorporated in the US CFRs. We understand CARB may wish to have more stringent limits than the ones in CFRs and in the IMO MARPOL Annex VI but this is a serious challenge to the nature of the international legislation to ensure same applicable standards ships can comply with at any port. No need to stress the consequences is any States or any country setting their own and different limits." (15-35.2)

**Agency Response (15-35.2):** CARB staff made no changes based on the received comment. The Regulation provides pathways for compliance that do not impede other ship standards. There are strategies to reduce vessel emissions which do not require changes to emission limits on vessels, as well as compliance options through Innovative Concepts to achieve emission reductions in other ways. It is up to the vessel operator and terminal operator to determine the best approach for compliance.

**Comment:** "If the terminal is responsible for installing the shoreside electrical power supply, the specifications of the systems should be decided early and disseminated." (15-24.14)

**Agency Response (15-24.14):** CARB staff made no changes based on the received comment. During the development of this Regulation, staff determined Ports and terminals would be required to submit port and terminal plans that discuss how the terminal will comply with the requirements of reducing emissions from vessels prior to the start of emissions reduction compliance deadlines for vessels. Port and terminal plans are to be submitted to CARB by December 1, 2021 and the earliest implementation date for emission control is January 1, 2023.

Submission of the terminal and port plans prior to implementation of emission reduction requirements allows for proper planning between ports, terminals and vessel operators. For example, a ro-ro terminal would be required to submit a plan in 2021 however, vessels would not need to start reducing emissions until 2025 allowing ample time for coordination and planning between the ports, terminals and vessel operators.

**Comment:** "The regulation should be amended to clarify that once a port has provided the infrastructure supporting shore power, the sole responsibility for reducing vessel emissions should be placed on the port tenant and shipping lines." (15-75.5)

**Agency Response (15-75.5):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. The Regulation is

designed to hold all parties responsible for compliance matters that are within their direct control. CARB staff recognizes that ports can play a significant role in the connection and disconnection of a vessel to shore power, and staff have added provisions to strengthen language in the Regulation to ensure that ports are held accountable for infrastructure commitments given in port and terminal plans. Port and terminal plans must assign the roles and responsibilities of each party (See Section 93130.14 (a)(3)(G) and (b)(3)(G)) and must be signed by each party (See Section 93130.14 (a)(4) and (b)(4)). If ports and terminals do not abide by their agreed upon port and terminal plans and if they do not submit a revised plan, they could be held liable for violation of the Regulation. Ultimately, the goal of shared responsibilities is to ensure that terminals and ports are each fulfilling their roles to achieve the necessary emissions reductions and public health benefits of the Regulation.

**Comment:** "Suggestion: Prior to a Port scheduling a visit by a cruise ship line ensure the proposed visiting ship's shore power requirements are known to match the existing shore-power and ensure each arriving ship will have trained personnel to perform hookup to shore power. If the ship cannot connect to the existing infrastructure then enhanced infrastructure be funded by the cruise line: cost of purchase, installation and maintenance of shore power to ensure their line has access to the type of shore power which their ships require to meet environmental mandates. And cruise ship personnel must be trained to perform hook-up to shore-power infrastructure each port terminal they plan to berth." (15-60.8)

**Agency Response (15-60.8):** CARB staff made no changes based on the comment received. The suggestion is outside the scope of this rulemaking, irrelevant, or not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

**Comment:** "If a terminal has rarely visited berths within its terminal does that mean a noncompliant ship would then circumvent simply by assignment by the port to use the rarely used berth at a terminal." (15-60.9)

**Agency Response (15-60.9):** CARB staff made no changes based on the received comment. There are no exceptions for low use berths. All berths at a regulated terminal have applicability requirements. However, if a terminal has less than 20 vessel visits per year they are considered a low-use terminal and are excluded from the emission reduction requirements of the Regulation.

**Comment:** "We hope your regulatory process will include "check-ins" or other types of assessment steps that can allow the various stakeholders to be a part of the implementation process, and assure that the steps envisioned can be implemented." (15-80.4)

**Agency Response (15-80.4):** CARB staff made no changes based on the received comment. As part of the Interim Evaluation (Section 93130.14(d)), CARB staff will assess the progress made in adopting control technologies as well as the status of land-side infrastructure improvements that may be needed to support emission reductions. Additionally, CARB staff will review as part of the Interim Evaluation control technologies for use with bulk and general cargo vessels or for vessels at anchor.

CARB staff welcomes stakeholders to submit information that is relevant to the Regulation. All information provided to CARB staff will be considered, including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies that inform the implementation timeline. As always staff appreciates and looks forward to stakeholder collaboration throughout the development and implementation of this Regulation.

**Comment:** "CARB should maintain a fleet average approach for the existing regulated fleet in order to ensure its continued success and consider the creation of a separate regulatory structure for any expansion fleets." (15-69.12)

**Agency Response (15-69.12):** The 2007 At-Berth Regulation had requirements for fleet based annual averaging where 1) all compliance obligation was on the vessel fleets and 2) determining compliance took months after the end of each year since annual reports are due on March 1 the following year. Regulated parties expressed concerns about both of these aspects of a fleet-based regulation. In response, staff decided to implement an individual compliance requirement for the Regulation.

Removing fleet averaging where all reductions were the vessel's responsibility and moving to a visit based pathway, allows for shared responsibility. Reducing emissions from OGVs is a collaborative effort between vessels, terminal operators, ports, and in some cases, third-party emissions control technology operators. The Regulation has been developed to place responsibilities on all parties involved in the connection, and ensures that compliance obligations are assigned to the appropriate party. In addition, staff believes that at higher levels of compliance, (80 percent to 90 percent) as is required with the Regulation, there would be less ability to absorb missed controlled visits through fleet averaging and shared responsibility will become even more important.

With a per visit compliance obligation, determination of compliance is faster and more streamlined and the regulated parties will have more certainty concerning compliance status. However, if fleets prefer the structure of fleet averaging, regulated entities can apply to CARB to use fleet averaging under the Innovative Concepts Compliance Options (section 93130.17).

**Comment:** “Accordingly, PMSA again requests that the Proposed At Berth Control Measure be bifurcated, consistent with Board direction, into one set of amendments for the existing fleet regulations and another entirely new regulation which is exclusively applicable to expansion fleets.” (15-69.13)

**Agency Response (15-69.13):** CARB staff made no changes based on the received comment. Bifurcating the Regulation, and preserving the 2007 At-Berth Regulations fleet averaging structure does not allow for a shared responsibility which is critical to the success of the Regulation and protects fleets that have done everything they can to comply. For further discussion, see response to comment 15-69.12.

**Comment:** “[R]ecommend that ‘vessel’ be removed from the list of responsible parties when a CAECS has a failure.” (15-57.25)

**Agency Response (15-57.25):** CARB staff made no changes based on the received comment. CARB staff has vessel, terminal, and CAECS operator in the responsible parties table, as all parties could potentially be liable depending on the situation. In a case where a CAECS fails to achieve the emissions reductions required for the visit, CARB enforcement staff will investigate and make a case-by-case decision depending on the individual circumstances of each event.

**Comment:** “CARB staff has created unacceptable non-compliance schemes such as TIE’s and VIE’s for Ports and Terminals to avoid planning their ship compliance needs in advance, budgeting funds in advance, ordering adequate equipment in advance, building electric utility infrastructure in advance and purchasing sufficient equipment in advance.

The Ports and Terminal Operators can list 99% of all possible worst case scenarios and prepare emergency back-up contingency plans today now. These are CARB Management and Staff elaborate schemes to allow ships to continue to maximize their profits, pollute our air and waters and allow significant Public Health Impacts to continue in our communities. (15-B-4.11)

**Agency Response (15-B-4.11):** CARB staff made no changes based on the received comment. Vessel and terminal operators will not be able to comply with this rule without planning in advance. TIEs and VIEs are limited in number, but CARB staff believes the rates of TIEs/VIEs are set high enough to ensure that vessels and terminal operators can be compliant using their planned strategy. TIEs have been set at 15 percent for the initial compliance years of 2023 and 2024 to help assist industry with the transition to the new regulatory structure and in recovery from the global economic downturn. TIEs will then be reduced to down to 5 percent starting in 2025 to protect the emissions benefits of the Regulation. The Regulation as designed will achieve significant emissions

reductions from ocean-going vessels at berth and provide significant benefits to public health.

**Comment:** “We want all responsible parties, the ports, terminal operators, ships and third party testing companies to be held jointly and severally liable for violating this Control Measure. We do not accept Staffs wording of “may be held Liable.” Again another CARB staff attempt to minimize enforcement in EJ Port Communities.” (15-B-4.12)

**Agency Response (15-B-4.12):** CARB staff made no changes based on the received comment. The Regulation as written allows CARB to hold responsible parties to requirements following CARB’s Enforcement Policy.

**Comment:** “CARB staff was directed by CARB Board Members at the December CARB Meeting to include Dry Bulk, Break Bulk and General Cargo Ships but staff has failed to include them in Table 1. CARB was presented an engineering firms data in December showing the significant amount of emissions of Dry Bulk, Break Bulk and General Cargo Ships and staff has not provided any evidence or data to validate an exemption.” ( 15-B-4.13)

**Comment:** “CARB staff also did not include Dry Bulk, Break Bulk and General Cargo Ships in Terminal Plans. Reference: Section 93130.14. Terminal and Port Plans and Interim Evaluation\_CARB staff also did not include Dry Bulk, Break Bulk and General Cargo Ships in Table 4: Remediation Fund Hourly Amount.” (15-B-4.14)

**Agency Response (15-B-4.13) and (15-B-4.14):** CARB staff made no changes based on the received comments. The Board directed staff to include bulk and general cargo vessels in the Interim Evaluation to review potential control technologies for use in these applications. This addition can be found in section 93130.14(d) of the Regulation. The exclusion of bulk and general cargo vessels is discussed in the ISOR beginning on page III-4. As a result of bulk and general cargo vessels being excluded from emissions control requirements, there is no need for these vessels or terminal operators to submit a vessel or terminal plan, or be included in the remediation fund hourly amount.

**Comment:** “We Want Ship Emissions Compliance At All Ship Locations

- A. At-Dock
- B. At-Anchor In Port Waters
- C. At- Anchor Outside Of Break Water
- D. At-Anchor In California Coastal Waters” (15-B-4.15)

**Agency Response (15-B-4.15):** CARB staff made no changes based on the received comment. The Regulation includes opacity requirements at berth and at anchor in section 93130.6 and at-dock requirements in sections 93130.7 and 93130.9. Control technologies for emissions in on ocean-going vessels at

anchor do not yet exist. The Board directed staff to include vessels at anchor in an Interim Evaluation to review potential control technologies. This addition can be found in section 93130.14 (d) of the Regulation.

**Comment:** "We Want The AT Bert Rule To Include The U.S. EPA North American and U.S. Caribbean Sea Emissions Control Areas Penalty Policy for Violations by Ships of the Sulfur in Fuel Standard and Related Provisions The regulation fails to reference and include all international IMO ship mandatory requirements and penalties. We request that CARB research and include all applicable IMO requirements for inclusion in this regulation." (15-B-4.22)

**Comment:** "The rule must also comply with IMO ship mandatory requirements and penalties." (15-B-18.3)

**Agency Response (15-B-4.22) and (15-B-18.3):** CARB staff made no changes based on the received comments. CARB enforces the Regulation "Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline." Vessel operators should comply with all IMO and federal requirements independent of any California rulemaking. CARB staff is unable to enforce IMO rules, it is outside of our jurisdiction.

**Comment:** "CARB needs to add mitigation measures." (15-B-18.4)

**Agency Response (15-B-18.4):** CARB staff made no changes based on the received comment. The commenter did not include clarification on what they mean with mitigation measures. CARB included the concept of a remediation fund in the proposal, see sections 93130.15 and 93130.16. This fund allows compliance under limited circumstances listed in 93130.15 (b) where a vessel operator, terminal operator, CAECS operator, or port may qualify to remediate emissions. This is a way to mitigate emissions.

*i. Connection/Disconnection Time*

**Comment:** "Maintain the current timeframe standards, or make them tougher, to connect to shore power. One hour after the ship docks to berth is acceptable. Changing this connection time to 2 hours after Ready to Work, in our situation, is unacceptable. Vessels and the Port need to make sure that the connections are maintained and labor is available to connect in one hour. Please do not lower standards to more than two hours to connect to shore power" (15-33.3) (15-34.3) (15-37.3) (15-38.3) (15-39.3) (15-40.3) (15-41.3) (15-43.3) (15-45.3) (15-47.3) (15-56.3) (15-64.3) (15-66.3) (15-67.3), (15-73.3), (15-74.3), (15-76.3), (15-77.3), (15-79.3), (15-63.3), (15-60.3), (15-44.3)

**Comment:** "San Diego's Port Authority allows cruise ships to re-engage their engines 1/2 hour before leaving the berth. I want that to continue. A one hour timeframe to pollute, is not necessary." (15-33.4) (15-34.4) (15-37.4) (15-38.4) (15-39.4) (15-40.4) (15-41.4) (15-43.4) (15-45.4)(15-47.4) (15-56.4) (15-64.4) (15-66.4) (15-67.4), (15-73.4), (15-74.4), (15-76.4), (15-77.4), (15-79.4), (15-63.4) (15-44.4)

**Comment:** "All cruise ships berthing here should be required to connect to shore power within one hour of arrival, and should not be permitted to utilize onboard diesel engines thereafter until one half hour prior to departure." (15-36.2)

**Comment:** "I am also concerned about increasing the time after docking to berth to connect to shore power, particularly since the total time (including the time to get clearance) can be considerably longer than 2 hours." ( 15-42.2)

**Comment:** "They need to hook up within 1/2 hour after docking. This needs to apply to ALL ships" (100%). (15-70.2)

**Comment:** "We are concerned about the timing to connect and disconnect cruise ships. Please don't extend the time to connect to shore power to two hours, as the 15-day rule changes proposes." (15-OT-21)

**Comment:** "We ask the cruise ships connect within one hour of docking." (15-OT-22)

**Agency Response (15-33.3) (15-34.3) (15-37.3) (15-38.3) (15-39.3) (15-40.3) (15-41.3) (15-43.3) (15-45.3) (15-47.3) (15-56.3) (15-64.3) (15-66.3) (15-67.3), (15-73.3), (15-74.3), (15-76.3), (15-77.3), (15-79.3), (15-63.3), (15-60.3), (15-44.3) (15-33.4) (15-34.4) (15-37.4) (15-38.4) (15-39.4) (15-40.4) (15-41.4) (15-43.4) (15-45.4)(15-47.4) (15-56.4) (15-64.4) (15-66.4) (15-67.4), (15-73.4), (15-74.4), (15-76.4), (15-77.4), (15-79.4), (15-63.4) (15-44.4) (15-36.2) (15-42.2), (15-70.2), (15-OT-21) and (15-OT-22):** CARB staff made no changes based on the received comments. CARB staff understands that some vessels can connect faster than the required two-hours, including some cruise vessels which can connect in less than one-hour. However, based on shore power connection data received by CARB, a significant portion of vessels cannot routinely connect in under one-hour. As such, CARB staff have allotted two-hours to complete this connection process. See Master Response 4 for more details on connection and disconnection times.

**Comment:** "Who has responsibility for emission control violations if more than two hours have passed since "Ready to Work" due to delays by shore-side works and/or any other reason to connect shore power. It should not be on vessel." (15-24.7)

**Agency Response (15-24.7):** CARB staff made no changes based on the received comment. Depending on the circumstances either the vessel operator, CAECS operator, terminal or a combination of the parties involved may be held responsible for failing to connect to a CAECS in less than two hours. For example, if labor on a vessel is not ready to connect, however

terminal labor is ready and willing, CARB enforcement staff would evaluate and could find that the vessel was responsible for not upholding their requirement to, "[b]egin controlling emissions with shore power or another CAECS within two hours after 'Ready to Work.'"

**Comment:** "1 hour" indicated in Section 93130. 7(e)(3)(A) and (B) should be relaxed to "6 hours." (15-24.15)

**Agency Response (15-24.15):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as six-hours for connection should not be necessary. See Master Response 4 for further discussion on why the one-hour emissions control requirement was increased to two-hours and why staff believe the requirement is achievable.

**Comment:** "[R]ecommend that vessels be required to begin using shore power or another CAECS within three hours after 'Ready to Work'." (15-57.12)

**Agency Response (15-57.12):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as an additional hour (three-hours total) for connection should not be necessary. See Master Response 4 for further discussion on why the one-hour emissions control requirement was increased to two hours and why staff believe the requirement is achievable.

**Comment:** "[R]ecommend that the shore power disconnection time be no sooner than two hours before 'Pilot on Board'." (15-57.13)

**Agency Response (15-57.13):** CARB staff made no changes based on the received comment. The requirement for disconnection from a control system is no sooner than one-hour before pilot on board. CARB staff chose the timeframe of one-hour before pilot on board, to allow for time to disconnect before the pilot arrives providing the opportunity for a prompt departure. However, if disconnection time takes longer than one-hour prior to pilot on-board disconnection may be made sooner and additional emissions may be remediated by use of the remediation fund. The goal of the Regulation is to control as many emissions as possible for each and every vessel visit.

**Comment:** "CARB staff has revised the one-hour limit on the connect and disconnect times for shore power to a two hour connect time limit and one-hour disconnect time limit. While it is appreciated that the infeasibility of the one-hour requirement was acknowledged, a two-hour requirement is still arbitrary and capricious and not based on any evidence that it is safe or feasible. As we have said in previous letters, the existing rule permits multiple connection strategies, some of which will require more than one hour. More importantly, the shore power connection process requires individual people to manhandle heavy, high voltage equipment and energize that

equipment – sometimes in adverse weather conditions. Under no circumstances should that work be performed under a stopwatch. The two-hour requirement would likely be ineffective because any exceedance of the one-hour requirement would likely result in a safety exemption being sought, as having labor move faster handling high voltage equipment would be fundamentally unsafe. CARB staff has still provided no basis on which it can be assumed that connection times can be consistently and safely accelerated. In fact, no data is available from CARB justifying the previous one hour connection window or the new two-hour connection window.” (15-68.27)

**Agency Response (15-68.27):** CARB staff made no changes based on the received comment. See Master Response 4 for discussion on connection and disconnection times. CARB staff agrees that connection and disconnection should be done safely and has provided a safety exemption as mentioned by the commenter as well as an option to remediate excess emissions by the remediation fund if the connection times are outside the requirements of the Regulation.

*ii. Commissioning*

**Comment:** “In discussions with CARB staff, PMSA understands that the proposed requirement that “[t]he port or terminal operator is responsible for commissioning vessels equipped with compatible shore power that is installed on the side of the vessel facing the wharf when berthed” means that upon the commissioning visit of a vessel to a terminal, the terminal can indicate whether their terminal will commission the vessel starboard side to or port side to, consistent with the design and operation of the terminal. PMSA believes that ports and terminal operators are responsible for commissioning vessels without the need for the enunciation of such responsibility in regulation as issues of berthing should be privately agreed to between the terminal operator and ocean carrier and not be prescriptively enforced through regulatory mechanism. PMSA recommends that CARB strike all prescriptive language on berthing orientation and allow terminal operators and ocean carriers to actively manage these issues privately amongst the two parties for peak efficiency.” (15-69.35)

**Agency Response (15-69.35):** CARB staff made no changes based on the received comment. CARB staff included this language in the 15-day changes released in March 2020 to ensure that terminal operators are not held responsible for connecting a vessel to shore power if the vessel does not have a connection point on the side that a terminal can berth the vessel. For example, if a terminal is only able to accommodate a vessel berthing on the port side, they would not have an obligation to commission the vessel’s shore power if it was located on the starboard side. In this case, the vessel would be responsible for making their shore power commissionable with the terminal, including moving their shore power connection box or installing shore power on both

sides of the vessel. In these cases, it is important to delineate responsibility for easier enforcement if disagreements on commissioning arise.

**Comment:** "(Section 93130.9 (a)(2)): While we do not believe it was CARB's intent, the proposed amendment could be read as allowing ports or terminal operators to dictate on which side vessels seeking to have their installed shore power systems commissioned must connect. This is unacceptable. We therefore strongly recommend that this provision be replaced with the following:

'(2) The port or terminal is responsible for commissioning vessels fitted with installed shore power equipment.'" (15-57.15)

**Agency Response (15-57.15):** CARB staff made no changes based on the received comment. This was actually CARB staff's intention. See example in response to comment 15-69.35 as to why staff thought this was necessary to include.

### *iii. Remediation Fund*

**Comments:** "[M]oney from penalties or alternative compliance actions should be spent in consultation with local communities on local emission reduction actions." (15-11.2), (15.14.3), (15-16.2), (15-18.2), (15-19.2), (15-46.3), and (15-71.2)

**Agency Response (15-11.2), (15.14.3), (15-16.2), (15-18.2), (15-19.2), (15-46.3) and (15-71.2):** CARB staff made no changes based on the received comments. Remediation funds will be spent in the communities impacted by the excess emissions created from ports and marine terminals. The fund administrator will ultimately be responsible for determining the process for selecting projects and determining the level of engagement with local communities. The process for selecting projects will be described in their Memorandum of Understanding, as required by the application provision in section 93130.16(c)(3).

**Comment:** "We support the establishment of a mitigation fund to be used in communities impacted by uncontrolled emissions. We request that the mitigation fund language be amended to require an annual report to the public on how the mitigation funds are being spent." (15-29.2)

**Comment:** "[R]equest that ARB ensures that fund administrators, working with air districts or directly with ARB via a Memorandum of Understanding, have an obligation to provide an annual report to the public as to how funds have been administered. Although the SOR provides for semi-annual reporting to ARB, there is no provision for an annual accounting of mitigation funds to the public. For an example of how this is done, we refer ARB to the Harbor Community Benefit Foundation, which partners with

the Port of Los Angeles to gather and spend container fees to decrease community impacts of port operations. (15-8.2)

**Agency Response (15-29.2) and (15-8.2):** CARB staff made no changes based on the received comments. There is a reporting requirement that must be included with any Memorandum of Understanding between CARB and a fund administrator. The reports must be provided to CARB semi-annually per section 93130.16(h)(6). Staff will share these reports upon request to the extent that they can be made public based on the Memorandum of Understanding with the administrator and in light of proprietary or confidential business information.

**Comment:** “Where applicable, the remediation fund revenues should be used to implement strategies included in adopted Community Emission Reduction Plans. BAAQMD encourages CARB to require community input in instances where incentives are used to mitigate impacts to AB 617 communities or other disadvantaged or low-income communities.” (15-26.6)

**Agency Response (15-26.6):** CARB staff made no changes based on the received comment. The strategy of developing projects is left up to the fund administrator. CARB is looking first toward the Districts to administer these funds, and encourages community involvement and input as appropriate. Under the Memorandum of Understanding, CARB expects the fund administrator to prioritize eligible projects in AB 617 communities. See section 93130.16(h)(3) on how fund administrators are to prioritize projects including those in AB 617 communities.

**Comment:** “Is there an incentive for a Port terminal operator to prefer remediation rather than ensure an individual cruise ship actually meets environmental mandates? Is the ‘remediation’ actually cost effective for the ship fleet operator?” (15-60.6)

**Agency Response (15-60.6):** CARB staff made no changes based on the received comment. CARB staff does not make it possible for an operator to prefer remediation over direct compliance as the remediation fund requires operators to have already made enforceable commitments to controlling emissions at berth (i.e. cruise vessels need to have shore power). The remediation fund is intended to cover limited situations where a strategy would be rendered unavailable like equipment repairs, delays with using a strategy, or construction. See section 93130.15(b). It is not a direct compliance method, but if it were, CARB staff does not believe the remediation fund would be a cost effective compliance option. CARB based the remediation fund amount on par with the advanced technology limit for cost effectiveness under the Carl Moyer program guidelines. This ensures a high likelihood that any project funded by the remediation funds will sufficiently reduce emissions above those generated by vessels utilizing the remediation fund option for compliance.

**Comment:** “The rule as written does not ensure that Remediation funds are available in each port prior to full implementation on 1/1/2020, and we now question whether these Fund Administrators could be established, and MOUs completed in the few months remaining. We also are concerned about the lack of alternatives (CAECS), with no alternatives in most ports and only one prototype system each in LA and Long Beach.

Recommendation: CARB needs to align implementation schedules to ensure that the defined compliance pathways are available in each port prior to required compliance at that port.” (15-27 and 15-28.4)

**Agency Response (15-27) and (15-28.4):** CARB staff modified the proposed regulatory language in response to the received comments. The comments accurately portray concern that the remediation fund option is only an option if a remediation fund administrator exists through the execution of a MOU with CARB. The implementation of this section of the Regulation was changed to January 1, 2023, so this is no longer an issue. This allows for additional time to establish fund administrators.

**Comment:** “Accelerated compliance dates in the 15-day package to potentially require use of the remediation fund on an extended basis. The remediation fund compliance option is intended to be used in limited circumstances. However, the accelerated compliance dates could cause operators to resort to having to use the option for a longer period of time. The terminal plan will provide a list of known constraints to CARB including those out of an operators control, such as permitting, availability of necessary equipment or labor to meet the compliance deadlines. MPC recommends that the regulation not require an operator to utilize the remediation fund compliance option if the operator is acting in good faith, investing in a CAECS or Innovative Concept, in accordance with an approved plan.” (15-72.4)

**Agency Response (15-72.4):** CARB staff made no changes based on the received comment. CARB expects the Regulation to be complied with upon the implementation dates which begin in 2023. Delays in compliance result in increased emissions affecting communities surrounding the ports. The remediation fund is an option when a terminal is undergoing construction to ensure that the communities impacted by excess emissions will have a remedy for the situation.

**Comment:** “We agree with the World Shipping Council that the remediation fund should be expanded to allow vessels making infrequent calls to use the fund.” (15-58.4)

**Agency Response (15-58.4):** CARB staff made no changes based on the received comment. The remediation fund option was designed specifically to disallow

payment to bypass direct compliance. It is only eligible if the regulated parties have made efforts to comply with the rule. Enabling vessels to use the fund without commitment to comply could be construed as bypassing the most direct method of providing emissions reductions, could encourage more low use vessel visits, and more vessel visits without reductions.

**Comment:** "Remediation Fund Use: This remediation fund would apply only to vessels that already have complied with the rule by installing on-board shore power technology, or that are using an alternative if a vessel can use an alternative, for circumstances beyond the control of the vessel operator. Vessels won't know for up to 30 days after requested if such request to use the fund is granted by CARB, and ineligible requests to use the remediation fund for a vessel visit will result in that visit being considered non-compliant with this regulation. Why should vessels be in violation of, or non-compliance with, a regulation under the listed scenarios that, as a practical matter, cannot be controlled 100% of the time - particularly if they will not know their compliance status until they have left port? The reality is that companies will not "plan to be non-compliant" as that would surely subject them to a violation. These issues are of concern to cruise vessels because they cannot use the existing approved alternative compliance options. The criteria for vessels to qualify for the remediation fund, like the VIEs and TIEs, should be clearly stated to allow the vessels to know at the time a problem arises that they either can or cannot use the fund." (15-58.7)

**Agency Response (15-58.7):** CARB staff made no changes based on the received comment. The eligible situations to use the remediation fund are listed in section 93130.15(b) and are known prior to a vessels arrival. CARB staff agrees that companies do not plan to be non-compliant, but there are situations, especially construction and repairs, where a company will not be able to reduce emissions as required. The remediation fund ensures that there are options available to companies to remain compliant, while ensuring that communities are made whole for the excess emissions they are impacted by.

**Comment:** "The regulation continues to require extremely high remediation fees, even though shorepower is already installed on the ships. The fee will be assessed on a per hour rate when many of the scenarios cannot be resolved within hours or days, but rather months. This is extremely punitive for an equipment part that is not available quickly, for instance. It is particularly punishing for large cruise ships which are subject to the highest \$12,000 per hour fee since they have no alternative compliance measure identified by CARB that will work on a cruise ship. At \$12,000 per hour, if an equipment part takes 3 months to obtain, the fee for cruise ships could be in the millions. The methodology for these charges should be revised to be fairer among various vessel types, and longer-term issues should be assessed at lower rates. Without these changes, the remediation fee acts not like a fair alternative emission control option, but rather a major penalty that is usually reserved for willful or intentional violations. (15-58.8)

**Agency Response (15-58.7):** CARB staff made no changes based on the received comment. Vessel operators and terminals have access to TIE/VIEs to address a limited number of issues during visits at their discretion. Remediation fees are proportional to the excess emissions communities are expected to be impacted by during a vessels visit. Cruise ships require more power at berth than any other vessel category and in comparison to other vessel visits are the highest emitters; therefore the fees for cruise ships are higher than other vessel types. If a spare part costs less than the amount it would cost to use the remediation fund for 3 months, then it would be a better option to keep a stock of spare parts.

**Comment:** “The language restricting the use of Remediation Funds in Section 93130.16 is so broad as to potentially bar any conceivable project and must be revised. The restriction on projects identified in AB 617 Community Emission Reduction Programs (CERP) is inappropriate on two counts. CERPs are not enforceable and there is no guarantee that projects identified in CERPs will be initiated. As a result, CERPs actually outline projects that should be prioritized for funding from sources such as the At Berth Remediation Fund. In addition, CERPs represent communities that the State has identified for new investment. The proposed language would functionally cut off identified communities from a funding source.

PMSA proposes that the Remediation Fund have the same limitation that CARB always uses for incentive programs that the projects result in emission reductions that are real, quantifiable, verifiable, enforceable, and surplus.” (15-69.22)

**Agency Response (15-69.22):** CARB staff made no changes based on the received comment. To maximize reductions and benefits to the community, CARB has made sure that remediation fund money cannot be used to reduce emissions from projects that are likely to come to fruition without the fund. Projects identified in a Board approved AB 617 plan create obligations to reduce emissions that are beyond Regulation requirements and adds a level of certainty that the projects will be completed. Funding an AB 617 project with money garnered from a compliance obligation would not be a net benefit to the community.

**Comment:** “We recommend that CARB expand the list of circumstances in which vessel operators may use the remediation fund to include vessels that make infrequent calls to California ports (e.g. less than 3 calls per year).

We also request that CARB confirm that if a vessel’s request to use the remediation fund for a particular visit is denied by CARB, the vessel may use a VIE for that visit instead of being subject to penalty action.” (15-57.23)

**Agency Response (15-69.22):** CARB staff made no changes based on the received comment. See response to comment 15-58.4 regarding the infrequent

calls. If a request to use the remediation fund is denied, a VIE or TIE could be used instead.

**Comment:** “We do not want CAPCOA or an Air District to be a Remediation Fund Administrator and we do not approve of the use of an unenforceable and unappealable Memorandum of Understanding or “similar agreement”. We want a legal signed contract between all parties.

CAPCOA and Air districts have not supported EJ Communities Proposals, Requests, Recommendations, Appeals and Lawsuits 90%+ of the time in the past. The Harbor Community Benefit Foundation in San Pedro in Southern California and the Rose Foundation in Oakland in Northern California are qualified to administer this fund.” (15-B-4.17)

**Comment:** “We do not want CAPCOA to be part of the remediation fund. There are adequate nonprofit foundations such as the Harbor Community Benefit Foundation and the Rose Foundation who have this responsibility.” (15-OT-11)

***Agency Response (15-B-4.17) and (15-OT-11):*** CARB staff made no changes based on the received comment. Air districts are the preferred administrator as their agency goals and expertise align strongly with reducing air emissions and administering funding programs. The requirements of a MOU under the remediation fund ensure that the benefits of a remediation fund project will remain in the affected communities around the ports. If the district with jurisdiction in the region chooses not to apply to administer the funds, then other qualified non-profit organizations may be considered.

**Comment:** “We support the remediation fund as a limited compliance option under the regulation. But where applicable, we recommend that the revenues be used to implement strategies included in the adopted 617 community emission reduction plans, again so that they have the full community support there.” (15-OT-60)

***Agency Response (15-OT-60):*** CARB staff made no changes based on the received comment. CARB staff believes that the remediation fund money should be spent on actions that are in addition to other efforts including strategies approved and planned in AB 617 communities. Remediation funds can be spent on actions not already under obligation to ensure that the emission reduction benefits in the communities are maximized.

#### *iv. Interim Evaluation*

**Comment:** “BAAQMD supports the assessment of control requirements for bulk vessels and requests that CARB staff include information about the air quality impacts to communities resulting from projected increases in bulk vessel activity in an uncontrolled scenario.” (15-26.3)

**Agency Response (15-26.3):** CARB staff made no changes based on the received comment. CARB staff appreciates the support, and will continue to monitor impacts on port communities if bulk vessel activity increases. In Resolution 20-22, CARB committed to evaluate the potential feasibility of control technologies for use with bulk and general cargo vessels as part of the Interim Evaluation. No changes to the Regulation are needed to address this comment.

**Comment:** “If CARB’s interim evaluation determines that such control technologies are not practicable and commercially available at the terminals used by ro-ro vessels, then CARB will need to push back the compliance deadline. We also recommend that CARB include in its interim evaluation a detailed cost-benefit analyses for controlling ro-ro auxiliary emissions using available control technologies.” (15-57.22)

**Agency Response (15-57.22):** CARB staff made no changes based on the received comment. CARB confirms that the Interim Evaluation in 2022 will be used to reassess the ro-ro vessel timelines and make any further adjustments if necessary at that time, depending on the outcome of the Interim Evaluation. CARB staff has already provided a detailed cost-benefit analysis for controlling ro-ro auxiliary emissions using available control technologies, and will likely not provide a new cost-benefit analysis during the Interim Evaluation. See response to comment 45.11 for more information on the ro-ro analysis staff performed for the Regulation.

**Comment:** “Even as amended, however, the “interim evaluation” provision is no substitute for conducting a proper feasibility study before mandating a control strategy, not after. These amendments do nothing to relieve facility operators of the Proposed Regulation’s infeasible emissions reduction requirements, and they still do not require CARB to conduct the feasibility study necessary to assess the safety and feasibility of installing the very capture and control systems required by the Proposed Regulation. In our March 6, 2020 comment letter to the Board, WSPA reinforced the need for a proper feasibility study for stack capture and control systems on tankers, and proposed redlines that described the minimum elements that should be required as a part of any proposed “interim evaluation.” Still, with or without an “interim evaluation” after adoption of the Proposed Regulation, a feasibility study is still needed before any regulation is adopted, and likely would take approximately three years. With the now-accelerated deadline of December 2022 for an interim evaluation, there is no way that interim evaluation could possibly be informed by a full and complete feasibility study or could itself seriously evaluate potential technological feasibility concerns created by the Proposed Regulation.” (15-49.77)

**Agency Response (15-49.77):** CARB staff made no changes based on the received comment. CARB staff disagrees with two points in the received comment. First, CARB staff disagrees with the commenter’s assertion that the regulatory requirements are infeasible. See response to comments 22.26 and

15-69.14 for staff's response to this claim. Secondly, staff disagree with the commenter's claim that the Regulation mandates use of a control strategy. The Regulation does not mandate any specific control strategy, rather it gives vessels and terminals the flexibility to select the technology that works best with the vessel and/or terminal's operations.

The Interim Evaluation is not meant to be substitute for a feasibility study. Staff's Interim Evaluation provides CARB staff the opportunity to assess the progress being made towards the adoption of existing control technologies or new innovative technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will use the outcome of the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff's findings at that time.

CARB staff understands that there are some site specific technical and safety concerns that must be worked out if a tanker vessel opts to use a capture and control system to comply with the Regulation. Site-specific feasibility studies must be undertaken by the regulated entities themselves, as CARB staff does not have access to the information needed for each site location to perform this type of analysis. Staff also understands these feasibility studies take time to complete, but disagree with this commenter's assertion that a feasibility study could not present meaningful information by the time of the Interim Evaluation in 2022. Compliance with the Regulation can also be achieved through use of an Innovative Concept project, for which staff do not anticipate a feasibility study being required.

**Comment:** "[R]equest a mechanism in the regulations that allows for a timely reassessment and greater flexibility in the event that economic conditions require it." (15-B-3.6)

**Agency Response (15-B-3.6):** CARB staff made no changes based on the received comment. CARB staff believes that the Interim Evaluation (93130.14(d)) in the Regulation provides both staff and stakeholders an appropriate opportunity to re-evaluate the Regulation based on updated economic conditions in 2022. Outside of the Interim Evaluation, CARB staff can petition the Board to request amendments to the regulation should outstanding circumstances arise. No changes to the Regulation are needed in response to this comment.

**Comment:** "We Want No At Berth Rule Interim Requirements. Any and all requirements must be mandatory and clearly defined. We want no waivers, variances and extensions for non-certified technology. There can be an approved Pilot Project or Test Demonstration in preparation for final CARB Certification." (15-B-4.20)

**Agency Response (15-B-4.20):** CARB staff made no changes based on the received comment. CARB staff believes the Interim Evaluation is necessary to provide staff with an opportunity to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will also use the Interim Evaluation to assess control technologies for use with bulk and general cargo vessels, and for OGVs at anchor, and potential requirements for these vessel types. The outcome of the Interim Evaluation will be used to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff's findings at that time.

CARB staff does not intend to issue waivers, variances, or extensions for any technologies without CARB approval. Each technology applying for CARB approval is required in the Regulation to undergo testing (section 93130.5).

**Comment:** "There's also a need for a reassessment of the technology development. The development, deployment, and commercialization of alternative technologies and capture control measures has its challenges. And the development of infrastructure to support that technology can take several years. So we think we need to have some -- to have the opportunity to reassess where we're at in terms of the deadlines that are in place." (15-OT-43)

**Agency Response (15-OT-43):** CARB staff made no changes based on the received comment. CARB staff intends to use the Interim Evaluation in 2022 to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. The outcome of the Interim Evaluation will be used to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff's findings at that time.

**Comment:** "Second, shore-power technology is more compatible with some ship categories than others. We hope your rulemaking process will allow for assessment of the feasibility of use of shore power and any alternatives for the tanker and ro-ro ship categories before actual requirements going into effect." (15-OT-81)

**Comment:** "[W]e hope your regulatory process will include check-ins or other types of assessment steps that can allow the various stakeholders to be part of the implementation process and assure that the steps envisioned can be implemented." (15-OT-83)

**Agency Response (15-OT-43):** CARB staff made no changes based on the received comment. CARB staff assessments of the feasibility of shore power and other alternative emissions control technologies played an important part

in the rulemaking process. As there is not a “one-size fits all” solution for reducing emissions from vessels at berth, the Regulation was designed in such a way that allows regulated entities the flexibility to select the technology that works best with the vessel and/or terminal’s operations.

The 2022 Interim Evaluation will act as a continuation of feasibility studies already conducted during the development of the Regulation. The Interim Evaluation will provide CARB staff the opportunity to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. As part of the Interim Evaluation, CARB staff will evaluate the information provided by the port and terminal plans required by the Regulation, as well as other public information provided to CARB including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies that inform the implementation timeline. Staff will use the outcome of the Interim Evaluation to recommend any necessary changes to compliance deadlines depending on the outcome of staff’s findings at that time.

v. *Applicability and Exceptions*

**Comment:** “[W]e request placing the sole responsibility of reducing vessel emissions solely on the Port tenant and shipping lines once the Port provides the supporting infrastructure.” (15-25.4)

**Agency Response (15-25.4):** CARB staff modified the proposed regulatory language in response to the received comment. CARB clarified the shared responsibility of ports with terminals in section 93130.13(b) and (c). Each port and terminal relationship may be different, so the responsibilities must be described and agreed upon in the port and terminal plans.

**Comment:** “[W]e should be able to refrain from using shoreside electrical power for LNG-fueled vessel by reporting or verifying that LNG fuel has been used in port.” (15-24.5)

**Agency Response (15-24.5):** CARB staff made no changes based on the received comment. See response to comment 17.21 for an explanation of why a vessel wishing to use LNG to comply with the Regulation must submit documentation as required in Section 93130.5 and be approved by CARB prior to use, similar to any other technology or compliance strategy.

**Comment:** “Unlike containerships, RORO vessels have a short berthing time. Therefore, the target vessels should limit the number of annual calls to seven or more and berthing time to 24 hours or more.” (15-24.16)

**Agency Response (15-24.16):** CARB staff made no changes based on the received comment. The Regulation took into account the shorter stays of ro-ro vessels and determined that significant reductions could be achieved from these vessels even during short stays.

**Comment:** “We do not want to wait for Ports to take 2-3 years to develop their responsibilities. We want CARB to hold 2-3 public hearings within 6 months to develop preliminary Port Responsibilities. They can be fine-tuned by ports who may have some special circumstances.” (15-B-4.19)

**Agency Response (15-B-4.19):** CARB staff modified the proposed regulatory language in response to the received comment. Staff has held many public workshops, meetings, phone calls, conferences, and other engagements with the public in developing the Regulation which created responsibilities for the ports, terminals, and vessel operators. See Appendix F of the ISOR. CARB staff expects plans to be developed much faster than 3 years. Port and terminal plans are due in December 2021 providing ports roughly one year to finalize plans.

**Comment:** “We want all ship categories to be included. They have intentionally continued to avoid the dry bulk, bulk loading, and general cargo type ships. We want them to be included.” (15-OT-10)

**Comment:** “The At-Berth Rule should be applicable to all categories of ships with no exemptions.” (15-OT-67)

**Comment:** “So I request the following basic changes to the At-Berth Rule. Number one, first that the regulation include all categories of ships with no exceptions or exemptions. And that includes ships like dry bulk and general cargo ships.” (15-OT-91)

**Comment:** “[Want the] regulation [to] require ship emissions compliance at all ship locations, including at dock, at anchor --and anchor being port water -- port waters outside of the breakwater and even in the coastal waters.” (15-OT-94)

**Agency Response (15-OT-10), (15-OT-67), (15-OT-91), and (15-OT-94):** CARB staff modified the proposed regulatory language in response to the received comments. Staff is committed through the Interim Evaluation (see section 93130.14 (d)), to review control technologies for use with bulk and general cargo vessels. Staff made a determination to exclude bulk and general cargo vessels in this Regulation as described in the ISOR in Chapter III B.1. Additionally, in the Interim Evaluation, CARB will explore control options for vessels at anchor.

**Comment:** “And we believe that the rules should be maintained for container ships.” (15-OT-87)

**Agency Response (15-OT-87):** CARB staff made no changes based on the received comment. The Regulation maintains requirements for container vessels with the goal to control as many emissions as possible for each and every vessel visit. However, the Innovative Concept is a pathway for vessels to comply using a fleet averaging approach as long as equivalent emissions reductions are achieved for the impacted communities.

vi. *Reporting and Recordkeeping*

**Comment:** “The reporting requirements for general cargo and bulk vessels add a real, quantifiable burden to bulk and general cargo vessel operators, but do not advance any emissions reduction program in California. The State should not impose costly reporting requirements for the sole sake of collecting more information, particularly when there is no planned use for that data. If CARB identifies a future need for such data, it is readily available through alternative sources such as marine exchanges or port authorities. There are even existing regulatory tools in place like the OGV fuel rule that CARB can use to obtain vessel information and ensure significant emission reductions. There is no reasonable basis to place a permanent, costly reporting burden for no measurable or identified benefit.” (15-69.36) (15-68.28)

**Agency Response (15-69.36) and (15-68.28):** CARB staff made no changes based on the received comments. Reporting is an effective method to monitor activity for substantial increases at California ports. Receiving this information is essential to helping CARB evaluate the potential for control requirements for bulk and general cargo vessels and will also be used to refine and update CARB’s statewide emissions inventory for bulk and general cargo vessels. To assist with streamlining reporting, and minimize financial burdens, CARB is developing an online reporting system called the FRRS, which is intended to replace individual freight reporting systems currently used and overall simplify the reporting process.

**Comment:** “[W]e recommend that CARB consider allowing vessel operating companies to submit batched visit information for all of their vessels that call California on a monthly or quarterly basis. We also recommend that CARB develop an online system/dashboard into which each vessel (and terminal) operator would upload its post-visit reports. The dashboard should provide each operator with an updated snapshot of its compliance as well as VIE/TIE allowances versus usage and other relevant metrics for the designated fleet. (15-57.14)

**Agency Response (15-57.14):** CARB staff modified the reporting deadlines in response to this and other comments received on the reporting deadline for

vessel visits. Staff adjusted the reporting deadline to allow reporting within 30 days after a vessel's departure. Monthly reporting was selected over quarterly reporting to ensure the visit information is received in a timely manner in order to determine compliance with the Regulation. Also, CARB staff will rely on reporting data to calculate the number of TIEs and VIEs that should be issued each calendar year. Quarterly reporting could delay CARB's staff's ability to determine the number of TIEs and VIEs that a terminal or vessel would have to use for the calendar year.

Regulated entities will be able to submit reporting information via email or using the FRRS, which is an online tool that CARB is developing to streamline and consolidate reporting requirements for multiple freight regulations. Through the FRRS, a vessel fleet operator will be able to register vessels, and a terminal operator will be able to register berths at their terminal. After registering, both entities (and designated reporting parties) will be able to then report visit information. FRRS will provide each operator with an updated snapshot of its compliance as well as VIE/TIE allowances versus usage and other relevant metrics for the designated fleet. Some fields within the FRRS tool will have drop-down menus, while others will require filling in vessel and visit specific information. CARB continues to develop the FRRS and anticipates completion prior to the start of visit reporting requirements. The FRRS is also being designed to allow vessel and terminal operators to be able to upload multiple visit reports to FRRS at one time in order to streamline the reporting process.

**Comment:** "We Want The At Bert Rule To Include MARPOL ANNEX VI & XIII Engine Requirements & For Ships To Provide Certificate Information

- International Air Pollution Prevention Certificate (IAPPC)
- Engine International Air Pollution Prevention Certificate (EIAPPC)" (15-B-4.21)

**Agency Response (15-B-4.21):** CARB staff made no changes based on the received comment. MARPOL ANNEX VI limits the main air pollutants contained in ships exhaust gas while Regulation 13 applies to the control of diesel engine NOx emissions. Each regulated diesel engine in U.S. flagged vessels must have an Engine International Air Pollution Prevention Certificate (EIAPPC), issued by EPA, to document that the engine meets Annex VI exhaust standards. Certain vessels are also required to have an International Air Pollution Prevention Certificate (IAPPC), which is issued by the United States Coast Guard. Ship operators must maintain records on board regarding their compliance with the emission standards, fuels requirements and other provisions of Annex VI and U.S. flagged vessels are subject to inspection for compliance. In addition, non-U.S. flagged ships are subject to inspection under the Port State Control while operating in U.S. waters.

The USCG and/or EPA may bring an enforcement action for a violation against the requirements in MARPOL Annex VI as well as Regulation 13, including the requirement to obtain the EIAPP and IAPP Certificates. Section 93130.3(b) of the Regulation states that “Nothing in this Control Measure shall be construed to amend, repeal, modify, or change any applicable federal laws or regulations, including any United States Coast Guard regulations or requirements.” Staff did not include these certificates in the At Berth Regulation since CARB does not have authority to enforce these regulations.

The Regulation defines the IMO NOx Tier as “the NOx standards as set forth in the IMO MARPOL Annex VI and as certified by requirements set forth in IMO Regulation 13. Vessels without an IMO NOx tier are considered pre-tier I vessels.” However, CARB does keep track the IMO Tier for each vessel to determine how much pollution communities are being exposed to.

**Comment:** “We do not want to extend any time for any extra days or hours to do any reporting or compliance.” (15-OT-12)

**Agency Response (15-OT-12):** CARB staff made no changes based on the received comment. CARB staff understands why reporting and compliance delays may be seen as undesirable. However, as part of the March 2020 15-day change package this comment was submitted in regards to, CARB staff provided extensions for reporting (from 7 days to 30 days) and the connection time in which a vessel must connect to a CAECS by in order to be compliant with the Regulation (from 1 hour to 2 hours), as staff believe both changes are necessary to assist with the workability of the Regulation for regulated entities. Staff also adjusted compliance dates for container, reefer, cruise, and ro-ro vessels. See response to comment 15-OT-63 for the reasoning behind these date adjustments. None of these changes are anticipated to have any significant impact on the emissions reductions achieved by the Regulation, as stated in staff’s “Notice of Public Availability of Modified Text and Availability of Additional Documents and Information” and supporting documents published on CARB’s website on March 26, 2020 (available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

#### vii. *Port and Terminal Plans*

**Comment:** “We also urge that the review of the terminal plans involve other permitting State and local agencies.” (15-26.2)

**Agency Response (15-26.2):** CARB staff made no changes based on the received comment. Terminal and port plan reviews will likely be conducted by CARB staff, however, staff would not hesitate to reach out to other State and local permitting agencies as needed to confirm information included in the plans.

**Comment:** “A set implementation date should be established for the terminals and ports to provide the shorepower infrastructure for each vessel visit and the compliance timeline for the vessels should match that date. Just relying on TIEs if infrastructure at the terminals is not available will not remedy this issue. Do the ports feel confident that they have enough infrastructure to meet the requirements for currently regulated vessels and berth them on the correct side of the ships now and after additional vessel types are added?” (15-58.9)

**Agency Response (15-58.9):** CARB staff made no changes based on the received comment. The Regulation has set implementation dates by which terminals and ports are required to install the infrastructure (see section 93130.7(b) and (c)). TIEs are designed to be used in the event that a connection to an emissions control technology is not feasible during a regulated vessel visit for some reason, including operational constraints. They are not meant to be used as a long-term solution for infrastructure deficiencies. Terminal and port plans are designed to provide both entities with an opportunity to identify to CARB staff any infrastructure deficiencies needed in order to connect every regulated vessel visit to an emissions control technology, as well as assign responsibilities that may be unique to their specific terminal/port relationship. A terminal or port should document in their terminal or port plan any plans for installing any necessary infrastructure needed for compliance.

**Comment:** “WSC also believes that there would be value in explicitly articulating in the revised rule that port and terminal plans should include, among other things: a) appropriate changes to existing infrastructure design (e.g., inadequate electrical sub-station/electrical vault configurations); b) expansion of existing electrical infrastructure in container ports to accommodate future rule requirements to enable 95% of all shore power equipped container ship calls to be accommodated through shore-side power; and c) that approved plans include a realistic timeframe for design and construction consistent with the final regulatory dates promulgated in the final rule.” (15-57.21)

**Agency Response (15-57.21):** CARB staff made no changes based on the received comment. CARB staff believes that the Regulation as worded accomplishes the commenter’s first and third request (parts a and c) without additional revision. The Regulation requires both terminal and port plans to include a discussion of necessary infrastructure modifications needed to comply with the Regulation by the implementation dates listed in section 93130.7(b) and (c), along with a schedule for equipment installation and/or any necessary construction projects. See section 93130.14(a) and (b) for additional details on the requirements for terminal and port plans.

Regarding the commenter’s second request (part b), CARB staff did not put a requirement for terminals and ports to install shore power infrastructure as the Regulation was purposely designed to allow regulated entities to select the

emissions control strategy that works best for their unique operations. While CARB anticipates that most container terminals, particularly those covered under the 2007 At-Berth Regulation, will use shore power as the main pathway for compliance, it is not CARB's intent to make shore power a mandated compliance pathway.

*viii. Implementation Dates*

**Comment:** "Vessel Visit Exceptions is too lenient especially 8.e.(1) Until January 1, 2023 previously unregulated vessels are not subject to the vessel auxiliary engine requirements. Cruise lines already had years to convert their ships." (15-60.5)

**Agency Response (15-60.5):** CARB staff made no changes based on the received comment. This comment is no longer directly relevant to the Regulation, as staff adjusted the implementation date for container, reefer, and cruise vessel from January 1, 2021, to January 1, 2023. As such, there is no longer an exception for "previously unregulated vessels" (meaning those container, reefer, and cruise vessels not subject to the requirements of the 2007 At-Berth Regulation) until January 1, 2023, because that is now the implementation date for all container, reefer, and cruise vessels.

CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the health burdens. However, the implementation date for container, reefer, and cruise vessels was adjusted from 2021 to 2023 due to impacts to the industry as a result of the current ongoing economic situation. CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change (see Attachment C to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information, available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

**Comment:** "No engineering analysis was conducted by CARB and no information has been made part of the record to support the accelerated deadlines proposed in the 15-Day Notice. The accelerated deadlines for tanker and Ro/Ro vessels cannot be achieved." (15-69.14)

**Comment:** "Prior comments by WSPA and Chevron in this rulemaking proceeding have described in detail the fundamental problems with CARB's proposed regulation. The acceleration of the compliance deadlines proposed in CARB's 15-day rule changes would make these problems worse." (15-30.28)

**Comment:** "The IACCC is concerned that the latest proposed revisions have shortened the regulatory timelines without any meaningful data to support this change. This makes the implementation of this Rule, even under an ideal scenario,

infeasible due to the time consuming permitting and environmental review processes we have in place throughout our region.” (15-B-16.1)

**Agency Response (15-69.14), (15-30.28), and (15-B-16.1):** CARB staff made no changes based on the received comments. These comments are no longer directly relevant to ro-ro vessels, as staff adjusted the implementation date for ro-ro’s back to the originally proposed date of January 1, 2025, due to concerns related to the current ongoing economic situation. However, CARB disagrees with the commenter that there are fundamental problems with the Regulation and that the accelerated dates for tanker vessels cannot be achieved, particularly with the addition of the Innovative Concepts Compliance Option to the Regulation as part of the 15-day change package released on March 26, 2020. The Innovative Concepts Compliance Option was requested by regulated industry stakeholders and allows regulated entities to utilize lower cost projects outside of reducing vessel emissions as a compliance pathway as long as they are approved by CARB and achieve equivalent or greater emissions reductions as required by the Regulation. Accelerated implementation dates for tanker vessels are necessary in order to accelerate health benefits of the Regulation, given that around 30-50 percent of the remaining vessel at berth emissions are from tankers (ISOR, Chapter I).

Separately, the Interim Evaluation (section 93130.14(d) of the Regulation) provides the opportunity for all stakeholders (including the local and state permitting agencies) to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies, and this will be a continuation of feasibility studies already conducted. Staff will use the outcome of the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff’s findings at that time.

**Comment:** “It is also unfair to the existing regulated fleets to provide essentially no transition period from the current regulatory structure into the new proposed regulatory structure. Given the COVID-19 timeline and impacts described above, along with delays to the adoption of the rule by CARB and OAL resulting from the crisis and additional time built into the rulemaking calendar, prior infeasibility concerns regarding the potential implementation date of 2021 are now even more acute.” (15-69.15)

**Agency Response (15-69.15):** CARB staff modified the proposed regulatory language in response to the received comment and others similar to it. CARB staff believes flexibility provided in the Regulation through the granting of TIEs/VIEs and the remediation fund will enable existing regulated fleets to easily transition to the new structure of the Regulation. CARB staff are sensitive to the impacts to the industry from the ongoing economic downturn and have

adjusted the implementation dates for container, reefer, and cruise vessels from January 1, 2021, to January 1, 2023, giving the existing regulated fleets two additional years to prepare for the transition. CARB staff committed in Resolution 20-22, adopted by CARB's Board at the August 27, 2020, public hearing, to closely monitor implementation of the Regulation, the economic recovery of the shipping industry, and to report annually to CARB's Board. See Master Response 6 for more details on CARB's response to the ongoing pandemic situation.

**Comment:** "CARB staff appear to mischaracterize what the Board said in the December 5, 2019 Governing Board hearing. In that hearing, no member of the Board actually requested that CARB staff "accelerate implementation dates" for marine terminals hosting tankers, nor did the Board's final Resolution 19-28 from the hearing instruct CARB staff to substitute accelerated deadlines in the Proposed Regulation (the Resolution says nothing regarding any changes to the proposed compliance dates). In testimony during the hearing, some Board members did call for accelerating the time for the interim "technology review" to determine whether the proposed requirements could be feasibly met for tankers:

Thus, at most, the Board instructed CARB staff to (1) investigate how to prioritize the "technology review" needed to assess feasibility for tankers, (2) investigate and explain whether accelerating deadlines would be a possibility, and (3) to reassess whether the existing deadlines could be realistically achieved. At no point did the Board "request [CARB staff] . . . to accelerate implementation dates," but to analyze whether such acceleration could be justified and would be feasible." (15-49.60)

**Agency Response (15-49.60):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. During the December 5, 2019, Board hearing, there were at least four separate comments requesting staff to look into acceleration of implementation dates from Chair Nichols and Board Members Mitchell and Eisenhut (as can be noted on pages 168, 170, 176, 182 and 183 of the public transcript of the December 5, 2019, Board hearing, available on CARB's website at: <https://ww3.arb.ca.gov/board/mt/2019/mt120519.pdf>).

CARB's Board made it clear to staff during the December 5, 2019, Board Hearing that accelerating the tanker and ro-ro implementation timelines were important in order to reduce health burdens on port neighborhoods, including Northern California port communities heavily impacted by tanker vessel and refinery emissions, as well as helping South Coast achieve the reductions needed to meet federal ozone requirements in 2023 and 2031. Furthermore, CARB's Board ultimately voted to adopt the Regulation with the 2025 and 2027 deadlines for tankers, conclusively demonstrating its intent for those deadlines to apply.

**Comment:** “CARB staff have admitted that these accelerated deadlines will “result[] in higher costs for vessel and terminal operators” (Notice, App. B, p. B-1), but have not demonstrated that these new deadlines can be safely or feasibly achieved by tanker terminals by 2029/2027, let alone by two years sooner. These substantial changes also will require an updated SRIA and health risk assessment. Adopting the 15-Day Changes without a proper determination of feasibility, safe operation and cost-effectiveness before any requirements or deadlines are imposed on regulated parties would violate the California Health & Safety Code. Moreover, the accelerated deadlines proposed in the 15-Day Changes cannot legally be justified as “technology forcing” regulations, since CARB staff have provided no evidence in the administrative record indicating that at berth capture and control for tankers is reasonably anticipated to exist, or likely to become feasible or cost-effective, by the compliance deadlines. CARB bears the burden of establishing that a proposed regulation can be feasibly and cost-effectively implemented in the timeframes required by the regulation. CARB has failed to meet its burden here, and the available evidence WSPA and others have provided indicates a lack of any evidence that capture, and control can be safely and feasibly implemented for tankers in the timeframes required. We again strongly urge CARB to conduct a feasibility study for tankers, as described in our March 6th letter, and publish its analysis and findings in a report before any terminal plan deadlines are enforced.” (15-49.61)

***Agency Response (15-49.61):*** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. The commenter provides no legal authority backing up its contention that CARB’s process violates the Health & Safety Code, or any other SRIA or health risk assessment requirement. Regarding the SRIA, CARB is not required to update the full SRIA based on 15-day changes. Staff have, however, provided updated cost and health benefits analyses as part of both 15-day packages (Attachments B and D, respectively), as published on March 26, 2020, and July 10, 2020. Both packages were available for a public comment period (March 26 – May 1, 2020, and July 10 – July 27, 2020, respectively). See also Master Response 6.

In regards to the availability of control technologies for tanker vessels, CARB staff received confirmation from two technology providers that ensured staff they would be ready and willing to provide a system catering to tanker vessels, and both letters have been provided on record.<sup>17,18</sup> CARB also believes that the years of research and development of the Regulation, with the supporting regulatory documents and appendices, sufficiently address the feasibility, safe operation, and cost-effectiveness concerns raised by this comment. See response to comment 22.26 for more information on this topic. See also response to comment

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<sup>17</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>18</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for “To Consider Proposed Control Measure for Ocean-Going Vessels At Berth” on December 5, 2019. Available at:

<https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

15-69.14 for details on how staff addressed the feasibility of accelerated implementation timelines for tanker vessels.

**Comment:** "I object to the insufficient minor revision of the date of implantation [sic] from 2029 to 2027. I want the date to be no later then [sic] 2024. Ten years was too long to wait for relief of this most dangerous pollutant and pushing the date back by only two years is merely a bone tossed to a suffering public.

I also want the board to have discretionary authority to grant waivers of the 2024 date based solely upon technical difficulties not financial difficulties on a case by case basis. The application for and facts underlying such waiver will be, in a timely manner, publicly disclosed and justified." (15-1.1)

**Agency Response (15-1.1):** CARB staff made no changes based on the received comment. CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. However, sufficient time is needed to adapt and install emission control technologies at tanker terminals, which CARB staff does not believe could be met by 2024. See ISOR, Chapter III for staff's rationale for setting the implementation dates. CARB does encourage all terminals to begin reducing emissions as soon as possible, and regulated entities may take advantage of early compliance through the Innovative Concepts Compliance Option (section 93130.17 of the Regulation), which allows reductions achieved through an Innovative Concept that occur before a vessel or terminal's first compliance period to be used towards compliance during the first compliance period of up to five years.

**Comments:** "Bay Area oil terminals should be required to comply by 2025, on the same schedule as terminals located in Southern California." (15-11.1) (15-14.2) (15-16.1) (15-18.1) (15-19.1) (15-46.2) (15-23.1), (15-71.1)

**Comment:** "Regarding tanker vessels, BAAQMD urges CARB to consider an earlier compliance deadline of January 1, 2025 for our region, rather than the proposed date of January 1, 2027, to ensure that air quality improvements can be expedited in communities such as Richmond that experience high exposure to harmful emissions from tanker traffic." (15-26.1)

**Comment:** "First, we appreciate that the CARB staff brought forward the compliance date for tankers in the Bay Area by two years, from 2029 to 2027. But we really still feel that overburdened communities near the Bay Area's refineries deserve the same relief as their fellow communities in Southern California. So we still recommend bringing the first compliance deadline forward to 2025 to align with the Southern California port dates." (15-OT-58)

**Agency Response (15-11.1), (15-14.2), (15-16.1), (15-18.1), (15-19.1), (15-46.2), (15-23.1), (15-71.1), (15-26.1) and (15-OT-58):** CARB staff made no changes based on the received comments. CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. However, CARB staff believes that the unique structure of Northern California tanker terminals means that these regulated entities will need additional time to design, develop and install the infrastructure necessary to support emissions control equipment. Additional supporting details for this position can be found in the ISOR, Chapter III. Staff also believes that staggering the Regulations implementation dates is important in order to allow the technology providers manufacturing vessel control equipment to keep up with the demand.

**Comment:** "I would prefer to see it happen sooner than 2032." (15-21.1)

**Agency Response (15-21.1):** CARB staff made no changes based on the received comment. The Regulation would be fully phased in by January 1, 2027, so the Regulation would be fully implemented by 2032 and thus no changes to the Regulation are needed in response to this comment. In case the "2032" was a typo and the commenter meant 2023, see response to comment 15-33.2 for details as to why CARB staff did not choose to implement control requirements before 2023.

