

ARB Staff Report

Status Report on the State Strategy for California's 2007 State Implementation Plan (SIP)

and

Proposed Revision to the SIP Reflecting Implementation of the 2007 State Strategy

Release Date: March 24, 2009

Hearing Date: April 23-24, 2009

Highlights

- In 2007 and 2008, the Air Resources Board (ARB or Board) adopted rules for ten measures that were identified in the 2007 State Strategy. In total, this represents 11 separate rulemakings.
- ARB has also adopted three rules that will achieve ozone and fine particulate matter (PM_{2.5}) precursor reductions that were not identified as specific measures at the time the 2007 State Strategy was adopted.
- California now has in place programs and regulations that will achieve 95 percent of the reductions in oxides of nitrogen (NO_x) needed to meet the PM_{2.5} standard in the San Joaquin Valley and 87 percent of the reductions needed for PM_{2.5} attainment in the South Coast.
- California has achieved over 93 percent of the reductions needed from near-term measures for ozone attainment in the San Joaquin Valley and 90 percent of the reductions needed in the South Coast.

Table of Contents

Foreword	v
Part One: Status Report	
Status of Implementation	1
Recent ARB Rulemakings -- 2007 and 2008	4
Emission Reductions from Recently Adopted ARB Rules	4
Staff Reports for Recently Adopted ARB Rules	8
Analysis of Environmental Impacts	10
Part Two: Technical Revision to the 2007 State Strategy	
U.S. EPA's Approval Criteria for SIPs that Rely on Enforceable Commitments to Achieve Emission Reductions	11
State Implementation Plan Commitments	12
Commitment to Reduce Emissions	20
Commitment to Propose Defined New SIP Measures	22
Commitments for Remaining New SIP Measures	24
Commitment to Reduce Emissions via Long-Term Strategy	25
Withdrawal of Chapter 4	27

Foreword

The Air Resources Board (ARB or Board) adopted the 2007 State Strategy in September 2007 as a revision to the California State Implementation Plan (SIP). Since then, three major things have occurred. First, ARB has adopted comprehensive measures to implement the 2007 State Strategy. Second, in December 2008, ARB adopted the Scoping Plan mandated by AB 32, the California Global Warming Solutions Act of 2006. Actions outlined in the Scoping Plan will help reduce ozone and particulate pollution over the ozone attainment timeline of the SIP. Third, the nature of our national and State economies is shifting, and as a result, ARB expects California's economy to be greener in the future.

California's SIP relies on advanced technologies to be developed between now and 2023 to achieve the last increment of emission reductions needed for ozone attainment. With the State's focus on climate change and the completion of the Scoping Plan, there is now an opportunity to speed progress by linking our SIP efforts with our climate change efforts. In particular, ARB staff is working to align the SIP's new technology needs with the State's actions to reduce greenhouse gases. California's actions to reduce greenhouse gas emissions will help transition the State to new technologies, improved energy efficiency across the economy, and better land use patterns that are also necessary to meet air quality standards and other public health goals. The additional benefits of these actions are significant and will increase with further reductions in fossil fuel combustion.

The 2007 State Strategy was based on the best assumptions about California's future available at the time, assumptions about the nature of economic growth, the availability of incentive funds, land use and transportation patterns, technology advancement, and more. All of these factors continue to change. Responding to these changes is part of our ongoing evaluation of SIP implementation. Over the next years, as ARB completes implementation of the SIP, staff will be looking at these changes and their implications to the State's air quality program. Frequent updates to the SIP will be needed to incorporate new data into the SIP's technical foundation and to map out the next round of emission reduction measures.

Part One: Status Report Status of Implementation

In September 2007, ARB adopted the 2007 State Strategy for the California SIP. In doing so, the Board set out how the State will achieve the needed emission reductions from cars, trucks, locomotives, consumer products, and more to meet health-based federal air quality standards. This report documents that progress in terms of actions taken by ARB and emission reductions achieved in implementing the SIP.

ARB is on track in implementing the 2007 State Strategy. In 2007 and 2008, ARB adopted 14 pollution-reducing regulations to implement the SIP. Eleven of these regulations implement 10 of the new measures identified in the 2007 State Strategy. Three additional measures were adopted that were not envisioned in the 2007 State Strategy but will help California meet the commitments in the 2007 State Strategy.

The most significant of the rules adopted to implement the 2007 State Strategy is the cleaner in-use heavy-duty diesel truck rule adopted in December 2008. This rule represents a multi-year effort and is our most aggressive undertaking yet to turn over the legacy fleet of engines and replace them with the cleanest technology available. It pushes the cleanup of diesel engines beyond what has ever been done before in the country.

The in-use truck rule will accelerate the introduction of newer, cleaner truck and bus engines in California – by 2023 all of the heavy-duty trucks and buses in California will be 2010 model year or newer (the cleanest available). The chart below illustrates the accelerated phase-in of newer, cleaner trucks to the entire California fleet.

**Population by Model Year
Heavy-duty Trucks and Buses in California**

All	Pre-2007	2007-09	2010 and newer
2014	23%	22%	55%
2020	5%	9%	87%
2023	0%	0%	100%

The truck measure in the 2007 State Strategy envisioned modernizing truck fleets operating in California to the equivalent of the cleanest adopted new engine (2010) standards. The adopted regulation meets that goal at the pace necessary to meet all the SIP target dates. The adopted regulation meets or exceeds the combined NOx and PM2.5 SIP fleet rule targets in both the South Coast and San Joaquin Valley for all years. In 2014, in the South Coast, the SIP target is met with slightly more PM2.5 reductions and slightly less NOx than expected. The PM2.5 modeling used in the South Coast Air District SIP shows that direct PM2.5 emission reductions are relatively more effective in reducing ambient particulate levels than are NOx reductions. The rule achieves 60 tons per day of NOx in 2014 plus the equivalent of six more tons per day of NOx that come from extra PM2.5 reductions.

The table below summarizes the progress made from 2002 emission levels (the baseline for the SIP inventory) for NOx reductions, the key pollutant that must be reduced for both PM2.5 and ozone attainment. It represents recent rules adopted at the state level and, for the South Coast in 2014, recent rules adopted at the local level. The majority of the reductions achieved to date have come from statewide mobile source strategies.

With its actions since adopting the State Strategy in September 2007, California now has in place programs and regulations that will achieve 95 percent of the NOx reductions needed to meet the PM2.5 standard in the San Joaquin Valley and 87 percent of the reductions needed for PM2.5 attainment in the South Coast. California has also achieved 93 percent of the reductions needed from near-term measures for ozone attainment in the San Joaquin Valley and 90 percent of the reductions needed in the South Coast. Additional reductions are still needed from long-term measures. These reductions are not included in the following table.

