Proposed 8-Hour Ozone State Implementation Plan Revisions and Technical Revisions to the PM2.5 State Implementation Plan Transportation Conformity Budgets for the South Coast and San Joaquin Valley Air Basins

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California Environmental Protection Agency

Air Resources Board

Introduction

On April 28, 2011, the Air Resources Board (ARB or Board) considered revisions to the South Coast and San Joaquin Valley State Implementation Plans (SIPs) for PM2.5 that accounted for reductions of emissions that contributes to PM2.5 levels. The revisions were formally adopted by the Board's Executive Officer on May 18, 2011 when Executive Order S-11-010 was signed. The April 2011 PM2.5 SIP revisions accounted for recent regulatory actions and recessionary impacts on emissions that occurred after the South Coast and San Joaquin Valley PM2.5 SIPs were adopted in 2007 and 2008, respectively. Those revisions accounted for the impact the recession has had on emissions and the benefits of ARB's in-use diesel truck and off-road equipment regulations. The revisions updated the PM2.5 SIP's reasonable further progress (RFP) calculations, transportation conformity budgets, and ARB's rulemaking calendar.

ARB staff is now proposing corresponding revisions to the 8-hour ozone SIPs adopted by the South Coast and San Joaquin Valley Air Districts (Districts) in 2007. The same technical procedures used for the April 2011 PM2.5 SIP revisions were applied to estimate future emissions in 8-hour ozone SIP milestone years. Appendix A identifies the specific SIP revisions. Appendix B provides ARB staff's current estimate of remaining emissions after accounting for the impacts of the regulations and the recession and contains documentation for these estimates. Appendix C includes a description of the methodology used to calculate the proposed updated transportation conformity budgets for both the South Coast and San Joaquin Valley Air Basins. Appendix D provides the updated ARB rulemaking calendar, as adopted by ARB on May 18, 2011. Finally, Appendix E contains ARB staff's analysis of environmental impacts of the proposed SIP revisions.

Description of Proposed Revisions to the 8-Hour Ozone SIPs

Appendix A contains the proposed SIP revisions and is intended for submittal to U.S. EPA. The proposed 8-hour ozone SIP revisions update the RFP calculations and the transportation conformity budgets. Staff is also proposing to update ARB's rulemaking calendar for one measure, a revision to the calendar for cleaner in-use agricultural equipment. Appendix A also contains additional information on ARB actions to identify advanced emission control technologies in the South Coast and San Joaquin Valley.

Proposed Revisions to the 8-Hour Ozone SIP Reasonable Further Progress Calculations

ARB staff is proposing revisions to reflect the current estimate of remaining emissions in the RFP demonstrations for the South Coast and San Joaquin Valley. When ARB adopted the 2007 8-hour ozone SIPs for the South Coast and San Joaquin Valley, both regions demonstrated RFP in accordance with the Clean Air Act requirements. This continues to be true based on ARB staff's current estimate of remaining emissions in both the South Coast and San Joaquin Valley. In order to make this demonstration available to U.S. EPA for inclusion in the 8-hour ozone SIPs, ARB staff has recalculated the RFP demonstrations and contingency measure accounting using the current estimate of remaining emissions.

Proposed Revisions to the 8-Hour Ozone SIP Transportation Conformity Budgets

ARB is proposing to update the transportation conformity budgets applicable to the federal 8-hour ozone standard for the South Coast and San Joaquin Valley Air Basins that will ensure that on-road emissions will be consistent with the attainment demonstration in future years. These updates account for the action taken by the Board in December 2010 to amend the truck and bus regulations, new data, and to reflect the current rulemaking calendar.

ARB staff is also proposing to make minor technical revisions to the South Coast and San Joaquin Valley PM2.5 SIP transportation conformity budgets adopted by the Board in April of 2011.

Proposed Update to the 8-Hour Ozone SIP Rulemaking Calendar for Agricultural Equipment

When ARB adopted the recent revisions to the rulemaking calendar for California's PM2.5 SIPs, ARB only adopted revisions as they related to the PM2.5 SIPs. The updated rulemaking calendar now needs to be adopted for inclusion in the South Coast and San Joaquin Valley 8-hour ozone SIPs, with the following addition: ARB staff is proposing to revise the rulemaking calendar for the cleaner in-use agricultural equipment measure consistent with the updated calendar for the other remaining ozone measures identified in the 2007 SIP. This measure is included in the San Joaquin Valley 8-hour ozone SIP but not the PM2.5 SIP. The ARB adopted 2011 PM2.5 rulemaking calendar submitted to U.S. EPA is included in Appendix D.

An incentive program is also being implemented to achieve early reductions in ozone precursors from agricultural equipment, primarily tractors. To date, about $70 million has been allocated by the San Joaquin Valley Air District and federal agencies to modernize off-road agricultural equipment. Benefits from this incentive program will be incorporated into the 8-hour ozone SIP for the San Joaquin Valley as emission reductions are achieved and accounting is completed.

ARB staff proposes to bring an agricultural equipment measure to the Board for consideration in 2013. The final implementation schedule would be determined in the rulemaking process as described in the 2007 SIP. The specific revision to the rulemaking calendar for agricultural equipment is included in Appendix A.

Actions to Identify and Implement Advanced Technologies to Reduce Ozone-forming Emissions

While ozone air quality continues to improve in both the South Coast and San Joaquin Valley air basins, full attainment in these regions will require additional emission reductions. Advanced technologies are necessary in order to fully realize the emission reductions needed to attain the federal ozone standard by the attainment year of 2023. Appendix A summarizes ARB staff's proposal to augment the discussion

contained in the South Coast and San Joaquin Valley 8-hour ozone SIPs regarding actions ARB will take to identify and implement the advanced technology provisions in accordance with the requirements of section 182(e)(5) of the federal Clean Air Act.

Complete List of Appendices

- Appendix A: Proposed State Implementation Plan Revision
  - A-1: Proposed Revisions to the 8-hour Ozone SIP Reasonable Further Progress Calculations
  - A-2: Proposed Revisions to the 8-hour Ozone and PM2.5 SIP Transportation Conformity Budgets
  - A-3: Proposed Revisions to the 8-hour Ozone SIP Rulemaking Calendar for Agricultural Equipment
  - A-4: Actions for Identifying and Implementing Advanced Technology Measures
- Appendix B: Current Estimates of Remaining Emissions, Documentation and Methodology
- Appendix C: Description of Technical Revisions to the 8-hour Ozone and PM2.5 SIP Transportation Conformity Budgets
- Appendix D: Adopted PM2.5 Rulemaking Calendar
- Appendix E: Analysis of Environmental Impacts

Appendix A
State Implementation Plan Revision

- A-1: Proposed Revisions to the 8-hour Ozone SIP Reasonable Further Progress Calculations
- A-2: Proposed Revisions to the 8-hour Ozone and PM2.5 SIP Transportation Conformity Budgets
- A-3: Proposed Revisions to the 8-hour Ozone SIP Rulemaking Calendar for Agricultural Equipment
- A-4: Actions for Identifying and Implementing Advanced Technology Measures

A-1
Revisions to the 8-hour Ozone SIP
Reasonable Further Progress Calculations

South Coast
(Summer Season, tons per day)

	2002	2008	2011	2014	2017	2020	2023
Baseline ROG	880.5	632.0	579.9	535.2	519.8	513.9	513.4
CA MVCP/RVP Adjustment	0.0	56.1	73.0	86.6	93.7	98.3	101.6
RACT Corrections	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjusted 2002 Baseline ROG in milestone year	880.5	824.5	807.6	793.9	786.8	782.3	778.9
RFP commitment for ROG reductions from new measures	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Future Year ROG with existing and proposed measures		632.0	579.9	535.2	519.8	513.9	513.4
Required % change since previous milestone year (ROG or NOx) compared to 2002		18%	9%	9%	9%	9%	9%
Required % change since 2002 (ROG or NOx)		18%	27%	36%	45%	54%	63%
Target ROG levels		676.1	599.8	533.4	479.0	431.7	389.8
Apparent shortfall in ROG		-44.1	-19.9	1.7	40.8	82.2	123.6
Apparent shortfall in ROG, %		-5.3%	-2.5%	0.2%	5.2%	10.5%	15.9%
ROG shortfall previously provided by NOx substitution, %		0%	0.0%	0.0%	0.2%	5.2%	10.5%
Actual ROG shortfall, %		-5.3%	-2.5%	0.2%	5.0%	5.3%	5.4%
Baseline NOx	1024.1	728.3	591.2	532.1	478.8	428.2	378.4
CA MVCP Adjustment	0.0	64.7	80.6	93.0	98.3	102.4	105.9
Adjusted 2002 Baseline NOx in milestone year	1024.1	959.4	943.4	931.1	925.8	921.7	918.2
RFP commitment for NOx reductions from new measures	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in NOx since 2002		231.1	352.3	398.9	447.0	493.5	539.7
Change in NOx since 2002, %		24.1%	37.3%	42.8%	48.3%	53.5%	58.8%
NOx reductions since 2002 already used for RFP substitution and contingency through last milestone year, %		0.0%	3.0%	3.0%	3.2%	8.2%	13.5%
NOx reductions since 2002 available for RFP substitution and contingency in this milestone year, %		24.1%	34.3%	39.8%	45.1%	45.4%	45.3%
Change in NOx since 2002 used for ROG substitution in this milestone year, %		0.0%	0.0%	0.2%	5.0%	5.3%	5.4%
Change in NOx since 2002 available for contingency in this milestone year, %		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Change in NOx since 2002 surplus after meeting substitution and contingency needs in this milestone year, %		21.1%	34.3%	39.6%	40.1%	40.0%	39.9%
RFP Met?		YES	YES	YES	YES	YES	YES
Contingency Met?		YES	YES	YES	YES	YES	YES

