State of California

AIR RESOURCES BOARD

STAFF REPORT

PROPOSED 2003 STATE IMPLEMENTATION PLAN REVISIONS FOR THE SOUTH COAST AIR BASIN AND COACHELLA VALLEY

Release Date: August 25, 2003
Meeting Date: September 24-25, 2003

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STAFF REPORT

PUBLIC HEARING TO CONSIDER APPROVAL OF PROPOSED 2003 STATE IMPLEMENTATION PLAN REVISIONS FOR THE SOUTH COAST AIR BASIN AND COACHELLA VALLEY

Air Resources Board Hearing
Begins September 24, 2003 at 10:00 a.m.
and may continue September 25, 2003 at 8:30 a.m.
South Coast Air Quality Management District Auditorium
21865 E. Copley Drive
Diamond Bar, California 91765

Hearing notice available at http://www.arb.ca.gov/planning/sip/scsip03/scsip03.htm

Prior to the hearing, the public may submit written comments through regular mail, e-mail or fax. To be considered by the Board, written comments not physically submitted at the hearing must be **received no later than 12:00 noon, September 23, 2003** and sent to:

Clerk of the Board
Air Resources Board
1001 I Street, 23rd Floor
Sacramento, California 95814

or by e-mail to: 2003sip@listserv.arb.ca.gov

or by facsimile transmission to the Clerk of the Board at (916) 322-3928

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EXECUTIVE SUMMARY

The Air Resources Board (ARB or Board) will consider approval of a revised State Implementation Plan (SIP) for the South Coast Air Basin at a public hearing on September 24, 2003. This new air quality plan, adopted by the South Coast Air Quality Management District (District), identifies new clean air strategies needed to bring the region into attainment with federal air quality standards for ozone, particulate matter (PM10), and carbon monoxide. As a separate item, the Board will also consider approval of the proposed 2003 State and Federal Strategy that is an essential element of the South Coast SIP. If the Board approves these two items both will be submitted to the U.S. Environmental Protection Agency (U.S. EPA) for federal approval. ARB staff is recommending Board approval of the South Coast SIP and the State and Federal Strategy as a strengthening of the existing SIP needed to comply with federal Clean Air Act requirements.

Solving the South Coast's air quality problem, as evidenced by the severity of the 2003 ozone season, requires new actions by air quality agencies to ensure the region's historical clean air progress continues. The South Coast SIP reflects important new near-term commitments by the District and ARB to achieve emission reductions from air pollution sources under the respective air agency jurisdictions. The SIP also recognizes that action by the federal government is essential to address national and international sources that California can not practically or legally regulate.

In addition to establishing the near-term actions to be taken by each agency, the SIP identifies the long-term emission reduction target for ozone that must be achieved by 2010. The long-term target represents 30 percent of the overall reductions needed. The other 70 percent of the necessary reductions will be achieved through adopted regulations and near-term measures to be adopted between 2003 and 2006. In the proposed State and Federal Strategy, ARB staff has outlined a concurrent process for identifying the long-term measures by 2007 as required by the Clean Air Act. These measures will then be incorporated into the next SIP update.

The South Coast SIP is based on updated air quality modeling that is used to establish a 2010 emission target that demonstrates attainment of the federal one-hour ozone standard. Like the other elements of the SIP, the air quality modeling has undergone substantial public review as well as scientific peer review. Emission estimates have been improved since adoption of the 1999 South Coast SIP, including substantial revisions to the motor vehicle emission inventory. The updates to motor vehicle emissions have triggered a federal requirement to update the "emissions budgets" for purposes of federal transportation conformity requirements. New transportation conformity budgets are included in the SIP and must be approved by U.S. EPA in early 2004 to keep transportation funds flowing. In addition, the South Coast SIP includes a revised attainment demonstration for PM10 by 2006 and update to the attainment demonstration for carbon monoxide.

The South Coast SIP represents significant progress on many fronts. The SIP:

- Includes near-term measures to achieve new emission reductions of 87 tons per day (tpd) of volatile organic compounds (VOC) and 50 tpd oxides of nitrogen (NOx).

- Provides an enforceable commitment to identify and implement long-term measures needed to attain the federal one-hour ozone standard by 2010.

- Demonstrates attainment of the federal PM10 standard in the South Coast Air Basin and Coachella Valley by the 2006 deadline.

- Uses improved air quality modeling and emission estimates, and incorporates new growth projections and adopted controls into planning baselines.

The ozone attainment demonstration in the SIP is summarized in Table ES-1. The table indicates that existing controls will provide over 60 percent of the emissions reductions needed for attainment in 2010. The SIP includes a District commitment and, if approved by the Board, a State commitment for the adoption of additional near-term, "defined" measures that will provide over 70 percent of the needed emission reductions, when combined with already adopted controls.

Table ES-1
Summary of Attainment Demonstration for 2003 Ozone SIP
(South Coast Air Basin, tons per day)

	VOC	NOx	VOC + NOx
1997 Baseline Emissions	1222	1165	2381
2010 Attainment Emissions Target	310	530	840
Total Reductions Needed	912	635	1547
Reductions from Adopted Measures	560	404	964
Reductions from Near-Term Measures	87	50	137
Reductions from Long-Term Commitments	265	183	448

The SIP acknowledges that the adopted measures, together with the local and State near-term measures, will not reduce emissions enough to result in attainment of the federal one-hour ozone standard by 2010. Like prior SIPs for this Basin, the 2003 District Plan includes a commitment to achieve additional reductions from long-term measures to be identified by 2007. The federal Clean Air Act recognizes that extreme ozone nonattainment areas, such as the South Coast, must rely on evolving technologies to meet attainment goals. The South Coast SIP is consistent with this provision of the Clean Air Act, section 182(e)(5).

