

**Air Resources Board
Agenda Item #07-7-7
September 27, 2007**

**Meeting to Consider Approval of the Proposed State Strategy
for California's State Implementation Plan (SIP)
(continued from June 22, 2007)
Revised Staff Proposal**

Section 1

Discussion of Proposed New Local, State, and Federal Actions

Section 2

Proposed Revisions to State Strategy (SIP Revision)

Attachment

September 14, 2007 3-Agency Staff Document: "Meeting the South Coast District's PM2.5 Emission Reduction Target"

Section 1

Discussion of Proposed New Local, State, and Federal Actions

Section 1

Discussion of Proposed New Local, State, and Federal Actions

At two Air Resources Board (ARB or Board) meetings in June 2007, the air quality challenges of meeting the federal PM_{2.5} standard in the South Coast and the federal 8-hour ozone standard in the South Coast and San Joaquin Valley were discussed at length. At both meetings, the Board determined that there was still more work to be done to sufficiently meet these challenges and directed staff to collaborate with the respective air districts on this task. Since then, efforts of staff and Board members from ARB, the South Coast and San Joaquin Valley air districts, and the Southern California Association of Governments (SCAG), have resulted in a proposed strengthening of California's 2007 State Implementation Plan (SIP).

For the South Coast, actions were identified that would achieve the additional emission reductions needed by 2014 to reach the PM_{2.5} target established by the South Coast Air District. For the San Joaquin Valley, ARB staff identified additional emission reductions from mobile sources for inclusion in the proposed State Strategy to help attain the ozone standard prior to the 2023 deadline. Work also began to try to identify further emission reductions from stationary sources in the Valley.

This section describes staff's recommended additions to the April 26, 2007 proposed State Strategy and the benefits for the South Coast and San Joaquin Valley.

South Coast

At the June 22, 2007 Board hearing on the proposed State Strategy for California's 2007 SIP, staff described the PM_{2.5} challenge in the South Coast Air Basin: the need to achieve an additional 74 tons per day (tpd) of NO_x emission reductions, beyond what the April 2007 proposed State Strategy would deliver, to reach the 2014 target established by the South Coast Air District (District).

After testimony and discussion, the Board expressed its preference not to act on the proposed State Strategy until it could be jointly considered with the South Coast SIP. The Board also instructed staff to work with District staff to find additional emission reductions from already proposed measures or new measures to help meet the District's PM_{2.5} emission reduction target.

Since June 22, ARB and District staff have worked closely, delving into proposed measures and exploring new actions to achieve the additional emission reductions targeted for 2014. On September 14, 2007 staff of the District, ARB, and SCAG reached consensus on a package of actions that would achieve the District's 74 tpd NO_x reduction target. The table on the next page shows the list of actions and responsible entities. Implementing these actions requires ARB approval of the enhanced SIP commitment described in Section 2.

**Additional Actions to Meet the District's
PM2.5 Emission Reduction Target
(NOx Emission Reductions – tons/day in 2014)**

Action / Measure	Responsible Agency	NOx
Enhanced Heavy-Duty Truck Measure	ARB	27
Co-Benefits from Greenhouse Gas Reduction Measures	ARB	3
SOON Program Opt-in for Construction Equipment	District	12
Residential Wood Burning and Commercial Cooking Rule	District	11
Additional Incentive Funds for Port-Related and Other Sources	District/ARB*	3
Funding for Selective Catalytic Reduction on Metrolink Trains	District/ARB*	3
DMV Registration Fees Used for SIP-Creditable Projects	Local Gov	4
Federal Funding to Mitigate Locomotive Emissions in 2014 Pending Implementation of Proposed New Locomotive Standards	Federal Gov	10
SIP Credit for Moyer Program Projects Already Funded	District	3
Additional Reductions		76

* Joint funding commitment with ARB backstop of emission reduction commitment.

New District/Local Government Actions

SOON Program Opt-In for Construction Equipment

In addition to the statewide provisions of the new off-road diesel vehicle rule adopted by ARB in July 2007, the Board also approved an opt-in provision for a regional incentive program to achieve additional NOx reductions. The Surplus Off-road Opt-in for NOx (SOON) program gives air districts the option of requiring older larger fleets to meet a higher level of control when incentive funds are available to help offset the cost of control. A SOON program funding commitment from the South Coast District is estimated to achieve additional NOx emission reductions of 12 tons per day in the South Coast in 2014. If the San Joaquin Valley air district opts in to the SOON program it is estimated that approximately 4 tons per day of additional NOx reductions could be realized in the Valley in 2014 depending on funding availability.