A-1
Revisions to the 8-hour Ozone SIP
Reasonable Further Progress Calculations

San Joaquin Valley
(Summer Season, tons per day)

	2002	2008	2011	2014	2017	2020	2023
Baseline ROG	457.5	407.6	354.1	331.0	328.9	330.5	339.0
CA MVCP/RVP Adjustment	0.0	12.4	17.8	22.4	25.4	26.4	26.5
RACT Corrections	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adjusted 2002 Baseline ROG in milestone year	457.5	445.1	439.7	435.0	432.0	431.0	431.0
RFP commitment for ROG reductions from new measures	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Future Year ROG with existing and proposed measures		407.6	354.1	331.0	328.9	330.5	339.0
Required % change since previous milestone year (ROG or NOx) compared to 2002		18%	9%	9%	9%	9%	9%
Required % change since 2002 (ROG or NOx)		18%	27%	36%	45%	54%	63%
Target ROG levels		365.0	327.2	293.5	264.4	239.7	218.1
Apparent shortfall in ROG		42.6	26.9	37.5	64.5	90.9	121.0
Apparent shortfall in ROG, %		9.6%	6.1%	8.6%	14.9%	21.1%	28.1%
ROG shortfall previously provided by NOx substitution, %		0%	9.6%	9.6%	9.6%	14.9%	21.1%
Actual ROG shortfall, %		9.6%	-3.4%	-0.9%	5.4%	6.1%	7.0%
Baseline NOx	565.2	425.4	359.0	307.4	258.8	224.9	194.6
CA MVCP Adjustment	0.0	16.8	21.2	24.8	26.9	27.8	28.2
Adjusted 2002 Baseline NOx in milestone year	565.2	548.5	544.1	540.4	538.4	537.4	537.1
RFP commitment for NOx reductions from new measures	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in NOx since 2002		123.1	185.1	233.0	279.5	312.5	342.5
Change in NOx since 2002, %		22.4%	34.0%	43.1%	51.9%	58.1%	63.8%
NOx reductions since 2002 already used for RFP substitution and contingency through last milestone year, %		0.0%	12.6%	12.6%	12.6%	17.9%	24.1%
NOx reductions since 2002 available for RFP substitution and contingency in this milestone year, %		22.4%	21.4%	30.6%	39.4%	40.2%	39.7%
Change in NOx since 2002 used for ROG substitution in this milestone year, %		9.6%	0.0%	0.0%	5.4%	6.1%	7.0%
Change in NOx since 2002 available for contingency in this milestone year, %		3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Change in NOx since 2002 surplus after meeting substitution and contingency needs in this milestone year, %		9.9%	21.4%	30.6%	34.0%	34.1%	32.7%
RFP Met?		YES	YES	YES	YES	YES	YES
Contingency Met?		YES	YES	YES	YES	YES	YES

A-2
Revisions to the 8-hour Ozone and PM2.5 SIP
Transportation Conformity Budgets

South Coast
8-hour Ozone SIP Transportation Conformity Budgets*
(Summer Season, tons per day)

	2011		2014		2017		2020		2023	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
South Coast Air Basin	172	328	136	277	119	224	108	185	99	140

*Budgets are rounded up to the nearest ton.

In addition, at the time the 2007 SIP was adopted, a 2008 budget year was a necessary MPO analysis year for federal transportation conformity purposes. Since 2008 has passed, it is no longer applicable as a conformity analysis year, and was therefore not included in these budgets.

San Joaquin Valley
8-hour Ozone SIP Transportation Conformity Budgets**
(Summer Season, tons per day)

County Subarea	2011		2014		2017		2020		2023	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Fresno	14.3	36.2	10.7	30.0	9.3	22.6	8.3	17.7	8.0	13.5
Kern (SJV)	12.7	50.3	9.7	42.7	8.7	31.7	8.2	25.1	7.9	18.6
Kings	2.8	10.7	2.1	8.9	1.8	6.7	1.7	5.3	1.6	4.0
Madera	3.4	9.3	2.5	7.7	2.2	5.8	2.0	4.7	1.9	3.6
Merced	5.1	19.9	3.7	16.7	3.2	12.4	2.9	9.9	2.8	7.4
San Joaquin	11.1	24.6	8.4	20.5	7.2	15.6	6.4	12.4	6.3	10.0
Stanislaus	8.5	16.9	6.4	13.9	5.6	10.6	5.0	8.4	4.7	6.4
Tulare	8.8	16.0	6.7	13.2	5.8	10.1	5.3	8.1	4.9	6.2

** Budgets are rounded up to the nearest tenth ton (0.1).

In addition, at the time the 2007 SIP was adopted, a 2008 budget year was a necessary MPO analysis year for federal transportation conformity purposes. Since 2008 has passed, it is no longer applicable as a conformity analysis year, and was therefore not included in these budgets.

South Coast
PM2.5 SIP Transportation Conformity Budgets*
(Annual Average, tons per day)

	2012			2014		
	ROG	**NOx**	**PM2.5**	**ROG**	**NOx**	**PM2.5**
South Coast Air Basin	154	326	37	132	290	35

*Budgets are rounded up to the nearest ton.

Per Section 93.124 of the conformity regulations, for transportation conformity analyses using these budgets in analysis years beyond 2014, a trading mechanism is established to allow future decreases in NOx emissions from on-road mobile sources to offset any on-road increases in PM2.5, using a NOx:PM2.5 ratio of 10:1. This trading mechanism will only be used, if needed, for conformity analyses for years after 2014. To ensure that the trading mechanism does not impact the ability to meet the NOx budget, the NOx emission reductions available to supplement the PM2.5 budget shall only be those remaining after the 2014 NOx budget has been met. Clear documentation of the calculations used in the trading should be included in the conformity analysis.

In addition, at the time the 2007 SIP was adopted, a 2009 budget year was a necessary MPO analysis year for federal transportation conformity purposes. Since 2009 has passed, it is no longer applicable as a conformity analysis year, and was therefore not included in these budgets.

San Joaquin Valley
PM2.5 SIP Transportation Conformity Budgets**
(Annual Average, tons per day)

County Subarea	2012		2014	
	PM2.5	NOx	PM2.5	NOx
Fresno	1.5	35.7	1.1	31.4
Kern (SJV)	1.9	48.9	1.2	43.8
Kings	0.4	10.5	0.3	9.3
Madera	0.4	9.2	0.3	8.1
Merced	0.8	19.7	0.6	17.4
San Joaquin	1.1	24.5	0.9	21.6
Stanislaus	0.7	16.7	0.6	14.6
Tulare	0.7	15.7	0.5	13.8

** Budgets are rounded up to the nearest tenth ton (0.1).

Per Section 93.124 of the conformity regulations, for transportation conformity analyses using these budgets in analysis years beyond 2014, a trading mechanism is established to allow future decreases in NOx emissions from on-road mobile sources to offset any on-road increases in PM2.5, using a NOx:PM2.5 ratio of 9:1. This trading mechanism will only be used, if needed, for conformity analyses for years after 2014. To ensure that the trading mechanism does not impact the ability to meet the NOx budget, the NOx emission reductions available to supplement the PM2.5 budget shall only be those remaining after the 2014 NOx budget has been met. Clear documentation of the calculations used in the trading should be included in the conformity analysis.