**Comment:** "I am pleased that ships in fleets will be required to connect to shore power Jan 1, 2021. I want ALL cruise ships to meet this requirement, no exceptions, at the San Diego cruise ship terminal. Cruise lines already had years to convert their ships. (15-33.2) (15-34.2)(15-37.2) (15-38.2) (15-39.2) (15-40.2) (15-41.2) (15-43.2) (15-45.2) (15-47.2) (15-56.2) (15-64.2) (15-66.2), (15-67.2), (15-73.2), (15-74.2), (15-76.2), (15-77.2), (15-79.2), (15-63.2), (15-60.2) (15-44.2)

**Comment:** "To minimize particulate pollution in downtown San Diego, CARB should require ALL cruise ships berthing here to start using shore electric power 100% as of Jan 1, 2021, regardless of how many times a particular vessel comes to San Diego over the course of a year." (15-36.1)

**Comment:** "I am in favor of requiring ships in fleets to use shore power 100% of the time; concerned about exempting cruise lines that don't come in more than 4 times/year, as I understand that contributes significantly to pollution in the area." (15-42.1)

**Comment:** "We've asked to speed up the 100 percent compliance for cruise ships to connect to shore power, instead of a long phase-in period." (15-OT-19)

**Comment:** "I want the rules for cruise ships to reduce pollution levels to go more quickly." (15-OT-24)

**Comment:** “We were excited when we heard the new CARB rule that would require a hundred percent of the cruise ships to comply with the new rules by January 1st, 2021. Instead, we find out that the rule includes a two-year phase-in period.” (15-OT-25)

**Comment:** “Please don't cave into the big corporations and lengthen compliance dates. This will also allow cruise ships that dock five times or less to continue polluting until 2023. Please don't give them a waiver, but make them comply the same as the other cruise lines.” (15-OT-20)

**Agency Response (15-33.2), (15-34.2), (15-37.2), (15-38.2), (15-39.2), (15-40.2), (15-41.2), (15-43.2), (15-45.2), (15-47.2), (15-56.2), (15-64.2), (15-66.2), (15-67.2), (15-73.2), (15-74.2), (15-76.2), (15-77.2), (15-79.2), (15-63.2), (15-60.2) (15-44.2), (15-OT-19), (15-OT-24), (15-OT-25), and (15-OT-20):** CARB staff made no changes based on the received comments. CARB staff understands the need to accelerate emissions reductions from vessels at berth and share the desire to control emissions from every cruise vessel visit in order to reduce the health burdens on port communities. However, some concessions and exceptions are necessary in the Regulation for operational industry realities.

After extensive staff evaluation and Board direction at the June 25, 2020, public Board Hearing, the decision was made to adjust the Regulations implementation dates for cruise vessels (and container and reefer vessel) from January 1, 2021, to January 1, 2023, in response to the current ongoing economic situation and its impacts to the industry. This change was publically noticed as part of the July 10, 2020, 15-day package. CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change (see Attachment C to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information, available at:

<https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>). Cruise vessel fleets making five or more visits to the reported Ports under the 2007 At-Berth Regulation will continue to be required to reduce emissions from 80 percent of their fleet at the currently regulated ports until the new control requirements of the Regulation begin for cruise vessels in January 1, 2023.

Under the Regulation, all cruise vessels visiting regulated cruise terminals will be required to comply beginning January 1, 2023. Compliance can be achieved through shore power or another CAECS, use of a TIE/VIE or remediation fund, by using an Innovative Concept project, or if qualifying for an exception as written into the Regulation in sections 93130.8 and 9310.10. CARB staff are fully supportive of every vessel connecting to shore power, which achieves the highest level of emissions reductions at berth, but believes that operational flexibility is key to the success of the Regulation overall.

**Comment:** “Extend the timeline for RoRos and tankers to 2027, and 2029, respectively. While we understand the urgency for emission reductions at berth, a vast challenge lies ahead to develop and commercialize alternative emission capture and control technologies, specifically for RoRos’s and tankers, and to deploy infrastructure.” (15-25.2)

**Comment:** “As proposed, Ro-Ros would be required to comply in 2024 rather than 2025, tankers going to LA/LB in 2025 rather than 2027, and all remaining tanker trade in 2027 rather than 2029. As far as we can tell, CARB has offered no explanation for this revision. Given the current global circumstances and likely impact on the industry, we recommend providing comments to request the original compliance dates be maintained to allow sufficient time for fleets to come into compliance.” (15-24.1)

**Comment:** “Extend the timeline for RoRos and tankers. Infrastructure and capital improvements of this scope take years of environmental review, permitting, design, and funding. Not extending the time to allow for economic recovery from this recession will make compliance infeasible.” (15-75.4)

**Comment:** “We recommend you extend the requirement for ro-ros to 2027 and tankers to 2029.” (15-OT-38)

**Agency Response (15-25.2), (15-24.1), (15-75.4), and (15-OT-38):** CARB staff made changes to the ro-ro implementation date based on numerous comments received. Based on the economic impacts to this vessel category during the ongoing economic situation, CARB’s Board directed staff to consider a timeline extension of one year to provide additional time for the industry to raise funds and procure the necessary technology needed to control emissions at berth. As such, staff restored the original ro-ro implementation date of January 1, 2025, from the December 5, 2019, proposal. The Interim Evaluation in 2022 will provide additional opportunities for staff to reassess the ro-ro vessel timelines and make any further adjustments if necessary. See Master Response 3 for more information regarding the feasibility of implementation dates.

In regards to tanker timelines, see response to comment 15-69.14 for details on why CARB staff did not extend the timeline for tanker vessels.

**Comment:** “MPC has long held the opinion compliance with this rule would require on the order of ten plus years given the infrastructure requirements and unique environments our terminals exist in. CARB does not substantiate how a tanker vessel or terminal operator would require two less years to construct and install projects to control emissions. Stakeholders engaged in this rulemaking process over the last few years have seen three major revisions to compliance dates with little to no changes to available technologies to achieve the reductions. The 15 day changes to the compliance dates for the POLB/POLA and at all other terminals, is lacking any analysis for justification.” (15-72.2)

**Comment:** “Provide more time for regulated parties to comply. Given MPC’s prior guidance any project to install equipment identified in the proposed regulation as a CARB Approved Emission Control Strategy (CAECS) would require ten plus years, pending the outcome of a feasibility study, more likely compliance dates for the POLB/POLA would be 2031 and all other terminals 2036.” (15-72.6)

**Agency Response (15-72.2) and (15-72.6):** CARB staff made no changes based on the received comments. CARB staff appreciates MPC’s (Marathon Petroleum Corporation) involvement and engagement during the rulemaking process. Implementation dates for container, reefer, cruise, and ro-ro vessels were extended with the second 15-day change package released on July 10, 2020. Regarding tanker vessels, see Master Response 3 in regards to the feasibility of implementation dates for tanker vessels and response to comment 15-69.14 for details on why CARB staff did not extend the timeline for tanker vessels.

**Comment:** “Take advantage of the additional rulemaking time provided by Governor Newsome’s [sic] Executive Order N-40-20, extending APA deadlines by 60 days to re-engage with stakeholders to address residual concerns.” (15-72.7)

**Agency Response (15-72.7):** CARB staff made no changes based on the received comment. CARB staff are aware of the additional time provided by Governor Newsom’s EO N-40-20, and provided an extended comment period for the public to submit comments on the first 15-day change package released in March 2020. CARB staff has continued to discuss residual concerns with stakeholders throughout the rulemaking process, however, does not believe that a delay in the rulemaking is necessary as it would only result in delayed health benefits for California port communities.

**Comment:** “As was demonstrated in multiple industry comment letters, the original deadlines were unachievable. The rule demonstrated this absurdity by requiring facility plans to ensure compliance six months after compliance is required. The only engineering analysis in the record was submitted by the ports of Long Beach and Los Angeles that demonstrated, based on actual past experience, that more time was necessary to implement the proposed rule. No engineering analysis was conducted by CARB and no information has been made part of the record to support the accelerated deadlines. The accelerated deadlines for tanker and Ro/Ro vessels cannot be achieved.” (15-68.23)

**Agency Response (15-68.23):** CARB staff made no changes based on the received comment. CARB disagrees with this commenter that the original implementation dates were unachievable. The original dates requiring container, reefer, and cruise facility (i.e., port/terminal) plans to be submitted to CARB six months after compliance began was a result of the January 1, 2021,

effective date of the Regulation. That concern is no longer valid, as the compliance date for container, reefer, and cruise vessels was adjusted to January 1, 2023, with the release of staff's second 15-day change package on July 10, 2020. In regards to the comment about no engineering analysis or information being made part of the record to support the accelerated deadlines, see response to comment 15-69.14.

**Comment:** "[W]e recommend that CARB not proceed with plans to regulate ro-ro auxiliary emissions in 2024 and instead monitor ro-ro emissions and the ongoing development of technologies that may in the future provide a viable and economically achievable compliance option for these vessels." (15-57.11)

**Agency Response (15-57.11):** CARB staff made no changes based on the received comment. See response to comment 45.11 for more information on the benefits that would be lost by not controlling ro-ro vessel emissions and response to comment 45.18 for more information on provisions made for ro-ro vessels to comply and why CARB staff believes emission reductions from ro-ro vessels is achievable using existing technologies.

**Comment:** "A vast challenge lies ahead to develop and commercialize alternative emission capture and control technologies and to deploy infrastructure. The deadline for roll on, roll off vessels to be pushed back to 2027 so that we can work with ports to find public funding opportunities to build some of the infrastructure including bonnets." (15-B-3.4)

**Comment:** "So our request, and we respectfully request, is that the roll-on roll-off vessels regulations pushed to 2027, so that we could work with car ports to find funding opportunities for this equipment. We also need CARB to invest more in those technologies." (15-OT-74)

**Agency Response (15-B-3.4) and (15-OT-74):** CARB staff made changes to the ro-ro implementation date based on numerous comments received. While CARB staff argues that the technology to control ro-ro emissions is already developed and available for adaptation to ro-ro vessels, staff do agree that some additional time to fund and procure these systems may be necessary due to the impacts this particular industry sector has seen as a result of the ongoing economic situation. Given the current unique situation, CARB's Board directed staff to consider a timeline extension of one year to provide additional time for the industry to raise funds and procure the necessary technology needed to control emissions at berth. Delaying to 2027 was not deemed acceptable due to the delay in health benefits it would provide to the community.

However, the Regulation also provides for an Interim Evaluation in 2022 (Section 93130.14(d)). If CARB staff determines at that time that the compliance deadlines and implementation dates warrant an adjustment, staff

may propose adjustments as necessary. More information about the Interim Evaluation can be found in Master Response 3.

**Comment:** "CARB staff has proposed numerous date and time extensions which are not necessary." (15-B-4.18)

**Agency Response (15-B-4.18):** CARB staff made no changes based on the received comment. CARB disagrees with this comment, which does not provide any supporting material to explain their claim that these changes are not necessary. As part of the 15-day change package this comment was submitted in regards to, CARB staff provided extensions for reporting (from 7 days to 30 days) and the connection time in which a vessel must connect to a CAECS by in order to be compliant with the Regulation (from one-to-two hours), both of which are necessary to assist with the workability of the Regulation for regulated entities. Neither of these changes are anticipated to have any significant impact on the emissions reductions achieved by the Regulation, as stated in staff's "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information" and supporting documents published on CARB's website on March 26, 2020 (available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>). CARB staff did extend the compliance timeline for container, reefer, cruise, and ro-ro vessels as part of the second 15-day package released July 10, 2020, in order to assist the shipping industry with recovery from the ongoing economic downturn. However, the emissions impacts resulting from this change are expected to be minimal due to the reduction in vessel visit activity associated with the ongoing economic downturn. See Master Response 6 for a detailed discussion on the rationale for this change.

**Comment:** "I support accelerated implementation dates for tankers and ro-ros, especially the 2023/2024 ro-ro date." (15-B-14.1)

**Agency Response (15-B-14.1):** CARB staff made no changes based on the received comment. CARB staff thanks the commenter for their support. However, it is important to note that with the second 15-day package released July 10, 2020, and made available for public comment through July 27, 2020, the implementation date for ro-ro vessels was adjusted back to the original proposed date of January 1, 2025. This change was due to the impacts to the industry as a result of the ongoing economic downturn. Ro-ro vessels experienced a significant decrease in vessel visit activity as a result of the ongoing economic downturn, and CARB staff anticipates a slow recovery on the order of three to four years based on historical data. Because of the reductions achieved from the current decrease in ro-ro vessel activity and the slow anticipated recovery, CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change (see Attachment C to the Second Notice of Public Availability of Modified Text and

Availability of Additional Documents and Information, available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

In regards to tanker vessels, the accelerated tanker implementation dates remain in place in order to accelerate the health benefits achieved by the Regulation from tanker vessels.

**Comment:** “We ask the Board to defer adoption of this Rule so that the safe implementation can be thoroughly understood and vetted, and so that the Rule can achieve our mutual goal of safely and effectively reducing emissions.” (15-B-16.4)

**Agency Response (15-B-16.4):** CARB staff made no changes based on the received comment. CARB staff disagrees with this comment. Postponing the Regulation would negatively impact the affected and burdened communities by delaying the anticipated health benefits associated with reducing emissions from vessels at berth. Staff believe the Regulation has been laid out in a manner that is consistent with safe implementation, including multiple compliance pathways that allow an operator to determine the compliance technologies that best fit their unique operations.

The Regulation also specifies that an Interim Evaluation will occur in 2022, which will require staff to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals (section 93130.14(d)). During this Interim Evaluation, CARB staff will consider other public information provided, including terminal specific engineering evaluations, logistical considerations, public engagement, and independent studies. This process will allow for CARB staff to work with stakeholders to ensure safe implementation of the Regulation.

**Comment:** “An issue about which we continue to have serious concerns is CARB’s proposal to expand, and even accelerate, the rule’s applicability to ro-ro vessels (including vehicle carriers) without a definitive cost-benefit analysis and based on the hope that emissions capture technology, which has significant problems today, will become a viable control option for ro-ro vessels.

CARB’s proposal fails to demonstrate that a cost-effective and practicable pathway exists for controlling ro-ro vessels’ auxiliary emissions, fails to address the major operational, safety and cost issues the proposed emissions capture systems pose for ro-ro vessels and fails to account fully for the emissions generated by emissions capture systems.

Compelling ro-ro carriers to try to comply with the rule using the operationally impractical, complex and costly emissions capture systems currently on the market is

not appropriate and will delay the adoption and benefits of more practicable zero-emission technologies that still need to be developed.

WSC would support adjustments of the implementation dates back, as described in the staff brief. This additional time must be used to ensure adequate shoreside infrastructure plans are approved and implemented, address the remaining problems with rule as discussed in our comments, and properly assess the costs versus benefits and feasibility of regulating ro-ro auxiliary emissions.” (15-B-17.1)

**Comment:** “An issue about which we continue to have serious concerns is CARB's proposal to expand and even accelerate the rule's applicability to ro-ro vessels without a definitive cost-benefit analysis and based on the hope that emissions capture technology, which has significant problems today, will become a viable control option.” (15-OT-29)

**Comment:** “WSC would support adjustments of the implementation dates back. This additional time must be used to ensure adequate shoreside infrastructure plans are implemented, address the remaining problems with the rule as identified in our comments, and properly assess the cost versus benefits and feasibility of regulating ro-ro auxiliary emissions.” (15-OT-32)

***Agency Response (15-B-17.1), (15-OT-29) and (15-OT-32):*** CARB staff made no changes based on the received comments. CARB staff disagrees with the statements that staff have not provided sufficient cost and technical feasibility analyses for controlling ro-ro vessel emissions at berth. See response to comment 45.11 regarding the disbenefits of excluding ro-ro vessels from the Regulation. CARB staff also disagrees that the current emissions control technology has significant problems. The existing capture and control systems have been controlling emissions successfully on container vessels for compliance with the 2007 At-Berth Regulation since 2015. While CARB staff recognizes that there are currently no capture and control systems approved for use on ro-ro vessels at the time of this rulemaking, technology providers have ensured CARB staff that the technology can be expeditiously adapted for use on ro-ro vessels.<sup>19,20</sup> This was also addressed by delaying the implementation date for ro-ro vessels until 2025. An implementation date of 2025 allows additional time for technologies and infrastructure to be adapted to suit ro-ro vessels and installed at ro-ro terminals.

Lastly, CARB staff also disagrees that the Regulation expressly compels ro-ro vessels to use capture and control technologies. The Regulation itself is

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<sup>19</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>20</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for “To Consider Proposed Control Measure for Ocean-Going Vessels At Berth” on December 5, 2019. Available at:

<https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

designed in such a way that ro-ro vessels can comply by using whichever CARB approved emissions control technology fits best for their operations. There is no incentive or requirement in the Regulation that would compel vessels to use capture and control technology for compliance. CARB staff's Berth Analysis (ISOR, Appendix E) evaluated compliance based on what was suggested as the most likely path to compliance. The pathway chosen for ro-ro vessels was capture and control systems and was based on currently available technologies and multiple conversations with industry stakeholders. That does not, however, preclude ro-ro vessels from utilizing shore power, on-board vessel technologies, or any other future solution that receives CARB approval.

**Comment:** "This rule should be approved no later than August." (15-G-18.1)

**Agency Response (15-G-18.1):** CARB staff made no changes based on the received comment. CARB staff appreciates the support from this commenter for a quick and timely adoption of the Regulation.

**Comment:** "The-15 day package accelerated deadlines by two years. The prior deadlines were already infeasibly short and the new deadlines only exasperate the problem. We recommend CARB restore the vessel control and plan deadlines or the pre-15-day package version and look at incentives for early emission reductions." (15-OT-3).

**Agency Response (15-OT-3):** CARB staff made no changes based on the received comment. CARB staff adjusted the implementation date for ro-ro's back to the originally proposed date of January 1, 2025, due to concerns related to the current ongoing economic situation. However, CARB staff disagrees with the commenter's statement that the accelerated compliance deadlines cannot be met, particularly with the addition of the Innovative Concepts Compliance Option to the Regulation. See response to comment 15-69.14 for further discussion.

**Comment:** "We don't support any changes that will either delay implementation for container vessels, cruise ship vessels, or auto carriers." (15-OT-17)

**Comment:** "And UCS supports earlier compliance and no more delays on the rule. We urge you to adopt the strongest possible rule and not entertain the false choice of protecting communities from known toxic emissions versus maintaining a robust economy." (15-OT-56)

**Comment:** "We oppose the proposal to shift back any compliance deadlines, because the challenges we are facing today require us to achieve public health benefits and emissions reductions as soon as possible." (15-OT-63)

**Comment:** “We need CARB to adopt strong regulations addressing each sector of emissions from the freight industry in order to address these longstanding disparities. We urge CARB not to weaken or further delay these life-saving regulations and to adopt a strong rule no later than this summer.” (15-OT-64)

**Agency Response (15-OT-17), (15-OT-56), (15-OT-63), and (15-OT-64):** CARB staff made no changes based on the received comments. CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. However, after extensive staff evaluation and Board direction at the June 25, 2020, public Board Hearing, the decision was made to adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, due to impacts to the industry as a result of the current ongoing economic situation.

This change was publicly noticed as part of the July 10, 2020, 15-day package. CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change (see Attachment C to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information, available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>). Container, reefer, and cruise vessel fleets that are currently subject to the 2007 At-Berth Regulation will continue to be required to reduce emissions from at least 80 percent of their fleet until the control requirements of the new Regulation begin.

**Comment:** “But we'd like to reiterate a point we made in a comment letter dated December 4th, 2019, that the proposed control measure should demonstrate technological and financial feasibility within a realistic time frame, so as to ensure that the regulated entities can comply in a safe and technologically sound manner.” (15-OT-33)

**Agency Response (15-OT-33):** CARB staff made no changes based on the received comment. CARB staff believes that the years of research and development of the Regulation, with the supporting regulatory documents and appendices, sufficiently address the technological and financial feasibility of controlling vessel emissions at berth. See response to comments 22.26 and 15-69.14 for further discussion.

**Comment:** “We provided numerous comment letters on this proposed regulation and I want to highlight that we strongly believe additional time is needed to develop and commercialize the required technologies and to deploy infrastructure for ro-ros and tankers. While we appreciate the recommendation staff just announced to not accelerate the time lines, we still believe additional time is needed.” (15-OT-37)

**Agency Response (15-OT-37):** CARB staff made no changes based on the received comment. CARB staff thank the commenter for their support regarding the adjusted ro-ro timeline. Staff agrees that this extension, in combination with the Interim Evaluation set to occur in 2022, will provide sufficient opportunities to ensure any remaining technology concerns are worked out and allow time for any necessary supporting infrastructure to be installed. CARB conducted extensive research and met with numerous stakeholders during the rulemaking process, and assert that the ample analysis performed for the Regulation as part of the ISOR, SRIA, EA and two subsequent notices demonstrates that technological and financial feasibility for controlling emissions from ro-ro and tanker vessel can occur within the regulatory time frame. See response to comments 22.26 for more information on staff's analysis.

**Comment:** "And second, MPC is concerned with the proposed compliance dates as they are placing added safety risk to its operations. Staff has assumed the majority of compliance with this rule will be completed through the use of a land-based capture system, a system that has never been built or used on tankers before." (15-OT-47)

**Comment:** "Reducing the time to comply with the rule by two years is significant, provided the equipment has never been demonstrated." (15-OT-48)

**Agency Response (15-OT-47) and (15-OT-48):** CARB staff made no changes based on the received comments. CARB staff understands industry stakeholders have safety concerns with new technologies like capture and control systems. Safety is of the utmost importance to CARB as well. However, CARB staff disagrees that the implementation dates for tanker vessels pose a safety risk. Based on years of extensive evaluation during this rulemaking process (as documented in CARB staff's ISOR) and conversations with technology manufacturers<sup>21,22</sup>, CARB is confident that the existing emissions control technologies (shore power, capture and control) can be adapted for use on tanker vessels with proper design modifications and site specific engineering analyses. The Interim Evaluation (section 93130.14(d) of the Regulation) provides another opportunity for all stakeholders (including local and state permitting agencies) to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will use the outcome of the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff's findings at that time.

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<sup>21</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>22</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at: <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

As noted in the Berth Analysis (ISOR Appendix E), the use of a land-based capture and control system was assumed by CARB as the most likely technology for use by tanker vessels. However, the Berth Analysis assumptions are staff's best guess regarding the tanker industry's most likely compliance pathway based on conversations with industry members. The Regulation does not require the use of a capture and control system or any other specific emissions control technology. Tankers could elect to comply using another CARB approved technology, such as shore power, which has already been tested and used with tanker vessels, or any future to-be-developed CARB approved emissions control technology, including vessel-based technologies.

**Comment:** "Now, speaking practically, the vessel equipment, port infrastructure, and the IT reporting tools that we will need just can't be put in place by the first of January." (15-OT-53)

**Agency Response (15-OT-53):** CARB staff modified the proposed regulatory language in response to the received comment and others similar to it, which is in regards to the January 1, 2021, proposed implementation date for container, reefer, and cruise vessels in the original Proposed Regulation and the first 15-day change package published on October 15, 2019, and March 26, 2020, respectively. CARB staff understands that the ongoing economic situation has put additional stress on the ability of the regulated industry to prepare for compliance obligations beginning January 1, 2023. In response, and as directed by CARB's Board at the June 25, 2020, public Board Hearing, staff adjusted the implementation date for container, reefer, and cruise vessels to January 1, 2023. CARB is also developing an online reporting tool (FRRS) which will be available to assist with more streamlined reporting prior to 2023.

**Comment:** "We believe that the practical solution for the currently regulated fleets is to stay on this regulated pathway, while all of the implementation details are fully worked out, so that we can future proof this regulation and ensure its success. The staff recommendation is for these fleets to continue under the current rule until at least 2023 makes great sense and will achieve the needed plan reductions. (15-OT-54)

**Agency Response (15-OT-54):** CARB staff made no changes based on the received comment. CARB staff appreciates the support for the implementation date adjustment for container, reefer, and cruise vessels to January 1, 2023, and agrees that this change will benefit the regulated industry while not sacrificing significant additional emissions reductions versus the original proposed 2021 implementation date from the October 2019 and March 2020 proposals. More information about why CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change can be found in Attachment C to the Second Notice of Public Availability of

Modified Text and Availability of Additional Documents and Information, available at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>.

**Comment:** "If the rule is revised to include container and cruise ship in 2023, it is important that we remain bifurcated, and that our vessel fleets remain regulated and controlled under our current rule until 2023. However, we request that the Board maintain the existing rule and the success it has had and keep the bifurcated approach for container ships and cruise ships." (15-OT-71)

**Agency Response (15-OT-71):** CARB staff made no changes based on the received comment. CARB staff did adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, based on the Board's direction at the June 25, 2020, public hearing, with the stipulation that the vessel fleets currently subject to the 2007 At-Berth Regulation will remain subject to the requirements of that Regulation until the control requirements of the new Regulation begins on January 1, 2023. CARB is moving forward with the new Regulation in order to achieve additional health benefits from all vessel categories as highlighted in staff's ISOR and Attachment D to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information (available on CARB's website at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>). For more details on why CARB staff did not keep a bifurcated approach for container, reefer, and cruise ships, see response to comment 52.15.

**Comment:** "And the third request is that there's a reassessment on the regulations." (15-OT-75)

**Agency Response (15-OT-75):** CARB staff made no changes based on the received comment. This comment came from a representative of ILWU during the June 25, 2020, CARB Board Hearing. Staff are uncertain what type of reassessment of the Regulation is being requested by the commenter. This comment is not specifically directed at any specific proposed action or about the procedures followed by CARB in proposing or adopting the Regulation, therefore CARB is not required to respond.

**Comment:** "Although, I'm not a resident of a port community, in the Inland Empire I feel the impacts of diesel death zones and goods movement. And the same impacts from at-berth ships influence my friends and colleagues who live near the Ports of L.A. and Long Beach.

...Activities have had a strong hold on over our communities for centuries. And your job at CARB is to move away from what's easy to what is necessary. The supply chain is connected and any delay on the implementation of this rule will continue crises we've been living with before COVID-19 -- to allow ro-ro -- we believe that there are

no proposals to allow ro-ro vessels to delay compliance until 2025 instead of 2027 -- weakening of this proposal." (15-OT-85)

**Comment:** "We don't want to delay the compliance. And there are proposals to delay the shift to the new regulatory framework from 2021 to 2023, I believe, and we don't support that proposal. The new framework creates more accountability for the public enforceability. We need this rule to be adopted ASAP and we can no longer be waiting beyond the summer." (15-OT-86)

**Comment:** "Number two, that the regulation be adopted as soon as possible and all ship comply as soon as possible." (15-OT-92)

**Comment:** "We are grateful to staff for the work in expanding the scope of this rule to cover even more vessels and facilities, and we remain supportive of much of the staff's proposal in March, which would require earlier compliance for roll-on/roll-off and tanker vessels after compliance." (15-OT-16)

**Comment:** "We strongly support the Board taking action to reduce emissions from ships across the state, including for the first time addressing at-berth emissions from ro-ro and tanker vessels. We urge the Board to adopt this rule as soon as possible and not weaken any compliance deadlines in the rule. This rule is critical to reducing NOx and particulate matter pollution and would result in significant health benefits." (15-OT-62)

**Comment:** "We also believe the new regulatory framework will be more enforceable, and we do not support any delay in shifting to that frame -- to that framework." (15-OT-66)

**Comment:** "And I want to urge the Board to approve and implement the -- as soon as possible without delay, the regulation as proposed after the December Board meeting, which I attended and spoke at." (15-OT-13)

**Agency Response (15-OT-85), (15-OT-86), (15-OT-92), (15-OT-16), (15-OT-62), (15-OT-66), and (15-OT-13):** CARB staff made no changes based on the received comments. CARB staff appreciates the support from these commenters, understands, and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. However, CARB staff also realizes that emissions control technology to reduce emissions from vessels at berth and potential supporting infrastructure, will take time to plan, fund, develop, and install; as such, CARB staff set the implementation dates to allow time for these things to occur. This is particularly true for new vessel categories added to the Regulation. See Master Response 6 for more details on CARB's response to the ongoing pandemic situation.

ix. CARB Approved Emission Control Strategies (CAECS)

**Comment:** “We would like to know clearly the basis (reason) of these presented values, 2.8(NOx), 0.03(PM2.5) and 0.1(ROG).” (15-24.3)

**Agency Response (15-24.3):** CARB staff made no changes based on the received comment. See ISOR Pages I-25, III-2, and IV-37 for the rationale behind the presented values for NOx, PM2.5, and ROG for control technologies.

**Comment:** “Implementation date of regulation should not be advanced, and cost assistance is required for NOx, PM2.5 and ROG measurement.” (15-24.4)

**Agency Response (15-24.4):** CARB staff made no changes based on the received comment. CARB disagrees with this comment on not advancing the implementation date of the Regulation. CalEPA’s Boards, Departments, and Offices have been working to prioritize what are the most important field enforcement efforts that need to be undertaken to protect public health. However, control requirements for the first affected vessel categories have been pushed back from January 1, 2021 to January 1, 2023 allowing additional time to secure funding and for infrastructure design and construction. For more information on cost and incentive funding sources see response to comment 15-OT-23 or OC-2 Rees.

**Comment:** “[R]evisions do not go far enough in laying out clear lines of responsibility. For instance, Table 6 still identifies Terminal and Vessel as potentially responsible for CAECS failure, in addition to the CAECS operator. Only the CAECS operator should be responsible for failure of a CAECS system. In addition, Section 93130.15 makes clear that CAECS are eligible for use of the Remediation Fund, but Section 93130.12 only requires a CAECS operator to remediate excess emissions if excess emissions occur beyond three days. Under the proposed language, it is unclear which party is responsible for the first three days of excess emissions or if emissions must be remediated for connection delays. This ambiguity must be corrected to make clear that the CAECS operator is responsible for all excess emissions from performance in terms of arrival, connection, and departure and performance in terms of emissions control.” (15-69.19)

**Agency Response (15-69.19):** CARB staff made no changes based on the received comment. CARB disagrees with this commenter’s statement that the responsibility for CAECS failure is on the CAECS operator only if excess emissions occur beyond three days. CARB staff recognizes there will be situations where shore-side, vessel, or CAECS operational issues may cause the CAECS to fail, and there is no three-day time requirement for determining responsibility for uncontrolled emissions. In light of these challenges, CARB staff maintains the placing of shared responsibilities on all parties involved in

the connection process would ensure that if emissions are not being reduced, enforcement action for non-compliance can be taken against the appropriate party. In the case mentioned above by the commenter, the three days of excess emissions would be the responsibility of all regulated entities, not just the CAECS operator.

**Comment:** “Recommend that CARB retain the provisions in the current at-berth regulations that designate LNG- fired auxiliaries as an approved control option.” (15-57.7)

**Agency Response (15-57.7):** CARB staff made no changes based on the received comment. As described in Page I-34 of the ISOR, CARB recognizes that although LNG may significantly reduce SO<sub>x</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and PM emissions, there is the potential of increased methane and GHG emissions. In consideration of limited emissions data for LNG as a marine fuel and the need for further testing, staff will not currently consider LNG in the Regulation as a grid-neutral option. The applicant can do further testing and apply for and EO if this option is found to be equivalent.

**Comment:** “[R]ecommend that, when a CAECS operator fails to provide contracted emissions control services to a vessel or marine terminal, the compliance burden and any penalties for noncompliance be initiated solely against the CAECS operator. We also recommend that CARB amend the visit reporting deadline for CAECS operators consistent with our recommendations for vessel visit reporting (discussed above in part 5.c.iii of these comments).” (15-57.19)

**Agency Response (15-57.19):** CARB staff made no changes based on the received comment. Please refer to CARB response to 15-69.19 for further discussion on CAECS failure and responsible parties. Regarding the reporting, monthly reporting was selected to ensure the visit information is received in a timely manner in order to determine compliance with the Regulation yet still be a time period that is workable for all regulated parties.

**Comment:** “Some terminal operators currently draw power from a combination of grid and on-site cogeneration power. To meet the proposed “grid-neutral” requirement, these operators would need to isolate the power supply for the CAECS to pull directly and only from the grid, which adds unnecessary project complexity and is not a cost-effective way to reduce GHG emissions.” (15-49.78)

**Agency Response (15-49.78):** CARB staff made no changes based on the comment received. CARB disagrees with this comment that grid-neutral power supplies requires all operators to isolate the power supply for the CAECS from the grid. The Regulation’s reference to grid-neutral power is a performance standard, not a requirement to pull directly from the grid. It is more and more common for facilities to use self-generation, and many are still being tied into

the grid. CARB would expect that the facility has an interconnection agreement with the utility and that the power for a vessel derives from onsite renewables or grid electricity or another grid-neutral power supply. If the electricity going to a vessel comes from cogeneration, then CARB expects the cogeneration to be grid-neutral as well.

**Comment:** “WSPA believes the grid-neutral requirement in the proposed 15-Day Changes is unnecessary. A market-based incentive to reduce GHG emissions from a CAECS already exists through the Cap and- Trade Program, and the value of auctioned allowances is used by the state to further mitigate GHG emissions that might be generated by a CAECS.” (15-49.79)

**Agency Response (15-49.79):** CARB staff made no changes based on the received comment. The commenter does not explain how the Cap-and-Trade Program accounts for emissions from a CAECS. CARB disagrees with this comment as the GHG emission reductions from the existing Cap and Trade Program are for a different purpose, and CARB desires to take all feasible steps toward ensuring that the Regulation would not lead to any incidental GHG emissions increases.

**Comment:** “Additionally, a grid-neutral requirement drives facilities away from on-site cogeneration, which puts facilities at greater risk from Public Safety Power Shutoff events (which tend to drive facilities towards on-site power generation). For these reasons, this requirement should be removed from the 15-Day Changes. If CARB staff are concerned about impacts from a temporary power source (e.g., diesel engines) needed to power a CAECS, the 15-Day Changes should simply specify that CAECS may not be powered by those temporary power sources of concern.” (15-49.80)

**Agency Response (15-49.80):** CARB staff made no changes based on the comment received. CARB disagrees with this comment as grid neutrality does not automatically exclude on-site cogeneration, particularly if the on-site power generation is configured to be a distributed generation configuration that incorporates grid-neutral technologies. Again, the “grid neutral” requirement is a performance standard, not a mandate to use grid power.

**Comment:** “Electric Shorepower can only stop and prevent about 50% of ship emissions because shorepower can only connect to the Main Engines Exhaust Pipes. Toxic air pollution is still being released into the atmosphere untreated from Auxiliary Boilers... Ship Emissions Capture, Control & Treatment Technology can capture and treat 99% of emissions and therefore are more effective than shorepower.” (15-B-4.2)

**Comment:** “Electric shore Power though only controls 50% emissions. The technology of Ship Emissions capture, control and treatment is MORE EFFECTIVE.” (15-B-18.2)

**Agency Response (15-B-4.2) and (15-B-18.2):** CARB staff made no changes based on the comment received. As is discussed in further detail in chapter III of the ISOR, all vessels have auxiliary boilers. However, the majority of these auxiliary boilers are small and do not significantly contribute to the emissions profile of an OGV at berth. Control of boiler emissions is an added bonus of capture and control systems however, shore power remains the “gold standard” in air pollution control because it eliminates all on-site auxiliary engine emissions while the vessel is at berth, including cancer-causing DPM emissions. Whereas, capture and control systems cannot achieve 100 percent emissions capture as they will typically have on-board generators. Therefore, control system emission capture of boiler emissions offsets the additional emissions created by the control systems diesel generators.

**Comment:** “We want to replace the current CARB inappropriate technology approval process of using an Executive Order and want an industry standardized CARB Approved Ship Emissions Control Technology Certification Requirement. EO’s allow personal bias, industry an [sic] political influence to interfere and approve less qualified companies which is occurring now. We want no discretionary Executive Officer approval. A technology Applicant either passes or fails a CARB Approved Ship Emissions Control Technology Certification Protocol and Requirements.

We want clearly defined and certified Ship Emissions Technology Control Certification Requirement and Mitigation Measures.

We want all references to CARB Approved Emission Control Strategy (CAECS), emission control strategy, innovative concept and innovative concept compliance terminology to be replaced throughout the regulation with CARB Certified Approved Ship Emissions Control Technology.” (15-B-4.6)

**Comment:** “We Want A CARB Ship Emissions Control Technology Certification Protocol and Procedures.” (15-B-4.8)

**Agency Response (15-B-4.6) and (15-B-4.8):** CARB staff made no changes based on the received comment. On-board ship emissions control technologies are currently an option for reducing emissions from an OGV at berth. These technologies would receive an EO approval to be used for compliance. To receive an EO approval the system would have to meet the requirements that are clearly defined under the Regulation in section 93130.5. The CARB approval process through an EO is essentially the same and achieves the same goal as a CARB technology certification protocol and procedures the commenter is requesting.

**Comment:** “CARB include in the Certification Requirements that the manufacturer and/or seller provide evidence of ownership of technology patents or permission to use Emissions, Capture, Control and Treatment Technologies. CARB has issued an

EO's to a company that does not own the patents or rights for its technologies and allowed that they also be awarded CARB grant subcontracts." (15-B-4.9)

**Agency Response (15-B-4.9):** CARB staff made no changes based on the received comment. CARB disagrees with this comment as ownership of intellectual property and patents for technologies, and related intellectual property related legal matters, are outside the scope of the CARB EO approvals.

**Comment:** "CARB's Reference To A Second Qualified Ship Emissions Capture & Control Technology Company Is A Fraud & Example of CARB Management Discrimination Against A Superior Minority Owned Technology Company." (15-B-4.25)

**Agency Response (15-B-4.25):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking, irrelevant, and not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

**Comment:** "The problem we see is that some of these exemptions are asking for an extensions impact environmental justice communities the most. For example, we have requested and we want that CARB establish a ship emissions control technology certification protocol and procedures. We don't want to play games. We want to know exactly what technology is going to be approved. We don't want a strategy. We don't want innovative concepts." (15-OT-8)

**Agency Response (15-OT-8):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment as the exemptions under the Regulation are very limited, the only exemptions from regulatory requirements are if a vessel has a safety/emergency event, is performing in a research project, visiting a low activity terminal, commissioning for shore power, is utilizing a TIE or VIE or participating in an alternative compliance path such as the Innovative Concept. The Innovative Concept requires that the emissions benefit remains in the community and is equivalent or greater than the reductions that would have occurred using a CAECS. See section 93130.17 (a)(3) and (4) of the Regulation. These provisions insure emissions reductions directly benefit the local communities just as emissions reductions from vessel visits would.

Furthermore, the Regulation already has in place specific procedures for technologies including on-board technologies to be approved and used for compliance with the Regulation, please refer to section 93130.5 of the Regulation.

**Comment:** "We want you to approve zero-emission technologies, and we want you to certify them. We want you to approve emissions capture and treatment technologies and we want them to be certified." (15-OT-9)

**Agency Response (15-OT-9):** CARB staff made no changes based on the received comment. CARB staff agrees and believes that future additional zero-emission technologies will be developed and may receive CARB approval for compliance with the Regulation.

**Comment:** "We want to clearly define -- we want a clearly defined and certified ship emission technology control certification requirement and mitigation measures." (15-OT-68)

**Agency Response (15-OT-68):** CARB staff made no changes based on the received comment. See response to comment 15-B-4.6 for further discussion on CARB approval requirements.

**Comment:** "[Would like] the regulation include a CARB-approved ship emissions control technology certification requirement. I do not like the CARB staff proposed approved emissions control strategy. We also want emission control technology certification for protocol and procedures to be adopted." (15-OT-93)

**Agency Response (15-OT-93):** CARB staff made no changes based on the received comment. The current CARB Approved Emissions Control Strategy under the Regulation was developed to require emission technologies to meet specified emission controls through rigorous testing procedures, this is to ensure emission reductions occur. The strategies can be either vessel or land-side controls to provide flexibility for what works best at individual terminals and for vessel fleets.

#### x. *Definitions*

**Comment:** "(40) "IMO NOx tier" means the NOx tier level of a vessel as certified in the Engine International Air Pollution Prevention (EIAPP) Certificate. Vessel without an IMO NOx tier are considered pre-tier I vessel.

What is difference in correspondence between each vessel due to differences in tier? If the vessel satisfied with tier 2 or 3, is there some preferential treatment?" (15-24.2)

**Agency Response (15-24.2):** CARB staff made no changes based on the received comment. The difference between IMO NOx tiers is the standard set by the IMO. Each tier I, II, and III have increasingly lower NOx emissions. No preferential treatment is given to different IMO tier vessels other than for a reduced remediation fund for Tier III vessels. Another benefit for higher tiered vessels is that it will be easier to achieve the NOx emissions requirement of the Regulation if choosing to control via an on-board option.

**Comment:** "If a malfunction occurs, please specify what kind of maintenance record should be prepared and submitted in order to certify "Not poor maintenance, negligent operation, or any other reasonably preventable upset condition or equipment breakdown." (15-24.9)

**Agency Response (15-24.9):** CARB staff made no changes based on the received comment. As part of the requirements of becoming a CAECS, a warranty must be provided and included the maintenance practices set forth by the manufacturer (section 93130.5(d)(5)). Since maintenance and the requirements may be different for each CEACS, CARB staff did not include specificity on the kinds of maintenance records that should be kept and submitted as part of a malfunction.

**Comment:** "Section 93130.7. Vessel Operator Requirement. Vessel operators that visit a berth or terminal in California shall meet the following requirements. Any failure to perform any specific items in this section shall constitute a separate violation for each day that the failure occurs.

Operator definitions are stated as follows:

*"Page 13 (79) "Vessel Operator" means any person who decides where a vessel is to call or who is in direct control of the vessel. The party in direct control of the vessel may be a third-party hired to carry cargo or passengers for the person under a charter agreement to operate the vessel. Direct control does not include the vessel master or any other member of the vessel crew, unless the vessel master or crew member is also the owner of the vessel or decides where a vessel is to call."*

From these definitions, it is possible to understand that the owner considers the charterer to be the operator, and the charterer considers the shipper to be the operator. Please add a sentence that clearly indicates the requirements imposed on the shipper." (15-24.12)

**Agency Response (15-24.9):** CARB staff made no changes based on the received comment. There is potential for all of these entities: owner, charterer, and shipper, to be the vessel operator and all could have a responsibility to meet these requirements. In many cases, the owner of the vessel is not in control of where a vessel goes when chartered, and the shipper is not controlling the vessels movement but instead taking space on a planned vessel route. In general, the charterer is the one that decides the routes and brings the vessels to California. However, depending on the relationship between the owner, charterer, and shipper, the owner or shipper may also be considered the operator.

**Comment:** "There are virtually no opportunities for government authorities to visit and 'clear' a vessel at every time. Therefore, can we regard the vessel to be 'Ready to Work' when the gangway is set up or the when the captain signs documentation in communication with the agent? Please provide clear guidance as to what would constitute a clearance by government authorities. Since it is expected that the loading/discharging start time will be delayed, the stern ramp should be set up regardless of whether power has been switched to shoreside electrical power." (15-24.13)

**Agency Response (15-24.13):** CARB staff made no changes based on the received comment. Government clearance is achieved when labor is permitted to begin working the vessel. If no government agencies are required to clear a vessel prior to starting work, they would be considered "Ready to work" when the vessel is tied to the berth and the gangway has been lowered with netting down.

**Comment:** "We support this change as it addresses the fact that 'Ready to Work' should not occur until any government entities that has jurisdiction over the vessel visit has cleared the vessel. While the above described change is helpful, we recommend that CARB insert in the amended definition the following after 'netting down' and before 'all: ', the ramp is down and secure (if applicable), required shore side labor technicians are present, and". These changes to the 'Ready to Work' definition are needed to accommodate vessels equipped with ramps (which would not therefore use a gangway) and to note the presence of labor technicians that are essential to hooking the vessel up to shore power or to an alternative compliance method." (15-57.5)

**Agency Response (15-57.5):** CARB staff made no changes based on the received comment. The purpose of the gangway being down and secured is to allow individuals to safely board and disembark the vessel. In the case where the vessel uses a ramp instead of a gangway, then ready to work would not begin until after it is down and secured so that individuals can safely board and disembark the vessel. CARB staff disagree with adding "required shore side labor technicians are present" as the commenter suggests, as it is the terminal's responsibility to ensure labor is available to connect a vessel to a CAECS when the vessel is made "Ready to Work". Real emissions impacts are occurring to port communities when the vessel is not connected to shore power or another CAECS, so CARB staff does not want to provide any incentive that might unintentionally delay the start of emissions reductions.

**Comment:** "CARB proposes to add language to this definition that states that 'a vessel move from one berth to another is considered a new visit at each subsequent berth'. We recommend that the words 'at a different marine terminal' be inserted after the word 'another' so shifts within a single marine terminal, which occur infrequently but may be done when an operational problem is encountered at the initial berth, would not constitute a new vessel visit. To correspond to the above

change, the words 'at a different marine terminal' must also be inserted after the word 'berth' in Section 93130.7(e)(4)(l)." (15-57.6)

**Agency Response (15-57.6):** CARB staff made no changes based on the received comment. The requirements to reduce emissions at berth apply for the duration of a visit. Treating vessel shifts as individual visits enables the vessel to stop emissions control at the first berth and restart emissions control at the new berth.

**Comment:** "The definition of Anchorage includes the words "moor" and "California waters," but there are no definitions of these words." (15-B-4.26)

**Comment:** "The average person does not know what the word moor means and does not know how far out in the ocean is the California water boundary." (15-B-4.27)

**Agency Response (15-B-4.26) and (15-B-4.27):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff added the definition for "moor" in the 15-day change package released in July 2020. "California waters" in the anchorage definition was also amended to read "regulated California waters," which had an existing definition.

**Comment:** "The term At Anchor is used more often than At Anchorage and should also be included in the definitions." (15-B-4.28)

**Agency Response (15-B-4.28):** CARB staff made no changes based on the received comment. CARB staff did not add additional definitions for anchorage as is intended to define a more generalized category of at anchor.

**Comment:** "We want the requirement and definition of Certification to be included in the definitions." (15-B-4.29)

**Agency Response (15-B-4.29):** CARB staff made no changes based on the received comment. CARB staff are unclear exactly what this commenter was referencing in their letter, but assume they are referring to requirements and certification of a CAECS systems. CARB staff did not include a requirement for certification because there is not one single process for certifying every imaginable piece of vessel emissions control technology. As such, there was no reason to include the requirements and definition of certification to be included in the Regulation definitions as requested by the commenter.

**Comment:** "There is no definition for IMO and does reference all the mandatory worldwide ship requirements that are applicable in this At Berth Rule." (15-B-4.30)

**Agency Response (15-B-4.30):** CARB staff made no changes based on the received comment. CARB staff did not include a definition of IMO but did include a definition for "IMO number" and "IMO NOx Tier," which are

referenced in the Regulation. CARB staff did not include any reference to international requirements as requested by the commenter as CARB does not have enforcement authority for those programs and requirements.

**Comment:** "The rule defines Remediation Fund but has no definition of Remediation." (15-B-4.31)

**Agency Response (15-B-4.31):** CARB staff made no changes based on the received comment. CARB staff did not include an additional definition as the remediation fund definition includes the action of remediation, "achieve emission reductions, not otherwise required by law or regulation."

**Comment:** "There is a Tanker Boiler definition but fails to state that all ships have and use Boilers. Tanker Ship Boilers are also the largest source of emissions." (15-B-4.32)

**Agency Response (15-B-4.32):** CARB staff made no changes based on the received comment. CARB staff did not include additional boiler definitions, as only some specific tanker boilers are included in the Regulation. See the ISOR, Chapter I for more information on tanker boilers.

**Comment:** "There is a Utility definition that is not correct or accurate. One accurate definition of Electric Utility is: An electric utility is a company in the electric power industry that engages in electricity generation and distribution of electricity for sale generally in a regulated market. Where does staff get the word 'any person engaged in...?'" (15-B-4.33)

**Agency Response (15-B-4.33):** CARB staff made no changes based on the received comment. In the definition of utility, "Person" can mean business entities or public districts, and is a defined term in the Regulation.

**Comment:** "We want a review of all word definitions and all words contained in this regulation." (15-B-4.34)

**Agency Response (15-B-4.34):** CARB staff made no changes based on the received comment. CARB staff are unclear on the scope of what this commenter is requesting CARB staff to do. Staff reviewed all definitions and the Regulation in its entirety prior to finalizing the Regulation, and determined no additional changes would be needed.

xi. *Terminal and Vessel Incident Events (TIEs and VIEs)*

**Comment:** "We, as a very small fleet operator, we are concerned with wording on legislation for assigning VIE to a fleet. For container fleets it is said to be 5% of total amount of visits from previous year and the number will be rounded to the nearest whole number. On our fleet, we average 9 to 11 port calls a year and that resulting in a total assigned VIE of 0.45 to 0.55. In a year where we would have only 9 port calls,

assigned VIE for following year would be 0.44 which rounded to nearest whole number would become zero. Could the board consider reviewing wording to read 'The number of VIEs granted is rounded UP to nearest whole number'?" (15-78.1)

**Agency Response (15-78.1):** CARB staff made no changes based on the received comment. The intent of the Regulation is to control emissions from vessels and reduce impacts on nearby communities. While the method to estimate TIEs and VIEs may be conservative, rounding could inappropriately permit uncontrolled visits due to mathematical and not practical, reasons. Staff foresees the potential for misapplication, inadvertently or intentionally, by vessels self-classifying themselves as "fleets," which could undermine the Regulation and result in a higher level of uncontrolled emissions than anticipated.

**Comment:** "Vessel Incident Events (VIEs) and Terminal Incident Events (TIEs): Rather than using a fleet average to allow the flexibility that vessels need to deal with normal incidents beyond their control, this rule sets up a complicated and limited number of passes each year through VIEs and TIEs. The VIEs and TIEs are also provided for just one port, even if vessels call 3 different terminals - for instance in SD-LA/LB-SF - severely limiting their number, availability or usefulness. The VIEs and TIEs system is most punitive to vessels making fewer calls and those without an option to use alternative compliance options. The VIEs and TIES are then dropped by 2029. As noted, this system is unrealistic and uncertain, leaving ships without knowing if they have incurred a violation or if they are in non compliance, even if it is the result of something beyond their control." (15-58.5)

**Agency Response (15-58.5):** CARB staff made no changes based on the comment received. The comment is outside the scope of this comment period, therefore, CARB is not required to respond. Similar comments and responses can be found in the 45-day comment period section of this FSOR.

**Comment:** "[W]e recommend that CARB temporarily increase the VIE allocation for 2021-2024 to 10 percent per year." (15-57.16)

**Agency Response (15-57.16):** CARB staff made no changes based on the comment received. CARB staff continues to believe five percent VIEs, in combination with the remediation fund, and the Innovative Concept option, will be enough for all vessels to comply with the Regulation. Additionally, the implementation dates for control of emissions for cruise, ro-ro, and container vessels has been postponed until 2023 allowing for additional time for all vessels to equip control equipment and for alternative control equipment to be built and deployed.

**Comment:** "Since vessel operators may encounter situations that warrant additional VIEs that could not be anticipated by 1 December, we recommend that CARB modify

93130.11 (c) by inserting the following after the third full sentence: '(Note: CARB staff will consider, and respond within 60 calendar days, to written requests for additional VIE and TIEs submitted at any time during the year)'." (15-57.17)

**Agency Response (15-57.17):** CARB staff made no changes based on the comment received. Additional VIEs or TIEs must be requested by December 1 of the previous year so that CARB staff has time to review the request prior to February 1 of each year when VIEs/TIEs are distributed. VIEs and TIEs are provided by February 1 of each calendar year so that fleets and terminals can plan around a set number of VIEs/TIEs. Although an unexpected increase will not result in more VIEs for a fleet immediately, an increase in visits will be included when VIEs are calculated for the following year.

**Comment:** "[W]e recommend that CARB allow companies to carry over any unused TIEs or VIE until June 30 of the year after they were granted." (15-57.18)

**Agency Response (15-57.18):** CARB staff made no changes based on the comment received. This comment was previously submitted during the 45-day comment period. See response to comment 45.29 for more information.

**Comment:** "We Do Not Want To Expand Use Of Vessel and Terminal Incident Events (VIE's and TIE's) To New & Growing Vessel Fleets & Terminals" (15-B-4.24)

**Agency Response (15-B-4-24):** CARB staff made no changes based on the comment received. TIEs and VIEs were established as compliance options that help address times when a terminal or vessel cannot control emissions due to operational issues. TIEs/VIEs allow for the uncertainty that may surround vessel movements and cargo operations. CARB staff has purposefully kept the TIE/VIE percentages as low as possible to maintain a high level of emissions controlled to protect the surrounding port communities while still allowing some flexibility to regulated entities.

CARB staff added the provision in section 93130.11(c) to allow for vessel fleets and terminals to expand their operations in California. Either a fleet or terminal may request additional TIEs or VIEs when they anticipate growth in the following year. This was necessary to ensure fleets and terminals have the ability to plan for growth, and to allow for new businesses to enter the California market. However, the percentage of TIEs and VIEs will stay the same. For example, if a fleet operator anticipates 20 additional vessel visits in a year, they would only be allowed one additional VIE.

**Comment:** "[T]he Port is very concerned that the proposed complex regime of TIEs and VIEs will lead to disputes, rather than collaboration, among terminal operators, vessel operators, and a local seaport. It is doubtful whether CARB enforcement staff

possesses the necessary dispute resolution expertise to referee the foreseeable conflicts. Again, the Port of Oakland recommends that CARB maintain the framework of the existing At-Berth Regulation in place for containerships.” (15-B-10.8)

**Comment:** “And finally, we're concerned again that the TIEs and VIEs concept, which has been introduced could create actually --conflict and reduce collaboration among our vessel owners and terminal operators of the port.” (15-OT-90)

**Agency Response (15-B-10.8) and (15-OT-90):** CARB staff made no changes based on the comments received. CARB staff disagrees TIEs/VIEs would cause conflict or finger-pointing, as the Regulation has been designed to help delineate the responsibilities of each unique port, terminal, and vessel relationship.

It is the reporting parties’ responsibility to determine if a TIE/VIE is used for a visit that did not reduce emissions. If parties cannot agree, and no exceptions are requested, the visit will be noncompliant and may be subject to enforcement action. During an investigation, CARB enforcement staff may find one or all parties responsible depending on the unique facts of the case. The Regulation has been developed to place responsibilities on all parties involved in the connection and ensures that compliance obligations are assigned to the appropriate party.

Further, staff believes that at higher levels of compliance as required by the Regulation (80 percent to 90 percent), there would be less ability to absorb missed controlled visits through fleet averaging. Additionally, the Regulations per visit compliance obligation allows for the determination of compliance faster and is more streamlined. If fleets prefer the structure of annual fleet averaging, regulated entities can apply to CARB to use annual fleet averaging as an Innovative Concepts Compliance Option (section 93130.17). If the application is approved, fleets can use this strategy to help with the transition to the new Regulation structure. When using an Innovative Concept to comply with a vessel visit, regulated parties cannot use VIEs/TIEs or accrue VIEs/TIEs based on that visit; circumstances that would call for the use of a VIE or TIE would instead need to be accounted for with fleet averaging. An Innovative Concept is subject to CARB approval and an application to utilize this strategy must be submitted to the Executive Officer no later than December 1<sup>st</sup>, 2021.

**Comment:** “Number five, that the regulation require all ports and terminals to have compliance requirements. The staff has created these TIEs and VIEs. And they avoid advanced planning, because it's not necessary. So they need to prepare emergency backup contingency plans.” (15-OT-95)

**Agency Response (15-OT-95):** CARB staff made no changes based on the comment received. Ports and terminals have compliance responses in the form

of providing a CAECS for a vessel visit. They are to provide the equipment prior to the start of the vessel visit compliance dates and require advance planning by way of port and terminal plans submitted prior to compliance dates (section 93130.14). TIEs and VIEs are provided to terminals and vessel fleets to help in instances when compliance cannot and are capped to a small percentage of vessel visits per year.

#### 4. REGULATION LANGUAGE CLARIFICATIONS

**Comment:** "In regards to general applicability. "Who would be chiefly responsible? If the vessel is chartered, will the owner be responsible? As can be seen from the phrase "All responsible parties may be held jointly and severally liable," we can assume that CARB takes the stance that chartered vessels, owners, and shippers can all be held responsible. Please clarify the responsible person." (15-24.10)

**Agency Response (15-24.10):** CARB staff modified the proposed regulatory language in response to the received comment. The definition of vessel operator was clarified to mean the person in direct control of the vessel, meaning the person who decides where a vessel is to call. This person is considered a responsible party.

**Comment:** "Differentiations between existing and newly built ship standards should be clarified. Expecting old vessels to comply with latest performance standards is impractical. Limitations (like derating) should be acceptable." (15-24.17)

**Agency Response (15-24.17):** CARB staff made no changes based on the received comment. The Regulation makes no differentiation between new and old vessels. The Regulation requires all regulated vessels to reduce emissions at berth regardless of age. The Regulation can accommodate any strategy that becomes a CAECS (see section 93130.5) or an Innovative Concept (see section 93130.17). Many existing vessels have already been retrofit to use shore power or have connected to a capture and control systems.

**Comment:** "INTERTANKO would suggest there is a need to clarify situations of availability of such systems, including providing shore power to tankers. If a tanker which has no means to use shore power arrives and the systems are not available, what would be the consequence of proceeding to berth and to cargo operations? Similarly, if a tanker can use shore power but the level of shore power required a large tanker is not available to be supplied for some time, what would be the consequences? Would the ship wait with cargo operations until such an options becomes available? We strongly suggest such aspects need to be clarified in due time. INTERTANKO will suggest this question is not a pure commercial issue. Such a scenario could create a lot of bottle necks in port activities." (15-35.3)

**Agency Response (15-24.17):** CARB staff made no changes based on the received comment. A tanker vessel that has no means to use shore power must arrange for another CAECS to reduce emissions on the vessel during the visit. See section 93130.7(a). If the terminal also does not have shore power, then the terminal shares the responsibility of arranging the CAECS for the visit. (See section 93130.9(b)) If a tanker has been commissioned to use shore power at a terminal, then the terminal is required to plug the vessel into shore power or arrange another CAECS for the vessel to use. See section 93130.9(a).

**Comment:** "Section 93130.7 contains checklist items that a commissioned shore power equipped ship will not be able to complete unless the terminal/port and/or CAECS operator completes their obligations under the rule. Section 93130.7's statement that "Any failure to perform any specific items in this section shall constitute a separate violation..." could thus be used to penalize a shore power equipped ship that cannot complete all of the vessel checklist items in 93130.7(e) because the terminal/port or CAECS operator failed to meet its rule obligations." (15-57.8)

**Agency Response (15-57.8):** CARB staff made no changes based on the received comment. The vessel completes the checklist to the best of their ability. If the required emissions were not reduced on the visit, then there is the potential for a violation depending on the circumstances. Vessel operators with shore power visiting terminals without shore power can note that it is the responsibility of the terminal to arrange for a CAECS. See section 93130.9 (b).

**Comment:** "[R]recommend that 93130.7 (a) be replaced with the following:

*"(a) Shore power requirements for at berth emissions reductions. Vessel operators with shore power vessels that have been commissioned by the terminal (or port) at which the vessel will call (or deemed compatible based on a previous commissioning) shall plug in to shore power on each visit to the terminal. Commissioning of vessel shore power equipment should be based on the following technical standards: IEC/ISO/IEEE 80005-1/80005-2 and IEC 62613- 1." (15-57.9)*

**Agency Response (15-57.9):** CARB staff made no changes based on the received comment. See Agency Responses 52.C.64 and 47.6. Staff is supportive of standardization and anticipate that IEEE standards will be adopted by industry.

**Comment:** "With reference to ROG, please advise more details how to calculate ROG, because a vessel which equips LNG fueled Diesel Generator engine will be delivered soon, Therefore we'd like to prove that the LNG fueled engine is acceptable for At-Berth Regulation.

[W]hat is FRAC(Excel)-Fraction data for source categories, and how to calculate, please advise formula." (15-2.1)

**Agency Response (15-2.1):** CARB staff made no changes based on the received comment. Total organic gases (TOG) is measured using method 25A and ROG is calculated as a ratio of ROG/TOG, for MGO that factor is 0.856. Since there are not ratios for LNG vessels in the emission inventory excel sheets listed in the Regulation, these ratios can be conservatively assumed to be 1. If there are different test methods that a company believes would be better to use for source testing natural gas engines, CARB can work with you to explore using alternative test methods and has the ability to allow different test methods upon written approval from the Executive Officer.

**Comment:** "The regulation states that, "To receive CARB approval, a person must demonstrate that the emission controls strategy achieves emission The word person must be replaced with 'Technology.'" (15-B-4.7)

**Agency Response (15-B-4.7):** CARB staff made no changes based on the received comment. Section 93130.5 requires an applicant to submit an application for a control strategy to become a CAECS. This person must provide information that the strategy reduces emissions following the guidelines in the Regulation.

**Comment:** The regulation requires a manufacturer to provide a Warranty but Carb Staff is currently waiving those requirements and allowing a company to continue to operate out of compliance and in violation of a CARB Executive Order and CARB Subcontract requirements. i.e. Port of Los Angeles Green OMNI Terminal Project - Clean Air Engineering-Maritime, Inc. Marine Exhaust Treatment System (METS-1) and ShoreKat System. (15-B-4.10)

**Agency Response (15-B-4.10):** CARB staff made no changes based on the received comment. The warranty provisions requirement remains in the Regulation language. See Section 93130.5 (d)(5). The 2007 At-Berth Regulation does not have a warranty provision. The METS-1 system is not in violation of CARB's EO. The ShoreKat does not operate under an EO.

*i. Opacity*

**Comment:** The proposed rule establishes an opacity limit for vessels at anchorage. Such a requirement conflicts with established International Maritime Organization (IMO) and USEPA emissions standards for vessels. USEPA rules preempt state and local emissions standards for oceangoing vessels. While not quantified as a typical numerical standard but a limit based on Ringelmann values, an opacity limit is clearly an engine emissions standard for an operating vessel – even if that operation is at anchorage. Such standards should be promulgated for new engines and done so

through existing IMO/USEPA framework. Accordingly, CARB should eliminate the proposed emissions standard from the regulation. Moreover, the novel treatment of vessels At Anchorage should be removed from the regulation for vessels At Berth as they present fundamentally different topics of regulation, on fundamentally different subjects of regulation, and often impact completely separate and different off-road engines. The inclusion of an entirely new class of potential engines, fuel, and emissions standards in this rulemaking is unsupported by significant data in the ISOR, SRIA, or 15-Day Change Notice, and is also subject to the granting of a waiver by USEPA separate and independent of the existing waiver approved for the current regulation. (15-69.34)

**Agency Response (15-69.34):** CARB staff made no changes based on the received comment. See responses to comment 52.43 and 52.19.

**Comment:** "There is no definition of Opacity and Opacity Requirements. It essentially means how dark is the black smoke that you see and the volume. You cannot see or see clearly the smoke in the rain, on a foggy day and at night.

Opacity Requirements require a person to take a class and having opacity charts/scales to look at or to confirm an observation. So there is some personal opinion and best judgement allowed.

We want to include CARB PM Standards and Testing Requirements included in the regulation." (15-B-4.23)

**Agency Response (15-B-4.23):** CARB staff made no changes based on the received comment. CARB disagrees with this statement, as there in fact is a definition of opacity and it is consistent with California's general opacity standards under Health and Safety Code section 41701. The opacity limit or standard is a visible darkness limit, which is measured by a Ringelmann number scale for discharge (smoke) during a specific observation period. This test method and standard is used because it applies to stacks with internal diameters greater than 7 feet and for consistency. Regarding the PM testing and standards, that is already part of the Regulation under the EO CARB approval process for emission control systems. These systems have to pass this testing in order to receive an EO and as it clearly states in the Regulation, OGVs are required to utilize these approved systems while they are at berth. This is to ensure that PM and other emissions are in fact being reduced.

**Comment (15-24.11):** "It is said that black smoke on a Ringelmann 2 or more scale and other pollutants must not be discharged for more than three minutes out of every hour. Do we need to monitor the funnel with cameras and store recorded video? Video that can be adequately verified at night can be difficult to obtain."

**Agency Response (15-24.11):** CARB staff made no changes based on the comment received. The opacity requirements under the Regulation do not contain any requirements for video recording or recordkeeping as related to opacity. Opacity requirements are related to maintenance of the vessels engines, therefore if the vessel operator performs regular maintenance on the engines they should not be in violation of the opacity requirements. While opacity standards are included in the Regulation, the requirements mirror the statutory opacity limits that are already effect and already apply to all sources.