The primary issues raised in the process of development and District adoption of the SIP relate to the long-term measures – both the magnitude of the reductions needed and how the responsibility for achieving these reductions is allocated. A key related issue is the uncertainty about what actions the federal government will take to achieve reductions from national and international sources. Sources requiring federal action account for 33 percent of the NOx emissions remaining in 2010 after taking into account existing requirements and the new near-term measures.

In absolute terms, the magnitude of the reductions needed from long-term measures is greater than in the 1999 South Coast SIP for two reasons. One, the 2010 emissions target is tighter based on more stringent air quality modeling results. Second, our improved understanding of motor vehicle emissions has led to increased emission estimates, which translates into an increased emission reduction target. It's important to note that an increased *emission estimate* is not an increase in measured air quality. However, this does trigger a recalibration of air quality modeling and the resulting emission reduction target -- in this case, making the emission reduction target greater than in the 1999 SIP. And, given the severity of the 2003 ozone season, it is clear that substantial additional emission reductions will be needed in coming years in order to attain the ozone standard in 2010.

ARB staff believes that taking the additional time allowed by the Clean Air Act to develop long-term measures is both necessary and appropriate. We are committed to initiating that process in early 2004 concurrent with the ARB rulemaking efforts outlined in the proposed State and Federal Strategy. We envision that process as a cooperative multi-agency effort that should focus on identifying available and cost-effective long-term strategies. We don't see a practical basis for allocating emission reduction responsibilities to specific agencies until that process is complete – which should be as soon as possible but no later than 2007.

While the District plan includes an assignment of responsibility for long-term reductions by agency, primarily to ARB, we view this as a placeholder between now and 2007 when long-term measures must be defined. However, as the State agency charged with ensuring California's SIP compliance, ARB is ultimately responsible for ensuring the necessary measures are identified by 2007, and the emission reductions are achieved by 2010. On that basis, we recommend approval of the SIP as proposed by the District.

In terms of the District measures, we propose approval of that plan element which would achieve 22 tons per days of VOC reductions and 5 tons per day of NOx reductions from new near-term measures and 31 tons per day from long-term measures. Section III of this report discusses the District measures and identifies areas where we think further assessment is warranted as we work with other agencies to identify long-term emission reduction opportunities.

We also propose approval of the emission reduction commitment by the Southern California Association of Governments (SCAG) – 16 tons per day of VOC and 8 tons per day of NOx. This represents a carrying forward of SCAG's commitment in the 1999 SIP but no additional reductions. Given the challenging long-term emission reduction target for the region, we expect SCAG to actively participate in the process of identifying the innovative long-term strategies that will be needed by 2010.

The ARB's proposed near-term measures would achieve an additional 49 tons per day of VOC reductions and 37 tons per day of NOx reductions. This Board commitment is being considered separately for approval as part of the 2003 State and Federal Strategy. The Strategy also discusses measures that we believe U.S. EPA should pursue in order to meet its obligation to reduce emissions from sources under its jurisdiction, as well as to address international sources.

The District has proposed a new federal obligation of 18 tons per day of VOC reductions and 68 tons per day of NOx reductions. However, given the lack of an explicit federal commitment to achieve additional emission reductions, the District includes a proposal to increase the long-term State emission reduction target correspondingly if the federal government does not meet this obligation. As part of the State and Federal Strategy, ARB staff is proposing that the Board allow the federal reductions to be added to the overall State long-term commitment if needed, with no modifications to the control target at this time. However, as the process of developing the long-term measures proceeds, we will use every possible means to press our federal counterparts to act where the State and local air agencies cannot.

The District also included in its SIP an option for an alternative, less stringent, NOx emission target for 2010. ARB staff does not propose pursuing this option since additional NOx reductions are needed to meet the State and federal PM2.5 standards. If the Board approves the backstop to a federal commitment described above, this option would not be triggered. Table ES-2 shows the SIP's ozone attainment demonstration by local, State, and federal jurisdiction.

In summary, ARB staff recommends Board approval of the South Coast's 2003 State Implementation Plan for submittal to U.S. EPA. The SIP meets Clean Air Act requirements, includes new near-term State and local clean air measures, and recognizes the urgent need to identify and implement the long-term measures needed to attain the federal one-hour ozone standard by 2010.

Table ES-2
2010 Attainment Demonstration for the 2003 Ozone SIP by Jurisdiction
(South Coast Air Basin, tons per day)

	VOC	NOx	Percent of Combined VOC+NOx by Jurisdiction
1997 Baseline Emissions			
State	835	758	67%
Local	298	128	18%
Federal	89	279	15%
Total	*1222*	*1165*	
Emission Reductions from Adopted Measures			
State	-418	-317	76%
Local	-105	-43	15%
Federal	-37	-44	8%
Total	*-560*	*-404*	
2010 Baseline Emissions			
State	417	441	60%
Local	193	85	20%
Federal	52	235	20%
Total	*662*	*761*	
Emission Reductions from New Near-Term Measures			
State	-49	-37	63%
District	-22	-5	20%
Southern California Association of Governments	-16	-8	17%
Federal	0	0	0
Total	*-87*	*-50*	
Emission Reductions from New Long-Term Measures			
Proposed State Commitment for Multi-Agency Effort	-216*	-113*	74%
Local Commitment	-31	0	7%
Federal Obligation	-18	-68	19%
Total	*-265*	*-181*	
2010 Attainment Emissions Target	**310**	**530**	

*The SIP proposes to increase this commitment to 234 TPD VOC and 181 TPD NOx reductions if U.S. EPA does not carry out its legal responsibilities to achieve new emission reductions.