In addition, at the time the 2007 SIP was adopted, a 2009 budget year was a necessary MPO analysis year for federal transportation conformity purposes. Since 2009 has passed, it is no longer applicable as a conformity analysis year, and was therefore not included in these budgets.

A-3
Revisions to the 8-hour Ozone SIP
Rulemaking Calendar for Agricultural Equipment

ARB adopted revisions to the rulemaking calendar for California's PM2.5 SIPs on May 18, 2011. The updated rulemaking calendar is also intended for inclusion in the South Coast and San Joaquin Valley 8-hour ozone SIPs, with the following addition: the rulemaking calendar for the cleaner in-use agricultural equipment measure, has an action date of 2013 consistent with the updated calendar for the remaining ozone measures identified in the 2007 SIP. This measure is included in the San Joaquin Valley 8-hour ozone SIP but not the PM2.5 SIP. A copy of the PM2.5 SIP Rulemaking Calendar is included in Appendix D to this report for reference.

An incentive program is also being implemented to achieve early reductions in ozone precursors from agricultural equipment, primarily tractors. To date, about $70 million has been allocated by the San Joaquin Valley Air District and federal agencies to modernize off-road agricultural equipment. Benefits from this incentive program will be incorporated into the 8-hour ozone SIP for the San Joaquin Valley as emission reductions are achieved and accounting is completed.

Revisions to the 8-hour Ozone SIP Rulemaking Calendar for Agricultural Tractors

	Agency	Actions	Implementation
Off-Road Equipment			
Cleaner In-use Agricultural Equipment[1]	ARB	2013	See note

[1] The final implementation schedule would be determined in the rulemaking process as described in the currently adopted ozone SIP. This measure is included in the San Joaquin Valley 8-hour ozone SIP and not the PM2.5 SIP.

A-4
Actions for Identifying and Implementing Advanced Technology Measures

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 fully meet attainment goals in the South Coast and San Joaquin Valley. As the State agency charged with ensuring California's SIP compliance, the ARB is ultimately responsible for ensuring that measures are identified no later than 2020 (three years prior to the attainment year) and the emission reductions achieved by 2023.

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.

To implement the Long-term Strategy, ARB:

a) commits to share the results of its efforts 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.

While the Clean Air Act establishes timelines well into the future, ARB recognizes the challenges presented are near enough that action is needed in order to bridge the attainment gap in the South Coast and San Joaquin Valley. While not exhaustive, the following section describes on-going activities to identify and deploy the technologies needed to attain the ozone standard in the South Coast and San Joaquin Valley and to fulfill ARB's commitment under section 182(e)(5) of the Clean Air Act.

Clean Air Technology Initiative

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 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

Co-Benefits of Climate Change Programs

California is committed to reducing the State's impacts on global climate change. California's major initiatives for reducing climate change or greenhouse gas (GHG) emissions are outlined in Assembly Bill 32 – the Global Warming Solutions Act of 2006 (AB 32). These efforts aim at reducing GHG emissions to 1990 levels by 2020 – a reduction of approximately 30 percent. Reducing emissions from combustion sources is at the core of California's program to meet the federal ozone standard and is also central to the AB 32 Scoping Plan for meeting the 2020 greenhouse gas emissions target. California's climate and criteria pollutant programs are complementary, and the AB 32 regulations ARB is adopting will provide emission reductions that will be incorporated into future air quality plans for ozone and fine particles.

Air Quality Improvement Program (AQIP)

The *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118, Statutes of 2007, Chapter 750) creates the Air Quality Improvement Program (AQIP). This incentive program is administered by ARB to fund clean vehicle and equipment projects, research on biofuels production and the air quality impacts of alternative fuels, and workforce training. The AQIP expands California's portfolio of air quality incentives, providing the opportunity to fund projects that do not fit within the statutory framework of existing incentive programs such as the Carl Moyer Air Quality Standards Attainment Program (Carl Moyer Program), Goods Movement Emission Reduction Program, and Lower-Emission School Bus Program.

AQIP is ARB's only incentive program structured to allow for investments in technology advancing projects which also provide immediate emission reductions, and ARB is using AQIP funds for this purpose. AQIP investments support the deployment of hybrid-electric vehicles, zero-emission vehicles (ZEV), and other advanced technologies critical to meeting California's post-2020 SIP and climate change emission reduction goals. California must start placing these zero- and near-zero emission vehicles on its roadways today to achieve large-scale emission reductions in future decades because of the time it takes for significant fleet turnover. The cornerstone of the AQIP for FY 2009-10 is the $20.4 million Hybrid Truck and Bus Voucher Incentive Project (HVIP), aimed at accelerating California deployment of new hybrid medium- and heavy-duty vehicles. California's large funding commitment for hybrid truck technology not only provides emission benefits today, but is likely to enable heavy-duty hybrids to become commonplace in the near future, much the way hybrid cars have become commonplace in the light-duty sector. Hybrid technology for trucks is near a tipping point, and the State's investment over several years should help it become self-sustaining through production economies of scale.

AQIP is also funding vehicle purchaser incentives for other cleaner technologies – ZEV's and plug-in hybrid cars, electric lawnmowers, and demonstration projects for cleaner marine and locomotive engines. These projects are on track as well. In nearly all cases, demand for funding is meeting or exceeding ARB's expectations.

Annual Research Program

Annually, ARB adopts a research plan intended to provide timely scientific and technical information that will help the Board and local air pollution control districts to most effectively implement air pollution control programs in California. Specifically, this plan supports ARB's mission to protect public health based on a strong scientific understanding of health effects and exposures; continue developing and implementing strategies to reduce GHG emissions and energy consumption; develop effective strategies to safeguard health and welfare against adverse impacts of ambient air pollution; and support development of technologies and non-technological strategies that address multiple priorities related to air quality. The 2010/2011 research program identified 25 projects to receive more than $6.5 million dollars in research funding. Cumulatively, California has granted nearly $24 million dollars in research funds since the 2007 8-hour ozone SIPs were adopted.

South Coast and San Joaquin Valley Air District Efforts

South Coast

The South Coast Air District has been a leader in identifying and implementing strategies to improve air quality through the use of innovative strategies and advanced technologies. In order to meet the region's 2023 attainment goal, emissions of nitrogen oxides (NOx) will need to decline by an additional two-thirds by 2023. Achieving this goal will require a fundamental shift in business-as-usual to a clean-energy future. The South Coast Air District has identified a clean energy vision of the future that would guide the way as the region begins to recover from the economic recession that has affected the entire nation.

This vision would have local, State and federal government and business leaders focus on utilizing the cleanest, greenest technologies in their planned growth. In order to fully realize the vision, the region would need to change how people and freight are moved – using electrification and hybridization technologies to convert existing infrastructure to near-zero emissions. Land-use decisions would put people closer to their destinations and would empower people to choose energy efficient mass transit. Energy generation and use would be cleaner. Solar and fuel cell distributed generation would play a significant role in meeting the region's energy needs. Old inefficient power plants would be modernized with more efficient equipment. Building energy use would be improved and energy consumers would be given the tools needed to use energy more wisely.

San Joaquin Valley

The San Joaquin Valley Air District is also pursuing innovative strategies to reduce ozone-forming emissions, through the local "Fast Track" strategy. The Fast Track strategy focuses on using innovative strategies to reduce emissions from sources that cannot be regulated or have already been well controlled at the local level. Key long-

term elements of the Fast Track strategy include opportunities to reduce emissions from heavy-duty trucks by shifting goods movement to lower-emission alternatives. The San Joaquin Valley Air District has explored and advocated for the use of short sea shipping opportunities to shift goods movement from trucks to waterways. In 2010, the U.S. Department of Transportation awarded the Ports of Stockton, West Sacramento, and Oakland with a $30 million grant to move goods between Oakland and the two inland ports over the San Joaquin-Sacramento Delta.

The San Joaquin Valley Air District also recognizes the need for transformational changes in technology, and has adopted a Technology Advancement Program to support technological advancements through partnerships with universities, State agencies, and the federal government. The San Joaquin Valley Air District also established a Regional Energy Efficiency Strategy to support technology development and deployment in the Valley. The Regional Energy Efficiency Program lays out goals and measures that will guide the District's actions to reduce emissions caused by electricity and natural gas consumption in residential, industrial, and institutional organizations in the Valley.

Conclusion

Achieving the emission reductions needed to fully attain the federal 8-hour ozone standard in the South Coast and the San Joaquin Valley will require significant penetration of the cleanest technologies. ARB, the South Coast Air District and the San Joaquin Valley Air District have a long history of pursuing innovative strategies to bring low and ultra-low emission technologies into use. ARB staff will periodically update the Board on these efforts and will revise the SIP as appropriate when advanced technologies become viable emission control strategies. Additionally, ARB will revise the SIP if needed, as California addresses future air quality standards.