Residential Wood Burning and Commercial Cooking Rule

The final South Coast 2007 Air Quality Management Plan (AQMP) contains two control measures: Wood Burning Fireplaces and Wood Stoves (BCM-03) and Commercial Under-fired Charbroilers (BCM-05) which, when fully implemented, will provide 2.1 tons per day of directly emitted PM2.5 emission reductions. The

draft 2007 AQMP called for 0.7 tons per day of directly emitted PM2.5 emission reductions. The additional 1.4 tons per day would be achieved through enhancements to the control options for the two control measures. Enhanced control options identified for the wood burning fireplace control measure include an element of voluntary or mandatory wood burning curtailment during periods of poor air quality in the winter, public outreach and education, and implementation of a gas-log exchange incentive program. The commercial under-fired charbroilers control measure will provide additional PM2.5 reductions based on the installation of new and retrofit control equipment, similar to the proposal developed by the Bay Area Air Quality Management District. The additional 1.4 tons per day of directly-emitted PM2.5 is equivalent to about 11 tons per day of NOx.

Additional Incentive Funds for Port-Related and Other Sources

The Carl Moyer Program encourages early introduction of clean air technology into the on-road and off-road vehicle fleets by providing funds to help purchase new vehicles or new engines (repowers) and for installation of retrofit units on older engines. The program has been very successful in reducing emissions from existing long-lived engines. Future use of Moyer funds is expected to achieve at least an additional 3 tons per day of NOx reductions from mobile source equipment not accounted for in existing and future CARB regulations and would be considered surplus emission reductions.

Funding for Selective Catalytic Reduction on Metrolink Trains

Metrolink currently operates approximately 40 locomotives in the South Coast Air Basin, and is planning to expand operations to more than 50 locomotives in the near future. NOx emissions are expected to be 3.5 tons per day in 2014 from these locomotives. The South Coast District is currently conducting a study with Metrolink to demonstrate selective catalytic reduction (SCR) technologies and diesel particulate filters on two passenger locomotives with the objective of achieving upwards of 85 percent control of NOx and PM emissions. Retrofitting the Metrolink fleet with SCR technology achieving 85 percent control will garner 3 tons per day of NOx reductions in 2014 at a total cost of approximately \$15 million. Metrolink currently receives federal funding to assist in the replacement or repower of their locomotives. Such funding may also be available to assist in cleaning up the NOx and PM emissions associated with these locomotives. Furthermore, the District staff would also seek its board's approval to fund the retrofit projects.

DMV Registration Fees Used for SIP-Creditable Projects

In September 1990, AB 2766 was signed into law which authorized a \$4 per vehicle surcharge on annual registration fees to fund the implementation of programs to reduce air pollution from motor vehicles. Under the AB 2766 Program, 40 cents of every dollar collected by the Department of Motor

Vehicles is used by cities and counties located in the South Coast District to reduce motor vehicle air pollution.

Currently, cities and counties receive approximately \$19 million AB 2766 funds per year and have expended these funds on a wide range of projects from clean vehicle purchases to various transportation programs to relieve traffic congestion. About half of the funds have been spent on regulatory compliance, the rest on programs whose emission reductions are not directly SIP-quantifiable. In recognizing the health crisis this region is facing, this action proposes that local governments maximize the emissions reductions associated with the implementation of mobile source emission reduction programs by selecting the more cost-effective, quantifiable projects first. As an example, clean vehicle projects such as replacement of legacy fleets of on-road heavy-duty diesel vehicles and off-road diesel equipment, which are directly quantifiable, would be identified as more cost-effective projects followed by other directly quantifiable clean air projects. Another example would be for local governments to apply their AB 2766 funds to incentivize reduction of emissions from mobile source related activities occurring within their jurisdictions. Such activities could be construction-related, commercial vehicles operated by local businesses, or part of a larger regional scale project that would provide local air quality benefits.

The target of 4 tons per day NO_x reductions represents about 40 percent of the funds under city and county control used for projects achieving cost-effectiveness similar to the Carl Moyer Program. ARB would amend its guidance on the use of the fees to include new cost-effectiveness guidelines and a suggested list of SIP-creditable projects. SIP credit could also be taken for South Coast Mobile Source Air Pollution Reduction Review Committee projects funded with AB 2766 surcharges that achieve surplus emissions reductions.

Needed Federal Action

Federal Funding to Mitigate Locomotive Emissions

The State's ability to reduce emissions from locomotives is impacted by jurisdictional issues, the cost of controls, and the availability of clean engines to meet the lowest emission standards. U.S. EPA, by virtue of its ability to establish engine emission standards, holds the key to the introduction of the cleanest engines needed to meet federal air quality standards in California. ARB and the District cannot make up the reductions where California is preempted by federal law. Existing agreements with the rail industry are reducing emissions in the South Coast Air Basin beyond federal requirements. However, the severity of the region's PM_{2.5} problem and the attainment deadline make it necessary to further mitigate locomotive emissions in 2014.

New ARB SIP Commitments

The new ARB SIP commitments proposed for Board approval are presented in Section 2.