NOx Reductions for 2014 PM2.5 Attainment (starting from 2002* emission levels)			
	Needed (tpd)	Achieved (tpd)	Percent Progress
San Joaquin*	284 *	269 *	95% *
South Coast	641	560	87%
NOx Near-term Reductions for 2023 Ozone Attainment (starting from 2002 emission levels)			
San Joaquin	402	375	93%
South Coast	724	653	90%

* San Joaquin Valley 2014 calculations start from 2005 emission levels rather than 2002 levels.

Note: The percent progress numbers include reductions from the current program and recently adopted measures.

In addition to reporting on the status of ARB's efforts to implement the 2007 State Strategy, this report includes proposed technical amendments to the SIP that the U.S. Environmental Protection Agency (U.S. EPA) has asked ARB to make to aid U.S. EPA's approval of the SIP. The amendments account for reductions achieved since adoption of the 2007 State Strategy, clarify ARB's legal commitments in light of U.S. EPA's approval criteria, and extend the description of the long-term strategy for identifying future technologies to achieve the last increment of reductions. These amendments do not change the emission reductions in tons per day of NOx, reactive organic gases (ROG), oxides of sulfur (SOx), and direct PM2.5 that the Board committed to achieve by specific years when it adopted the 2007 State Strategy.

The amendments also include the commitment for emission reductions in the Sacramento area that the Board will consider at its March 2009 meeting along with

approval of the SIP for the Sacramento area. The reductions in Sacramento from the statewide measures in the 2007 State Strategy had not been quantified at the time the 2007 State Strategy was adopted and so are not reflected in the 2007 State Strategy. For clarity, staff is now proposing to reflect this commitment within the State Strategy.

ARB is also implementing its *2006 Emission Reduction Plan for Ports and Goods Movement*. This plan outlines strategies to reverse the growth in goods movement-related emissions and reduce risk from exposure to diesel particulate emissions. Most of the strategies in the plan are also measures in the 2007 State Strategy and the regulations adopted in 2007 and 2008 that reduce PM2.5 emissions implement both of these plans.

In addition to adopting regulations that reduce ozone- and PM2.5-forming emissions, ARB has been busy developing a scoping plan that outlines how California will meet its aggressive greenhouse gas emission reduction goals. ARB adopted the Scoping Plan in December 2008. While the Scoping Plan targets climate change emissions, many of the measures in the Scoping Plan will achieve ozone and PM2.5 co-benefits. Staff is in the process of calculating those regional co-benefits for years critical to the SIP. Staff will include those estimates in future status reports.

Recent ARB Rulemakings--2007 and 2008

The following table summarizes the 10 measures that were identified in the 2007 State Strategy for which ARB has adopted implementing rules. In total, this represents 11 separate rulemakings. The column labeled *Schedule Adoption Year* was the year ARB targeted in the SIP for action. The column next to that is the year that the Board adopted the implementing rule.

Recently Adopted Proposed New SIP Measures	Scheduled Adoption Year	Date Adopted by ARB
Cleaner In-Use Off-Road Equipment	2007	July 2007
Modifications to Reformulated Gasoline Program – Phase 3		June 2007
Cleaner Main Ship Fuel		July 2008
Clean Up Existing Harbor Craft		November 2007
Enhanced Vapor Recovery for Above Ground Storage Tanks ^(a)		June 2007
Cleaner In-Use Heavy-Duty Trucks	2008	December 2008
Port Truck Modernization		December 2007/ December 2008
Ship Auxiliary Engines (Cold Ironing)		December 2007
Consumer Products Program I		June 2008 and November 2008
Additional Evaporative Emission Standards [partial] – Portable Outboard Marine Tanks ^(a)	2009-2010	Partial in September 2008

^(a) While we committed to adopting these measures in the 2007 State Strategy, the emissions from these sources were not included in the inventory baseline and therefore the reductions are not shown in the emission reduction tables to follow.

ARB has also adopted the three rules in the following table that will achieve ozone and PM2.5 precursor reductions that were not identified as specific measures at the time the 2007 State Strategy was adopted. Although not called out in the SIP, these rules will help clean the air and ARB will credit any reductions achieved toward fulfillment of ARB's commitment to reduce emissions by specified amounts in specific years.

Additional Emission Reduction Strategies Adopted	Date Adopted by ARB
Light-duty Vehicle Catalyst Replacement	October 2007
Greenhouse Gas Emissions from Heavy-duty Vehicles	December 2008
Large Spark Ignition Engines > 1 L, Rule Amendment	November 2008

Emission Reductions from Recently Adopted ARB Rules

The charts on the following pages show the emission reductions achieved from measures recently adopted by ARB.

Emission Reductions from Recently Adopted (2007-2008) SIP Measures (tons per day)								
South Coast								
	2014				2020		2023	
	NOx	ROG	Direct PM2.5	SOx	NOx	ROG	NOx	ROG
Proposed New Measures								
Passenger Vehicles	2.0	8.5	--	--	1.4	6.2	1.1	4.7
Smog Check Improvements (BAR) [partial]	2.0	4.1	NYQ	--	1.4	3.2	1.1	2.2
Modifications to Reformulated Gasoline Program	--	4.4	--	--	--	3.0	--	2.5
Heavy-Duty Trucks	59.7	5.0	3.5	--	27.3	2.1	22.4	1.7
Cleaner In-Use Heavy-Duty Trucks	59.7	5.0	3.5	--	27.3	2.1	22.4	1.7
Goods Movement Sources	29.1	0.1	2.6	17.4	37.2	0.0	42.1	0.0
Ship Auxiliary Engine Cold Ironing & Clean Technology	25.4	0.1	0.5	0.3	34.1	0.0	39.9	0.0
Cleaner Main Ship Engines and Fuel [fuel portion only]	1.3	--	1.9	17.0	1.6	--	1.8	--
Port Truck Modernization (reductions included in Heavy-Duty Trucks)	--	--	--	--	--	--	--	--
Cleaner Line-Haul Locomotives	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ
Clean Up Existing Harbor Craft	2.4	0.1	0.1	--	1.4	--	0.4	--
Off-Road Equipment	10.5	2.7	2.6	--	18.7	2.9	13.9	1.9
Cleaner In-Use Off-Road Equipment (>25hp) ^(a)	10.5	2.7	2.6	--	18.7	2.9	13.9	1.9
Areawide Sources	--	1.8	--	--	--	2.5	--	2.5
Consumer Products Program [partial]	--	1.8	--	--	--	2.5	--	2.5
Emission Reductions from Recently Adopted New Measures	101.3	18.1	8.7	17.4	84.6	13.7	79.5	10.8

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair.