Appendix B
Current Estimates of Remaining Emissions, Documentation and Methodology

Appendix B includes additional documentation and data supporting this proposed SIP Revision. It includes additional detail regarding the emissions accounting methodology and information on how ARB staff accounted for the impacts of the recession. This methodology is consistent with the methodology described in Appendix A and Appendix E of the ARB staff report "Progress Report on Implementation of PM2.5 State Implementation Plans (SIP) for the South Coast and San Joaquin Valley Air Basins and Proposed SIP Revisions" which was released to the public on March 29, 2011.

Current Estimates of Remaining Emissions

South Coast Air Basin
Remaining NOx Emissions
(Summer Season, tpd)

Category	2002	2008	2011	2014	2017	2020	2023
Stationary & Areawide	89	82	73	71	68	68	68
On-road Mobile	652	422	327	276	224	185	140
Off-road Mobile	283	225	191	185	187	176	170
Total Inventory	1024	728	591	532	479	428	378

South Coast Air Basin
Remaining ROG Emissions
(Summer Season, tpd)

Category	2002	2008	2011	2014	2017	2020	2023
Stationary & Areawide	318	247	252	254	260	267	273
On-road Mobile	361	211	171	135	119	107	98
Off-road Mobile	202	174	156	146	141	140	142
Total Inventory	881	632	580	535	520	514	513

Current Estimates of Remaining Emissions

San Joaquin Valley
Remaining NOx Emissions
(Summer Season, tpd)

Category	2002	2008	2011	2014	2017	2020	2023
Stationary & Areawide	101	76	68	57	55	53	53
On-road Mobile	312	229	183	153	115	91	69
Off-road Mobile	152	120	108	98	89	80	73
Total Inventory	565	425	359	307	259	225	195

San Joaquin Valley
Remaining ROG Emissions
(Summer Season, tpd)

Category	2002	2008	2011	2014	2017	2020	2023
Stationary & Areawide	276	263	226	223	229	235	244
On-road Mobile	110	78	66	50	43	39	37
Off-road Mobile	71	67	62	59	57	57	57
Total Inventory	457	408	354	331	329	331	339

SIP Accounting

The Clean Air Act requires the use of air quality modeling to determine the “carrying capacity” or “SIP emissions target”; that is, the maximum allowable emission levels that the nonattainment area can accommodate while attaining the standard.

While the adopted SIP contains a list of category-specific measures with regulatory timelines and expected reductions, ARB’s enforceable commitment is to meet the emission levels needed for attainment with sufficient aggregate emission reductions, including any from actual changes in emissions.

To track progress toward the emissions target, this report uses a simple emissions accounting approach that explicitly shows the impact of the recession and the benefit of the regulations ARB and the local air districts have approved since the ozone SIPs were adopted. The approach looks like:

(Emissions Inventory) – (Emission Reductions Achieved) = (Remaining Emissions)

Where:

Emissions Inventory	=	Amount of ozone precursor emissions in the SIP baseline
Emission Reductions Achieved	=	Amount of emissions that have been reduced either through adopted regulations or actual emission decreases due to the recession
Remaining Emissions	=	The ozone precursor emissions level that is forecast to be remaining in the attainment year with the impacts of both regulations and the recession.

This approach keeps the focus on meeting the ultimate goal of the emissions target derived from air quality modeling. This approach also has the advantage of explicitly showing the impacts of both the regulatory actions and the recession.

Assessing the Impacts of the Recession on Goods Movement Related Emissions

This section documents the methodologies used to account for the impacts of the economic recession on the emission inventories for trucks, in-use off-road equipment, ocean-going vessels, and cargo handling equipment. Links to more detailed information are provided.

General Methodology

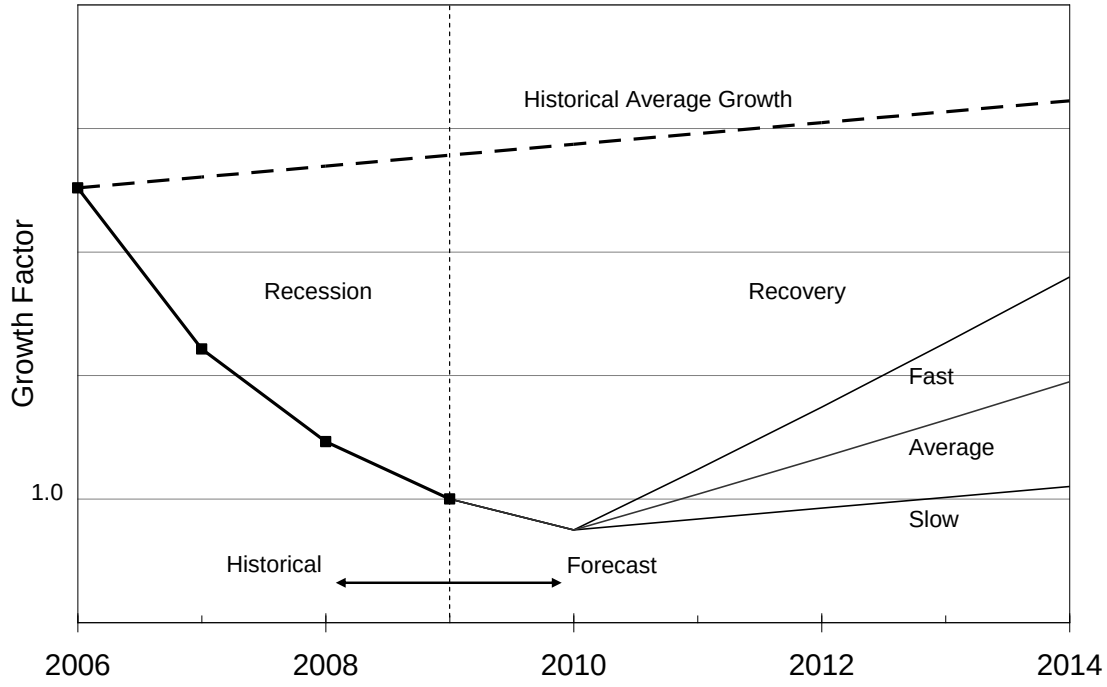
The economic recession officially started in December of 2007 and ended in June 2009. It was the most severe since the Great Depression and had a substantial impact on California industries. The emission inventories for trucks, in-use off-road equipment, ocean-going vessels, and cargo handling equipment have all been adjusted to reflect the recession's impact.

To adequately understand the impact of reduced activity on future emissions, staff developed both fast and slow recovery scenarios.

The fast recovery scenario assumes that total activity would return to projected historically average levels in 2017 and then grow at the historical average rate after that. This scenario is based on the Congressional Budget Office forecast which indicated that real gross domestic product at a nationwide level will converge with potential gross domestic product trends no later than 2015. Coupling this forecast with the assumption that California's recovery will lag the nation's by several years yielded the 2017 recovery date assumed for the fast recovery scenario.

In the slow recovery scenario, staff assumed that activity would be permanently depressed relative to historical levels, but continue to grow at the average historical growth rate beginning in 2011.

While the fast and slow scenarios provide reasonable bounds of possible recoveries, for rulemaking purposes and for this SIP update, a single forecast is needed. For that forecast, staff assumed an average recovery midway between the fast and slow recoveries. The chart below illustrates the two bounding scenarios and the assumed average used in this report. This is the same approach developed to provide economic relief through last year's regulatory amendments to the diesel trucks, buses, and off-road equipment rules.



In-Use On-Road Trucks & Buses

Staff updated the inventory for diesel trucks and buses to support ARB consideration of regulatory amendments to provide economic relief last December 2010. The update was comprehensive and included revised population estimates, new regional allocation factors, lifetime odometer assumptions, revised growth rates, forecasted vehicle age distributions to reflect the impact of the economic recession, and updated out-of-state vehicle activity. These changes are described in detail at:

http://www.arb.ca.gov/regact/2010/truckbus10/truckbus10.htm

This report required emission estimates for years and pollutants (ROG) that were not needed

for the 2010 rulemaking staff report. Staff used the same methodologies and principles used for the December 2010 regulatory inventory to develop estimates for the other years and pollutants in this report.