San Joaquin Valley

At the June 14, 2007 ARB meeting in Fresno, the Board heard several hours of testimony indicating that more work was needed to reduce emissions in advance of a 2023 “extreme” ozone attainment date. A primary focus was a draft report by the International Sustainable Systems Research Center (ISSRC), which suggested ways to further reduce emissions from both stationary and mobile sources in the Valley. At the meeting, the Board directed staff to explore what additional actions could be included in the SIP to further reduce emissions, including thoroughly reviewing the ISSRC report.

The public comments also indicated that significant work must be done to reach out to the public and build partnerships. In response, the Board also directed staff to establish a task force with Valley stakeholders to evaluate ways to further reduce emissions, including evaluating the ISSRC proposal, and to hold a series of town hall meetings in Valley communities in an effort to receive input from the public. ARB staff held town hall meetings in Parlier and Arvin. Another is being scheduled in the next few weeks. ARB Board Members D’Adamo and Case have attended these meetings to directly hear from community members.

ARB staff held two task force meetings in August 2007 and will hold a third meeting on September 24, 2007 focused on ARB staff’s proposed new mobile source SIP commitments. The next two task force meetings will focus on the stationary source recommendations in the ISSRC report. ARB staff will report back to the Board on the results of these activities at its November 15, 2007 meeting.

The table on the next page shows the additional actions ARB staff is proposing to strengthen the mobile source portion of the San Joaquin Valley’s 2007 ozone SIP. The proposed SIP commitment is presented in Section 2.

ARB staff is proposing that the Board adopt the strengthened mobile source strategy for the San Joaquin Valley at the September 27, 2007 hearing. Staff is further proposing to submit to U.S. EPA the mobile source strategy, once approved by the Board, along with the supporting information and additional SIP elements so the U.S. EPA can begin processing the Valley’s transportation conformity budgets. Staff will continue to evaluate local actions for increasing NO_x reductions and will also look at additional ROG reduction opportunities, including those in the ISSRC report and in public testimony. Staff does not propose to submit the stationary source portion of the San Joaquin Valley Ozone SIP before the Task Force process is complete.

**Additional Actions to Accelerate Ozone Air Quality Progress
in the San Joaquin Valley**
(NOx Emission Reductions – tons/day in 2017)

Action / Measure	Responsible Agency	NOx
Enhanced Heavy-Duty Truck Measure	ARB	17
SOON Program Opt-in for Construction Equipment	District/ARB	4
Mobile Agricultural Equipment	ARB	5-10
Stationary Sources	District	Under evaluation
Additional Reductions		26-31

Section 2

Proposed Revisions to State Strategy (SIP Revision)

Section 2

State Implementation Plan Commitments

This section sets forth the State's SIP commitments for the 2007 State Strategy for two of the areas that need the emission benefits from the proposed, new State measures to demonstrate attainment – South Coast and San Joaquin Valley. Specific commitments for emission reductions as needed for attainment in other nonattainment areas, such as the Antelope Valley and Western Mojave Desert, Sacramento, and Ventura County, will be developed later and brought for Board consideration with SIPs for these regions.

The State's SIP commitments consist of three components:

1. Commitment to achieve emission reductions by specific dates;
2. 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 federally enforceable upon approval by U.S. EPA of the State Strategy and each district's attainment plan. The commitments for emission reductions are calculated using the planning inventory described in Appendix A; progress will be tracked in the same inventory currency to assess compliance.

The total emission reductions from the new measures necessary to attain the federal standards are an enforceable State commitment in the SIP. While the proposed 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 total emission reductions necessary to attain the federal standards, which would be the aggregate of all existing and proposed new measures combined. 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 in any air basin for which emission reduction commitments have been made 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.

Commitments to Reduce Emissions

The tables below describe the tons per day 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 on page 5 of this section entitled, “Schedule for Board Consideration of Proposed ARB Rulemaking.” The reductions may be achieved through a combination of actions, including regulations, incentives, and other enforceable mechanisms.

Summary of Emission Reduction Commitments – South Coast

Year	NOx	ROG	Direct PM2.5	SOx
2014	122	46	9	20
2020 ¹	144	52	--	--
2023	141	54	--	--
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.

Summary of Emission Reduction Commitments – South Coast Additional NOx Reductions to Meet District’s PM2.5 Target

Year	NOx
2014	30

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

ARB commits to secure 30 tons per day (tpd) of NOx emission reductions in the South Coast Air Basin by 2014 (in addition to the 122 tpd NOx commitment in the table on page 18 of this document). In addition, 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 (see table on page 2, Section 1), 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 of reducing NOx as specified in Table V-2-14 of the District's Air Quality Management Plan (AQMP) as replicated below. 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.