^(a) Benefits from rule as adopted by ARB. Does not reflect February 2009 budget agreement impacts.

Emission Reductions from Recently Adopted (2007-2008) SIP Measures (tons per day)									
San Joaquin Valley									
	2014				2017	2020		2023	
	NOx	ROG	Direct PM2.5	SOx	NOx	NOx	ROG	NOx	ROG
Proposed New Measures									
Passenger Vehicles	0	3.7	0	--	0	0	2.2	0	1.7
Smog Check Improvements (BAR) [partial]	0.0	0.8	0.0	--	0.0	0.0	0.6	0.0	0.4
Modifications to Reformulated Gasoline Program	--	2.9	--	--	0.0	0.0	1.6	0.0	1.3
Heavy-Duty Trucks	65.6	4.3	4.3	--	48.8	28.7	1.6	22.8	1.1
Cleaner In-Use Heavy-Duty Trucks	65.6	4.3	4.3	--	48.8	28.7	1.6	22.8	1.1
Goods Movement Sources	0.0	0.0	0.0	--	0.1	0.1	0.0	0.0	0.0
Cleaner Line-Haul Locomotives	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ	NYQ
Clean Up Existing Harbor Craft	0.0	0.0	0.0	--	0.1	0.1	0.0	0.0	0.0
Off-Road Equipment	3.7	0.9	0.8	--	5.4	7.0	1.0	5.4	0.6
Cleaner In-Use Off-Road Equipment (>25hp) ^(a)	3.7	0.9	0.8	--	5.4	7.0	1.0	5.4	0.6
Areawide Sources	--	2.0	--	--	--	--	2.2	--	2.2
Consumer Products Program [partial]	--	0.5	--	--	--	--	0.7	--	0.7
Pesticides: DPR 2008 Pesticide Plan	--	1.5	--	--	--	--	1.5	--	1.5
Emission Reductions from Recently Adopted New Measures	69.3	10.9	5.1	--	54.3	35.8	7.0	28.3	5.6

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Department of Pesticide regulation
Emission reductions from individual measures may not add to total due to rounding.

^(a) Benefits from rule as adopted by ARB. Does not reflect February 2009 budget agreement impacts.

Emission Reductions from Recently Adopted (2007-2008) New SIP Measures (tons per day) Sacramento		
	2018	
Proposed New Measures	NOx	ROG
Passenger Vehicles	0.0	1.6
Smog Check Improvements (BAR) [partial]	0.0	0.5
Modifications to Reformulated Gasoline Program	--	1.1
Heavy-Duty Trucks	9.5	0.8
Cleaner In-Use Heavy-Duty Trucks	9.5	0.8
Goods Movement Sources	0.3	0.0
Clean Up Existing Harbor Craft	0.3	0.0
Off-Road Equipment	1.9	0.4
Cleaner In-Use Off-Road Equipment (>25hp) ^(a)	1.9	0.4
Areawide Sources	--	0.3
Consumer Products Program [partial]	--	0.3
Emission Reductions from Recently Adopted New Measures	11.7	3.1

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair.

(a) Benefits from rule as adopted by ARB. Does not reflect February 2009 budget agreement impacts.

Staff Reports for Recently Adopted ARB Rules

For each of the rulemakings discussed in this report, ARB staff has developed and published extensive documentation. This documentation includes formal staff reports and the materials required for rule adoption under the Administrative Procedures Act, as well as factsheets and workshop presentations. Altogether, this information describes in detail the rule structure as well as the method, data, and results of the emission reduction benefit calculations. Below are links to this detailed information.

Measures adopted in 2007

Regulation for In-Use Off-Road Diesel Vehicles

<http://www.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm>

Proposed 2007 Amendments to Phase 3 California Reformulated Gasoline Regulations

<http://www.arb.ca.gov/regact/2007/carfg07/carfg07.htm>

Regulations to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port

<http://www.arb.ca.gov/regact/2007/shorepwr07/shorepwr07.htm>

Proposed Regulation for Commercial Harbor Craft

<http://www.arb.ca.gov/regact/2007/chc07/chc07.htm>

Adoption of Regulations for the Certification and Testing of Gasoline Vapor Recovery Systems Using Aboveground Storage Tanks

<http://www.arb.ca.gov/regact/2007/ast07/ast07.htm>

Amendments to Regulations Regarding New Aftermarket and Used Catalytic Converters Offered for Sale and Use in California

<http://www.arb.ca.gov/regact/2007/amcat07/amcat07.htm>

Measures adopted in 2008

Regulation to Reduce Emissions from In-Use Diesel Vehicles and Equipment, Vehicle Exhaust Emissions Standards and Test Procedures, and Commercial Motor Vehicle Idling <http://www.arb.ca.gov/regact/2008/truckbus08/truckbus08.htm>

Regulation to Reduce Greenhouse Gas Emissions from Heavy-duty Vehicles

<http://www.arb.ca.gov/regact/2008/ghghdv08/ghghdv08.htm>

Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline

<http://arb.ca.gov/regact/2008/fuelogv08/fuelogv08.htm>

Amendments to the California Consumer Products Regulation
<http://www.arb.ca.gov/regact/2008/cp2008/cp2008.htm>

Additional evaporative emission standards:
Amendments to the Current Regulations for Large Spark-ignition Engines with an
Engine Displacement Less Than or Equal to One Liter
<http://www.arb.ca.gov/regact/2008/lsi2008/lsi2008.htm>

Bureau of Automotive Repair Actions

Smog Check Improvements:

- * Visible Smoke Test
- * Consumer Assistance Program Vehicle Retirement Option Eligibility

http://www.bar.ca.gov/80_BARResources/05_Legislative/RegulatoryActions/RegulatoryActions.html

Analysis of Environmental Impacts

This report includes proposed technical amendments to the SIP that U.S. EPA has asked ARB to make to aid U.S. EPA's approval of the SIP. ARB staff has concluded that the proposed amendments to the SIP will not result in any significant adverse environmental impacts, for the following reasons.

The proposed SIP amendments quantify the reductions that have been achieved since adoption of the 2007 State Strategy, clarify ARB's legal commitments in light of U.S. EPA's approval criteria, and extend the description of the long-term strategy for identifying future technologies to achieve the last increment of reductions. The proposed amendments do not change the amount of NO_x, ROG, SO_x, and direct PM_{2.5} emission reductions that the Board committed to achieve by specific years when it adopted the 2007 State Strategy.

