CALIFORNIA
AIR RESOURCES BOARD

Proposed Heavy-Duty Inspection and Maintenance Regulation

Board Hearing
December 9, 2021

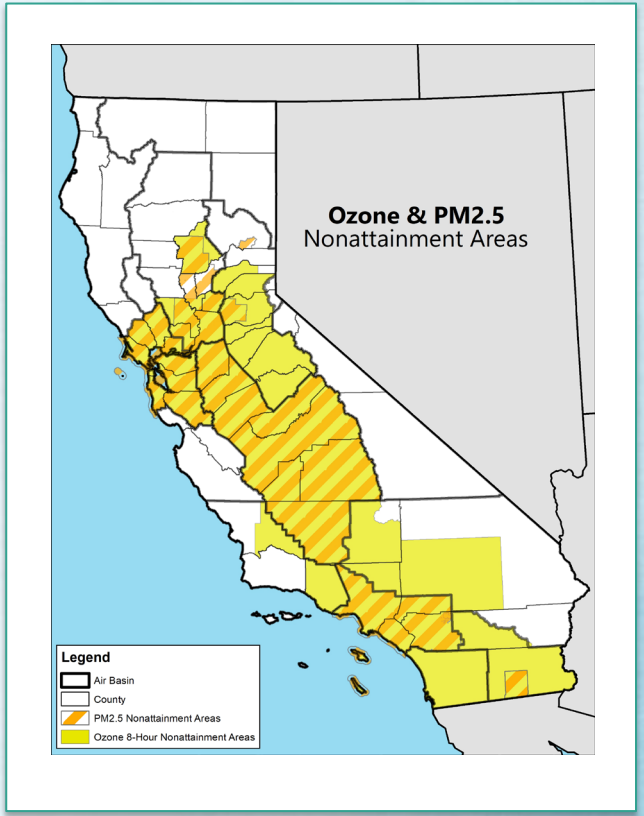
Presentation Outline

- Background
- CARB's Existing Heavy-Duty Inspection Programs and Senate Bill 210
- Staff Proposal
- Benefits and Costs
- 45-Day Comments and Proposed 15-Day Change
- Staff Recommendation

CARB

California's Air Quality Challenges

- ~70% of Californians still breathe unhealthful air
- Key challenges:
  - Ozone and PM 2.5: San Joaquin Valley and South Coast
  - Equitable benefits for disadvantaged communities
- HD trucks remain one of the largest emissions contributors in the state
  - 52% of NOx from on-road sources
  - 54% of PM from on-road sources



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HD I/M is Critical for SIP Attainment

- State Implementation Plan (SIP) statewide strategy: largest near-term NOx reduction measure
  - Largest NOx emission reduction measure since 2008 Truck and Bus Regulation
- San Joaquin Valley region: 6.8 tpd NOx reduction from HD I/M included in 2024 SIP commitment
- South Coast region: 60% NOx reduction beyond current programs by 2031

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CARB's Heavy-Duty Vehicle Programs

Advanced Clean Technologies	• Advanced technology demos • Advanced technology regulations • Financial incentive and loan programs
Manufacturer Engine & Vehicle Requirements	• New engine standards and certification • On-board diagnostics (OBD) • Warranty and in-use compliance
In-Use Truck Rules	• Exhaust retrofits • Accelerated vehicle turnover
Vehicle Inspection Programs	• Heavy-Duty Vehicle Inspection Program (HDVIP) • Periodic Smoke Inspection Program (PSIP)

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CARB's Existing Inspection Programs

- HDVIP: Heavy-Duty Vehicle Inspection Program
  - Roadside inspections
- PSIP: Periodic Smoke Inspection Program
  - Annual self-testing for California fleets of 2+ vehicles
- 5% opacity limit for vehicles with diesel particulate filters (DPFs)
- Existing inspection programs inadequate for monitoring modern diesel engines

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Senate Bill 210

- 2019: Senate Bill (SB) 210 authored by Senator and Board Member Leyva
- Directs CARB to develop and implement a new, comprehensive HD I/M program
  - Target malfunctioning vehicles with high emissions
  - Require all vehicles operating in California to comply
  - Link HD I/M compliance to California DMV registration
  - Maintain compliance certificate
  - Authorize CHP to enforce HD I/M requirements
  - Assess compliance fees to support program administration