## 5. TECHNOLOGY FEASIBILITY

**Comment:** “Shore power technology is more compatible with some ship categories than others. Of particular concern are safety and operational limitations that exist for tanker ships. We hope your rulemaking process will allow for assessment of the feasibility of use of shore power, and any alternatives, for the tanker and roll-on-roll-off (RoRo) ship categories before actual plug-in requirements go into effect. We would like to be partners with you in the consideration of technologies for these new ship categories as you work through your regulatory process.” (15-80.2)

**Agency Response (15-80.2):** CARB staff made no changes based on the received comment. CARB staff is aware of the limitations of adapting shore power for tanker and ro-ro vessels and intends to use the Interim Evaluation in 2022 under the Regulation to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. The outcome of the Interim Evaluation will be used to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff’s findings at that time. CARB staff appreciates and welcomes the offer for assisting in the Interim Evaluation.

**Comment:** “[T]he technologies discussed in support of the Rule have not been tested for the tanker sector and could result in substantial safety issues.” (15-B-16.3)

**Comment:** “A feasibility study for tankers involving registered, international, safety, classification, society organizations is necessary to avoid serious safety concerns associated with CARB’s proposed control technology. We want CARB to be part of this process. We request also that the feasibility study findings be brought back to the Board so that you can see the findings for yourself.” (15-OT-4)

**Comment:** “CARB has acknowledged the challenges the tankers moving to cold ironing. The SRIA did not identify it as likely compliance option for tankers. Many tankers visit infrequently and are not likely justified for retrofit. Without standardizations for voltage infrequency, very few vessels would be compatible with any single shore-side connection likely causing supply disruption.” (15-OT-46)

**Comment:** "We strongly support a feasibility study be completed prior to announcing or determining any sort of compliance dates on tankers." (15-OT-49)

**Comment:** "I am greatly concerned about the unintended consequences of exhaust gas capture. I believe it's imperative that the issues be fully addressed before considering its implementation." (15-OT-50)

**Comment:** "Number one, I'm most concerned about the way that the system will affect the generation of inert gas. Large tankers utilize boilers to power the cargo pumps, which are driven by massive steam turbines. Exhaust gas from the boilers is processed to have very low oxygen and injected into the cargo tanks as the cargo is discharged. This requires a critical balance of air and fuel in the boiler in order to control the oxygen content while still producing the right amount of steam and pressure. It all changes as the pump speed is adjusted and will be complicated by the starting and stopping of the ship's generator engines, which -- whose gas is also being captured. The system must be able to sink -- perfectly synchronize with the vessel." (15-OT-51)

**Comment:** "Secondly, I'm concerned about static electricity. The flow of the exhaust gas through the capture hose system along with other components within the capture system are likely to produce a static charge, which could in turn cause an incendiary spark. I've identified three examples of deadly polluting tanker explosions caused by static electricity combined with non- or poorly inerted tanks. Sansinena in Los Angeles Harbor in '76. This incident is important, because it was one of the actual drivers that created the current rules for the use of inert gas. The Chassiron in 2003 --that exploded in France due to high O2 contact with static discharge. And lastly, the Doola 3, which exploded in 2012 due to a static discharge. All three incidents could have been prevented with better control of static electricity and the proper use of inert gas. I believe it's imperative that these issues are addressed prior to implementation. Explosions have become exceedingly rare because of the use of inert gas and static precautions. I cannot express strongly enough the importance of ensuring the safety exhaust capture technology before it is implemented." (15-OT-52)

**Agency Response (15-B-16.3), (15-OT-4), (15-OT-46), (15-OT-49), (15-OT-50), (15-OT-51) and (15-OT-52):** CARB staff made no changes based on the received comments. Through regular conversations with the tanker industry, staff is aware of many of the claims raised by these comments regarding land based emissions capture systems, especially concerning the lack of space, structural stability, fire/explosion safety, and electrical safety of these systems. CARB agrees that any emission control system needs to be safe, and therefore must address identified safety concerns. Staff does not believe that technical issues, such as static discharge, are unsurmountable. Tanker vessels already have strategies in place to introduce inert gas into tanks during the offloading process. Furthermore, capture systems are substantially decoupled from a

tanker vessel, directing the exhaust gas from engines and boilers taken from a vessel's stack onto a barge- or land-based system for treatment. Solving technical issues should be addressed independent of the regulatory process to control emissions. Capture and control systems have already been used on many other OGV categories, and in other industries. Many of the hurdles identified by the tanker industry are already known and understood by developers who believe they can be addressed.

Although it is true there has not yet been a capture and control system tested and approved for tanker vessels, due to the lack of any emissions control requirements until the approval of this Regulation, technology providers have informed CARB<sup>23,24</sup> that alternate control technology, as proven on other vessel categories, can be adapted to tanker vessels. Technology providers have used capture and control technology for regulatory compliance on container vessels and have used it on bulk and ro-ro vessels. CARB believes that the technology to control emissions on tanker vessels is similar in many aspects to the systems currently in existence, and can be reasonably adapted to tankers given the time provided to the tanker industry. There are no restrictions in the Regulation that would prevent tanker vessels from utilizing other forms of emissions control technologies, including shore power or barge-based capture and control systems. Specifically, the rationale behind CARB's assumption that tanker vessels will utilize land-based capture and control systems in staff's analyses, was largely due to a lack of collective interest expressed by the tanker industry in regards to the development of shore power for tanker vessels (see ISOR, Chapter III and CARB staff's Berth Analysis Record of Development<sup>25</sup> for more discussion). Additionally, capture and control systems can also treat boiler emissions. This provides an advantage for controlling tanker emissions, as shore power cannot reduce boiler emissions because boilers on OGVs are, in general, not electric powered. Retrofitting to electric boilers would be impractical, requiring large auxiliary engines, and replacement electric boilers. This is unlikely to successfully accomplish because of space and operational constraints with vessels designs that are generally not flexible enough to undergo such a redesign and would add substantial costs on top of the costs already considered.

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<sup>23</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>24</sup> Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at: <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

<sup>25</sup> CARB staff's Berth Analysis Record of Development is available for public review and includes a record of the conversations and emails provided to CARB staff that formed the Berth Analysis (ISOR Appendix E). For information on how to access these records, see CARB staff's "Second Notice of Public Availability of Modified Text and Availability of Additional Documents and/or Information" released July 10, 2020.

The additional time allowed for implementation of tanker vessel control requirements (2025 and 2027) will also provide the opportunity for the development, construction and deployment of safe land based control systems to use on tanker vessels, in addition to developing and deploying safety protocols and establishing operational requirements. However, that does not preclude a tanker vessel from selecting other options for compliance, including a barge-based capture and control system, where feasible.

Another path CARB staff integrated into the Regulation is the Innovative Concept compliance option which is described in Section 93130.17. CARB staff believes that the Innovative Concept pathway provides flexibility by allowing vessels or terminal operators additional time needed to identify opportunities for implementing a compliance strategy that reduces vessel emissions while at berth. Approved Innovative Concept projects are valid for up to 5 years, and can be renewed for another compliance period of up to 5 years as long as the qualifications in the Regulation are maintained (see Section 93130.17(a)(7)). Innovative Concept project applicants can apply for renewal indefinitely as long as the project continues to meet the qualifications listed in the Regulation. As such, the Innovative Concept pathway can be utilized as a terminal's main pathway to compliance or as a bridge to reduce emissions while longer term project installations are taking place.

Staff also included an Interim Evaluation into the Regulation for 2022, which will be used by staff as a way to reassess the impacts stemming from the current pandemic situation and will provide an opportunity to suggest changes at that time if necessary based on updated information.

For further discussion on tanker emission control feasibility and safety see the *Responses to Comments on the Draft Environmental Analysis*, Master Response 4.

**Comment:** "Ro-ro vessels make infrequent and very short port calls in California. The problem is that ro-ro vessels and the terminals they call have limited viable compliance options. For example, barge-based emissions capture systems present safety and reach issues. Shore-based capture systems obstruct cargo operations, and exceed the load-bearing capabilities at certain ports." (15-OT-30)

**Comment:** "CARB's proposal fails to demonstrate that a cost effective and practicable pathway exists for ro-ro auxiliary emissions." (15-OT-31)

**Agency Response (15-OT-30) and (15-OT-31):** CARB staff made no changes based on the received comment. Based on conversations CARB staff have had with industry stakeholders, staff anticipates that capture and control systems (a mixture of both barge-and land-based) will be the primary pathway for compliance for ro-ro vessels in the near term. As ro-ro berths are generally large, wide-open spaces with sufficient wharf strength to support the off-

loading of cars and other large equipment on wheels, wharf infrastructure improvements are not anticipated to be necessary for ro-ro terminals and systems should be developed with safety and operations in mind. For a discussion on the benefits from barge-based systems, tugs and ro-ro vessels see Master Response 1. Additionally, the Interim Evaluation in 2022 will be used to reassess the status of ro-ro vessel technologies and make any timeline adjustments if necessary, depending on the outcome of the Interim Evaluation.

**Comment:** “We also very much appreciate the intended courtesy of the innovative concept provision, but believe that in its current form regulated parties may opt to comply via vessel-based technologies, which have not been vetted to be safe. So in the spirit of due diligence, we'd like to ask that the Board ensure that the parties impacted by this rule would comply with it in a way that would potentially compromise safety and effective emission reductions.” (15-OT-34)”

**Agency Response (15-OT-34):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment. The Innovative Concept provision, which is limited to a compliance period of up to five years before requiring applicants to apply for a renewal, reduces emissions from sources in and around the regulated port or marine terminal at a level equivalent or greater to what would be achieved by reducing emissions from vessels. The provision would not cause an increase in vessel-based technologies to be used for compliance as written. Any vessel-based technology utilized for compliance with the Regulation would have to follow the same approval process as other CARB approved emission control systems which would ensure that the technology was safe and effective at reducing emissions, see section 93130.5 (d) of the Regulation.

**Comment:** “We have concerns because the port [of Oakland] does not have a feasible alternative compliance method. This has been recognized by CARB staff.” (15-OT-88)

**Agency Response (15-OT-88):** CARB staff made no changes based on the received comment. See response to comment 17.5 in the 45-day comments section of this FSOR.

**Comment:** “[T]he regulation require ports and terminals to provide more adaptive shore power, that is the shore power needs to be at both ends of the ship or be connected up -- be able to be connected up at both ends of the ship and both sides. That's the port and starboard sides and fore and aft ends, because that's some of the problem in connecting of the port power.” (15-OT-96)

**Agency Response (15-OT-96):** CARB staff made no changes based on the received comment. While CARB agrees that more adaptive shore power may be necessary at some terminal locations, the Regulation does not include requirements that specify shore power must be used for compliance but rather

simply requires that vessel emission reductions are achieved. Vessel and terminal operators can achieve these reductions by directly reducing emissions from a vessel at berth using shore power or through the use of a CAECS, use of a TIE/VIE or remediation fund, or by using an Innovative Concept in order to provide necessary flexibility.

## 6. COSTS AND ECONOMICS

**Comment:** "In order for the Port of San Diego to meet the connection requirements already proposed, it needs money to build the additional infrastructure to provide a second connection to shore power. Please provide the resources to make this happen before Jan 1, 2021." (15-33.5) (15-34.5) (15-37.5) (15-38.5) (15-39.5) (15-40.5) (15-41.5) (15-43.5) (15-45.5) (15-47.5) (15-56.5) (15-64.5) (15-66.5) (15-67.5), (15-73.5), (15-74.5), (15-76.5), (15-77.5), (15-79.5), (15-63.5) (15-60.7) and (15-44.5)

**Comment:** "I understand that our Port has only one connection to shore power, and it certainly seems like we need a second in our infrastructure. I understand that is a real complicating factor, especially given the financial impacts of the ongoing pandemic. Are there plans (and budgeting) in the works to do this?" (15-42.3)

**Comment:** "BROADWAY AND B STREET PIER CRUISE SHIP RULES. We need one more at least power hook station for cruise ships ASAP.: (15-70.1)

**Comment:** "Installation of shore power infrastructure is very expensive and we hope the state can help support this program with appropriations for the development, purchase and deployment of this technology. (15-80.5)

**Comment:** "[R]equest that cap and trade funding and other types of funds are allocated to ports to build the infrastructure. (15-B-3.5)

**Agency Response (15-33.5), (15-34.5), (15-37.5) (15-38.5) (15-39.5) (15-40.5) (15-41.5) (15-43.5) (15-45.5) (15-47.5) (15-56.5) (15-64.5) (15-66.5) (15-67.5), (15-73.5), (15-74.5), (15-76.5), (15-77.5), (15-79.5), (15-63.5) (15-60.7) (15-44.5) (15-42.3), (15-70.1), (15.80.5), and (15-B-3.5):** CARB staff made no changes based on the received comment. The structure of the Regulation does not mandate that any port or terminal, including the Port of San Diego cruise terminal, use 100 percent shore power. Each port and terminal must commit to reducing emissions from every vessel visit (for regulated vessel types at regulated terminals), with the exception of those visits using TIEs/VIEs or experiencing an event qualifying for use of the remediation fund. A port or terminal may also apply to use an Innovative Concept as a pathway to compliance (section 93130.17 of the Regulation). However, CARB staff does understand that shore power will likely be the main compliance option for cruise vessels and that some infrastructure improvements may be necessary to support the new regulatory structure.

Additionally, staff acknowledges the Regulation will have substantial costs and fiscal impacts which can be seen in further detail in the SRIA released as part of the ISOR in October 2019 and the subsequent 15-day changes cost updates released in March and July 2020. Costs and impacts of the Regulation were disclosed to the public as well as the Board prior to the adoption of the Regulation. See response comment 48.5 for more information on CARB incentive programs that may be able to assist with infrastructure improvements.

**Comment:** “The alternative emission capture and control technologies will not only be expensive to develop, but also expensive to deploy. Ultimately, in order to comply with the At Berth Rule, California ports will need to purchase several systems. To support the development, purchase and deployment of this technology, the Ports are requesting CARB appropriate at least \$200 million statewide. (15-25.6)

**Comment:** “CAPA urges CARB to continue its support to dedicate low carbon transportation funds for the development, demonstration, and commercialization of this technology.” (15-75.6)

**Agency Response (15-25.6), (15-75.6):** CARB staff made no changes based on the received comments. CARB staff understands that some infrastructure improvements may be necessary to support the new regulatory structure. Additionally, staff acknowledges the Regulation will have substantial costs and fiscal impacts which can be seen in further detail in the SRIA as part of the ISOR in October 2019 and the subsequent 15-day changes cost updates released in March and July 2020. Costs and impacts of the Regulation were disclosed to the public as well as the Board prior to the adoption of the Regulation. See response to 45-day comments 13.2 and 48.5 for more information on CARB incentive programs that may be able to assist with the development and deployment of alternative emission capture and control technologies.

**Comment:** “Assumptions used to determine cost impacts due to the accelerated compliance deadlines in the 15-day package are not available. CARB indicates the changes will increase compliance costs from the initial \$2.2 billion to \$2.4 billion, a change of about 10 percent. But CARB fails to illustrate how this 10 percent cost increase is proportional to a 33 percent decrease in time to comply for the POLB and 25 percent decrease for all other terminals.” (15-72.3)

**Agency Response (15-72.3):** CARB staff made no changes based on the received comment.

It is worth noting that because staff adjusted the implementation dates with the release of a second 15-day changes published on July 10, 2020, updated cost figures were presented for these modifications. As such, the percent differences listed in this comment are no longer relevant to the latest cost

figures for the Regulation. However, CARB was required to publish a SRIA as part of the ISOR in October 2019, disclosing costs and impacts of the Regulation to the public well in advance of the adoption of the Regulation. With the 15-day changes, CARB staff was not required to provide updates to cost information, as the cost information used to assess the Regulation largely stayed the same. However, in the interest of transparency, staff did provide the assumptions that led to any changes in cost and provided updated total cost information, which were included as part of Attachment B to the first and second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information published on March 26, 2020, and July 10, 2020, respectively (available on CARB's website at: <https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>).

CARB staff does not expect the accelerated compliance deadlines for tankers to substantially affect costs. Even if tanker operators and terminals encounter difficulties in developing or adapting their desired control technologies by the compliance dates (a scenario CARB staff believes to be unlikely), staff expects that many tanker vessel and terminal operators most likely would utilize Innovative Concepts to meet the at berth emissions reduction requirements of the Regulation until emission control systems are deployed and/or vessel fleets adopt on-vessel technology that meets the emission reduction requirements. The Innovative Concept would reduce emissions from other sources in and around the port or marine terminal at equivalent (or greater) levels that would be achieved with reducing emissions from vessels at berth, at a lower cost than direct compliance. CARB staff provided more detail on its methodology for incorporating the Innovative Concepts into the cost analysis in the 15-day package released March 26, 2020 (See Attachment B, page B-2).

Please see Attachment B of the 1<sup>st</sup> 15-day changes (page B-3) for further information regarding why the use of Innovative Concepts will result in reduced costs to tanker terminal operators and ports compared to the costs for installing capture and control equipment and infrastructure.

**Comment:** "MPC asks CARB to continue focusing on more cost effective emission reduction opportunities within the state, this will allow for emission reduction technologies associated with OGV's to mature." (15-72.5)

**Agency Response (15-72.5):** The Innovative Concepts provision included in the 15-day changes (Section 91130.17) allows terminal or vessel operators an alternative to direct vessel emission reductions. If a more cost effective way to reduce emissions from sources in and around the regulated port or marine terminal (at a level equivalent or greater to what could be achieved by solely reducing emissions from vessels) exists they may apply to CARB to use that strategy. See section 93130.17 of the Regulatory Text for more information.

This alternative compliance option helps in situations where emissions reductions technologies may not be available and also allows for the maturing of technologies for emissions control on vessels.

**Comment:** “Current and credible financial projections do not support the Air Resources Board’s basis for this rule. As the Department of Finance commented on the Standardized Regulatory Impact Analysis, “... because new facilities are required for compliance, these capital costs may not be spread evenly across the effective period of the regulation as (C)ARB assumes but will depend on the ability of parties to finance up-front costs.” The Air Resources Board’s written response, that “the Proposed Regulation would result in indirect costs to individuals and small businesses to the extent that compliance costs are passed through to the ultimate consumers of cargo and cruise vessel passengers,” is not practical considering the shut-down of the cruise industry, prolonged travel/gathering restrictions, and chilling impacts of the recession on demand for imported goods. (15-61.4)

**Agency Response (15-61.4):** CARB staff made no changes based on the received comment. Staff understands that economic conditions are tough for some industry members in light of the current economic downturn. In response to this uncertain situation, staff adjusted implementation dates for container, cruise, reefer, and ro-ro vessels via the second 15-day change package to provide more time for regulated entities to recover financially from the current economic downturn and acquire any necessary additional equipment or infrastructure needed to support the new regulatory requirements. It is important to note, given this commenter’s concerns about the cruise industry, that staff do not anticipate a significant amount of new infrastructure needed at currently regulated ports receiving cruise, container, or reefer vessels (as shown in the Berth Analysis, ISOR Appendix E) because the majority of the infrastructure for container, reefer, and cruise vessels is already in place due to the existing 80 percent connection requirements with the 2007 At-Berth Regulation. Vessels and terminals will have a combined 20 percent flexibility through VIEs/TIEs through 2025, making the connection level requirements similar to the 2007 At-Berth Regulation for which the appropriate amount of infrastructure should already be in place. CARB staff has also designed the Regulation with an interim review to occur in 2022, which will give staff an opportunity to assess the current economic situation and recommend any changes to the Regulation.

In regards to DOF’s comment regarding non-annualized capital costs, staff addressed the concern in the ISOR (Appendix C-2). See response to comment 52.C.1 for more details regarding staff’s SRIA and DOF’s response.

**Comment:** “The economic analysis presented by CARB shows Low Carbon Fuel Standard (LCFS) credit-derived revenue offsetting electricity, labor, and infrastructure costs without restriction. At the time of this letter, CARB LCFS staff is still preparing

guidance on the “Use of Proceeds” under the LCFS regulation. As a result, it has not been clear what costs are eligible for offsets on the LCFS “Use of Proceeds” requirements. Please confirm that shore power-related electricity, labor, and infrastructure costs are eligible offsets for shore power-generated LCFS credit revenue.” (15-69.31) (15-68.24)

**Agency Response (15-69.31), (15-68.24):** CARB staff made no changes based on the received comment. Since receipt of this comment, CARB released a draft guidance document titled “Low Carbon Fuel Standard (LCFS) Guidance 20-03 Electricity Credit Proceeds Spending Requirements” (available at [https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance\\_20-03\\_ADA.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/guidance/lcfsguidance_20-03_ADA.pdf)) in March 2020 that clarified eligible costs for LCFS offsets and confirmed that shore power-related electricity, labor, and infrastructure costs are eligible offsets for shore power-generated LCFS credit revenue. CARB staff received email confirmation from this commenter that the release of this guidance document adequately clarified the eligible costs and clearly aligned it with CARB staff’s SRIA analysis for this Regulation. No revisions to the regulation or staff analysis are needed in response to this comment.

**Comment:** “The summary of the impacts on costs states that emission reductions can be achieved for \$30,000 per weighted ton and the cost analysis for the proposed regulation has been updated to reflect that cost assumption based on information from PMSA and WSPA. The referenced PMSA email concerned the appropriate value of the remediation fund, since the purpose of the remediation fund is to replace unmitigated auxiliary engine emissions. If CARB staff believes that number accurately reflects the costs to offset uncontrolled emissions, the hourly remediation fund rate should be adjusted to reflect that. If CARB does not believe that the \$30,000 per weighted ton estimates of cost reflect the cost of replacement emission reductions, then the cost estimate prepared by CARB should reflect the higher value used to establish the remediation fund rate. CARB should not select higher and lower costs in order to achieve a preferred outcome depending on each situation.” (15-69.32) (15-68.25)

**Agency Response (15-69.32):** CARB staff made no changes based on the received comment. CARB based the remediation fund amount on the Carl Moyer cost effectiveness formula for zero emission technologies of \$100,000/weighted ton of emissions to ensure there is adequate funding available for zero-emission projects in and around the port to help advance technology beyond what is currently regulated. However, stakeholders advised us that they could develop Innovative Concepts at the Carl Moyer cost-effectiveness level of \$30,000/weighted ton of emissions. As such, the \$30,000 per weighted ton value was used for analyzing costs of alternative compliance projects based on information provided to CARB staff by industry stakeholders. The more conservative value was left in place, however, for the

remediation fund to ensure the emissions from uncontrolled vessel visits are fully remediated.

The remediation fund option is not designed as a long-term option for vessel or terminal operators to reduce emissions. Staff expects the remediation fund option to only be used in limited circumstances (see section 93130.15(b) for details) and that operators would be prepared to minimize reliance on the fund through coordinating logistics and scheduling or an Innovative Concept to ensure that equipment repairs and construction projects do not hinder vessel emissions from being controlled.

**Comment:** “Accelerating the schedule increases costs in multiple ways. However, the ‘15-Day Change’ notice provides no detail on how costs increased. There is only a vague statement that total program costs have increased by \$210 million. It attributes increased costs to the accelerated schedule and to the inclusion of the Innovative Concept section but does not identify what those costs are or how they arise. The nature and mix of costs are important to understanding the economic impact. As the Department of Finance (DOF) pointed out in its comment of the Standardized Regulatory Impact Assessment (SRIA):

*‘the SRIA must include non-annualized capital costs. Capital costs are almost half of the direct costs of the package. However, because new facilities are required for compliance, these capital costs may not be spread evenly across the effective period of the regulation as ARB assumes, but will depend on the ability of parties to finance up-front costs. The SRIA should disclose the cost of capital construction to the year the money will actually be spent, as well as the assumed amortization.’*

The proposed acceleration of the deadline compounds the issue that DOF identified. Without detailed information on the increased costs, it is impossible to assess and provide impacts for those increased costs.” (15-68.15)

**Comment:** “[T]he “15-Day Change” notice provides no detail on how costs are increased. There is only a vague statement that total program costs have increased by \$210 million. It attributes increased costs to the accelerated schedule and to the inclusion of the Innovative Concept section but does not identify what those costs are or how they arise.

The proposed acceleration of the deadline compounds the issue that DOF identified. Without detailed information on the increased costs, it is impossible to assess and provide impacts for those increased costs.” (15-69.21)

**Agency Response (15-68.15), (15-69.21):** CARB staff made no changes based on the received comment. See response to comment 15-72.3 in regards to the cost information provided in staff’s 15-day change package. In regards to

DOF's comment regarding non-annualized capital costs, staff addressed the concern in the ISOR (Appendix C-2). See response to comment 52.C.1 for more details regarding staff's SRIA and DOF's response.

**Comment:** "CARB's estimate of net costs incurred by vessel operators using port power includes vessel equipment and maintenance costs. But these costs are partly offset by fuel savings, since the vessels would no longer have to run their auxiliary engines when in port. The estimated amount of fuel savings is based on the marine gas-oil price of \$763/metric ton (actual cost in April 2019), adjusted using the U.S. Energy Information Administration's (EIA) price projections for transportation diesel fuel. The EIA projection, made in October 2018, assumed that diesel prices would rise from \$2.80 per gallon in 2018 to \$3.39 in 2020, \$4.30 by 2025 and \$5.03 by 2030. (The same forecast assumed that West Texas crude oil would rise from \$50 per barrel in 2018 to \$72 per barrel by 2020, \$100 per barrel by 2025, and \$120 per barrel by 2030. As noted earlier, the price as of April 24 of this year was \$17 per barrel.) If lower crude-oil prices persist, the avoided costs will be substantially less than assumed in the CARB estimate, and net costs of the regulation will be higher. (15-68.33)

**Agency Response (15-68.33):** CARB staff made no changes based on the received comment. CARB staff acknowledges that the exact costs of the fuel savings in the Regulation are subject to varying crude oil prices. However, the calculated fuel savings at \$8M was less than 0.5 percent of the total calculated costs of the Regulation (as noted in the SRIA, ISOR Appendix C-1). As such, staff do not expect variances in the cost savings for fuel to make a significant impact on the overall cost of the Regulation.

Additionally, CARB staff has been closely monitoring the impacts of the pandemic to the shipping industry. The low fuel prices mentioned by this commenter were quoted from April 2020, which was heavily impacted by the associated economic downturn. In response to impacts seen by the shipping industry, staff presented the impacts to CARB's Board on June 25, 2020, and published a second 15-day change package on July 10, 2020, adjusting implementation dates for container, reefer, cruise, and ro-ro vessels. These implementation date adjustments are expected to aide industry in recovery of the current economic downturn, which in turn supports staff's original fuel savings analysis.

**Comment:** "Chevron believes that ARB's cost analysis greatly underestimates the costs to permit, construct and operate a land-based capture and control system. To avoid misinformation to the public, we recommend this cost information be corrected." (15-30.29)

**Comment:** "Typically, Chevron estimates the engineering costs alone (excluding permitting) at around 6-8% of the total cost for the project which is significantly higher

than the \$1,000,000 ARB estimates when taking into account the additional construction costs which ARB has underestimated or not included.

ARB assumes in Table IV. Tanker Terminal Infrastructure Feasibility, Engineering and Permitting Costs on page 8 of the Inputs and Assumptions document that the engineering AND permitting costs will total around \$1,000,000 per berth. Even if ARB’s extremely low-cost estimates for terminal installation of land-based capture and control systems is taken (which Chevron does not believe is accurate and is discussed in further detail below), 6-8% of a \$66,000,000 project (which is ARB’s estimate) is around \$4,500,000 for engineering alone which is an additional \$500,000 on top of ARB’s estimate. The table below shows the 6-8% cost estimate for engineering is based off of ARB’s cost estimate in the Land- Based Capture and Control Cost Input Table in their Cost Analysis workbook.

Land-Based Capture and Control	Unit	Value	Total Cost with 4 Berths
Land-Based Emission Treatment System Cost - Tanker Terminals [B]	Cost per berth (\$)	\$4,999,500	\$ 19,998,000
Terminal Infrastructure (Berth to Shore Shoreside Piping) Capital Cost - Tanker Terminals [B]	Cost per berth (\$)	\$4,500,000	\$ 18,000,000
Loading Arm (Crane) Cost - Tanker Terminals [A]	Cost per berth (\$)	\$7,000,000	\$ 28,000,000
		Total	\$ 65,998,000
		6%	\$ 3,959,880
		8%	\$ 5,279,840

[H]owever, CARB’s assumption regarding the number of cranes (“loading arms”) per berth is incorrect. The cost per berth for cranes alone would double to \$14,000,000 per berth. For Richmond Long Wharf, the total for cranes alone based on CARB’s estimate is \$56,000,000 for all 4 berths, plus piping and emission treatment system costs. Consequently, the total investment using CARB’s values above would be \$94MM, with engineering ranging from 6% (\$5.64MM) to 8% (\$7.52MM). This number is likely still low based on the underestimate of construction costs which would inevitably increase the design and permitting costs. Lastly, the 6-8% estimate for design does not include the cost of permitting which would put ARB’s \$1,000,000 figure even more out of proportion with the true costs.” (15-30.31)

**Agency Response (15-30.29) and (15-30.31):** CARB staff made no changes based on the received comments. CARB staff obtained cost information incorporated into the ISOR and SRIA from a variety of sources, which are detailed in Appendix A of the SRIA, and used the best available information to develop the cost estimates for the Regulation, including information received directly from stakeholders regarding the projected costs to permit, construct, and operate a land-based capture and control system as well as the number of cranes needed per berth for each terminal (as reflected in ISOR Appendix E).

Staff agree that the costs may not directly reflect every terminal-specific solution, as each terminal will have different needs, but reflects a best estimate of a statewide average cost expectation. The compliance costs that were presented in the SRIA and that were used in the macroeconomic analysis were chosen to be conservative. For example, staff assumed for the cost analysis

that each tanker terminal exceeding the vessel visit threshold would require an emissions control system, emission control system connections and foundation support structure, piping infrastructure from berth to emission control system, cranes, and crane support structures. Not all tanker terminals will need such extensive infrastructure and thus, in some cases staff have overestimated the costs.

CARB agrees the cost of the Regulation is considerable, but the health-related benefits continue to outweigh the costs. See 15-day changes attachment B for more information on the costs of the Regulation.

**Comment:** “Most roll on, roll off terminals resemble parking lots and do not have a large amount of existing electrical equipment.” Small ports do not have the economic resources to make such large investment during the current economic crisis.” (15-B-3.9)

**Comment:** “[T]he costs for the new infrastructure required by the proposed regulations will be shouldered by the Port of Hueneme alone, as we are both the Public Port Authority and terminal operator. The Port is a State Special District, not a wealthy multinational corporation as previous commenters have suggested. The scale of the investments needed to comply with the proposed rule are so significant that in the revenue-limited environment we are in due to the pandemic, it will be extremely challenging to meet the proposed timelines in the draft rule. With this in mind, we ask that the CARB Board consider the unprecedented downturn of the global economy and their role in the upcoming economic recovery for our community as they review the proposed deadlines of these new regulations.” (15-B-15.2)

**Agency Response (15-B-3.9) and (15-B-15.2):** CARB staff modified the proposed implementation dates of the Regulation in response to numerous concerns received from stakeholders regarding the ability of stakeholders to prepare for regulatory compliance during the ongoing economic downturn, including shifting the ro-ro vessel compliance date from 2024 to 2025. CARB staff believes the additional year will provide both small and large ports/marine terminals with adequate time to secure funding for and install the emissions control system(s) needed to control emissions from ro-ro vessels visiting their terminals by January 1, 2025. As presented at CARB’s June 25, 2020, public hearing (recording of the remote Board Hearing available at <https://cal-span.org/unipage/?site=cal-span&owner=CARB&date=2020-06-25>), minimal impact to the emissions reductions achieved by the Regulation are expected as a result of this modification.

Historical vessel activity data from the Great Recession timeframe also indicated a recovery period of around 3 years for ro-ro vessels, which lines up with this adjusted 2025 date for ro-ro vessels. The 2022 Interim Evaluation will also provide CARB staff the opportunity to assess the progress being made towards

the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will use the results from the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories depending on staff's findings.

Incentive funding is also available for small and large ports to assist in funding emissions control technologies. See response to comment 48.5 for more information on CARB incentive programs that may be available to assist small ports with necessary infrastructure improvements. Alternatively, regulated entities can use the Innovative Concept Compliance Option to comply with the Regulation, which provides a pathway for regulated entities to select lower cost emissions reductions projects from sources other than vessels at berth (see section 93130.17 of the Regulation).

**Comment:** "ARB incorrectly assumes in Table XI. Berth and Terminal Counts, Anticipated Infrastructure Needs, and Unique Vessels on page 17 of the Inputs and Assumptions document that only one crane would be needed for each berth to operate a land-based capture and control system. For the RLW, two cranes would be needed to operate a land-based capture and control system thus doubling the cost of this element and requiring additional engineering and construction time. Two cranes are needed for the following reasons:

- i. Vessels need to be able to arrive and depart with the tides, which requires them to be able to berth starboard- and port-side-to (i.e. face different directions). Two cranes are required to address the two directions a vessel may berth.
- ii. Should a ship need to take stores aboard while at berth, it would necessitate berthing in the direction such that the vessel's crane is adjacent to the Wharf. Each vessel is unique in its layout for the shipside crane, which may be located on the port side or the starboard side. This means a terminal must have the flexibility of port-side-to or starboard-side-to berthing for each vessel call.
- iii. A single crane is only feasible if vessels are designed to have an OCIMF-developed standard ship-to-shore exhaust port located in a central location near the midpoint on the ship. However, no such standard currently exists. Vessel stacks are at the stern, and consequently, one single crane at the midpoint of the berth cannot reach hundreds of feet horizontally while also reaching over a hundred feet vertically while also avoiding conflicts with the operating envelopes of other terminal equipment such as marine cranes, permanent gangways and vessel cranes/equipment on deck. (15-30.32)

**Agency Response (15-30.32):** CARB staff made no changes based on the received comment. The document referenced by this commenter, the Inputs and Assumptions document, was published for discussion purposes only in

May 2019 prior to staff's May 14, 2019, and May 16, 2019, public workshops. Following the May 2019 workshops, staff received information from tanker vessel stakeholders indicating that two cranes would be needed per berth at all Northern California tanker terminals. In response, staff updated the cost analysis to reflect two cranes per berth at all Northern California tanker terminals, as reflected in both the SRIA on page 83 and Berth Analysis (ISOR Appendix E). As such, the cost of the regulation already includes two cranes at the Richmond Longwharf (RWL). Therefore, no additional adjustments to the cost analysis are needed to account for this commenter's concern.

**Comment:** "Piping and Electrical Infrastructure Needs – Similar to the discussion on cranes, we believe ARB has underestimated the costs of piping and electrical infrastructure needs in Table III. Land-Based Capture and Control Systems – Cost Inputs on page 7 of the Inputs and Assumptions document. To begin, ARB is only taking into account the piping infrastructure needs and has not accounted for the necessary electrical upgrades. For the RLW, this is a critical cost element as almost a mile of medium or high-voltage electrical infrastructure (cables, conduit and duct bank) and potentially a new sub-station or expanded substation would be needed to connect the land-based capture and control system to the refinery's electrical grid. Chevron would also likely need to upgrade another substation inside the refinery and replace two 12kV 24 MVA transformers with 48 MVA transformers. Further modifications may be necessary at the point of interconnection with PG&E. Consequently ARB's cost estimate is significantly underestimated. See the blinded cost information submitted by WSPA for additional details. (15-30.33)

**Agency Response (15-30.33):** CARB staff made no changes based on the received comment. The document referenced by this commenter, the Inputs and Assumptions document, was published for discussion purposes only in May 2019 prior to staff's May 14, 2019, and May 16, 2019, public workshops. Following the May 2019 workshops, staff received additional information from tanker vessel stakeholders, including the cost information as provided by WSPA as mentioned in this comment. As shown on page 83 of the SRIA under the sub-heading "*Emission control system connections and foundation support structure,*" CARB staff did factor in costs for electrical infrastructure into the costs of emission control system connections for land-based capture and control systems based on the information provided. Therefore, no additional revisions to CARB's analysis are needed.

**Comment:** "Undersized Emission Control Systems – ARB has estimated the costs of the emissions control system in Table III. Land-Based Capture and Control Systems – Cost Inputs on page 7 of the Inputs and Assumptions document based on the boiler loads from tankers as opposed to the volumetric flowrate expected from the tanker stacks. This significantly underestimates the sizing of the emission control system needed and subsequently also underestimates the costs. Typical exhaust flow rates for Suezmax vessel are around 55,000 cubic feet per minute (cfm) and those for very large crude carriers (VLCC) and ultra large crude carriers (ULCC) would be even

more, although VLCCs and ULCCs do not currently call at the RLW. After discussing the costs of an emission control system with vendors of these technologies, Chevron believes that the costs ARB estimated using the boiler loads is over 2x less than what the cost would be if they were estimated based upon the stack exhaust flow rates which the vendors deem appropriate. (15-30.34)

**Comment:** “Additional Space Needed at the RLW – Nowhere in ARB’s Inputs and Assumptions document is an estimate of the costs associated with the need to expand the RLW’s footprint to account for the additional space needed to house the cranes, piping and emission control systems. Chevron estimates that in order to house the necessary equipment, the RLW would need to add approximately 25,000 square feet to its existing footprint. This would necessitate driving between 1,500 and 2,000 new piles to support the additional space and weight. Without taking these critical costs into account, ARB is severely underestimating the cost for the RLW, and likely other marine terminals. Additionally, the need to drive piles and expand the footprint adds a significant amount of time to the permitting process and construction, as described in 3e, below.” (15-30.35)

**Agency Response (15-30.34), (15-30.35):** CARB staff made no changes based on the received comments. The document referenced by this commenter, the Inputs and Assumptions document, was published for discussion purposes only in May 2019 prior to staff’s May 14, 2019, and May 16, 2019, public workshops. Following the May 2019 workshops, staff received additional information from tanker vessel stakeholders, including the volumetric flow rate information as mentioned by this commenter and information reflecting the necessary infrastructure needs to support emissions control equipment. This additional information was factored into the SRIA as published on August 1, 2019, and can be found in the SRIA Appendix A, page 7, Table III-B. *Land-Based Capture and Control Systems for Tanker Vessels – Cost Inputs*. Therefore, no additional revisions to CARB’s analysis are needed.

**Comment:** “Necessary PG&E Electrical Upgrades – Nowhere in ARB’s Inputs and Assumptions document is an estimate of the costs which would be born by the end user (e.g., the Richmond Refinery) for the necessary upgrades to PG&E’s systems to account for the additional load needed to operate a land-based capture and control system. It is unclear without an engineering assessment conducted by PG&E what the costs would be for upgrading PG&E’s equipment outside the refinery’s control to meet the additional electrical demand necessary to operate the land-based capture and control systems. ARB should engage with PG&E and include the scope of improvements necessary and include those costs into their cost estimates.

Additionally, PG&E will pass along the costs of long-term operations and maintenance (O&M) to the customer requesting the electrical infrastructure upgrades in the form of “special facilities fees”. In recent years, those fees have ranged from 70% to 100% of the cost of the new infrastructure built, meaning the actual cost of the upgrades are

nearly double. PG&E infrastructure was not taken into account in ARB's electricity cost calculations in their Cost Analysis workbook. When Chevron representatives inquired on May 17, 2019, PG&E's customer service representative for major industrials in the East Bay region commented that he had not yet been consulted or asked to evaluate PG&E infrastructure needed to support expanded electrical demand at the marine terminals and ports in the East Bay region, and that it would take some substantial engineering effort by PG&E staff. Further, any PG&E infrastructure needed should be included in the CEQA analysis for the regulation. (15-30.37)

**Agency Response (15-30.37):** CARB staff made no changes based on the received comment. The commenter is correct that electrical utility infrastructure costs were not included in the cost workbook. As stated in the SRIA, Appendix B page 7,

*"The potential for this cost to occur was raised by stakeholders, but no stakeholders provided specific information on which to base an assumed cost. Staff understands that these costs would be incurred at some terminals but not others, and be highly dependent on existing conditions at each individual location."*

Thus including any cost numbers would be speculative at best. Additionally, the SRIA was submitted to DOF on August 1, 2019 and on August 29, 2019. DOF responded with comments on the SRIA (available at [http://www.dof.ca.gov/Forecasting/Economics/Major\\_Regulations/Major\\_Regulations\\_Table/documents/ARB\\_At\\_Berth\\_SRIA\\_Finance\\_Comments2019.pdf](http://www.dof.ca.gov/Forecasting/Economics/Major_Regulations/Major_Regulations_Table/documents/ARB_At_Berth_SRIA_Finance_Comments2019.pdf)). DOF stated:

*"[W]ith one exception, [DOF] generally concurs with the methodology used to estimate impacts of proposed regulations. The SRIA clearly lays out for the public the proposed regulatory impacts. The methodological appendices are particularly valuable, as they clearly identify distribution of costs across geography, vessel type, and class of regulated party."*

CARB addressed the DOF comment in the ISOR (Appendix C-2).

In addition, utility infrastructure was included in the draft EA. Specifically, construction calculations of reasonably foreseeable utility construction were calculated and are provided in Appendix D, Attachment B, Air Quality Calculations.

**Comment:** "Additional Labor – In Table III. Land-Based Capture and Control Systems – Cost Inputs on page 7 of the Inputs and Assumptions document, ARB assumes that no additional labor would be needed to operate and maintain the land-based capture and control systems but does not provide any justification for this assumption. For the RLW, which would need eight new cranes and a new emission control system, it is

likely that additional personnel time will be necessary to ensure safe and efficient operations.” (15-30.38)

**Agency Response (15-30.38):** CARB staff made no changes based on the received comment. Table III-B Tanker Land-Based Capture and Control Systems for Tanker Vessels – Cost Inputs clearly states additional labor costs to be approximately \$1,000,000 per berth annually. See ISOR Appendix C-1 (SRIA), SRIA Appendix A, page 7.

**Comment:** “Maintenance Costs – While ARB breaks out the maintenance costs for the shore power option in Table XII. Shore Power Infrastructure, Maintenance and Labor – Cost Inputs on page 18 of the Inputs and Assumptions document, they do not provide an equivalent table for land-based capture and control systems. The only information which ARB provides is an estimate of \$17,500 for the maintenance on the emission control system which in itself appears very low. Additional data on the equipment’s reliability would provide for a much more accurate cost estimate especially given the significant size increase over existing systems which serve a similar purpose. Additionally, this estimate does not appear to include the maintenance costs associated with the cranes, electrical systems or piping. Considering the RLW would need eight cranes and over a mile of electrical infrastructure and piping, this cost would be significant. (15-30.39)

**Agency Response (15-30.39):** CARB staff made no changes based on the received comment. Shore power has been a long proven strategy for emission reductions. Starting in 2014 shore power has been used throughout ports in California for compliance with the 2007 At-Berth Regulation. Maintenance and labor needs and costs for shore power are more readily available as compared to land-side systems. Land-side systems are a promising developing technology and system reliability is still in the process of being demonstrated. All costs related to land-based control systems can be found in Table III-B. Land-Based Capture and Control Systems for Tanker Vessels – Cost Inputs on page nine of Appendix A of the SRIA, which states:

*Staff did not receive consistent information from stakeholders regarding an appropriate value to estimate maintenance cost for both the emission control system and the associated infrastructure. Therefore, Staff assumes that maintenance costs would be similar to shore power equipment in proportion to project capital costs, and applied 0.3 percent based on the average shore power terminal equipment maintenance costs of \$24,285 and the container/reefer berth shore power retrofit capital costs of \$7,010,813 per berth as indicated by the June 2018 vessel operator surveys.*

As explained, CARB staff did include maintenance costs for both emission systems and associated infrastructure, such as cranes.

**Comment:** Additional Demurrage Costs – ARB does not account for the additional time needed to connect, ensure operability and disconnect the shore-based capture and control systems which would lead to additional demurrage. Chevron estimates that approximately 1-2 additional hours would be needed per vessel visit to account for the addition of a land-based capture and control system. (15-30.40)

**Agency Response 15-30.40:** CARB staff made no changes based on the received comment. Attempting to quantify demurrage costs that might potentially be incurred would be entirely speculative and not appropriate for CARB staff's cost analysis. See SRIA Appendix B, page 8, *Cost Inputs*, for information regarding demurrage costs:

*The potential for this cost to occur was raised by stakeholders, but no stakeholders provided specific information on which to base an assumed cost. Staff understands that these costs would be incurred at some terminals but not others, and be highly dependent on existing conditions at each individual location.*

CARB staff believes that by requiring all parties (port, terminals, and vessels) to be responsible for reducing emissions, it is in the best interest of all parties to connect equipment control emissions as quickly and efficiently as possible to minimize the potential for any demurrage fees.

**Comment:** "Increase in Electricity Rates – PG&E's approved Time of Use (TOU) electric rate change effective October 2020 effects a 30% increase in electricity rates for E-20T industrial consumers with Standby electrical supply, including demand charges. Current proposed rate increases are 4-7% per rate case (every 3 years). Further, with the 4Q2018 Camp Fire wildfire costs yet to be allocated and PG&E's ongoing bankruptcy, there is a very strong possibility that electricity rates and demand/standby charges will increase dramatically in the next 3-6 years. The referenced CEC Mid Case Feb 2018 estimate is already out of date based on current information, which pre-dates the wildfires and PG&E's approved Time of Use rate structure changes." (15-30.41)

**Agency Response (15-30.41):** CARB staff made no changes based on the received comment. As shown in the SRIA, Appendix A, Table VIII. Electricity and Fuel Cost Inputs:

*"Projected rates for PG&E, LADWP, SDG&E, and SCE averaged to produce an average statewide rate. This statewide rate is used for all ports/terminals and vessel types, with the exception of cruise vessels at Port of San Diego."*

CARB staff was not able to use unsubstantiated cost predictions in the analysis of the Regulation, therefore assuming increases in electricity costs due to the Camp fire were not included in the cost analysis. CARB staff released the cost workbook in May 2019 and again in August 2019. Where stakeholders provided additional information CARB staff incorporated this information into the cost inputs. See Appendix A of the SRIA, Table VIII. Electricity and Fuel Cost Inputs (pages 16-18) for additional information on electricity calculation assumptions.

## 7. EMISSIONS INVENTORY

**Comment:** "CARB should take into consideration the scope and duration of the current cargo disruption and the need to reevaluate CARB's baseline and forecasted emissions assumptions with updated calculations and results." (15-75.2)

**Agency Response (15-75.2):** CARB staff made no changes based on the received comment. To account for the economic downturn, some requirements of the Regulation were adjusted, such as implementation dates for control requirements. CARB staff believes reflecting the current downturn in growth calculations at this time is too speculative to calculate as the true scope of the conditions are unknown. However, new data and reports are available often and CARB inventory staff will continue to update the inventories with the best available information. Future inventory updates may be completed and included in the inventory prior to the Board review of the Interim Evaluation scheduled for 2022. The 2022 Interim Evaluation will be used by staff as a way to reassess the impacts stemming from the current pandemic situation and will provide an opportunity to suggest changes at that time if necessary based on updated information. See Master Response 6 for further discussion about changes made in light of the current economic situation.

**Comment:** "The inventory that serves as the foundation of this rule is flawed. It underestimates the efficacy of the current regulation and overstates the benefits of the Proposed Control Measure. The discrepancies listed below invalidate the conclusions of CARB's analysis.

- a. CARB's 2016 baseline data do not seem reliable. Comparing summaries by vessel class size to the Port of Oakland's own data (used for billing and subject to audit), the values are off by up to 40% in critical areas.
- b. The inventory calculation caps the benefit of the current regulation at 80%, which disregards current overcompliance primarily due to 1) the provision requiring every vessel capable of plugging in to do so, 2) the long call durations at the SPBP resulting in ~96% emissions reductions, and 3) the fact that some infrequent callers are in fact plugging in even though they are not required to do so.

- c. As recognized by CARB staff, the assumed growth rate for the Port of Oakland is too high. The inventory assumes a 5% compounded annual growth rate (CAGR) for the Port of Oakland, which CARB staff have agreed should be lowered to 2.2%. Considering the current COVID-19 crisis and the related documented decline in cargo throughput at California seaports, it is evident that the 5% CAGR is speculative at best and should not serve as the analytical basis to the estimate projected emissions reductions and cost-effectiveness of the Proposed Control Measure.

CARB inventory staff have acknowledged these issues in a variety of phone calls and emails to the Port of Oakland staff. CARB staff members have said that they will address these issues in Summer 2020, which is obviously too late to make the required adjustments or revisions under the proposed rulemaking and adoption schedule. The Port suggests that CARB take the time available now during the COVID-19 crisis to reassess its baseline data, compliance assumptions, and inventory calculations. The Port has kept meticulous shore power record and would be happy to share information and provide reliable data sets to CARB.” (15-48.5)

**Agency Response (15-48.5):** CARB staff made no changes based on the received comment. A draft of the emissions inventory used to support the At Berth Regulation has been available for review and comment since January 16, 2019 and the modifications to the baseline and inventory numbers used by CARB staff for analysis were released in the 15-day change package released in March 2020. The commenters list of “discrepancies” in the emissions inventory are outside the scope of this comment period as they do not refer to the 15-day modifications.

The inventory calculations were based on compliance rates, and reflected the best assumptions available. CARB staff agrees that longer visits in the San Pedro Bay ports create opportunities for very high emission reductions per visit. However, not every visit results in emission reductions. Some vessel visits may not be able to use emissions controls, and a limited number of them are allowed in the regulation as TIE or VIE visits. While it is conceivable for port emission reductions at berth to be as high as 96 percent or higher, staff has taken a more conservative approach to the inventory to reflect what has been seen in the past.

To account for the economic downturn, some requirements of the Regulation were adjusted. However, CARB staff disagrees with the commenters request to revise the inventory to reflect the downturn in growth calculations at this time as the true scope of the conditions are too speculative to calculate. New data and reports are available not only every year but also every few months. CARB inventory staff will continue to update the inventories with the best available information, and these future updates will be completed and included in the

inventory prior to the Board review of the Interim Evaluation scheduled for 2022.

**Comment:** “[T]he analyses on which this rule is based are out of date and no longer valid. Previously Faulty Assumptions On Containership Growth Rates are Now Even More Facially Incorrect The underlying ISOR/SRIA analysis, upon which the 15-day Notice relies as well, is predicated on strong growth assumptions based on a number of forecasts. Prior to the current crisis, those forecasts were in doubt. For example, the analysis assumes that from 2016 (the inventory base year) through 2020, cargo at the ports of Long Beach and Los Angeles would grow 4.5% per year. Last year (before the current crisis), cargo throughput at the two ports declined 3.3%. By the end of this year, the baseline forecast used in the ISOR will overestimate cargo volumes by between 26% and 62%.” (15-69.7)

**Comment:** “[T]he analyses on which this rule is based are out of date and no longer valid.” (15-68.8)

**Agency Response (15-69.7) and (15-69.7):** CARB has made no changes based on the comments received. See Response to Comment 15-75.2 and Master Response 6 for further discussion about changes made in light of the current economic downturn.

**Comment:** “The crisis is also forecast to impact auto sales in this country and globally. Decreased auto sales will translate into reduced Ro/Ro activity. A forecast by Automotive from Ultima Media indicates that it will take most of this decade for auto sales to return to their pre-crisis levels. The base case scenario has volumes declining from 2019 by 14%. In a worst-case scenario, volume declines would plunge 28% from 2019 levels.

In order to be meaningful, accurate, and facilitate CARB’s stated policy goals, the ISOR must be revised to take into account these effects and their material and significant impacts.” (15-69.8)

**Agency Response (15-69.8):** CARB has made no changes based on the comment received. See response to comment 15-75.2 for further discussion.

**Comment:** “Even before addressing the changes brought about by the COVID-19 crisis, the emissions inventory has not addressed known problems as described in previous industry stakeholder comment letters. The inventory overestimates growth, resulting in a significant overestimation of the proposed rule’s emissions benefit. The inventory does not consider the emission reductions associated with Proposition 1B funding, requiring emission reductions of 90% under the existing rule – 10% more than the proposed rule. This results in the inappropriate attribution of emission reductions from existing requirements to the proposed rule. The emissions inventory also inappropriately caps emission reductions under the existing rule at 80%. Every vessel

with a call greater than 15 hours will result in emission reductions greater than 80%. In San Pedro Bay, where calls greater than 100 hours are typical, emission reductions can exceed 97%. Yet, no reason is given in the emissions inventory for capping emission reductions. The inventory must be updated to reflect these issues.

CARB inventory staff have acknowledged these issues in a variety of phone calls and emails with stakeholders and have indicated that these issues will be resolved sometime this summer. That delay does a disservice to both the public and decisionmakers in understanding the benefits of the proposed rule changes.” (15-69.33) (15-68.26)

**Agency Response (15-69.33) and (15-68.26):** CARB has made no changes based on the comments received. A draft of the emissions inventory used to support the At Berth Regulation has been available for review and comment since January 16, 2019 and comments agreed to and accepted by CARB staff were included in subsequent updates made available in the first and second 15-day changes in March and July 2020, respectively. In a data-rich environment such as container vessel shipping, new data and reports are available not only every year but also every few months. CARB inventory staff will continue to update the inventories with the best available information, and these future updates will be completed and included in the inventory prior to the Board review of the progress in port infrastructure and technologies scheduled for 2022.

**Comment:** “Chevron has concerns that the emission inventory ARB is using to justify this regulation significantly overestimates the emissions (and thus the health risk and environmental impact) from tankers specifically at the RLW and likely across the state.” (15-30.30)

**Comment:** “It is also important to note that staff overestimates the benefit of the proposed rule for the existing regulated fleet for several reasons, including by not estimating the benefit from Prop 1B funding and requirements.” (15-OT-69)

**Agency Response (15-3-30) and (15-OT-69):** CARB staff made no changes based on the received comment. CARB disagrees that the emissions benefits of the Regulation are overestimated; staff do, however, acknowledge that there is room for improvement in the emissions inventory in regards to how Proposition 1B funded berths are factored into the inventory, and will work to better reflect this in future inventories.

**Comment:** “The emissions benefit calculation caps the benefit of the current regulation at 80%. This is incorrect because it ignores demonstrated overcompliance due to 1) the provision requiring every vessel capable of plugging in to do so, 2) the long call durations at the San Pedro Bay Ports resulting in ~96% emission reductions, and 3) the fact that some infrequent callers are plugging in even though they are not required to do so.” (15-B-10.4)

**Agency Response (15-B-10.4):** CARB staff made no changes based on the received comment. CARB disagrees with the commenter's statements. The emissions inventory is based on actual compliance data received by CARB enforcement staff, which reflects all regulatory requirements including the requirement to plug in any vessel that is shore power capable. CARB enforcement and inventory data do not make special consideration for additional Proposition 1B requirements, but those shore power visits required by Proposition 1B should be included by default in the rate of shore power connection information provided by CARB's enforcement team.

**Comment:** "CARB's 2016 baseline data do not seem reliable. Comparing summaries by vessel class size to the Port of Oakland's own data (used for billing and subject to audit), the values are off by up to 40% in critical areas." (15-B-10.5)

**Agency Response (15-B-10.5):** CARB staff made no changes based on the received comment. For further discussion on CARB's inventory baseline and forecasting specifically for Oakland see response to comment 17.2 (45-day comment).

**Comment:** "As recognized by CARB staff, the assumed growth rate for the Port Oakland is too high. The inventory assumes a 5% compounded annual growth rate (CAGR) for the Port of Oakland, which CARB staff have agreed should be lowered to 2.2% to be in line with the recently finalized Bay Area Seaport Forecast (by Tioga Group for the San Francisco Bay Conservation and Development Commission, dated May 22, 2020). Considering the current COVID-19 crisis and the related documented decline in cargo throughput at California seaports, the 5% CAGR is highly speculative and unreliable at best and should not serve as the analytical basis to estimate projected emissions reductions and cost-effectiveness of the Proposed Control Measure." (15-B-10.6)

**Agency Response (15-B-10.6):** The growth assumption in the emissions inventory are based on the FAF (described in much greater detail in the inventory documentation, Appendix H to the ISOR) developed by the Federal Highway Administration (FHA), with a projected growth for Oakland between 4 and 5 percent annual compounded growth. The choice of growth rate, corroboration with other sources, and comparison with the Port of Oakland historical rate are all detailed in the ISOR Appendix H. It is notable that at the time of the inventory release, the last official Tioga Report (a forecast report used by the Port of Oakland) showed a growth rate of 5 percent, slightly higher than CARB's emission inventory. This forecast was updated between the first and second CARB boarding hearings. CARB staff, as with all other inventories, have agreed to continue to work with industry to reflect the best available data in future updates. However, as new data for both ports and the wider OGV

industry is available on a nearly monthly basis, CARB must set milestones for the inventory and used the best available data at the time of release. Additionally, both the costs and energy (and therefore emissions) in the inventory were grown at the exact same rate, meaning changing the growth would not change cost effectiveness by even a single percent.

As noted by the commenter, CARB staff will continue to work with industry to reflect the best available data in future updates, and expects the updated growth rate to be incorporated significantly before staff return to the Board for the Interim Evaluation in 2022.

**Comment:** "CARB inventory staff have acknowledged these issues in a many phone calls and emails to Port of Oakland staff. CARB staff members have said that they will address these issues in Summer 2020, which is too late to make the required adjustments or revisions under the proposed rulemaking and adoption schedule. The Port suggests that CARB take the time available now during the COVID-19 crisis to reassess its baseline data, compliance assumptions, and inventory calculations. The Port has kept meticulous shore power records and would be happy to share information and provide reliable data sets to CARB." (15-B-10.7)

**Comment:** "Given the unknown duration of the current economic disruption, the rule should provide an opportunity to reassess CARB's baseline and forecast emission assumptions with updated calculations and results." (15-OT-42)

**Agency Response (15-B-10.7) and (15-OT-42):** CARB staff made no changes based on the received comment. See Master Response 6 for further discussion on inventory updates due to the economic downturn created by the pandemic.

**Comment:** "Also, the analytics for the proposed control measure continue to show a growth rate that is well above the documentation that we provided to CARB. So we believe that the emissions are overstated." (15-OT-89)

**Agency Response (15-OT-89):** CARB staff made no changes based on the received comment. Prior to the current economic downturn, a draft of the emissions inventory used to support the Proposed Regulation had been available for review and comment since January 16, 2019. Modifications to the baseline and inventory numbers used by CARB staff for analysis were released in the 15-day change package released in March 2020 and many stakeholder comments were taken into consideration at that time. The end goal of the inventory is not an absolute agreement across all different port systems in California (no single methodology would match each port in any case as each uses different systems) but using the best available data and corroborating it with available information from ports allows for a reasonable approximation.

## 8. HEALTH BENEFITS ANALYSES (CANCER AND NON-CANCER IMPACTS)

**Comment:** “[U]nderstand[] [cancer/non-cancer] as estimated figure, however, it is not just because of vessels. It seems to be not considered the underlying disease, inherited diseases, lifestyle-related diseases, etc.” (15-24.8)

**Agency Response (15-24.8):** CARB staff made no changes based on the received comment. The Mortality and Illness analysis uses an established approach for estimating past or future changes in adverse health impacts expected to result from population-level changes (e.g. death) from exposure to pollutants. This approach uses county wide reported health outcome data and relates the incidence rates of these health outcomes to measured concentrations of PM2.5 and NOx within the air basin. Rather than considering preexisting conditions and overall health as the commenter mentions, the analysis estimates human health impacts resulting from hypothetical changes in pollutant levels.

**Comment:** “The 15-Day changes proposed for the At-Berth Regulation include an acceleration of health benefits to the public, which in turn purportedly justify increased costs. However, those health benefits are based, in part, on an “Incidences per Ton” analysis to determine reduced mortality and morbidity outcomes. This is the use of a new air quality standard and a deviation established State and National Ambient Air Quality Standards and/or reduction of risk from an identified Toxic Air Contaminant.

The use of a new standard that has not been subject to a public review process is fundamentally an underground regulation. CARB is able to provide justification for new regulations without subjecting the de facto standard implied by the analyses to its own broad public review. CARB should immediately remove the “Incidents per Ton” as a basis for the proposed rule. The approach itself has not gone through its own extensive public review; it should not be relied upon as justification for the draft regulatory concept.” (15-69.18)

**Agency Response (15-69.18):** CARB staff made no changes based on the received comment. The commenter is correct that IPT is not a cost effectiveness evaluation. The IPT methodology only evaluates the health impacts associated with CARB’s regulations. It is a method that has been used by U.S. EPA and CARB for about 10 years.

## 9. CARGO DIVERSION

**Comment:** “The ISOR and SRIA do not properly analyze the possibility of vessel diversions and their economic impact. These infrequent cruise vessel calls are particularly subject to diversion. This is especially true without the existing fleet average compliance system, which could allow the cruise lines to accommodate these non-frequent fliers. Out of hundreds of cruise vessels worldwide, only a limited number continually visit California and are equipped with shorepower. The more

specialized world cruises and relocating cruise vessels may visit California once every two to four years and only a few ports each visit, using entirely different cruise ships each time.” (15-58.3)

**Comment:** “Initial Statement of Reasons fails to consider the number of jobs that will be lost as roll on, roll off Vessels go to other ports that do not impose At-Berth regulations. Roll on, roll off vessels can and will take vehicles to ports outside of California, which will eliminate port workers jobs. CARB ignores this economic impact.” (15-B-3.8)

**Agency Response (15-58.3) and (15-B-3.8):** CARB staff made no changes based on the received comment. Refer to Master Response 2 for discussion on cargo diversion.

## 10. INNOVATIVE CONCEPT COMPLIANCE OPTION

**Comment:** “Only strategies ‘in excess of other requirements’ will be eligible for the IC provision. The Ports want to be certain that emissions reductions from CAAP strategies can be considered for this provision as they are voluntary and above state requirements. We also would like certainty that the provision allows for use of incentives when the emission reductions are achieved prior to the dates set by the regulation and are in excess of any requirements under the existing incentive program. In addition, the requirement to reapply every three years adds additional risk for regulated entities which opt for this IC pathway. The restriction on incentives and the added uncertainty regarding eligibility of CAAP strategies is likely to severely impact the use of the IC provision, thereby reducing overall cost-effectiveness of this rule.” (15-25.5)

**Agency Response (15-25.5):** CARB staff modified the proposed regulatory language in response to the received comment. The Innovative Concept compliance period has been adjusted from three years to up to five years to reduce risk for entities that opt into the innovative compliance pathway. See section 93130.17 (a)(7) for more information on the five-year compliance period.

Although an Innovative Concept cannot be funded with a public incentive program, the reductions that occur before the first compliance period may be used toward compliance under the Innovative Concept during the first compliance period of up to five years. See section 93130.17 (a)(11) and (a)(12) for more information on early reductions and the prohibition against funding an Innovative Concept with a public incentive program.

**Comment:** “It will be necessary to issue some documents from engine manufacturer such as the NOx Technical File, in order to comply with new regulation of NOx, and to describe who will allow CARB to approve the test result for PM2.5 and ROG

measurement. If CARB accept the method/equipment for reduction of NO<sub>x</sub>/PM/ROG, we would like to request CARB to compensate the cost for test." (15-24.6)

**Agency Response (15-24.6):** CARB staff made no changes based on the received comment. CARB does not typically compensate regulated entities for the cost of compliance, or for testing.

**Comment:** "The IC pathway is promising but greater flexibility and longer durations on these alternative compliance plans is needed for regulated entities to achieve compliance while addressing its own unique circumstances. The requirement to reapply every three years adds additional risk for regulated entities which opt for this IC pathway. The restriction on incentives and the added uncertainty regarding eligibility of voluntary strategies, such as those outlined in respective port air quality plans, is likely to severely impact the use of the IC provision, thereby reducing overall cost-effectiveness of this rule." (15-75.3)

**Agency Response (15-75.3):** CARB staff modified the proposed regulatory language in response to the received comment (see Agency Response 15-25.5). The limitations put on Innovative Concepts ensure that emissions reductions achieved by the Innovative Concept are in excess, early, and would not have occurred but for the Regulation.