In-Use Off-Road Equipment

Just as for trucks and buses, staff completed a comprehensive revision to the inventory for off-road equipment to support ARB consideration in December 2010 of regulatory amendments to provide economic relief. Updates were made to the population of equipment, annual activity, load, and future equipment sales. These changes are described in detail at:

http://www.arb.ca.gov/regact/2010/offroadlsi10/offroadlsi10.htm

This report required emission estimates for years and pollutants (ROG) that were not needed for the 2010 rulemaking staff report. Staff used the same methodologies and principles used for the December 2010 regulatory inventory to develop estimates for the other years and pollutants in this report.

Ocean-Going Vessels (OGV)

The OGV inventory in the ozone SIP included vessel-specific data, an improved vessel traffic network, vessel-specific hoteling and anchorage times, and improved vessel speeds. Staff has refined that inventory since then to support rulemaking in 2008 on the sulfur content in fuel. Staff has further updated that 2008 inventory in anticipation of amendments to the same fuel rule later this year. That information is used in this report. In general, the updates include improved algorithms for vessel speed reduction (VSR), auxiliary engine power, and estimating low load adjustment factors. Recession impacts are based on container throughput statistics for the Ports of Los Angeles, Long Beach and Oakland. OGV activity was down about 25% for the combined Ports of Los Angeles and Long Beach and about 15% for the Port of Oakland between 2006 and 2009. More information is available at:

http://www.arb.ca.gov/ports/marinevess/ogv.htm

Cargo Handling Equipment (CHE)

An update to the cargo handling equipment (CHE) inventory is currently underway using new information about the population, equipment usage, impacts of the recession and fleet turnover. The new model is still under development and not available for use in this report; therefore, staff scaled the existing ozone SIP CHE emissions inventory to account for the new data.

The inventory used for the ozone SIP was based on population and activity values from a 2001 to 2004 survey. As part of the adopted regulation, equipment owners were required to report the population of their equipment to ARB. Additionally, between 2005 and 2009 the ports and rail yards have conducted their own emission inventories. This new information

indicates that the total State population is slightly higher than originally assumed. These same data sources include updates to activity and load factor. However, changes in activity and load factors offset these increases in the population.

To account for these changes, staff compared baseline 2006 emissions from the original inventory to the draft updated inventory baseline. As discussed in a recent February 2011 workshop, emissions for NOx are approximately 27 percent lower. For this report, staff assumed 2006 emissions were 27 percent lower than in the SIP. To forecast emissions forward from 2006, staff compared the original growth assumptions for CHE to the growth in port truck activity in the 2010 Truck and Bus Rule inventory model. Assuming that the CHE activity relates chiefly to the movement of shipping containers, staff reduced growth by approximately 20 percent. More information is available at:

http://www.arb.ca.gov/ports/cargo/cargo.htm

Commercial Harbor Craft

In 2007, ARB adopted a commercial harbor craft regulation and adopted amendments to the original rule in 2010. Updates were made to the population of equipment, annual activity, and regional allocation. These changes are described in detail at:

http://www.arb.ca.gov/ports/marinevess/harborcraft/hcdocuments.htm#regulatory

Emission Inventory Improvements for the San Joaquin Valley

Nature of Emissions Update

The San Joaquin Valley Air Pollution Control District (Valley Air District) initially adopted the 2007 8-hour ozone SIP in April 2007. At that time, the SIP reflected the best available emissions inventory estimates, technical calculations, and air quality modeling used to meet federal air quality planning requirements.

Since the San Joaquin Valley 2007 8-hour ozone SIP was adopted, both ARB and the Valley Air District have continued to evaluate and update emission inventory categories under their respective authority. As described earlier in this Appendix, ARB has identified emissions inventory improvements through the recent rulemaking process for trucks, in-use off-road equipment, ocean-going vessels, and cargo handling equipment. These ARB emission inventory improvements were submitted to U.S. EPA on May 18, 2011 as an update to the PM2.5 SIPs for the San Joaquin Valley and South Coast. The Valley Air District also identified emissions inventory and forecasting method improvements subsequent to the adoption of the 2007 8-hour ozone SIP that were incorporated into the San Joaquin Valley 2008 PM2.5 SIP. ARB staff briefed the Board on the improvements in November 2007, when staff presented the Board with the report entitled “ARB Staff Report to the Air Resources Board: Accelerating San Joaquin Valley Air Quality Progress.”

The San Joaquin Valley Air District improvements included using the most recent transportation activity data provided by Valley Metropolitan Planning Organizations and updates to several categories subject to recent District rulemaking (including agricultural burning and residential wood combustion). Revisions were also made to an emissions inventory methodology from the early 1990's for a category identified as "unspecified" natural gas sources. This emissions inventory category labeled was "unspecified" because it was designed to estimate small emission sources potentially not identified in other emissions categories. A review of the methodology used to estimate and forecast this emission category showed that emissions were incorrectly calculated in the base year and a growth surrogate was applied which further increased the future year forecast. In the 2008 PM2.5 SIP, the San Joaquin Valley District revised this methodology to correct the inventory error. The 2008 methodology is also being used in this ozone SIP update.

In aggregate, the emission estimates based on ARB and San Joaquin Valley Air District improvements show a 12 percent reduction in baseline NOx emissions for 2002. The change in 2023 is relatively greater primarily because the "unspecified" natural gas emissions estimate was greater in 2023 than in 2002. The revised emission estimates are shown in Table B-1.

Relationship to SIP Emissions Target

The SIP attainment demonstration shows how the 2023 emissions target will be met through a combination of adopted measures, new SIP measures, and 182(e)(5) emission reductions. The SIP emissions target represents the maximum allowable emissions level that the nonattainment area can accommodate while attaining the standard. The attainment demonstration in the San Joaquin Valley 8-hour ozone SIP was based on air quality modeling which used procedures set by U.S. EPA. To assess whether the emissions inventory improvements would affect the 2007 attainment demonstration, a qualitative review of the SIP modeling results was conducted. This review relied on the previous modeling results because in the near term it is not feasible to conduct new SIP modeling. Developing new SIP modeling and revisiting the adopted attainment demonstration would be a multi-year process. However, as part of the planning effort to address the expected revision to the federal 8-hour ozone standard, ARB will include 2023 attainment modeling for the current standard along with the attainment demonstration for the revised standard. If new modeling for 2023 shows that the emissions target has changed to require additional reductions, ARB will submit a revised commitment to provide the reductions needed to meet the emission target.

Review of SIP Modeling Results

In accordance with U.S. EPA procedures, air quality models are used to predict the relative response to reductions in ozone-forming emissions for each site in the region. Two model runs are conducted. The first model run is for the reference year (in this case 2002) using a corresponding estimate of ozone-forming emissions in that year. The second model run is for a future year (in this case 2023) using forecasted emissions, including adopted controls, but no new SIP measures. This provides modeled ozone concentrations for 2002 and 2023. The

ratio of these two concentrations is termed a relative reduction factor (RRF). The RRF reflects the modeled decrease in ozone levels between 2002 and 2023. The RRF is then applied to an observed baseline ozone level calculated according to U.S. EPA guidance to project the expected ozone level in the attainment year. In the San Joaquin Valley this projected ozone level was above the federal 8-hour ozone standard, indicating additional emission reductions were needed.

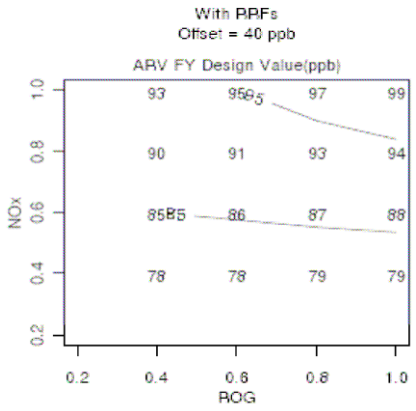
To determine how many additional reductions were needed an ozone response diagram was developed. The modeling analyses showed that Arvin was the most restrictive site in the San Joaquin Valley for attainment of the federal 8-hour ozone standard. The ozone response diagram for Arvin is shown in Figure B-1. To develop this diagram, further modeling simulations were conducted, each using incremental reductions of 20, 40, and 60 percent from the 2023 emissions forecast. From this information, the diagram provides the percent reduction needed to achieve an ozone concentration that meets the standard. This procedure established the SIP emissions target for the 2007 San Joaquin Valley ozone SIP. It is also apparent from Figure B-1 that the response to the NOx emission reductions is not linear. For example as you move down the diagram to greater NOx reductions, the rate of ozone improvement gets larger.