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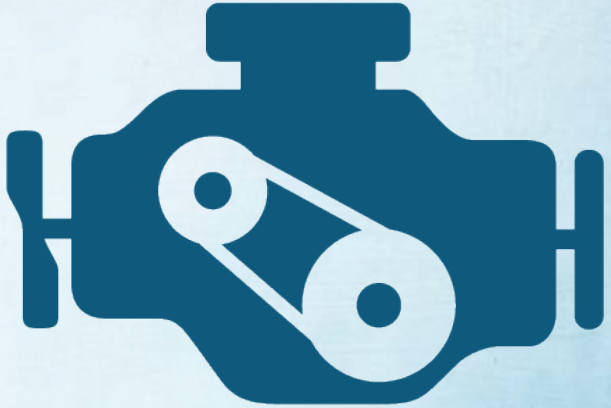
HD I/M Purpose

- Revamp existing inspection programs
- Ensure emissions control systems are functioning properly
- Ensure quick repair of malfunctioning parts
- Ensure high compliance rates and a level playing field



Major HD I/M Program Elements

Enhancing Identification & Repair of Malfunctioning Parts

- Expanded applicability to all fleets, including owner-operators
- Revamped compliance tests (On-Board Diagnostics)
- More frequent periodic testing
- Remote Emissions Monitoring Devices (REMD)

Improved Enforcement Tools

- Compliance certificate and link to DMV registration
- Tester training and referee network
- Freight contractor/ facility requirements
- Improved coordination with other agencies

Vehicle Applicability

- Non-gasoline HDVs operating in California > 14,000 lbs
- In-state, out-of-state/country
- Includes owner-operators
- Limited exemptions in SB 210
- Gasoline HDVs > 14,000 lbs in BAR's Smog Check program

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Revamped Vehicle Compliance Tests for HD I/M

OBD-equipped vehicles:

- OBD data scan
- Identifies emissions-related component malfunctions
- Identifies NOx-related malfunctions

Non-OBD vehicles:

- Smoke opacity test procedure (SAE J1667)
- Vehicle emissions control equipment inspection

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What is OBD?

- First established by CARB in 1994 as inspection and maintenance tool for light- and medium-duty vehicles
- Monitors the performance of all emissions-related components for malfunctions
- Monitors the emissions systems in-use for the life of the vehicle/engine

Compliance Testing for OBD Vehicles

- Applicable to vehicles with 2013 and newer model year engines
- Testing technology options designed for minimal disruptions:
  - Telematics service providers
    - Original equipment manufacturers or third-parties
    - Utilization of existing equipment on the vehicle
    - "Set it and forget it"
  - Hand-held OBD data scan tools

Periodic Vehicle Compliance Testing

- Frequency:
  - 2x per year compliance testing for most vehicles
    - Cost effective while meeting program emissions reduction needs
  - 1x per year for California-registered motor homes and agricultural vehicles
- Compliance deadlines based on:
  - DMV registration date for California-registered vehicles
  - Last number of VIN for out-of-state registered vehicles
- Submit passing compliance test within 90 days of deadline

Remote Emissions Monitoring Devices

- Identify high-emitting vehicles and pursue follow-up compliance testing
  - High emitters conduct OBD or opacity testing and repairs
- Mobile and stationary platforms
- Benefits
  - Out-of-state vehicle enforcement
  - Identifying regions of non-compliance

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Ensuring Enforceable Requirements

- Compliance certificates linked to DMV registration
- Improve accountability and accuracy of reporting
- Freight contractor/facility requirements
- Enhanced field inspection coordination

Compliance Certificate Requirements

- All vehicles must have a valid compliance certificate to legally operate in California
- Criteria to obtain a compliance certificate:
  - Compliant with testing requirements
  - No outstanding enforcement actions
  - Pay annual compliance fee
- DMV registration block placed on California-based vehicles that have not demonstrated compliance
- CHP checking for compliance certificates for in-state and out-of-state vehicles

Improving Accountability and Accuracy of Reporting

Tester Training

- Training required to perform HD I/M compliance tests
- Online training course on HD I/M requirements and testing

Referee Network

- Third-party inspection and verification
- Flexibility to handle novel compliance scenarios

Parts Unavailability Compliance Time Extension

- Compliance extension request process when emissions control components for needed repairs are unavailable