The amendments also include the commitment for emission reductions in the Sacramento area, since Sacramento's attainment plan will be considered by the Board at its March 26, 2009 meeting when it considers approval of the SIP for the Sacramento area. The reductions in Sacramento from the statewide measures in the 2007 State Strategy had not been quantified at the time the 2007 State Strategy was adopted and so were not reflected in the 2007 State Strategy. For clarity, staff is now proposing to amend the State Strategy to reflect this commitment.

ARB prepared an environmental analysis for the 2007 State Strategy prior to its approval by the Board in September 2007. Various measures identified in the 2007 State Strategy have been adopted by the Board since that time, and separate, additional environmental analyses were also prepared by ARB prior to the adoption of each of these measures. As discussed above, the proposed SIP revision simply quantifies the emission reductions that have been achieved by these already-adopted measures, and no changes have been made to the underlying commitments in the 2007 State Strategy to achieve specified emission reductions by specific dates. Therefore, staff has concluded that the proposed SIP amendments will not result in any significant adverse environmental impacts.

Part Two: Technical Revision to the 2007 State Strategy

The following pages completely replace the corresponding sections in the April 26, 2007 Revised Draft Air Resources Board's Proposed State Strategy for California's 2007 State Implementation Plan. This revision includes the clarifying changes requested by U.S. EPA to aid U.S. EPA approval and it quantifies the emission reductions from the State Strategy in Sacramento. It also includes the changes and additions made by the Board to the April 2007 draft when it adopted the State Strategy related to its commitments to reduce emissions contained in Attachment B to resolution 07-08. Specifically, the following replaces all material in the April 2007 draft document starting on page 58 with the heading "State Implementation Plan Commitments" up to but not including on page 67 the section titled, "Role of Funding and Incentives Programs."

U. S. EPA's Approval Criteria for SIPs that Rely on Enforceable Commitments to Achieve Emission Reductions

U.S. EPA has identified three criteria which SIPs that rely on enforceable commitments for emission reductions need to meet to be approvable. The first criterion is that the commitment be for a limited portion of the needed emission reductions. Most of the emission reductions needed for attainment in the South Coast and San Joaquin Valley will come from already adopted SIP measures. Consequently, the commitments for reductions from new measures are a limited portion of the total needed. Further, the tables in the section titled Commitment to Reduce Emissions show the State's success already in fulfilling its commitment for emission reductions. ARB has already adopted regulations that will provide a majority of the emission reductions associated with proposed new measures in the 2007 State Strategy. As a result, what's left to achieve out of the commitment is now only 51 tpd NO_x, 28 tpd ROG, in the South Coast; and 7 tpd NO_x, 12 tpd ROG, in the San Joaquin Valley in 2014.

U.S. EPA's second approval criterion is that the state is capable of fulfilling its commitment. ARB's performance in meeting its obligations both under this SIP and prior SIPs is solid evidence that the State is capable of adopting the regulations to which it commits. The list of ARB SIP Control Measures (1994-2006) on page 38 of the State Strategy also shows the State's record of continuous accomplishment in developing, adopting, and implementing successfully a wide range of ambitious, innovative controls to which the State committed in prior SIPs. ARB has experienced staff and other resources needed to complete the tasks associated with development of controls to achieve the relatively small remaining near-term measure reductions, and ARB reiterates its determination to continue expeditious development of these measures.

U.S. EPA's third approval criterion is that the commitment be for a reasonable and appropriate period of time. ARB has committed to a schedule of bringing the proposed new SIP measures to the board for rulemaking consideration. The schedule calls for four of the five remaining ARB measures to be presented this year or the following year. Given the variety of difficult issues to address in the complex process of regulatory

development, this is an expeditious schedule. The fifth measure, Consumer Products Program II, is scheduled for board consideration in 2010-2012. This follows intensive efforts by ARB resulting in successful adoption on June 26, 2008 of new or more stringent regulations for more than 20 product categories and further product categories in November 2008. Because of the need to collect data on product formulation and use, to review control options for the challenging categories that remain, and to resolve complex issues relating to product performance, this schedule is expeditious.

The seventh measure, Accelerated Introduction of Cleaner Line-haul Locomotives, is dependant on U.S. EPA adopting Tier 4 standards for locomotive engines. Now that the new standards are adopted, ARB commits to working with the railroad companies to accelerate cleanup of the locomotive fleet.

ARB is also working with the Bureau of Automotive Repair (BAR) to develop and institute successfully the Smog Check program enhancements. BAR progress to date includes the addition of diesel vehicles to the inspection program through state legislation (AB 1488, 2007) and authority to conduct visible smoke tests (AB 1870, 2006). BAR regulations in progress will increase the stringency of the tests by setting lower cut points used to determine if the vehicle initially passes or fails the Smog Check test.

Inasmuch as reductions from the enforceable commitment for emission reductions are not relied upon in meeting the reasonable further progress provisions for any area, the adoption and implementation schedule to fulfill the commitment will not jeopardize attainment. Further, the State Strategy includes an enforceable commitment to achieve all reductions needed for attainment by the attainment year applicable to each area.

State Implementation Plan Commitments

This section sets forth the State's SIP commitments for the 2007 State Strategy for the areas that need the emission benefits from the proposed, new State measures to demonstrate attainment – the South Coast Air Basin, the San Joaquin Valley, the Coachella Valley, and the Sacramento Metro Area.

The State's SIP commitments consist of three components:

1. A commitment to achieve aggregate emission reductions by specific dates;
2. A commitment to propose defined new SIP measures; and
3. A long-term strategy commitment.

The total emission reductions and the obligation to propose specific measures for Board consideration would become enforceable upon approval by U.S. EPA of the State Strategy and each district's attainment plan. The commitments for NO_x, ROG and PM_{2.5} emission reductions are calculated using the summer planning inventory described in Appendix A to the Proposed State Strategy and progress will be tracked using the same inventory to assess compliance. However, the PM_{2.5} standard is an

annual average standard; thus the PM2.5 attainment demonstration for the South Coast was based on the corresponding annual average emission reductions. Since the emission reductions in this document and the emission reductions found in the PM2.5 attainment demonstration are based on different seasonal inventories, the specific emission reduction numbers may differ.

Air quality modeling indicates that the combined emission reductions committed to by the ARB and the South Coast and San Joaquin Valley air districts will result in attainment of the federal 8-hour ozone standard by 2023 in each of these areas, and for federal PM2.5 standard in the South Coast by the 2014 deadline. The total emission reductions from the new measures necessary to attain the federal standards are an enforceable State commitment in the SIP. While the State Strategy includes estimates of the emission reductions from each of the individual new measures, it is important to note that the commitment of the State Strategy is to achieve the aggregate emission reductions identified from the existing strategy and the adopted State Strategy. Therefore, if a particular measure does not get its expected emission reductions, the State still commits to achieving the total aggregate emission reductions, whether this is realized through additional reductions from the new measures, or from alternative control measures or incentive programs. If actual emission decreases occur that exceed the projections reflected in the emission inventories and the State Strategy, the actual emission decreases may be counted toward meeting ARB's total emission reduction commitments.