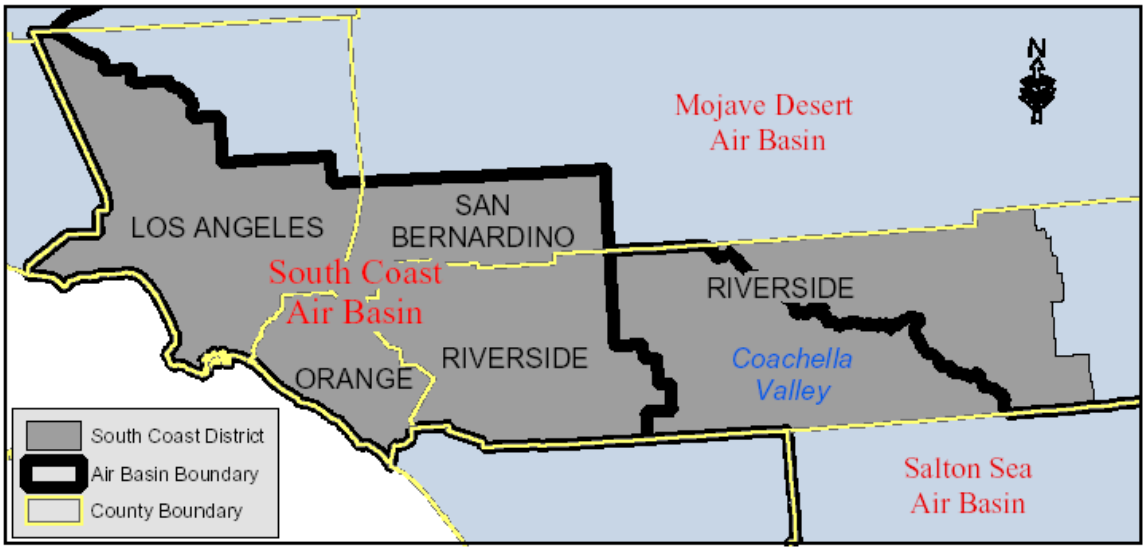
I. BACKGROUND

A. Profile of the South Coast Air Basin

The South Coast Air Basin (South Coast or Basin) includes the southern two-thirds of Los Angeles County, all of Orange County, and the western, more urbanized portions of Riverside and San Bernardino Counties. The area generally forms a lowland plain, bounded by the Pacific Ocean on the west and by mountains on the other three sides. The South Coast is California's largest metropolitan region. With a population of over 15 million, it is home to about forty percent of the State's residents.

The South Coast Air Quality Management District (District) is the local air quality agency responsible for the Basin. The District also has jurisdiction over the Riverside County portion of the Salton Sea Air Basin (Coachella Valley) and the western portion of the Mojave Desert Air Basin in Riverside County. The Southern California Association of Governments (SCAG) is the transportation planning agency for the region. Figure I-1 shows the boundaries of the District, the Basin, and Coachella Valley.

Figure I-1
South Coast Air Quality Management District Boundaries



B. Historical Emissions and Air Quality

Despite rapid increases in population and vehicle miles traveled (VMT), air pollution controls in the Basin have reduced emissions of volatile organic compounds (VOC)[1] and nitrogen oxides (NOx) -- the pollutants that form ozone in the presence of sunlight --

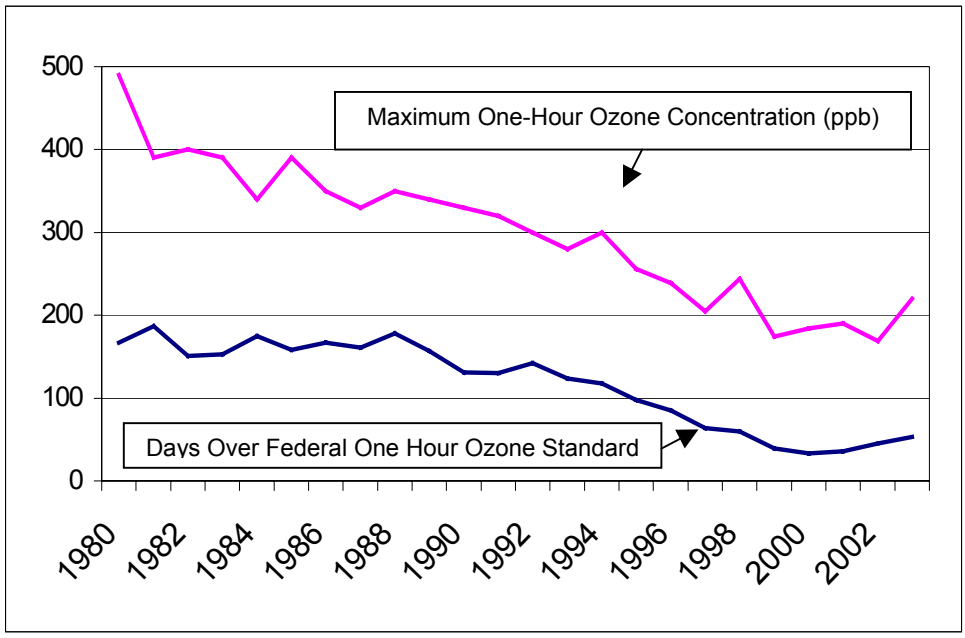
[1] ARB generally classifies reactive hydrocarbons as reactive organic gases (ROG). The State's legal commitments for emission reductions are expressed in terms of ROG. But this report uses the classification of volatile organic compounds (VOC), a subset of ROG, for consistency with the District's terminology in the 2003 Plan. VOC and ROG are functionally equivalent for the purposes of this report.

by about 45 percent from 1990 to 2003. Direct emissions of particulate matter less than or equal to ten microns in diameter (PM10) have declined by about 15 percent in the same period, and carbon monoxide emissions have fallen by over 55 percent.
The emission decreases have significantly improved ozone air quality in the Basin. Since the 1980s, the number of days exceeding the federal one-hour standard has decreased over 70 percent, and the maximum ozone concentration has decreased over 50 percent. Population exposure to unhealthy air has declined by 80 percent during this same time period.

1. Ozone

The long-term improvement in South Coast ozone air quality, as measured by the maximum one-hour ozone concentration in parts per billion (ppb) and the number of days over the federal one-hour ozone standard, is shown in Figure 1-2.