**Comment:** "Have concerns that, despite requirements that innovative concepts must achieve equivalent or greater emissions reductions compared with a CARB approved emissions control strategy (CAECS) overall, the distribution of emissions benefits could change such that surrounding communities would no longer experience the same benefits relative to the CAECS." (15-26.4)

**Agency Response (15-26.4):** CARB staff made no changes based on the received comment. The Innovative Concept requires that the emissions benefit remains in the community and is equivalent or greater than the reductions that would have occurred using a CAECS. See section 93130.17 (a)(3) and (4) for more information on requirements for emission reductions to be realized through an Innovative Concept. These provisions insure emissions reductions directly benefit the local communities just as emissions reductions from vessel visits would.

**Comment:** "Determining whether an innovative concept achieved the same or greater emissions reductions is done via a retrospective analysis on an annual basis, and any changes to the concept needed to make up for the differences would likely result in further delays to deliver equivalent emissions benefits. These delays will undermine BAAQMD's past and future efforts to meet its clean air commitments to Bay Area

communities, including those identified in the West Oakland Community Action Plan.” (15-26.5)

**Agency Response (15-26.5):** CARB staff made no changes based on the received comment. Emission reductions under an Innovative Concept are not allowed to be made up in future years. Early reductions can be used during the first compliance period. Otherwise, reductions can only count toward compliance in the current year or the following year. The structure of the Innovative Concept is designed to achieve reductions early or in the same year, and does not delay reductions.

**Comment:** “Funding the cost and educating ports of innovations toward delivery of goods which in San Diego is currently done via semi trucks serving berthed cruise ships at the downtown terminal and the current transport of passengers by bus/taxi/personal vehicles which also currently decreases air quality in the immediate and surrounding area. Suggest mandate such innovations to ports to offset poor air quality generated by terminal operations.” (15-60.11)

**Agency Response (15-60.11):** CARB staff made no changes based on the comment received. The intent of this Regulation is to reduce emissions from vessels at berth. CARB has separate regulations to reduce emissions from terminal cargo handling equipment and trucks. However, if a regulated entity wishes to reduce emissions from other sources that affect the same impacted communities as vessels at berth, perhaps at a lower cost than directly reducing emissions from vessels at berth, then that entity can apply to CARB to use an Innovative Concept. An Innovative Concept could include equipment used in terminal operations if that equipment is not already regulated by another federal, state, or local regulation. See section 93130.16 for the requirements for Innovative Concepts projects.

**Comment:** “Compliance – “The proposed innovative concept must achieve emissions of NO<sub>x</sub>, PM 2.5 and ROG that are early or in excess of any other state, federal or international rule, regulation, statute, or any other legal requirement (including any requirement under a Memorandum of Understanding with a government entity, or an emission reduction strategy identified in an AB 617 Community Emissions Reduction Program that has been approved by CARB’s Governing Board.” AND “The proposed innovative concept must achieve emissions reductions that exceed any reductions otherwise required by law, regulation or legally binding mandate, and that exceed any reductions that would otherwise occur in a conservative business-as-usual scenario.”

Is this limited to compliance with California laws and programs or does it apply to international/IMO requirements and requirements in other countries? Note too that the few AB 617 plans proposed to date have been very broad in scope and the

proposed Oakland AB 617 plan included an Indirect Source Rule. This expectation should be clarified." (15-27\_28.5)

**Agency Response (15-27 28.5):** CARB staff made no changes based on the received comment. To maximize reductions and benefit to the community, CARB has made sure that Innovative Concepts cannot be used to reduce emissions from projects that are likely to come to fruition already. Projects identified in a Board approved AB 617 Community Emission Reduction Plan creates obligations to reduce emissions in those specific communities. Funding an AB 617 emission reduction strategy as an Innovative Concept compliance obligation would not be a net benefit to the community as it is expected that those reductions will be realized as a result of the AB 617 program and funding.

**Comment:** "The proposed innovative concept must not increase emissions at other ports or marine terminals." Must there be no negative impact on any other California Port, or if this prohibition is global, and if so, how might a global impact be evaluated? For example, it could be said that redeploying a vessel with a Tier 3 NOx engine to California might negatively impact the ports on the service where that vessel had been deployed." (15-27\_28.6)

**Agency Response (15-27 28.6):** CARB staff made no changes based on the comment received. The requirement for Innovative Concepts to not increase emissions at other ports of terminals apply to California Ports and global emissions are not considered.

**Comment:** "Funding - "No innovative concept shall be partially or fully funded with a public incentive program." – There is no definition of a "public incentive program". Is this provision restricted to California "public incentive programs," or might it preclude use of approaches funded under International programs such as those in the European Union? Would it disqualify technology funded under various Port Technology Demonstration Programs?" (15-27\_28.7)

**Agency Response (15-27 28.7):** CARB staff made no changes based on the comment received. In this instance, public incentive program does not include international programs such as those in the European Union. The intention of the Regulation is to ensure that public incentive dollars are not used for compliance with what is already required by this Regulation. Public incentive funds should instead be used in a manner that would add to the public benefit.

**Comment:** "According to the 15-day changes, the Innovative Concepts provision provides a pathway "for regulated vessels to continue using fleet averaging methods to comply with the Proposed Regulation." If the current regime is already acceptable as an Innovative Concept, why not let the current regime stay in place? Why force the carriers to re-apply every three years for a proven method that is already working? The

Port suggests that CARB allow current fleet averaging methods to stay in place for all carriers who desire it without the need to constantly re-apply every three years.” (15-48.4)

**Agency Response (15-48.4):** CARB staff made no changes based on the received comment. See response to comment 52.15 for discussion on fleet averaging and the Regulation. Additionally, the purpose for the Innovative Concept compliance option is to, for a limited duration, allow the supplementary time needed for additional infrastructure and technology to develop and not to allow an alternative compliance pathway for fleets. However, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements.

**Comment:** “The District would hope the regulation’s innovative concepts provision, which eliminates environmental pilot programs and demonstration projects, can be improved to remove the prohibition on public funds, and that the compliance structure and definitions would reflect the realities of a phased process governed by factors outside of any port’s control.” (15-61.6)

**Comment:** “The prohibition on public funding for ICs is too broad. Funding may come from different sources, including federal, other states, or other nations. In addition, such a prohibition would exclude demonstration projects. Fleets that are likely to engage in ICs, including fleet averaging, are also likely to participate in demonstration projects sought by CARB or other air quality agencies. Being innovative should not prohibit technology advancement.” (15-69.28) (15-68.21)

**Agency Response (15-69.28), (15-68.21), and (15-61.6):** CARB staff made no changes based on the comments received. The intention of the Regulation is to ensure that public incentive dollars directed to California ports are not used for compliance with what is already required by this Regulation.

**Comment:** “According to the Air Resources Board’s analysis, alternative mobile control technologies – though not approved by the Air Resources Board nor demonstrated to be feasible – may reduce criteria pollutants while yielding increases in greenhouse gases and therefore undermine the District’s own aggressive climate action goals. It assumes these solutions require less time to implement, yet permanent technologies are restricted to the same time frame for compliance and lack the 5-7 years that are necessary to execute a capital improvement project.

Would an extension for permanent solutions be possible? If a port can show intent through a memorandum of understanding and an implementation plan, is there a grace period for the design and construction of an innovative concept? Can a port

advance multiple solutions in phases if the result is compliance or beyond? Within the options provided, what can a port do to move forward on implementation while still maintaining compliance?" (15-61.7)

**Agency Response (15-61.7):** CARB staff made no changes based on the received comment. To a limited degree, extensions are included in the Regulation under the remediation fund. Terminals with a physical or operational constraint may be eligible to comply with the remediation option until a solution is implemented. Terminal construction projects are eligible to comply using the remediation option. Using an innovative concept to reduce emissions is another option. Although this would not provide an extension or grace period in reducing the emissions, there may be projects that are ready to implement on a shorter time frame that can reduce emissions for compliance while the permanent solution is developed.

**Comment:** "A fleet averaging concept should be a defined path within the IC section. Fleet averaging, as a program whose parameters are known, should not be subject to unnecessary restrictions for new concepts. Given the known success of fleet averaging to reduce emissions, it is not necessary to create uncertainty by having a three-year term with extension subject to uncertain approval." (15-69.23) (15-68.16)

**Agency Response (15-69.23) and (15-68.16):** CARB staff made no changes based on the received comments. It is CARB's intention to eventually have all terminals and vessels on the same compliance pathway. The Innovative Concept compliance option was intended to be used for a limited time to help with the infrastructure buildout, technology development and vessel modifications that may be needed. However, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements. See response to comment 52.15 for more discussion on fleet versus the per visit compliance requirement.

**Comment:** "There should not be a set term for IC plans. As written, the IC section requires regulated parties to repeatedly apply for and receive CARB approval to use an "Innovative Concept" for limited three-year terms. Different concepts may require different terms in order to recoup any necessary investment. A one-size-fits-all approach is unwarranted and unnecessary. The term for any IC can be determined individually." (15-69.24) (15-68.17)

**Agency Response (15-69.24) and (15-68.17):** CARB staff modified the proposed regulatory language in response to the received comment. CARB adjusted the Innovative Concept compliance period from three to up to five years, to help mitigate the risk of stranded assets. This can be extended for

additional compliance periods in increments of up to five years as long as it continues to meet the requirements of an Innovative Concept. It is CARBs intention to eventually have all terminals and vessels to be on the same compliance pathway. The Innovative Concept compliance option was intended to be used for a limited time to help with the infrastructure buildout, technology development and vessel modifications that may be needed. However, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements.

**Comment:** “While ICs must be ‘surplus’ at the time of creation, CARB could revoke or decline to renew approval if the emission reduction became subject to regulation at a future date or by any CARB-approved AB 617 Community Emission Reduction Plan. The IC section should be modified to allow IC reductions without this limitation.” (15-69.25) (15-68.18)

**Agency Response (15-69.25) and (15-68.18):** CARB staff modified the proposed regulatory language in response to the received comments. The Regulation text was changed during the 15-day changes released in July 2020 to state:

*If any law, regulation, or legally binding mandate (including any requirement under a Memorandum of Understanding with a government entity) requiring emission reductions comes into effect, is approved, or is noticed, which would affect the Innovative Concept, during an Innovative Concept’s compliance period, then the Innovative Concept may continue to claim those emission reductions for the remainder of the compliance period, but the Innovative Concept may not be renewed for another compliance period.*

This provision was provided to allow certainty for entities electing to use the Innovative Concept compliance option.

**Comment:** “Limiting the location of IC emissions reductions only to “adjacent” communities and distances no greater than 3 nautical miles may have unintended consequences. Neither “adjacent” nor “community” are defined in the Proposed Regulation, so it is unclear how close an area would need to be in order to be deemed “adjacent,” and where the boundaries of that area would end. The IC section should be modified to encourage any project (adjacent or not) that would benefit the port and terminal communities.” (15-69.26) (15-68.19)

**Agency Response (15-69.26) (15-68.19):** CARB staff made no changes based on the received comments. This provision ensures Innovative Concepts directly benefits those affected most by vessel at berth emissions. A good guideline for

adjacent communities are the census tracts that border the port or marine terminal as identified in CalEnviroScreen 3.0. In addition, many of the communities surrounded by ports have been identified as AB 617 communities. Those communities have established boundaries.

**Comment:** “The IC section sets a deadline for submitting a proposal. This implies that ICs will not be considered after 2021. We do not believe it was the intention of staff to limit development of IC to the first six to twelve months of the proposed rule’s implementation. The deadline should be removed and replaced with a process for IC plan review at any date such plans are submitted in the future.” (15-69.27) (15-68.20)

**Agency Response (15-69.27) and (15-68.20):** CARB staff made no changes based on the received comments. The Innovative Concept compliance option was intended to be used for a limited time to help with the infrastructure buildout, technology development and vessel modifications that may be needed. Thus, CARB staff has limited the application availability for Innovative Concepts to December 1, 2021 for all vessel categories. However, once a project is approved by CARB for the Innovative Concepts compliance option, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements.

**Comment:** “Revocation of an IC plan provides for a 30-day notice. This is likely to be inadequate for an ocean carrier to transition to original provisions of the rule. The risk of a 30-day transition at the uncertain end of a three-year program is enough to prevent an ocean carrier opting to implement an IC. The IC section should include a nine-month transition period upon revocation of an IC plan.” (15-69.29) (15-68.22)

**Agency Response (15-69.29) and (15-68.22):** CARB staff made no changes based on the received comments. Revocation of the Innovative Concept compliance option is limited to certain situations, such as if the provisions of the Innovative Concept are not met. CARB staff believes that entities should, prior to having their plans revoked, have an alternative means of compliance in place. The Innovative Concept compliance option may be valid for up to five years which was intended to allow for any additional time needed for vessel modifications and terminal infrastructure to be built.

**Comment:** “PMSA proposes that ICs have the same limitation that CARB always uses for determining whether a proposed project results in “real” emission reductions. Any proposed IC should result in emission reductions that are real, quantifiable, verifiable, enforceable, and surplus. Each of these elements have a long history in delivering emission reductions to local communities. The addition of other language only serves to obscure what projects could be eligible.” (15-69.30)

**Agency Response (15-69.30):** CARB staff made no changes based on the received comment. Innovative concepts require real emission reductions as described in the comment. The other conditions ensure that the reductions achieved properly offset emission from ocean-going vessels at berth. If the only limitation is that an Innovative Concept has real emission reductions, then compliance could be met with projects that would already occur, or with projects that would not benefit the adjacent communities.

**Comment:** “We are concerned, however, that some of the conditions for approval of an innovative concept are unreasonable and may make it impossible or at least highly improbable for an innovative concept to be approved. We therefore recommend the following changes to Section 93130.17:

- Delete § (a) (3), which would unrealistically require reductions “in excess of any other state, federal or international rule, regulation, statute or any other legal requirement...”;
- Amend § (a) (4) by replacing “three” with “ten” in the last sentence. This change would allow for emissions reductions up to ten miles away from the port or marine terminal called by the vessel;
- Amend § (a) (7) by increasing the length of the compliance period to up to five years, which is more reasonable given the amount of analysis and effort needed to prepare and obtain approval of an innovative compliance option;” (15-57.24)

**Comment:** “The proposed “Innovative Concepts” provisions in the 15-Day Changes are not the compliance alternative WSPA requested. WSPA was clear in its March 6, 2020 letter to CARB and in discussions with CARB staff that stakeholders need a viable compliance alternative *in lieu of* a requirement to install and operate at berth capture and control equipment, not a temporary *additional* obligation to the still-infeasible capture and control requirement. The “Innovative Concepts” provisions contain several significant limiting conditions, which strongly disincentivize funding by stranding investment and creating significant compliance risks. By structuring the “Innovative Concepts” provisions in this way, CARB essentially conveys that the only acceptable compliance option is control of at berth emissions.” (15-49.57)

**Agency Response (15-57.24) and (15-49.57):** CARB staff modified the proposed regulatory language in response to the received comments. The Innovative Concepts provision allows regulated entities to comply during a five-year compliance period, which increased from 3 years, to help mitigate the risk of stranded assets. This can be extended for additional compliance periods in increments of up to five years as long as it continues to meet the requirements of an Innovative Concept. The limitations on the Innovative

Concepts to be in excess of any other requirement in section 93130.17 (a)(3) ensures that the community benefit from an Innovative Concept is additional to what would already occur. The limitation of three miles in section 93130.17 (a)(4) ensures that the emissions reductions achieved by the Innovative Concept will provide a greater benefit to the local community than the commenter's recommended 10-mile threshold. CARB sees the use of CAECS as the most straightforward and certain pathway for compliance. Innovative concepts are a very flexible alternative compliance pathway that can also be used for compliance for a period of up to 5 years, and can be renewed for additional compliance periods.

**Comment:** "The 15-Day Changes do not provide the alternative compliance path we requested. Instead, the 15-Day Changes would adopt a limited "Innovative Concepts" provision that fails to provide a true "in lieu of" alternative to mandated implementation of (yet-unproven) at berth capture and control measures. The proposed "Innovative Concepts" would offer only a temporary substitute for at berth capture and control requirements, would set narrow locational constraints on potentially valid projects, would be subject to revocation and/or refusal to renew at CARB's unreviewable discretion, and would result in imposing unreasonable additional burdens on the regulated community.

Indeed, because the 15-Day Changes would provide no relief at all from the parallel deadlines to install at berth capture and control as a CARB-approved emission control strategy (CAECS), CARB's refusal to renew an "Innovative Concept" would create a compliance trap for tanker terminals, leaving them with even fewer years to meet the already-infeasible 2029/2027 deadlines." (15-49.59)

**Agency Response (15-49.59):** CARB staff made no changes based on the received comments. The Innovative Concept option is a substitute for traditional compliance, but there are limitations to this. Although the Innovative Concept compliance period is up to five years, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements and all other requirements are met.

**Comment:** "The "Innovative Concepts" provisions contain several significant limiting conditions, which strongly disincentivize funding by stranding investment and creating significant compliance risks. By structuring the "Innovative Concepts" provisions in this way, CARB essentially conveys that the only acceptable compliance option is control of at berth emissions." (15-49.62)

**Agency Response (15-49.62):** CARB staff modified the proposed regulatory language in response to the received comment. CARB adjusted the compliance

period from three to up to five years to reduce the risk of stranding an investment.

**Comment:** “According to the Notice (p. 21), “[T]he three year time period is expected to be long enough to allow the applicant a window of certainty for compliance with the rule but short enough to ensure that an innovative concept is still achieving early or excess emissions reductions.” On the contrary, the 15-Day Changes provide no such “window of certainty”, since approval of an Innovative Concept may be revoked with no more than a 30-day notice, or may even become ineffective without revocation and on no notice, at any time. See 15-Day Changes, Proposed Sections 93130.17(f) and (g).” (15-49.63)

**Agency Response (15-49.63):** CARB staff made no changes based on the received comment. The provisions listed in section 93130.17(f) ensure that CARB has the ability to invalidate an Innovative Concept that is not meeting the requirements of the program. Section 93130.17(g) ensures that regulated parties are held responsible for the emission reductions if they are unable to achieve them with the Innovative Concept. There is always a risk that the Innovative Concept will not work.

**Comment:** “[T]he 15-Day Changes are silent as to how “business-as-usual” conditions would be determined to set a realistic baseline emissions inventory. (15-49.64)

**Agency Response (15-49.64):** CARB staff made no changes based on the received comment. The Regulation states on page 61:

*‘business as usual’ means the set of conditions reasonably expected to occur within the relevant area in the absence of the incentive provided by the Innovative Concept provisions of this Control Measure, taking into account all current laws and regulations, as well as current economic and technological trends.”*

**Comment:** “If an “Innovative Concept” were to be revoked or renewal denied, a regulated marine terminal could be in imminent or immediate noncompliance, with no identifiable feasible path to compliance for tanker vessels. This would result in a continuously moving compliance target that will inevitably end in noncompliance. Once an “Innovative Concept” approval is revoked or renewal is denied, the terminal will have to identify and develop new “Innovative Concept” projects to avoid being required to install infeasible capture and control equipment. Even if a new “Innovative Concept” were identified, the 15-Day Changes provide no defined period of time to design, permit and implement it. Eventually, the pool of reasonably available reductions that could qualify as an “Innovative Concept” will be exhausted, leaving the terminal unable to avoid noncompliance. Ironically, the proposed “Innovative Concept” provisions would actually stifle innovation, as few terminals would commit the engineering, permitting, construction timelines, capital and manpower needed to

develop an “Innovative Concept” if it eventually will become a stranded investment.” (15-49.65)

**Agency Response (15-49.65):** CARB staff made no changes based on the received comment. Innovative concepts are included to provide an additional pathway to reduce emissions and comply with this Regulation. Although it allows compliance through other projects, it is not open ended. In the event that emission reductions from an Innovative Concept become a requirement, then the regulated parties will need to reduce emissions on the vessel. It is unlikely that the Innovative Concept would become a stranded investment because if the project is no longer an eligible Innovative Concept it is most likely due to the reductions being required by another program, or that it does not work as intended.

**Comment:** “Regulated parties should not be immediately disqualified from using an “Innovative Concept” and required to provide new reductions if the “Innovative Concept” becomes regulated. This contradicts the principle under California law that emission reduction credits must be real, permanent, quantifiable, enforceable and surplus at the time they are initially generated, based on the laws and regulations then in effect. See Cal. Health & Safety Code 39607.5; 17 C.C.R. 91501(i). Emissions credits are not retroactively disqualified, or new reductions required, if some of those credited reductions become regulated at some point in the future. Indeed, the 15-Day Changes would not retroactively require new reductions from regulated sources if future federal regulations achieve the emissions savings of the At Berth Regulation. Moreover, any other at berth CARB Approved Emission Control Strategy (CAECS) would involve a one-time operator investment resulting in a certain and creditable emissions reduction at the terminal or port. We would urge CARB staff to remove this unnecessary disparity between the CAECS compliance option and the proposed “Innovative Concept” provisions, and at least harmonize the “Innovative Concept” provisions to allow a more certain and permanent alternative to compliance with capture and control. At the very least, CARB staff should ensure that “Innovative Concept” reductions that were not already legally required at the time of their approval do not lose their “Innovative Concept” status if they later become legally required.” (15-49.66)

**Agency Response (15-49.66):** CARB staff made no changes based on the received comment. Innovative concepts are not immediately lost if they become required, they are allowed to be used through the compliance period of up to 5 years. The intent is that the Innovative Concept is useful for a minimum time period so that it does not become a stranded asset. However, if the Innovative Concept becomes a requirement of another program or rule then the reductions of the Innovative Concept will no longer be additional, and thus no longer eligible for use as a compliance pathway. At this time, the Innovative Concept will cease being a compliance option at the end of the compliance period.

**Comment:** “The proposed ‘Innovative Concepts’ language in the 15-Day Changes also would create a fundamental unfairness to regulated parties funding early and ongoing emissions reductions (e.g., funding early replacement of tugboat engines) by ultimately crediting the future-regulated source with the benefit of those reductions, rather than the regulated party who originally paid for the reduction. It is beyond question that early funding of emissions reductions not currently required by law reduces the future emissions baseline, which then allows less burden to be placed on other sources in the inventory for reductions. This conflicts with the way CARB has addressed early reductions in other contexts such as AB 32, where early reductions were immediately credited to the party funding them regardless of whether those reductions eventually became required by law. (15-49.67)

**Agency Response (15-49.67):** CARB staff made no changes based on the received comment. Early reductions under an Innovative Concept can be used for compliance during the first compliance period of up to five years. If after the first compliance period, the innovative compliance project is still eligible as a compliance option, the applicant can apply to use the Innovative Concept for another compliance period of up to five years. Innovative concept applicants benefit from using the concept during a compliance period, but will always run the risk that the reductions credited to the Innovative Concept will one day become required. This is why CARB staff has increased the compliance period to up to five years, to provide more certainty when selecting a project.

**Comment:** “The 15-Day Changes would require emissions reductions from an ‘Innovative Concept’ to be annually reported and compared to reductions that would be achieved from controlling at berth emissions through capture and control. This essentially imposes an ever-changing annual mass emission reduction requirement, based on terminal activity (and requires a difficult assessment of what ‘business-as-usual’ activity would have been without the ‘Innovative Concept’). In contrast, a CAECS does not need to meet an annual mass reduction requirement, but simply requires the source to achieve a control requirement that is independent of source activity. An ‘Innovative Concept’ should be held to the same CAECS standard and only require implementing a control requirement that is independent of source activity, rather than being held to a changing annual mass emissions target.” (15-49.68)

**Agency Response (15-49.68):** CARB staff made no changes based on the received comment. The comparison of emissions controlled by an Innovative Concept to uncontrolled vessel visits is by design. The Innovative Concept must reduce equal or greater emissions to those that would be required by the vessel visits. A CAECS has a similar requirement since vessels must be compliant on every visit. If more vessels visit, then there must be more use of a CAECS. Similarly, if more vessels visit using an Innovative Concept then they

must balance the increase in emissions with the reductions associated with the Innovative Concept.

**Comment:** "Permanent reductions should not require a reapplication for qualification every three years, given that the annual verification process will already confirm that those reductions are real, permanent, quantifiable, enforceable and surplus."  
(15-49.69)

**Agency Response (15-49.69):** CARB staff made no changes based on the received comment. Reapplying for another compliance period would still be necessary, however in the second 15-day changes released in July 2020 the Innovative Concepts term was increased from three years to up to five years. The reductions might not always be surplus or real if the source of the permanent reductions becomes a regulated entity or if the permanent reduction happened under a business as usual case.

**Comment:** "Limiting the location of 'Innovative Concept' emissions reductions only to 'adjacent' communities may have unintended consequences. Neither 'adjacent' nor 'community' are defined in the Proposed Regulation, so it is unclear how close an area would need to be in order to be deemed "adjacent," and where the boundaries of that area would end. Reductions in an 'adjacent' nearby community impacted by terminal-area emissions, but that is not immediately bordering the port or terminal, could be needlessly excluded (even if they benefit that area). Also, a nearby AB 617 community may not be sure how to account for emissions reductions from "Innovative Concept" projects, and whether such reductions would need to be required by its Community Emissions Reduction Plan. WSPA recommends changing this criterion to 'within five miles of the terminal or port,' in order to eliminate the ambiguous term 'adjacent community' and strike a reasonable balance between distance from the terminal/port and a large enough area from which emissions reductions could still benefit communities affected by terminal/port-area emissions." (15-49.70)

**Agency Response (15-49.70):** CARB staff made no changes based on the received comment. Adjacent communities can be determined with CalEnviroScreen or the community definition provided by AB 617 communities near ports. See response to comments 15-69.26 and 15-68.19 for more information on adjacent communities. A description for how to account for the emission reductions of an Innovative Concept is required by the application for the Innovative Concept. See Sections 93130.17 (b)(3)(B) and (C) for more information on emission reduction requirements.

**Comment:** "Limiting qualifying reductions from tankers to distances no greater than 3 nautical miles from a port or terminal is unnecessary and conflicts with the benefits accounted for within the much larger area defined by CARB's Fuel Sulfur And Other Operational Requirements For Ocean Going Vessels Within California Waters And 24 Nautical Miles of the California Baseline (13 Cal. Code Regs. § 2299.2) (Fuel Sulfur

Regulation). The air basins defined in the Fuel Sulfur Regulation are nearly identical to those designated in the Health Risk Assessment (HRA) for the Proposed Regulation.<sup>5</sup> CARB staff should allow PM, NO<sub>x</sub> and ROG reductions in the wider area defined by the Fuel Sulfur Regulation to also qualify for credit as an “Innovative Concept.” (15-49.71)

**Agency Response (15-49.71):** CARB staff made no changes based on the received comment. Staff wants to ensure that the emission reductions that are calculated toward an Innovative Concept occur as close to the port or terminal as possible to provide the most benefit to the neighboring communities.

**Comment:** “The inability to obtain approval for an alternative reduction funded partially with public incentives does not make practical sense. CARB directed staff to craft an Innovative Concept option that “meets or exceeds” reductions from compliance with the Proposed Regulation. Under that rationale, even if a regulated facility decides to apply public incentive funds to partially fund an Innovative Concept, those emissions reductions should be credited if they would not have happened but for the offer of coverage as an “Innovative Concept,” and exceed the reductions that would have been achieved through complying with the capture and control requirements of the Proposed Regulation.” (15-49.72)

**Agency Response (15-49.72):** CARB staff made no changes based on the received comment. In general, incentive projects are not able to fund compliance obligations. Since Innovative Concepts would be developed as a compliance mechanism for this rule, the project should be funded by the regulated parties and not by incentives. The incentive funding agency may not know that the Innovative Concept is actually a compliance requirement, and thus would be ineligible.

**Comment:** “The 15-Day Changes would require that reductions from an ‘Innovative Concept’ be calculated using the actual data evidencing that reduction (i.e., a ‘business-as usual’ emission baseline minus the actual emissions under the ‘Innovative Concept’). But the proposed regulatory language would then compare those ‘Innovative Concept’ reductions to at berth emissions derived from default emission factors. This is an unnecessary disparity in emissions estimation methods and using default emission factors to estimate at berth emissions does not account for voluntary upgrades to vessel emission sources. To remedy this disparity, the proposed section 93130.17(d)(1)(B) should allow the option to calculate at berth emission reductions using best available information rather than mandating use of emission factors. (15-49.73)

**Agency Response (15-49.73):** CARB staff made no changes based on the received comment. Default emission factors are used to ensure that the project has a conservative metric to estimate emission reductions necessary to remain compliant. If the Innovative Concept relies on cleaner ships, then it should be in

the application for the Innovative Concept and quantified as such. Otherwise, the decision to bring in a cleaner ship is a business-as-usual decision and would be ineligible for the Innovative Concept.

**Comment:** “The proposed December 2021 deadline for any “Innovative Concept” to be included in Port/Terminal Plans is too soon for regulated parties to have any meaningful plan for such proposed reductions ready, given the uncertainties listed above. It is also inconsistent with language in the Notice specifying that “[a]pplications for innovative concepts are due on or before terminal plan and port plan due dates,” given that proposed Section 93130.14(a)(2) provides that final revised terminal plan submittals are not even due until 2024 for ports and 2026 for all other tanker terminals. The 2021 ‘Innovative Concept’ deadline should be changed to match the deadlines for revised terminal plans in Section 93130.14(a)(2).” (15-49.74)

**Agency Response (15-49.74):** CARB staff modified the proposed regulatory language in response to the received comment. Innovative concept applications, terminal, and port plans for all vessel categories are due to CARB on December 1, 2021.

**Comment:** “The ‘Innovative Concept’ provisions also should clearly provide that port and terminal operators with an approved terminal plan containing an ‘Innovative Concept’ or other CAECS should be entitled to rely on that approved ‘Innovative Concept’ or CAECS completely for compliance with the Proposed Regulation, and not also be required to rely on another compliance option (such as the remediation fund option) during the time that the “Innovative Concept” is being constructed and implemented. Failing to clarify these risks unfairly penalizing entities that receive approval for and commit in good faith to a valid CAECS or ‘Innovative Concept,’ either of which could take upwards of a decade to complete.” (15-49.75)

**Agency Response (15-49.75):** CARB staff made no changes based on the received comment. The remediation fund option is only available when terminals or vessel operators have made the commitments to comply with this rule. The remediation fund is intended to ensure communities are made whole for any excess emissions they are exposed to. An approved terminal plan does not reduce emissions, but does demonstrate a pathway to compliance. During the construction of the compliance options, terminals may use the remediation fund to remain compliant with the rule. Communities cannot wait another decade for OGVs to reduce emissions at berth. Additionally, plans are due to CARB by December 1, 2021, but control requirements will not be required until January 1, 2023 for container, reefer and cruise vessels, 2025 for ro-ro vessels, and 2025 and 2027 for tanker vessels. CARB staff believes this will be ample time for infrastructure design and build out. The remediation fund would be utilized in the rare occasion when construction projects were delayed.

**Comment:** “WSPA recommends CARB staff further revise the “Innovative Concepts” in the 15-Day Changes to reflect the proposal in WSPA’s March 6, 2020 comment letter, specifically the key provisions addressing how reductions from an “Innovative Concept” are determined to be equivalent, where they can occur, and which regulations they need to be in excess of.

- WSPA’s proposal for a one-time demonstration of equivalent reductions between an “Innovative Concept” and CAECS using a 2016 baseline year is superior to the proposed 15-Day Changes language because:
  - The proposal uses ARB’s 2016 baseline (or an alternative subject to ARB approval), which was the foundation for determining an acceptable amount of annual reductions from the Proposed Regulation.
  - By having a one-time equivalency comparison, the regulated community would be afforded compliance certainty to incentivize investment.
  - By having an ongoing annual demonstration that emission reduction measures are in place and properly operating, there would be assurance that emission reductions are occurring.
  - Like CAECS, WSPA’s proposed language imposes a compliance requirement on an “Innovative Concept” that is independent of source activity, ensuring that an “Innovative Concept” is not chasing a changing annual mass emissions target.
  
- WSPA’s proposal to allow calculation of uncontrolled at berth emissions using best available information avoids the inaccuracy of the default emissions factors mandated by proposed Section 93130.5(d)(1)-(2) in cases where vessel operators have voluntarily upgraded ship engines to cleaner engines.
  
- WSPA’s proposal to at least allow reductions from Innovative Concepts to occur within five miles of the port/terminal and within California waters, if not within 24 nautical miles as discussed above, is superior to the language proposed in the 15-Day Changes. A five-mile limit strikes a balance between distance from the terminal/port and a large enough area from which to achieve emissions reduction. A fixed distance also recognizes that air quality benefits can change with meteorology and are not bound by “community” or city boundaries.
  
- WSPA’s proposal to require reductions from “Innovative Concepts” to be specifically in excess of United States law and regulations is superior to the language proposed in the 15-Day Changes. Operators in California are presumed to be familiar with United States federal and state laws and regulations, but are not always versed in the international regulations that may apply at various ports of all throughout the world (especially if the vessels do not normally call on those ports). In setting the emission reduction requirements for CAECS, CARB staff have not disallowed emissions reductions that might be required by international regulations; it is sufficient if such

reductions are not already required under United States federal or state laws or regulations. (15-49.76)

**Agency Response (15-49.76):** CARB staff made no changes based on the received comment. WSPA's proposal to use a 2016 baseline to determine equivalency between a CAECS and an Innovative Concept ignores changing activity levels year over year. The WSPA proposed baseline has the potential to claim fleets are compliant just because they were compliant in 2016. CARB's strategy ensures excess emissions associated with each visit are offset by emissions from an Innovative Concept, so any increase in annual visits must be still offset to be compliant.

The commenter requests to use "best available information" rather than default emissions factors to calculate emissions, meaning emission calculations would be lower when higher tier or cleaner vessels visit a California berth. The Innovative Concept is written in a way that excludes reductions resulting from business-as-usual. CARB staff included this provision to the Innovative Concept compliance option to assure that any reductions in emissions made via the Innovative Concept were beyond those that would have been achieved otherwise. Thus, unless the upgraded ship is part of a CAECS or included as part of an Innovative Concept, the emission reductions from cleaner vessels would be the result of a business-as-usual decision and not as a result of compliance with the rule. Using the baseline of default emissions ensures emissions are being reduced to the greatest extent.

The commenter suggested any reductions from an Innovative Concept be allowed to occur within 5 miles of a port/terminal or 24 nautical miles from the California coastline. CARB staff wants to ensure that the emission reductions that are calculated toward an Innovative Concept occur as close to the port or terminal as possible to provide the most benefit to neighboring communities that are burdened by at berth vessel emissions.

The Innovative Concept is designed to ensure that the reductions obtained are achieved through projects that would not already occur. However, many options for Innovative Concepts include projects that would occur in and around the port complex through sources other than OGVs. These projects would be unlikely to fall under international law since they would take place in the port area. An applicant would not be eligible for claiming reductions required by law as part of an Innovative Concept, even reductions required by international law, because those actions would already occur. These projects would not result in an added benefit to the community to offset uncontrolled vessel emissions.

**Comment:** "If an alternative compliance option can reduce emissions in communities adjacent to ports in an amount equivalent to the Proposed Regulation and by the

currently proposed timelines, then the intent of the Proposed Regulation should be fulfilled, and there should be no additional requirements or limitations imposed on the alternative emission reductions.” (15-49.81)

**Agency Response (15-49.81):** CARB staff made no changes based on the received comment. For further discussion on the purpose of the Innovative Concept see Agency Response 15-69.27 and 15-68.20. Additionally, other conditions found in the requirements for Innovative Concept projects ensure that the reductions achieved properly offset emissions from OGVs at berth. If the only limitation is that an Innovative Concept has emission reductions, then compliance could be met with projects that would already occur, or with projects that would not benefit the adjacent communities.

**Comment:** “The Innovative Concepts provision provides a pathway “for regulated vessel fleets to continue using fleet averaging methods to comply with the Proposed Regulation.” If the current regime is already acceptable as an Innovative Concept, why not let the current regime stay in place? Why force the carriers to re-apply every three years for a proven method that is already working? The application process with public review is burdensome and the three-year limit injects uncertainty. The Port of Oakland recommends that CARB maintain the framework of the existing At-Berth Regulation for containerships.” (15-B-10.2)

**Agency Response (15-B-10.2):** CARB staff made no changes based on the received comment. CARB staff made fixes to the current strategy with the new Regulation development to address many issues but most importantly shared responsibility, and compliance without using advisory scenarios. Continuing to comply with a fleet structure like the 2007 At-Berth Regulation as an Innovative Concept would continue to place liability on fleet operators and not the terminals. Because of this, we need the Innovative Concept to be reviewed and renewed periodically, after a compliance period of up to 5 years. If a fleet is able to work with terminals outside the new Regulation and reductions are achieved as required, then a fleet averaging method can continue to be used.

**Comment:** “On behalf of the East Bay Leadership Council, a regional public policy and advocacy organization representing hundreds of employers across Contra Costa and Alameda Counties, we are supportive of achieving emission reductions in port communities. The mechanism by which we do that is important and must be done in a way that is safe and achieves meaningful, lasting reductions. Unfortunately, the 15-day language has advanced the timelines and put forward “innovative concepts” that can’t be meaningfully used to comply with this regulation. This leaves regulated entities in a situation where the only way they can comply with the regulation will be with vessel-based technologies which, at this point, have not been tested for the tanker sector and could result in substantial safety issues. For the safety of our communities, we can’t support a rule that fails to establish safe and effective compliance mechanisms. We strongly encourage the board to ensure that this rule

can be complied with in a manner that is safe and effective and results in the community.” (15-B-11.1) (15-B-13.1)

**Agency Response (15-B-11.1) and (15-B-13.1):** CARB staff made no changes based on the received comments. The technology to reduce emissions on an ocean-going vessel exists today, but must be adapted for tanker technologies to be used in that application. The Regulation does not limit tanker vessels to reduce emission through on-board technologies or capture and control technologies. The Regulation provides multiple compliance pathways, primarily using a CAECS to reduce emissions on vessels at berth. However, if a regulated party has a way to reduce equivalent emissions in or adjacent to the port or terminal that regulated vessels visit, the Regulation provides an Innovative Concept compliance option that allows for the reduction of equivalent or greater emission reductions to occur from other sources. As another community protecting measure, if a project is taking longer to develop or a terminal has physical constraints with implementing any technology, then compliance can be achieved through payments to the remediation fund that will be administered to reduce emissions in the community. The funds intent is to mitigate the community impacts of uncontrolled vessel emissions.

CARB staff also made commitments to review the implementation of the Regulation and the status of development of technologies for ro-ro and tanker vessels in an interim review in 2022. Lastly, CARB has made commitments to help support the development of technologies to reduce emissions on tanker vessels, and is working with industry to help fund a project to reduce emissions on tanker vessels at berth. CARB is confident that a safe and effective solution will be implemented to reduce emissions on tankers. For further discussion on emissions control on tanker vessels and why CARB staff believes it to be safe, see *Responses to Comments on the Draft Environmental Analysis, Master Response 4: Feasibility and Safety of Capture and Control for Tanker Vessel*, starting on p. 17.

**Comment:** “[T]he new “innovative concepts” provision fails to establish a meaningful alternative path to comply with this Rule. This leaves regulated entities with no proven technologies to comply with the regulation.” (15-B-16.2)

**Agency Response (15-B-16.2):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment. The intention of Innovative Concept compliance option was to allow for Innovative Concepts to be contrived by each unique regulated entity for a limited time while technology and infrastructure is developing for at berth emissions control. However, once a project is approved by CARB for the Innovative Concepts compliance option, as long as the reductions are being achieved and are not required by other programs, the Innovative Concept can be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as

long as the emission reductions used for compliance are in excess of other requirements.

**Comment:** “We do want to emphasize that with the innovative concepts, we don't oppose them, as long as they retain the crucial safeguards that are built in.” (15-OT-1)

**Agency Response (15-OT-1):** CARB staff made no changes based on the received comment. CARB staff makes note of and appreciates the support of the Innovative Concept compliance option. Innovative concept reductions must be real, quantifiable, verifiable and enforceable to ensure crucial safeguards are retained.

**Comment:** “Due to safety concerns and controlling tanker emissions, we asked for an alternative compliance option that would allow reducing emissions equivalent to, but in lieu of, compliance with vessel-based requirements. Unfortunately, the innovative concepts added here impose limiting conditions, which make it frankly unworkable. We recommend CARB adopt the framework in our March 6th letter, including that reductions be surplus at the time when the innovative concept measure is in place and not when a new regulation is adopted it removes the credit.” (15-OT-2)

**Agency Response (15-OT-2):** CARB staff modified the proposed regulatory language in response to the received comment. CARB extended the compliance period for Innovative Concepts from three to up to five years. This change was made to make the Innovative Concepts more workable. If the project is surplus when approved for a compliance period, it can be used for compliance for the duration of the compliance period up to five years and can be renewed if it still meets the qualifications of an Innovative Concept. If a new requirement is implemented that makes an Innovative Concept a requirement, then the Innovative Concept will not be renewed for an additional compliance period, as it is no longer a source of extra reductions.

**Comment:** “We also request flexibility in the strategies that are allowable for the innovative compliance pathway. Leveraging voluntary port Clean Air Action Plan strategies, for example, can be an important means of more cost effectively reducing emissions near our neighboring disadvantaged communities.” (15-OT-39)

**Agency Response (15-OT-39):** CARB staff made no changes based on the received comment. CARB is open to accepting a wide variety of projects to reduce emissions under a proposed Innovative Concept. CARB staff are cautious about accepting projects that would already occur, since the point of the Innovative Concept is to achieve emissions reductions equivalent to the those not reduced from an ocean-going vessel as part of a regulatory requirement. If a project would likely have occurred anyways, it is not a net benefit to the community. See response to comment 15-25.5 for additional information on the use of CAAP strategies for Innovative Concepts.

**Comment:** “We do recommend that proposals be discussed with local 617 steering committees and have community support, and that the local air districts can have a role in that approval process for those projects.” (15-OT-59)

**Agency Response (15-OT-59):** CARB staff made no changes based on the received comment. Applications for an Innovative Concept will be published on CARB’s website, and made available for public comment prior to being approved.

**Comment:** “I'm very concerned about this innovative concepts option. I feel that that is going to be a maze of things that will make it hard to look at a regulation and see if it's being carried out for a layperson or for the community. I want a simple regulation that's clear what it is and that it is being carried out and implemented. I want to be able to look at it myself without having to go through getting a Master's degree to find out about a bunch of other things.” (15-OT-79)

**Agency Response (15-OT-79):** CARB staff made no changes based on the received comment. Applications for an Innovative Concept will be published on CARB’s website, and made available for public comment prior to being approved. Additionally, each year an Innovative Concept applicant will report a list of each vessel visit and the pollutants that are offset by the Innovative Concept. The requirements are intended to be clear and easily enforceable.

## 11. ENFORCEMENT

**Comment:** “There are two issues we would like to work with you on regarding enforcement. First, as you contemplate 100% compliance requirements, we would like to work with you on determining a level of compliance that is operationally feasible (i.e., accommodates unanticipated circumstances) without triggering noncompliance. Second, once regulatory requirements go into effect, we would like to work with you to ensure accountability is appropriately allocated, whether this be facilitating installation of infrastructure or actual emissions reductions.” (15-80.3)

**Agency Response (15-80.3):** CARB staff made no changes based on the received comment. CARB staff agrees that 100 percent compliance may be difficult to achieve as unexpected issues and challenges arise and the Regulation does not require such. The Regulation does require all vessel visits at regulated terminals to control emissions. However, to account for operational challenges in addition to emergency exclusions, CARB has developed an allowance of TIEs and VIEs (Section 93130.11). TIEs/VIEs are intended to accommodate a limited number of situations where a vessel does not reduce emissions during a visit.

In addition, the remediation fund is a compliance option that may be used under limited circumstances where vessels and/or terminal operators have made certain enforceable commitments to controlling emissions at berth. Even if the emissions are not controlled for all or part of a vessel visit, under certain circumstances, a vessel may qualify to remediate emissions (Section 93130.15). With these provisions, CARB staff believes the requirement of emissions reductions from all vessel visits to a regulated terminal is achievable.

The Regulation is designed to hold all parties responsible for compliance matters that are within their direct control. A summary of responsibilities for regulated parties can be found in section 93130.18 of the Regulation. CARB enforcement staff would consider the reason for the uncontrolled emissions on a case-by-case basis. Ultimately, the goal with shared responsibilities is to ensure that terminals and ports are each fulfilling their roles to achieve the necessary emissions reductions and public health benefits of the Regulation.

**Comment:** “Third, there are two issues we would like to work with you on regarding enforcement. First, as you contemplate a hundred percent compliance requirements, we would like to work with you on determining a level of compliance that accommodates unanticipated circumstances without triggering non-compliance. Second, once regulatory requirements go into effect, we would like to work with you to ensure accountability is appropriately allocated, whether this be facilitating installation of infrastructure or actual emissions reductions.” (15-OT-82)

**Agency Response (15-OT-82):** CARB staff made no changes based on the received comment. CARB staff agrees that accountability is vital to the success of the Regulation and has outlined specific responsibilities in the Regulation to ensure this occurs. Additionally, the Regulation has provided flexibility options for unanticipated events such as, the TIES and VIES and the remediation fund compliance options. Lastly, CARB welcomes and encourages regulated entities to work with CARB’s Enforcement Division in advance of any known violations.

**Comment:** “Regulations for vessels at berth, including specifically any newly promulgated emissions standards, are legally unenforceable without the provision of a new waiver. Such a waiver request from CARB might not even be properly before the USEPA for consideration by January 1, 2021, and it is not reasonable to expect that one would be granted in that time period. PMSA views the elimination of the current rule and existing waiver as an unnecessary complication that should be studiously avoided. We would instead ask that ARB keep the current rule for the currently regulated fleets and make amendments to this existing rule which are either consistent with the existing waiver or which could be addressed with US EPA within the context of the existing waiver via future amendment.” (15-69.16)

**Agency Response (15-69.16):** CARB staff made no changes based on the received comment. See responses to comment 52.19 and 2-15-9.1 for a detailed discussion on waivers.

**Comment:** “We want a chapter or section that clearly outlines and describes CARB’s Enforcement, Penalties And Fine Responsibilities.” (15-B-4.35)

**Agency Response (15-B-4.35):** CARB staff made no changes based on the received comment. Under the Regulation, responsibility for requirements and what constitutes a violation is clearly stated. CARB’s enforcement policy is publicly available at:  
<https://ww2.arb.ca.gov/resources/documents/enforcement-policy>.

**Comment:** “We strongly encourage CARB not to initiate penalties against vessels that encounter compliance difficulties at ports and terminals where the shore power infrastructure is not yet fully in place.” (15-57.20)

**Agency Response (15-57.20):** CARB staff made no changes based on the received comment. As part of the requirements of the Regulation (Section 93130.18), a circumstance where vessels equipped with shore power visit a berth not equipped with shore power are not held responsible for the visit being non-compliant. See Table 7 in the Regulatory language for more information on information describing the summary of responsibilities for regulated entities

**Comment:** “The regulation adds a requirement at the end of the draft that “all responsible parties may be held jointly and severally liable for violating this Control Measure”. This should be clarified to be consistent with the liability/responsibility for ports, terminals, vessels and alternative compliance operators laid out in Table 6 and 7. Otherwise, it appears that all parties are liable no matter what the circumstances, which is in conflict with many other sections of the draft regulation.” (15-58.12)

**Agency Response (15-58.12):** CARB staff made no changes based on the received comment. CARB staff kept this phrase in the Regulation in order to retain potential responsibility on the part of any regulated entity. This enables CARB to assess any potential violation on a case-by-case basis (consistent with the referenced tables), and to determine which party is properly deemed to be responsible for noncompliance. CARB staff will make the determination on a case-by-case basis which party is responsible for any violation.

## 12. ARTICULATED TUG BARGES

**Comment:** “[I]nclude articulated tug-barges, commonly referred to as “ATBs,” in the Board’s proposed “Control Measure for Ocean-Going Vessels at Berth (At-Berth Rule).

If not included in the final At-Berth Rule, self-propelled tank vessels and ATB’s will face significantly different emissions control requirements in California despite performing the same function. This appears neither rational nor fair considering that self-propelled bulk liquid tankers, many of which foreign flagged, are ATB’s competition in interstate and international commerce. Including ATB’s in the final rule will ensure they are subject to the At-Berth Rule’s cold iron, plug-in, or emissions capture requirements when moored alongside bulk liquid terminals in California.” (15-7.1)

**Agency Response (15-7.1):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “The exclusion of ATBs from the definition of tankers in the proposed 15-Day Changes makes no common sense and is inconsistent with industry practice. ATBs, which are ocean-going vessels designed to transport oil cargo between ports, squarely fall within CARB’s own definition of “ocean-going vessels”. See, Initial Statement of Reasons, dated October 15, 2019 (ISOR), p. ES-1.” (15-12.2)

**Agency Response (15-12.2):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “In the ISOR, CARB staff stated, without support or substantiation:

*‘However, despite being defined as subcategory of tankers, ATBs are considered a barge and a tug separately.’ [p.IV-6]*

Crowley submits that this statement is plainly incorrect. When the tug is connected to the barge, an ATB is not considered to be a separate tug and barge, but as one vessel, functioning as a tanker.” (15-12.3)

**Agency Response (15-12.3):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “CARB’s failure to address the classification of ATBs in the proposed 15-day changes moves the agency further along a path that will result in the control of emissions from two types of vessels with nearly-identical operational profiles – ATBs and tank ships – under separate regulatory schemes.” (15-12.4)

**Agency Response (15-12.4):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “CARB should revise the proposal and not arbitrarily exclude ATBs under the definition of ocean-going vessels.” (15-69.20)

**Agency Response (15-69.20):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “The comment letter provided by Crowley provided in their opinion, “The Case for Including Large Articulated Tug Barges In the At-Berth Rule.” This comment letter was similar and included reasoning already submitted during the 45-day comment period and the 15-day comment period.” (15-B-5.1)

**Agency Response (15-B-5.1):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “The ATB exclusion from the proposed rule is based on a mischaracterization and fundamental misunderstanding of what are large ocean-going vessel that is over 120,000 barrel capacity ATBs are and what they do. As such, the basis for the exclusion may be challenged as arbitrary and capricious.” (15-OT-26)

**Agency Response (15-OT-26):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** “In particular, while conducting cargo operations at berth, there is no functional difference between an ATB of at least 120,000 barrel capacity and any other ocean-going tanker. Notably, CARB has not offered any industry study or emissions data to suggest that ATBs at berth should not be regulated like other ocean-going tankers. The new At-Berth Rule provides a better alternative to the problematic commercial harbor craft regulation of large ocean-going ATB engines, as if they were performing the same operations as smaller harbor tugs, and exclusively in California waters, which they are not. The ATB exclusion adversely impacts the effectiveness of the rule and may have a significant adverse impact on interstate commerce, because these ATBs spend a majority of their out -- time outside California waters and carry a noteworthy portion of refined product in U.S. west coast trade. For all these reasons as set forth in our written comments, Crowley submits that the Board should now take the opportunity to delete the ATB exclusion from the at-berth rule -- and exclude them in the rule.” (15-OT-27)

**Agency Response (15-OT-27):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

### **13. GLOBAL ECONOMIC DOWNTURN (PANDEMIC)**

**Comment:** “Since early studies already show a connection to COVID-19 and pollution health impacts it is important for you to maintain these new dates and not slip back to the earlier ones because of the slowing of the economy. We need health improvements sooner than ever.” (15-32.2)

**Comment:** “We cannot afford to delay or pause efforts to move forward with life-saving regulations, and it would be particularly inappropriate to delay the At-Berth Regulation in light of the COVID-19 pandemic. It is well-known that OGV emissions are linked to increased rates of lung, cardiovascular, and other chronic diseases, and recent scientific studies show that these chronic illnesses exacerbate mortality and morbidity from COVID-19.” (15-31.2)

**Comment:** “We remain concerned that some who have long opposed At-Berth emission controls now suddenly discover the Covid-19 crisis and call for delay, claiming a new environment and an opaque future dictates rethinking this proposed update. Their cynicism and opportunism is breathtaking. This new environment is killing people. That is a certainty. Rather than support delay, the pandemic emphasizes the urgent need for tough At-Berth regulation.” (15-59\_62.2)

**Comment:** “It is a shame that the Ports use COVID-19 as the reason to extend the implementation of the rule to 2027. (15-B-18.5)

**Agency Response (15-32.2), (15-31.2), (15-59 62.2), and (15-B-18.5):**

CARB staff made no changes based on the received comments. CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the health burdens, especially in light of the current pandemic. CARB’s Board directed staff to proceed without delaying the rulemaking process in order to address the health burdens being placed on California’s port communities by vessels at berth. See Master Response 6 for further details about CARB’s response to the ongoing pandemic situation.

**Comment:** “We recognize we are facing an unprecedented public health crisis, which has and will continue to have significant adverse economic impacts. In light of this, we recommend a mechanism that allows for a timely reassessment of the regulation and greater flexibility in the event that economic conditions warrant it.” (15-80.1)

**Comment:** “First, in light of the current pandemic, we recommend a mechanism that allows for a timely reassessment of the regulation and a greater flexibility in the event that economic conditions warrant it.” (15-OT-80)

**Agency Response (15-80.1) and (15-OT-80):** CARB staff made no changes based on the received comments. This mechanism already exists in the Regulation in the form of the Interim Evaluation. See response to comment 15-B-3.6.

**Comment:** “[CAPA] requests that the At Berth regulatory package process be delayed. This pause would afford ports and port workers time to get through the COVID-19 outbreak and navigate its economic impacts prior to enacting a regulatory change that could complicate economic recovery.” (15-75.1)

**Comment:** "Recommendation: Pause action on the proposed regulatory package for 9-12 months until the state, national and international economic impacts and outlooks can be determined." (15-27\_28.3)

**Comment:** "I am writing to request a postponement in the development of the pending At-Berth regulatory package. The California Air Resources Board (CARB) Initial Statement of Reasons supporting At-Berth regulations made a number of predictions that are no longer likely because of the COVID-19 pandemic. Given the current crisis, and for the reasons detailed below, the proposed At-Berth regulations should be postponed until January 2021 and, at that time, CARB should conduct a new economic analysis on the proposed regulations." (15-52\_52.3)

**Comment:** "[W]e are concerned that this rulemaking process is proceeding during this crisis as our member companies are engaged in responding to this crisis by developing and implementing emergency procedures to address active coronavirus cases and prevent further infections, ensuring that their staff and communities are safe, and maintaining the supply chains that allow the U.S. and international response efforts to be executed and our communities to successfully shelter-in-place. As a result, meaningful public participation in this rulemaking is significantly impaired as the ability of the impacted and regulated industry to review, understand, and comment on proposed regulations is severely constrained at this time. In a previous letter on March 20, 2020, industry stakeholders including PMSA reached out to the California Air Resources Board (CARB) and Cal/EPA outlining the impacts of the crisis on our industries and requesting consideration of a pause in this rulemaking during the crisis." (15-69.6)

**Comment:** "[W]e are concerned that this rulemaking process is proceeding in the midst of a global crisis as our member companies are engaged in responding to the COVID-19 crisis by developing and implementing emergency procedures to address active coronavirus cases and prevent further infections, ensuring that their staff and communities are safe, and maintaining the supply chains that allow the U.S. and international response efforts to be executed and our communities to successfully shelter-in-place. As a result, their ability to review, understand, and comment on proposed regulations is severely constrained. CARB's indifference to meaningful stakeholder engagement is disappointing, particularly in the midst of a crisis. This coalition previously reached out to California Air Resources Board (CARB) and Cal/EPA outlining the impacts of the crisis on our industries (Attachment A) and the need for a pause in rulemaking during this crisis. Unfortunately, no response was ever received." (15-68.7)

**Comment:** "CARB should pause the rulemaking and begin working with the port authorities to develop new cargo volume and cruise visits projections that will serve as the basis for re-analysis of the proposed rule." (15-68.11)

**Comment:** "As a result of the COVID-19 circumstances described above and in anticipation of other extenuating factors arising from this crisis that may come to light in the coming months, we respectfully request that the regulatory schedule be paused until January 2021 when this crisis is over and its full impacts have been assessed." (15-68.29)

**Comment:** "[R]espectfully recommend that CARB delay formal action and implementation of the rule until after the COVID-19 outbreak is under control and the regulated community can properly implement the rule's requirements." (15-57.4)

**Comment:** "As we know, timing is everything, and in the midst of a global pandemic and economic recession, a 6 month pause in this rule making process will enable science and data to determine the best solution for these circumstances." (15-55.4)

**Comment:** The commenter provided a copy of a letter written to the Secretary of EPA and Chair of the Air Resources Board Requesting a pause in development of the AT Berth Regulation due to the COVID-19 crisis. The letter requests regulatory delay until January 2021 in order to focus their efforts on the COVID-19 related issues. (15-49.84)

**Comment:** The commenter submitted a copy of a letter sent to Governor Gavin Newsom requesting an Executive Order to temporarily suspend new rulemaking (e.g. Proposed At Berth Regulation) (15-49.85)

**Comment:** The commenter submitted a copy of an electronic submittal to Governor Gavin Newsom requesting a postponement in "regulatory proceedings including pre-rulemaking activities for a reasonable period of time after shelter in place orders are lifted" (15-49.86)

**Comment:** The commenter submitted a copy of a legislature letter addressed to Chair Nichols of CARB signed by thirty-three Assembly or Senate members, requesting CARB "put all current and proposed rulemakings regarding freight transportation and harbor craft on hold until January 2021". (15-49.87)

**Comment:** "[E]ncourage the California Air Resources Board (CARB) to consider delaying the implementation of these proposed changes as the hypothetical growth in future emissions is no longer possible given the current global economic depression and to provide more time to analyze how the economic fallout from the COVID-19 pandemic affects the California ports." (15-55.2)

**Comment:** "Port encourages CARB to delay implementing this new rule change until a clearer understanding develops of the economic condition of the State as the pandemic matures. This rule will require ports and terminals to invest hundreds of millions of dollars in new infrastructure, which these entities will have to pay for by raising their costs for their cargo customers. For the Port this means funding new infrastructure that will likely cost approximately \$10 million at a time when its revenues have decreased by more than 50% because of the COVID depression. This situation is going to be putting a huge economic handicap on the California ports (and by result the entire State economy) and thus a significant competitive disadvantage just as the economy is trying to recover post-COVID." (15-55.3)

**Agency Response (15-75.1), (15-27 28.3), (15-52 52.3), (15-69.6), (15-68.7), (15-68.11), (15-68.29), (15-57.4), (15-55.4), (15-49.84), (15-49.85), (15-49.86), (15-49.87), (15-55.2), and (15-55.3):** CARB staff made no changes based on the received comments. CARB received numerous requests to pause the At Berth Regulation rulemaking as a result of the ongoing pandemic situation. See Master Response 6 for the reasoning as to why CARB decided not to pause rulemaking efforts and for additional details about CARB's response to the ongoing pandemic situation.

**Comment:** "Significant questions have been raised about the economic and emissions inventory projections used in the SRIA. These questions merited answers prior to the Board vote to enable an informed decision. Now due to COVID-19 these assumptions are clearly invalid, and any projection of future business activity is sheer guesswork." (15-27\_28.2)

**Agency Response (15-27 28.2):** CARB staff made no changes based on the received comment. CARB staff disagrees with this commenter's assertion about the economic and emissions inventory projections of this Regulation, and would point to the commenter's own conclusion that the projection of future business activity is "sheer guesswork" as evidence of why CARB did not change the established analysis used for the economic and emissions inventory analyses based on the uncertainties existing around the current pandemic situation. See Master Response 6 for details about CARB's response to the ongoing pandemic situation, including how staff addressed the economic analysis and emissions inventory projections for the regulation.

**Comment:** "[A] new economic analysis is needed as CARB cannot rely on pre-COVID-19 forecasts." (15-52\_53.4)

**Comment:** "As a result of ongoing impacts of COVID-19, the economic assumptions used in the Air Resources Board's initial analysis have completely changed and no longer apply. This is a fixable problem. An accurate baseline is required for any regulation to be established. (15-61.3)

**Comment:** “Many of the fiscal assumptions that were used for the initial rule-making need to be revisited and revised based on updated economic analysis and changed conditions across industries due to the COVID-19 pandemic. The At-Berth regulations, at this time, would place a substantial fiscal burden on small ports that are seeing a substantial decrease in the movement of the commodities, such as automobiles, that make them viable.” (15-52\_53.5)

**Agency Response (15-68.34):** CARB staff made no changes based on the received comment. See Master Response 6 for further details about CARB’s response to the ongoing pandemic situation, including how staff addressed the economic analysis for the regulation.

CARB staff recognizes that there is perhaps a greater financial burden for small ports during the ongoing economic downturn; however, staff believe that the economic analysis performed for this regulation remains valid. Because the requirements of the final Regulation were relaxed slightly from the economic analysis presented in staff’s SRIA, the overall costs of the Regulation are expected to be of similar magnitude or smaller. CARB will continue to closely monitor the ongoing situation and will reassess the economic situation in 2022 to determine if any changes to the regulation are necessary.

**Comment:** “CARB’s existing SRIA would not accurately inform its Board and members of the public of the true economic impacts of the proposed regulation, and needs to be revised. It makes sense to delay action on the proposed regulation at least until the economy emerges from the current crisis, and the post-COVID-19 outlook becomes clearer. At that point, CARB should re-estimate the proposal’s impacts based on assumptions that more accurately reflect the economy in the post-COVID-19 world.” (15-68.34)

**Agency Response (15-68.34):** CARB staff made no changes based on the received comment. See Master Response 6 for a discussion as to why CARB has not decided to pause the rulemaking process and for more details about CARB’s response to the ongoing pandemic situation, including how staff addressed the economic analysis and emissions inventory projections for the Regulation.

**Comment:** “Before listing comments on the regulation, the Port questions whether CARB’s timeline for implementing the Proposed Control Measure is still appropriate and feasible. A CARB is aware, California and U.S. seaports and good movement industry stakeholder are responding to an unprecedented global economic and public health crisis. The maritime industry, which includes California and U.S. seaports, is included within the transportation critical infrastructure sector defined by the Department of Homeland Security. The maritime industry, operating under extraordinarily challenging public health, safety and financial conditions due to the

COVID-19 pandemic, has swiftly reprioritized and reallocated scarce personnel and financial resources to ensure the continuity of essential supply chain services to the public, community, business and local, state and federal government agencies round the United States. It seems problematic and inattentive to these challenges for CARB to require California seaports terminal operators and shipping companies to divert their limited resources and attention to this rulemaking process when lives and jobs are at risk, especially since many of the proposed measures are not due to take effect for several years. We respectfully request that CARB place the rulemaking process on "pause" to allow the maritime industry to focus its resources and attention on the performance of its critical supply chain functions and services in response to the COVID-19 pandemic." (15-48.2)

**Comment:** "[T]he Port questions whether CARB's timeline for implementing the Proposed Control Measure is still appropriate and feasible. As CARB is aware, California and U.S. seaports and goods movement industry stakeholders are responding to an unprecedented global economic and public health crisis. The maritime industry, which includes California and U.S. seaports, is included within the transportation critical infrastructure sector defined by the Department of Homeland Security. The maritime industry, operating under extraordinarily challenging public health, safety and financial conditions due to the COVID-19 pandemic, has swiftly reprioritized and reallocated scarce personnel and financial resources to ensure the continuity of essential supply chain services to the public, communities, businesses and local, state and federal government agencies around the United States. It seems problematic and inattentive to these challenges for CARB to require California seaports, terminal operators, and shipping companies to divert their limited resources and attention to this rulemaking process and subsequent requirements when lives and jobs are at risk. We respectfully request that CARB place the rulemaking process on "pause" to allow the maritime industry to focus its resources and attention on the performance of its critical supply chain functions and services in response to the COVID-19 pandemic. CARB could use this time to refine the analysis that serves as the foundation for the Proposed Control Measure." (15-B-10.1)

**Agency Response (15-48.2) and (15-B-10.1):** CARB staff modified the proposed regulatory language in response to the received comment and others similar to it. After extensive discussion at the June 25, 2020, public Board Hearing, CARB's Board directed staff to adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, which was the originally proposed implementation date in 45-day package released in October 2019. These changes were made due to impacts to the industry as a result of the current ongoing economic situation. See Master Response 6 for details about CARB's response to the ongoing pandemic situation, including why rulemaking efforts were not paused and how staff

addressed the economic analysis and emissions inventory projections for the Regulation.