**Expected Emission Reductions from Proposed New SIP Measures
(tons per day)**

South Coast and San Joaquin Valley -- 2023

	South Coast		San Joaquin Valley	
Proposed New SIP Measures	NOx	ROG	NOx	ROG
Passenger Vehicles	7.1	10.5	2.1	3.3
Smog Check Improvements (BAR)*	6.9	7.5	2.1	1.9
Expanded Vehicle Retirement	0.2	0.5	0.04	0.1
Modifications to Reformulated Gasoline Program*	--	2.5	--	1.3
Heavy-Duty Trucks	25.3	1.7	21.2	2.3
Cleaner In-Use Heavy-Duty Trucks*	25.3	1.7	21.2	2.3
Goods Movement Sources	92.2	1.9	16.4	1.3
Ship Auxiliary Engine Cold Ironing & Clean Technology*	30.8	--	--	--
Cleaner Main Ship Engines and Fuel*	39.9	--	--	--
Port Truck Modernization (in Heavy-Duty Trucks)*	--	--	--	--
Accelerated Intro. of Cleaner Line-Haul Locomotives*	15.6	1.9	16.4	1.3
Clean Up Existing Harbor Craft*	5.9	NYQ	--	NYQ
Off-Road Equipment	13.9	1.9	5.4	0.6
Cleaner In-Use Off-Road Equipment (over 25hp)*	13.9	1.9	5.4	0.6
Cleaner In-Use Agricultural Equipment	NYQ	NYQ	NYQ	NYQ
Other Off-Road Sources	2.4	24.0	0.6	11.4
New Emission Standards for Recreational Boats	2.4	17.6	0.6	5.3
Expanded Off-Road Rec. Vehicle Emission Standards	--	6.4	--	6.1
Additional Evaporative Emission Standards*	--	NYQ	--	NYQ
Vapor Recovery for Above Ground Storage Tanks*	--	NYQ	--	NYQ
Areawide Sources	--	13.7	--	6.3
Consumer Products Program*	--	13.7	--	3.8
Pesticides: DPR Regulation	--	NYQ	--	2.5
Greenhouse Gas Reduction	NYQ	NYQ	--	--
Co-Benefits from Greenhouse Gas Reduction Measures	NYQ	NYQ	--	--
Emission Reductions from Proposed New Measures	141	54	46	25

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Dept. of Pesticide Regulation.

Locomotives measure relies on U.S. EPA rulemaking and industry agreement to accelerate fleet turnover.

Note: Emission reductions reflect the combined impact of regulations and supportive incentive programs. Emission reduction estimates for each proposed measure are shown for informational purposes only. Actual emission reductions from any particular measure may be greater than or less than the amounts shown.

* Adopted in part or in full

**Expected Emission Reductions from Proposed New SIP Measures
(tons per day)**

South Coast and San Joaquin Valley -- 2020

	South Coast		San Joaquin Valley	
	NOx	ROG	NOx	ROG
Proposed New SIP Measures				
Passenger Vehicles	9.6	12.9	2.7	4.1
Smog Check Improvements (BAR)*	8.3	8.7	2.4	2.2
Expanded Vehicle Retirement	1.3	1.2	0.3	0.3
Modifications to Reformulated Gasoline Program*	--	3.0	--	1.6
Heavy-Duty Trucks	34.9	2.6	30.2	3.3
Cleaner In-Use Heavy-Duty Trucks*	34.9	2.6	30.2	3.3
Goods Movement Sources	79.1	1.8	15.6	1.2
Ship Auxiliary Engine Cold Ironing & Clean Technology*	28.3	--	--	--
Cleaner Main Ship Engines and Fuel*	32.3	--	--	--
Port Truck Modernization (in Heavy-Duty Trucks)*	--	--	--	--
Accelerated Intro. of Cleaner Line-Haul Locomotives*	13.4	1.8	15.6	1.2
Clean Up Existing Harbor Craft*	5.1	NYQ	--	NYQ
Off-Road Equipment	18.7	2.9	7.0	1.0
Cleaner In-Use Off-Road Equipment (over 25hp)*	18.7	2.9	7.0	1.0
Cleaner In-Use Agricultural Equipment	NYQ	NYQ	NYQ	NYQ
Other Off-Road Sources	1.6	17.9	0.4	8.7
New Emission Standards for Recreational Boats	1.6	12.8	0.4	3.8
Expanded Off-Road Rec. Vehicle Emission Standards	--	5.1	--	4.9
Additional Evaporative Emission Standards*	--	NYQ	--	NYQ
Vapor Recovery for Above Ground Storage Tanks*	--	NYQ	--	NYQ
Areawide Sources	--	13.5	--	6.1
Consumer Products Program*	--	13.5	--	3.6
Pesticides: DPR Regulation	--	NYQ	--	2.5
Greenhouse Gas Reduction	NYQ	NYQ	--	--
Co-Benefits from Greenhouse Gas Reduction Measures	NYQ	NYQ	--	--
Emission Reductions from Proposed New Measures	144	52	56	24

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Dept. of Pesticide Regulation.

Locomotives measure relies on U.S. EPA rulemaking and industry agreement to accelerate fleet turnover.

Note: Emission reductions reflect the combined impact of regulations and supportive incentive programs.

Emission reduction estimates for each proposed measure are shown for informational purposes only. Actual emission reductions from any particular measure may be greater than or less than the amounts shown.