Figure I-2
Maximum One-Hour Ozone Concentration and
Days Over Federal One-Hour Ozone Standard in South Coast Air Basin
(through August 20, 2003)



However, the last few years do not appear to show the same improvements as seen in the early 1990s, despite continued emission reductions. The Summer of 2003 has been particularly conducive to ozone formation. By the end of July 2003, the South Coast Air Basin had experience 44 exceedances of the federal one-hour standard, more than were recorded during each of the prior three years. Furthermore, on July 11, 2003, the South Coast experienced its first Stage 1 ozone alert since 1998. A Stage 1 alert is called when ozone concentrations reach or exceed 200 ppb. The alert warns even healthy residents to curtail their outdoor activities.

The variation in ozone air quality is strongly influenced by differences in weather conditions. Years having more days with severe weather conditions that are conducive to ozone formation have a greater chance of having more days that exceed the standards and higher peak concentrations. These severe weather conditions include hot temperatures, strong inversion layers, and calm conditions.

Our meteorologists have reviewed meteorological data from 1980 through July 2003. Their analysis indicates that the total number of days with high ozone forming potential during 2003 were greater for a comparable period of the year (May 1 through July 21) than any other year during the analyzed time period (1980- 2003). This may help explain the large number of exceedance days in 2003 relative to the past few years.

Furthermore, the weather conditions present during the July 11, 2003 episode had not been seen since a similar episode in 1998. It is interesting to note that the 1998 episode had higher peak concentrations than the 2003 episode and was more widespread throughout the Basin than the 2003 episode. Emission reductions achieved since 1998 have resulted in lower ozone levels on days with severe weather conditions. However, this year's peak values are a clear indication that substantial further emission reductions are needed.

The Basin also exceeds U.S. EPA's new eight-hour ozone standard.

2. Particulate Matter

Annual average concentrations of PM10 have declined by over a third in the Basin since the 1980s. However, the Basin continues to exceed the federal 24-hour and annual average PM10 standards of 150 μg/m3 and 50 μg/m3, respectively. In 2002, the maximum 24-hour PM10 concentration was 130 μg/m3, while the annual average PM10 concentration was 60.2 μg/m3.

The Basin also exceeds U.S. EPA's new fine particulate (PM2.5) 24-hour and annual standards.

3. Carbon Monoxide

Peak eight-hour carbon monoxide (CO) levels in the South Coast Basin have declined by over fifty percent since the early 1980s, due largely to cleaner motor vehicles and fuels. Because the South Coast exceeded the federal carbon monoxide standard only once during 2001 and 2002, it now meets the criteria for attainment. The District has chosen to update the CO attainment demonstration now and accumulate a third year of air quality meeting the standard before preparing a maintenance plan and seeking an official redesignation to attainment.

4. Nitrogen Dioxide

The Basin has attained the federal nitrogen dioxide (NO2) standard since 1991.

II. AIR QUALITY PLANNING

This chapter briefly reviews the relevant planning provisions in the federal Clean Air Act (CAA or Act) and describes recent South Coast plans.

A. Federal Planning Requirements

The CAA establishes planning requirements for those areas that routinely exceed the health-based National Ambient Air Quality Standards (NAAQS). These nonattainment areas must adopt and implement a State Implementation Plan (SIP) that demonstrates how they will attain the standards by specified dates. Federal law holds each state responsible for implementing the provisions of the Act.

California Health and Safety Code (HSC) section 39602 designates the ARB as the State's air pollution control agency for all purposes set forth in federal law, including the preparation of the SIP. The HSC further specifies that the ARB must adopt the nonattainment area plan approved by a local district, unless the ARB finds, after a public hearing, that the locally adopted plan will not meet the requirements of the CAA (HSC Section 41650(a)). All California SIP revisions must be submitted to U.S. EPA by ARB. The provisions and commitments in a U.S. EPA-approved SIP are federally enforceable. The CAA also allows interested parties to sue U.S. EPA, the state, or local agencies to compel implementation of an approved SIP and other provisions of the Act.

The South Coast District customarily prepares a comprehensive plan, approximately every three years, to address both federal and State air quality planning requirements and multiple air pollutants. The District's Air Quality Management Plan (AQMP) includes elements that are beyond the scope of the federal requirements. Thus, SIP revisions for this region are typically based on a subset of the AQMP -- the technical foundation (monitoring data, emissions, modeling) and the local control strategy that addresses progress, attainment, or maintenance of a federal air quality standard. Once approved by ARB, the SIP revision sent to U.S. EPA includes only the elements needed to meet federal requirements, as directed by State law.

1. Ozone

The CAA requires the South Coast Air Basin, as an "extreme" ozone nonattainment area, to provide for attainment of the federal one-hour ozone standard by November 15, 2010. Coachella Valley is part of the Southeast Desert Modified Air Quality Management Area, a "severe-17" federal one-hour ozone nonattainment area with an attainment date of November 15, 2007.

Section 182(c)(2) of the Act requires that the SIP establish ozone rate-of-progress milestones for VOC and NOx and demonstrate how the control strategy meets those interim year targets. In addition, the Act requires the establishment of conformity emission budgets for specific sources like on-road motor vehicles for milestone years. These budgets are used to determine if planned projects that will require federal

approval or funding, such as freeway improvements or airport expansions, are consistent with the emissions targets in the approved SIP. Other Act requirements include transportation control measures to address growth in vehicle travel, and contingency measures to be triggered if progress milestones are not achieved.

2. PM10

As "serious" PM10 nonattainment areas, the South Coast Air Basin and Coachella Valley were required by the CAA to attain the federal PM10 standard by December 2001. These areas did not attain the standard by the deadline. U.S. EPA granted each area a five-year extension to December 2006, as allowed by the Act. The Act also requires that "serious" PM10 nonattainment areas adopt Best Available Control Measures (BACM) for fugitive dust sources, and that PM10 plans include motor vehicle emission budgets, reasonable further progress milestones, and contingency measures.