**Comment:** “We join our fellow ports and various statewide partners to encourage the California Air Resources Board (CARB) to consider the delay the implementation dates of some the proposed timelines included in the rule. The main reason for this request are the substantial and material changes impacting our industry resulting from the COVID-19 pandemic and ensuing economic recession that have drastically altered our operational capabilities and circumstances. These impacts have rendered the hypothetical future estimates of emissions and cargo growth predictions, upon which the proposed control measures are based, drastically inaccurate. More time is needed to understand how the economic fallout from the COVID-19 pandemic affects California ports, the automobile and RoRo industry, and the abilities of the industry to fund the required infrastructure to implement the proposed regulations.” (15-B-15.1)

**Agency Response (15-B-15.1):** CARB staff modified the proposed regulatory language in response to the received comment and others similar to it. After extensive discussion at the June 25, 2020, public Board Hearing, CARB’s Board directed staff to adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, which was the originally proposed implementation date in 45-day package released in October 2019. These changes were made due to impacts to the industry as a result of the current ongoing economic situation. See Master Response 6 for additional details.

**Comment:** “The ISOR must be revised to take [COVID-19] significant effects into account. California is already responding to the economic reality in other arms of the government.” (15-68.10)

**Comment:** “The 15-Day Changes completely ignore the COVID-19 pandemic and fail to account for any impacts to CARB staff’s original baseline emissions or economic assumptions.” (15-49.56)

**Comment:** “The California Air Resources Board’s (CARB) Initial Statement of Reasons supporting At-Berth regulations made a number of predictions that are no longer likely because of the COVID-19 pandemic.” (15-B-3.2)

**Agency Response (15-68.10), (15-49.56), and (15-B-3.2):** CARB staff made no changes based on these received comments. CARB staff’s first 15-day change package was released on March 26, 2020, prior to knowing what any of the significant impacts from the pandemic would be. Portions of the ISOR that required updating in response to the ongoing pandemic situation were included as attachments to the first and second “Notice of Public Availability of Modified Text and Availability of Additional Documents and Information

available on CARB's website at:  
<https://ww2.arb.ca.gov/rulemaking/2019/ogvatberth2019>.

Staff believe that the economic analysis performed for this Regulation remains valid, as changing economic conditions for regulated entities do not alter the cost of the Regulation. Regarding the projected emissions benefits, CARB has elected not to update the emissions inventory for the purposes of this rulemaking as there is no precedent for such a situation and there is no level of certainty as to how it will impact California port activity. See response to comment 15-75.2 and Master Response 6 for further discussion on updates made to staff's inventory and economic analyses due to the economic downturn created by the pandemic.

**Comment:** "[I]t is clear that the forecasts contained in the ISOR no longer represent a reasonable expectation of future activity of tankers in California. New analysis is necessary to determine how future demand for liquid bulk imports will change as a result of the COVID-19 crisis." (15-68.9)

**Agency Response (15-68.9):** CARB staff made no changes based on the received comment. CARB understands that vessel activity, including liquid bulk imports, has been impacted by the current ongoing economic situation. However, as there is no precedent for such a situation and there is no level of certainty as to how it will impact California port activity, CARB has elected not to update the emissions inventory for the purposes of this rulemaking. CARB inventory staff will continue to closely monitor vessel visit activity and will update the emissions inventory and growth projections based on the best available information. Future inventory updates may be completed and included in the inventory prior to the Board review of the Interim Evaluation scheduled for 2022. The 2022 Interim Evaluation will be used by staff as a way to reassess the impacts stemming from the current pandemic situation and will provide an opportunity to suggest changes at that time if necessary based on updated information. See Master Response 6 and response to comment 15-75.2 for further discussion.

**Comment:** "Under normal circumstances, the timeline to deploy new electrification infrastructure at a marine terminal would verifiably range from 5-7 years. The scenarios detailed in the attached reference guide describe a realistic timeline for deploying shore power based on necessary engineering work and legal requirements imposed by existing California and federal law. However, due to the crippling effects of COVID-19 upon the District's operations and finances, the ability to move forward with many of these new requirements would be difficult at best. With the collapse of the tourism economy, normal circumstances across the District are so profoundly and unrecognizably changed that completing the design, funding, and construction of a shore power project or innovative solution between now and 2024 is not feasible. (15-61.2)

**Agency Response (15-61.2):** CARB staff made no changes based on the received comment. CARB understands that vessel activity has been impacted by the ongoing economic downturn, which has impacted equipment/infrastructure funding and installation timelines for the ports. In response, CARB staff adjusted the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, due to impacts to the industry as a result of the current ongoing economic situation. The additional years are expected to allow time for ports impacted by the economic downturn to raise funds for and purchase/install emissions control technology needed for compliance with the Regulation.

Additionally, there will be an Interim Evaluation in 2022, which will be used by staff as a way to reassess the impacts stemming from the economic downturn and will provide an opportunity to make any changes at that time if necessary based on updated information.

**Comment:** “[T]he current health crisis and resulting economic recession have caused a decrease in work for port workers. The proposed regulations would impose financial burdens on terminal operators and ports that would result in additional job loss. (15-B-3.3)

**Agency Response (15-B-3.3):** CARB staff made no changes based on this comment. CARB understands that vessel activity has been impacted by the ongoing economic downturn, but disagrees with this commenter’s assertion that the Regulation will result in job losses. See response to comment 15-B-3.10.

**Comment:** “[T]he required infrastructure costs are not revenue-producing. Consequently, it is not possible to finance them through the traditional revenue-bonding mechanisms used by ports. While it may be reasonable to assume that some of the port authorities could handle the major expenses imposed by this proposal without reducing other expenditures during good economic times, the situation is markedly different when the economy is soft, even at the larger ports. (15-68.31)

**Comment:** “Time and funds are needed to fulfill our environmental mission, and absent correction, this proposed regulation will fall short of that goal due to changed circumstances related to COVID-19 and the impact on the District’s finances. (15-61.1)

**Comment:** “Timing and funding for the infrastructure needed at Port of San Diego are going to be key for successful implementation of the new reg. Plainly, no surprise to you, the economic impacts of the pandemic are a major challenge for compliance. (15-OT-72)

**Agency Response (15-68.31), (15-61.1), and (15-OT-72):** CARB staff made no changes based on the received comments. CARB understands that vessel activity has been impacted by the ongoing economic downturn, which has impacted funding sources for the ports that would be used to install emissions control equipment and infrastructure for this regulation. CARB staff also recognize that there is perhaps a greater financial burden for small ports during the ongoing economic downturn. In response, CARB staff adjusted the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, due to impacts to the industry as a result of the current ongoing economic situation. The additional years are expected to allow ports impacted by the economic downturn to raise funds for and purchase/install emissions control technology needed for compliance with the regulation. There will also be an Interim Evaluation in 2022, which will be used by staff as a way to reassess the impacts stemming from the current pandemic situation and will provide an opportunity to make any changes at that time if necessary based on updated information.

**Comment:** “[T]he impact on ports is magnified by the fact that it is more difficult to shift costs onto vessel owners and owners of discretionary cargo when these entities are facing their own financial hardships in a depressed economy.” (15-68.32)

**Comment:** “Revenues from diminished economic activity currently are down by 35 to 40 percent since the COVID pandemic hit.” (15-OT-73)

**Agency Response (15-68.32) and (15-OT-73):** CARB staff made no changes based on the received comments. This information is well noted; however, the comment is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

**Comment:** “Lastly, the industry is facing significant challenges. Cargo disruptions due to COVID-19 on top of the impacts from the global trade tariffs have resulted in a decline in cargo with volumes down 13 percent for the port complex in the first five months of the year compared to last year. These impacts increase the need for more time.” (15-OT-40)

**Comment:** “I'd like to speak on behalf of, and advocate for, adjusting the implementation date, leaving the existing fleet regulations in place and allowing the implementation date to move to 2023 as opposed to 2021. This will have the most impact on the infrequent fliers. As you know, I don't have to tell you what the impact of COVID has been on the cruise industry, but basically we're shut down, and we don't see any operations until September at least. And it's uncertain beyond then when we'll have it.” (15-OT-61)

**Agency Response (15-OT-40) and (15-OT-61):** CARB staff modified the proposed regulatory language in response to these received comments. CARB understands that vessel activity has been impacted by the ongoing economic. At the June 25, 2020, public hearing, CARB's Board directed staff to adjust the implementation dates for container, reefer, and cruise vessels from 2021 to 2023, and ro-ro vessels from 2024 to 2025, due to impacts to the industry as a result of the current ongoing economic situation. This change was publically noticed as part of the July 10, 2020, 15-day package. See Master Response 6 for more details about the changes CARB staff made to the regulation proposal in light of the pandemic situation.

**Comment:** "To accurately reflect the effects of the national and statewide emergency as it evolves, the proposed regulation will only benefit from a diligent assessment of COVID-19 impacts. Emissions remain low already while the economy is shut down, which will give the Air Resources Board time to develop funding solutions that equip progress, especially for the heavy upfront investments required for large scale capital projects." (15-61.5)

**Agency Response (15-61.5):** CARB staff made no changes based on the received comment. CARB understands that vessel activity has been impacted by the ongoing economic downturn, and agrees that a robust assessment of the impacts from the current situation is warranted. CARB staff has been closely tracking and analyzing vessel activity data since March 2020 in order to better assess the impacts to the shipping industry in California. The Regulation is based on staff's assessment of these impacts, as presented publically at CARB's June 25, 2020, Board Hearing. CARB staff look forward to working with regulated entities to develop funding solutions where possible to assist with equipment and infrastructure projects in order to support emissions reductions from vessels at berth.

**Comment:** "The reduction in vessel activity will lower the level of baseline emissions, which in turn affects the amount of potential emission reductions and health benefits that can be realized from the regulation." (15-68.30)

**Agency Response (15-68.30):** CARB staff made no changes based on the received comment. CARB understands that vessel activity has been impacted by the current ongoing economic situation. However, as there is no precedent for such a situation and there is no level of certainty as to how it will impact California port activity, CARB has elected not to update the emissions inventory baseline emissions for the purposes of this rulemaking. See response to comment 15-75.2. Regardless of any temporary emissions reductions resulting from the current economic downturn, further reductions must be achieved from vessels at berth in order to reduce the health burdens on port communities.

**Comment:** “[R]equest that the proposed At-Berth regulations include protections for port workers and flexibility as California is facing health and economic challenges. (15-B-3.1)

**Agency Response (15-B-3.1):** CARB staff made no changes based on the received comment. CARB staff agrees that protections for port workers are important, but do not have the authority to address these concerns in the Regulation. CARB trusts that port staff will work with labor unions and other port workers to provide support on these issues. In regards to flexibility, staff believe that the Regulation, with an initial implementation date of January 1, 2023, contains an appropriate amount of flexibility to deal with the current health and economic challenges facing port workers. CARB will continue to closely monitor the ongoing situation and will reassess the regulatory implementation dates in the 2022 Interim Evaluation to determine if any changes are necessary.

**Comment:** “You can see that due to the impact of the current crisis, activity at the ports will be between 26 percent and 62 percent below levels assumed in the initial statement of reasons, a gap that will only grow during a long recovery.” (15-OT-70)

**Agency Response (15-OT-70):** CARB staff made no changes based on the received comment. This comment is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff does note the information provided, and understand that the ongoing economic downturn is having an impact on port activity in California. Staff also notes the wide range of uncertainty in projected impacts to California’s ports, as this commenter highlights. This uncertainty further reinforces the importance of proceeding with the Regulation for the health benefits it will provide, while utilizing the 2022 Interim Evaluation to reassess the current economic conditions at that time.

**Comment:** “[F]rom January 2020 to April 2020, cargo volumes have continued to decrease at California's ports because of the COVID-19 pandemic. Specifically, ports in California have experienced the following declines:

- The Port of Oakland experienced a 7.4 percent decrease in cargo volume in March 2020 compared to March 2019;
- The Port of Long Beach experienced a 6.4 percent decrease in cargo volume in March 2020 compared to the March 2019; and
- The Port of Los Angeles experienced a 30.9 percent decrease in cargo volume in March 2020 compared to March 2019.” (15-B-3.7)

**Agency Response (15-B-3.7):** CARB staff made no changes based on the received comment. Staff notes the comment and appreciates the additional information provided. CARB understands that there have been significant impacts to the cargo volumes at many of the ports in California due to the global economic situation. However, staff believes the benefits of the Regulation justify the necessity and timing for the Regulation, even in the face of the recent declines in cargo volumes. At the June 2020 CARB hearing, the Board directed staff to push back the emission control dates for container, reefer, cruise, and ro-ro vessels to allow the industry more time to recover from the any disruptions experienced due to the economic downturn. CARB staff believes this additional time will allow the ports, terminals, and vessels with adequate time to build infrastructure and control emissions from vessels.

In addition, CARB staff has included several avenues in the Regulation to help offset some costs including, adding TIEs/VIEs, a remediation fund, and an Innovative Concept compliance option (sections 93130.11, 93130.15 and 93130.17).

#### **14. GENERAL GRIEVANCES**

**Comment:** "I don't believe CARB is considering the proximity of the ships to the residential population in its rule making. A one size fits all scenario for rulemaking does not work since the health and welfare of thousands of people is being put at risk. The San Diego cruise ship terminal is very different than LA's and should be treated differently." (15-33.1), (15-34.1), (15-37.1), (15-38.1), (15-39.1), (15-40.1), (15-41.1), (15-43.1), (15-44.1), (15-45.1), (15-47.1), (15-60.1), (15-56.1), (15-63.1), (15-64.1), (15-66.1), (15-67.1), (15-73.1), (15-74.1), (15-76.1), (15-77.1), (15-79.1).

**Agency Response (15-33.1), (15-34.1), (15-37.1), (15-38.1), (15-39.1), (15-40.1), (15-41.1), (15-43.1), (15-44.1), (15-45.1), (15-47.1), (15-60.1), (15-56.1), (15-63.1), (15-64.1), (15-66.1), (15-67.1), (15-73.1), (15-74.1), (15-76.1), (15-77.1), and (15-79.1):** CARB staff made no changes based on the received comments. CARB staff is committed to working with impacted communities to understand their specific impacts and work to address their concerns. CARB's intent of the new Regulation is to strengthen and increase emissions reductions in portside communities. These reductions are in addition to what the 2007 At-Berth Regulation already achieves. CARB staff agrees that each port is operated differently including the Ports of San Diego and Los Angeles, however, CARB staff believes the Regulation was written to maximize reductions and increase regulatory certainty. Staff is committed to bringing an Interim Evaluation back to the Board to review the implementation of the regulation as well as review new technologies and applications to reduce emission from OGVs. This review will provide staff the opportunity to review how different ports are meeting the requirements of the Regulation.

**Comment:** “Please install second shore power system for the cruise liners. When they come into our city the diesel smoke and snoot is evident [sic] on the balcony’s of our homes in downtown SD. It is effecting our real estate values and our health.” (15-51.1)

**Agency Response (15-51.1):** CARB staff made no changes based on the comment received. This comment is outside the scope of this rulemaking, irrelevant, or not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff will note that while the Regulation does not require shore power to be used as the only compliance pathway, all ports and terminals have an obligation under the Regulation to install any necessary infrastructure or equipment that may be needed to comply. This could potentially include an additional shore power system at the Port of San Diego if it is necessary to ensure compliance with the Regulation.

**Comment:** “The Ports estimate that adaptation of the barge technologies used on container vessels to RoRos could increase GHG emissions by as much as 50% per year.” (15-25.3)

**Agency Response (15-25.3):** CARB staff made no changes based on the comment received. Refer to Master Response 1 regarding the analysis of GHG emissions and barge-based systems.

**Comment:** “BAAQMD continues to urge CARB to consider that berths with shore power equipment funded by Proposition 1 B be allowed exemptions for no more than 5% of vessel visits.” (15-26.7)

**Agency Response (15-26.7):** CARB staff made no changes based on the received comment. Proposition 1B has project guidelines independent of the Regulation. The most recent guidelines can be found on the Prop1B website at <https://ww2.arb.ca.gov/sites/default/files/2020-02/February%202020%20EO%20G-20-22.pdf>.

At a minimum the guidelines state that shore power equipment funded by Prop 1B must have additional emission reductions attributable to the project (beyond those required by any law or regulation) for at least 10 years. The additional emission reduction requirements for being funded by Prop 1B will be subtracted from the amount of TIEs the terminal will receive. See Section 93130.11 of the Regulation language for the TIE/VIE allowances by year.

**Comment:** “If the ship does not have trained personnel or proper equipment to make connection to existing shore power infrastructure then a Port official should not grant the ship access to a downtown terminal for berthing. If a ship is unable to connect to shore power the owner of the ship line must meet mandate by retrofit, only use nonCalifornia ports, fund the cost of remediation, high-cost fines and/or fund

infrastructure enhancements at ports they want to visit to allow for compliance.”  
(15-60.4)

**Agency Response (15-60.4):** CARB staff made no changes based on the received comment. If a ship fails to control their emissions while at berth, the vessel owner can choose to use a VIE, pay into the remediation fund, or utilize an Innovative Concept to reduce emissions from another localized source within the area. The number of VIE’s allocated per year are capped and decrease into the future to ensure that emission reductions are achieved for the nearby communities that are impacted by the vessel emissions.

**Comment:** “I have concerns regarding how compliant local Port terminal operators are toward ensuring environmental mandates are met due to a likely close working relationship with fleet operators. And to be effective the timeliness of response time on CARB communications and terminal reporting of vessel visits and incident events is imperative thus staffing levels must meet those needs.” (15-60.10)

**Agency Response (15-60.10):** CARB staff made no changes based on the comment received. CARB enforcement will be responsible for ensuring terminals are compliant with the Regulation. Thus, any relationship between the terminal and fleet operators would not conflict with ensuring compliance with the Regulation. CARB agrees that in order for the Regulation to be effective it is imperative that timely reporting of vessel visits and incident events are reported to CARB. To ensure timely reporting, Staff adjusted the reporting deadline within 30 days after a vessel’s departure. Monthly reporting was selected over quarterly reporting to ensure the visit information is received in a timely manner in order to determine compliance with the Regulation. Regulated entities will be able to submit reporting information via email or using FRRS, which is an online tool that CARB is developing to streamline and consolidate reporting requirements for multiple freight regulations.

**Comment:** “One of the Port of Oakland’s main concerns about the Proposed Control Measure is its potential to create conflict and failure rather than collaboration among terminal operators, vessel operators and a local seaport. The Port of Oakland has expressed this concern in previous correspondence to CARB. Specifically, the proposed TIEs and VIEs has the potential to lead to disputes, rather than collaboration, among terminal operators, vessel operators and a local seaport. Similarly, the proposed requirement for each port to prepare a “Port plan” and agree upon a “division of responsibilities” between terminal operators and the local seaport adds another potential arena of conflict for each port and its terminal tenants. It is doubtful whether CARB enforcement staff possess the necessary dispute resolution expertise to referee the foreseeable conflicts. The Port of Oakland recommends that CARB maintain the framework of the exiting AT-Berth Regulation in place for containerships.” (15-48.3)

**Agency Response (15-48.3):** CARB staff made no changes based on the comment received. CARB agrees that there may be situations that arise that cause a dispute between terminal operators, vessel operators, and the local port. CARB believes that clear responsibilities are prescribed in the Regulation and will help facilitate better communication and cooperation between regulated parties. In cases where a resolution cannot be achieved, CARB enforcement staff will review the case and determine the violator or violators. It is important that ports, terminals, CAECS, and vessel operators continue to work together to eliminate potential disputes.

**Comment:** “The Port of Oakland notes that today’s May 1 2020, letter is the Port’s fifth letter to CARB providing comments and expressing concerns regarding the Proposed Control Measure. (see attachments to this letter, below.) The Port has expended considerable time and personnel resources combing through the proposed regulation and raising substantive concerns and questions about many different details of the proposed regulation and the data upon which it is based. To date, CARB staff have not provided written responses to the questions and comments posed in the Port of Oakland’s first four letters. The Port believes that CARB’s intention to provide meaningful stakeholder engagement requires that CARB timely and diligently provide substantive written responses to questions raised and comment made by the Port of Oakland and other stakeholders.” (15-48.6)

**Comment:** “[W]e request that CARB staff review and respond to all industry comments prior to Board consideration of the proposed regulation.” (15-69.11)

**Comment:** “The industry coalition is concerned that our comments on the ISOR were not addressed or considered. Extensive technical comments on cost, infrastructure, and feasibility were submitted with supporting information. In fact, some of the proposed “15-Day Changes” are diametrically opposed to the evidence submitted to CARB. As an example, substantial evidence, in the form of engineering analysis and previous comparable examples, was submitted by both industry and port authorities demonstrating that more time was needed to ensure successful compliance with the rule. Those concerns and that evidence appears to have been dismissed, with CARB staff proposing to accelerate already unachievable timelines. Accordingly, we request that CARB staff review and respond to all industry comments prior to Board consideration of the proposed regulation.” (15-68.13)

**Agency Response (15-48.6), (15-69.11) and (15-68.13):** CARB staff made no changes based on the received comments. The Administrative Procedure Act (APA) contains the statutes governing the rulemaking process. As part of APA requirements, in the FSOR, CARB must submit a summary of each comment made during the formal comment periods, regarding the specific adoption, amendment, or repeal proposed. CARB must provide a response of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change.

CARB staff greatly appreciates the time and energy spent by stakeholders to help make the Regulation favorable for both industry and the affected communities. The Regulation produced a large response from both industry and community members alike as can be seen in this FSOR. During the formal rulemaking comment periods there were over 1000 comments. Although all comments are read by staff and considered, staff is unable to provide formal responses to all comments until the FSOR. The commenter can find all answers to their formally submitted letters in this document. In addition, the Board heard industry's concerns with the Regulation during the previous Board hearings. CARB disagrees that it dismissed any evidence submitted; CARB has explained its reasoning for establishing the implementation dates elsewhere in the second 15-day notice and in this FSOR.

**Comment:** “[W]e believe corrections to the existing rule for currently regulated fleets would still achieve similar emission reductions without requiring the cruise lines and cargo vessels to completely change their reporting and methodologies that took many years to develop in order to be compliant with the regulation.” (15-58.2)

**Agency Response (15-58.2):** CARB staff made no changes based on the received comment. The shared responsibilities in the Regulation are designed to hold parties with direct responsibility for reducing emissions liable for their roles in the process. The 2007 At-Berth Regulation lacked the ability to hold parties outside of vessel fleets responsible for their actions, even though those actions may directly result in a lack of emissions reductions from the vessel at berth. While some of the regulated fleets remain the same in the Regulation, the structure and impacts far exceed the 2007 At-Berth Regulation and these reductions are very critical in assisting the goals of the CAAP and reducing the health risk for disadvantaged communities surrounding California's ports. In addition, to assist with streamlining reporting, and minimize financial burdens, CARB is developing an online reporting system called the FRRS, which is intended to replace individual freight reporting systems currently used and overall simplify the reporting process.

**Comment:** “Limited Exceptions and No Alternative Compliance Option for Cruise Vessels: The fact that there are no existing approved alternative compliance technologies that can be used by the cruise lines leaves cruise vessels at a major disadvantage in attempting to comply with this at berth rule. Without fleet averaging, and without the ability of the vessel itself to determine compliance with many requirements in this regulation because they must rely on CARB to make a separate decision after the ship has left port, the regulation leaves compliance completely uncertain for extended periods of time. This is a major flaw in this regulation.” (15-58.6)

**Agency Response (15-58.6):** CARB staff made no changes based on the received comment. Although the vast majority of cruise vessel terminals have shore power installed (see ISOR Attachment E), CARB staff developed VIEs for vessels in a fleet that would not be compliant with the Regulation. In addition, CARB has allowed for flexible options for vessels to comply with the Regulation including, the Innovative Concept compliance option which allows for fleet averaging (Section 93130.17) in addition to TIE/VIEs. The Regulation outlines the various requirements and compliance pathways available to vessels so CARB does not believe vessel operators would be uncertain if a visit was compliant or not.

**Comment:** “This regulation will require low activity ports that receive 20 or more visits per year for two consecutive years to begin compliance with this regulation. Cruise lines visit several of these low activity terminals and are concerned that a small terminal or port will not be able to gear up that quickly to provide power and install shorepower.” (15-58.10)

**Agency Response (15-58.10):** CARB staff made no changes based on the received comment. The Regulation would ensure that terminals that are increasing in vessel activity, and consequently placing a higher health burden on nearby communities, would be included automatically after exceeding the thresholds for two consecutive years. This ensures that terminals that are planning to grow their business must also plan how to reduce the emissions impact and associated health risks to their nearby communities at the same time. Once a terminal has been subject to control requirements as part of the Regulation, then the terminal will remain subject to regulatory control requirements even if a drop in activity occurs to prevent terminals from fluctuating in and out of the visit threshold. This “once in, always in” concept also helps to protect against stranded assets in the future; if a terminal spends the money to install expensive emissions control equipment, this provision provides assurance that the equipment will continue to be used.

**Comment:** “We recommend that the Board direct its staff to proceed in the following order: First, CARB should pause the rulemaking and begin working with the port authorities to develop new cargo volume and cruise visits projections that will serve as the basis for re-analysis of the proposed rule.” (15-69.9)

**Agency Response (15-69.9):** CARB staff made no changes based on the received comment. See Master Response 6 for details on why CARB did not pause rulemaking efforts in light of the ongoing economic downturn. Regarding future cargo volume and cruise visits updates to the emissions inventory, CARB staff will continue to update the emissions inventories with the best available information. Future inventory updates may be completed and included in the inventory prior to the Board review of the Interim Evaluation scheduled for 2022.

**Comment:** "CARB should revise its assumptions based on the comments previously submitted by stakeholders that demonstrate costs have been underestimated and emission reductions and health benefits have been overestimated." (15-69.10) (15-68.12)

**Agency Response (15-69.10) and (15-68.12):** CARB staff made no changes based on the received comments. CARB staff did consider all previously submitted comments but did not agree that costs were underestimated and emission reductions and health benefits were overestimated. For more information on why CARB believes the costs and emission reductions achieved from the proposed Regulation are sound, see responses to comments in both Section F (Costs and Economics) and Section H (Health Benefits Analyses).

**Comment:** "Accelerating deadlines in the rule by 33% for tankers and 25% for Ro/Ros with no evidence to support the feasibility of the proposal is not a reasonably foreseeable change to the proposed regulation. As a result, these changes are not appropriate for a "15-Day Change" notice. The changes substantially alter the impact and implementation of the proposed rule. CARB staff should recirculate the proposed changes as a "30-Day Change" notice.

The purpose of the "15-Day Change" notice is to provide flexibility for de minimis changes that do not require substantial new analysis. The proposed changes have required concurrent changes to every element of the analysis: costs, emissions inventory, and health benefits. Even worse, the impact of an accelerated schedule on costs are not disclosed, eliminating the opportunity for stakeholders to provide comment on the change." (15-68.14)

**Comment:** "Accelerating deadlines in the rule by 33% for tankers and 25% for Ro/Ros with no evidence to support the feasibility of the proposal is not a reasonably foreseeable change to the proposed regulation. As a result, these changes are not appropriate for a "15-Day Change" notice. The changes substantially alter the impact and implementation of the proposed rule. CARB staff should recirculate the proposed changes as a "30-Day Change" notice." (15-69.17)

**Agency Response (15-68.14) and (15-69.17):** CARB staff made no changes based on the received comments. CARB staff disagrees with the commenters' assertions that accelerating the tanker implementation dates by two years cannot be done via a 15-day change.

The Administrative Procedure Act (APA) provides that regulations may be changed through 15-day changes where the changes are either (1) nonsubstantial or solely grammatical in nature, or (2) sufficiently related to the original text that the public was adequately placed on notice that the change could result from the originally proposed regulatory action. (Cal. Gov. Code § 11346.8(c).) Here, the entire section pertaining to tanker vessels is new. The

45-day notice accompanying the original proposed regulatory text clearly noticed to the public that this section, as well as the other amended sections, could be changed during the course of the rulemaking. As clearly stated on page six of the Notice of Public Hearing to Consider Proposed Control Measure for Ocean-Going Vessels At Berth:

*CARB may also consider other changes to the sections affected, as listed under "Objectives and Benefits of the Proposed Regulatory Action" of this notice, during the course of this rulemaking process. In developing the Proposed Regulation, staff continues to consider various provisions, including provisions that may incorporate elements of the Existing Regulation into the Proposed Regulation.*

Therefore, the changes referenced by the commenter were "sufficiently related" and thus appropriate for a 15-day package. In addition, the first 15-day package was released on March 26, 2020 and was open for comment until May 1, 2020 (over 30 days) to allow for additional time for stakeholders to evaluate the documentation.

**Comment:** "A related factor that has not been adequately considered is the tug emissions generated to move the barge-based capture and control system to and from the ro-ro vessels and other vessels that may require barge-based emissions control strategies. As a result, emissions from tugboat operations can significantly offset the emissions reductions gained by requiring ro-ro to use capture and control systems during their vessel calls. The capture and control systems also use generators for power that need to be factored into the total impact analysis for regulating ro-ro auxiliary emissions." (15-57.10)

**Agency Response (15-57.10):** CARB staff made no changes based on the received comment. See Master Response 1 for discussion on tug emissions and GHG emissions resulting from the use of barge-based systems.

**Comment:** "The 15-Day Changes do not address the comprehensive regulatory language revisions recommended by WSPA in its March 6, 2020 letter." (15-49.58)

**Agency Response (15-49.58):** CARB staff made no changes based on the received comment. CARB staff did not agree with some of the recommended regulatory language revisions offered by the commenter previously and thus did not make revisions to the regulatory language. However, as part of the APA, all comments have been considered by staff. For more detail and response to WSPA regulatory language revision comments see comments 15-49.83a-f.

**Comment:** "Because California law requires a formal feasibility determination before a regulation is adopted, WSPA again respectfully requests staff to reassess the

Proposed Regulation, provide for a feasibility evaluation study before imposing any enforceable requirements on stakeholders, and revise the regulatory implementation in accordance with the findings of the feasibility evaluation study.” (15-49.82)

**Agency Response (15-49.82):** CARB staff made no changes based on the received comment. This Regulation is technology forcing. Not all of the technology is available at the time of adoption. The Regulation intended to provide many years of preparation for tanker vessels to develop and implement technology to control emissions. Tankers represent the largest single category of emissions remaining unregulated at California terminals and communities near these terminals cannot simply hope that industry will implement the technology needed to achieve emissions reductions equivalent to those sought by the Regulation; rather, a regulatory signal is needed to achieve these reductions. Staff expects regulated entities to perform feasibility studies on the technologies that they wish to use to achieve compliance under the Regulation. If these studies are provided to CARB in a timely manner, they will be considered in the Interim Evaluation.

**Comment:** “CARB must take into consideration that the proposed regulations will result in job loss, which will have a devastating impact on families that have worked for generations at the ports and need these jobs now more than ever.” (15-B-3.10)

**Agency Response (15-B-3.10):** CARB staff made no changes based on this comment and disagrees that the Regulation will result in job loss. Chapter IX of the ISOR summarizes results from analyses that estimate the cost and benefit impacts of the Regulation, including the creation of jobs in manufacturing, engineering, and construction related jobs throughout the state. While the direct compliance costs of the Regulation are large, they are also borne by large industries. By the time the impacts of the Regulation work their way through the economy, the macroeconomic modeling shows a small impact on economic indicators such as gross State product, employment, output, and the personal income of individuals in California. Thus, this regulatory action will not have a significant adverse economic impact on businesses. See Chapter IX of the ISOR for more information on the economic impacts assessment that was completed as part of this Regulation.

**Comment:** “The Environmental Justice Community and Public only requested 4 basic changes:

- That the regulation include all categories of ships with no exemptions
- That the regulation be adopted asap
- That there be no extensions of dates or time to comply with Rule requirements

- That CARB create a standardized industry technology certification protocol” (15-B-4.3)

**Agency Response (15-B-4.3):** CARB staff made no changes based on the comment received. CARB staff are not proposing control requirements at this time for bulk and general cargo, as bulk and general cargo vessels combined make up the smallest portion of ocean-going vessel emissions. Bulk and general cargo vessels will be required to maintain opacity standards at berth and at anchor, and would also have reporting requirements so that CARB staff could monitor for any significant change in activity that might warrant future regulatory action. Additionally, CARB staff will consider the inclusion of bulk and general cargo vessels during the Interim Evaluation in 2022.

As far as timing, the Regulation is being adopted as quickly as CARB staff determined was possible for industry to comply by still maintaining a cost-effective regulation. CARB extended the dates for the container, cruise, reefer, and ro-ro vessels due to the unforeseeable economic downturn. However, CARB did accelerate the compliance year for tankers by two years in the most recent 15-day change. Tankers contribute 50 percent of the PM2.5 emissions from all vessels at berth in California and emission reductions are essential to protecting the portside communities from PM2.5 air pollution. For additional information on why the timelines were pushed back for some vessel types due to the impact of the pandemic please refer to Master Response 6.

Section 93130.5 of the Regulation outlines the required steps for a CAECS to operate, which includes submittal and approval of a test plan. Testing must be in accordance with the criteria specified in this section and will be reviewed annually. CARB staff does not believe a standardized industry technology certification protocol needs to be created as the Regulation already outlines the requirements to operate a CAECS and there is not one standard way to certify the various types of technologies that may be submitted to CARB for approval.

**Comment:** “CARB management and staff made amendments that were not requested by the EJ Community or the Public nor were they directed by CARB Board members during the public hearings.

CARB management and staff illegally accepted public comment from the shipping industry after the public comment deadline of May 1, 2020 and incorporated some of the shipping industries requests into the current proposal. The purpose of this CARB Informational Hearing is to try to cover up this illegal action by the CARB staff. The public was not allowed or advised they could continue to submit additional public comment.” (15-B-4.4)

**Agency Response (15-B-4.4):** CARB staff made no changes based on the comment received. While CARB did make modifications to the previous regulation language, the public notice did clearly state on page six of the

Notice of Public Hearing to Consider Proposed Control Measure for Ocean-Going Vessels At Berth that:

*CARB may also consider other changes to the sections affected, as listed under "Objectives and Benefits of the Proposed Regulatory Action" of this notice, during the course of this rulemaking process. In developing the Proposed Regulation, staff continues to consider various provisions, including provisions that may incorporate elements of the Existing Regulation into the Proposed Regulation.*

Therefore, changes are reasonably foreseeable. Further, it is not illegal to continue to meet with stakeholders outside the formal rulemaking period. In developing the Regulation, CARB met with various stakeholders from all sides. See Agency Response (2-15-12.1).\_Furthermore, the informational meeting referenced by the commenter was held to inform the Board on changes made to the Regulation and the need to continue to refine the requirements.

**Comment:** "The majority of Environmental Justice Community and Public Comments that were submitted were not included in the current Amendments." (15-B-4.5)

**Agency Response (15-B-4.5):** CARB staff made no changes on the comment received. CARB did receive a large number of comments on the Regulation and all of the comment letters are responded to in this FSOR. CARB cannot incorporate all suggested changes to the Regulation as CARB staff did not agree with all of the comments received and this would require developing a new regulation and associated analyses and would further delay the emission reductions that would be achieved from the Regulation. See response to comment 15-48.6 for information on how CARB responds to all written comments received in the FSOR.

**Comment:** "According to CARB's own analysis, the Port of Oakland has no feasible alternative compliance method at three out of four of its terminals (representing 83% of the Port's call volume). This means that carriers relying on a barge-mounted bonnet system for compliance at the San Pedro Bay Ports will not be able to call Oakland, where the only feasible compliance method is shore power. This puts the Port of Oakland at a substantial competitive and operational disadvantage, especially as compared to its competitor ports outside California in Tacoma, Seattle, Vancouver, and Prince Rupert. Diverting cargo to distant seaports leads to increased emissions, undermining the purpose of the regulation." (15-B-10.3)

**Agency Response (15-B-10.3):** CARB staff made no changes based on the received comments. CARB disagrees that there are no potential alternative emissions control options for the Port of Oakland. See response to comment 17.5 for further discussion on the Port of Oakland and CAECS. See also Master Response 2: Good Diversion and Leakage.

**Comment:** "To date, CARB staff have not provided written responses to the questions and comments posed in the Port of Oakland's first five letters. The Port has attached the previous five letters to today's letter, and specifically requests detailed responses to each of the questions raised in all the Port's letters. The Port believes that CARB's expressed intention to provide meaningful stakeholder engagement requires that CARB timely and diligently provide substantive written responses to questions raised and comments made by the Port of Oakland and other stakeholders." (15-B-10.9)

**Agency Response (15-B-10.9):** CARB staff made no changes based on the received comment. See Agency Response 15-48.6 for information on how CARB responds to all written comments received in the FSOR.

**Comment:** "The proposal does fail to address full suite of health benefits as noted in the presentation. We know that there are numerous benefits that are not monetized and numerous benefits and pollution impacts that are not captured in the assessment. So we do urge you to adopt the rule without weakening provisions. We need to capture the emission benefits outlined in the proposed rule coming out of the December hearing." (15-OT-7)

**Agency Response (15-OT-7):** CARB staff made no changes based on the received comment. CARB staff understands and appreciate the commenter's understanding that the Regulation has benefits beyond those monetized in the HRA and agree that reducing emissions as quickly as possible will provide the maximum benefit for the affected communities. See response to comment 15-33.2 for further discussion on implementation dates.

**Comment:** "[W]e ask that the concept for -- the concepts and the cap measures are considered." (15-OT-76)

**Agency Response (15-OT-76):** CARB staff made no changes based on the received comment. This comment came from a representative of ILWU during the June 25, 2020, CARB Board Hearing. Staff are unclear what type of concepts and cap measures the speaker was referring to in this comment, and no elaboration was provided. This comment is not specifically directed at any specific proposed action or about the procedures followed by CARB in proposing or adopting the Regulation, CARB is therefore not required to respond.

**Comment:** "Importantly, help the Port of San Diego find the \$6 million to install a second shore-power connection." (15-OT-23)

**Comment:** "In addition, the industry will also need support in making these investments. We've previously requested CARB to appropriate \$200 million to at-berth emission reduction technology advancement and deployment statewide. We're operating from a common understanding. We need emission reductions in our

communities as soon as possible, and we understand the importance of the regulatory approach.” (15-OT-41)

**Comment:** “And finally, with respect to funding, installation of shore-power infrastructure is very expensive and we hope the State can help support this program with appropriations for the development, purchase, and deployment of this technology as they did in the past.” (15-OT-84)

**Agency Response (15-OT-23), (15-OT-41), and (15-OT-84):** CARB staff made no changes based on the received comments. CARB recognizes the challenges industry is facing and acknowledges that commitments from agencies, local governments, and the State are necessary to help facilitate compliance. At this time incentive funding is available for shore power, cable management systems, and capture and control systems for all vessel types through these programs:

Program Name	Types of Projects Funded
Low Carbon Transportation – Advanced Technology Demonstration and Pilot Projects	Capture and Control System for Tankers
Carl Moyer Program*	Shore Power and Capture and Control Systems
VW Mitigation Trust	Shore Power
AB 617 Community Air Protection*	Shore Power and Capture and Control Systems
Clean Off-Road Equipment Voucher Incentive Project*	Cable Reel Management Systems
Proposition 1B – Goods Movement Program	Shore Power

\*Funds are available statewide and are not limited to At Berth Regulation projects

**Comment:** “CARB staff agrees with need for additional funding opportunities for ocean-going vessel emission control projects to support the regulatory program and has been working with CARB incentive program staff. One specific example of this includes \$10 million in CARB approved funding to demonstrate a capture and control system designed to capture at berth emissions from oil tankers. The funding was approved in the 2019-2020 FY Funding plan for Clean Transportation Incentives under CARB’s Low Carbon Transportation Investments and the Air Quality Improvement Program, and the solicitation for projects was released in September 2020, and all work shall be completed by January 1, 2025.”

**Comment:** “One thing that we want to do is figure out solutions for --for instance, San Diego doesn't have the economic means to -- for the infrastructure, so we want to have a little more time to figure out the funding.” (15-OT-77)

**Agency Response (15-OT-77):** CARB staff made no changes based on the received comment. The implementation date for container, reefer, and cruise vessels was adjusted from 2021 to 2023 due to impacts to the industry as a result of the current ongoing economic situation. The change allows for additional time for funding to be found and infrastructure to be built. See response to comment 15-OT-23 for more information on funding sources available for at berth projects.

**Comment:** “And we think that there's a middle ground, so that there is infrastructure improvements and that we get to keep our jobs, which is very important. We want to make sure that any of those regulations do not put workers out of a job.” (15-OT-78)

**Agency Response (15-OT-78):** CARB staff made no changes based on the received comment. As part of every rulemaking CARB staff evaluates the implications of the Regulation. CARB evaluated the impacts of the cost and economics in the SRIA. The evaluation showed there is a small, but positive, impact on jobs especially those in engineering and manufacturing.

**Comment:** “[T]he Tanker Ship Industry stated that the Ship Emissions Capture & Treatment Technology has never been tested or proven on a Tanker Ship. Advanced Environmental Group (AEG) the manufacturer of the Jell-Advanced Maritime Emissions Control System has asked the Petroleum Industry to provide a ship for testing and demonstration and all companies have denied. The Port of Los Angeles, Port of Long Beach, South Coast AQMD and CARB have done nothing to facilitate a test or demonstration project.

AEG has designed and built a new unique AMECS SPUD Barge design specifically for the Tanker Ship Industry. It addresses all Tanker Ship Industry Safety Concerns and design engineering information was submitted to the U.S. Coast Guard for their review and comment. The U.S Coast Guard found no safety issues.” (15-B-20.1)

**Agency Response (15-B-20.1):** CARB staff made no changes based on the received comment. This comment is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, since this Regulation is technology forcing and CARB supports the continued development of technologies, the agency approved \$10 million in funding to demonstrate a capture and control system for oil tankers to capture at berth vessel emissions. The funding was approved in the 2019-2020 FY Funding plan for Clean Transportation Incentives under CARB’s Low Carbon Transportation Investments and the Air Quality Improvement Program. Several industry and technology stakeholders have expressed interest in applying for this particular funding, and CARB staff anticipates that this funding will provide the backing needed for such a demonstration project to move forward.

**Comment:** “Pile driving windows – Pile driving work within San Francisco Bay is currently restricted to activity between June 1 and November 30 each year to protect fisheries and accommodate fish breeding seasons. As a result, pile driving activities can only occur 6 months per year. Chevron believes, based on extensive actual project experience at the RLW, that only two (2) 24-inch diameter concrete vertical piles could be driven per day. For 1500 piles, that equates to 750 work days to install, and in a given year there are approximately 182 pile driving days. Under this aggressive schedule, it would take at least 3.75 years to just drive the piles necessary for a project of this magnitude, and that’s not taking into account work delays due to weather or other factors. Furthermore, potential environmental concerns relating to the pile driving work would be a focus of project permitting and could result in additional delays.” (15-30.36)

**Agency Response (15-30.36):** CARB staff made no changes based on the received comment. CARB staff evaluated the construction schedule for tanker terminals using land-side control systems in the ISOR EA (Appendix D) Attachment B. Staff estimated up to two years of pile driving at no more than 151 days each. Under the scenarios evaluated by CARB staff, fishery restrictions did not prevent the terminals from complying with the implementation dates proposed in the Regulation.

CARB staff disagrees with the commenter that any compliance response to this Regulation would require an additional wharf structure needing 1,500 piles. In their analysis, staff chose to conservatively assume five piles per day would be installed and 500 piles would be needed for a 15,000 square foot platform and additional dock support. Also relevant is that although pile driving may take a considerable amount of time, other construction activities may take place concurrently or during times when pile driving windows are closed.

**Comment:** “[I]n addition to no final date by which the port and terminal plans must be implemented and infrastructure in place, there is no date by which CARB is required to review, audit and approve the checklist report or approve a request for a second or subsequent commissioning to qualify for an exemption; there is no guaranteed date by which online reporting will be available; there is no deadline by which CARB must notify entities regarding the opportunity to administer the remediation fund; and the remediation fund administrator may take months to get organized and operational, leaving the use of the fund unavailable for vessels to use as a compliance option in the interim.” (15-58.11)

**Agency Response (15-58.11):** CARB staff made no changes based on the received comment. CARB staff disagrees with the commenter’s statement that there is no final date by which the port and terminal plans must be implemented with infrastructure in place. The Regulation has set

implementation dates by which terminals and ports are required to install the infrastructure (see section 93130.7(b) and (c)). See response to comment 15-58.9 for more details.

Separately, the commenter is correct that there is no date by which CARB is required to review, audit, and approve compliance information. The process of compliance determination is an iterative process performed on a case-by-case basis, and it is not possible to say with any certainty how long it might take. Compliance determination will, however, be faster under the new regulatory structure versus the 2007 At-Berth Regulation, as visit information is due 30 days after a visit takes place instead of by March 1 of the following calendar year (as it is with the 2007 At-Berth Regulation).

The commenter is also correct that there is no specified timeline for approving use of a second commissioning event exception, as additional information gathering and discussion may be needed between CARB staff, vessel operators, and terminal operators to assess why there is a need for an additional commissioning event. If the request is denied for any reason, the vessel or terminal operator may elect to use a VIE or TIE to comply with the Regulation or pay the remediation fund if an eligible situation occurred.

Similarly, CARB staff have not put a deadline in the Regulation by which CARB must notify entities regarding the opportunity to administer the remediation fund, as this is also expected to be an iterative process. It would be purely speculative to put a deadline on this process. CARB staff are committed to working with remediation fund administrator applicants to get the remediation fund in place and functional as quickly as possible to ensure the Regulation can function properly and achieves the required emissions reductions.

Lastly, CARB staff agrees that there is no guaranteed date by which online reporting will be available, but reporting via an online system is not a requirement of the Regulation. CARB is scheduled to provide an online reporting system (referred to as "FRRS") prior to the first implementation date of January 1, 2023. However, if FRRS is not available for any reason, the visit information required in sections 93130.7(e)(4) and 93130.9(d)(5) can be reported to CARB as per section 93130.19 of the Regulation.

#### **15. NOT RELEVANT (no response needed)**

**Comment:** The commenter submitted documentation on a presentation given by the Coalition for a Safe Environment's presentation conducted at the CARB Board Hearing on December 5, 2019. The commenter rebutted the presentation's message that Ship Emissions Control Technologies are available and safe to use. (15-49.98)

**Agency Response (15-49.98):** CARB staff made no changes based on the comment received. The comment is outside the scope of this rulemaking, irrelevant, or not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond.

**Comment:** “Every major port in California is required to have at least one terminal that offers Electric Shorepower. Ships must be retrofitted to be able to plug into Electric Shorepower and most ships have not been retrofitted or because of the design cannot be retrofitted. Some port terminals only offer shorepower on one end or location of a terminal so cannot be used on all ships.” (15-B-4.1)

**Agency Response (15-B-4.1):** CARB staff made no changes based on the comment received. The comment is outside the scope of this rulemaking, irrelevant, or not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff would like to clarify that they do not agree with the commenter’s assertion. For the requirements of the 2007 At-Berth Regulation, see the regulatory language provided on the program website at <https://ww2.arb.ca.gov/our-work/programs/ocean-going-vessels-berth-regulation>.

**Comment:** The Commenter submitted the document “Alameda-Contra Costa Transit District ZEB Rollout Plan, Version 1” (15-B-13.2)

**Agency Response (15-B-13.2):** CARB staff made no changes based on the comment received. The comment is outside the scope of this rulemaking, irrelevant, or not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. The document seems to have been submitted in error.

## **16. WSPA – Regulation Language**

The commenter provided CARB with suggested regulatory language revisions they believe “clarifies additional provisions regarding the need for a feasibility study prior to the imposition of deadlines, and an alternative compliance option that would enable a more feasible path to compliance while ensuring the health and safety of the communities in which we operate.” See comment number (15-49.83)

**Comment:** The commenter requests to add an alternative emission reduction strategy. The language provided by the commenter states that a person subject to the emissions control requirements can apply for an alternative emission reduction strategy.

- The alternative strategy would be required to reduce emissions from vessels or onshore sources within 5 miles of port or terminal.
- Emission reductions achieved under the strategy would be calculated as the difference between baseline year (2016 or a representative alternative year) mass emissions of NO<sub>x</sub>, ROG and PM<sub>2.5</sub> from sources covered in the Strategy, and emissions that would have occurred from those same sources in that baseline year emissions if the Alternative Emission Reduction Strategy had been in place that year.
- An alternative strategy must reduce emissions at least 80% from the baseline emissions or reduce no less than what controlling at berth emissions from vessels using the main CAECS pathway would achieve. (15-49.83a)

**Agency Response (15-49.83a):** CARB staff modified the proposed regulatory language in response to the received comment. This comment addresses a portion of suggested amendments to the original draft regulatory language that was publically noticed by CARB staff on October 15, 2019. CARB staff understood from this comment letter and other conversations with industry stakeholders that there was a desire to include an alternative compliance pathway that allows regulated entities to achieve equivalent (or greater) emissions reductions through projects in and around the ports and marine terminals that might be lower cost than reducing emissions directly from vessels at berth. CARB's Board agreed with this direction at the December 5, 2019, public hearing, and asked staff to include a provision in the Regulation allowing this. CARB staff responded with the inclusion of the Innovative Concepts Compliance Option in the 15-day package release March 26, 2020, which provides regulated stakeholders with an alternative compliance pathway. See section 93130.17 for full details regarding the Innovative Concepts provision.

There are some key differences in staff's final Innovative Concepts provision versus this commenter's requests, including the requirement that equivalent offshore emissions reductions occur within three nautical miles (nm) of land, instead of five nm in order to better ensure the community is receiving the same benefits. Regulated entities must achieve emissions reductions equivalent or greater to what would be achieved by reducing emissions from vessels under sections 93130.7 and 93130.9 of the Regulation, not as compared to a specific baseline year or alternative source. These differences were incorporated to ensure that compliance with the Regulation through the Innovative Concepts provision can achieve emissions reductions equivalent to direct compliance with the Regulation.

**Comment:** The commenter would like to add a provision in section 93130.5(g) Source Testing. The provision would allow alternative test methods or emission verifications to the ones listed in the Regulation if approved by the Executive Officer. (15-49.83b)

**Agency Response (15-49.83b):** CARB staff made no changes based on the received comment. The Regulation as published on October 15, 2019, already allows for alternative test methods or emissions verifications to be used testing when specified in the test plan upon written approval by CARB's Executive Officer. See section 93130.5(g) of the Regulation.

**Comment:** The commenter requests terminal and port plan dates should be revised as follows:

- All tanker terminals complying with an alternative control strategy has a plan due no later than December 1, 2021.
- All tanker terminals complying by regular pathway submit plans no later than July 1, 2024. (15-49.83c)

**Agency Response (15-49.83c):** CARB staff made no changes based on the received comment. The due date for initial tanker terminal plans is December 1, 2021, with subsequent updated plans due by February 1 the year before implementation begins (see section 93130.14(a)(2)). February was chosen over July to give staff ample time to review and discuss plans with regulated entities as necessary. Separately, this commenter appears to be recommending that there be separate requirements for terminal and port plans for regulated entities using a CAECS to reduce vessel at berth emissions and regulated entities complying with the Regulation using the Innovative Concept option. CARB staff disagrees that there should be separate terminal and port plan requirements based on the compliance pathway that a terminal or port chooses. To streamline the Regulation, CARB staff did not bifurcate the tanker terminal plans as suggested by this commenter, but instead provided consistent dates for all tanker vessels to minimize confusion.

**Comment:** The commenter provided details that should be required when submitting a terminal or port plan for use with an alternative emissions strategy. It includes things such as:

- Identification and description of all vessel and/or onshore sources alternative reductions will be achieved;
- Schedule for completing work necessary to achieve alternative reductions; and
- Reported NO<sub>x</sub>, ROG and PM<sub>2.5</sub> emissions data from 2016 (or other approved baseline year) for all vessel and/or onshore sources from which alternative reductions will be achieved. (15-49.83d)

**Agency Response (15-49.83d):** CARB staff made no changes based on the received comment. The Regulation as originally published on October 15, 2019, already generally encompasses these elements in the

terminal and port plan requirements (section 93130.14(a) and (b)), with the exception of emissions from a baseline year as these are not deemed necessary for a terminal plan. For regulated entities electing to comply with the Regulation using an Innovative Concept ("alternative reductions", per this commenter), an estimate of the vessel emissions planned to be covered for each pollutant is included as part of the Innovative Concept application process (see section 93130.17(b)).

**Comment:** The commenter would like to add a requirement in the Regulatory language Section 93130.14(a) that states, "[a]ll terminal plans shall be signed by the applicable terminal's Responsible Official under penalty of perjury and are subject to verification by enforcement staff" (15-49.83e)

**Agency Response (15-49.83e):** CARB staff modified the proposed regulatory language in response to the received comment. CARB staff agrees with this suggestion and added language to the regulation with the publication of staff's 15-day package released on March 26, 2020. Staff also added language that specifies that the division of responsibilities between the terminal operator and the port must be signed by the port's Responsible Officer under penalty of perjury.

**Comment:** The commenter requests a feasibility study is part of the interim evaluation. The feasibility study would be conducted by a third-party and should include:

- Engagement with stakeholders, emission control vendors, marine engine and boiler experts to assess and document safety, reliability and cost effectiveness of potential control strategies etc.
- Identification of unique operating characteristics.
- Final determination on applicability, safety, cost effectiveness etc.
  - For reach technology determined feasible a full hazard and operability study (HAZOP) shall be conducted (feasibility study shall propose design standards that will comply with MOTEMS and other existing regulations).
  - If no technology is determined to be feasible, identify the specific requirements and/or changes (if any) which will need to be met before the technology can be considered feasible.
- If a technology or set of technologies is determined to be feasible, CARB staff in consultation with the third-party will assess the compliance deadlines to determine if adjustments need to be made. CARB staff shall initiate formal rulemaking to adjust the deadlines if needed. (15-49.83f)

**Agency Response (15-49.83f):** CARB staff made no changes based on the received comment. The type of site specific engineering analysis being requested by this commenter is not something that can be performed by CARB staff. As mentioned by industry stakeholders, each individual terminal will have to select the emissions control strategy that works best for their specific

operations. As such, CARB staff does not have the resources to perform site specific engineering studies for every marine terminal in California. CARB staff have already performed a general feasibility study for the available technologies at the time of this rulemaking that included engagement with stakeholders, emission control vendors, marine engine and boiler experts to assess the safety, reliability and cost effectiveness of potential control strategies etc., and have found shore power and capture and control technologies to be feasible for all regulated vessel types.

Shore power is already used at one tanker terminal in California (Berth T121 at the Port of Long Beach, as discussed in staff's ISOR in Chapter III). CARB staff understands that there are certain elements of the currently available capture and control technologies that will require specific changes for each vessel type. However, technology manufacturers have assured CARB staff that industry's safety and feasibility concerns with the existing capture and control technologies on the market today can be safely resolved.<sup>26,27</sup>

Marine terminals are encouraged to work with third-party entities and technology manufacturers to perform site specific feasibility studies as part of their preparation for compliance. As written, the Regulation requires that CARB staff evaluates public information, including terminal specific engineering evaluations, logistical considerations, and independent studies as part of staff's 2022 Interim Evaluation (see section 93130.14(d)). The Interim Evaluation will give staff and stakeholders an opportunity to address any concerns shared with site specific evaluations, and present staff an opportunity to return to the Board to request direction to make amendments to the Regulation as necessary. The 2022 Interim Evaluation will also provide CARB staff the opportunity to assess the progress being made towards the adoption of existing control technologies for use with tanker vessels, as well as the progress of land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will use the outcome of the Interim Evaluation to make any necessary changes to the regulation, depending on the outcome of staff's findings at that time.

## 17. WSPA – List of Inaccurate Staff and Public Statements

**Comment:** "p. 5:19-24: "Further emissions reductions from ocean-going vessels at berth are needed to provide public health benefits to the port communities that are already heavily burdened by air pollution from port-related freight sources, as well as to contribute to our ozone and greenhouse gas reduction goals."

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<sup>26</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>27</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at: <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

- The evidence in the record does not support the view that reductions at berth are likely to be any significant contributor to achieving ozone and greenhouse gas reduction goals, or that such reductions will yield any measurable net public health benefit.
- Also, Staff's estimate of growth in emissions is inaccurate, as it only relies on the 2016 Mercator report and the Freight Analysis Framework" (15-49.88)

**Agency Response (15-49.88):** CARB staff made no changes based on the comment received. CARB staff disagrees that the Regulation will not yield any measurable net public health benefit. Section 2 of Attachment C (Updates to Appendix H: 2019 Update to Inventory for Ocean-Going Vessels at Berth: Methodology and Results) displays the emissions for NO<sub>x</sub>, PM<sub>2.5</sub>, and DPM with the 2007 At-Berth Regulation as compared to the new At Berth Regulation. Updated Figures 13-20 show that the Regulation will result in significant reductions of these emissions, including for NO<sub>x</sub> which is a precursor to ozone.

Although GHG emissions are shown to increase into the future due to an increase in vessel activity, any future capture and control system used on a vessel will be required to mitigate their GHG emissions to ensure they are emitting no more GHG emissions than if the system were powered by the California electricity grid. In addition, the grid-neutrality requirements (see ISOR Pages IV-15 to IV-16 under "Grid Neutrality") were written to address the emissions generated by the existing emissions capture and control technologies. Relative to the 2007 At-Berth Regulation, the new Regulation is projected to reduce approximately 356,000 metric tons CO<sub>2</sub>e of GHG from 2021 to 2032. The year-to-year reductions between the Regulation and 2007 At-Berth Regulation are far less substantial compared to the reductions in NO<sub>x</sub>, DPM, PM<sub>2.5</sub>, and ROG, but are still significant towards helping to achieve our climate goals in California. In addition, the NO<sub>x</sub> and GHG emissions that will be reduced from the Regulation are important for areas such as South Coast (who has the highest ozone levels in the nation) who need additional reductions to achieve the ozone standards in 2023 and 2031.

Growth rates for Los Angeles and Long Beach are based directly off of the Mercator forecast for tanker-carried commodities, a report generated specifically for the ports. CARB staff generally agrees it would be an improvement to use more specific values for the types of commodities from tankers, and whether the tanker is importing or exporting product, and plan to make this improvement in future inventories.

The emissions inventory documentation includes a description of the growth source for tankers (and all other categories) in Section 4.1. If a stakeholder has a recommendation for an alternate source of forecasting, CARB staff would certainly consider them in future inventories (as has been done for the Ports of

Los Angeles and Long Beach, Port of Hueneme, and is being considered for the Port of Oakland).

**Comment:** “p. 7:16-22: “But staff has taken this opportunity to really connect with our port communities and work closely with them and the maritime industry in order to develop a regulation that's really health protective, but also takes into account the unique operations that occur in our ports here in the State.”

- Also p. 14:4-6: “Now, to develop this proposed regulation, staff has conducted extensive community and industry outreach.”; 13-19 “We've also had the opportunity to thoroughly engage with our maritime industry. We've gotten the opportunity to visit many of the vessels, ports, and terminals that would be included in this regulation. And again, the tour gave our staff a much better insight to understand the unique layouts and operations of some of these vessels, terminals, and ports.”
- Staff has largely rejected data from industry showing that the regulations are not likely to reflect the public health benefits staff claim.” (15-49.89)

**Agency Response (15-49.89):** CARB staff made no changes based on the received comment. The commenter does not specify what data was provided to CARB so staff are unable to respond to this comment specifically. Further, CARB staff disagrees with the comment that the Regulation is not likely to reflect the public health benefits that staff claim. See Section VI.A and Appendix G (Health Analyses) of the ISOR and the July 10, 2020 updates for the Appendix G Health Analyses for a discussion on the health benefits anticipated from this Regulation.

**Comment:** “p. 13:6-11: “Now, after full implementation of the existing regulation in 2020, there are no additional measures on the books to continue reducing the remaining health benefits--or sorry, the health burdens that are associated with our ocean-going vessels at berth.”

- The suggestion that the existing regulation would not continue to reduce health burdens and emissions after 2020 is not true. The existing regulation imposes aggressive diesel engine operational time limits and emission reduction requirements that apply indefinitely, and those limits and reductions have gotten more and more stringent over the past 10 years. Electricity provided to vessels at berth must meet minimum NO<sub>x</sub>, PM and CO emissions standards. Vessels visiting a terminal equipped to provide compatible shore power must use that power in every visit to that berth. These are measures that will continue to yield health benefits well beyond 2020.” (15-49.90)

**Agency Response (15-49.90):** CARB staff made no changes based on the comment received. While the commenter is correct that the 2007 At-Berth Regulation will continue to reduce emissions from vessels at berth, the

statement made by CARB staff states that after 2020, “there are no *additional* measures to continue reducing the remaining health burdens...” This is a true statement and does not diminish the reductions that will be achieved from the 2007 At-Berth Regulation.

**Comment:** “pp. 25:24-25 to 26:1-6: “So I also mentioned earlier that the proposed regulation also includes an interim evaluation in 2023. So staff have set ambitious implementation timelines for realizing the health benefits of this regulation as early as possible, but we also realize there may be some uncertainty with adapting these technologies for new vessel types and also with the infrastructure developments that may be required.

- This is not a matter of mere “uncertainty with adapting these technologies for new vessel types and also with the infrastructure developments that may be required.” CARB staff have not established in the first instance that the current state of technology would even allow for tanker adoption at private marine terminals.” (15-49.91)

**Agency Response (15-49.91):** CARB staff modified the regulatory language and adjusted the date of the Interim Evaluation from July 1, 2023 to December 1, 2022. This change is due to the adjustment of implementation dates in Section 93130.5(b) and (c). It is necessary to provide additional time prior to ro-ro and tanker vessel implementation dates for CARB staff to review the progress of emissions control technologies and infrastructure improvements. This Regulation is technology forcing. Not all of the technology is physically available at the time of adoption. The Regulation provides many years of preparation time for tanker vessels to develop and implement technology to control emissions. Tankers represent the largest single category of emissions remaining unregulated at California terminals and communities near these terminals cannot simply hope that industry will implement the technology needed to achieve emissions reductions equivalent to those sought by the Regulation; rather, a regulatory signal is needed to achieve these reductions. Staff expects regulated entities to perform feasibility studies on the technologies that they wish to use to achieve compliance under the Regulation. If these studies are provided to CARB in a timely manner, they will be considered in the Interim Evaluation. In addition, CARB staff developed the Innovative Concept compliance option (Section 93130.17).