* Adopted in part or in full

**Expected Emission Reductions from Proposed New SIP Measures
(tons per day)**

San Joaquin Valley -- 2017

Proposed New SIP Measures	NOx	ROG
Passenger Vehicles	3.3	5.4
Smog Check Improvements (BAR)*	2.9	2.6
Expanded Vehicle Retirement	0.4	0.5
Modifications to Reformulated Gasoline Program*	--	2.3
Heavy-Duty Trucks	62.4	6.2
Expanded Cleaner In-Use Heavy-Duty Trucks*	62.4	6.2
Goods Movement Sources	11.4	0.9
Ship Auxiliary Engine Cold Ironing & Clean Technology*	--	--
Cleaner Main Ship Engines and Fuel*	--	--
Port Truck Modernization (in Heavy-Duty Trucks)*	--	--
Accelerated Intro. of Cleaner Line-Haul Locomotives*	11.4	0.9
Clean Up Existing Harbor Craft*	--	NYQ
Off-Road Equipment	10.4-15.4	1.6-2.3
Cleaner In-Use Off-Road Equipment (over 25hp)*	5.4	1.0
Cleaner In-Use Agricultural Equipment	5-10	0.6-1.3
Other Off-Road Sources	0.3	6.2
New Emission Standards for Recreational Boats	0.3	2.6
Expanded Off-Road Rec. Vehicle Emission Standards	--	3.6
Additional Evaporative Emission Standards	--	NYQ
Vapor Recovery for Above Ground Storage Tanks*	--	NYQ
Areawide Sources	--	5.9
Consumer Products Program*	--	3.4
Pesticides: DPR Regulation	--	2.5
Emission Reductions from Proposed New Measures	88-93	26-27

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Dept. of Pesticide Regulation.

Locomotives measure relies on U.S. EPA rulemaking and industry agreement to accelerate fleet turnover.

Note: Emission reductions reflect the combined impact of regulations and supportive incentive programs. Emission reduction estimates for each proposed measure are shown for informational purposes only. Actual emission reductions from any particular measure may be greater than or less than the amounts shown.

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**Expected Emission Reductions from Proposed New SIP Measures
(tons per day)**

South Coast -- 2014

Proposed New SIP Measures	NOx	ROG	Direct PM2.5	SOx
Passenger Vehicles	14.4	17.7	0.3	--
Smog Check Improvements (BAR)*	12.0	10.5	0.2	--
Expanded Vehicle Retirement	2.4	2.8	0.05	--
Modifications to Reformulated Gasoline Program*	--	4.4	--	--
Heavy-Duty Trucks	76.3	5.1	3.0	--
Cleaner In-Use Heavy-Duty Trucks*	76.3	5.1	3.0	--
Goods Movement Sources	47.4	0.7	3.1	20.1
Ship Auxiliary Engine Cold Ironing & Clean Technology*	18.5	--	0.3	0.4
Cleaner Main Ship Engines and Fuel*	20.0	--	2.4	19.7
Port Truck Modernization (in Heavy-Duty Trucks)*	--	--	--	--
Accelerated Intro. of Cleaner Line-Haul Locomotives*	4.3	0.7	0.2	--
Clean Up Existing Harbor Craft*	4.6	--	0.2	--
Off-Road Equipment	10.5	2.7	2.6	--
Cleaner In-Use Off-Road Equipment (over 25hp)*	10.5	2.7	2.6	--
Cleaner In-Use Agricultural Equipment	NYQ	NYQ	NYQ	--
Other Off-Road Sources	0.4	6.6	--	--
New Emission Standards for Recreational Boats	0.4	4.2	--	--
Expanded Off-Road Rec. Vehicle Emission Standards	--	2.4	--	--
Additional Evaporative Emission Standards	--	NYQ	--	NYQ
Vapor Recovery for Above Ground Storage Tanks*	--	NYQ	--	NYQ
Areawide Sources	--	12.9	--	--
Consumer Products Program*	--	12.9	--	--
Pesticides: DPR Regulation	--	NYQ	--	--
Greenhouse Gas Reduction	3.0	NYQ	NYQ	NYQ
Co-Benefits from Greenhouse Gas Reduction Measures	3.0	NYQ	NYQ	NYQ
Emission Reductions from Proposed New Measures	152	46	9	20

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Dept. of Pesticide Regulation.

Locomotives measure relies on U.S. EPA rulemaking and industry agreement to accelerate fleet turnover.

Note: Emission reductions reflect the combined impact of regulations and supportive incentive programs.

Emission reduction estimates for each proposed measure are shown for informational purposes only. Actual emission reductions from any particular measure may be greater than or less than the amounts shown.

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**Expected Emission Reductions from Proposed New SIP Measures
(tons per day)**

San Joaquin Valley -- 2014

Proposed New SIP Measures	NOx	ROG	Direct PM2.5	SOx
Passenger Vehicles	3.8	6.5	0.1	--
Smog Check Improvements (BAR)*	3.3	2.9	0.05	--
Expanded Vehicle Retirement	0.5	0.7	0.01	--
Modifications to Reformulated Gasoline Program*	--	2.9	--	--
Heavy-Duty Trucks	61.4	6.4	3.6	--
Cleaner In-Use Heavy-Duty Trucks*	61.4	6.4	3.6	--
Goods Movement Sources	7.2	0.5	0.2	--
Ship Auxiliary Engine Cold Ironing & Clean Technology*	--	--	--	--
Cleaner Main Ship Engines and Fuel*	--	--	--	--
Port Truck Modernization (in Heavy-Duty Trucks)*	--	--	--	--
Accelerated Intro. of Cleaner Line-Haul Locomotives*	7.2	0.5	0.2	--
Clean Up Existing Harbor Craft*	--	NYQ	--	--
Off-Road Equipment	3.7	0.9	0.8	--
Cleaner In-Use Off-Road Equipment (over 25hp)*	3.7	0.9	0.8	--
Cleaner In-Use Agricultural Equipment	NYQ	NYQ	NYQ	--
Other Off-Road Sources	0.1	3.5	--	--
New Emission Standards for Recreational Boats	0.1	1.3	--	--
Expanded Off-Road Rec. Vehicle Emission Standards	--	2.2	--	--
Additional Evaporative Emission Standards	--	NYQ	--	NYQ
Vapor Recovery for Above Ground Storage Tanks*	--	NYQ	--	NYQ
Areawide Sources	--	5.7	--	--
Consumer Products Program*	--	3.2	--	--
Pesticides: DPR Regulation	--	2.5	--	--
Emission Reductions from Proposed New Measures	76	23	5	0

NYQ = Not Yet Quantified. BAR = Bureau of Automotive Repair. DPR = Dept. of Pesticide Regulation.

Locomotives measure relies on U.S. EPA rulemaking and industry agreement to accelerate fleet turnover.

Note: Emission reductions reflect the combined impact of regulations and supportive incentive programs. Emission reduction estimates for each proposed measure are shown for informational purposes only. Actual emission reductions from any particular measure may be greater than or less than the amounts shown.