B. 1994 Ozone SIP

In November 1994, California submitted comprehensive ozone SIP for the South Coast and five other nonattainment areas in California. The control strategy in the 1994 SIP included local commitments to adopt rules and transportation control measures, as well as a statewide element to reduce emissions from mobile sources, fuels, consumer products, and pesticides. In addition to its own commitments, ARB identified emission reduction strategies for sources under federal authority and credited the expected benefits in the attainment demonstration. In the Federal Register notice approving the 1994 SIP, U.S. EPA argued that the State did not have the authority to assign reductions to the federal government.[1] U.S. EPA instead participated in a public consultative process to identify potential strategies to reduce emissions from sources subject to federal authority.

The District's 1994 AQMP was the basis for the local element of the 1994 Ozone SIP for the South Coast Air Basin and Coachella Valley.

C. 1997 Ozone, PM10, CO, and NO2 SIPs

In 1996, the District developed and adopted the 1997 AQMP, which included:

- An ozone attainment plan for the South Coast Air Basin and Coachella Valley
- A PM10 attainment plan, and attainment date extension request for the South Coast Air Basin from 2001 to 2006
- A carbon monoxide attainment plan for the South Coast Air Basin
- A nitrogen dioxide maintenance plan and redesignation request for the South Coast Air Basin

ARB approved all of these elements and submitted them to U.S. EPA as SIP revisions.

[1] Federal Register, January 8, 1997 (Volume 62, Number 5); Approval and Promulgation of Implementation Plans; California - Ozone; Final Rules.

The 1997 Ozone SIP modified the local element of the 1994 Ozone SIP attainment strategy. The plan used new growth projections, emission inventories, and modeling analyses to demonstrate that the ozone standard could be attained in 2010 with fewer emission reductions. As a result, the District deleted or delayed several of the local ozone control measures in the 1994 SIP. ARB did not change the State and federal strategy from the 1994 SIP, but the resulting emission reductions were updated based on the new inventory. U.S. EPA subsequently proposed a partial disapproval of the proposed 1997 Ozone SIP revision, due to the delay or deletion of local control measures and the federal emission reduction assignment.[1] U.S. EPA approved the carbon monoxide and nitrogen dioxide elements of the 1997 AQMP in 1998,[2] [3] but did not act on the 1997 PM10 SIP for the South Coast Air Basin at that time.

D. 1999 Ozone SIP

In September 1997, three environmental groups filed a citizens' suit to compel implementation of the federally approved 1994 Ozone SIP. As part of a settlement agreement between the District and the plaintiffs, the District amended the 1997 AQMP in 1999 to accelerate implementation of some of the stationary short-term control measures. The District submitted the 1999 SIP revision to ARB; ARB approved it and submitted it to U.S. EPA. In 2000, U.S. EPA approved the 1997 SIP as amended in 1999 (1997/1999 SIP) as a revision to the 1994 Ozone SIP.[4]

E. 2002 PM10 SIPs

The South Coast Air Basin and Coachella Valley both failed to meet the federal PM10 attainment deadline of 2001. In June 2002, the District updated the emission budgets and control measure implementation status for the South Coast Air Basin's 1997 PM10 SIP to facilitate federal approval of the plan and attainment date extension request. That same month, the District also adopted the 2002 Coachella Valley PM10 Plan, and requested a five-year PM10 attainment date extension for the Coachella Valley. The District also committed to update the PM10 plans for the Basin and Coachella Valley in 2003 utilizing the latest approved motor vehicle emissions model and planning assumptions. ARB approved these revisions and submitted them to U.S. EPA. In April 2003, U.S. EPA approved the 1997 PM10 Plan, 2002 Coachella Valley PM10 Plan, and attainment date extension requests for both areas.[5]

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[1] Federal Register; January 12, 1999 (Volume 64, Number 7); Approval and Promulgation of State Implementation Plans -- South Coast.
[2] Federal Register; April 21, 1998 (Volume 63, Number 76); Approval and Promulgation of State Implementation Plans -- South Coast Air Quality Management District.
[3] Federal Register; July 24, 1998 (Volume 63, Number 124); Approval and Promulgation of State Implementation Plans and Redesignation of the South Coast Air Basin in California to Attainment for Nitrogen Dioxide.
[4] Federal Register; April 10, 2000 (Volume 65, Number 69); Approval and Promulgation of State Implementation Plans -- South Coast.
[5] Federal Register; April 18, 2003 (Volume 68, Number 75); Approval and Promulgation of State Implementation Plans -- South Coast.

F. 2003 Ozone, PM10, CO, NO2 SIPs

On August 1, 2003, the District Governing Board adopted its 2003 AQMP that included elements intended to revise the South Coast Air Basin SIPs for ozone, PM10, CO, and NO2, as well the Coachella Valley SIPs for ozone and PM10. The District submitted all of these plans to ARB with a request for approval and forwarding to U.S. EPA as SIP revisions. We are proposing that the Board consider approval of each element, collectively referred to as the 2003 Plan in this document, with the exception of the Coachella Valley Ozone SIP revision.

Just prior to publication of this report, we found that the Coachella ozone plan does not contain the required motor vehicle emission budgets for transportation conformity. Without the updated budgets, the Coachella ozone plan is incomplete and we could not recommend Board approval. We expect that the District will adopt and transmit the needed budgets to ARB for subsequent submittal to U.S. EPA.

Because Coachella Valley is one of three subregions in the Southeast Desert ozone nonattainment area, the other subregions (Antelope Valley and Mojave Desert) must also adopt and submit a revised attainment demonstration, including vehicle emissions budgets, before we can provide U.S. EPA with a complete package for the nonattainment area. These other areas are working on SIP revisions for local adoption in early 2004. As long as ARB receives adopted ozone budgets for Coachella Valley by then, we do not expect this issue to delay U.S. EPA action on the comprehensive Southeast Desert budgets or SCAG's ability to make conformity findings for the upcoming 2004 Regional Transportation Plan.

