

Resolution 07-28

September 27, 2007

Attachment B

**Proposed Modifications to the Air Resources Board's
Proposed State Strategy for California's 2007 State Implementation Plan
that will Achieve 30 Tons Per Day of Additional Emission Reductions in the
South Coast by 2014 and 88 to 93 Tons Per Day of Emission Reductions in
the San Joaquin Valley by 2017**

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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	<u>88-93</u>

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 NOx 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 NOx 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 PM2.5.

This measure would reduce NOx 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 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 air 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 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 NO_x 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 cleaner new engine NOx standards as quickly as possible. Conversion to the cleanest Tier 4 engines is linked to timing 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.

The advantage of setting a goal of full conversion to Tier 4 equipment is that it ultimately results in the cleanest fleet. While this is the starting point for staff's proposal we recognize that significant reductions can be achieved sooner by upgrading the dirtiest, old equipment to Tier 3. To that end we are supporting efforts to secure federal funds and other mechanisms to achieve near-term reductions that can be credited to the SIP.

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 taking into account early upgrades to Tier 3 equipment. During detailed rulemaking, ARB staff will also 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.