Determining an emission target based on revised emissions would require extensive new SIP modeling, following the process described above. However, to qualitatively assess the viability of the current attainment target, two pieces of information were key. First, as shown in Table B-1 the greater percent emission reductions resulting from the revised inventory would likely result in lower future ozone levels (a more responsive RRF). The diagram shows also that NOx reductions are the most effective precursor to control. Therefore, increasing amounts of NOx reductions result in a greater rate of air quality improvement. Taken together, these two pieces of information suggest that the existing emission targets are appropriate. The commitment to revisit the ozone modeling in the next San Joaquin Valley ozone SIP process will provide a timely review of the 2023 emissions target.

Table B-1
Comparison of Original and Revised NOx Emission Estimates
in the San Joaquin Valley

	2007 SIP NOx Emissions (tpd)	**2011 NOx Emissions (tpd)**
2002 Baseline	642	565
2023 Forecasted without SIP	295	225
Percent Change Between 2002 and 2023	54%	60%

Figure B-1
Arvin 2023 Ozone Response Diagram



Appendix C
Description of Technical Revisions to the 8-hour Ozone and PM2.5 SIP Transportation Conformity Budgets

8-hour Ozone SIP Transportation Conformity Budgets Methodology

ARB is proposing to update the transportation conformity budgets applicable to the federal 8-hour ozone standard for the South Coast and San Joaquin Valley that will ensure that the impact of on-road emissions will be consistent with the attainment demonstration in future years. These updates account for the action taken by the Board in December 2010 to amend the truck and bus regulations to include better data and improvements to the emissions inventory, and reflect the current rulemaking calendar. Appendix A provides the SIP revision.

The federal Clean Air Act requires metropolitan planning organizations (MPOs) to demonstrate that their regional transportation plans (RTPs) and transportation improvement programs (TIP) are consistent with progress toward and attainment of federal air quality standards. MPOs use modeling to estimate regional emissions based on projected motor vehicle travel on the region's road and transit facilities.

The level of emissions for on-road motor vehicles, such as cars, trucks, and buses, consistent with SIP progress and attainment, are called "Transportation Conformity Budgets." For conformity, projected emissions from highway and transit use must be less than or equal to the budget. Budgets are developed during the air quality planning process in consultation with ARB, regional air districts, U.S. EPA, the U.S. Department of Transportation, and MPOs and provide for public review and comment.

The conformity budgets use the SIP on-road mobile source inventory which includes an updated heavy duty diesel truck and bus inventory that reflects the 2010 truck and bus regulatory amendments. This adjustment reflects the difference between the baseline SIP on-road motor vehicle emissions inventory from EMFAC2007 and the new truck and bus inventory that incorporates the impacts of both the recession and final regulations. The ton per day change in emissions is incorporated as a line item adjustment to the updated transportation conformity budgets (see "State Strategy Adjustments" line item in Tables C-1 and C-2 below).

Methodologically, the State Strategy Adjustments line item is then subtracted from the baseline SIP on-road motor vehicle emissions inventory from EMFAC2007. Importantly, the SIP baseline emissions inventory used to develop the transportation conformity budgets continues to be based on the activity data (e.g. vehicle miles travelled) provided by the MPOs included in the SIPs.

This line item approach to account for State Strategy reductions is consistent with the approach used to develop the originally submitted budgets. The transportation conformity budget development worksheets are included in Tables C-1 and C-2 below, with the proposed SIP budgets found in Appendix A.

Line-Item Adjustments in 8-hour Ozone Conformity Budgets for South Coast and San Joaquin Valley

The following section describes the line-item adjustments used in the existing transportation conformity budgets (as adopted in 2007) as well as those in the revised budgets ARB staff is proposing today.

Line-Item Adjustments in the Existing 8-hour Ozone SIP Budgets
(Adopted 2007)

EMFAC2007 Baseline, covering 2008, 2011, 2014, 2017, 2020, and 2023 for South Coast and San Joaquin Valley

Line-Item Adjustments To Baseline For Measures Adopted Prior To December 2006
(Referred to as "Adjustments to Baseline" in Budgets, adjustments included in applicable years)

South Coast and San Joaquin Valley

- Heavy Duty Diesel Truck (HDDT) Chip Reflash
- HDDT Public Fleet and Solid Waste Rules
- HDDT Idling Rule
- AB 1493 GHG Standards
- On-Road Portion of Carl Moyer Program

San Joaquin Valley Only

- District Rule 9310 – School Buses

Line-Item Adjustments for Proposed SIP Measures
(Referred to as "State Strategy Reductions" in Budgets,
adjustments included in applicable years)

South Coast and San Joaquin Valley

- All Smog Check Improvements (Low Pressure Evap, Cutpoints, Annual Insp. for Older, Annual Insp. for High Mileage, Motorcycles, Lt. Duty Diesels)
- HDDT In-Use Rule
- Reformulated Gasoline
- Expanded Vehicle Retirement

South Coast Only

- AB 923 High Emitter

San Joaquin Valley Only

- Indirect Source Rule

Line-Item Adjustments in the Proposed New Budgets

EMFAC2007 Baseline, covering 2011, 2014, 2017, 2020, and 2023 for South Coast and San Joaquin Valley

Line-Item Adjustments to Baseline for Measures Adopted Prior to December 2006
(Referred to as "Adjustments to Baseline" in Budgets,
adjustments included in applicable years)

South Coast and San Joaquin Valley

- AB 1493 GHG Standards
- On-Road Portion of Carl Moyer Program

San Joaquin Valley Only

- District Rule 9310 – School Buses

Adjustments Now Included in New Heavy Duty Diesel Truck Model
(Included in "State Strategy Adjustments" in Budgets,
adjustments included in applicable years)

South Coast and San Joaquin Valley

- New HDDT Inventory
- HDDT Recession Impacts
- HDDT In-Use Rule
- HDDT Chip Re-flash
- HDDT Public Fleet and Solid Waste Rules
- HDDT Idling Rule

Line-Item Adjustments for Adopted SIP Measures
(Included in "State Strategy Adjustments" in Budgets,
adjustments included in applicable years)

South Coast and San Joaquin Valley

- Smog Check Improvements (Low Pressure Evap, Cutpoints, Lt. Duty Diesels, Smoke Test)
- Reformulated Gasoline

San Joaquin Valley

- Employee Based Trip Reduction Rule

Table C-1
South Coast Air Basin
Ozone Transportation Conformity Emission Budget Worksheets*
(Summer Season – tpd)

South Coast Air Basin	ROG						NOx				
	2011	**2014**	**2017**	**2020**	**2023**		**2011**	**2014**	**2017**	**2020**	**2023**
Baseline Emissions (EMFAC 2007 Default)	176.0	150.1	131.1	117.0	106.1		367.7	299.9	243.5	200.2	171.8
Adjustments for Adopted State and Local On-road Measures	-0.3	-0.6	-0.9	-1.1	-1.5		-1.4	-1.4	-1.0	-0.1	-0.1
State Strategy - On-road Reductions	-4.5	-14.2	-11.5	-8.5	-6.2		-38.9	-22.3	-18.8	-15.6	-31.9
SUM	171.2	135.2	118.8	107.4	98.4		327.5	276.3	223.6	184.5	139.8
Proposed Budget	172	136	119	108	99		328	277	224	185	140

*Budgets are rounded up to the nearest ton.

Table C-2
San Joaquin Valley Air Basin
Ozone Transportation Conformity Emission Budget Worksheets*
(Summer Season – tpd)

Proposed 2011 Transportation Conformity Budgets

County Subarea	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Baseline EMFAC2007	15.62	51.87	15.76	86.69	3.34	17.28	3.68	13.11	6.20	31.38	12.13	37.28	9.00	24.06	9.26	22.41
Existing Measures:																
Local Reductions	0.00	0.03	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.02	0.00	0.02
State Reductions	0.01	0.10	0.01	0.12	0.00	0.03	0.00	0.02	0.01	0.05	0.01	0.08	0.01	0.05	0.01	0.04
New/Proposed Measures:																
Local Reductions	0.15	0.05	0.10	0.04	0.02	0.01	0.02	0.01	0.04	0.02	0.12	0.04	0.09	0.03	0.07	0.03
State Reductions	1.20	15.51	3.01	36.29	0.57	6.62	0.36	3.85	1.14	11.45	0.95	12.57	0.46	7.15	0.41	6.42
Total	**14.27**	**36.17**	**12.63**	**50.22**	**2.74**	**10.62**	**3.30**	**9.23**	**5.01**	**19.85**	**11.06**	**24.56**	**8.45**	**16.81**	**8.77**	**15.90**
Budget*	**14.3**	**36.2**	**12.7**	**50.3**	**2.8**	**10.7**	**3.4**	**9.3**	**5.1**	**19.9**	**11.1**	**24.6**	**8.5**	**16.9**	**8.8**	**16.0**

*Budgets are rounded up to the nearest tenth ton (0.1).