III. 2003 OZONE SIP FOR SOUTH COAST AIR BASIN

To demonstrate attainment of the one-hour ozone standard, the 2003 Plan relies on new emission reductions to be achieved at the local, State, and federal level. ARB staff provided the draft State and federal strategy to the District so the public could see all the elements of the control strategy in one place. As a separate item, the Board will consider approval of the proposed 2003 State and Federal Strategy that is an essential element of the South Coast Ozone SIP.

The District submitted the 2003 Plan to ARB for its consideration on August 7, 2003. If ARB approves both the State and local elements, the overall plan can be submitted to U.S. EPA as a SIP revision. If approved by U.S. EPA, the 2003 Ozone SIP would replace the existing 1997/1999 Ozone SIP, and the State commitments that were originally made as part of the 1994 Ozone SIP. This chapter provides staff's evaluation of the 2003 Ozone SIP emission inventory, attainment demonstration, and control strategy for the Basin.

A. Emission Inventory

Emission inventories are fundamental elements of any air quality plan. They combine data about existing emissions with growth forecasts and the impact of adopted regulations to project emission levels in future years. The 2003 Plan utilizes the latest emission estimates for stationary, area-wide, and on- and off-road mobile sources. This updated inventory reflects improved methodologies for estimating emissions, recently adopted controls, the latest growth projections, previously uninventoried sources, and other improvements.

VOC and NOx emissions are projected to decline by about 40 percent between the 2003 Plan's 1997 base year, and the and the 2010 ozone attainment year, as a result of controls that have already been adopted. This reflects a 30 percent decline in emissions from stationary and area-wide sources, a 49 percent decline in emissions from on-road motor vehicles, and a 32 percent decline in emissions from off-road vehicles and equipment. Tables III-1 shows the breakdown of VOC and NOx emissions by broad source category in 1997 and 2010, with the benefit of adopted controls.

The rapid decline in on-road motor vehicles emissions is due to regulations to reduce emissions from new cars and trucks and fuels. By 2010, new cars will be 99 percent controlled, while new trucks will be at 98 percent control. Pre-1998 passenger cars will account for just 23 percent of vehicle miles traveled by cars in the South Coast in 2010, but will contribute 82 percent and 67 percent of the passenger car VOC and NOx, respectively.

Table III-1
2003 Plan Baseline Emissions Trends
(South Coast Air Basin Summer inventory in tons per day)

Source Category	VOC		NOx		VOC + NOx		
	1997	2010	1997	2010	1997	2010	% Change
Stationary & Area-wide	443	315*	128	85**	571	400	-30%
On-Road Motor Vehicles	506	208	717	411	1223	619	-49%
Off-Road Vehicles/Equipment	273	139	320	265	593	404	-32%
TOTAL	**1222**	**662**	**1165**	**761**	**2387**	**1423**	**-40**

* Includes 5.0 tpd VOC added to the stationary source baseline emission inventory -- 3.0 tpd for future technology assessments, and 2.0 tpd for the phase-out of toxics and ozone depleting compounds. Future technology assessments to occur prior to implementation of adopted District rules may scale back emission reductions achieved by 2010. The phase-out of toxics and ozone depleting compounds may result in increased VOC emissions from substitute products.
** Includes 3.0 tpd NOx added to stationary source baseline emission inventory -- 2.0 tpd for technology assessments and 1.0 tpd for the District "growth set-aside". See section entitled "Growth Set Aside" (below) for more information.

The following sections discuss updates to the mobile, stationary and area-wide source inventories since the 1997/1999 SIP, and provide ARB staff's analysis of the VOC and NOx 2003 Plan inventory.

1. Mobile Sources

The mobile source emission inventories used in the 2003 Plan represent many improvements in the models that are used to estimate emissions from both on-road and off-road sources. As a result, our estimates of the emissions generated by mobile sources have increased significantly relative to those used in the 1997/1999 SIP. These higher estimates do not indicate that emissions are increasing over time – on the contrary, actual emissions from cars and trucks have declined and will continue to decline rapidly over time. This progress comes in response to State and federal requirements for cleaner engines and fuels, and despite significant growth in population and vehicle usage.

a. On-Road

California's new on-road motor vehicle emission factor model (EMFAC2002) has been used to generate the on-road mobile source emission inventory for the 2003 Plan. EMFAC2002 represents a comprehensive review and revision of the on-road inventory when compared to EMFAC7G, which was used in the 1997/1999 SIP. The major changes reflected in EMFAC2002 include:

- New passenger vehicle and truck standards
- Updated light-duty vehicle emission estimates based on additional vehicle testing
- County-specific light-duty fleet information
- Updated light-duty fleet age distribution derived from new Department of Motor Vehicle data
- Improvement of evaporative emission estimates for light-duty vehicles
- Updated estimates of Smog Check benefits
- Heavy-duty truck emissions from new cycle-based chassis dynamometer testing
- Heavy-duty truck "off-cycle" emissions due to emission control defeat devices
- New estimates of truck idling emissions

The 1997/1999 SIP utilized EMFAC to calculate the benefits of mobile source controls, and CalTrans' Demand Travel Impact Model (DTIM) to generate the mobile source planning and modeling inventories, and mobile source emission budgets. The 2003 Plan utilizes EMFAC2002 as the primary tool for all of these purposes. Because the EMFAC model does not spatially distribute emissions below the county level, DTIM is used in the 2003 Plan to allocate each county's EMFAC-based inventory into grid cells for air quality modeling. This new approach to mobile source emissions will provide greater consistency among the inventories used for planning, modeling, control measure quantification, rate-of-progress determinations, vehicle emission budgets, and transportation conformity analyses. ARB staff appreciates the cooperation of the District and SCAG in making this transition.

b. Off-Road

The 2003 Plan is also the first South Coast plan to use ARB's OFFROAD model to generate off-road mobile source emissions. The OFFROAD model represents a step forward from the inventory methodologies used in the 1997/1999 SIP. The OFFROAD model utilizes improved estimates of equipment population, usage, emission rates, deterioration rates, and other information to provide seasonal and annual emissions for most categories of off-road mobile sources. The OFFROAD model has also been updated to include evaporative emission estimates for the first time. Emissions from ships, aircraft, trains, and recreational vehicles are still estimated outside this model.