**Comment:** “p. 26:12-13: “And shore power has actually been used on tanker vessels here in California.”

- The evidence does not reflect that this has been done at scale anywhere for oil tankers calling on private marine terminals.
- Other statements in the transcript itself rebut this claim. See p. 106 (Port of Long Beach (“POLB”) tanker demonstration is unique), p. 114 (T. Umenhofer

response to Board member Gioia), pp. 118-119 (B. McDonald response) (15-49.92)”

**Agency Response (15-49.92):** CARB staff made no changes based on the received comment. As explained in the ISOR, in 2005 POLB Green Port Program and British Petroleum (BP) voluntarily started to work on a tanker vessel shore power project at Berth T121. The project involves shore power infrastructure and vessel infrastructure for two tankers and is currently in use at POLB. In the ISOR, CARB staff correctly describes the tanker shore power project as the first berth where the use of shore power occurs for tanker vessels. However, this successful project shows that shore power for tanker vessels may be possible in some cases, and indeed has already been shown to be successful in one location. CARB disagrees with the commenter’s contention that the other statements in the transcript rebut the claim that shore power has been used on tankers in California.

**Comment:** “p. 27:10-18: ‘And most importantly, as seen here on slide 20, the health benefits of the proposed regulation outweigh the costs. And looking at real costs for the regulation, so in other words those costs that might be passed down to the consumer, we’re looking at the total cost of the proposed regulation are expected to be minimal on a per unit basis, for example, less than one cent for a gallon of fuel.’

- See also p. 28:9-12: “So the projected NO<sub>x</sub> reductions of 46 percent and diesel PM reductions of 52 percent at full implementation of the proposal are shown here on slide 22.”
- See also pp. 28:19-29:1: “Now, as a result of the projected emissions reductions achieved by staff’s proposal, a reduction in potential cancer risk of 55 percent is projected for the ports of Los Angeles, Long Beach, and Richmond. And non cancer related benefits are also expected in association with staff’s proposal, including 16 avoided emergency room visits, 72 avoided hospital [ad]missions, and 230 avoided premature deaths.”
- The evidence does not establish that the health benefits would outweigh the costs, as CARB staff consistently overstate the expected health benefit versus the baseline and understate the implementation costs to industry. (15-49.93)

**Agency Response (15-49.93):** CARB staff made no changes based on the received comment. CARB staff disagrees with the statement that CARB overstates the expected health benefit and understates the implementation costs to industry. The cumulative value of the health benefits from the Regulation continue to exceed the total costs of the Regulation. Specifically, the regulation cost is calculated to be \$2.23 billion from 2023 through 2032 and the statewide valuation of avoided health impacts is valued at \$2.32 billion from 2023 through 2032.

**Comment:** “pp. 154-159; Board member Gioia is receptive to innovative alternatives whether reductions come from ship or on shore so long as the reductions are additional as required for offsets.

- See also Board members Balmes, Riordan, Mitchell, pp. 165-167, all of whom express interest in obtaining truck emission reductions from alternatives to the proposed regulation.
- See also p. 140 where an environmental justice advocate supports the alternative of truck electrification as a “tremendous opportunity.”
- If the terminal operators have implemented truck electrification or some other alternative to CARB’s satisfaction, in the period beyond the deadlines while the feasibility of an at berth system is still being explored, there would be no reason to stop and undo the already working alternative and instead implement an at berth control system at a later date. Requiring operators to do so would be arbitrary and capricious double-counting, unnecessary to address emissions already offset by the alternative. See also WSPA’s more detailed comments on the Innovative Concept proposal in our letter on the 15-Day Changes.” (15-49.94)

**Agency Response (15-49.94):** CARB staff made no changes based on the received comment. CARB staff agrees that there may be other projects in and around the ports that are capable of achieving considerable emissions reductions. As such, staff added a provision called the “Innovative Concepts Compliance Option” to the Regulation with the release of the first 15-day change package on March 26, 2020, with further refinements to the regulatory language issued with the second 15-day package on July 10, 2020. The Innovative Concept compliance option allows facilities or vessel operators to submit to CARB alternative emissions reductions plans that will reduce equivalent emissions to shore power or capture and control systems. In addition to the Innovative Concepts compliance option, vessels are permitted to use on-board emissions control technologies to comply with the Regulation, providing they receive advance approval from CARB and meet the emissions requirements of the regulation (section 93130.5).

The Innovative Concept compliance option could be used, for example, in a scenario in which terminal operators would like to employ truck electrification in lieu of reducing emissions from regulated vessels. However, emission reductions from an Innovative Concept would need to be equal or greater than the emission reductions that would have been achieved through compliance with the Regulation and the applicant would need to demonstrate that these emission reductions would not have occurred but for the Regulation. The purpose for the Innovative Concept compliance option is to, for a limited duration, allow further time needed for additional infrastructure and technology to develop or be deployed, and not to allow an alternative compliance pathway for fleets. However, as long as the reductions are being achieved and are not

required by other programs and other specified requirements are met, the Innovative Concept may be renewed. In this sense, it is not temporary, but can be operated permanently for compliance, as long as the emission reductions used for compliance are in excess of other requirements. In this case, if truck electrification was required for another rule it would no longer be a valid option for an Innovative Concept.

**Comment:** "p. 168:17-23: "In the course of developing this regulation, staff has done two things. One, in 2018, we did a technology assessment. And part of that technology assessment looked at different technologies, what they were feasible -- what -- how they were feasible, areas that they needed improvement. So that in itself was a portion of the feasibility study."

- CARB OGV Technology Assessment looked at the technologies available to date but did not include a formal engineering assessment to evaluate the readiness to control emissions from other vessel types. (15-49.95)

**Agency Response (15-49.95):** CARB staff made no changes based on the received comment. The Technology Assessment does not represent the full universe of applicable technologies and is an assessment and not a formal engineering document. Staff focused on assessing the technologies showing the most promise for commercialization within the next ten years, and will continue to monitor and evaluate new technologies and product advancements. Staff expects regulated entities to perform engineering studies on the technologies that they wish to use to achieve compliance under the Regulation.

**Comment:** "The commenter submitted excerpts from the At Berth ISOR and commented on what they believe to be inadequate technical research in regards to tanker vessels." (15-49.96)

**Agency Response (15-49.96):** CARB staff made no changes based on the received comment. CARB staff disagrees that there has been inadequate technical research in regards to tanker vessels. Staff spent months evaluating the technical feasibility of emissions controls for tanker vessels prior to drafting the Regulation, and the information gathered and shared in staff's ISOR and associated appendices reflects the confidence CARB staff have in the feasibility of existing emissions control technologies for use on tanker vessels. In regards to the availability of control technologies for tanker vessels, shore power is already in use at a tanker terminal at the Port of Long Beach and CARB staff received confirmation from two technology providers that ensured staff they

would be ready and willing to provide a system catering to tanker vessels (both letters have been provided on record.<sup>28,29</sup>).

As part of the Regulation staff has also included an Interim Evaluation which will assess the progress in adapting control technologies for use with tanker and ro-ro vessels and as a result may make changes to compliance deadlines for these vessel categories if deemed necessary. Industry can also provide additional research to CARB for consideration as part of the Interim Evaluation. For additional information on the development of technologies for use on tanker vessels, see response to comment 15-49.91.

**Comment:** The commenter submitted documentation from the original 2007 At-Berth Regulation's technical evaluation for cold-ironing (shore power). The commenter believes a similar and thorough evaluation was not conducted for the At Berth Regulation and should be. (15-49.97)

**Agency Response (15-49.97):** CARB staff made no changes based on the received comment. CARB staff has determined that the current shore-based and barge-based emission control systems are effective at reducing PM and NOx emissions on currently regulated vessels and believes that use of the technology for other vessel types is feasible and achievable. Staff acknowledge that some adaptation of the systems may be necessary for the unique needs of ro-ro and tanker vessels and terminals, as described in the ISOR (Pages III-14 to III-22). Shore power has been demonstrated on tankers and ro-ro vessels, along with capture and control on many vessel types. Manufacturers of capture and control technologies have indicated that they are confident the existing technologies can be adapted to tankers and ro-ro's.<sup>30,31</sup>

Additionally, CARB staff has committed to an Interim Evaluation in 2022 to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at tanker and ro-ro terminals. For additional information on the development of technologies for use on tanker vessels, see response to comment 15-49.91.

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<sup>28</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>29</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at:

<https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

<sup>30</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>31</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at:

<https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

## 18. ENVIRONMENTAL ANALYSIS

All EA comments and responses to those comments are in the *Responses to Comments on the Draft Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth and Supplemental Responses to Comments on the Environmental Analysis* documents, both of which were approved by the Board on August 27, 2020. These documents are posted on CARB’s regulatory website at <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/rtc.pdf>, and <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/supplementalrtc.pdf>, respectively. These response to comments documents are hereby incorporated by reference.

### C. Comments Received During the Second 15-day Comment Period and at the Board Hearing on August 27, 2020

*Table 6: Comments Received During the Second 15-day Comment Period (July 10, 2020 – July 27, 2020)*

Comment Number (2-15 – Docket # . Comment #)	Commenter	Affiliation	Date Received/ Added to Database	EA Comments
2-15-1.1 – 2-15-1.2	Art Mead	Crowley	07/22/20	1-1
2-15-2.1 -2-15-2.2	Wayne Natri	SCAQMD	07/24/20	2-1
2-15-3.1 – 2-15-3.6	Shingo Mizutani	NYK Lines	07/25/20	n/a
2-15-4.1 – 2-15-4.10	Lee Kindberg	Maersk	07/26/20	4-1
2-15-5.1 – 5-15-5.16	Mike Jacob	PMSA	07/27/20	5-1 – 5-3
2-15-6.1 – 2-15-6.20	Doug Schneider	World Shipping Council	07/27/20	6-1 – 6-2
2-15-7.1 – 2-15-7.6	Sande George	CLIA	07/27/20	n/a
2-15-8.1 – 2-15-8.4	Steven Wallauch	CAPA	07/27/20	n/a
2-15-9.1 – 2-15-9.17	Thomas Jelenic	PMSA	07/27/20	9-1 – 9-4
2-15-10.1 – 2-15-10.5	Matt Arms	Port of Long Beach		10-1
2-15-11.1 – 2-15-11.10	Tracy Fidell	Port of Oakland	7/27/20	11-1
2-15-12.1	Jesse Marquez	Coalition for a Safe Environment	7/27/20	12-1 – 12-2
2-15-13.1 – 2-15-13.2	Giles Pettifor	Port of Hueneme	7/27/20	n/a
2-15-14.1 – 2-15.4	Shingo Mizutani	NYK Line	7/27/20	n/a
2-15-15.1 – 2-15-15.17	Sophie Ellinghouse	WSPA	7/27/20	15-1 – 15-5
2-15-16.1 – 2-15-16.2	Janet Rogers	Embarcadero Coalition	7/27/20	n/a
2-15-17.1 – 2-15-17.2	Pat Pressel	Individual	7/27/20	n/a
2-15-18.1	Robert Piskule	Embarcadero Coalition	7/27/20	n/a
2-15-19.1 – 2-15-19.3	Bill Magavern	Coalition for Clean Air	7/27/20	19-1

Table 7: Written Comments Received During August 27, 2020 Board Hearing

Comment Number(s) (BH – Docket # . Comment #)	Commenter	Affiliation	Date Received/ Added to Database	EA Comments
BH-21.1 – BH-21.5	Catherine Reheis-Boyd	WSPA	8/27/2020	See Supplemental Responses to Comments on the Environmental Analysis
BH-22.1 – BH-22.4	Martha Miller	CAPA	8/27/2020	n/a
BH-23.1 – BH-23.8	Jesse Marquez	Coalition for a Safe Environment	8/27/2020	n/a
BH-24.1- 24.3	Art Mead	Crowley	8/27/2020	n/a
BH-25.1	Janet Rogers	Embarcadero Coalition	8/27/2020	n/a
BH-26.1 – BH-26.3	Tracy Fidell	Port of Oakland	8/27/2020	n/a
BH-27.1	Dominick Falzone	Individual	8/27/2020	n/a
BH-28.1	Alice Neuhauser	Individual	8/27/2020	n/a
BH-29.1* (*resubmitted see BH-32)	Jesse Sanford	Individual	8/27/2020	n/a
BH-30	Luis Montes	Inside Sustainability SoCal	8/27/2020	n/a
BH-31.1	Katie Covell	NELA Climate Collective	8/27/2020	n/a
BH-32.1*	Jesse Sanford	Individual	8/27/2020	n/a

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Table 8: Oral Comments Received During the August 27, 2020 Board Hearing

Comment Number(s) (Final-Comment #)	Commenter	Affiliation	Date Received
Final 1-2	Bill Magavern	Coalition for Clean Air	08/27/2020
Final 3-5	Christopher Cannon	Port of Los Angeles	08/27/2020
Final 6	Peter Warren	San Pedro and Peninsula Homeowners Coalition and Indivisible San Pedro	08/27/2020
Final 7-11	Catherine Reheis-Boyd	Western States Petroleum Association	08/27/2020
Final 12-14	Heather Kryczka	Natural Resources Defense Council	08/27/2020
Final 15-17	Morgan Caswell	Port of Long Beach	08/27/2020
Final 18	Bernie Kotlier	International Brotherhood of Electrical Workers/National Electrical Contractors Association	08/27/2020
Final 19	Mallory Warhurst	Long Beach student	08/27/2020
Final 20	Madeline Rose	Pacific Environment	08/27/2020
Final 21-23	Cam Spencer	Port of Hueneme	08/27/2020
Final 24-26	Jesse Marquez	Coalition for a Safe Environment	08/27/2020
Final 27-28	Will Barrett	American Lung Association	08/27/2020
Final 29	Erin Rodriguez	Union of Concerned Scientists	08/27/2020
Final 30	Janet Rogers	Embarcadero Coalition of San Diego	08/27/2020
Final 31	Thomas Jelenic	PMSA	08/27/2020
Final 32-33	Richard Sinkhoff	Port of Oakland	08/27/2020
Final 34-36	David Yow	Port of San Diego	08/27/2020
Final 37	Joy Williams	Environmental Health Coalition	08/27/2020
Final 38-39	Zorik Pirveysian	SCAQMD	08/27/2020
Final 40	Regina Hsu	Earthjustice	08/27/2020
Final 41	Katelyn Roedner Sutter	Environmental Defense Fund	08/27/2020
Final 42-45	Roman Berenshteyn	Bay Planning Coalition	08/27/2020
Final 46-47	Marvin Pineda	International Longshore and Warehouse Union	08/27/2020
Final 48-49	Carlo De La Cruz	Sierra Club	08/27/2020
Final 50-52	Brian McDonald	Marathon Petroleum Corporation	08/27/2020
Final 53-54	Martha Miller	California Association of Port Authorities	08/27/2020
Final 55-56	Douglas Schneider	World Shipping Council	08/27/2020
Final 57	Daniel Velazquez	EneRep	08/27/2020
Final 58	Tom Dow	Carnival Corporation	08/27/2020

## 1. COMMENTS IN SUPPORT

**Comment:** CARB received broad support from the commenters. (2-15-18.1), (BH-27.1), (BH-28.1), (BH-30.1), (BH-31.1), (BH-32.1), (Final 2), (Final 6), (Final 12), (Final 15), (Final 18), (Final 19), (Final 20), (Final 24), (Final 27), (Final 29), (Final 37), (Final 39), (Final 40), (Final 55), and (Final 58)

**Agency Response (2-15-18.1):** CARB staff made no changes based on the received comments. CARB staff thank you for your support. The Regulation is set to accomplish emission reduction goals by introducing emission control requirements to additional ports and marine terminals, and vessels not covered by the 2007 At-Berth Regulation. As explained in the ISOR, the Regulation is anticipated to result in additional emission reductions of NO<sub>x</sub>, DPM, PM<sub>2.5</sub>, ROG, GHG, and black carbon emissions beyond those already realized by the 2007 At-Berth Regulation.

## 2. INFORMATIVE COMMENTS

**Comment:** The commenter submitted a Draft Final Report called “Emissions Evaluation of a Large Capacity Auxiliary Boiler on a Modern Tanker” and stated that the NO<sub>x</sub> and PM<sub>2.5</sub> emission factors that were developed by CARB for tankers were extremely overstated. (2-15-15.17)

**Agency Response (2-15-15.17):** CARB staff made no changes based on the received comment. Staff is aware of the Draft Final Report “Emissions Evaluation of a Large Capacity Auxiliary Boiler on a Modern Tanker”. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. However, for a discussion on the referenced report, see response to Comment 2-15-15.5.

**Comment:** The commenter submitted a copy of the American Bureau of Shipping (ABS), “Guidance Notes on Qualifying New Technologies” dated April 2017. This guidance document was issued to outline numerous steps that are required to assess feasibility of any new technology on marine vessels before the technology can be adopted for real-world use. (2-15-15.16)

**Agency Response (2-15-15.16):** CARB staff made no changes based on the received comment. Staff notes and appreciates the submittal of the “Guidance Notes on Qualifying New Technologies”. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. However, CARB does agree that it is imperative that any new technologies developed for marine vessels to comply with the Regulation should go through thorough safety, risk, engineering, and other pertinent assessments. The Regulation provides the time needed to accommodate this, as well as an Interim Evaluation to track progress, and compliance flexibility options to allow additional time to develop emissions control strategies if needed.

**Comment:** The commenter submitted part of Chapter 8 of the International Chamber of Shipping, et al., "International Safety Guide for Tankers and Terminals," (ISGOTT) (6th ed. 2020). The ISGOTT is a guide for safe carriage and handling of crude oil and petroleum products on tankers and at terminals. The Oil Companies International Marine Forum (OCIMF) recommends a copy of the ISGOTT is kept and used on every tanker and terminal so there is a consistent approach to operational procedures and shared responsibilities for operations at the ship/shore interface. The 6<sup>th</sup> edition replaces the 5<sup>th</sup> edition that was released in 2006. (2-15-15.15)

**Agency Response (2-15-15.15):** CARB staff made no changes based on the received comment. Staff notes and appreciates the submittal of a few pages from Chapter 8 of the "International Safety Guide for Tankers and Terminals" (ISGOTT) (6th ed. 2020). The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB's rulemaking process for adopting the Regulation. Nor do they demonstrate any conflicts between the Regulation and the ISGOTT. The ISGOTT is a guidance document, and it is phrased in non-mandatory terms. Furthermore, its recommendations can be undertaken in the course of implementing the Regulation. As noted extensively in this rulemaking, the Regulation does not mandate the use of any specific technology, and it provides substantial flexibility options, as well as lead times adequate to allow for the kind of assessments suggested by the ISGOTT. However, CARB does agree that it is critical for any alternative and emerging technologies to be thoroughly assessed to ensure that they do not negatively impact tanker vessel or terminal safety. This commenter did not appear to submit the whole referenced Chapter 8 of the ISGOTT (6th ed.) for CARB staff review. Because the ISGOTT (6th ed.) is currently only available for purchase for 385 British pounds, CARB has not been able to analyze its contents in detail. See *Responses to Comments on the Draft Environmental Analysis* comment 15-2 for additional discussion on the updated 6th edition of the ISGOTT.

**Comment:** The commenter submitted a table from the Marine Exchange of Southern California, showing "Major Ship Types By Count; 1-15 July 2020" (July 2020). The commenter stated that U.S. crude oil imports and exports in 2020 are far below averages seen in 2019, with the total monthly visits of foreign tankers into Southern California ports and terminals continuing to drop into July 2020. (2-15-15.14)

**Agency Response (2-15-15.14):** CARB staff made no changes based on the received comment. Staff notes and appreciates the submittal of the "Major Ship Types By Count; 1-15 July 2020" (July 2020) data. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB's rulemaking process for adopting the Regulation. Staff is aware of the negative impacts that the current pandemic has had on all vessel types, including tankers. CARB staff has been using the publically available California Energy Commission Weekly Fuels Watch to

monitor the refinery input levels, which gives an idea in the change for demand in refined products. Although tanker visits in mid-July 2020 did decrease, crude oil production increased in the month of July when compared to the low recorded in May 2020. Overall, crude oil production has been steadily increasing since May 2020 according to publicly available refinery input and production information available on the CEC website available at: [https://ww2.energy.ca.gov/almanac/petroleum\\_data/fuels\\_watch/output.php](https://ww2.energy.ca.gov/almanac/petroleum_data/fuels_watch/output.php). Furthermore, the commenter appears to overlook the fact that tanker emissions reduction requirements do not become effective until 2025 and 2027 for Southern and Northern California terminals, respectively, which allows a number of years for the economy (and tanker volumes) to recover. As noted throughout this FSOR, the Regulation also includes the Innovative Concept provisions to add flexibility.

**Comment:** The commenter submitted copies of the U.S. Energy Information Administration, Weekly U.S. Imports of Crude Oil and Weekly U.S. Exports of Crude Oil, Jan-Jul. 2020. (2-15-15.13)

**Agency Response (2-15-15.13):** CARB staff made no changes based on the received comment. Staff notes and appreciates the submittal of the U.S. EIA, Weekly U.S. Imports of Crude Oil and Weekly U.S. Exports of Crude Oil, Jan-Jul. 2020. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB's rulemaking process for adopting the Regulation. In addition to reviewing the information submitted by this commenter, CARB staff have also been closely monitoring publically available refinery crude oil input volumes as published weekly by the California Energy Commission (CEC). Staff acknowledge that U.S. crude imports and exports and California refinery input levels have been lower in 2020 when compared to 2019. However, staff would also like to note that more recently published data from the CEC indicates that refinery crude oil inputs are recovering gradually. Publically available data from the CEC showed refinery inputs down 33 percent year-over-year as of May 2020, with those numbers rising to 15 percent below 2019 volumes year-over-year as of September 2020. This signifies to CARB staff that an increase in the amount of crude oil imports will be needed to meet increased refinery demand. Because the CEC website (<https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/crude-oil-imports-source>, updated as of July 2020) indicates that the majority of crude oil imports are brought into California by marine transportation (i.e., tanker vessels), CARB staff believes that a continued increase in refinery production will lead to more tanker vessel visits. Refinery input data can be found on the CEC website (available at: [https://ww2.energy.ca.gov/almanac/petroleum\\_data/fuels\\_watch/output.php](https://ww2.energy.ca.gov/almanac/petroleum_data/fuels_watch/output.php)).

Furthermore, it is important to note that U.S. crude oil imports and exports and California refinery import levels represent only a snapshot in time, and may not

represent long-term economic trends (including in periods years down the road when tanker emissions control deadlines arrive in 2025 and 2027). See Master Response 3 and Master Response 6 for more discussion on why CARB staff believes the implementation dates for tanker vessels remain feasible despite the ongoing pandemic. See Agency Response (2-15-15.14).

**Comment:** The commenter submitted copies of the California Energy Commission Weekly Fuels Watch Report for dates from May through July. (2-15-15.12)

**Agency Response (2-15-15.12):** CARB staff made no changes based on the received comment. Staff notes and appreciates the submittal of the CEC Weekly Fuels Watch Report for dates from May through July. The materials neither provide objections or recommendations specifically directed at the Regulation nor provide recommendations on CARB’s rulemaking process for adopting the Regulation. See response to Comments 2-15-15.14 and 2-15-15.13 for more information in recent crude oil trends.

### 3. REGULATION STRUCTURE

**Comment:** “Summary of Responsibilities (Section 93130.18): The last row in Table 6 suggests that in the case of a CAECS equipment failure or failure to perform, the vessel, terminal and the CAECS operator would be held responsible. This is not appropriate and creates ambiguity with respect to compliance. The vessel operator has no ability to control the performance or maintenance of a CAECS operator [R]ecommend that “vessel” and “terminal” be removed from the list of responsible parties in Table 6 when a CAECS has an equipment failure or failure to perform.” (2-15-6.20)

**Agency Response (2-15-6.20):** CARB staff made no changes based on the received comment. See response to comment 15-57.25 for further discussion.

**Comment:** “The liability provisions in the new rule should be clarified before January 2023. The proposed rule still calls for joint and several liability for violating the control measure. This conflicts with the basic premise that the new rule should define clear requirements and responsibilities for each participant: ports, terminals, vessels and alternative compliance operators.” (2-15-4.10)

**Comment:** “By 2023, the liability provisions in the new rule should be clarified. The new proposed rule still requires joint and several liability for violating the control measure, which conflicts with specific liability/responsibility for ports, terminals, vessels and alternative compliance operators in other sections of the rule.” (2-15-7.5)

**Agency Response (2-15-4.10) and (2-15-7.5):** CARB staff made no changes based on the received comment. The Regulation makes every attempt to have clear requirements and responsibilities for all regulated entities, but there can

still be some uncertainty due to the variety of different working arrangements at individual terminals. When a vessel is unable to reduce emissions, there can be multiple factors and multiple parties involved and each party must be able to be held responsible either separately or jointly. This is a key aspect of the Regulation, given lessons learned from the existing At-Berth control measure. Since it is not always easy to determine which entity is responsible for a violation (with entities sometimes pointing at each other), CARB staff crafted the Regulation to be broad with respect to potential liability, yet fair in apportioning liability to the party(ies) at fault. Having a detailed port and terminal plan with specific responsibilities listed as required by section 93130.14 (a) and (b) will significantly assist CARB staff in making a determination on who would be liable in certain situations, and will help the regulated entities reduce uncertainty regarding potential liability.

**Comment:** “Ports and marine terminals at present are responsible for the provision of shoreside power infrastructure and operational support and manning under the current rule, and that will not change under the proposed rule. These entities can be held accountable for such responsibilities, but they cannot be held liable for an emissions standard violation by an off-road engine on a vessel over which they have no control. This proposal seeks to do just that by establishing a novel and unnecessary Joint & Several Liability measure for vessel emissions.

Assigning a vessel’s emissions standard liability to a port or marine terminal must be avoided. The creation of third-party liability for vessel emissions for a marine terminal is just as misplaced as trying to hold a vessel operator responsible for the actions of a marine terminal operator once at berth. These should all be treated as independent bases of responsibility and given independent measures of reporting and review. PMSA has proposed multiple bases upon which these liabilities may be established and believes that continued investment in compliance can be maintained without the establishment of a new liability regime. (2-15-9.2)

**Agency Response (2-15-9.2):** CARB staff made no changes based on the received comment. The structure of the Regulation provides CARB the ability to hold the vessel operator, as well as other parties including the terminal operator and port operator, responsible for their role in reducing vessel emissions while at-berth. For example, if a shore power equipped vessel is unable to connect to shore power at berth because the terminal lacks sufficient infrastructure to plug the vessel in, then the terminal is responsible for the failure to reduce those emissions. This can happen when terminals have too few shore power berths to accommodate vessels of various sizes, or position vessels incorrectly to reach the shore power vaults. There are many solutions to these situations including providing additional shore power berths, adapting mobile shore power outlet solutions, or logistics to position vessels at the existing shore power outlets. While the situation may be caused in some cases by changes in the size of vessels that a fleet brings, the solution requires making

adjustments at the terminal. This change is necessary because the 2007 At-Berth Regulation lacked sufficient responsibilities for terminals and ports and the majority of compliance was the responsibility of vessel fleets who had the potential to be out of compliance for situations over which they had no control.

**Comment:** “The cruise lines request that CARB staff work over the next year with cruise lines and other stakeholders that have non-frequent fliers to find an alternative compliance option for vessels that rarely or unexpectedly visit California ports. The goal will be to allow cruise vessels to continue to make 4 or fewer calls in California without being forced to either put in shore power that is rarely used or eliminate calls in California ports to stay in compliance. CARB has unfortunately classified these non-frequent fliers as “unregulated” because they are exempted from the existing At Berth rule. (2-15-7.1)

**Agency Response (2-15-7.1):** CARB staff made no changes based on the received comment. All cruise vessels will need to be comply with the Regulation by January 1, 2023, including cruise vessels which infrequently call California ports. CARB staff will continue to work with cruise lines to help identify alternative compliance options and work to determine solutions for rare or unexpected visits. For example, TIEs can be used to bring these vessels in, as well as an appropriate Innovative Concept.

**Comment:** “A different flexible alternative is critical for these vessels to avoid displacing this trade that though fewer in overall numbers are still financially significant to impacted California ports that will lose additional calls. It is also important to note that the ISOR and SRIA do not properly analyze the possibility of future vessel diversions as well as those that have already occurred, and their economic impact.” (2-15-7.2)

**Agency Response (2-15-7.2):** CARB staff made no changes based on the received comment. The Regulation provides a number of flexible compliance options including approval of new CAECS and allowance of Innovative Concepts as well as the ability to use a limited number of TIEs or VIEs for uncontrolled visits. CARB agrees that the possibility of future vessel diversions is a risk and would not be a preferred outcome for anyone. See Master Response 2 for further discussion on cargo diversion.

*i. Definitions*

**Comment:** “We recommend that CARB amend this definition by inserting the following after ‘netting down’ and before “all”: “, the ramp is down and secure (if applicable), required shore side labor technicians are present, and”. These changes are needed to accommodate vessels equipped with ramps (which would not therefore use a gangway) and to note the presence of labor technicians that are essential to

hooking the vessel up to shore power or to an alternative compliance method.” (2-15-6.3)

**Agency Response (2-15-6.3):** CARB staff made no changes based on the received comment. This is a redundant comment that was also submitted during the first 15-day change comment period. See response to comment 15-57.5.

**Comment:** “We recommend that the words ‘at a different marine terminal’ be inserted after the word ‘another’ so shifts within a single marine terminal would not constitute a new vessel visit. To correspond to the above change, the words ‘at a different marine terminal’ must also be inserted after the word ‘berth’ in Section 93130.7(e)(4)(l).” (2-15-6.4)

**Agency Response (2-15-6.4):** CARB staff made no changes based on the received comment. This is a redundant comment that was also submitted during the first 15-day change comment period. See response to comment 15-57.6.

**Comment:** “So one of my proposals is to address to the Board to add to the definition of alternative diesel fuels.” (Final 57)

**Agency Response (Final 57):** CARB staff made no changes based on the received comment. This commenter spoke in regards to turning plastic into usable, low sulfur fuels. The Regulation does not have a definition for alternative diesel fuels, nor does the Regulation require or specify any specific type of fuel for compliance with the Regulation. As such, this comment is outside the scope of this rulemaking and therefore, CARB is not required to respond.

ii. *Connection/Disconnection Times*

**Comment:** “Most pilots come aboard before the sailing time, but just before that is the busiest time for the crew. Therefore, we would like to request a change in the regulation “no sooner than two hours before ETD” regardless of the time of POB.” (2-15-3.3)

**Comment:** “There will be situations in which this is not a practicable disconnection deadline for ocean carriers because of delayed vessel departures due to weather or vessel traffic or if labor unplugs the vessels early due to their own shift schedules. We therefore recommend that the shore power disconnection time be no sooner than two hours before “Pilot on Board”.” (2-15-6.12)

**Agency Response (2-15-3.3) and (2-15-6.12):** CARB staff made no changes based on the received comments. The requirement for disconnection from a

control system remains as no sooner than one-hour before pilot on board. CARB staff chose the timeframe of one-hour before pilot on board, to allow for time to disconnect before the pilot arrives providing the opportunity for a prompt departure. However, if disconnection time takes longer than one-hour prior to pilot on board, disconnection may be made sooner and additional emissions may be remediated by use of the remediation fund, or disconnection can happen after the pilot is onboard.

**Comment:** “[S]hould be considered that is necessary to idling operation without applying electric power load for a while before stopping and after starting generator engines. Idling operation is needed at least 15 minutes after starting till apply electric load and 15 minutes to stop after taking out electric load (for cooling down). Therefore, 30 minutes of idling time should not be included in CAECS usage time such as shore power. Thus, this time consuming should be considered for next opinion of item. (berthing period).” (2-15-3.4)

**Agency Response (2-15-3.4):** CARB staff made no changes based on the received comments. The Regulation allows for time after the vessel is ready to work and prior to departure, before a vessel is required to use a CAECS. This time is provided to ensure safe operations, and to account for starting and stopping of engines and necessary components of a control strategy.

**Comment:** “I continue to be concerned about the time granted to connect and disconnect to shore power in the new rule. Current standards allow the vessels to run their engines a total of 3 hours between tie down and leaving. CARB staff says this time period is too short since it is very hard to meet this standard.

The new rule still has a 3 hour window plus additional time to complete the READY TO WORK process. The rule establishes 2 hours to connect from READY TO WORK and 1 hour to disconnect from the time the Harbor Pilot boards the ship. We were told that a 2-hour connection time was requested by container ships, due to additional complications related to the containers.

I believe that cruise ships could have a shorter time to connect, and possibly disconnect, due to a comparatively simpler process than container ships. Yet this possibility is not considered in the proposed rule.

I believe that standards should be achievable and based on data. Unfortunately, CARB is setting these new standards without data to support the 2 hour and 1 hour rules.

...[A]sk the CARB Board to consider:

1. Staff collecting Ready to Work data for cruise ships, on a random basis, to understand how long this normally takes.

2. Staff collecting connection times for cruise ships starting from Ready to Work, on a random basis, to understand how long this takes.
3. Staff should present this information in its 2022 interim evaluation and consider altering the rule if appropriate.
4. Staff should commission a time study to evaluate the times to connect and disconnect.
  - Is the READY TO WORK process handled efficiently?
  - Are the connect and disconnect processes being done efficiently?
  - Can the technologies be improved?
  - Can the labor processes be improved?
5. Staff should keep records of current connect and disconnect times and compare them to times after the implementation of the new rule. Allowing the ships time in excess of reasonable needs for the connect/disconnect process may result in longer times. This rule creates a big jump to 120 minutes after READY TO WORK for cruise ships, and people lose the incentive to complete the process quickly.
6. Staff could create incentives to shorten connect/disconnect times.
7. Adjust measurements so that averages remove outliers, like VIE and TIE, which skew results.
8. Use a wider range of statistical analysis, even something as easy as MODE, to find the normal breakpoints for a process.
9. More data collection, reporting and analysis can provide the tools CARB staff needs to reduce emissions.
10. Separate the cruise ship requirements from the container ships, since the process is not the same.
11. Consider making the cruise ship connection time 1 hour from READY TO WORK and adjust both the connect and disconnect times based on data from incentivized programs." (2-15-16.2) (2-15-17.2)

**Comment:** "CARB staff calculated information for us from the San Diego data and found that 69 percent of cruise ships connect in less than one hour, including ready-to-work. Given this information, please ask staff to determine the actual time taken at various ports for cruise ships to connect to ground power after ready-to-work and the time needed to connect to engines before disconnecting. If the information coincides with the information currently available, please then have CARB reconsider these rules. In the 2022 interim review, change the connection time after ready-to-work to a half an hour from two hours. That is double the time it takes." (Final 30)

**Comment:** The commenter believes the connection times for CAECS are too long and can be completed sooner as has been demonstrated on cruise ships in San Diego. The commenter asks that:

1. In the 2022 interim review, change the connection time after Ready to Work to 1/2 hour from 2 hours. In previous discussions with our Port, we were told that ships usually run their engines for ½ hour before disconnecting. If this holds true when investigated by CARB then we have a second request.
2. In the 2022 interim review, change the time to run engines before disconnecting to ½ hour from 1 hour. (BH-25.1)

**Agency Response (2-15-16.2), (Final 30), and (BH-25.1):** CARB staff made no changes based on the received comments. CARB staff understands that some vessels can connect faster than the required two hours, including some cruise vessels which can connect in less than one-hour. However, based on shore power connection data received by CARB, a significant portion of vessels cannot routinely connect in under one-hour. As such, CARB staff has allotted two-hours to complete this connection process. See Master Response 4 for more details on connection and disconnection times.

CARB staff will continue to collect and analyze visit information from all vessels, including information about shore power connection times, between now and the 2022 interim. If vessels are already plugging into shore power in under one-hour under the 2007 At-Berth Regulation, it is unlikely that there is any need to modify the new regulatory requirement in the future, as vessels are already generally incentivized to connect to shore power as soon as possible because connecting to shore power eliminates the need for the vessel to operate on expensive cleaner marine distillate fuel as required by CARB's Vessel Fuel Regulation. This means that a vessel is saving marine fuel that typically is at a much higher cost than electricity provided.

Additionally, at some terminals, shore power results in revenue through the CARB's LCFS program. Therefore, it is often beneficial for parties to connect to shore power expeditiously. CARB staff believes many vessels utilizing shore power will connect in less than the two-hour requirement and stay plugged in as long as possible prior to departure. However, if future evidence is found that a majority of cruise vessels can successfully connect in a shorter amount of time on a regular basis, CARB staff may review connection times during the 2022 Interim Evaluation.

**Comment:** "[A] two-hour requirement is still arbitrary and not based on any evidence that it is safe or feasible. As we have said in previous letters, the existing rule permits multiple connection strategies, some of which will require more than one hour. More importantly, the shore power connection process requires individual people to manhandle heavy, high-voltage equipment and energize that equipment – sometimes in adverse weather conditions. Under no circumstances should that work be performed under a stopwatch. The two-hour requirement would likely be ineffective because any exceedance of the one-hour requirement would likely result in a safety exemption being sought, as having labor move faster handling high voltage equipment would be fundamentally unsafe." (2-15-5.14) (EA 5-3)

**Comment:** “While CARB proposes to modify § (3) (A) to require vessels to begin using shore power or another CAECS within two hours after ‘Ready to Work’, a substantial number of arriving vessels would still be unable to meet this requirement. Establishing shore power connections must be done safely by longshore technicians, who may not be immediately available given their other extensive responsibilities. Unreasonably short time limits for connecting high-voltage systems could pose safety risks to workers, result in unnecessary damage to the equipment, and subject a substantial percentage of compliant vessel calls to noncompliance for tasks the vessel cannot control. We therefore recommend that vessels be required to begin using shore power or another CAECS within three hours after ‘Ready to Work’.” (2-15-6.11) (EA 6-2)

**Comment:** “More importantly, the shore power connection process requires individual people to manhandle heavy, high-voltage equipment and energize that equipment – sometimes in adverse weather conditions. Under no circumstances should that work be performed under a stopwatch. The two-hour requirement would likely be ineffective because any exceedance of the one-hour requirement would likely result in a safety exemption being sought, as having labor move faster handling high voltage equipment would be fundamentally unsafe.

CARB staff has still provided no basis on which it can be assumed that connection times can be consistently and safely accelerated. In fact, no data is available from CARB justifying the previous one-hour connection window or the new two-hour connection window.” (2-15-9.15) (EA 9-4)

**Agency Response (2-15-5.14), (2-15-6.11), and (2-15-9.15):** CARB staff made no changes based on the received comments. See Master Response 4 for discussion on connection and disconnection times. CARB staff agrees performing connection and disconnection should be done safely and has provided a safety exemption as mentioned by the commenter, as well as an option to remediate access emissions by the remediation fund if the connection times are outside the requirements of the Regulation. See also, *Responses to Comments for the Environmental Analysis* comment numbers 5-3, 6-3 and 9-4 for environmental responses.

### *iii. Applicability and Exceptions*

**Comment:** “Because it is only about 20 ro-ro vessels (PCTC) out of 110 ro-ro vessels(PCTC) call California frequently and regularly, and other ro-ro vessels (PCTC) may call only several times a year and very short stay at berth. Moreover, some vessels may not call CARB. But all of our ro-ro vessels (PCTC) have to comply this new regulation because of any ro-ro vessels (PCTC) may have chance to call California. Therefore, it will be required to install AMP on all of our ro-ro vessels (PCTC). Based

on our past experience of installation of retrofit AMP on container ships, we estimate approximate costs of USD 700,000 to 900,000/vessel.” (2-15-3.1)

**Agency Response (2-15-3.1):** CARB staff made no changes based on the received comment. The Regulation does not prescribe vessels to use shore power. It is a great option, and is encouraged, but it is not the only compliance option. Another CAECS, such as a capture and control system, may be more appropriate for infrequent vessels as the use of a single system can control many individual vessels without significant installation costs on each vessel. Additionally, if a vessel operator or terminal operator can achieve equivalent emission reductions near the port, they may be able to comply using an Innovative Concept rather than reducing emissions on all vessels. The Regulation is intentionally flexible to allow the most effective and economic solutions to be used to comply.

**Comment:** “In this year, LNG fueled ships will be delivered into service in place of conventional heavy fuel oil, but regarding the generator of LNG fueled ship, it should be approved as “type approval”, means we’d like to suggest not approval for each generator engine of vessel individually. In other words, the exhaust gas of LNG fuel engine itself equipped on board to be not measured, but exhaust gas of engine of same model/type to be measured at the manufacturer's factory and that it is approved. Furthermore, although we are studying with one of university in US for the sample collection procedure for PM/NOx/ROG measurement and method for exhaust gas analysis, found that it is tremendously difficult to install the measurement equipment on board (due to space restriction and impossible to apply various required load on Diesel generator for testing) and costs a huge amount. Basically concerning that the sparks on the shore power cable connection may cause a very dangerous situation, so strongly request to exempt use of shore power during bunkering and LNG fueled vessels, however, if it is difficult to accept, at least LNG fuel auxiliary engines retain as an approved control option, or LNG fuel engines should be approved as ‘type approval’ as mentioned above.” (2-15-3.2)

**Agency Response (2-15-3.2):** CARB staff made no changes based on the received comment. While it is understood that LNG offers emissions benefits compared to MGO fuels, CARB staff does not have the evidence that an LNG vessel can meet the emission reduction requirements of the Regulation. A vessel operating on LNG has potential to be a CAECS, or part of a strategy but it requires testing and approval to demonstrate the emissions from using LNG are low enough to meet the requirements of the rule.

**Comment:** “In the case of RoRo, berthing period is often quite short...would like to request exempt that if it is berthing period within 10 hours. Due to shore power connection and disconnection work, there is a possibility that will be pointed out by PSC in other countries no as to comply with MLC regulations (shortage of rest hours).” (2-15-3.5)

**Agency Response (2-15-3.5):** CARB staff made no changes based on the received comment. Emissions on ro-ro vessels are highest when running large ventilation fans during loading and unloading vehicles. The Regulation is designed to capture the emissions when the vessel is being worked, and even if the stay is short, these emissions will need to be reduced. CARB expects that the vessel operator will determine the logistics necessary to comply with all maritime labor conventions including providing adequate rest hours, and ensure that the appropriate personnel are assigned to complete all necessary jobs on the vessel.

**Comment:** “Request ‘Control Measure for Ocean-Going Vessels Include At-Berth, At-Anchor In Port and At-Anchor Outside Breakwater’” (BH-23.3)

**Agency Response (BH-23.3):** CARB staff made no changes based on the received comments. Anchorage locations are not considered for control requirements, as there is typically little to no wharf infrastructure available to support emissions control equipment. Anchorage locations can be located off-shore around a mile to a mile and a half, and are subsequently subject to harsher weather conditions, including higher wind speeds and wave heights than vessels at berth, which can make connecting to emissions control technologies difficult, if not impossible. However, vessels at berth and at anchorage must comply with existing opacity standards set forth in California’s HSC section 41701 in California’s regulated waters. Additionally, staff will evaluate the feasibility of controlling vessel emissions at anchor again during the Interim Evaluation in 2022.

**Comment:** “Future action is needed to address emissions from ships at anchor in California harbors.” (Final 14)

**Agency Response (Final 14):** CARB staff made no changes based on the received comment. See response to comment 15-B-4.15 for discussion on at anchor requirements.

#### *iv. Commissioning*

**Comment:** “This section [(Section 93130.7)] contains vessel checklist items that a commissioned shore power equipped ship cannot complete unless the terminal/port and/or CAECS operator complete their checklist obligations under the rule. Section 93130.7’s statement that ‘Any failure to perform any specific items in this section shall constitute a separate violation...’ could thus be used to penalize a shore power equipped ship that could not complete its checklist items because the terminal/port or CAECS operator failed to meet its obligations. To correct this issue, we recommend

that the second sentence in the opening paragraph of Section 93130.7 be replaced with:

*'Any failure to perform any specific items in this section shall constitute a separate violation for each calendar day that the failure occurs, except to the extent a vessel operator cannot perform any requirement due to (1) a terminal and/or port's failure to comply with the portions of this Control Measure that impose requirements upon terminals and/or ports, and/or (2) a CARB Approved Emission Control Strategy Operator's failure to comply with the portions of this Control Measure that impose requirements upon CARB Approved Emission Control Strategy Operators.'*"(2-15-6.6)

**Comment:** "(Section 93130.9 (a)(2)): This proposed change could be read as allowing ports or terminal operators to dictate on which side vessels seeking to have their installed shore power systems commissioned must connect. Vessel shore power equipment is designed to enable the vessel to connect to shore power on one, but not both, sides and the vessel has no ability to quickly switch the equipment to the other side. We strongly recommend that this provision be replaced with the following: "(2) The port or terminal is responsible for commissioning vessels fitted with installed shore power equipment." (2-15-6.14)

**Comment:** "(Section 93130.7 (a)): Changes are needed to eliminate ambiguity and prevent this provision from being used to dictate to vessels on which side they must be able to plug in to shore power. We recommend that 93130.7 (a) be replaced with:

*'(a) Shore power requirements for at berth emissions reductions. Vessel operators with shore power vessels that have been commissioned by the terminal (or port) at which the vessel will call (or deemed compatible based on a previous commissioning) shall plug in to shore power on each visit to the terminal. Commissioning of vessel shore power equipment should be based on the following technical standards: IEC/ISO/IEEE 80005-1/80005-2 and IEC 62613-1.'*" (2-15-6.7)

**Agency Response (2-15-6.6), (2-15-6.14), and (2-15-6.7):** CARB staff made no changes based on the received comments. CARB staff included this language in the 15-day changes released in March 2020 to ensure that terminal operators are not held responsible for connecting a vessel to shore power if the vessel does not have a connection point on the side that a terminal can berth the vessel. For example, if a terminal is only able to accommodate a vessel berthing on the port side, they would not have an obligation to commission the shore power if a vessel only had a starboard side connection point. In this case, the vessel would be responsible for making shore power commissionable with the terminal, including moving their shore power connection box or installing shore power on both sides of the vessel.

v. *Interim Evaluation*

**Comment:** “The interim review should address issues regarding rule implementation raised by stakeholders over the next two years. As work on implementation continues, it will be critical to resolve issues, including the sufficiency of TIEs/VEs, incorporation of fleet averaging under Innovative Concepts or CARB Approved Emission Control Systems (CAECS), sufficient compliance pathways for non-frequent fliers, and other issues identified in this letter. This period should also enable updating of the emissions inventory projections.” (2-15-4.2)

**Comment:** “The interim evaluation due now December of 2022 should be specifically expanded to address issues regarding rule implementation raised by stakeholders. As work on implementation continues, it will be critical to resolve issues, including incorporation of fleet averaging under Innovative Concepts or CARB Approved Emission Control Systems (CAECS), finalizing sufficient compliance pathways for non-frequent fliers, and addressing other issues identified in this letter, previous CLIA comments, and the Industry Coalition letters.” (2-15-7.4)

**Comment:** “The interim evaluation should also address issues regarding rule implementation raised by PMSA and other maritime industry stakeholders over the next two years. As work on implementation continues, it will be critical to resolve issues, including the sufficiency of TIEs/VEs, incorporation of fleet averaging under Innovative Concepts or CARB Approved Emission Control Systems (CAECS), sufficient compliance pathways for non-frequent fliers, and other issues identified in this letter.” (2-15-9.5)

**Comment:** “The interim evaluation scope is being expanded beyond a review of ro-ro and tanker vessels to also include an evaluation of control technologies for bulk, general cargo, and ocean-going vessels. The language authorizing staff to make recommendations to alter the deadlines for ro-ro and tankers should also be expanded to allow staff to recommend changes for all other vessels based on the findings in staff’s review. We recommend the following sentence be amended as follows: “If staff finds that the compliance deadlines for ro-ro or tanker vessels need to be extended adjusted forward or backward in time, the report will include recommendations to initiate staff’s development of potential subsequent formal regulatory amendments.” (2-15-8.1)

**Agency Response (2-15.4.2), (2-15-7.4), (2-15-9.5), and (2-15-8.1):** CARB staff made no changes based on the received comments. CARB staff believes that the Regulation provides sufficient TIEs/VEs to enable operational flexibility while preserving high levels of emissions reductions, and also provides a pathway for fleet averaging under the Innovative Concepts provision and sufficient pathways for non-frequent visiting vessels. However, staff committed in Resolution 20-22, as adopted by CARB’s Board at the August 27, 2020, public hearing, to continue working with all stakeholders (regardless of vessel

category) prior to and during the Interim Evaluation to determine if any further adjustments are needed to the Regulation. If any new information is presented that might warrant a change in the regulation, such as updated economic information, CARB's Board may ask staff to develop regulatory amendments for their consideration.

See response to comments 17.1 and 15-75.2 for details on how CARB staff intend to handle updating the emissions inventory projections.

**Comment:** "Given the current economic disruption and uncertain future, concerns have been raised about the accuracy of forecast assumptions used in the inventory of ocean-going vessels at-berth. As part of the interim evaluation requirement, language should be added specifically directing CARB staff to update and adjust the inventory based on the economic trends and data accumulated over the next two years. (2-15-8.2)

**Agency Response (2-15-8.2):** CARB staff made no changes based on the received comment. See response to comments 17.1 and 15-75.2 for details on how CARB staff intends to handle updating the emissions inventory projections.

**Comment:** "The interim evaluation language directs staff to evaluate information from ports and required terminal plans, and consider other public information such as engineering evaluations, logistical concerns, public engagement, and independent studies. The interim evaluation should be required to include an analysis of this information, and in particular, an evaluation of the economic health of a port to meet the implementation deadlines." (2-15-8.3)

**Agency Response (2-15-8.3):** CARB staff made no changes based on the received comment. CARB staff agrees that economic information should be considered with the Interim Evaluation. CARB committed in Resolution 20-22, as adopted by CARB's Board at the August 27, 2020, public hearing, to consider economic information as part of the 2022 Interim Evaluation. If any new information is presented that might warrant a change in the Regulation, CARB's Board may ask staff to develop regulatory amendments for their consideration.

**Comment:** "[W]e encourage CARB to ensure that the interim assessment be as robust as possible and consider compliance progress on a Port by Port, or terminal by terminal basis, as substantial differences in financial resources and physical characteristics will result in differing abilities to meet compliance deadlines. This is particularly critical during this pandemic and the hoped for, eventual economic recovery. As has been mentioned before, the assumptions of estimated vessel activity growth and subsequent increases in emissions will likely prove to have been overestimated for the smaller ports, which are going to struggle the most to fund and install the needed infrastructure to comply with the new rule without help from the State or Federal government." (2-15-13.1)

**Agency Response (2-15-13.1):** CARB staff made no changes based on the received comment. CARB staff intends to make the Interim Evaluation robust. CARB staff recognizes that the impacts of the pandemic may be magnified for small ports in many ways. Staff will continue to closely monitor the ongoing situation and will reassess the economic situation in 2022 to determine if any changes to the Regulation may be necessary. See Master Response 6 for further details about CARB's response to the ongoing pandemic situation.

**Comment:** "The interim evaluation should be clear that it will evaluate all considerations that would impact the success of new control technologies. [T]he demonstrations proposed by CARB staff will be inadequate to inform the interim evaluation. First there are no proposed demonstrations to address Ro/Ro vessels... With a presentation date of December 2022, it is likely that the demonstration will not even be operating before CARB staff must prepare their evaluation and is not expected to be complete until long after the interim evaluation is complete. An interim evaluation that is not informed by a complete demonstration is mere speculation.

The interim evaluation should also address issues regarding rule implementation raised by stakeholders over the next two years. As work on implementation continues, it will be critical to resolve issues, including the sufficiency of TIEs/VIEs, incorporation of fleet averaging under Innovative Concepts or CARB Approved Emission Control Systems (CAECS), sufficient compliance pathways for non-frequent fliers, and other issues identified in this letter." (2-15-5.3)

**Comment:** "The text of the interim evaluation contained in the proposed regulation presupposes the feasibility of emission control technology for Ro/Ro vessels. The language should be clear that the interim evaluation will evaluate the feasibility of technology to control emissions successfully and cost-effectively from Ro/Ro vessels since there is no existing technology to reduce emissions in exhaust streams in a manner that can safely operate on tanker Ro/Ro vessels in operation. The technology which is currently in demonstration has a number of technical, safety, and operational constraints it must overcome. At the same time, any proposed system needs to also abide by Coast Guard, OSHA, and other regulatory requirements, while not being prohibitively expensive.

The interim evaluation should be clear that it will evaluate all considerations that would impact the success of new control technologies, including the configuration of Ro/Ro vessels, which make reaching the exhaust an engineering challenge. The only way to answer these questions is with a demonstration that must be completed before the interim evaluation is conducted. With a presentation date of December 2022, it is likely that the demonstration will not even be operating before CARB staff must prepare their evaluation and is not expected to be complete until long after the interim evaluation is complete. An interim evaluation that is not informed by a complete demonstration is mere speculation." (2-15-9.4)

**Comment:** “[W]e strongly encourage CARB to expand the interim review so that it includes an assessment of the feasibility of controlling ro-ro auxiliary emissions, including a detailed cost versus benefit analyses based on updated ro-ro vessel visit, emissions and control technology information.” (2-15-6.1)

**Agency Response (2-15-5.3), (2-15-9.4) and (2-15-6.1):** CARB staff made no changes based on the received comments. CARB staff found through a feasibility assessment performed during the rulemaking development period that the technology to control emissions from ro-ro vessels exists today, even if some adaptations to control emissions from this specific vessel type may be needed. CARB staff also performed a robust cost analysis for ro-ro vessels as part of the SRIA process (see ISOR, Appendix C). Staff anticipate that existing emissions reduction technologies can be adapted for ro-ro vessels prior to the 2025 ro-ro implementation dates. However, even if demonstration is not complete, CARB staff are confident that enough information can be gathered in the Interim Evaluation, scheduled to be completed by late 2022, to provide any appropriate recommendations to the Board, should any implementation date or other regulatory adjustments be necessary.

Regarding the cost-benefit analysis for ro-ro vessels, CARB staff has already provided a detailed cost-benefit analysis for controlling ro-ro auxiliary emissions using available control technologies, and will likely not provide a new cost-benefit analysis during the Interim Evaluation. See response to comment 45.11 for more information on the ro-ro analysis staff performed for the Regulation.

CARB staff have committed in Resolution 20-22, as adopted by CARB’s Board at the August 27, 2020, public hearing, to continue working with all stakeholders (regardless of vessel category) prior to and during the Interim Evaluation to determine if any further adjustments are needed to the Regulation.

**Comment:** “It is unclear in the new regulatory language whether or not industry data will be accepted. We request that the development of the recommendations from this Interim Evaluation be based upon data provided by those organizations impacted directly, and the process for including data is transparent.” (2-15-10.5)

**Agency Response (2-15-10.5):** CARB staff made no changes based on the received comment. CARB staff included language in the Regulation (section 93130.14(d)) that specifies that CARB will consider public information provided to CARB, including terminal specific engineering evaluations, logistical considerations, public engagement, community input, and independent studies. To the extent that any data provided by industry can be made public, that

information will be included as part of staff's transparent public process during the Interim Evaluation.

**Comment:** "The proposed changes to the "interim evaluation" provisions fail to provide for the feasibility study critically needed for tankers before the Proposed Regulation is adopted." (2-15-15.3)

**Comment:** "The proposed changes to subsection 93130.14(d) do not make the 'interim evaluation' an adequate substitute for an actual tanker feasibility study done prior to adopting the Proposed Regulation. As discussed above, Chapter 8 of the June 2020 ISGOTT update provides that all aspects of a proposed technology's feasibility and safety – including hazards analyses, workability of the proposed interface with existing vessel systems, consistency with classification society and industry standards, and potential risks to tanker and shore-side personnel – must be reviewed before implementing the proposed technology, not after.

...[A]s currently proposed in the Second 15-Day Changes, section 93130.14(d) would require Staff to publish its report on tanker control technology by December 1, 2022 – nearly two years after portions of this Regulation become effective and a year after tanker terminals are required to submit terminal plans describing how they will comply with the Proposed Regulation." (2-15-15.9)

**Agency Response (2-15-15.3) and (2-15-15.9):** CARB staff made no changes based on the received comments. See response to comment 15-49.77 for a full discussion addressing these concerns. See also response to comment 2-15-15.15.

**Comment:** "Given the current economic disruption and uncertain future, concerns have been raised about the accuracy of forecast assumptions used in the inventory of ocean-going vessels at-berth, and the economic capacity of ports. As part of the interim evaluation requirement, a data-driven economic assessment that evaluates the impacts of the present economic downturn upon the maritime sector and economic health of ports in particular. In addition, language should be added specifically directing CARB staff to update and adjust the inventory based on the economic trends and data accumulated over the next two years. CAPA would support the inclusion of an economic analysis that utilizes a third-party review of the economic analysis." (BH-22.1)

**Comment:** "We ask that the two-year interim review of this regulation include a data-driven analysis from an industry-respected economist jointly chosen by you, the Board, and the maritime industry together to ensure certification and shared trust in that data and impacts they conclude." (Final 21)

**Comment:** "First, a solid interim evaluation will include a data-driven economic assessment of how COVID's impacts are hitting this economic sector, engage the

recovery necessary to support the new investments the regulation requires. This lets you turn on the headlights, so you can make sure we're still driving on the road and verifies that enough economic activity has returned to support necessary infrastructure investments. A thorough economic assessment can give you the visibility you need and help us avoid unintended consequences and losing more jobs in this the downturn." (Final 34)

**Agency Response (BH-22.1), (Final 21), (Final 34):** CARB staff made no changes based on the received comment. CARB staff committed in Resolution 20-22, as adopted by CARB's Board at the August 27, 2020, public hearing, to continue monitoring the economic impacts of the ongoing pandemic situation and to working with stakeholders prior to and during the Interim Evaluation to determine if any further adjustments are needed to the Regulation. If any new information is presented that might warrant a change in the regulation, such as updated economic information, CARB's Board may ask staff to develop regulatory amendments for their consideration. See response to comments 17.1 and 15-75.2 for details on how CARB staff intends to handle updating the emissions inventory projections.

In regards to the commenter's request a third-party review of the economic analysis, CARB staff would like to note that the economic analysis performed for the Regulation was reviewed and commented on independently by DOF. The Interim Evaluation does not require a SRIA, but if additional amendments are made in the future, those amendments could potentially be subject to additional economic analysis by DOF, depending on the extent of the changes.

**Comment:** "The interim evaluation language directs staff to evaluate information from ports and required terminal plans, and consider other public information such as engineering evaluations, logistical concerns, public engagement, and independent studies. Given the recent heat event whereby Governor Newsom issued an Executive Order suspending the requirement for vessels to use shore power in order to free-up grid capacity and avoid rolling blackouts, the interim evaluation must review the capacity of the grid to meet the demand of the expanded regulation and how future heat events should be addressed." (BH-22.2)

**Agency Response (BH-22.2):** CARB staff made no changes based on the received comment. CARB staff agrees that it will be important to evaluate the capacity of California's electricity grid moving forward in order to ensure that it can support the transition to zero emissions technologies at California ports. However, CARB staff believes this topic is outside the scope of the Interim Evaluation for this Regulation, given that there is already an exemption built into the Regulation for utility-related events, which would include the Governor issuing an EO suspending the requirement for vessels to use shore power to reduce the load on the electricity grid, as mentioned here by this commenter.

**Comment:** “Implementation of any regulation requires financial resources to invest in those improvements. The development and commercialization of capture and control measures and expansion of shore power will be expensive, and state and local support is critical. CAPA urges CARB to establish a port infrastructure fund within existing CARB incentive programs to facilitate upfront investments required for large-scale capital improvements required by the regulation.” (BH-22.3)

**Agency Response (BH-22.3):** “CARB staff made no changes based on the received comment. CARB staff notes and understands the need and desire for increased funding, and are committed to working with regulated entities to help connect them with funding programs that may be available for offsetting some of the costs of reducing emissions from vessels at berth. No changes to the Regulation are necessary to address this comment.”

**Comment:** “And finally, you mentioned the check-in in 2022. We actually ask that you would do it more frequently than that. As we've seen in recent weeks, as well as throughout this pandemic, things come up that we're not aware of, and it would be helpful for staff to be able to evaluate whether the timelines are still on target or the technology is still able to accomplish its objectives.” (Final 5)

**Agency Response (Final 5):** CARB staff made no changes based on the received comment. CARB staff committed in Resolution 20-22, which was adopted by CARB’s Board at the August 27, 2020, public hearing, to continue closely monitoring impacts to the industry in association with the ongoing pandemic and to update the Board annually on the status of the shipping industry and on implementation of the Regulation. No changes are needed to the Regulation to address this comment.

**Comment:** “On the interim evaluation, we thank the Board and staff, because we think that there should be a – whether technologies exist, input should be taken from data terminal operators, vessel operators, and then also on the economic recovery.” (Final 47)

**Agency Response (Final 47):** CARB staff made no changes based on the received comment. The Interim Evaluation will include any data provided (and made publically available) by vessel and terminal operators, as specified in section 93130.14(d) of the Regulation. CARB staff also committed in Resolution 20-22, which was adopted by CARB’s Board at the August 27, 2020, public hearing, to closely monitor the ongoing situation and reassess the ongoing economic situation and its impacts to the shipping industry as part of the Interim Evaluation in 2022. If the Board determines changes are necessary to the Regulation, they may direct staff to bring amendments to the Board for their consideration.

**Comment:** "...as has been said by previous speakers, more action will need to be had on the at-anchor ships that are also releasing emissions out in the port harbor." (Final 49)

**Agency Response (Final 49):** CARB staff made no changes based on the received comment. CARB staff understands the need and desire to explore emissions reductions from vessels at anchor, and have committed in the Regulation (see section 93130.14(d)) to reviewing control technologies for use on OGVs at anchor, and potential requirements for these vessels. No further changes to the Regulation are required to address this comment.

vi. *Port and Terminal Plans*

**Comment:** "Plans and infrastructure timing: The revised timeline is not fully aligned with public works project timing in the ports. For example, terminal and port plans are due December 2021, with CARB approval lasting up to 90 days. We question whether the required infrastructure improvements can then be funded, permitted and in place to support the 1/1/2023 implementation of the new rules for the currently regulated fleets. This is particularly troubling due to the lack of viable alternative CAECS in most California ports.

Recommendations:

- Include a provision to allocate additional VIEs or TIEs in locations where the necessary infrastructure improvements cannot be achieved in the allotted time.
- Consider allowing unlimited use of the remediation fund or other alternatives to achieve timely reductions and enable compliance in the gap between the vessel compliance dates and completion of needed infrastructure projects.
- Consider allowing use of the remediation fund in situations where no alternatives CAECS are feasible.
- During the 2 years before implementation of the new rule clarify the application and compliance options for lay-by berths and repair berths, where usage and access are by definition variable. Data on these facilities is limited, so the interim review should be used to determine any practicality issues and if needed, adjust the low activity terminals provisions." (2-15-4.1) (EA 4-1)

**Agency Response (2-15-4.1):** CARB staff made no changes based on the received comment. Because the majority of container, reefer, and cruise terminals that will be subject to the Regulation beginning January 1, 2023, receive vessels that are regulated under the 2007 At-Berth Regulation, CARB does not expect a significant amount of additional infrastructure to be needed to comply with the new Regulation. The due date for the terminal and port

plans does not mean any necessary infrastructure improvements cannot be started prior to the December 1, 2021, plan submittal date.

TIEs/VEs are limited in order to keep uncontrolled emissions to a minimum and protect the health benefits of the Regulation. Alternatively, use of the remediation fund is not limited, as long as qualifying circumstances exist. The remediation fund may be used by terminals and/or ports for certain qualifying situations. Examples of remediation fund qualifying situations may include when an investment has been made in shore power or another CAECS and construction projects are ongoing that may prevent connection, or in instances where an approved terminal plan identifies a physical and/or operational constraint that is delaying the implementation of a CAECS at the terminal. Section 93130.15 of the Regulation lists the qualifying circumstances whereby the remediation fund can be used.