Table V-2-14 of the South Coast AQMP
**Relative Contributions of Precursor Emissions Reductions to Simulated
 Controlled Future-Year PM2.5 Concentrations**

Precursor (TPD)	PM2.5 Component	Standardized Contribution to Mass
VOC	Organic Carbon	Factor of 1
NOx	Nitrate	Factor of 3
PM2.5	Elemental Carbon & Others	Factor of 5
SOx	Sulfate	Factor of 10

Summary of Emission Reduction Commitments – San Joaquin Valley

Year	NOx	ROG	Direct PM2.5	SOx
2014	76	23	5	0
2020	56	24	--	--
2023	46	25	--	--
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.

**Summary of Emission Reduction Commitments – San Joaquin Valley
NOx Reductions to Accelerate Ozone Standard Attainment**

Year	NOx
2017	67-72

Summary of Emission Reduction Commitments – Coachella Valley

Year	NOx	ROG
2018	7	2

Commitment to Propose Defined New SIP Measures

In addition to the commitment to reduce emissions by 2014, 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

**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

Cleaner In-Use Heavy-Duty Trucks (replaces 4/26/07 version)

Federal and State engine standards will ensure that by 2010 all new diesel heavy-duty trucks are 90 percent cleaner than new 2006 trucks. This tremendous progress is on top of a 65 percent reduction in NOx and an 85 percent reduction in particulate matter since 1990. Since trucks last a long time, we must bring newer trucks into the fleet at a faster pace, clean up older, dirtier trucks, and keep the clean trucks clean longer to help meet air quality goals.

Between now and 2014 existing programs reduce heavy-duty truck emissions by 50 percent. This proposed measure would reduce 2014 emissions another 60 percent. The measure would accomplish these new reductions through a program to reduce emissions from the legacy fleet involving accelerating the turnover to new truck engines and retrofitting the remaining trucks with emission reduction devices, and through an excess emissions program.

Legacy Fleet Emission Reduction Program

Newer heavy-duty trucks are typically used in long-haul service. After seven or eight years, they are often sold and their service is typically shifted to shorter-haul work. These trucks may remain in service within a given region for another 20 years or more.

An in-use truck program would focus on overcoming the slower rate of heavy-duty truck turnover to cleaner engines and retrofitting the remaining trucks with emission control devices such as particulate matter filters. The most comprehensive way to accomplish this would be through an "in-use" fleet rule that would require truck owners to meet specified emission levels. The proposed measure would address fleets operating in California regardless of whether they are registered out of state and would also address trucks serving California ports.

The emission reduction impact of the proposed measure would be equivalent to having the entire model year 2006 and older heavy-duty truck fleet meet model year 2007 emission levels by 2014. While separate rulemaking efforts, along with other actions, will be used to address private truck fleets and port trucks, the relative emission reduction goals for both efforts are the same. The proposed measure would generate additional emission reductions beyond 2014, achieving reductions needed to meet the ozone air quality standard.

The proposed measure would provide an additional 27 tons per day of NOx reductions in the South Coast in 2014 over what was proposed in the April 2007 proposed State Strategy in order to help meet the South Coast District's PM2.5 target. The proposed measure would also provide an additional 17 tons per day of NOx reductions in the San Joaquin Valley in 2017 over the impact (45 tons per day) of what was proposed in the April 2007 proposed State Strategy in order to help accelerate ozone air quality progress.

Rulemaking is currently in progress for a port truck modernization rule. ARB staff has also recently begun informational workshops on a heavy-duty truck in-use fleet rule, and has started to identify and explore the many emissions inventory, technology, financial, and logistical issues involved in crafting the most effective rule possible. ARB staff will be studying and requesting feedback from stakeholders on many issues, including: the characteristics of trucks registered outside of California; cost implications, especially to truck owner-operators, and ways to avoid any competitive disadvantage for various categories of truck owners; and the most efficient use of limited public incentive funds to achieve maximum emission benefits and lessen financial burden on truck owners.

Excess Emissions Program

An estimate of deterioration of emission controls has historically been built into ARB’s projections of future emissions. As new engine technologies are introduced over the next few years, we need to ensure that the complex engine electronics and control devices used to make trucks so much cleaner are not more prone to failure, tampering or malmaintenance, and that deterioration does not reduce the benefits of the new standards. As the 2010 new engine standards are implemented, we will evaluate the in-use emissions and develop approaches to reduce excess emissions from trucks.

Under an existing program, heavy-duty trucks are inspected at random roadside locations for excessive smoke, and are inspected for tampered emission control systems. Owners of vehicles that do not pass these inspections are issued citations that require prompt repairs and carry civil penalties. This measure could include an expansion of this program.

While the design and evaluation of the specific program features has yet to be determined, ARB staff estimates that this concept has the potential to reduce NOx deterioration emissions by approximately 50 percent.