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**Expected Emission NOx and ROG Reductions from Proposed
New SIP Measures
(tons per day)**

Sacramento Metro Area -- 2018

Proposed New SIP Measures	NOx	ROG
Passenger Vehicles	1.7	2.6
Smog Check Improvements (BAR) *	1.4	1.3
Expanded Vehicle Retirement	0.3	0.2
Modifications to Reformulated Gasoline Program*	--	1.1
Heavy-Duty Trucks	9.5	0.8
Cleaner In-Use Heavy-Duty Trucks*	9.5	0.8
Goods Movement Sources	0.2	0.0
Clean Up Existing Harbor Craft*	0.2	0.0
Off-Road Equipment	1.9	0.4
Cleaner In-Use Off-Road Equipment (over 25hp) *	1.9	0.4
Other Off-Road Sources	0.3	6.1
New Emission Standards for Recreational Boats	0.3	3.0
Expanded Off-Road Rec. Vehicle Emission Standards	0.0	2.7
Additional Evaporative Emission Standards*	--	0.4
Areawide Sources	--	1.9
Consumer Products Program*	--	1.9
Emission Reductions from Proposed New Measures	13	11

BAR = Bureau of Automotive Repair

Includes motor vehicle inventory from SACOG FEB 2008 submittal

Commitment to Reduce Emissions

The tables below describe the emission reduction commitment proposal for Board approval. ARB staff proposes to commit to achieve the emission reductions set forth in these tables, by the dates indicated in the table entitled, “Schedule for Board Consideration of Proposed ARB Rulemaking” that occurs later in this document. The reductions may be achieved through a combination of actions, including regulations, incentives, and other enforceable mechanisms.

South Coast

Summary of Emission Reduction Commitments (tons per day) – South Coast

Year	NOx		ROG		Direct PM2.5		SOx	
	Commitment	Achieved	Commitment	Achieved	Commitment	Achieved	Commitment	Achieved
2014	152	101	46	18	9	9	20	17
2020 ¹	144	85	52	14	--	--	--	--
2023 ²	141	80	54	11	--	--	--	--
2023 CAA 182(e)(5) Measures	241 ²	--	40 ²	--	--	--	--	--

¹ The 2020 commitment in the South Coast is necessary to provide for attainment in the downwind nonattainment areas.

² The reductions of NOx and ROG from 182(e)(5) measures will be reassessed as new SIPs are developed and revised.

Commitments to Secure Additional Emission Reductions to Help Meet the South Coast District’s PM2.5 Emission Reduction Target

ARB commits to working with the South Coast Air Quality Management District (District) to secure funding for the District to achieve 6 tpd of NOx emission reductions from port-related and other sources and from Metrolink trains, and to backstop the District’s 6 tpd emission reduction commitment. “Backstop” means that ARB commits to secure some or all of the 6 tpd of the District’s emission reduction commitment if the District fails to achieve the emission reductions.

ARB’s emission reduction commitments may be achieved through a combination of actions including but not limited to the implementation of control measures; the expenditure of local, State or federal incentive funds; or through other enforceable measures. In addition, ARB may meet its emission reduction commitments by securing ROG, SOx, or direct PM2.5 emission reductions instead of NOx reductions, if these reductions achieve the equivalent air quality benefit. In determining equivalency, the State will rely on the information on air quality modeling documented in the South Coast District’s SIP.

Finally, if actual emission decreases occur in the South Coast Air Basin that are greater than the projected emissions reductions from the adopted measures in the State Strategy, the actual emission decreases may be counted toward meeting ARB's total emission reduction commitments.

If U.S. EPA makes a finding under section 179(c)(1) of the Clean Air Act that the South Coast Air Basin has attained the Annual Average PM2.5 National Ambient Air Quality Standard before the entire commitment has been achieved, ARB commits to achieving the remaining emission reductions, but they may be achieved after 2014 but no later than 2017.

San Joaquin Valley

Summary of Emission Reduction Commitments (tpd) – San Joaquin Valley

Year	NOx		ROG		Direct PM2.5		SOx	
	Commitment	Achieved	Commitment	Achieved	Commitment	Achieved	Commitment	Achieved
2014	76	69	23	11	5	5	--	--
2017	88-93	54	--	--	--	--	--	--
2020	56	36	24	7	--	--	--	--
2023	46	28	25	6	--	--	--	--
2023 CAA 182(e)(5) Measures	81 ¹	--	-- ¹	--	--	--	--	--

¹ The reductions of NOx and ROG from 182(e)(5) measures will be reassessed as new SIPs are developed and revised.

Coachella Valley

Summary of Emission Reduction Commitments (tpd) – Coachella Valley

Year	NOx		ROG	
	Commitment	Achieved	Commitment	Achieved
2018	7	NYQ	2	NYQ

Sacramento

Summary of Emission Reduction Commitments (tpd) – Sacramento Metro Area

Year	NOx		ROG	
	Commitment	Achieved	Commitment	Achieved
2018	13	12	11	3

Commitment to Propose Defined New SIP Measures

In addition to the commitment to reduce emissions by 2014, 2018, 2020 and 2023, ARB staff also proposes to commit to submit to the Board and propose for adoption the list of proposed new ARB control measures shown in the table below. The Board shall take action on or before the dates set forth in the following table. Such action by the Board may include any action within its discretion.

Schedule for Board Consideration of Proposed ARB Rulemaking

Proposed New SIP Measures	Year
Cleaner In-Use Off-Road Equipment*	2007
Modifications to Reformulated Gasoline Program*	
Cleaner Main Ship Fuel*	
Clean Up Existing Harbor Craft*	
Enhanced Vapor Recovery for Above Ground Storage Tanks*	
Cleaner In-Use Heavy-Duty Trucks*	2008
Port Truck Modernization*	
Ship Auxiliary Engines*	
Cleaner Line-Haul Locomotives (Enforceable Agreement)*	
Consumer Products Program I*	
Cleaner In-Use Agricultural Equipment	2009-2010
New Emission Standards for Recreational Boats	
Expanded Off-Road Recreational Vehicle Emission Standards	
Additional Evaporative Emission Standards*	
Consumer Products Program II	2010-2012