2. Stationary and Areawide Sources

Stationary and area-wide sources include industrial sources like factories, refineries, power plants, and smelters; commercial sources like gas stations, dry cleaners, and paint spray booth operations; and residential sources like fireplaces, water heaters and house paints. Responsibility for reducing emissions from these sources rests with the District, except for consumer products and aerosol paints (under ARB jurisdiction), and gas stations (responsibility shared by ARB and District).

Growth Projections The growth assumptions used to estimate future emissions are a critical element in any attainment demonstration plan -- they directly impact the amount of emission reductions needed to reach the emissions target.

State law requires the District to utilize population growth and economic projections developed by SCAG in its plans and emission projections. Emission projections for stationary and area-wide sources in the 2003 Plan are based on source-specific "growth factors" from the SCAG Growth Forecast. The SCAG growth factors are generally a function of growth in each sector's output, as determined by employment and productivity forecasts. A "control factor" is applied to the grown emissions to account for the application of adopted emission controls.

ARB staff used an ARB-contracted report prepared by E.H. Pechan & Associates[1] (Pechan) to provide an independent check on the SCAG growth projections that underlie the 2003 Plan. The Pechan report includes comprehensive growth data for stationary and area-wide sources, based on regression analysis and other analytical assessments. This independent data was used to generate a 2010 emission inventory for comparison to the inventory in the 2003 Plan. While there was some variation in emissions for specific source categories, the overall 2010 projections differed by only one percent for ROG and less than five percent for NOx.[2]

Growth Set-Aside The District's New Source Review (NSR) program requires that all emission increases from new or modified large stationary sources be fully offset, and that these sources install the Best Available Control Technology (BACT). The 2003 Plan establishes a "growth set-aside" of 1 tpd NOx, SOx, CO and PM10 in the 2010 baseline inventory to address a projected shortage in the stationary source emission offsets needed to accommodate economic growth. The overall control strategy must compensate by reducing each of these pollutants by an extra ton per day. Since these emissions were accounted for in the attainment demonstration, ARB concurs that they are available for use in the District's NSR program.

B. Modeled Ozone Attainment Demonstration

The Act requires the use of air quality modeling to assess whether the control strategy in a proposed SIP, and the resulting emission reductions, will lead to attainment of the ozone standard. The attainment demonstration determines the optimal "carrying capacity" or attainment emissions target -- the combination of VOC and NOx emission levels that the Basin can accommodate while attaining the standard.

ARB and South Coast staff have worked together closely on the ozone modeling for this Plan, including development of the modeling inventory and other inputs, analysis of model performance, and validation of the ozone attainment demonstration. Attainment of the ozone standard was demonstrated through an iterative process. First, emissions and meteorological inputs for the August 5-6, 1997 episode were fed into the model,

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[1] E. H. Pechan & Associates, *Development of Emission Growth Surrogates and Activity Projections Used in Forecasting Point and Area Source Emissions, Final Report*, February 26, 2001.

[2] NOx sources in the District's Regional Clean Air Incentives Program (RECLAIM) were not included in this analysis.

and the model's ability to replicate observed ozone concentrations was analyzed. The model was then run using a "baseline" 2010 inventory to generate isopleth (or contour) lines delineating the combinations of across-the-board VOC and NOx reductions that are predicted to result in attainment. Finally, emission reductions from the specific sources and commitments proposed in the Plan were incorporated into the modeling to demonstrate attainment. The 2003 Plan also addresses transport of ozone and ozone precursors from the Basin to Coachella Valley, Mojave Desert, and Antelope Valley, and demonstrates that these downwind areas attain the federal one-hour ozone standard by their 2007 deadline.

The 2003 Plan utilizes the Urban Airshed Model (UAM) used in the 1994 and 1997/1999 SIPs with a new August 5-6, 1997 ozone episode to demonstrate attainment in both the Basin and the downwind areas. An August 27-28, 1987 episode, evaluated in the 1994 and 1997/1999 SIPs, was also assessed to provide a link to previous modeling evaluations. Table III-2 provides a comparison of the 2003 Plan carrying capacity and other modeling parameters with those of previous South Coast SIPs.

Table III-2
Modeling Results for Recent South Coast Ozone SIPs

Plan	Primary Episode	3-Year Design Value* (ppb)	Peak Concentration Observed in Episode (ppb)	Peak Concentration Predicted by Model** (ppb)	Attainment Emissions Target (tpd)	
					VOC	NOx
1994 SIP	June 5-7, 1985	360	360	223	323	553
1997/1999 SIP	June 23-25, 1987	350	240	211	413	530
2003 Plan	August 5-6, 1997	215	187	199	310	530

* The design value reflects the fourth highest observed ozone level in an area over the three year period up to and including the year of the primary episode day. A design value of 124 ppb or less equals attainment.
* The peak observed and predicted concentrations do not necessarily occur at the same location.

1. Air Quality Model

ARB staff concurs with the use of the UAM as the primary air quality model for the attainment demonstration. ARB and District staff conducted extensive model performance evaluations with three air quality models -- the UAM, the California Photochemical Grid Model (CALGRID), and the Comprehensive Air Quality Model with Extensions (CAMx). While each of these models met U.S. EPA model performance guidelines to varying degrees on different episode days, UAM was best able to simulate the unpaired peak concentration during the August 5, 1997 episode. The District also conducted a "mid-course evaluation" of UAM performance, validating the ability of the model to replicate peak ozone concentrations observed during the Summer of 2002.