Estimated Emission Reductions

South Coast

	(tons per day)	2006	2014	2020	2023
ROG	Baseline emissions	16	10	7	6
	Potential reductions	--	7.5	2.6	1.7
NOx	Baseline emissions	238	131	79	65
	Potential reductions	--	76.0	34.9	25.3
PM2.5	Baseline emissions	10.2	5.3	3.3	2.8
	Potential reductions	--	4.3	1.8	1.3

San Joaquin Valley

	(tons per day)	2006	2014	2020	2023
ROG	Baseline emissions	20	13	9	8
	Potential reductions		6.4	3.3	2.3
NOx	Baseline emissions	277	150	88	72
	Potential reductions		61.4	30.2	21.2
PM2.5	Baseline emissions	11.4	5.5	3.2	2.6
	Potential reductions		3.6	1.6	1.2

Baseline emissions represent emissions from diesel-fueled medium- and heavy heavy-duty trucks. (Note: Baseline emissions reflect adjustments not included in the SIP Emission Inventory Projections on ARB's website. The adjustments include sleeper truck idling restrictions, diesel engine software upgrade, and emission reductions from the Carl Moyer Program.)

Timing

Action: 2008

Expected Implementation: 2010-2015

Staff Proposed SIP Commitment

ARB staff proposes to commit to bring this measure to the Board by 2008. ARB staff will initiate a rule development process designed to achieve the reductions shown for the South Coast and San Joaquin Valley in 2014, 2020, and 2023, plus the benefits referenced in the text for 2017 in the San Joaquin Valley. The measure as proposed by staff to the Board or adopted by the Board may provide more or less emission reductions than the amount shown.

Cleaner In-Use Off-Road Equipment (replaces 4/26/07 version)

Adopted emission standards for new off-road diesel engines are becoming increasingly more stringent, ensuring that new construction, mining, industrial, oil drilling and airport ground support equipment become progressively cleaner. The cleanest standards for NO_x emissions in these categories will phase in from 2013-2015. However, large diesel off-road equipment with more than 25 horsepower remain in use for long periods of time, often 25 years or more. This long life means that new, lower emitting engines are introduced into fleets relatively slowly with the result that the emission reductions and associated health benefits from these cleaner engines will also be slow to materialize. Accelerating the introduction of cleaner engines and emissions control technologies into the statewide fleet is necessary to meet air quality standards.

This proposed measure is based on the regulation adopted by the Air Resources Board in July 2007. The adopted regulation requires owners of equipment larger than 25 horsepower to meet a stringent average emissions level across all of their equipment. The fleet average approach provides equipment owners flexibility in how they will comply, including: swapping older, dirtier engines with newer, cleaner engines; purchasing newer equipment (with cleaner engines); and, adding emission control devices to older engines. It also allows fleet owners to maintain a fleet with some engines which are cleaner than the fleet average and others which are dirtier, so that, on average, the fleet meets the target. The regulation also includes idling limits similar to those the Board has adopted for heavy duty trucks.

Staff began work on the rule in 2004 as part of the Diesel Risk Reduction Program. During early SIP development work in 2006, staff identified the necessity for large NO_x emission reductions from off-road equipment and other diesel sources to meet the health-based federal air quality standards. Consequently, staff revised the control concept extensively to meet California's clean air needs relative to diesel particulates, ozone, and PM_{2.5}.

This measure would reduce NO_x emissions from large diesel off-road equipment in the South Coast Air Basin by approximately 10 percent in 2014 and by about 30 percent in 2023.

In addition to the statewide provisions of the new off-road diesel vehicle rule, the Board also approved an opt-in provision for a regional incentive program to achieve additional NO_x reductions. The Surplus Off-road Opt-in for NO_x (SOON) program gives air districts the option of requiring older, larger fleets to meet a higher level of control when incentive funds are available to help offset the cost of control. A SOON program funding commitment from the South Coast air district is estimated to achieve additional NO_x emission reductions of 12 tons per day in the South Coast in 2014. If the San Joaquin Valley air district opts in to the SOON program it is estimated that approximately 4 tons per day of additional NO_x reductions could be realized in the San Joaquin Valley in 2014. Since the

SOON program reflects a local air district commitment that would enhance what the regulation would achieve, estimated SOON program emission reductions are not reflected in the tables below.

Estimated Emission Reductions

South Coast

	(tons per day)	2006	2014	2020	2023
ROG	Baseline Emissions	20.2	13.3	9.3	8.1
	Potential Reductions		2.7	2.9	1.9
NOx	Baseline Emissions	143.2	96.1	59.0	46.5
	Potential Reductions		10.5	18.7	13.9
PM2.5	Baseline Emissions	8.1	4.9	2.6	1.8
	Potential Reductions		2.6	1.8	1.3

San Joaquin Valley

	(tons per day)	2006	2014	2020	2023
ROG	Baseline Emissions	6.1	4.2	3.1	2.7
	Potential Reductions		0.9	1.0	0.6
NOx	Baseline Emissions	47.6	32.8	21.6	17.7
	Potential Reductions		3.7	7.0	5.4
PM2.5	Baseline Emissions	2.3	1.5	0.8	0.6
	Potential Reductions		0.8	0.6	0.4

Baseline emissions are from the OffRoad2007 model.