Regarding lay-by berths and repair berths, staff is open to accepting additional information about these berths during the Interim Evaluation. However, if these berths are at a terminal that receives 20 or more visits by a single vessel type each year, CARB expects these vessels to comply with the Regulation. If a vessel is being repaired or laid up for an extended period of time, the emissions generated by those visits are still impacting nearby communities and must be controlled as much as possible.

**Comment:** “[A]surances should be included in the rule that shoreside shore power infrastructure will be available to meet the increased port calls required beginning in 2023.” (2-15-7.3)

**Agency Response (2-15-7.3):** CARB staff made no changes based on the received comment. CARB staff believes that the Regulation as worded accomplishes the commenter’s request without revision. See response to comment 15-57.21 for more details.

**Comment:** “WSC believes that there would be value in explicitly articulating in the revised rule that port and terminal plans should include, among other things: a) appropriate changes to existing infrastructure design (e.g., inadequate electrical sub-station/electrical vault configurations); b) expansion of existing electrical infrastructure in container ports to accommodate to enable all shore power equipped container ship calls to be accommodated through shore-side power; and c) that approved plans include a realistic timeframe for design and construction consistent with the final regulatory dates promulgated in the final rule.” (2-15-6.18)

**Agency Response (2-15-6.18):** CARB staff made no changes based on the comment received. This comment was previously submitted during the first 15-day comment period released in March 2020. See response to comment 15-57.21 for more information.

vii. *Implementation Dates*

**Comment:** "I look forward to the new rule going into effect for cruise ships January 1, 2023. I wish the rule was going into effect immediately, since every day these ships are not connected to shore power, they emit a huge amount of toxic fumes to foul the air downtown and make people sick." (2-15-17.1)

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**Comment:** "[W]e support the new Regulation whole-heartedly and urge the ARB to implement the regulation beginning on January 1, 2021." (2-15-19.1)

**Comment:** "Delayed Implementation Schedule for Ro-ros Is Unjustified. We oppose moving back the emissions control requirements for these vessels because it will result in greater emissions in 2024. At the June Board meeting, no convincing evidence was introduced to support the rollback; in fact, a persuasive case was made that the delay will prolong the suffering of communities in the San Diego area who are exposed to diesel fumes from ro-ros." (2-15-19.2) (EA 19-1)

**Comment:** Request "[t]hat All Ship Categories Be Included By 2022 And Implemented by 2025." (BH-23.4)

**Comment:** "We Want No Extension Of Originally Proposed Dates Or Times Compliance Requirements." (BH-23.7)

**Comment:** "And in our opinion, some of the timelines for compliance are too long, but we think overall, this is an important rule, and we fully support it and urge you to adopt it today." (Final 1)

**Agency Response (2-15-17.1), (2-15-16.1), (2-15-19.1), (2-15-19.2), (BH-23.4), (BH-23.7), and (Final 1):** CARB staff made no changes based on the received comments. CARB staff understands and share the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. See response to comment 15-33.2 for further discussion as to why CARB staff did not choose to implement control requirements before 2023.

**Comment:** "Under the latest changes, CARB staff proposes to delay the compliance start date for container ships, reefers and cruise ships by two years from 2021 to 2023 and allow these vessels to remain under the existing At-Berth Regulation without any additional controls beyond 2020. Although we recognize the potential economic impact on the maritime industry due to the coronavirus pandemic, we are concerned

with the negative impact of this proposed change on NOx and DPM emissions. Based on data provided in the second 15-day document, the proposed delay in the compliance date would result in increased NOx emissions at berth by 0.74 ton per day (tpd) in 2021 and 0.79 tpd in 2022 (and 0.01 tpd of DPM in 2021 and 2022) in our Basin compared to the initially-proposed regulation in December 2019. Given the significant contribution of emissions from these vessels, uncertainties regarding potential impact of the pandemic on marine industry, and the need to achieve early reductions for our local port communities and the regional air quality, we believe the proposed two-year delay is too long. Instead, South Coast AQMD staff recommends a maximum one-year delay to provide a reasonable level of relief to the marine industry which will start the compliance date for container ships, reefers and cruise ships on January 1, 2022." (2-15-2.1) (EA 2-1)

**Agency Response (2-15-2.1):** CARB staff made no changes based on the received comment. The container, reefer and cruise vessels are currently included under the 2007 At-Berth Regulation with an 80 percent control requirement. At the June 25, 2020 CARB Board Meeting, CARB staff discussed with the Board the potential for adjusting the starting implementation date under the Regulation to 2023 to allow for some additional time for these vessel sectors to recover from the current economic conditions. The Board directed staff to continue compliance for the container, reefer and cruise vessels under the 2007 At-Berth Regulation through 2022 and begin compliance under the Regulation in 2023. In 2021 and 2022, the 2007 At-Berth Regulation and the Regulation achieve similar estimated emissions reductions and resultant health benefits. As the commenter notes, there are comparatively small differences in the reduction benefits for the 2007 At-Berth Regulation and the Regulation in 2021 and 2022. CARB staff anticipates that additional emissions benefits be achieved beyond those reflected in the emissions inventory estimates for the 2007 At-Berth Regulation due to reduced vessel activity from the economic downturn.

**Comment:** "The Ports still support the previously requested a timeline for RoRo implementation of 2027." (2-15-10.2)

**Agency Response (2-15-10.2):** CARB staff made changes to the ro-ro implementation date based on numerous comments received. Based on the economic impacts to this vessel category during the ongoing economic situation, CARB's Board directed staff to consider a timeline extension of one year to provide additional time for the industry to raise funds and procure the necessary technology needed to control emissions at berth. As such, staff restored the original ro-ro implementation date of January 1, 2025, included in the December 5, 2019, proposal. The Interim Evaluation in 2022 will provide additional opportunities for staff to reassess the ro-ro vessel timelines and make any further adjustments if necessary. See Master Response 3 for more information regarding the feasibility of implementation dates.

**Comment:** “We believe the 2025 timeline is infeasible, and a deadline of 2029 will be necessary. The hurdles to overcome the safety challenges associated with the tankers vessels are significant, and a hazard assessment must be conducted.” (2-15-10.3) (EA 10-1)

**Comment:** The commenter asserts that adjustments in compliance start years for regulated vessels should not arbitrarily exclude tanker vessels. “[E]ven if crude imports were seeing minor increases at times in May and June 2020, levels of recent activity do nothing to make at-berth capture and control feasible or safe for tanker vessels in the timetables provided in the Proposed Regulation. As we and others have explained in detail in numerous prior comments, the types of emissions capture and control equipment that would be required for tankers in the current Proposed Regulation still have not been proven safe and feasible in real-world operations with tankers at marine terminals. This makes both the original 2027/2029 compliance dates, and the accelerated 2025/2027 compliance deadlines from the First 15-Day Changes, unrealistic and potentially dangerous to attempt to meet, even if eventually determined to be feasible sometime in the future. Indeed, CARB heard undisputed public testimony at the June Board meeting that failing to follow stringent safety measures in managing gases in tanker cargo spaces at berth can lead to catastrophic explosion and loss of human life, as it has in prior real-world incidents. See Transcript, pp. 364-365 (testimony of Capt. Saul Stashower). This issue alone warrants giving ports and terminals additional time to conduct necessary feasibility studies in order to determine whether and how at-berth capture and control could be accomplished without risking people’s safety.” (2-15-15.6) (EA 15-1)

**Comment:** “We remain concerned about some issues for ro-ros and tankers. We're particularly concerned about the timing issues. We still think that the technology for commercialization of at-berth emissions control technologies for these vessel categories is still very, very early. And so the timeline of having requirements by 2025 for both of these is too soon. We think 2027 would be better for roll-on roll-off ships, and we think really 2029 is better for tankers.” (Final 3)

**Comment:** “The deadlines in the regulation are unreasonable and too compressed giving the uncertainties and concerns related to safety and feasibility. They were moved up two years earlier.” (Final 8)

**Comment:** “The port strongly believes the implementation timeline of 2025 for ro-ros and tankers will be extremely challenging to achieve, and significant State funding will be required to implement the rule.” (Final 17)

**Agency Response (2-15-10.3), (2-15-15.6), (Final 3) and (Final 8), and (Final 17):** CARB staff made no changes based on the received comment. CARB staff understands the port’s and industry’s concerns about the implementation dates

for ro-ros and tankers, but believes that these dates are feasible and obtainable. Reductions from currently unregulated ro-ro and tanker vessels are needed as quickly as possible in order to achieve the air quality improvements that are necessary to protect public health in California's disadvantaged communities.

Early in the rulemaking process, the compliance dates for the tanker terminals were set to 2027 for Los Angeles and Long Beach, and 2029 for Northern California. As part of the 1<sup>st</sup> 15-day changes to the Regulation, the compliance dates for tankers were accelerated by two years which CARB staff believes is more appropriate due to the significant emissions that tanker vessels contribute to portside communities and to communities that reside near refineries. The initial regulatory proposal would not have achieved health benefits in these communities for 7-9 years so the timelines were strengthened to achieve much needed public health benefits sooner. Please see response to Comment 60.14 regarding a current and successful control technology being used on tankers.

In regards to technologies for ro-ro's, shore power is technically feasible and is in use in Northern Europe for combination passenger/ro-ro vessels. However, based on conversations with industry stakeholders and the significant electrical infrastructure upgrades that would be needed at ro-ro terminals, CARB staff anticipates that capture and control systems (a mixture of both barge- and land-based) will be the primary pathway for compliance for ro-ro vessels. Because ro-ro vessels have similar power loads at berth as many container and reefer vessels, the existing capture and control systems utilized for container and reefer vessels are expected to be able to easily be adapted for ro-ro vessels. CARB staff confirmed this assumption with manufacturers of the capture and control technologies, who provided letters supporting the fact that these technologies will be easily adaptable to ro-ro vessels and have already included this information in the record.<sup>32,33</sup>

See Master Response 3 for more information regarding the feasibility of implementation dates and for additional information about the 2022 Interim Evaluation, which will enable CARB staff to offer recommendations to regarding potential implementation date adjustments through subsequent amendments if that evaluation identifies changes to the implementation timeline are necessary. In addition, Innovative Concepts can be used as an alternative compliance path as long as the Concepts result in equivalent or greater emission reductions to the control measure's requirements. See also EA Response to Comments

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<sup>32</sup> Letter from Clean Air Engineering – Maritime, Dated August 12, 2019

<sup>33</sup> Letter from Letter from Ruben Garcia, Advanced Environmental Group, Dated October 14, 2019, posted to the Comment Log for "To Consider Proposed Control Measure for Ocean-Going Vessels At Berth" on December 5, 2019. Available at: <https://www.arb.ca.gov/lispub/comm/bccommlog.php?listname=ogvatberth2019>

#### Master Response 4: Feasibility and Safety of Capture and Control for Tanker Vessels.

CARB staff also notes and understands the need and desire for increased funding, and are committed to working with regulated entities to help connect them with funding programs that may be available for offsetting some of the costs of reducing emissions from vessels at berth.

**Comment:** "Given the hurdles facing ports to implement the At-berth regulation, there will be delays beyond the control of ports. This includes the lengthy and expensive CEQA process, review and approval by Army Corp of Engineers, entitlements, agreements with utilities, and funding. CAPA urges CARB to consider adding to the regulation a formal process through which measurable good faith efforts demonstrated by ports is counted towards compliance with the final regulation. These measurable milestones could include formal approval of the project, project funding, project entitlements, and objectives of similar scale as new construction phases begin." (BH-22.4)

**Comment:** "A second way to shore up the regulation -- pardon the pun -- is to accept measurable good faith efforts demonstrated by ports as compliance with the final regulation, such as formal approval of the project, project funding, project entitlements. Other verifiable objectives that have confirm new construction phases are beginning. And keep in mind, in that process, we have to go through CEQA, Army Corps of Engineers permitting as we implement these regulations and those can be impacted by external factors way outside of our control." (Final 35)

**Agency Response (BH-22.4) and (Final 35):** CARB staff made no changes based on the received comment. CARB staff understands that delays can occur outside of the control of ports and terminals during installation of emissions control equipment and supporting infrastructure, but good faith efforts do not achieve the emissions reductions needed by port communities. This Regulation was designed with implementation dates and flexibility in mind to account for construction situations, with TIEs/VIes, the remediation fund, and Innovative Concepts all available as compliance pathways for terminals/ports, giving regulated entities multiple compliance pathways should there be delays in the installation of a regulated entities chosen emissions control technology. Information regarding delays in the installation of necessary infrastructure will also be important to provide to staff as part of the Interim Evaluation, as the Interim Evaluation will be used to inform the Board if any changes need to be made to the implementation dates.

**Comment:** "Instead, of a two year delay, South Coast AQMD staff recommends a maximum one year delay, which will start the compliance date for container ships,

reefers, and cruise ships on January 1st, 2022 to provide a reasonable level of relief to the maritime industry, given the compliance flexibilities that already exist in the proposed regulation for what's called the terminal and vessel incident exceptions for up to 20 percent of the annual calls." (Final 38)

**Agency Response (Final 38):** CARB staff made no changes based on the received comment. CARB staff understands and share the desire to accelerate the emissions reductions from vessels at berth to reduce the associated health burdens. Because container, reefer, and cruise vessels are largely already regulated under the 2007 At-Berth Regulation, and will remain subject to the requirements of the 2007 Regulation until January 1, 2023, CARB staff does not anticipate any significant loss in emissions reductions in 2021 or 2022 as a result of delaying implementation of the new Regulation to 2023. See response to comment 15-33.2 for further discussion as to why CARB staff did not choose to implement control requirements before 2023.

**Comment:** "In addition to financial and technological viability challenges, these rules also establish new regulatory hurdles, particularly for those entities in the San Francisco Bay region, who will have to navigate a complex web of external agency approval and permitting. For this reason alone, the timelines proposed in the proposed rule will be difficult to meet." (Final 44)

**Agency Response (Final 44):** CARB staff made no changes based on the received comment. CARB staff understands that external agency approvals and permitting will impact the ability for some regulated entities to meet implementation timelines, and have committed to working with permitting agencies to streamline and expedite these processes in any way possible. See Master Response 3 for additional information regarding the feasibility of implementation dates and the 2022 Interim Evaluation, which will give CARB staff the opportunity to recommend potential subsequent amendments to the implementation timelines should they become necessary.

**Comment:** "As other commenters have mentioned, WSC also has substantial concerns with the proposed 2025 implement date -- implementation date for ro-ro vessels and vehicle carriers. Ro-ro vessels make infrequent and very short port calls in California. Over the course of a year, a single ro-ro vessel may call only two or three times and for a very short time period. The reality is that ro-ro vessels and the terminals they call at have limited, viable at-berth emission compliance options due to operational issues. The existing and very limited barge-based emission capture systems present -- present safety and reach issues due to the significant vertical and lateral distance needed to reach the vessel exhaust stacks. Shore-based emission capture systems are not yet in place and obstruct cargo operations and exceed the load-bearing capabilities at many California ro-ro terminals. And there has not been a comprehensive cost-benefit analysis based on available control technologies to warrant regulation of ro-ro at-berth emissions by the proposed phase-in date. WSC strongly encourages CARB to delay

regulation of ro-ro auxiliary emissions until comprehensive and favorable feasibility and cost-benefit analyses, based on available function and control technologies, have been completed.” (Final 56)

**Agency Response (Final 56):** CARB staff made no changes based on the received comment. CARB staff understands and note concerns related to the implementation timeline and technologies used to control emissions for ro-ro vessels, but believe these concerns are not insurmountable and are appropriately accounted for in the Regulation. Staff believes the Regulation has been laid out in a manner that is consistent with safe implementation, including multiple compliance pathways that allow an operator to determine the compliance technologies that best fit their unique operations. See response to comment 15-B-3.4 and Master Response 3 for a discussion on the feasibility of implementation dates and emissions control technologies for ro-ro vessels.

CARB staff disagrees with the commenter that there has not been a comprehensive cost-benefit analysis for ro-ro vessels. Staff provided a detailed cost-benefit analysis for controlling ro-ro auxiliary emissions using available control technologies as part of the SRIA. See response to comment 45.11 for a discussion on the ro-ro analysis staff performed for the Regulation.

#### *viii. Reporting and Recordkeeping*

**Comment:** “We support CARB’s proposal in § (4) to require reporting of information for each visit to a California terminal within 30 days of vessel departure instead of the previously proposed 7 days of vessel departure. We recommend that CARB develop an online system/dashboard into which each vessel (and terminal) operator could upload its post-visit reports. The dashboard should provide each operator with an updated snapshot of its compliance as well as VIE/TIE allowances versus usage and other relevant metrics for the designated fleet.: (2-15-6.13)

**Agency Response (2-15-6.13):** CARB staff made no changes based on the received comment. Regulated entities will be able to submit reporting information via email or using the FRRS, which is an online tool that CARB is developing to streamline and consolidate reporting requirements for multiple freight regulations. Through the FRRS, a vessel fleet operator will be able to register vessels, and a terminal operator will be able to register berths at their terminal. After registering, both entities (and designated reporting parties) will be able to then report visit information. FRRS will also determine compliance of a visit and display a compliance status which can later be reviewed and overridden by CARB staff. CARB continues to develop the FRRS and anticipates completion prior to the start of visit reporting requirements.

**Comment:** “Section 93130.11(a)(1) calls for reporting of vessel visits to CARB by January 7th. This seven-day period is inconsistent with the 30-day reporting required

in other sections. Please clarify whether this report is a simple vessel call count or the full individual call reports for each vessel call that would normally be reported in 30 days." (2-15-4.6)

**Agency Response (2-15-4.6):** CARB staff made no changes based on the received comment. The VIEs/TIEs allocated for the current year will be based off of the previous years' vessel visits reported by January 7. See response to comment 2-15-4.7 for more information on the reporting deadline to allocate VIEs/TIEs for the current year.

ix. *CARB Approved Emission Control Strategies (CAECS)*

**Comment:** "We suppose it is required that CO<sub>2</sub>E from control strategy must be grid-neutral in case the control strategy is external additional system. In case of gas-fueled engine, there is no additional control system and we try to meet the regulation by the performance of engine alone, therefore we suppose it is not necessary to consider grid-neutral, is it correct?" (2-15-14.1)

**Agency Response (2-15-14.1):** CARB staff made no changes based on the received comment. For strategies approved after 2020, the emission reduction requirement for that strategy is to achieve grid neutral GHG emissions. The grid neutral emission rate is calculated and set by the year that the technology is granted an EO. The grid neutral requirement applies to the overall emission control system or emission reduction strategy and considers the additional power required to run the strategy or system. In this case, the strategy has no increase in GHG because there are no additional controls from the engine itself.

**Comment:** Since SCR system is not used as control strategy for our DF(LNG) engine, we guess there is no point measuring ammonia because there is no factor to generate ammonia in exhaust gas. Is it necessary to measure ammonia? (2-15-14.2)

**Agency Response (2-15-14.2):** CARB staff made no changes based on the received comment. The measurement and continuous testing of ammonia is related to the use of SCR as a reduction strategy therefore if SCR is not utilized the requirement would not be applicable.

**Comment:** "Is Engine load settings on testing (measurement of Gas of Diesel Generator engine) approved on 100%, 75%, 50%, 25% and 10% ? , and is it evaluated NO<sub>x</sub>, PM<sub>2.5</sub> and ROG (g/kWh) shall be weighted averaged values calculated based on D2-test cycle (as well as IMO' NO<sub>x</sub> Technical Code)? (2-15-14.3)

**Agency Response (2-15-14.3):** CARB staff made no changes based on received comment. Under the Regulation, source testing is required to demonstrate that a proposed emission control strategy achieves the performance standards in section 93130.5 (d). The specific requirements that apply to the source testing

and calculations are outlined under section 93130.5 (g), please refer to this section for specifics.

**Comment:** “Is it considered that such CARB approved test is required for all engines one by one even if they are the same type of engine? Or, is it considered that CARB will allow exemption of test of same type engine as previously tested engine?”  
(2-15-14.4)

**Agency Response (2-15-14.4):** “CARB staff made no changes based on the received comment. Per the Regulation, the CARB approval process for emission control strategies through an EO allows for individual compliance instructions for each emission control strategy and includes requirements for all responsible parties to follow in order to use that strategy. This allows for flexibility in various strategies that may be used for compliance, such as a group of strategies that may be able to fall under the same EO.

**Comment:** “Requirements for CARB Approval (Section 93130.5 (d)): Under current CARB at-berth regulations, LNG-fired auxiliary engines are treated as an approved control option. The proposed rule would, however, require time-consuming and costly testing of LNG-fired auxiliary engines before they may apply for CARB approval. This will discourage investments in a promising alternative to oil-fired auxiliaries. We therefore recommend that CARB retain the provisions in the current at-berth regulations that designate LNG-fired auxiliaries as an approved control option.”  
(2-15-6.5)

**Agency Response (2-15-6.5):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment as the provision to include alternative fueled engines as a CAECS is important to ensure that the reductions from alternative fueled engines are achieved to levels as specified and intended and we keep a level playing field for all technologies. As described in Page I-34 of the ISOR, CARB recognizes that although LNG may significantly reduce SO<sub>x</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and PM emissions, there is the potential of increased methane and GHG emissions. In consideration of limited emissions data for LNG as a marine fuel and the need for further testing, staff will not currently consider LNG in the Regulation as an approved emission control strategy without demonstrating that the engines meet the same emission reduction levels. The applicant can do further testing and apply for and EO if this option is found to be equivalent.

**Comment:** Request, “CARB Create an Emission Control Technology Certification Program. The use of arbitrary non-standardized industry methods Executive Orders is not acceptable.

- a. Standardized Application process
- b. Standardized Review Process

- c. Verification that Applicant owns patents or rights to technology(s).
- d. Standardized Test Validation Procedures/Format
- e. Standardized Approval Process
- f. Ability to Approve a Subclass
- g. Standardized Validation Approval Letter/Certificate" (BH-23.1)

**Agency Response (BH-23.1):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment that EOs are arbitrary and non-standardized. To receive an EO approval the control system would have to meet the requirements that are clearly defined in section 93130.5 of the Regulation. The CARB approval process through an EO achieves the same goal as a CARB technology certification program and follows the same procedures the commenter is requesting. With regard to verifying ownership of patents for technologies and related legal matters that is outside the scope of the CARB EO approvals.

**Comment:** Request "CARB Approved Emission Control Strategy (CAECS) must be transparent with Public Participation

- a. Clearly Defined Program
- b. Must include Goals, Objectives, Measurable Metrics
- c. Transparency in decision-making
- d. Public review of all data developed in the certification process
- e. Public Investigation Request Procedure" (BH-23.2)

**Agency Response (BH-23.2):** CARB staff made no changes based on the received comment. The requirements for CAECS are clearly stated under the Regulation and the process for EO approval is also clearly defined and transparent. CARB staff will make available any data that is requested to the extent that data is not classified and business confidential information.

x. *Terminal and Vessel Incident Events (TIEs and VIEs)*

**Comment:** "The Port is concerned about the Proposed Control Measure's potential to create conflict and disputes rather than collaboration among terminal operators, vessel operators and the local seaport.

Specifically, the Port is very concerned about the complex regime of TIEs and VIEs and the interplay with fleets that choose the Innovative Concepts route. For example, a terminal operator that has expended its TIE budget for the year would be incentivized to give more favorable berth assignments to ships on the TIE/VIE regime over ships on the fleet averaging regime. There are many foreseeable scenarios where a missed plug-in is not clearly the fault of the vessel owner or the terminal operator. How will CARB staff navigate these grey areas?

The Port recommends that CARB maintain the framework of the existing At-Berth Regulation for containerships.” (2-15-11.7)

**Agency Response (2-15-11.7):** CARB staff made no changes based on the comments received. See response to comment 15-B-10.8 for further discussion on TIE/VIEs, responsibility, and maintaining the 2007 At-Berth Regulations structure.

**Comment:** “[S]upport the need for operators to know the VIE/TIE allocation as early as feasible in the year. However large vessels arriving on December 31 may have longer calls due to the holidays, so full data may not yet be available. Occasionally a vessel may still be alongside. We suggest that either a simple actual vessel arrival/departure schedule be accepted for this purpose, or that preliminary reports be allowed by Jan. 7th for calls after Dec. 7th, with updates allowed for those calls when full details are available.” (2-15-4.7)

**Agency Response (2-15-4.7):** CARB staff made no changes based on the comments received. In general, VIEs/TIEs will be determined by looking at visits between January 1 and December 31, as reported by January 7 of the following year. This cutoff ensures that CARB staff has sufficient time to process the information and provide VIEs/TIEs by February 1. Visits that are not reported by January 7 will not be counted toward VIEs/TIEs, but that should have a minimal impact on the final of VIEs/TIEs that are provided. For example, a fleet making bi-weekly visits, reporting 2 weeks after a visit would have reported 98 visits, out of the 104 visits by January 7. That fleet would be assigned five VIEs whether reporting 98 visits or 104 visits.

Fleet or terminal operators may instead make a request for VIE/TIE by December 1 as described in Section 93130.11 (c). This is intended to accommodate new fleet or terminals, or when an anticipated growth in visits is not reflected in this year’s visits. By requesting VIEs/TIEs, CARB has the ability to provide the operator with VIEs/TIEs based on their anticipated activity for the year or following year. However, the operator will be held accountable to using the correct number of VIEs/TIEs based on the years’ actual activity.

**Comment:** “Section 93130.11(a)(1) also excludes calls made under Innovative concepts from being part of the VIE/TIE allocation. Provisions should be made for situations where the innovative concept is not available due to expiring approval or other technical or operational issues.” (2-15-4.8)

**Agency Response 2-15-4.8:** CARB staff made no changes based on the comment received. The year an Innovative Concept is no longer valid for use TIE/VIEs will be calculated using the previous years’ vessel count. If the terminal or vessel fleet anticipates growth they may also request additional VIEs/TIEs by December 1 as described in Section 93130.11(c).

All Innovative Concepts should include provisions for technical operational issues, by means of over compliance or other form of assurance. These provisions would be in place of TIEs/VIEs and would ensure all emissions required to be reduced are achieved.

**Comment:** "Section 93130.11(a)(3) has been aligned with the revised timeline. However the 5% values shown for vessel operators are not sufficient based on the analyses we submitted to CARB over the last year. This should be reviewed further during the period prior to implementation and specifically addressed in the interim review." (2-15-4.9)

**Agency Response (2-15-4.9):** CARB staff made no changes based on the comment received. To see how CARB staff evaluated and came to the conclusion of a five percent VIE rate, see ISOR Chapter III page 30. Additionally, for limited cases the remediation fund may be used in place of TIE/VIEs. The Interim Evaluation will be used to assess the progress made in adopting control technologies for use with tanker and ro-ro vessels, as well as the status of land-side infrastructure improvements that may be needed to support emission reductions at ro-ro and tanker terminals. However, CARB staff will consider other public information provided to CARB.

**Comment:** "This industry coalition remains concerned that the number of Vessel Incident Events (VIEs) and Terminal Incident Events (TIEs) are insufficient to ensure rule compliance. An analysis prepared by Starcrest Consulting Group previously submitted, demonstrated that there are insufficient VIEs/TIEs available to ensure compliance for known issues identified by CARB. As discussed earlier, VIEs/TIEs will be needed for unknown and unexpected changes in trade, vessel deployments or equipment failures and maintenance. If VIEs/TIEs are not increased, CARB will penalize ocean carriers and terminals for already known and unavoidable circumstances." (2-15-5.15)

**Agency Response (2-15-5.15):** CARB staff made no changes based on the comment received. See response to comment 52.49 for TIE/VIE discussion.

**Comment:** "The proposed VIE allocation (5%) needs to be increased to account for the fact that the rule will require all containerships and refrigerated cargo vessels to use at-berth power. We anticipate, based on historical compliance data, that more than 5% of vessel fleets will be unable to comply due to onboard equipment problems, the need to rotate vessels into and out of California services for required surveys and dry-dockings, and due to unpredictable commercial demands that may require shipping companies to deploy or phase-in non-commissioned vessels to meet U.S. import and export trade needs. With the above considerations in mind, we recommend that CARB increase the VIE allocation for the first three years after implementation to 10 percent per year." (2-15-6.15)

**Comment:** “PMSA is concerned that the number of Vessel Incident Events (VIEs) and Terminal Incident Events (TIEs) are insufficient to ensure rule compliance. An analysis prepared by Starcrest Consulting Group previously submitted, demonstrated that there are insufficient VIEs/TIEs available to ensure compliance for known issues identified by CARB. As discussed earlier, VIEs/TIEs will be needed for unknown and unexpected changes in trade, vessel deployments or equipment failures and maintenance. If VIEs/TIEs are not increased, CARB will penalize ocean carriers and terminals for already known and unavoidable circumstances.” (2-15-9.16)

**Agency Response (2-15-6.15) and (2-15-9.16):** CARB staff made no changes based on the received comments. While the allotment of VIEs and TIEs may not sufficiently account for all unforeseen circumstances, the Regulation is designed to provide flexibility with multiple compliance pathways. See ISOR pages IV-76 through IV-81 for the purpose and rationale for TIEs and VIEs.

During the implementation of the 2007 At-Berth Regulation CARB staff were made aware of multiple circumstances where a vessel visit would be unable to comply with emission reduction requirements. Absent an exemption, staff developed the concept of TIEs and VIEs to address unexpected instances. As a compliance pathway, TIEs are available to use when a terminal operator cannot control emissions for unforeseen circumstances or emissions control strategies are unavailable due to construction or routine maintenance. If TIEs are insufficient to reduce emissions the remediation fund may possibly be used.

Additionally, implementation dates for container, reefer, and cruise vessels were adjusted from 2021 to 2023 due to impacts to the industry as a result of the current ongoing economic situation. This change will allow for the time needed for infrastructure buildout and for fleets and terminals and to procure spare parts.

**Comment:** “Since vessel operators may encounter situations that warrant additional VIEs that could not be anticipated by 1 December, we recommend that CARB modify 93130.11 (c) by inserting the following after the third full sentence: “(Note: CARB staff will consider, and respond within 60 calendar days, to written requests for additional VIE and TIEs submitted at any time during the year)”. (2-15-6.16)

**Agency Response (2.15-6.16):** CARB staff made no changes based on the comment received. This comment was previously submitted during the 15-day comment period released in March 2020. See response to comment 15-57.17 for response.

**Comment:** “To provide more flexibility, particularly to address chaotic market conditions, we recommend that CARB allow companies to carry over any unused TIEs or VIE until June 30 of the year after they were granted.” (2-15-6.17)

**Agency Response (2-15-6.17):** CARB staff made no changes based on the comment received. This comment was previously submitted during the 45-day comment period. See response to comment 45.29 for more information.

*xi. Remediation Fund*

**Comment:** “We recommend that CARB expand the list of circumstances in which vessel operators may use the remediation fund to include vessels that make infrequent calls to California ports (e.g. less than 3 calls per year). This is a logical regulatory approach for addressing infrequent calling vessels (e.g. vessels rotated in to California to address increased demand or “extra loaders” brought in to ease port congestion) because it would enable the vessels to have a compliance option if CAECS operators are not available or operational for a particular visit. (2-15-6.19)

**Agency Response (2-15-6.19):** CARB staff made no changes based on the comment received. The remediation fund requires the regulated party has made efforts to comply with the rule. The expansion of the remediation fund to allow infrequent calls has the potential to encourage an increase in low use vessels rather than direct compliance. See agency response 15-58.4 for more information.

**Comment:** “We Do Not Want CAPCOA To Be A Remediation Fund Administrator, CAPCO is Unqualified and Has No Experience.

- a. CARB be the Administrator or
- b. A Qualified Mitigation Non-Profit Foundation such as the Harbor Community Benefit Foundation in San Pedro in Southern California and the Rose Foundation in Oakland in Northern California are qualified to administer this Remediation Fund.” (BH-23.5)

**Agency Response (BH-23.5):** CARB staff made no changes based on the comment received. See response to comments 15-B-4.17 and 15-OT-11 for further discussion.

#### **4. TECHNOLOGY FEASIBILITY**

**Comment:** “CARB is predicating its regulation of ro-ro auxiliary emissions on the premise that barge or shore-based emissions capture and control technologies will become a viable and practicable emissions control option. Experience to date with the existing barge-based capture and control service providers has demonstrated that those services are often unreliable, are exceedingly costly, and would pose substantial operational and safety problems for ro-ros. For example, the systems cannot be used in windy weather, cannot always reach ro-ro stacks (which may be 40 meters laterally and 40 meters above the waterline), and often prevent simultaneous alongside

bunkering operations. Shore-based emissions capture systems may be better able to reach ro-ro stacks, but obstruct shoreside cargo operations, may not be useable in windy weather and exceed the load bearing capabilities at many of the terminals in California where ro-ro vessels must call.” (2-15-6.8)

**Agency Response (2-15-6.8):** CARB staff made no changes based on the received comment. Based on conversations with industry stakeholders, CARB staff anticipates that capture and control systems (a mixture of both barge-and land-based) will be the primary pathway for compliance for ro-ro vessels in the near-term. This is due to the fact that ro-ro berths are generally large, wide-open spaces with sufficient wharf strength to support the off-loading of cars and other large equipment on wheels. However, vessels and terminals have the flexibility to select control strategies that best meet their site specific conditions and operations. Wharf infrastructure improvements are not anticipated to be necessary for ro-ro terminals and systems should be developed with safety and operations in mind. For a discussion on the benefits from barge-based systems, tugs and ro-ro vessels see Master Response 1. Additionally, the Interim Evaluation in 2022 will be used to reassess the status of ro-ro vessel technologies and to make any timeline adjustments if necessary, depending on the outcome of the Interim Evaluation.

**Comment:** “Finalizing this rule without addressing feasibility and critical safety risks is just simply unacceptable. The amendments must be revised to require an assessment of feasibility and safety before tanker capture and control or electrification is required not after.” (Final 7)

**Comment:** “We urge CARB to defer adoption of the reg and instead direct staff to review and revise the proposed reg to address the current feasibility and critical safety risks.” (Final 11)

**Agency Response (Final 7) and (Final 11):** CARB staff made no changes based on the received comments. See response to comments 15-B-16.3, 15-OT-4, 15-OT-46, 15-OT-49, 15-OT-50, 15 OT-51 and 15-OT-52 (which are all responded to in a grouped response) for more information on tanker control technology and ensuring that safe control systems for tankers are developed.

**Comment:** “One of the big concerns that we have is that we need CARB to establish a technology certification process, which means you have to have a standardized application process, a standardized review process, verification the applicant owns the patents or the rights to the technology. You have to have standardized test validation procedures and format, a standardized approval process, but it also has to be a little bit flexible, because in some cases, we need the regulation to be able to approve a technology for a subclass.” (Final 25)

**Agency Response (Final 25):** CARB staff made no changes based on the received comment. See response to comment BH-23.1 for more information on the CAECS EO process and approval.

**Comment:** “The port sees itself as a valuable resource to CARB in operational technological feasibility of the At-Berth Regulation. Over the last many years, we've developed expertise with data and knowledge of how the shore-power regulation works. And we urge CARB to continue to see the Port of Oakland, in fact, the entire goods movement industry, as a valuable partner and source of pragmatic insights and solutions as we moved forward with this rule and other rulemaking.” (Final 32)

**Agency Response (Final 32):** CARB staff made no changes based on the received comment. CARB staff agrees and appreciates the valuable partnership the ports, especially the Port of Oakland have provided thus far and looks forward to continuing this partnership into the future.

**Comment:** “First, the need for a feasibility study to isolate and identify serious and significant challenges to the proposed technology options must be underscored. Staff assumes tankers will largely comply with the rule through utilization of a land-based capture system. This is remarkable considering the technology has never been tested on a tanker, and notable considering the one system deployed at the Port of L.A. on a cargo vessel was only utilized a handful of times and is not in-use today.” (Final 50)

**Agency Response (Final 50):** CARB staff made no changes based on the received comment. CARB staff assumed in the Berth Analysis that tanker vessels would use land-based capture and control systems based on conversations with the tanker industry, but that does not preclude the tanker industry from choosing a different control technology. CARB staff also disagrees with the commenter’s characterization that the land-based capture and control system at the Port of Los Angeles has only been used a few times. See the response to comments 15-B-16.3, 15-OT-4, 15-OT-46, 15-OT-49, 15-OT-50, 15-OT-51, and 15-OT-52 (which are all responded to in a grouped response) for more information on tanker control technology and ensuring that safe control systems for tankers are developed.

**Comment:** “Staff Have Failed to Provide Evidence That a Requirement for Tanker Capture and Control is Safe and Feasible for Real-World Tanker Operations, and a Feasibility Study is Required Before the Regulation is Adopted.

To date, despite our numerous requests to do so, Staff have refused to conduct a feasibility study for tankers to develop such evidence. Instead, Staff set compliance deadlines for tankers that were already unrealistic in the original version of the Proposed Regulation and did not provide sufficient time for a feasibility study – and then adopted 15-Day Changes that accelerated those unreasonable deadlines for tankers by two years. As WSPA explained in its July 27, 2020 comments, tankers are

subject to extremely rigorous international safety standards for management of boiler gases and prevention of explosion. The June 2020 International Safety Guide for Tankers and Terminals (“ISGOTT”) and the April 2017 American Bureau of Shipping (“ABS”) “Guidance Notes on Qualifying New Technologies” are two examples of international standards that Staff has yet to evaluate for consistency with a mandate for tankers to meet limits that could only be met by adopting yet-unproven capture and control systems.<sup>2</sup> As documented in our letter, lives have been lost due to noncompliance with those standards. Yet Staff have made no attempt to assess whether and how tanker capture and control could be implemented consistent with these important safety guidelines.

...Critically, in order to ensure that the Proposed Regulation is technologically achievable and cost-effective as required by California law, a feasibility study must be conducted before adopting tanker emissions limits that could force construction of potentially infeasible and unsafe capture and control equipment, not after.” (BH-21.1)

**Agency Response (BH-21.1):** CARB staff made no changes based on the received comment. See the response to comments 15-B-16.3, 15-OT-4, 15-OT-46, 15-OT-49, 15-OT-50, 15-OT-51 and 15-OT-52 (which are all responded to in a grouped response) for more information on tanker control technology and ensuring safe control systems for tankers are developed.

**Comment:** “What we want to see is a clearly defined program that must include some goals, some objectives, and measurable metrics. There must be transparency in the decision-making process. There must be an opportunity for public review of all data developed and in the certification process. And that there must be a method where the public can also request an investigation if there are some concerns that they have. (Final 26)

**Agency Response (Final 26):** CARB staff made no changes based on the received comment. CARB staff disagrees with the comment as under the At Berth Regulation the goals are laid out in Section 93130.1 as well as the requirements for the approval process in Section 93130.5. Regarding the public involvement and transparency, see response to comment BH-23.2.

**Comment:** “Staff Has Not Adequately Considered How Increased Extreme Heat Events Change the Assessment of the Proposed Regulation’s Anticipated Benefits ...[T]he Governor’s August order allowing more backup and local power production during “Extreme Heat Events” underlines the state’s recognition that the at-berth shore power requirements must take a back seat – at least temporarily – to overriding public health and safety risks from wildfire and widespread power outages. Similarly, the attempts in the Proposed Regulation to mandate tanker capture and control at-berth must give way to the more serious risks to public safety that will result from trying to force operation of unproven and unsafe control infrastructure at terminals

and ports without first conducting a feasibility study. Once a feasibility study is done, the risk balance may change.” (BH-21.5)

**Agency Response (BH-21.5):** CARB staff made no changes based on the received comment. CARB staff agrees with the State’s response to emergency extreme heat events and the need to temporarily halt shore power activities during those events as the Governor ordered recently in August. However, regarding the public safety for capturing tanker emission CARB staff disagrees, see response to comments 15-B-16.3, 15-OT-4, 15-OT-46, 15-OT-49, 15-OT-50, 15 OT-51, and 15-OT-52 (which are all responded to in a grouped response) for more information on tanker control technology and ensuring that safe control systems for tankers are developed. It is unclear what the commenter’s mention of the State response to extreme heat event related impacts on the electrical grid has to do with developing safe tanker control technology.

## 5. COSTS, ECONOMICS and INCENTIVES

**Comment:** “We need to make a budget for operating expenses of vessels. It does not specify the charges for using shore power when using it at RoRo terminal. For the reference, would like to know how you are considering the expenses of electricity usage at this stage. It must be considered as an additional cost for entering in the port of CARB.” (2-15-3.6)

**Agency Response (2-15-3.6):** CARB staff made no changes based on the received comment. CARB staff calculated costs for ro-ro vessels based on a combination of barge and land-based capture and control strategies, based on staff’s conversations with ro-ro industry stakeholders and best available information staff had at the time of this rule development. CARB staff did consider the cost of shore power electricity use and incorporated them into the cost estimates for container, reefer, and cruise vessels. More details about CARB staff’s assumptions for the costs for shore power can be found in the SRIA (Appendix C-1 to the ISOR), specifically on pages 72-76 of the main SRIA document and in *Table VIII. Electricity and Fuel Cost Inputs* on pages 16-17 of Appendix A to the SRIA. CARB staff recognizes that if ro-ro vessel operators choose to utilize shore power as a compliance pathway instead of capture and control technologies, the costs will vary from the information provided in the SRIA. However, ro-ro vessel operators can use the information and assumptions provided in the SRIA as a basis for developing their own budget for shore power operating expenses.

**Comment:** “The development and commercialization of these capture and control measures will be expensive, and state and local support is critical. CAPA urges CARB to continue its support to dedicate low carbon transportation funds for the development, demonstration, and commercialization of this technology.” (2-15-8.4)

**Comment:** “The Ports ask that you appropriate significant funding during this time to make this rulemaking successful while ensuring our California ports remain competitive. Previously, the Ports requested at least \$200 million to support technology advancement and deployment. We reiterate this request, and ask that these dollars be appropriated to both RoRos and tankers statewide.” (2-15-10.4)

**Comment:** “We hope that the State can allocate money for this for ports all up and down the State of California, because this is not going to be an easy thing to do for us to implement this and to install the infrastructure to support these increased at-berth controls.” (Final 4)

**Comment:** “We also ask you to commit to identifying a specific funding source.” (Final 22)

**Agency Response (2-15-8.4), (2-15-10.4), (Final 4) and (Final 22):** CARB staff made no changes based on the received comments. CARB recognizes the challenges industry is facing and acknowledges that commitments from agencies, local governments, and the State are necessary to help facilitate compliance. At this time incentive funding is available for shore power, cable management systems, and capture and control systems for all vessel types through these programs:

Program Name	Types of Projects Funded
Low Carbon Transportation – Advanced Technology Demonstration and Pilot Projects	Capture and Control System for Tankers
Carl Moyer Program*	Shore Power and Capture and Control Systems
VW Mitigation Trust	Shore Power
AB 617 Community Air Protection*	Shore Power and Capture and Control Systems
Clean Off-Road Equipment Voucher Incentive Project*	Cable Reel Management Systems
Proposition 1B – Goods Movement Program	Shore Power

\*Funds are available statewide and are not limited to At Berth Regulation projects

CARB staff agrees with need for additional funding opportunities for ocean-going vessel emission control projects to support the regulatory program and has been working with CARB incentive program staff. One specific example of this includes \$10 million in CARB approved funding to demonstrate a capture and control system designed to capture at berth emissions from oil tankers. The funding was approved in the 2019-2020 FY Funding plan for Clean Transportation Incentives under CARB’s Low Carbon Transportation Investments and the Air Quality Improvement Program, and the solicitation for

projects was released in September 2020, and all work shall be completed by January 1, 2025.

**Comment:** "CARB has estimated that the control cost per ton of emissions reduced for ro-ro vessels is \$53,600. Even using that cost estimate, which we believe is low, it is worth noting for comparison that CARB estimated that the control cost per ton of emissions reduced for containerships is \$13,500. When asked what cost-benefit threshold was used to decide which classes of vessels to regulate and which not to regulate, CARB staff reported that there is no threshold and that the decision to regulate ro-ro emissions was based simply on aggregate emissions. There has been no considered analysis of the costs and benefits of regulating ro-ro auxiliary emissions. We also note that ro-ro auxiliary emissions occur in distinctly different geographic locations, where their impacts and the related cost-benefit analyses for controlling those emissions may be quite different." (2-15-6.9)

**Agency Response (2-15-6.9):** CARB staff made no changes based on the received comment. CARB agrees that there is no specific threshold that staff used to make a cost-effectiveness determination, but disagrees that there has been no considered analysis of the costs and benefits of regulating ro-ro emissions. See response to comments 45.11 for more information on the benefits that would be lost by not controlling ro-ro vessel emissions. Furthermore, CARB staff performed extensive analyses on the costs, emissions benefits, as well as health impact benefits gained from regulating ro-ros. The costs, emissions benefits and health benefits are described in the ISOR, SRIA and technical support documents released for the modifications made in the 15-Day Change packages. CARB staff also understands that ro-ro emissions occur in different geographic locations than other vessel types in some instances, but not in all cases. Ro-ro operations at locations such as the Port of Los Angeles, Long Beach, San Diego, and Hueneme all occur within close proximity of other vessel activity, acting to further compound the health impacts from vessel at berth emissions. Many ro-ro terminals, particularly in Southern California, are also located in and around AB 617 communities, which further necessitates the need for reducing emissions from these vessel types.

**Comment:** "CARB's proposal fails to demonstrate that a cost-effective and practicable pathway exists for controlling ro-ro vessels' auxiliary emissions, fails to address the major operational, safety and cost issues emissions capture systems pose for ro-ro vessels and fails to account fully for the emissions generated by emissions capture systems. Compelling ro-ro carriers to try to comply with the rule using the operationally impractical, complex and costly emissions capture systems on the market is not appropriate and will delay the adoption and benefits of more practicable zero-emission technologies that still need to be developed.

WSC therefore recommends that CARB not proceed with the proposal to regulate ro-ro auxiliary emissions and instead monitor ro-ro emissions and the ongoing

development of technologies that may in the future provide a viable and economically achievable compliance option for these vessels.” (2-15-6.10)

**Agency Response (2-15-6.10):** CARB staff made no changes based on the received comment. See response to comment 45.11 for more information on the benefits that would be lost by not controlling ro-ro vessel emissions and response to comment 45.18 for more information on provisions made for ro-ro vessels to comply and why CARB staff believes emission reductions from ro-ro vessels is achievable using existing technologies.

The 2022 Interim Evaluation will provide CARB staff the opportunity to assess the progress being made towards the adoption of existing control technologies for use with ro-ro vessels, as well as the progress of any land-side infrastructure improvements needed to support land-side emissions control technologies. Staff will use the outcome of the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories depending on the outcome of staff’s findings at that time.

CARB staff also committed in Resolution 20-22, as adopted by CARB’s Board at the August 27, 2020, public hearing, to update the Board annually on the status of implementation of the Regulation.

**Comment:** “We were just informed our project proposal to capture air emissions from ro-ro vessels, a technology which this very reg calls for, would be technically ineligible for Carl Moyer and VW mitigation funding. We were further informed we are precluded from this funding as we are not technically in a disadvantaged community according to the CalEnviroScreen 3.0 map, even though we reside in the most economically-challenged area in Ventura County, facing 26 percent poverty, and are within just one mile of the CalEnviroScreen map designation. We respectfully request you help us secure this funding with waivers and/or other potential solutions. We will provide further details supporting this request in a written letter to follow.” (Final 23)

**Agency Response (Final 23):** CARB staff made no changes based on the received comment. This comment is not specifically directed at CARB’s proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff are aware of the situation mentioned by this commenter and are working directly with this commenter and CARB funding staff to figure out a process in which these types of projects can qualify for available funding. No changes to the Regulation are needed to address this comment.

**Comment:** “Use your authority to establish a port infrastructure fund to facilitate upfront investments that we know are required for large scale capital projects.” (Final 36)

**Comment:** "What we're asking for is for -- to work with stakeholders. And we need CARB to identify option funding opportunities, because the ones that have been identified in the past have -- they don't -- ports cannot apply to those." (Final 46)

**Comment:** "Additionally, implementation of any regulation will require financial resources. We urge CARB to establish a port infrastructure fund within the existing CARB incentive programs to facilitate upfront investments required for large scale capital improvements required by the regulation." (Final 54)

**Agency Response (Final 36), (Final 46), and (Final 54):** CARB staff made no changes based on the received comments. These comments are not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff notes and understands the need and desire for increased funding, including for port entities, and are committed to working internally and with regulated entities to explore all available incentive funding opportunities and to help connect entities with funding programs that may be available for offsetting some of the costs of reducing emissions from vessels at berth. No changes to the Regulation are needed to address this comment.

**Comment:** "...as this rule is passed, we hope that CARB will work to establish an interagency collaboration with BCDC and other relevant agencies, and increase communications in the availability of resources, such as grant and other financing opportunities for impacted entities." (Final 45)

**Agency Response (Final 45):** CARB staff made no changes based on the received comment. This comment is not specifically directed at CARB's proposed action or to the procedures followed by CARB in proposing or adopting the action, therefore, CARB is not required to respond. However, CARB staff has committed to working with agencies like BCDC, be it through an interagency collaboration and/or individually, to increase communication and understanding of available funding opportunities and permitting processes in order to help streamline and expedite the installation of necessary emissions control technologies and infrastructure needed to meet regulatory timelines. No changes to the Regulation are needed to address this comment.

## 6. EMISSIONS INVENTORY

**Comment:** "We are concerned that a refusal to incorporate Oakland's 2016 baseline data or to officially update the expected cargo growth rate for Oakland or to remove the incorrect 80% cap on the benefit of the current regulation, will produce a distorted result that justifies a changed rule for containerhips based on faulty assumptions." (2-15-11.3) (EA 11-1)

**Comment:** "The emissions benefit calculation caps the benefit of the current regulation at 80%. This is incorrect because it ignores demonstrated overcompliance

due to 1) the provision requiring every vessel capable of plugging in to do so, 2) the long call durations at the San Pedro Bay Ports resulting in ~96% emission reductions, 3) the fact that some infrequent callers are plugging in even though they are not required to do so, and 4) the required 90% compliance rate for shore power systems that received grant funding.

The artificial 80% benefit cap is not even internally consistent within CARB's own documents. According to page 22 of the 2007 regulation (text copied in below), CARB assumes 90% reductions for any ship that plugs in. Why does the analysis cap the benefit of the 2007 regulation at 80%" (2-15-11.4) (EA 11-1)

#### (4) Control Factors

- (A) The emissions from vessels using grid power in lieu of the vessel's auxiliary engines when the vessels are at berth are presumed to be reduced by 90 percent.

**Comment:** "The inventory does not consider the emission reductions associated with Proposition 1B funding, requiring emission reductions of 90% under the existing rule – 10% more than the proposed rule. This results in the inappropriate attribution of emission reductions from existing requirements to the proposed rule. The emissions inventory also inappropriately caps emission reductions under the existing rule at 80%. Every vessel with a call greater than 15 hours will result in emission reductions greater than 80%. In San Pedro Bay, where calls greater than 100 hours are typical, emission reductions can exceed 97%. Section 93118.3(e)(4)(A) of the current regulation explicitly states that any vessel using grid power is assumed to reduce emissions 90%. Yet, no explanation or reason is given in the emissions inventory for capping emission reductions at 80%. The inventory must be updated to correct these issues." (2-15-5.13) (EA 5-2)

**Comment:** "The inventory overestimates growth, resulting in a significant overestimation of the proposed rule's emissions benefit. The inventory does not consider the emission reductions associated with Proposition 1B funding, requiring emission reductions of 90% under the existing rule – 10% more than the proposed rule. This results in the inappropriate attribution of emission reductions from existing requirements to the proposed rule. The emissions inventory also inappropriately caps emission reductions under the existing rule at 80%. Every vessel with a call greater than 15 hours will result in emission reductions greater than 80%. In San Pedro Bay, where calls greater than 100 hours are typical, emission reductions can exceed 97%. Section 93118.3(e)(4)(A) of the current regulation explicitly states that any vessel using grid power is assumed to reduce emissions 90%. Yet, no explanation or reason is given in the emissions inventory for capping emission reductions at 80%. The inventory must be updated to correct these issues." (2-15-9.14) (EA 9-3)

**Agency Response (2-15-11.3), (2-15-11.4), (2-15-5.13), (2-15-9.14):** CARB staff made no changes based on the received comment. For background,

CARB's 2007 At-Berth Regulation vessels requires that fleets impacted by the rule plug in for a percent of their total time at berth (weighted by power), with increasingly stringent steps in 2014, 2017, and 2020. The requirements state that 50, 70 and 80 percent of the fleets' auxiliary engine power use be replaced by shore power by those dates, respectively. CARB's emission inventory is based on 2016 data, a year in which the 50 percent requirements were in place.

Currently, the emission inventory forecast projects that fleets will increase shore power usage to 80 percent to meet the 2020 requirements, but not exceed that mark (on an overall port average, some groups of vessels are reflected as exceeding 80 percent). This does not conflict with the statement that vessels that plug in reduce power by 90 percent, as not all vessels in applicable fleets currently plug in to shore power. Rather, vessels currently meet a weighted average based on annual vessel visits (i.e. the vessels that plug in with approximately 90 percent emission reductions are averaged against vessels visits that do no plug in, for a variety of reasons).

This is shown below in a subset of Table 20 from the October 15, 2019 ISOR Appendix H on emissions inventory updates. The percent time on shore power in 2016 is shown in the right column, specific to the Ports of Los Angeles and Long Beach, by vessel size bin (roughly equivalent to the 1,000s of TEU capacity of the vessel). This reflects data reported by fleets to CARB, compared to the total time of all vessels at berth.

**Table 20: Percent of Time on Shore Power**

Arrival Port	Vessel Type	Size Bin	2016
Los Angeles / Long Beach	Container	1	34%
Los Angeles / Long Beach	Container	2	18%
Los Angeles / Long Beach	Container	3	21%
Los Angeles / Long Beach	Container	4	55%
Los Angeles / Long Beach	Container	5	46%
Los Angeles / Long Beach	Container	6	70%
Los Angeles / Long Beach	Container	7	68%
Los Angeles / Long Beach	Container	8	70%
Los Angeles / Long Beach	Container	9	43%
Los Angeles / Long Beach	Container	10	22%
Los Angeles / Long Beach	Container	11	77%
Los Angeles / Long Beach	Container	12	95%
Los Angeles / Long Beach	Container	13	34%
Los Angeles / Long Beach	Container	14	96%
Los Angeles / Long Beach	Container	16	N/A
Los Angeles / Long Beach	Container	17	0%
Los Angeles / Long Beach	Container	18	N/A
Los Angeles / Long Beach	Container	20	N/A
Los Angeles / Long Beach	Cruise		54%

While it is clear that a few size bins are plugging in for significant portion of the time, as a total (or on average), it shows that vessels are not plugging in more than 80 percent of the time and certainly not 90 or 96 percent (as a fleet average). The other ports are shown in the appendix, with varying details but demonstrating the same relative percent reductions (with the exception of the Port of Hueneme).

As fleets hit their final compliance requirement in 2020, CARB staff will review the actual time spent on shore power and update the emissions inventory. Currently, staff are not projecting that fleets will over-comply with the regulations as doing so (as noted by many commenters) carries a cost and complexity. If fleets over-comply in 2020 with the 80 percent requirements, this will be reflected in future inventories.

Similarly, the Prop 1B funding mentioned in the comments is reflected in the reports to ARB on actual time on shore power for the base year. In forecasting, the interaction between the funding and the reported values is difficult to predict. For example, during the base year when 50 percent time on shore power was required, a terminal that received funding had the option to reduce

emissions with shore power on 60 percent of vessels at the terminal (10 percent more than required). However, when the fleets report to CARB, they report their total across *all* terminals at the port. It is difficult to determine in this case if time at this specific terminal increases overall time on shore power across all terminals. CARB staff believes the best method to reflect this data is to use real world reports from 2020 to determine impacts, and will include them in future assessments.

**Comment:** “CARB’s 2016 baseline data for shore power operations in Oakland are neither reliable nor reflective of actual usage. Comparing summaries by vessel class size to the Port of Oakland’s own data (used for billing and subject to audit), the values are off by up to 40% in critical areas. Port staff discussed this problem with CARB staff and showed them the comparison during a phone call on January 15, 2020. CARB staff offered to investigate the issue and spot check some data points to try to understand it better. To date, nothing has happened. Port staff have continued to raise this issue, but it remains unaddressed and unresolved. The baseline data are critical for accurately evaluating any future benefits of the Proposed Control Measure, so this needs to be addressed.” (2-15-11.5) (EA 11-1)

**Agency Response (2-15-11.5):** CARB’s data for shore power comes directly from each fleet and/or vessel that calls at Oakland and uses shore power, where each fleet reports time that auxiliary engines are shut down while at port. The Port of Oakland similarly tracks time where shore power is provided to vessels, and these times do not exactly match. It is possible the discrepancy is due to the fact that vessels do not shut down exactly the moment they receive shore power, or that one of the two reports are in error. However, for the data CARB uses to determine shore power time to be in error, the ocean-going vessel industry would have to be submitting false or inaccurate reports directly to CARB. Both cases appear to be very unlikely, as failing to report time on shore power would work against their interest, as would underestimating the current time on shore power (underreporting time on shore power would impact their fleet average and would require additional actions later in the year).

Both CARB staff and the Port of Oakland offered to spot check the data on the other side to determine the source, unfortunately confidentiality of the data prevents sharing CARB’s enforcement data on each fleet visit without further agreement from ocean-going vessel fleets subject to the Regulation. CARB staff are open to spot checking the Oakland data, if it can be shared.

**Comment:** “As recognized by CARB staff, the assumed growth rate for the Port Oakland is too high and does not comport with any recent or anticipated cargo trends. The inventory assumes an unreasonably aggressive 5% compounded annual growth rate for the Port of Oakland. CARB staff agreed it should be lowered to 2.2% to be in line with the recently finalized Bay Area Seaport Forecast (by Tioga Group for the San Francisco Bay Conservation and Development Commission, dated May 22,

2020). CARB staff said they would address this in summer 2020, but that does not seem to have happened and does not appear to be scheduled before the Board votes on this item. This is also a critical factor that, if left unaddressed, would artificially inflate any future emissions from OGV operations in Oakland and overstate the benefit of the Proposed Control Measure.” (2-15-11.6) (EA 11-1)

**Agency Response (2-15-11.6):** The growth assumption in the emissions inventory are based on the FAF (described in much greater detail in the inventory documentation, Appendix H to the ISOR) developed by the Federal Highway Administration (FHA), with a projected growth for Oakland between 4 and 5 percent annual compound growth. The choice of growth rate, corroboration with other sources, and comparison with Port of Oakland historical rate are all detailed in the ISOR Appendix H. It is notable that at the time of the inventory release, the last official Tioga Report (a forecast report used by the Port of Oakland) showed a growth rate of 5 percent, slightly higher than CARB’s emission inventory. This forecast was updated between the first and second CARB boarding hearings.

CARB staff, as with all other inventories, have agreed to continue to work with industry to reflect the best available data in future updates. However, as new data for both ports and the wider ocean-going vessel industry is available on a nearly monthly basis, CARB must set milestones for the inventory and used the best available data at the time of release.

Additionally, both the costs and energy (and therefore emissions) in the inventory were grown at the exact same rate, meaning changing the growth would not change cost effectiveness by even a single percent.

As noted by the commenter, CARB staff will continue to work with industry to reflect the best available data in future updates, and expects the updated growth rate to be incorporated significantly before staff return to the Board for the review period of this Regulation.

**Comment:** “The estimates of benefits, emissions estimates, costs, cost-effectiveness, and health impacts, which presume the rate of growth contained in the ISOR, are now no longer valid. Even if growth were to immediately resume at levels assumed in the ISOR, cargo volumes and resulting activity will likely be millions of containers off from the cargo volume estimate.” (2-15-5.11) (EA 5-1)

**Comment:** “COVID-19 crisis has impacted existing and future cargo volumes in California ports... As a result, all dependent analyses, including rule emissions benefits, health benefits, CEQA review including the Statement of Overriding Considerations, and cost-effectiveness, will all be based on flawed data. CARB should re-evaluate baseline emissions, proposed emission reductions, health benefits, costs,

and cost-effectiveness based on a revised forecast and assumptions.” (2-15-5.12)  
(EA 5-1)

**Agency Response (2-15-5.11) and (2-15-5.12):** CARB agrees that the impact from current pandemic and economic downturn on freight movement has been significant, however the long term impacts are still unknown and impossible for industry or CARB to forecast with reasonable accuracy without more information and time. CARB staff will continue to monitor the impacts and will incorporate this information into the technology review period. Where the pandemic has significantly changed practices, emissions, or need for reductions, staff will consider if changes need to be made. However, cargo volumes have been on the rise recently, the Port of Los Angeles reported that August saw its strongest monthly cargo volumes of all time (<https://www.dailybreeze.com/2020/09/15/port-of-la-sees-cargo-surge-in-august-as-holidays-approach/>).

It is also worth considering that the severity of the economic downturn have been correlated with areas with poor air quality and populations that are more likely to suffer from adverse health impacts from air pollution. This has stressed the need to address air quality in the most impacted communities, including those near ports and harbors.

**Comment:** “More information continues to become available demonstrating the problems attendant to the existing CARB forecasts and inventories. PMSA recently released an analysis that provides the most recent annual data on the loss of containerized trade market share experienced by U.S. West Coast ports, including Los Angeles, Long Beach, and Oakland in recent years. This analysis demonstrates the accelerating market share erosion of California ports. As a result, all dependent analyses, including rule emissions benefits, health benefits, CEQA review including the Statement of Overriding Considerations, and cost-effectiveness, will all be based on flawed data. CARB should re-evaluate baseline emissions, proposed emission reductions, health benefits, costs, and cost-effectiveness based on a revised forecast and assumptions.” (2-15-9.3) (EA 9-1)

**Agency Response (2-15-9.3):** CARB aligned with the Ports of Los Angeles and Long Beach on growth forecasts (using exactly the same rates as the Ports), and has worked to align with the Port of Oakland’s rates (as noted in other responses, the Port of Oakland finalized their updated forecast between the first and second CARB Board hearings on this item, and their latest forecast is not yet reflected). The data sources used by CARB and the major ports in California do consider shifts in trade market shares both nationally and internationally. CARB will continue to work with the major ports to align forecasts and recommends that PMSA share their analysis with the ports for consideration in future growth factor discussions.

However, the future of containerized trade is uncertain, and the growth forecast are influenced by a significant number of assumptions. CARB appreciates the analysis from PMSA and would like to determine the best way to use it in future methodologies, but does not believe it invalidates the data sources used in the inventories and described in the emissions inventory documentation.