* Adopted either in part or in full

**State Strategy
Proposed New SIP Measures
Implementing Agency – Expected Action – Expected Implementation**

Proposed New SIP Measures	Implementing Agency	Expected Action	Expected Implementation
Passenger Vehicles			
Smog Check Improvements*	BAR	2007-2008	By 2010
Expanded Vehicle Retirement	ARB/BAR	2008-2014	2008-2014
Modifications to Reformulated Gasoline Program*	ARB	2007	Phase-in starting 2010
Trucks			
Cleaner In-Use Heavy-Duty Trucks*	ARB	2008	2010-2015
Goods Movement Sources			
Auxiliary Ship Engine Cold Ironing and Other Clean Technology*	EPA/ARB/Local	2007-2008	Phase-in starting 2010
Cleaner Main Ship Engines and Fuel*	EPA/ARB/Local	Fuel: 2007 Engines: 2009	2007-2010 Phase-in starting 2010
Port Truck Modernization*	ARB/Local	2007-2008	2008-2020
Accelerated Introduction of Cleaner Line-Haul Locomotives*	EPA/ARB	2007-2008	Starting in 2012
Clean Up Existing Harbor Craft*	ARB	2007	2009-2018
Off-Road Equipment			
Cleaner In-Use Off-Road Equipment*	ARB	2007	Phase-in starting 2008
Cleaner In-Use Agricultural Equipment	ARB	2009	Phase-in starting 2014
Other Off-Road Sources			
New Emission Standards for Recreational Boats	ARB	2009-2010	2012-2013
Expanded Off-Road Recreational Vehicle Emission Standards	ARB	By 2010	2012-2015
Enhanced Vapor Recovery for Above Ground Storage Tanks*	ARB	2007	Phase-in starting 2008
Additional Evaporative Emission Standards*	ARB	By 2010	2010-2012
AREAWIDE SOURCES			
Consumer Products Program*	ARB	2007-2008 2010-2012	By 2010 By 2012-2014
DPR Pesticide Regulation*	DPR	2008	2008

DPR = Department of Pesticide Regulation. BAR = Bureau of Automotive Repair

* Adopted either in part or in full

Commitments for Remaining New SIP Measures

ARB staff commits to report to the Board annually on progress in developing, adopting, and implementing the near-term and long-term measures in the State Strategy for California's 2007 State Implementation Plan.

ARB commits to revise the 2007 SIP as may be appropriate in a 2010 Mid-course Review SIP update to:

- (a) reflect the emission benefits of newly adopted regulations;
- (b) to provide more detail on the State's intended actions to fulfill the commitment to achieve emission reductions in total by specific dates;
- (c) to update as necessary the emissions inventories, including the on-road mobile source emissions inventory and motor vehicle activity levels for federal ozone and PM2.5 nonattainment areas; and
- (d) to revise as necessary other plan aspects, including motor vehicle emissions budgets.

ARB commits to develop and adopt any necessary and appropriate update and submit it to U.S. EPA as a SIP revision by June 30, 2010.

Commitment to Reduce Emissions via Long-Term Strategy

Consistent with section 182(e)(5) of the federal Clean Air Act, this SIP includes long-term commitments to achieve the last increment of emission reductions necessary to meet attainment goals in the South Coast and San Joaquin Valley. As the State agency charged with ensuring California's SIP compliance, ARB is ultimately responsible for ensuring the necessary measures are identified no later than 2020 (three years prior to the attainment year) and the emission reductions achieved by 2023.

After adoption of the State Strategy, ARB staff proposes to initiate a coordinated government, private, and public effort to establish emission goals for critical mobile and stationary emission source categories. Following the setting of emission goals, ARB will start an ongoing public process to assess technology advancement opportunities for the critical categories. ARB staff will periodically brief the Board at public meetings on emerging emission reduction opportunities, promising technologies, and the progress made in developing long-term emission reduction measures. As ARB staff identifies feasible technology-forcing emission reduction measures, staff will propose those measures to the Board for inclusion into the SIP.

U.S. EPA, along with ARB, the South Coast and San Joaquin Valley Air Districts and the California Environmental Protection Agency, signed a memorandum of agreement (MOA) to commit to developing and testing new sustainable technologies to accelerate progress in meeting current and future national air quality standards.

The goal of the MOA is to improve air quality by aligning agency research resources, where possible and appropriate, to evaluate innovative technologies that have the potential to reduce emissions of pollutants and pollutant precursors, and to develop and assess new monitoring equipment that could improve the measurement of emissions from mobile and stationary sources of pollution.

As part of this agreement, the agencies intend to coordinate research efforts with other public and private stakeholders, including other federal departments and agencies and other state and local entities, in order to utilize the resources and capacities of a wide sector of government and the business community in projects to develop, demonstrate and assess new technologies that can help achieve clean air goals.

To implement the agreement, each agency may appoint a liaison to serve as an ongoing point of contact and to, among other things, coordinate the objectives of the MOA and pursue necessary resources. The agencies also agreed to establish a Clean Air Technology Working Group, to administer the MOA. Projects and activities may include:

- Creation of a Research Coordination Council to review current information and explore opportunities to develop and deploy new technologies;

- Exchange of information on research and development program plans and projects and new technologies;
- Collaborative planning and execution of research and development programs;
- Participation of scientists, engineers, analysts and other specialists from each agency in agreed upon activities;
- Organization of seminars and other meetings;
- Joint projects; and
- Dissemination of information to stakeholders on potential applications of new technologies.

No later than 2020, ARB and the two air districts will prepare a revision to the 8-hour Ozone SIP that (1) reflects any modifications to the 2023 emission reduction target based on updated science, and (2) identifies any additional strategies, including the implementing agencies, needed to achieve the necessary emissions reductions by 2023. In accordance with section 182(e)(5)(B) of the Clean Air Act, ARB will submit enforceable commitments to develop and adopt contingency measures if the advanced technology measures do not achieve planned reductions.

South Coast: After accounting for the anticipated benefits of both adopted and new defined State and local measures, the State Strategy demonstrates a need for another 281 tpd ROG and NO_x reductions from long-term measures. This represents 24 percent of the total reductions needed by 2023. We believe that this gap can be bridged through a cooperative effort by the local, State and federal agencies responsible for specific emission sources. This effort should focus on how to most effectively achieve the additional reductions, considering the availability and cost of potential controls.

San Joaquin Valley: After accounting for the anticipated benefits of both adopted and new defined State and local measures, the State Strategy demonstrates a need for another 81 tpd NO_x reductions from long-term measures. This represents 13 percent of the total NO_x and ROG reductions needed by 2023. We believe that this gap can be bridged through a cooperative effort by the local, State and federal agencies responsible for specific emission sources. This effort should focus on how to most effectively achieve the additional reductions, considering the availability and cost of potential controls.

To implement the Long-term Strategy, ARB:

- a) commits to share the results of its efforts and others to identify emerging emission reduction opportunities, promising technologies, and the progress made in developing long-term emission reduction measures with the public through

- periodic briefings to the Board, workshops, conferences, symposia, website postings, and other means;
- b) commits to work to secure resources in the future for continuing research and development of new technologies; and
 - c) commits to develop schedules for moving from control technology research to implementation.

Withdrawal of Chapter 4

Chapter 4 was included in ARB's submission for historical purposes. It does not reflect the final decisions made regarding the South Coast air district's attainment demonstration approved by ARB. Chapter 4 is withdrawn.