Emission reduction estimates are based on expected emission reductions from ARB's adopted In-Use Off-Road Diesel Vehicle rule.

The rule applies declining fleet averages for large fleets beginning in 2010. For NOx, the fleet averages for 2014 for most engine sizes are more stringent than Tier 1 emission levels. The corresponding PM fleet averages for 2014 are cleaner than Tier 2 emission levels. In 2020, fleet averages for NOx and PM are more stringent than Tier 3 emission levels. The means to reach these fleet averages are left to the equipment owners to decide. However, if a fleet cannot meet the NOx averages, it must turn over 8 percent of its total horsepower per year to cleaner engines (minimum Tier 2 engine) in the initial years and 10 percent per year in years after 2015. A fleet must retrofit 20 percent of its total horsepower with diesel particulate filters if it cannot meet the PM average. The rule would also restrict unnecessary idling. If an air district opts in to the SOON program, then fleets with more than 40 percent Tier 0 and Tier 1 vehicles and maximum power greater than 20,000 horsepower must apply for incentive funding if their fleet operating in the air district exceeds NOx targets, and must use the incentive funding for retrofits, repowers, or replacements to meet the NOx targets. Fleets with maximum power less than or equal to 20,000

horsepower are not required to apply for funding, but may choose to do so on a voluntary basis if they exceed NOx targets.

Timing

Action: 2007

Expected Implementation: Phase-in starting 2008

Staff Proposed SIP Commitment

The Air Resources Board adopted the In-Use Off-Road Diesel Vehicle rule at its July 2007 meeting.

Co-Benefits from Greenhouse Gas Reduction Measures (new measure)

The California Global Warming Solutions Act of 2006 (AB 32) establishes a comprehensive program to curb greenhouse gases. The law requires ARB to implement a statewide strategy to reduce greenhouse gas emissions by roughly 25 percent by 2020. As engines, equipment and manufacturing processes are made more efficient to reduce greenhouse gases, some criteria pollutant emissions are reduced as well. This measure would include the criteria pollutant emission reduction co-benefits of ARB's actions and other actions within the State to mitigate climate change as mandated by AB 32.

Early action measures to help meet AB 32's goal have already been adopted by ARB and more have been proposed. Governor Schwarzenegger has initiated programs (such as the Green Buildings Initiative and California Solar Initiative) to reduce energy use and greenhouse gases. AB 32 includes an aggressive timeline for ARB action that includes adopting regulations by January 2011 to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gases.

ARB staff estimates that greenhouse gas reduction measures would reduce roughly 3 tons per day of NOx in the South Coast by 2014.

Cleaner In-Use Agricultural Equipment (replaces 4/26/07 version)

New engines used in agricultural equipment, primarily tractors, must meet the same standards as other off-road engines, ensuring that new equipment becomes progressively cleaner. Just as in other off-road applications, diesel agricultural equipment can remain in use for long periods of time. This long life means that equipment with new, lower emitting engines are introduced into fleets relatively slowly with a direct impact on the pace that emission reductions materialize.

The cleanup of agricultural in-use equipment is primarily an issue in the San Joaquin Valley with its large agricultural economy. Natural turnover of the agricultural fleet will reduce emissions significantly, but not sufficiently to meet the region's clean air needs.

Therefore, the goal of this measure is to accelerate fleet turnover to equipment with engines meeting the cleanest new engine NOx standard as quickly as possible. When that conversion can begin is linked to the phase-in of U.S. EPA's standards for off-road diesel engines. The cleanest standards for small engines, 25 hp and below, already apply. Unfortunately, the cleanest standards for larger engines do not come on line until 2013, 2014, or 2015 depending on the engine size. ARB estimates that about three-quarters of all NOx emission from agricultural equipment come from equipment with diesel engines in the midsize range, 50 to 175 hp.

Given the timing of the federal NOx standards and importance of the clean-up of equipment in the midsize ranges, ARB staff proposes to begin full implementation of the fleet clean-up measure in 2014. During detailed rulemaking, ARB staff will evaluate the opportunity and benefit of beginning earlier for equipment in the narrow size ranges where clean equipment are available before 2014. The availability of incentives will be the critical factor along with equipment availability governing how fast the equipment can be done.

Emission reduction estimates are based on ARB's OFFROAD2007 emissions model. That model is based on equipment population data from the U.S. Department of Agriculture's Census of Agriculture (1992) and general assumptions about the useful life of the equipment and their operating hours. During rule development for ARB's recently adopted construction equipment rule, ARB staff collected detailed population, use, and age data from the construction industry that was used to refine emission estimates. The same effort must be done for farm equipment. Staff expects that it will result in substantially different estimates from the emissions and the measure benefits presented below.