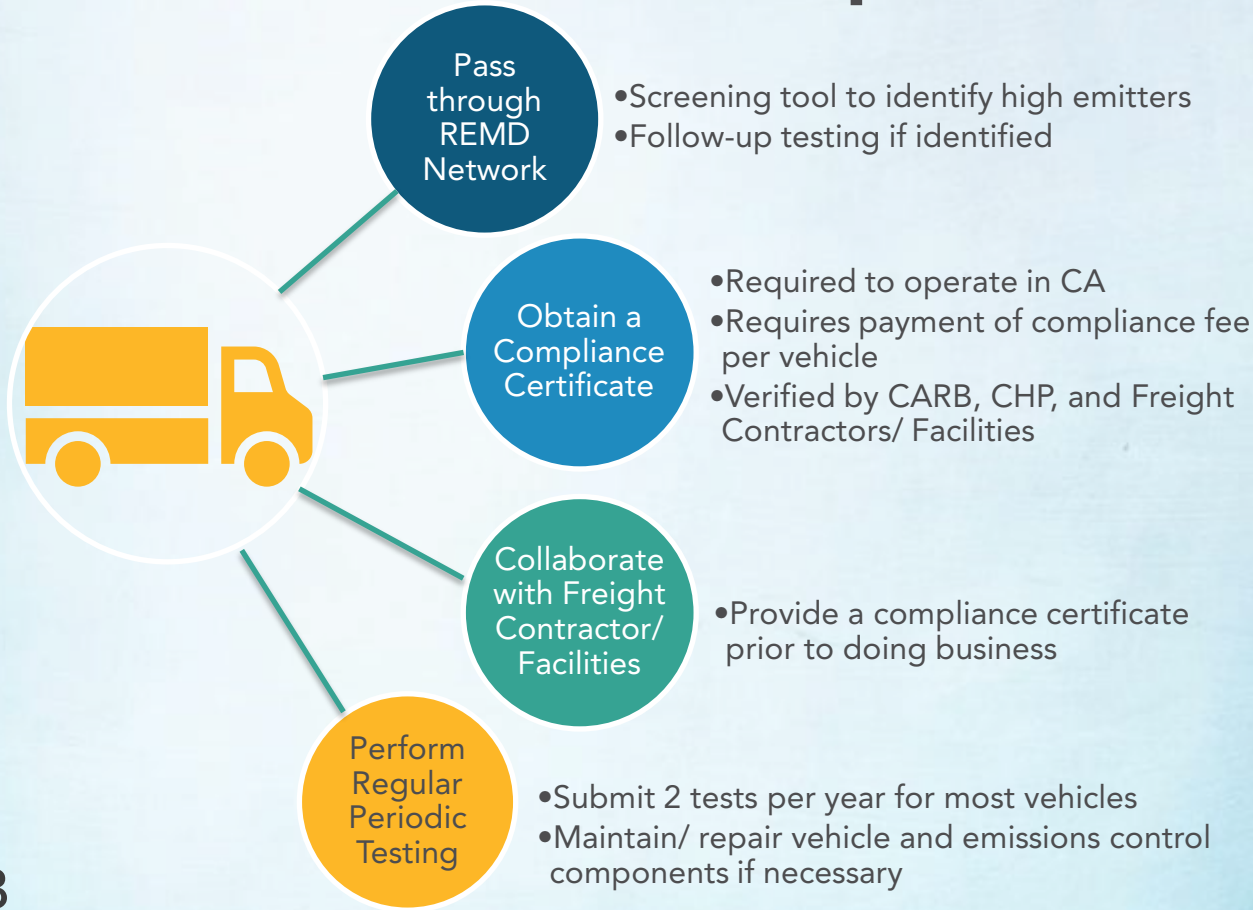
Freight Contractors and Applicable Freight Facilities

- Compliance certificate verification and recordkeeping requirements
  - Freight Contractors
  - Brokers
  - Applicable Freight Facilities
- Consistent with existing requirements
- Encourages compliance

Close Coordination with other State Agencies

- California Highway Patrol
  - Ensure vehicles have compliance certificate
  - Perform inspections
- DMV registration tied to compliance
- Establishing inspection locations with CDFA, Caltrans, and CHP

Truck Owner Perspective



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HD I/M Implementation: Proposed Phase-In

- First Phase – Begins January 1, 2023
  - High-emitter vehicle screening and follow up compliance testing
- Second Phase – Begins no earlier than July 1, 2023*
  - Link to California DMV registration
  - Compliance certificate enforcement
  - Freight contractor/facility verifications start
- Third Phase (Full Implementation) – Begins no earlier than January 1, 2024*
  - Periodic compliance testing

*These dates are estimates and may shift based on procurement, database implementation, etc.