**Comment:** "A draft report for a CARB-commissioned study on real-world tanker emissions – "Emissions Evaluation of a Large Capacity Auxiliary Boiler on a Modern Tankers," dated March 2020 – was made available to WSPA for the first time in early July. The results indicate that Staff's tanker NOx emissions factor overstates the actual real-world factor by 233% and overstates the actual tanker PM2.5 emission factor by 2,288%. Despite these significant inaccuracies in Staff's assumptions, Staff have not accounted for the findings of this study in the Second 15-Day Changes." (2-15-15.5) (2-15-15.11) (EA 15-5)

**Comment:** "Staff Has Failed to Address the Results of a CARB-Commissioned Study on Real-World Tanker Emissions, Which Indicates That Staff's Emissions Assumptions May be Grossly Inaccurate

...As explained in WSPA's July 27, 2020 comments, the data used to develop the emission factors Staff used were based on a fleet of tankers from the 1980s that burned fuel oil. Most, if not all, of these tankers have been replaced due to age, and burning fuel oil has not been allowed for any tanker since 2008. For these reasons, the emission factors Staff used are not representative of tankers operating today. In reality, a large reduction in emissions has occurred in marine auxiliary boilers in the last 30 years. This is not only because of better nozzle designs, but also because tankers are burning cleaner fuel. The important role of the fuel change was confirmed by Alpha Laval engineers, the main marine auxiliary boiler manufacturer, and is consistent with the UCR testing. CARB does not take this into account in its response." (BH-21.4)

**Comment:** "We also believe the process continues to ignore the real-world impacts on the future of the tanker industry, and its future baseline emissions, and has not accounted at all the actual findings of CARB's CE-CERT study that tankers emit far less NOx and PM than staff estimates. California law requires staff to consider these things." (Final 10)

**Agency Response (2-15-15.5), (2-15-15.11), (BH-21.4), and (Final 10):** CARB staff made no changes based on the received comments. CARB disagrees with this comment as the emission factors used in the inventory for the Proposed Regulation were the best available at the time and are also used by U.S. EPA, other states, and other international groups, such as the Marine Emissions Tool developed by the Canadian government.

As marine technology advances and marine fuels become cleaner, CARB consistently performs new emissions test studies. To advance the knowledge base related to tanker vessels, CARB is contracting with the University of California, Riverside to perform emission testing of tanker boilers. CARB incorporates new data in the inventory as soon as possible and after appropriate vetting and analysis.

The preliminary emissions data attached to WSPA's letter were completed on the newest generation of tankers that came into service in the last few years. These vessels come equipped with the latest and most efficient modern boiler systems. Therefore, the emissions data found in their report represents only the newest generation of tanker boiler design, and that data is not broadly applicable to the wider tanker fleets, consisting of many vessels with older boiler technologies. The new Chevron tankers represent only 5 percent of the states total tanker at-berth activity in 2018, and does not reflect the significantly older international fleet of tankers that comprises the vast majority of vessel visits. It would thus be inaccurate and extremely misleading to base the inventory on the emissions data in the CE-CERT study referenced by the commenter. Furthermore, we expect that these cleaner vessels (i.e., Tier 3 or Tier 3 equivalent) will not enter the inventory until approximately 2030, because of the limited number of Tier 3 vessels in the international fleet and long useful life of in use vessels. It would also be premature to use the results before they have been peer-reviewed and verified.

Additionally, during the development of CARB's emissions estimates, CARB staff worked with the tanker industry to better reflect actual operation parameters of any advanced engine and boiler systems. Specifically, Chevron provided information showing that the boilers provided power to the vessel in certain modes of operation, reducing auxiliary engine emissions (and also not being counted toward diesel particulate matter as boilers are not compressions ignition engines). These updates are reflected in the inventory and display the collaboration CARB has committed to in developing the emissions inventory.

**Comment:** "Second, MPC is aware of a report prepared by the University of California, Riverside which tested a tanker vessel to quantify the hoteling of emissions. This report illustrates a significant departure from the emissions inventory utilized in this rulemaking suggesting CARB's inventory is overstated by no less than 50 percent. CARB should strongly consider the results of this report. We realize this is one vessel out of many which operate in California, but points to the significant changes vessels have undertaken since the source of CARB's emission factors were produced 40 years ago.

CARB must rely on data to inform its decisions. A good emission inventory is a critical element of a good regulation. This is the second significant issue identified within it.

The first being a misinterpretation of the Mercator report findings for the tanker industry in the Port of Long Beach. These two combined are inflating the cost effectiveness of the cap -- of the regulation while claiming reduction which are not real." (Final 51)

**Agency Response (Final 51):** CARB staff made no changes based on the received comment. See response to comment 2-15-15.5 for discussion about the University of California, Riverside report. See also response to comments Agency Response (22.8) and (OC-2 McDonald) for discussion on the Mercator report.

**Comment:** "MPC requests the Board delay the adoption of this regulation until after a robust -- robust feasibility study is conducted and the emission factors used for the baseline inventory have been more thoroughly analyzed and updated to represent the current fleet. (Final 52)

**Agency Response (Final 52):** CARB staff made no changes based on the received comment. CARB staff released the draft emissions inventory in February 2019, in order to allow comment, review and a collaborative interaction with the industry and other stakeholders. CARB also held a public workshop focused on emissions inventory on February 26, 2019 where staff walked through all the major updates to the 2019 ocean-going vessel emissions inventory, and solicited stakeholders' feedback. Following this comprehensive public process, changes were made throughout 2019, and future updates and additional research are already under consideration. In general, it is reasonable to assume that just as the industry changes each year, the inventory will require consistent updates and revisions and should be considered in flux on an ongoing basis. These changes are made to continually reflect the latest and best available data.

Additionally, CARB staff disagrees that further feasibility studies should be conducted by CARB. CARB staff understands that there are some site specific technical and safety concerns that must be worked thus, site-specific feasibility studies must be undertaken by the regulated entities themselves, as CARB staff to not have access to the information needed for each site location to perform this type of analysis.

## **7. ENFORCEMENT**

**Comment:** "Now that CARB has set the effective date for changes to the existing At Berth Rule in 2023, it should clearly and affirmatively lay out its schedule for seeking an obtaining a new waiver for the new At Berth Regulation from the U.S. Environmental Protection Agency, or it should create a clear compliance pathway for currently regulated vessel fleets which is consistent with the existing waiver. (2-15-9.1)

**Agency Response (2-15-9.1):** CARB staff made no changes based on the received comment. The compliance pathways under the Regulation are clear: they are as stated in the Regulation. To the extent U.S. EPA authorization is needed, CARB would plan to apply for it after the regulation is filed with the Secretary of State. CARB expects that U.S. EPA would review and act upon CARB's application as provided under the Clean Air Act.

**Comment:** "CARB Staff has Proposed No or Inadequate Enforcement, Penalties or Sanctions for Non-compliance" (BH-23.8)

**Agency Response (BH-23.8):** CARB staff made no changes based on the received comment. The commenter does not provide any explanation as to why they believe there is "inadequate enforcement, penalties or sanctions for non-compliance." CARB follows its Enforcement Policy to resolve violations of any CARB regulation. CARB's Enforcement Policy can be found on the website at: <https://ww2.arb.ca.gov/resources/documents/enforcement-policy>.

## 8. CARGO DIVERSION

**Comment:** "Diverting cargo to distant seaports can lead to increased emissions, undermining the purpose of the regulation. We still need to understand how ARB staff will address these practical concerns about creating an alternative compliance method that is infeasible for the overwhelming majority of ship operations at the Port of Oakland, given the major negative impacts that could result (decreased Port competitiveness, loss of market share, diverted cargo, increased emissions, etc). This is a matter than needs to be addressed before the Board considers the adoption of the Proposed Control Measure." (2-15-11.2)

**Agency Response (2-15-11.2):** CARB staff made no changes based on the received comment. See Master Response 2 for discussion on cargo diversion

## 9. INNOVATIVE CONCEPT COMPLIANCE OPTION

**Comment:** "The provision for fleet averaging to be used as an Innovative Concept must be included in the language of the regulation to give carriers certainty. Otherwise, CARB staff could change their mind about its acceptability." (2-15-11.8)

**Agency Response (2-15-11.8):** CARB staff made no changes based on the received comment. Innovative Concepts are open-ended, based on an application, and could conceivably include fleet averaging. The reasons CARB would revoke an Innovative Concept is detailed in section 93130.17(f).

**Comment:** "[T]he Innovative Concept rule has one single application deadline, December 1, 2021. Does that mean that fleets entering the California market in 2022 are not allowed to use fleet averaging? What about fleets that start using the TIE/VIE

regime but then wish to switch to fleet averaging, would that be allowed? CARB needs to include certainty about fleet averaging, and a mechanism to allow it after December 1, 2021.” (2-15-11.9)

**Comment:** “The IC section sets a single, one-time deadline for submitting a proposal. This implies that ICs will not be considered after December 1, 2021. The deadline should be removed and replaced with a process for IC plan review at any date such plans are submitted in the future. In addition, if IC will be used to facilitate fleet averaging, the ability to use fleet averaging should be available beyond 2021. New fleets may want to enter the California market after the 2021 deadline and this ensures they will be forever precluded from using fleet averaging... [W]e strongly recommend that IC applications be accepted continuously with the understanding that CARB needs a minimum lead time before an approved application becomes effective.” (2-15-5.8)

**Comment:** “The IC section sets a single, one-time deadline for submitting a proposal. This implies that ICs will not be considered after December 1, 2021. The deadline should be removed and replaced with a process for IC plan review at any date such plans are submitted in the future. In addition, if IC will be used to facilitate fleet averaging, the ability to use fleet averaging should be available beyond 2021...New fleets may want to enter the California market after the 2021 deadline and this ensures they will be forever precluded from using fleet averaging. The original rule contained a similar fixed date requirement for alternative technologies, CARB staff eventually were forced to revise that through the use of an “Advisory”. As a result, we strongly recommend that IC applications be accepted continuously with the understanding that CARB needs a minimum lead time before an approved application becomes effective.” (2-15-9.11)

**Agency Response (2-15-11.9), (2-15-5.8), and (2-15-9.11):** CARB staff made no changes based on the received comments. The Innovative Concept section 93130.17 was included as a response to port’s and industry’s request for more time to develop infrastructure to comply with the Regulation and as an option to benefit from early compliance. CARB requires the Concepts to be developed by December 1, 2021, so if approved can be included in port and terminal plans for compliance. Fleets entering the California market in 2022 must comply using a CAECS. Switching to an Innovative Concept after the application deadline is not allowed.

**Comment:** “The Innovative Concept provision is a step in the right direction. But for simplicity’s sake, if the current regime is already acceptable as an Innovative Concept, why not let the current regime stay in place? Why force the carriers to re-apply every five years for a proven method that is already working? The application process with public review is burdensome, the five-year limit injects uncertainty, and the one-time application deadline is an unfair barrier for future fleets.

The Port of Oakland recommends that CARB maintain the framework of the existing At-Berth Regulation for containerships. California's container shipping industry has successfully coalesced around this existing regulation, is complying well with the regulation and is achieving the desired compliance levels and air quality reduction outcomes." (2-15-11.10)

**Comment:** "A fleet averaging concept should be a defined path within the IC section. Fleet averaging, as a program whose parameters are known, should not be subject to unnecessary restrictions for new concepts. Given the known success of fleet averaging to reduce emissions, it is not necessary to create uncertainty by having a five-year term with extension subject to uncertain approval. In addition, concerns remain that at this time it is unknown how fleet averaging would be handled under the IC provisions and that CARB staff cannot describe or even assure that fleet averaging is consistent with all the requirements of the IC provisions." (2-15-5.5) (2-15-9.8)

**Comment:** "[T]he Port suggests that CARB improve the Innovative Concept option to explicitly include fleet-wide averaging for containerships. CARB staff have said fleet-wide averaging is allowable, and stated it in presentations and slides, yet it does not appear in the regulation language itself. It should be automatically allowed as an Innovative Concept, without the arduous application process or the short 5-year compliance period followed by an uncertain future. The one-time point of entry deadline of December 1, 2021 does not make sense. Future containership fleets should be allowed to use fleet-wide averaging to enter the California market otherwise they are at a disadvantage to their competition." (BH-26.2)

**Comment:** "As an example of an issue, we appreciate CARB staff's commitment to use the innovative concepts provision to continue a fleet averaging approach for the existing regulated fleet. Today, it is not clear what mechanisms and metrics will be involved. But during the next two years, PMSA will continue to work with CARB staff to address this and other identified issues in the proposed rule." (Final 31)

**Agency Response (2-15-11.10), (2-15-5.5), and (2-15-9.8):** CARB staff made no changes based on the received comments. The fleet averaging approach as shown with the 2007 At-Berth Regulation has its issues. One primary issue is that it lacks accountability for terminals and ports to provide sufficient infrastructure as it is primarily the vessel fleets' responsibility to reduce emissions at berth. Fleets that wish to continue to use fleet averaging as an Innovative Concept may apply for it, but will be fully responsible for achieving the required reductions. CARB staff will monitor and review Innovative Concepts to make sure they are achieving, and will continue to achieve, the anticipated reductions.

**Comment:** "The Port suggests the following to [sic] amendments to the Innovative Concept provisions (Section 93130.17):

1. Explicitly allow fleet-wide averaging for containerships without complicated application process
2. Provide rolling entry dates so that new fleets or fleets that initially try TIE?VIE regime have the option of switching to fleet-wide averaging beyond December 1, 2021" (BH-26.3)

**Agency Response (BH-26.3):** CARB staff made no changes based on the received comment. Fleet averaging is possible, see Agency Response 2-15-11.8. CARB staff included a deadline for Innovative Concepts to ensure, if approved, that they are incorporated in any terminal and port plans and are implemented as soon as possible.

**Comment:** "The Innovative Concepts (IC) section of the proposed regulation remains extremely complex. Changes should be considered to make the concept more viable as a long-term compliance option." (2-15-4.3)

**Comment:** "While increasing the term to five years does provide some additional certainty for select regulated parties to propose an innovative concept, it still fails to provide the long-term assurance necessary to make it a viable compliance pathway." (2-15-5.4) (2-15-9.7)

**Agency Response (2-15-4.3), (2-15-5.4), and (2-15-9.7):** CARB staff made no changes based on the received comments. Section 93130.17 (a)(7) of the Regulation describes how the concept can be used for additional compliance periods, making it viable for long-term compliance.

**Comment:** "[T]he window of opportunity for proposals remains overly short, with plans due no later than 12/2021. This greatly limits the usefulness of this concept. CARB should consider ways to encourage innovation in emissions reductions by lengthening the opportunity to propose additional ICs after 2021." (2-15-4.4)

**Agency Response (2-15-4.4):** CARB staff made no changes based on the received comment. Innovative Concepts are intended to be planned for and implemented as soon as possible. Delaying the application window further than December 2021 would not ensure that Innovative Concepts were incorporated in terminal and port plans. If a terminal or port does not have an Innovative Concept by December 2021, CARB expects them to be prepared to comply using a CAECS.

**Comment:** "Section 93130.17(a)(3) and following, starting on page A-61, are extraordinarily complex and restrictive. These and other restrictions in this section appear to exclude participation by:

- Technologies or operational programs that have been part of a Technology Advancement program in California (e.g., SPBP CAAP), other states, the EU or elsewhere in the world.
- Any technology or program that might conceivably become part of an AB 617 plan that includes an Indirect Source Rule or other broadly defined community recommendation.

We also question how the applicant and CARB staff are to ensure that there are no disqualifying regulations or issues anywhere globally, and who will define the “conservative business-as-usual scenarios.”

Recommendations:

- Section 93130.17 should be clarified and streamlined in order to achieve the needed reductions without discouraging innovation or participation in technology demonstrations and incentive programs in other parts of the world (e.g. Canada).
- In addition, it should be clearly stated that CARB’s Low Carbon Fuel Credits are not considered to be incentives under this section.” (2-15-4.5)

**Agency Response (2-15-4.5):** CARB staff made no changes based on the received comment. The Innovative Concept is written to broadly exclude funding from other sources in order to ensure that incentive funding is used on other projects that could benefit the port communities, and not on a regulatory requirement. In this instance, CARB does not see the LCFS credits as a disqualifying incentive since eligibility for the LCFS program for ocean-going vessel includes vessels under the At Berth Regulation.

**Comment:** “The Innovative Concept Provision Must Retain Safeguards, And Community Steering Committees Must Be Consulted. The innovative concept provision responds to the requests of the Western States Petroleum Association, Pacific Merchant Shipping Association and some ports. We welcome cost-effective alternative projects that achieve equivalent or greater emission reductions in the impacted communities at a lesser cost, but the provision must not become a loophole. Therefore, it is important that the alternatives reduce criteria pollutants at least as much as the controls would in the time frame needed to be in compliance, do not increase greenhouse gas emissions or increase emissions at other ports or terminals, provide additional reductions that would not have otherwise occurred, and do not use public funds. Furthermore, we agree that consideration of any innovative concepts should involve consulting with Community Steering Committees for AB 617 communities affected by at-berth emissions.” (2-15-19.3)

**Agency Response (2-15-19.3):** CARB staff made no changes based on the received comment. CARB wholeheartedly agrees with this comment, and has

included robust requirements for transparency in Innovative Concept applications that includes a public comment period. CARB will make every effort to work with communities, including community steering committees, to involve the public, keep the public informed and obtain input on any applications for Innovative Concepts.

**Comment:** "The Second 15-Day Changes proposes to extend the compliance period for approved innovative concepts from three years to up to five years. South Coast AQMD staff is agreeable to this proposed extension as long as the benefits of the approved alternative control strategies are monitored, evaluated and quantified based on credible and transparent methodologies to ensure that the emissions reductions achieved are real, surplus, quantifiable and enforceable." (2-15-2.2)

**Agency Response (2-15-2.2):** CARB staff made no changes based on the received comment. Innovative Concepts are required to ensure that the emissions reductions achieved are real, surplus, quantifiable, and enforceable per the requirements at the start of each compliance period. CARB will review the use of the Innovative Concept annually when the concept's emission reductions are compared to equivalent vessel emission for the purposes of compliance with the Regulation.

**Comment:** "While IC must be "surplus" at the time of creation, CARB could revoke or decline to renew approval if the emission reduction became subject to regulation at a future date, or by any CARB-approved AB 617 Community Emission Reduction Plan. The IC section should be modified to allow IC reductions without this limitation." (2-15-5.6)

**Comment:** "While IC must be "surplus" at the time of creation, CARB could revoke or decline to renew approval if the emission reduction became subject to regulation at a future date, or by any CARB-approved AB 617 Community Emission Reduction Plan. The IC section should be modified to allow IC reductions without this limitation." (2-15-9.9)

**Agency Response (2-15-5.6), and (2-15-9.9):** CARB staff made no changes based on the received comments. Innovative Concepts are allowed to be used for a compliance period. The concept can be revoked if it fails to perform as described in the application. Innovative Concepts will be allowed to be renewed for additional compliance periods as long as they are still a valid. When the Concept is no longer surplus, because of a future regulation or requirement, the Concept will no longer be renewed.

**Comment:** "Limiting the location of IC emissions reductions only to "adjacent" communities and distances no greater than 3 nautical miles may have unintended consequences. Neither "adjacent" nor "community" are defined in the Proposed Regulation, so it is unclear how close an area would need to be in order to be deemed

“adjacent,” and where the boundaries of that area would end. The IC section should be modified to encourage any project (adjacent or not) that would benefit the port and terminal communities.” (2-15-5.7) (2-15-9.10)

**Agency Response (2-15-5.7), and (2-15-9.10):** CARB staff made no changes based on the received comments. This provision ensures Innovative Concepts directly benefit those affected most by at berth vessel emissions. A good guideline for determining which communities are considered adjacent, are those that fall within the census tracts that share a boarder with the port or marine terminal as identified in CalEnviroscreen 3.0.

**Comment:** “The prohibition on public funding for ICs is too broad. Funding may come from different sources, including federal, other states, or other nations. In addition, such a prohibition would exclude demonstration projects. Fleets that are likely to engage in ICs, including fleet averaging, re also likely to participate in demonstration projects sought by CARB or other air quality agencies. Being innovative should not prohibit technology advancement.” (2-15-5.9)

**Comment:** “The prohibition on public funding for ICs is too broad. Funding may come from different sources, including federal, other states, or other nations. In addition, such a prohibition would exclude demonstration projects. Fleets that are likely to engage in ICs, including fleet averaging, are also likely to participate in demonstration projects sought by CARB or other air quality agencies. Being innovative should not prohibit technology advancement.” (2-15-9.12)

**Agency Response (2-15-5.9), and (2-15-9.12):** CARB staff made no changes based on the received comments. The Innovative Concepts are used to meet a regulatory requirement. Public incentive funds should instead be used in a manner that would add to the public benefit. See Agency Response (15-27\_28.7).

**Comment:** “[R]ecommend that CARB add a new sub-paragraph under the general requirements section (93130.17 (a)) that states that ICs may be used as a compliance option by regulated vessels, vessel fleets, ports and marine terminals.” (2-15-6.2)

**Agency Response (2-15-6.2):** CARB staff made no changes based on the received comment. The Innovative Concepts are used to meet the regulatory requirements of vessel operators and terminal operators to reduce emissions from vessel visits. Anyone can apply for an Innovative Concept, and provide the reductions of the Innovative Concept to a regulated party.

**Comment:** “Revocation of the IC plan provides for a 30-day notice. This is likely to be inadequate for an ocean carrier to transition to original provisions of the rule. The risk of a 30-day transition at the uncertain end of a five-year program is enough to prevent

an ocean carrier opting to implement an IC. The IC section should include a nine-month transition period upon revocation of an IC plan.” (2-15-9.13) (2-15-5.10)

**Agency Response (2-15-9.13) and (2-15-5.10):** CARB staff made no changes based on the received comments. Innovative concepts are revoked after a 30-day warning for cases where the Innovative Concept is unable to meet the requirements of the application. If compliance through an Innovative Concept is proposed by a regulated party, that compliance is dependent on achieving real emissions reductions. Whether the concept is revoked, or active, if the concept fails to reduce emissions, that regulated party would not be able to meet their compliance obligations. CARB staff included the 30-day notice provision to provide a mechanism to act quickly and notify all parties in the event CARB staff become aware that an Innovative Concept is failing to provide reductions.

**Comment:** “The proposed extension of the maximum “Innovative Concepts” compliance period from three years to five years in the Second 15-Day Changes fails to make “Innovative Concepts” a viable compliance alternative for tanker terminals.” (2-15-15.2)

**Comment:** “Changing this maximum time from three to five years does not address the core problems with the “Innovative Concepts” provisions. Most fundamentally, the Second 15-Day Changes fail to provide any relief from the running deadlines to install at-berth shore power or capture and control systems. Once one or more five-year “Innovative Concept” periods come to an end without CARB renewal (or during such a period if CARB decides to revoke an “Innovative Concept”), stakeholders then would become immediately subject to the default 2027/2025 deadlines to install a capture and control system. Far from providing more incentive to tanker terminals to choose the “Innovative Concept” option, a five-year project period would actually provide less incentive by increasing the amount of lost investment from funding the Innovative Concept over five years, while leaving the stakeholder with little or no time to install capture and control by the now-accelerated default regulatory deadlines.” (2-15-15.8)

**Comment:** “Finally, the regulation does not provide a true alternative to compliance. The proposed innovative concept provisions offer little incentive for companies to make significant investments in emission reductions that would provide at best only temporary relief from the primary at-berth requirements. The provisions disincentivize funding by stranding investment and creating significant compliance risks.” (Final 9)

**Agency Response (2-15-15.2), (2-15-15.8), and (Final 9):** CARB staff made no changes based on the received comments. CARB disagrees with the commenter’s characterizations of the Innovative Concepts provision. Innovative Concepts must be surplus to other requirements; otherwise the reductions would not truly be attributable to the Innovative Concept. This provides

valuable flexibility, especially for early reductions that can be applied at any time during the first compliance period. At the very minimum, an Innovative Concept could help industry to build out infrastructure for up to five years, and longer if the Innovative Concept continues to be surplus. Extending the compliance period from a maximum of three years to a maximum of five years, makes early reductions more useful, as well as providing two additional years of compliance certainty to an Innovative Concept. CARB also disagrees with the commenter's statement that the Innovative Concepts provision provides "at best only temporary relief". This is incorrect, as Innovative Concepts can be renewed so long as the reductions they generate are not otherwise required.

**Comment:** "We urge the Board really to adopt the rule today and to carefully monitor the implementation, especially around the innovative concepts provisions to ensure that these are truly real in excess -- in excess emission reductions. And we strongly support the coordination of these concepts with AB 617 community groups." (Final 28)

**Agency Response (Final 28):** CARB staff made no changes based on the received comments. We are committed to working with the community, including AB 617 community groups, when reviewing Innovative Concepts.

**Comment:** "We also appreciate CARB's intent in the establishment of the innovative concepts provision in order to smooth the transition as regulated parties begin compliance of these rules. However, even after changing the term to five years, it doesn't quite provide the elements needed to make it a viable compliance pathway for many impacted stakeholders." (Final 43)

**Comment:** "The "Innovative Concepts" Provisions Do Not Provide the Compliance Alternative Requested by Industry.

...California law requires CARB to consider and offer legitimately reasonable alternatives to proposed regulations that would achieve similar or greater cost-effective reductions in lieu of the proposed control. If CARB is going to insist on adopting a Proposed Regulation that requires terminal and port operators to create an unworkable and unproven system, CARB should at least provide an alternative compliance option that would be viable. "Innovative Concepts" fails to supply such an alternative." (BH-21.3)

**Agency Response (Final 43) and (BH-21.3):** CARB staff made no changes based on the received comments. CARB has previously addressed comments from industry and extended the Innovative Concepts compliance period from up to three years to up to five years. Innovative Concepts are required to achieve emissions reductions in excess of other requirements, and are not to be funded with incentive dollars, as the Innovative Concept used for compliance is part of a regulatory requirement. It is open ended and allows a number of

options for projects that could be considered under the Innovative Concept. See Agency Response (2-15-15.2), (2-15-15.8), and (Final 9).

## 10. ARTICULATED TUG BARGES

**Comment:** “In the Initial Statement of Reasons (“ISR”), CARB states as its sole reason offered for excluding ATBs from the At-Berth Rule is the following:

‘When an articulated tug barge is fully connected, it may meet the definition of an ocean-going vessel, as defined in this chapter (Section 93130.2(b)). However, despite being defined as a subcategory of tankers, articulated tug barges are considered a barge and a tug separately.’ [ISR, p. IV-6.]

This statement of a purported rationale for the ATB exclusion is unsupported by reference to any industry studies, analyses or definitions, particularly as to under what circumstances, and by whom, an ATB in operation could be “considered” to be “a barge and a tug separately”. CARB offers no insight as to the source of its stated rationale, which is not borne out by Crowley’s experience of its ATB operations. During operations in California waters, an ATB of over 120,000 bbl. capacity is the functional equivalent of an ocean-going tanker. Based on their California operations, Crowley’s ATBs cannot be ‘considered a barge and a tug separately.’” (2-15-1.1)

**Comment:** “Crowley’s fleet of ATBs cannot operate economically if they are required to be retrofitted as required by the proposed revised CHC. So, if ATBs are not regulated under the At-Berth Rule, Crowley’s ATB fleet will inevitably be withdrawn from California, and the clean petroleum products (CPP) currently transported by ATBs would be carried by increased numbers of Medium Range (MR) tankers.” (BH-24.1)

**Comment:** “If Crowley ATBs were required to comply with the revised CHC regulation, even assuming the availability of the technology that those revisions contemplate, Crowley estimates that the potential compliance cost for its entire fleet would be prohibitive. As Crowley has commented, including in its letter to CARB of April 29, 2020, the potential cost of retrofitting Crowley’s ATB fleet to meet the equipment standards of the CHC revisions would be almost \$126 million. From a commercial perspective, this cost cannot be absorbed by Crowley or through increases in charter rates.

If Crowley were to make such an expenditure to comply with the revised CHC regulations, while, at the same time, MR Tankers enjoy the competitive advantage of operating under the At Berth Rule, it can reasonably be expected that a point will be reached at which the cost of barrels delivered by Crowley’s ATBs in California will be significantly more than the cost per barrel delivered by an MR tanker. When this point is reached, ATBs will no longer be employed in the California market. When ATBs are no longer available to the oil majors currently chartering ATBs, the cost of CPP

transportation will be greater, and there may be an increase in the cost of CPP paid by California refineries, which will be passed to the California consumer. Therefore, the impact of imposing the revised CHC upon ATBs, and excluding ATBs from the At-Berth Rule, is likely to be that Crowley's ATBs will no longer operate in California. Given that MR tankers would be regulated under the At-Berth Rule, there would be no way for Crowley's ATBs to compete with MR tankers. This would mean that California's CPP would be transported by MR tankers, and the commercial, safety and environmental benefits of using ATBs would no longer be available. (BH-24.3)

**Agency Response (2-15-1.1), (BH-24.1), and (BH-24.3):** CARB staff made no changes based on the received comment. For a discussion on ATBs, see Master Response 5.

**Comment:** "In excluding ATBs from the At-Berth Rule, CARB failed to consider all relevant industry and environmental factors, and so it did not demonstrate any a rational connection between those factors, the choice made, and the purposes of the enabling statute." (2-15-1.2) (EA 1-1)

**Agency Response (2-15-1.2):** CARB staff made no changes based on the received comment. To the extent the commenter suggests that excluding ATBs from the Regulation would somehow create emissions impacts, CARB disagrees. ATBs have not been subject to the 2007 At-Berth Regulation. As explained at page IV-6 of the ISOR, ATBs are properly considered to be commercial harbor craft, and are regulated under CARB's CHC Regulation. Maintaining this existing distinction would not create any environmental impacts. CARB has explained the relevant factors in its decision to retain ATBs under the CHC Regulation, as well as the rational connection between those factors, the choice made, and the purposes of the enabling statute (i.e., reducing emissions as set forth in the California Health & Safety Code). See also Master Response 5 for further discussion and the Second 15-day Response to Comments to the EA comment 1-1 for environmental response.

**Comment:** "Crowley, however, has done its own analysis, which we offer here by way of an example of the environmental impact assessment that the Draft Environmental Analysis fails to include. Crowley analyzed the emissions profile of one of its 650 Class ATBs, the vision/650-10, based on actual operational conditions:

- (a) from or to 3 nm from the harbor entrance before or after maneuvering (Port Zone or "PZ");
- (b) during maneuvering near berth during arrival or departure; and
- (c) at berth.

Crowley's analysis showed the following for ATB emissions for one of its 650 Class ATBs, Vision/650-10, assuming compliance with current commercial harbor craft regulations:

	Mode	PM tons per trip	PM2.5 tons per trip	DPM tons per trip	NOx tons per trip	SOx tons per trip	CO2 e MT per trip
<i>Vision</i>	PZ	0.003	0.003	0.003	0.08	0.0001	6.0
<i>650-10</i>	PZ	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Maneuvering	0.001	0.001	0.001	0.04	0.0000	2.9
<i>650-10</i>	Maneuvering	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Berth	0.003	0.003	0.003	0.07	0.0001	5.3
<i>650-10</i>	Berth	0.013	0.012	0.013	0.34	0.0003	26.2
Power Plant							0.0
Total		0.020	0.019	0.020	0.53	0.0005	40.4

Crowley further analyzed the emissions that would result if the ATB were regulated under the At-Berth Rule and used the shore power option:

	Mode	PM tons per trip	PM2.5 tons per trip	DPM tons per trip	NOx tons per trip	SOx tons per trip	CO2 e MT per trip
<i>Vision</i>	PZ	0.003	0.003	0.003	0.08	0.0001	6.0
<i>650-10</i>	PZ	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Maneuvering	0.001	0.001	0.001	0.04	0.0000	2.9
<i>650-10</i>	Maneuvering	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Berth	0.000	0.000	0.000	0.01	0.0000	0.7
<i>650-10</i>	Berth	0.000	0.000	0.000	0.00	0.0000	0.0
Power Plant							11.3
Total		0.004	0.004	0.004	0.13	0.0001	20.9

Crowley also analyzed the emissions that would result if the ATB were regulated under the At-Berth Rule and employed the option of using Alternative Control Technology:

	Mode	PM tons per trip	PM2.5 tons per trip	DPM tons per trip	NOx tons per trip	SOx tons per trip	CO2 e MT per trip
<i>Vision</i>	PZ	0.003	0.003	0.003	0.08	0.0001	6.0
<i>650-10</i>	PZ	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Maneuvering	0.001	0.001	0.001	0.04	0.0000	2.9
<i>650-10</i>	Maneuvering	0.000	0.000	0.000	0.00	0.0000	0.0
<i>Vision</i>	Berth	0.000	0.000	0.000	0.01	0.0000	0.7
<i>650-10</i>	Berth	0.003	0.002	0.003	0.07	0.0003	26.2
Power Plant							0.0
Total		0.007	0.006	0.007	0.20	0.0004	35.8

This analysis, which measures the emissions from only one ATB on one trip to a California port, should leave no doubt that CARB’s policy decision to exclude ATBs from the At-Berth Rule has an environmental impact:

**Criteria pollutant emissions due to at-berth operations are clearly higher if the ATB exclusion policy is implemented than if CARB were to regulate ATB’s, like other ocean-going tank vessels, under the At-Berth Rule.**  
(BH-24.2)

**Agency Response (BH-24.2):** CARB staff made no changes based on the received comment. CARB disagrees with this comment. See response to comment L-13, on page 140 of *Responses to Comments on the Draft Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth in California* for further discussion.

## 11. GLOBAL ECONOMIC DOWNTURN (PANDEMIC)

**Comment:** “The estimates of benefits, emissions estimates, costs, cost-effectiveness, and health impacts, which presume the rate of growth contained in the ISOR, are now no longer valid. Even if growth were to immediately resume at levels assumed in the ISOR, cargo volumes and resulting activity will likely be millions of containers off from the cargo volume estimate.” (2-15-9.6) (EA 9-2)

**Comment:** “The Second 15-Day Changes assume no changes to projected emissions and economic activity in the face of the pandemic, relying instead on increasingly unrealistic and outdated assumptions about future business levels, emissions and potential environmental benefits of the amendments.” (2-15-15.4)

**Agency Response (2-15-9.6) and (2-15-15.4):** CARB staff made no changes based on the received comments. CARB understands that vessel activity has been impacted by the current ongoing economic downturn. See Master Response 6 for details about CARB’s response to the ongoing pandemic situation. Regardless of any temporary emissions reductions resulting from the current economic downturn, further reductions must be achieved from vessels at berth in order to reduce the health burdens on port communities as highlighted by CARB staff’s health analyses.

Regarding emissions estimates, because there is no precedent for such a situation and no level of certainty as to how it will impact California port activity, CARB has elected not to update the emissions inventory baseline emissions for the purposes of this rulemaking. See response to comment 15-75.2 for more details on how CARB intends to proceed with updating the emissions inventory in the coming years. See also Agency Response (BH-21.2).

**Comment:** “California law prohibits Staff from simply assuming away the most serious national economic calamity since the Great Depression. The Health and Safety Code authorizes CARB to adopt regulations only after finding that they are necessary, technologically feasible, and cost effective given the information made available to CARB Staff. Cal. Health & Safety Code §§ 39602.5(a), 43013(a). California Government Code Section 11346.3(c) further requires the Standardized Regulatory Impact Analysis (SRIA) in this rulemaking to conduct a full analysis of the potential of the Proposed Regulation to impact the creation or elimination of jobs, business, investment and innovation in the California economy, along with an accurate assessment of the health, safety and welfare benefits of the regulation. Cal. Gov. Code § 11346.3(c)(1).

...[I]t is CARB’s legal duty to accurately and fairly assess what impacts the coronavirus pandemic will have on future economic activity and vessel trips at California ports and terminals. Only then can CARB understand the true future emissions impacts of vessel traffic, and therefore, the potential impacts of the proposed measures on health and the actual cost-effectiveness of the Proposed Regulation.” (2-15-15.10) (EA 15-4)

**Agency Response (2-15-15.10):** CARB staff made no changes based on the received comment. CARB understands that vessel activity has been impacted by the ongoing economic downturn, and CARB staff has been closely tracking and analyzing vessel activity data since March 2020 in order to better assess the impacts to the shipping industry in California. In response to the impacts seen from the pandemic, CARB staff adjusted implementation dates for container, reefer, cruise, and ro-ro vessels, and will reassess economic conditions during the 2022 Interim Evaluation. See Master Response 6 and response to comment 15-B-3.2 for more details about CARB’s response to the ongoing pandemic situation, including why rulemaking efforts were not paused and how staff addressed the economic analysis and emissions inventory projections for the Regulation. See also Agency Response (BH-21.2).

**Comment:** “While we fully support additional at-berth controls, we continue to be concerned with the cost required to implement this rule, the aggressive compliance timelines for tankers and ro-ros, and the current lack of available and proven technologies to meet the required emission reductions, all moving forward at a time when the maritime industry is severely impacted by an ongoing trade war and the global pandemic.” (Final 16)

**Agency Response (Final 16):** CARB staff made no changes based on the received comment. CARB staff understands that there are concerns regarding costs, timelines for new vessel categories, and the status of available technologies to control tanker and ro-ro vessels. Despite the ongoing pandemic situation, CARB staff believes the implementation timelines remain attainable, and have designed the Regulation such that there is an Interim Evaluation in 2022 that will enable staff to assess both the economic impacts to the shipping industry and the progress being made on adapting and installing emissions control technologies for newly regulated vessel types. See Master Response 3 for a detailed discussion on timeline feasibility. CARB staff has also committed via Resolution 20-22, which was adopted by CARB’s Board at the August 27, 2020, public hearing, to consider the economic recovery of the shipping industry as part of the 2022 Interim Evaluation. If any new information is presented that might warrant a change in the regulation, CARB’s staff may recommend potential subsequent amendments for the Board’s consideration.

**Comment:** “Given the current economic disruption due to a global pandemic, the worst wildfire season on record, and strain on the energy grid due to heat waves, we would ask that the interim evaluation include language directing CARB staff to update and adjust the inventory based on the economic trends and data accumulated over the next two years, the inclusion of an economic analysis that utilizes third-party review of the economic analysis, and a review of the capacity of the grid to meet the demand of the expanded regulation. We are specifically concerned about how future heat events would be addressed.” (Final 53)

**Agency Response (Final 53):** CARB staff made no changes based on the received comment. See response to comments 17.1 and 15-75.2 for details on how CARB staff intends to handle updating of emissions inventory projections, and see response to comment BH-22.2 for a discussion on how the Regulation is designed to address future heat events. No changes to the Regulation are needed to address this commenter’s concerns.

**Comment:** “Staff Improperly Assume That the COVID-19 Pandemic Will Result in No Impacts to Tanker Emissions, Visits or Future Business Levels

[I]n its July 27 comments WSPA provided documented market evidence to Staff that the tanker industry has also been hit hard by the pandemic, and expects to continue suffering severe economic repercussions for years to come. Nevertheless, Staff have

been unwilling to extend to tankers the same relaxation in compliance schedules provided to every other vessel class in the Second 15-Day Changes.

...As WSPA explained in its July 27, 2020 comments, economic slowdowns over the next several years are likely to produce less vessel trips and lower vessel traffic, meaning that projected emissions will also be lower. If that is the case, anticipated health benefits of the Proposed Regulation will be less than Staff projected, and the Proposed Regulation itself is likely to be much less cost-effective. These are important impacts for Staff to consider, yet they have refused to accord them any weight. California law does not allow CARB Staff or the Board to simply ignore the massive impacts of an unprecedented worldwide pandemic and the largest economic collapse in a half-century because "outcomes are unknown." To do so would render Staff's projections of future vessel visits and economic impacts wildly inaccurate, understating potential economic impacts to regulated parties while overstating emissions reductions well above what the facts would indicate. CARB Staff have a legal duty to consider the unique impacts of the pandemic on its initial projections and to determine how those assumptions must be modified to account for the dramatic change in California's circumstances. Again, this Board must direct Staff to reevaluate the Proposed Regulation in light of this dramatic change in circumstances, or risk adopting a Proposed Regulation that is arbitrary and capricious and fails to comply with California law." (BH-21.2)

***Agency Response (BH-21.2):*** CARB staff made no changes based on the received comment. CARB staff disagrees with the commenter's statements that staff have not weighed the impacts of the pandemic on the shipping industry and the associated impacts to the projected emissions and health benefits. CARB staff adjusted implementation dates for container, reefer, and cruise vessels from 2021 to 2023 in response to the ongoing pandemic situation, and adjusted ro-ro vessels from 2024 to 2025 as well. Furthermore, the commenter seems to overlook that emissions reduction requirements for tankers begin in 2025 and 2027 (for Southern California and Northern California terminals, respectively). Historical visit information indicates that tanker vessel activity will likely return to previous levels within one to two years. Also, the Interim Evaluation in 2022 will enable staff to re-evaluate the economic conditions of the various shipping industry sectors and make recommendations regarding potential subsequent amendments to the implementation timelines based on updated conditions at that time. CARB disagrees that the Regulation is arbitrary and capricious; rather, it is based on the best economic projections available at the relevant times in this rulemaking. See Master Response 6 for further details about CARB's response to the ongoing pandemic situation.

Also, regardless of any temporary emissions reductions that are the result of the current economic downturn, further reductions must be achieved from vessels at berth in order to reduce the health burdens on port communities as highlighted by CARB staff's health analyses.

## 12. GENERAL GRIEVANCE

**Comment:** "CLIA's previous comments still apply regarding unresolved concerns with the proposed rule." (2-15-7.6)

**Comment:** "Previous Comments Continue to Be Unaddressed." (2-15-9.17)

**Comment:** "This coalition, again, renews its request that CARB staff review and respond to all substantive industry comments prior to Board consideration of the proposed regulation. Hundreds of pages of technical comments, data, and information have been provided to CARB during the entirety of this process. None of which has been agreed to, refuted, or rebutted. An iterative rulemaking process can only exist if CARB staff directly responds to the data submitted by stakeholders during the process, and the earlier in the process, the better the outcome for all." (2-15-5.16)

**Comment:** "The Port submitted seven letter with detailed questions and comments but didn't receive any written response until August 18, 2020; and those responses were limited to only a select few issues. The Port would appreciate timely [sic] response to all of its questions and comments, more in line with the type of response CARB is requiring Innovative Concept applicants to provide (i.e. public responses to all comments in 45 days)." (BH-26-1)

**Comment:** "The Port of Oakland wishes to suggest improvements to the engagement process, specifically responding to comments. The port has been highly involved. We submitted seven letters with an eighth today, but we haven't received responses to comments except for one letter, which doesn't meet for our standard of rigorous meaningful engagement. (Final 33)

**Agency Response (2-15-7.6), (2-15-9.17) (2-15-5.16), (BH-26-1), and (Final 33):** CARB staff made no changes based on the received comments. CARB staff disagrees with the commenter's position that staff have not participated in an iterative process. CARB staff had a robust public process that included over 250 conference calls, workgroups and one-on-one meetings with stakeholders, including the ports, to discuss data and information we received throughout the regulatory process. See ISOR Chapter XII and Appendix F for details on CARB staff's public process. CARB staff was responsive to all requests for meetings, and while staff was not able to respond in writing to every formal comment letter received during the informal rulemaking period, all answers to any comment letter submitted to CARB staff during the formal regulatory comment periods are included in this document as part of the FSOR, as required by the APA. As part of the APA process CARB must submit a summary of each comment made during the formal comment periods, regarding the specific adoption, amendment, or repeal proposed. CARB must then provide a response of how the proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change.

CARB staff greatly appreciates the time and energy spent by stakeholders to help make the Regulation favorable for both industry and the affected communities. The Regulation produced a large response from both industry and community members alike as can be seen in this FSOR during the formal rulemaking comment periods there were over 1000 comments. Although all comments are read by staff and considered, staff is unable to provide formal responses to all comments until the FSOR. The commenter can find all answers to their formally submitted letters in this document.

**Comment:** The commenter submitted several questions that they (Ports and Terminals) will need to assess prior to using a CAECS. The commenter asked multiple Engineering, Financial, Operations, and Safety questions. The commenter notes that these assessments will take “substantial expense and time” to comply with the Regulation.

Additional questions which remain:

- Can bonnet systems be powered by Tier IV diesel generators? Will they be required to capture carbon emissions?
- If bonnet systems have to operate in zero emissions mode, the Port will need to work with our electrical utility to upgrade the service to the Port. This electrical service upgrade is of the magnitude of having a projected cost of \$40-60 million and taking 4-6 years to complete.
- Are projects installing infrastructure for compliance with this rule ineligible for public grant funds?
- How will compliance for seasonal vessel calls be handled under the new regulation? If a seasonal produce line only visits California ports three months of the year, would they be eligible for vessel incident exemptions? (2-15-13.2)

**Agency Response (2-15-13.2):** CARB staff made no changes based on the received comment. CARB is not able to answer the appropriate engineering, financial, operational, and safety questions that the commenter presented. Each port and terminal is different and the solution that a port/terminal selects may be different or operate differently based on the specific needs of the various ports and terminals. In many cases, the terminal will need to conduct a feasibility study to determine the best course of action to take which will help when developing the terminal plan.

In regards to the additional questions which remain:

- 1) The bonnet systems can be powered by Tier IV diesel generators and the systems are required to be grid neutral - producing no more CO<sub>2</sub>e as

published in the latest eGRID summary table for state output emission rates.

- 2) CARB appreciates this information.
- 3) Installation of infrastructure to comply with this regulation may be ineligible to receive public funds because the reductions associated with infrastructure are a regulatory requirement.
- 4) Yes, if a seasonal produce line only visits California ports three months out of the year they would be eligible to use VIEs which would be calculated based on five percent of their previous year visits. The seasonal line would need to make at least 20 visits to generate a VIE. If the vessel is berthing for the first time, the vessel operator may request VIEs by December 1 based on five percent of their expected visits.

**Comment:** “This industry coalition remains concerned that the proposed rule as currently written and conceived cannot be successfully complied with even by vessels which are currently compliant with and have made required investments in shore power under the current regulation. Resolution of these concerns will only occur with concerted additional efforts to create a robust fleet-averaging construct or other new avenues for compliance prior to 2023.” (2-12-5.1)

**Agency Response (2-12.5.1):** CARB staff made no changes based on the received comment. CARB disagrees that vessels cannot successfully comply with the Regulation as written. Preserving the fleet averaging structure as is in the 2007 At-Berth Regulation would not allow for a shared responsibility which is critical to the success of the Regulation and protects fleets that have done everything they can to comply. Fleet averaging can potentially be used through the Innovative Concept compliance option in Section 93130.17 but places the compliance responsibility entirely on the vessels under the Innovative Concept. For further discussion on why a per visit approach was adopted rather than a fleet averaging approach from the 2007 At-Berth Regulation see response to comment 15-69.12.

**Comment:** “[C]oncerns remain regarding the feasibility and true cost-effectiveness of controlling tanker and Ro/Ro vessels...[I]t is imperative that CARB work with the impacted fleets to address outstanding concerns prior to commencement of the technical review period.” (2-15-5.2)

**Agency Response (2-15-5.2):** CARB staff made no changes based on the received comment. CARB agrees that it is imperative that CARB work with the impacted fleets. The Interim Evaluation will provide CARB staff the opportunity to assess the progress being made towards the adoption of existing control technologies for use with tanker and ro-ro vessels, as well as the progress of land-side infrastructure improvements needed to support emissions control technologies. Staff will use the outcome of the Interim Evaluation to make any necessary changes to compliance deadlines for these vessel categories

depending on the outcome of staff's findings at that time. In addition, as noted in Resolution 20-22, the Board directed staff to monitor the implementation of the Regulation for all regulated vessel types, including progress updates for infrastructure and vessel activity, and to report back to the Board with periodic updates, annually or as needed. If warranted, CARB staff will propose amendments to the Regulation for the Board's consideration.

CARB staff understands that there are some site specific technical and safety concerns that must be worked out if a tanker vessel opts to use a capture and control system to comply with the Regulation. Site-specific feasibility studies must be undertaken by the regulated entities themselves, as CARB staff do not have access to the information needed for each site location to perform this type of analysis. Compliance with the Regulation can also be achieved through use of an Innovative Concept project, for which staff do not anticipate a feasibility study being required.

**Comment:** "[R]ecommend that your Rule include a mechanism that allows for a timely reassessment of the regulation with greater flexibility in the event that economic conditions warrant it. For example, as regulatory requirements go into effect, the Ports suggest that "check-ins" or other types of assessment steps can occur that will allow the various stakeholders to be a part of the implementation process, and assure that the steps envisioned can be implemented." (2-15-10.1)

**Agency Response (2-15-10.1):** CARB staff made no changes based on the received comment. CARB staff agrees that a mechanism to reassess the Regulation with the current economic situation is valuable and thus, staff agrees that economic information should be considered with the Interim Evaluation. CARB committed in Resolution 20-22, as adopted by CARB's Board at the August 27, 2020, public hearing, to consider economic information for all vessel categories as part of the 2022 Interim Evaluation. If any new information is presented that might warrant an amendment to the Regulation, CARB's Board may ask staff to develop regulatory amendments for their consideration.

**Comment:** "The Second 15-Day Changes propose to extend the compliance start dates for container vessels, refrigerated cargo vessels, passenger vessels and roll-on roll-off ("ro-ro") vessels, but arbitrarily exclude tankers from any compliance schedule relief – based on an incorrect and unsupported claim that the tanker industry has "recovered" from the pandemic. The Second 15-Day Changes must be further revised to provide the lead time necessary for industry to recover from the nation's current severe economic recession and to conduct the feasibility studies necessary to ensure that new international safety standards are adequately considered, and that tankers are not put at unacceptable risk of explosion or other serious threats to safety." (2-15-15.1)

**Agency Response (2-15-15.1):** CARB staff made no changes based on the received comment. During the June 25, 2020, Board Hearing, CARB's Board made it clear to staff that accelerating the tanker implementation timelines (which were previously tentatively set far out in the future in 2027 and 2029) were important in order to reduce health burdens on port neighborhoods as well as helping South Coast achieve the reductions needed to meet federal ozone requirements in 2031. The Board also saw the importance of achieving emission reductions in Northern California port communities such as Richmond and Stockton as these ports were not included in the 2007 At-Berth Regulation.

See Master Response 3 in regards to the feasibility of implementation dates for tanker vessels and response to comment 15-69.14 for details on why CARB staff did not extend the timeline for tanker vessels. Publically available refinery input and production data from the CEC (available at: [https://ww2.energy.ca.gov/almanac/petroleum\\_data/fuels\\_watch/output.php](https://ww2.energy.ca.gov/almanac/petroleum_data/fuels_watch/output.php)), also shows improvements in the oil industry from June 2020 onward, which indicates to CARB staff that the tanker industry has not impacted as hard as other vessel categories during the ongoing economic downturn.

Separately, CARB staff agrees that it is imperative that international safety standards are followed during the feasibility studies conducted by the regulated entities themselves. In addition, the feasibility and safety information provided to CARB from the tanker industry will be reviewed and considered during the 2022 Interim Evaluation.

**Comment:** "The safety concerns associated with tankers – and the critical need to fully understand and account for them in any regulation impacting tankers – are further underlined in the new Sixth Edition of the International Safety Guide for Tankers and Terminals ("ISGOTT"), published in June 2020. See "International Safety Guide for Tankers and Terminals," International Chamber of Shipping, et al. (6th ed. 2020) (attached at Tab 4). The ISGOTT is "widely recognised as the definitive best practice guidance on tanker safety and pollution prevention" (ISGOTT, p. iii), and compliance with ISGOTT measures is mandated under several California statutes and regulations. See California Building Code (Title 24, C.C.R.), Ch. 31F (Marine Oil Terminal Engineering and Maintenance Standards ("MOTEMS") requiring marine oil terminals to meet various ISGOTT standards); 2 C.C.R. §§ 2340(c)(29), 2355(a) (State Lands Commission safety requirements for tanker operations to meet specified ISGOTT provisions). The latest ISGOTT now contains a new Chapter 8 with guidelines on due diligence steps that are to be taken before technologies not yet adopted in the tanker and terminal sector are applied to tankers. Among these diligence steps are directions to review a proposed technology's interface with the vessel's existing systems and processes, preparation of formal risk and impact assessment plans, a study of hazards presented by the new technology, evaluation of consistency with other industry and classification society standards, and analyses of tanker and terminal personnel safety. See ISGOTT, Ch. 8 (Tab 4). ISGOTT Chapter 8 highlights the critical

need to assess alternative and emerging technology to ensure that its introduction does not negatively impact tanker and marine oil terminal safety. These important ISGOTT guidelines reinforce the safety concerns that we have documented throughout this rulemaking process.

In adhering to the ISGOTT guidance, tanker operators also rely on direction, guidance and approvals for regulatory and standards compliance from classification societies like the American Bureau of Shipping (ABS), a “recognized organization” by the United States Coast Guard and International Maritime Organization (IMO), and member of the International Association of Classification Societies (IACS) with consultative status at the IMO.

...The record contains no indication that Staff have even reviewed the requirements of the ISGOTT or the ABS Guidance in preparing the Proposed Regulation, let alone evaluated whether the Proposed Regulation meets the due diligence and risk assessment requirements of the ISGOTT. Again, additional time should be provided in the compliance schedule for tankers, as it has for other classes of vessels, in order to allow Staff the time necessary to ensure that the Proposed Regulation takes the new ISGOTT guidelines and the ABS Guidance into consideration. These guidance materials also constitute new information that CARB must take into account in the analysis of hazard impacts in the Final Environmental Assessment for the Proposed Regulation.” (2-15-15.7) (EA 15-2) (EA 15-3)

**Agency Response (2-15-15.7):** CARB staff made no changes based on the received comment. CARB staff agrees that regulated entities must consider all safety guidelines that pertain to tanker vessels including the ISGOTT when developing or introducing any control technologies to comply with the Regulation to ensure that its use on the vessel does not negatively impact tanker or terminal safety. Specifically, Chapter 8, Section 8.3.2 of the ISGOTT, as provided by WSPA as an attachment to their second 15-day comment letter (submitted on July 27, 2020), states that “The tanker and terminal should complete an impact assessment before agreeing to use an alternative or emerging technology at the marine interface. This process should be documented and ensure that both parties have assessed and understood the risks of using the alternative or emerging technology.” Please refer to Agency Response 2-15-5.2 for more information on the Interim Evaluation and any feasibility studies that are conducted for tankers.

CARB staff also note that this commenter did not submit the whole referenced Chapter 8 of the ISGOTT (6th ed.) for CARB staff review. Because the ISGOTT (6th ed.) is currently only available for purchase for 385 British pounds, CARB has not been able to analyze its contents in detail. See *Responses to Comments on the Draft Environmental Analysis* comment 15-2 for additional discussion regarding the relevancy of the mentioned updates to the ISGOTT.

**Comment:** "We represent a broad base coalition of port community organizations in California and we object to the significant last minute and unacceptable changes to the Proposed Control Measure for Ocean-Going Vessels At Berth Rule. Many of the changes are delays in implementation or compliance which have significant impacts on public health, the environment and climate change. Hundreds of innocent residents and children will die prematurely and hospitalized with the new delays in implementation and compliance. This is an act of Environmental Racism.

CARB Staff has continuously failed to include 99% of all EJ Community recommendations, requests, information omissions, needed corrections and definitions that have been submitted in writing during the public comment periods. This is an act of Environmental Racism.

We request that you not approve the Proposed Control Measure for Ocean-Going Vessels At Berth Rule as presented by CARB Staff until the final At Berth Rule includes information corrections, information omissions, additional assessments information, recommendations and requests by the organization in these public comments. CARB Staff ignored 99% of all our concerns, document errors, information omissions, recommendations and requests." (2-15-12.1) (EA 12-1)

**Agency Response (2-15-12.1):** CARB staff made no changes based on the received comment. CARB staff understands and shares the desire to accelerate the emissions reductions from vessels at berth to reduce the health burdens. However, the implementation dates for container, reefer, and cruise vessels were adjusted from 2021 to 2023 and ro-ro vessels from 2024 to 2025 due to impacts to the industry as a result of the current ongoing economic situation. CARB staff does not anticipate a significant difference in emissions reductions achieved by the Regulation as a result of this change (see Attachment C to the Second Notice of Public Availability of Modified Text and Availability of Additional Documents and Information, available at:

<https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/2nd15dayattc.pdf>.

Although the compliance deadline was pushed back for the container, reefer, and cruise vessels from the original Proposed Regulation, the compliance date for tankers was moved up by two years which is significant since tankers represent the largest single category of emissions remaining unregulated at California terminals and communities near these terminals. The Regulation will also achieve much needed emission reductions in port communities that were not part of the 2007 At-Berth Regulation framework (e.g., northern California tanker terminals and Stockton).

In regards to CARB responding to the EJ communities concerns and comments, the APA contains the statutes governing the rulemaking process. As part of the APA process, in the FSOR, CARB must include a summary of each comment made during the formal comment periods regarding the specific adoption, amendment, or repeal proposed. CARB must provide a response of how the

proposed action has been changed to accommodate each objection or recommendation, or the reasons for making no change.

CARB staff greatly appreciates the time and energy spent by the EJ communities to help ensure the Regulation addresses their concerns. As discussed in Chapter XII of the ISOR, the rulemaking process for the Regulation began in late 2014. During the course of the rulemaking process, CARB staff conducted more than 150 meetings, phone calls, and site visits with members of impacted communities, environmental justice advocates, air districts, industry stakeholders (including vessel operators, ports, terminal operators, industry associations, and alternative technology operators), U.S. Coast Guard, CSLC, and other agencies. Meeting formats included public workshops, work group meetings, community meetings, and meetings with individual stakeholders. A wide range of both industry and community member stakeholders have helped shape this rulemaking, as evidenced in this FSOR. Stakeholders submitted over 1000 comments during the formal rulemaking comment periods. Although all comments are read by staff and considered, staff is unable to provide formal responses to all comments until the FSOR. The commenter can find all answers to their formally submitted letters in this document.

Finally, CARB staff disagrees that it ignored 99 percent of the commenter's concerns, that the changes made to the Regulation during this proceeding would result in any of the claimed harms, or that CARB has in any way engaged in "environmental racism", as the commenter puts it. These comments are unsupported allegations, and as such they require no further response.

**Comment:** "[T]he Port of Oakland has no feasible alternative compliance method at three out of four of its terminals (representing 83% of the Port's call volume). This means that carriers that might choose to rely on a barge-mounted bonnet system for compliance at the San Pedro Bay Ports will not have a compliance option in Oakland, where the only feasible compliance method is shore power." (2-15-11.1)

**Agency Response (2-15-11.1):** CARB staff made no changes based on the received comment. CARB disagrees that there are no potential alternative emissions control options for the Port of Oakland. See response to comment 17.5 for further discussion.

**Comment:** Request "Control Measure for Ocean-Going Vessels Include At-Berth, At-Ancor In Port and At-Ancor Outside Breakwater" (BH-23.3)

**Agency Response (BH-23.3):** CARB staff made no changes based on the received comment. Anchorage locations are not considered for control requirements, as there is typically little to no wharf infrastructure available to support emissions control equipment. Anchorage locations can be located off-shore around a mile to a mile and a half, and are subsequently subject to

harsher weather conditions, including higher wind speeds and wave heights than vessels at berth, which can make connecting to emissions control technologies difficult, if not impossible. However, vessels at berth and at anchorage must comply with existing opacity standards set forth in California's HSC section 41701 in California's regulated waters.

**Comment:** "We Want All Ports & Terminals To Have Specific Compliance Requirements In The Regulation. TIE's and VIE's are unacceptable and are only industry compliance delay tactics." (BH-23.6)

**Agency Response (BH-23.6):** CARB staff made no changes based on the received comment. CARB staff did not require all ports and terminals to reduce emissions as a requirement of the Regulation, but instead requires any terminals that receive 20 or more annual visits from a regulated vessel category to reduce emissions. Setting a 20 visit threshold includes the largest active container, reefer, and cruise, ro-ro, and tanker terminals in California, while omitting the smallest, most cost-prohibitive sources of at berth emissions. Where terminal vessel activity is lower than 20 visits, the cost effectiveness of installing emissions control equipment worsens, as there are fewer vessels calling at the terminal to use the equipment and to help recoup the costs of installing, operating, and maintaining the equipment. Additionally, staff developed the "once in, always in" concept to ensure terminals that meet the threshold, and have invested the money to build out shore power infrastructure, will still have control requirements and avoid having their investments rendered as stranded assets (see ISOR Pages IV-73 to 74).

CARB staff disagrees that TIE's and VIE's are industry compliance delay tactics. VIEs and TIEs are compliance options that can be used to address any situation where the operational needs of a terminal or vessel result in a vessel not being able to connect to an emissions control strategy as required during a visit. This compliance option recognizes the uncertainty that may surround vessel movements and cargo operations while a vessel is at berth, and reduces cost by eliminating the need for redundant emissions control systems.

**Comment:** "Finally, this rule is a critical step forward, but more work remains to be done. We urge CARB to work closely with community and environmental justice stakeholders in the rule's implementation. It will be critical to ensure that the rule leads to transparent and accurate reporting and effective enforcement mechanisms." (Final 13)

**Comment:** "I also want to underscore the importance of working with the local port communities in implementing this regulation, especially with the local 617 steering committees. This is going to be essential for the success of this program and really realizing the local health and air quality benefits." (Final 41)

**Comment:** “I urge CARB to work closely with our community members and environmental justice stakeholders in the rules implementation as it will be critical to ensure that this rule leads to transparent and accurate reporting and effective enforcement mechanisms.” (Final 48)

**Agency Response (Final 13), (Final 41), and (Final 48):** CARB staff made no changes based on the received comments. CARB staff agrees that engagement with the portside communities is very important and is necessary to ensure the Regulation is working as written. During the final hearing on August 27, 2020, CARB staff committed to engage with local community groups and AB 617 community steering committees including when considering Innovative Concept strategies for approval. CARB staff will also collaborate with portside AB 617 communities during the rule’s implementation to provide updates on the status and progress of the Regulation, hear concerns from community members, and take feedback on how the rule’s implementation could be improved. This collaboration with the portside communities will also provide information for the Interim Evaluation in 2022.

**Comment:** “We ask that CARB work with impacted stakeholders to ensure the safety, feasibility, and cost effectiveness of the control measures.” (Final 42)

**Agency Response (Final 42):** CARB staff made no changes based on the received comment. CARB staff understands the importance of working with impacted stakeholders to ensure the Regulation moves forward safely, feasibly, and cost effectively and commit to collaborate with the various stakeholders involved in the Regulation.

### 13. ENVIRONMENTAL ANALYSIS

All EA comments and responses to those comments are in the *Responses to Comments on the Draft Environmental Analysis Prepared for the Control Measure for Ocean-Going Vessels At Berth* and *Supplemental Responses to Comments on the Environmental Analysis* documents, both of which were approved by the Board on August 27, 2020. These documents are posted on CARB’s website at [https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/rtc.pdf](https://ww3.arb.ca.gov/regact/2019/ogvatberth2019 rtc.pdf) and <https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/supplementalrtc.pdf>, respectively.

## V. Peer Review

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including CARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. Here, CARB determined that the rulemaking did not contain a scientific basis or scientific portion subject to peer review, and thus no peer review as set forth in section 57004 needed to be performed.

The Regulation requires vessel and terminal/port operators to reduce OGV auxiliary engine emissions while at berth and report visit information. Requirements to reduce OGV emissions, report vessel visit information along with technologies used, and other requirements of the At Berth Regulation do not establish “a regulatory level, standard, or other requirement for the protection of public health or the environment,” such as an ambient air quality standard or toxic exposure level. As such, it does not have a “scientific basis” or “scientific portions” that form the foundations of a regulatory standard or level.

The scientific studies and assessments used to analyze the potential environmental impacts of these Regulations, such as the findings that diesel particulate is a toxic air contaminant and that GHGs contribute to climate change, were developed previously and subject to public review.

## **APPENDICES**

APPENDIX 1: Comments Received During 45-Day Comment Period

APPENDIX 2: Comments Received at the Board Hearing held on December 5, 2019

APPENDIX 3: Comments Received During the First 15-day Comment Period

APPENDIX 4: Written Comments Received During the June 25, 2020, Board Hearing

APPENDIX 5: Oral Comments Received During the June 25, 2020, Board Hearing

APPENDIX 6: Comments Received During the Second 15-day Comment Period

APPENDIX 7: Written Comments Received During August 27, 2020, Board Hearing

APPENDIX 8: Oral Comments Received During the August 27, 2020, Board Hearing