While staff expects to start rule development beginning with a fleet average approach like that used in the construction equipment clean-up rule, the economics of the agricultural industry will factor heavily into the design of the final rule. Farmers face a unique market structure that affects their ability to pass

costs on to their buyers. For some operations, especially the largest with the advantage of economic scale, an equipment replacement schedule will already be part of their business plan. But for smaller operations with just one or two pieces of equipment, the current business plan may be to retain existing equipment for as long as possible. Maximizing reductions in light of factors such as these will require careful rule design and the optimum use of incentives.

San Joaquin Valley

	(tons per day)	2006	2017*
ROG	Baseline Emissions	13	4
	Potential Reductions	--	0.6-1.3
NOx	Baseline Emissions	62	25
	Potential Reductions	--	5-10
PM2.5	Baseline Emissions	3.5	1.3
	Potential Reductions	--	TBD

* Does not represent final implementation date

Timing

Action: 2009

Expected Implementation: Beginning in 2014

Staff Proposed SIP Commitment

ARB staff proposes to commit to bring this measure to the Board by 2009. ARB staff will initiate a rule development process designed to achieve the reductions shown for the San Joaquin Valley nonattainment areas. The rule will be phased in beginning in 2014. The final implementation date will be determined in the rulemaking process. The measure as proposed by staff to the Board or adopted by the Board may provide more or less than the amount shown based additional information including but not limited to emission inventory updates.

Attachment

**September 14, 2007 3-Agency Staff Document:
“Meeting the South Coast District’s
PM2.5 Emission Reduction Target”**

**Meeting the South Coast District's
PM2.5 Emission Reduction Target**
(September 14, 2007)

At the June 22, 2007 Air Resources Board (ARB or Board) hearing on the proposed State Strategy for California's 2007 State Implementation Plan, staff described the PM2.5 challenge in the South Coast Air Basin: the need to achieve an additional 74 tons per day (tpd) of NOx emission reductions, beyond what the April 2007 proposed State Strategy would deliver, to reach the 2014 target established by the South Coast Air Quality Management District (District).

After testimony and discussion, the Board expressed its preference not to act on the proposed State Strategy until it could be jointly considered with the South Coast SIP, which was scheduled to be considered at the Board's September 27, 2007 hearing. The Board also instructed staff to work with District staff to find additional emission reductions from already proposed measures or new measures to help meet the District's PM2.5 emission reduction target.

Since June 22, ARB and District staff have worked closely, delving into proposed measures and exploring new actions to achieve the additional emission reductions targeted for 2014. The result is a revised proposal that meets the emission reduction target developed by the District. (See Table on Page 4.)

Summary of New and Revised Proposed Actions

It was very clear from the presentations, discussion, and testimony at the June 22 Board hearing that reducing the additional emissions necessary to meet the PM2.5 target would not be easy and would not be cheap. A combination of federal, State, and local government actions will be needed in order to meet the target. This new proposal will require the ARB and the District to exercise the full extent of their regulatory authority and will necessitate the effective use of all available air quality funds and acquisition of supplementary funds. ARB, the District, and local governments in the region would collaborate to secure additional funding sources. ARB will appropriately allocate discretionary funds (e.g., State Bond, AB 118, and other funds) to the District after careful consideration of the South Coast and other air districts' air quality needs.

ARB's additional emission reductions would come mainly from enhancing its heavy-duty truck measure, and includes both private truck fleets and port trucks. The emissions impact of the enhanced measure would be equivalent to having all model year 2006 and older trucks meet model year 2007 emission levels by 2014. This would reduce an additional 27 tpd of NOx in the South Coast in 2014 beyond the reductions from diesel trucks envisioned in ARB staff's April 2007 proposed State Strategy. The specific approach for achieving the reductions would be developed during the rulemaking process.

ARB staff's proposal also includes reductions from the co-benefits of ARB's early action measures plus other actions within the State to mitigate climate change

emissions from mobile and stationary sources in California. (When engines and equipment are made more efficient to reduce greenhouse gases, some criteria pollutant emissions are reduced as well.) Staff estimates that greenhouse gas reduction measures would reduce about 3 tpd of NO_x in the South Coast by 2014.

The District is committing to achieve additional emission reductions through a combination of rulemaking and targeted use of incentive funds. A rule would be pursued to reduce direct PM emissions from residential wood burning and commercial cooking. (The District made this commitment when it adopted its plan in June 2007.) Targeted use of incentive funds would enhance ARB rulemaking covering large off-road equipment and port-related sources. And funds would be used for advanced emission reducing technology on diesel Metrolink locomotive engines. These measures would reduce the equivalent of 29 tpd of NO_x in 2014.