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Benefits in Disadvantaged Communities

- Mobile remote emissions monitoring devices to be deployed in communities where air quality attainment goals are most urgent
- Opportunities to establish locations for use of free testing devices to increase compliance rates in disadvantaged communities

Estimated Emission Benefits (tons/day)

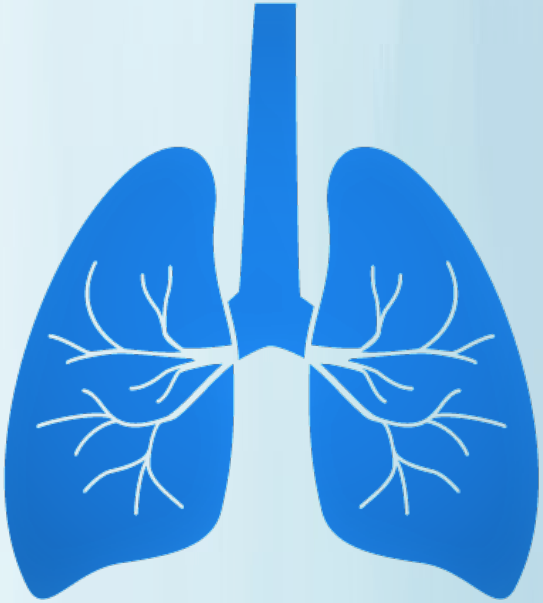
- Statewide reductions in key SIP years:

Year	NOx (tons/day)	Diesel PM (tons/day)
2023	6.4	0.07
2031	71.6	0.66
2037	81.3	0.70

- Largest NOx emission reduction measure since the Board first approved the Truck and Bus Regulation in 2008

Statewide Lifetime Health Benefits

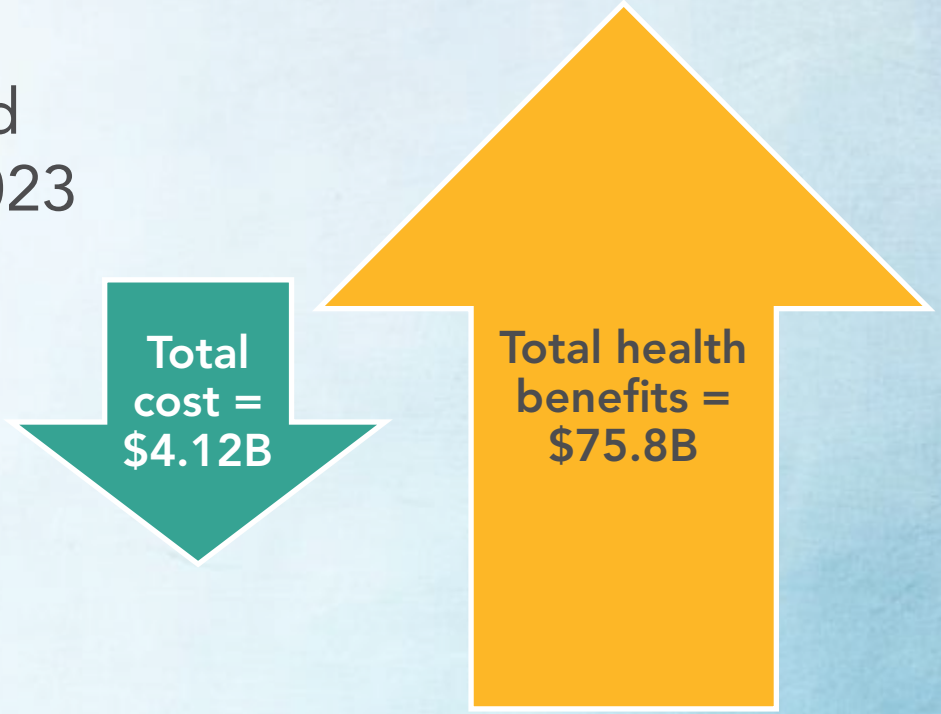
Outcome	Avoided Incidents (2023-2050)
Cardiopulmonary Mortality	7,500
Cardiovascular Hospitalizations	1,120
Respiratory Illness Hospitalizations	1,400
Emergency Room Visits	3,500



- Lifetime HD I/M benefits value (2020$): $75.8 billion

Cost of the Proposed Regulation (2020$)

- HD I/M regulation estimated to cost $4.12 billion from 2023 through 2050
  - $1.84/pound of NOx reduced
  - $62.3/pound of PM reduced
- Health benefits valuation of $75.8 billion is > 18 times expected costs



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45-Day Comment Period and Proposed 15-Day Change

- Nine comment letters submitted
- Main comments
  - Request for increasing periodic testing frequency to four times per year
  - Request to extend parts unavailability compliance extension to all fleets
- Proposed 15-day change
  - Revised parts unavailability compliance extension to allow access for all fleets

Staff Recommendation

- Approve Resolution 21-29 with proposed 15-day change
- Continued staff outreach and engagement to help foster a successful program

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