Proposed 2014 Transportation Conformity Budgets

County Subarea	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Baseline EMFAC2007	13.04	40.67	13.56	70.77	2.75	13.53	3.04	10.53	5.07	24.61	10.19	30.08	7.54	18.71	7.76	17.84
Existing Measures:																
Local Reductions	0.00	0.05	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.05	0.00	0.03	0.00	0.03
State Reductions	0.01	0.10	0.01	0.12	0.00	0.03	0.00	0.02	0.01	0.05	0.01	0.08	0.01	0.05	0.01	0.04
New/Proposed Measures:																
Local Reductions	0.29	0.27	0.21	0.19	0.05	0.04	0.05	0.04	0.09	0.08	0.24	0.23	0.17	0.16	0.14	0.13
State Reductions	2.10	10.30	3.68	27.76	0.69	4.56	0.56	2.80	1.33	7.84	1.63	9.31	1.02	4.60	0.99	4.48
Total	**10.64**	**29.95**	**9.66**	**42.65**	**2.00**	**8.89**	**2.43**	**7.66**	**3.64**	**16.62**	**8.31**	**20.42**	**6.34**	**13.86**	**6.62**	**13.16**
Budget*	**10.7**	**30.0**	**9.7**	**42.7**	**2.1**	**8.9**	**2.5**	**7.7**	**3.7**	**16.7**	**8.4**	**20.5**	**6.4**	**13.9**	**6.7**	**13.2**

*Budgets are rounded up to the nearest tenth ton (0.1).

Proposed 2017 Transportation Conformity Budgets

County Subarea	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Baseline EMFAC2007	11.18	32.41	11.67	55.71	2.31	10.52	2.59	8.54	4.21	19.24	8.64	23.57	6.50	14.76	6.70	14.35
Existing Measures:																
Local Reductions	0.00	0.13	0.00	0.09	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.11	0.00	0.08	0.00	0.06
State Reductions	0.01	0.07	0.01	0.09	0.00	0.02	0.00	0.02	0.00	0.03	0.01	0.06	0.01	0.03	0.01	0.03
New/Proposed Measures:																
Local Reductions	0.20	0.22	0.14	0.16	0.03	0.04	0.03	0.04	0.06	0.07	0.18	0.19	0.12	0.13	0.10	0.11
State Reductions	1.68	9.42	2.85	23.78	0.51	3.83	0.45	2.68	1.01	6.72	1.27	7.70	0.81	4.01	0.81	4.09
Total	**9.29**	**22.57**	**8.66**	**31.60**	**1.76**	**6.62**	**2.10**	**5.79**	**3.13**	**12.38**	**7.18**	**15.51**	**5.56**	**10.51**	**5.79**	**10.06**
Budget*	**9.3**	**22.6**	**8.7**	**31.7**	**1.8**	**6.7**	**2.2**	**5.8**	**3.2**	**12.4**	**7.2**	**15.6**	**5.6**	**10.6**	**5.8**	**10.1**

*Budgets are rounded up to the nearest tenth ton (0.1).

Proposed 2020 Transportation Conformity Budgets

County Subarea	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Baseline EMFAC2007	9.64	25.94	10.36	44.65	2.00	8.49	2.28	7.22	3.63	15.70	7.49	18.57	5.70	11.86	5.96	11.88
Existing Measures:																
Local Reductions	0.00	0.11	0.00	0.08	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.10	0.00	0.06	0.00	0.05
State Reductions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
New/Proposed Measures:																
Local Reductions	0.27	0.18	0.19	0.13	0.04	0.03	0.04	0.03	0.09	0.06	0.24	0.16	0.16	0.10	0.13	0.09
State Reductions	1.15	7.96	2.01	19.39	0.36	3.20	0.34	2.55	0.70	5.79	0.89	5.94	0.58	3.34	0.60	3.68
Total	**8.21**	**17.69**	**8.16**	**25.06**	**1.60**	**5.24**	**1.90**	**4.62**	**2.84**	**9.82**	**6.36**	**12.38**	**4.96**	**8.35**	**5.23**	**8.05**
Budget*	**8.3**	**17.7**	**8.2**	**25.1**	**1.7**	**5.3**	**2.0**	**4.7**	**2.9**	**9.9**	**6.4**	**12.4**	**5.0**	**8.4**	**5.3**	**8.1**

*Budgets are rounded up to the nearest tenth ton (0.1).

Proposed 2023 Transportation Conformity Budgets

County Subarea	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
Baseline EMFAC2007	9.08	22.89	9.44	37.62	1.81	7.29	2.13	6.49	3.32	13.80	7.20	16.67	5.23	10.19	5.44	10.24
Existing Measures:																
Local Reductions	0.00	0.10	0.00	0.07	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.09	0.00	0.06	0.00	0.05
State Reductions	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
New/Proposed Measures:																
Local Reductions	0.25	0.15	0.18	0.10	0.04	0.02	0.04	0.02	0.08	0.05	0.22	0.13	0.15	0.09	0.12	0.07
State Reductions	0.88	9.15	1.43	18.86	0.26	3.34	0.27	2.92	0.53	6.33	0.71	6.52	0.43	3.65	0.46	3.93
Total	**7.95**	**13.49**	**7.83**	**18.58**	**1.51**	**3.91**	**1.81**	**3.53**	**2.71**	**7.38**	**6.26**	**9.92**	**4.65**	**6.39**	**4.85**	**6.19**
Budget*	**8.0**	**13.5**	**7.9**	**18.6**	**1.6**	**4.0**	**1.9**	**3.6**	**2.8**	**7.4**	**6.3**	**10.0**	**4.7**	**6.4**	**4.9**	**6.2**

*Budgets are rounded up to the nearest tenth ton (0.1).

Minor Technical Revisions to the PM2.5 SIP Transportation Conformity Budgets

ARB has adopted the April 2011 revisions to the PM2.5 SIP transportation conformity budgets for the South Coast and San Joaquin Valley. ARB staff is now proposing the following minor technical revisions to the PM2.5 SIP transportation conformity budgets:

- Remove the benefits for indirect source review (ISR) from the adjustments to the San Joaquin Valley PM2.5 conformity budgets based on U.S. EPA's recent May 9, 2011 action regarding Rule 9510 in the San Joaquin Valley. The San Joaquin Valley Air Pollution Control District adopted Rule 9510 ISR, which was intended to regulate facilities which attract or may attract mobile sources of air pollution. The benefit that the Air District included from the rule in the 2008 PM2.5 SIP will be removed for the conformity budget calculation.

- Remove the benefits for AB 923 (Firebaugh, 2004) from the adjustments to the South Coast PM2.5 conformity budgets. AB 923 expanded the types of emissions covered by the Carl Moyer program to include additional emissions of particulate matter and reactive organic gases from defined covered sources in the State. The South Coast Air Quality Management District included benefits from AB 923 as one of the SIP strategy reductions in its 2007 Air Quality Management Plan. The Air District's latest SIP revision in April 2011 did not include the benefits from AB 923. ARB is adjusting the conformity budgets to be consistent with the Air District action.

- Correct data entry errors in the budget calculations for the South Coast and San Joaquin Valley.

The transportation conformity budget development worksheets are included in Tables C-3 and C-4, below.

Table C-3
South Coast Air Basin
PM2.5 Transportation Conformity Emission Budget Worksheets*
(Annual Average – Tons per Day)

South Coast Air Basin	2012			2014		
	ROG	**NOx**	**PM2.5**	**ROG**	**NOx**	**PM2.5**
Baseline Inventory	162.6	350.8	17.5	146.1	305.7	17.2
Re-entrained Road Dust (Paved)	--	--	18.8	--	--	19.0
Re-entrained Road Dust (Unpaved)	--	--	1.0	--	--	1.0
Road Construction Dust	--	--	0.2	--	--	0.2
State Strategy Adjustments	-8.7	-23.7	-1.4	-13.6	-15.1	-2.8
Adjustments to Baseline	-0.4	-1.4	-0.1	-0.6	-1.4	-0.2
Budgets	**154**	**326**	**37**	**132**	**290**	**35**

*Budgets are rounded up to the nearest ton.