ARB staff proposes that air quality-related motor vehicle registration fees collected in the air basin be used to achieve an additional 4 tpd of NO_x reductions through the funding of SIP-creditable projects. (SIP credit is not currently taken for projects funded with these fees.) South Coast cities and counties should target their air quality funds to get the most cost-effective emission reductions. This target represents about 40 percent of the funds under city and county control used for projects achieving cost-effectiveness similar to the Carl Moyer Program. ARB would amend its guidance on the use of the fees to include new cost-effectiveness guidelines and a suggested list of SIP-creditable projects. SIP credit could also be taken for South Coast Mobile Source Air Pollution Reduction Review Committee projects that achieve surplus emission reductions.

The U.S. EPA is an important partner in meeting federal Clean Air Act attainment requirements, as they have the authority and responsibility to control emissions from mobile sources under their jurisdiction, such as interstate trucks, marine vessels, and locomotives. The federal government should provide funding to mitigate the impacts of federal sources that are less well controlled than California regulated sources in order to meet the PM_{2.5} attainment deadline. Locomotives operating in the South Coast would produce 10 tpd of excess NO_x emissions in 2014 because the U.S. EPA's proposed new engine standards for NO_x are not expected to be fully implemented until 2017. This 10 tpd target is equivalent to the emission reductions that would have been achieved had U.S. EPA adopted its proposed Tier 4 NO_x locomotives standard in time for the State to work to convert all locomotives operating in the basin to Tier 4 by 2014.

Given that SCAG, through its RTP process, is identifying transportation infrastructure measures (e.g., rail electrification) that will seek to achieve quantifiable reductions, these reductions can be used to substitute for the SIP commitment.

Credit for an additional 3 tpd of NOx reductions can also be taken for Carl Moyer Program projects already funded by the District but not previously included in ARB's or the District's SIP credit accounting.

ARB Legal Commitments for the SIP

From a SIP legal perspective, ARB staff proposes to commit to an additional 30 tpd of NOx emission reductions in the South Coast Air Basin by 2014. We plan on working with the District to help secure funding to achieve the 6 tpd from port-related and other sources and from Metrolink trains. We also propose to backstop the 6 tpd, i.e., achieve the reductions if the measures fall short.

The emission reduction commitments may be achieved through a combination of actions, including the implementation of control measures; local, State or federal incentive funds; and other enforceable measures. ARB staff proposes to have flexibility to help achieve the commitment through ROG, SOx, or direct PM2.5 reductions to the degree that the reductions achieve the equivalent benefit of reducing NOx based on the District's PM2.5 modeling.

Finally, if attainment is reached prior to the entire commitment being achieved, ARB staff proposes that the remaining reductions still be realized but that they may be implemented after 2014 but no later than 2017.

Further Development of Section 182(e)(5) Strategies

The additional NOx emission reductions needed to demonstrate attainment of the federal annual PM2.5 ambient air quality standard by 2014 will help reduce the emission commitment of the long-term control measures (Section 182(e)(5) or "black box") needed to achieve the federal 8-hour ozone ambient air quality standard. However, significant efforts will be needed to identify specific control measures or strategies/mechanisms to achieve the emission reductions associated with the black box measure. In addition, early identification of specific control strategies will play an important role to help address the federal 24-hour PM2.5 ambient air quality standard and potentially a more stringent proposed federal 8-hour ozone air quality standard.

The three agencies (i.e., CARB, SCAG, and SCAQMD) are committed to work together to develop a discussion paper within four months from the date of adoption of the 2007 SIP. The discussion paper will explore potential strategies for the black box and future ambient air quality standards. The paper would discuss new or transformative strategies, such as state-of-technology zero and near-zero transportation systems, other mechanisms such as fee-based incentives, and availability of public funding assistance programs.

**Additional Actions to Meet the District's
PM2.5 Emission Reduction Target
(NOx Emission Reductions – tons/day in 2014)**

Action / Measure	Responsible Agency	NOx
Enhanced Heavy-Duty Truck Measure	ARB	27
Co-Benefits from GHG Reduction Measures	ARB	3
SOON Program Opt-in for Construction Equipment	District	12
Residential Wood Burning and Commercial Cooking Rule	District	11
Additional Incentive Funds for Port-Related and Other Sources	District/ARB*	3
Funding for Selective Catalytic Reduction (SCR) on Metrolink Trains	District/ARB*	3
DMV Registration Fees Used for SIP-Creditable Projects	Local Gov	4
Federal Funding to Mitigate Locomotive Emissions in 2014 Pending Implementation of Proposed New Locomotive Standards	Federal Gov	10
SIP Credit for Moyer Program Projects Already Funded	District	3
Additional Reductions		76**

* Joint funding commitment with ARB backstop of emission reduction commitment.

** 2 tpd of NOx reductions will be used to offset other small precursor pollutant shortfalls to meet the PM2.5 emission reduction target.

In its plan, the District committed to reducing direct PM2.5 emissions from residential wood burning and commercial cooking that would be equivalent to reducing NOx by 11 tpd. The proposed ARB commitment would include the same flexibility to secure other PM2.5 precursor reductions as long as they have the same air quality benefit predicted by the District's modeling.