Table C-4
San Joaquin Valley Air Basin
PM2.5 Transportation Conformity Emission Budget Worksheets*
(Annual Average – tpd)

County Subarea		2012		2014	
		PM2.5	NOx	PM2.5	NOx
Fresno	Baseline Inventory	1.82	47.82	1.65	40.60
	State Strategy Adjustments	0.36	11.99	0.56	9.07
	Adjustments to Baseline	0.01	0.16	0.02	0.22
	Budgets	**1.5**	**35.7**	**1.1**	**31.4**
Kern (SJV)	Baseline Inventory	2.98	81.58	2.63	70.28
	State Strategy Adjustments	1.14	32.46	1.44	26.29
	Adjustments to Baseline	0.01	0.23	0.01	0.28
	Budgets	**1.9**	**48.9**	**1.2**	**43.8**
Kings	Baseline Inventory	0.59	16	0.51	13.52
	State Strategy Adjustments	0.20	5.47	0.26	4.20
	Adjustments to Baseline	0.00	0.05	0.00	0.06
	Budgets	**0.4**	**10.5**	**0.3**	**9.3**
Madera	Baseline Inventory	0.5	12.30	0.46	10.62
	State Strategy Adjustments	0.12	3.14	0.17	2.55
	Adjustments to Baseline	0.00	0.05	0.01	0.07
	Budgets	**0.4**	**9.2**	**0.3**	**8.1**
Merced	Baseline Inventory	1.19	29.15	1.05	24.67
	State Strategy Adjustments	0.40	9.37	0.50	7.16
	Adjustments to Baseline	0.01	0.11	0.01	0.14
	Budgets	**0.8**	**19.7**	**0.6**	**17.4**
San Joaquin	Baseline Inventory	1.39	35.24	1.29	30.27
	State Strategy Adjustments	0.36	10.73	0.46	8.58
	Adjustments to Baseline	0.01	0.11	0.01	0.14
	Budgets	**1.1**	**24.5**	**0.9**	**21.6**
Stanislaus	Baseline Inventory	0.84	22.25	0.76	18.69
	State Strategy Adjustments	0.16	5.58	0.23	4.04
	Adjustments to Baseline	0.00	0.06	0.00	0.07
	Budgets	**0.7**	**16.7**	**0.6**	**14.6**
Tulare	Baseline Inventory	0.75	20.87	0.69	17.88
	State Strategy Adjustments	0.13	5.19	0.21	4.05
	Adjustments to Baseline	0.00	0.07	0.01	0.10
	Budgets	**0.7**	**15.7**	**0.5**	**13.8**

*Budgets are rounded up to the nearest tenth ton (0.1).

Appendix D
Adopted Rulemaking Calendar

(Note: This rulemaking calendar was included as Appendix D to the ARB staff report entitled, “Progress Report on Implementation of PM2.5 State Implementation Plans (SIP) for the South Coast and San Joaquin Valley Air Basins and Proposed SIP Revisions” and is included here unchanged for informational purposes.)

APPENDIX B: Rulemaking Calendar

Table B-1
Proposed Update to 2007 State Strategy: PM2.5 SIP Measures

	Agency	Actions	Implementation
Passenger Vehicles			
Smog Check Improvements	BAR	2007-2009	2008-2010; 2013[1]
Expanded Vehicle Retirement (AB 118)	ARB/BAR	2007	2009
Modifications to Reformulated Gasoline Program	ARB	2007	2010
Trucks			
Cleaner In-Use Heavy-Duty Trucks	ARB	2007, 2008, 2010	2011-2015
Goods Movement Sources			
Auxiliary Ship Engine Cold Ironing & Other Clean Tech	EPA/ARB/ Local	2007, 2008	2010
Cleaner Main Ship Engines and Fuel[2]		Fuel: 2008-2011	2009-2015
		Engines: 2008	2011
Port Truck Modernization	ARB, Local	2007,2008, 2010	2008-2020
Accelerated Intro. of Cleaner Line-Haul Locomotives[3]	EPA/ARB	2008	2012
Clean Up Existing Harbor Craft	ARB	2007, 2010	2009-2018
Off-Road Equipment			
Cleaner In-Use Off-Road Equipment[4]	ARB	2007, 2010	2009
Other Off-Road Sources			
New Emission Standards for Recreational Boats[5]	ARB	See notes	See notes
Expanded Off-Road Recreational Vehicle Emission Standards[5]	ARB	See notes	See notes
Enhanced Vapor Recovery for Above-Ground Storage Tanks	ARB	2008	2009-2016
Additional Evaporative Emission Standards[5]		2009	2010-2012
		See notes	See notes
Areawide Sources			
Consumer Products Program	ARB	2008	2010
		2009	2013-2014
		2011	2014
Pesticide Regulation	DPR	2008, 2009	2009

(Note: This rulemaking calendar was adopted in April 2011 as Appendix D to the ARB staff report entitled, "Progress Report on Implementation of PM2.5 State Implementation Plans (SIP) for the South Coast and San Joaquin Valley Air Basins and Proposed SIP Revisions" and is included here unchanged for informational purposes.)

[1]In 2010, the State Legislature improved the effectiveness of the Smog Check program (AB 2289), requiring the Bureau of Automotive Repair to direct older vehicles to high performing auto technicians and test stations for inspection and certification. This new program will be effective in 2013.

[2] In July 2008, ARB adopted a regulation that applies to ships operating within 24 nautical miles (nm) of the California Coastline and visiting California ports. These vessels must use less polluting marine distillate fuel for their main engines, auxiliary engines, and boilers instead of heavy fuel oil. The first phase of cleaner fuel for ship main engines took effect in 2009, with a second phase currently scheduled in 2012. By 2015, the International Maritime Organization's fuel sulfur requirements for the North American Emission Control Area will match ARB's phase 2 standards and extend out to 200 miles from California Coastline.

[3]In 2008, ARB awarded Prop 1B bond funds to upgrade line-haul locomotive engines not already accounted for by enforceable agreements with the railroads. Those cleaner line-hauls will begin operation by 2012.

[4]Reductions begin in 2014.

[5]Expected action in 2013, with implementation schedules to be determined in rulemaking process.

(Note: This rulemaking calendar was adopted in April 2011 as Appendix D to the ARB staff report entitled, "Progress Report on Implementation of PM2.5 State Implementation Plans (SIP) for the South Coast and San Joaquin Valley Air Basins and Proposed SIP Revisions" and is included here unchanged for informational purposes.)

Appendix E
Analysis of Environmental Impacts

Analysis of Environmental Impacts

ARB prepared an environmental analysis for the State Strategy for California's State Implementation Plan (SIP) for the New Federal PM2.5 and 8-Hour Ozone Standards prior to its approval by the Board in September 2007 (State Strategy). The State Strategy mapped out the actions ARB would take to reduce emissions to levels designed to bring California into compliance with federal air quality standards. The State Strategy is available for review at:

http://www.arb.ca.gov/planning/sip/2007sip/2007sip.htm

and at ARB's offices at:

1001 I Street, Sacramento, California, Room 7-45

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 part of tracking the implementation of the State Strategy, this report quantifies the emission reductions that have been achieved since adoption of the 2007 State Strategy. The proposed SIP revisions do not change the emission levels of NOx and ROG that the Board committed to achieve by specific dates when it adopted the 2007 State Strategy.

The proposed SIP revisions include four components: (1) an update to ARB's rulemaking calendar for one measure, (2) updates to reasonable further progress (RFP) tables and associated reductions for contingency purposes, (3) updates to the transportation conformity budgets, and (4) updates to the actions ARB would take to identify and implement advanced technology control measures as allowed under section 182(e)(5) of the federal Clean Air Act (Act). The proposed revisions do not cause any change that has the potential to result in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment, for the following reasons.

The updates to the rulemaking calendar reflect the current status of measures that have already been adopted, and changes to the expected dates by which emission reductions would be achieved for the agricultural tractor emission control measure. The update to the rulemaking calendar does not change the measure or its expected emission reductions identified in the 2007 State Strategy. They merely change the dates by which ARB staff will bring this measure to the Board for proposed action by the Board.

The updates to the RFP tables, contingency measure reductions and transportation conformity budgets are proposed accounting changes made to reflect the current status of adopted measures, better data, changes due to the recession, and methodological improvements to the emission inventory. These accounting changes do not change the strategies or commitments identified in the 2007 State Strategy to achieve specific emission reductions by specified dates. Because no changes have been made to the strategies or the underlying emission reduction commitments in the 2007 State Strategy, there is no potential for any of the proposed SIP revisions to cause any significant adverse environmental impacts. The revisions to the advanced technology discussion do not alter ARB's commitment to identify and implement emission reductions as required by section 182(e)(5) of the Act.