While CALGRID and CAMx are considered the more state-of-the-art models, CALGRID tended to underestimate peak ozone concentrations in the Basin. However, when the CALGRID modeling results for August 5, 1997 are adjusted to reflect model underprediction, CALGRID and UAM produce similar carrying capacity estimates. CAMx was not utilized in the attainment demonstration as model performance in the Basin was inferior to that of both UAM and CALGRID. However, CAMx continues to be a robust model that has performed well in Northern California simulations. ARB staff will continue working with both CAMx and CALGRID with the expectation that these may be used in future South Coast plans.

2. Ozone Episode

ARB staff also concurs with selection of August 5-6, 1997 as the primary ozone episode to define the ozone attainment targets. This episode allowed for the use of detailed meteorological, air quality, and emissions data collected during the 1997 Southern California Ozone Study (SCOS97). SCOS97 was an intensive field study co-sponsored by ARB, U.S. EPA, the U.S. Navy, South Coast District, and other air districts to better understand how ozone is formed in Southern California, and to support the development of effective strategies to reduce ozone. With the help of this detailed data, the August 1997 episode provides for the best overall air quality model performance, as judged by its ability to simulate the peak ozone concentration and other parameters.

Three other ozone episodes were considered but not selected for the attainment demonstration in the 2003 Plan.

- A July 14-18, 1998 ozone episode was excluded from the attainment demonstration, as it represents severe and infrequent meteorological conditions. ARB staff's analysis indicates this level of ozone-forming potential occurs once every four to five years. Because attainment of the federal ozone standard is based upon the fourth highest ozone level over a three-year period, the federal standard does not require modeling for attainment during the most severe meteorological events. The peak measured one-hour ozone concentration of 244 ppb on July 14-18, 1998 also exceeds the area's design value for that year. ARB and District staff agree that this episode is not appropriate for use in the attainment demonstration.

- A September 28-29, 1997 weekend episode was also evaluated, but did not meet U.S. EPA model performance criteria and was therefore also excluded. ARB staff will continue working to better understand weekend emissions and ozone formation, with the goal that a weekend episode can be used in a future South Coast SIP.

- Finally, an August 27-28, 1987 episode -- also included in the existing 1997/1999 SIP -- was retained as part of the 2003 Plan modeling analysis to supplement the 1997 episode and provide a link to the previous SIP.

3. Peer Review

The South Coast District retained seven technical experts to help determine which air quality model and episode day provide the most technically sound foundation for the Plan.[1] Overall, the peer reviewers concurred that the technical approach for the air quality modeling used by District and ARB staff was reasonable. The reviewers generally supported use of August 5-6, 1997 as the primary modeling episode, as long as model under-prediction of peak ozone concentrations (which occurs with use of the CALGRID and CAMx models) is addressed. The reviewers were divided as to whether UAM or CALGRID would provide the most sound attainment demonstration. While they generally acknowledged CAMx to be a state-of-the-art air quality model, none of the peer reviewers recommended its use for this Plan.

4. Fallback Approach Based on U.S. EPA Action

The 2003 Plan includes an "Option 1" carrying capacity of 310 tpd VOC and 530 tpd NOx, and an "Option 2" carrying capacity of 310 tpd VOC and 598 tpd NOx. The 530 tpd NOx emissions target in Option 1 was selected to ensure no backsliding from the 1997/1999 SIP NOx target, and to ensure steady progress towards PM2.5 standards that will require additional NOx control. Option 2 includes 68 tpd of NOx reductions that, under Option 1, would be achieved from sources under federal control. U.S.EPA has indicated that it will not accept a plan that assigns emission reductions to federal sources. Because the model response is insensitive to NOx reductions in the range between 598 tpd and 530 tpd, both the Option 1 and Option 2 emission targets demonstrate attainment in combination with 310 tpd VOC emissions. Table III-3 shows the maximum projected concentration in 2010 for each of the modeled episode days, using both Option 1 and Option 2 NOx emission levels.

Table III-3
Attainment Demonstration Options for 2003 Ozone SIP
(South Coast Air Basin, 2010)

Episode Day	UAM Predictions of Maximum Ozone Levels in ppb		
	With Baseline Emissions	With Controlled Emissions-Option 1 Federal Reductions	With Controlled Emissions-Option 2 No Federal Reductions
August 5, 1997	153	123	123
August 6, 1997	146	120	124
August 27,1987	120	98	98
August 28, 1987	136	111	112

[1] Peer reviewers were: Dr. C.S. Burton (retired); Dr. Judith Chow, Desert Research Institute; Dr. Robert Harley, University of California at Berkeley; Mr. Frederick Lurmann (Sonoma Technology, Inc.); Dr. Edwin Meyer (retired); Dr. John Seinfeld, California Institute of Technology; and Dr. Mel Zeldin (retired).

C. Control Strategy

If approved, the 2003 Plan will commit the District, SCAG, ARB, and BAR to achieve an additional 87 tpd VOC and 50 tpd NOx reductions from new near-term control measures for State and local implementation. These new measures represent the next iteration of controls needed to attain the federal one-hour ozone standard in 2010, and continue progress towards the more health-protective State standards and new federal standards. Due to concerns expressed by U.S. EPA, no near-term federal control measures are included in the 2003 Plan.

The 2003 Plan also benefits from nearly 1,000 tpd of combined VOC and NOx emission reductions that will be realized between 1997 and 2010 as a result of controls that are already on the books. Adopted controls and proposed new measures together account for over 70 percent of the emission reductions needed to attain the federal one-hour ozone standard over the course of this plan. As allowed by CAA Section 182(e)(5), the 2003 Plan also relies on long-term new technology measures, to be identified by 2007, to achieve the remaining 30 percent of needed reductions.

Upon approval by ARB and U.S. EPA, the State and local VOC and NOx emission reduction commitment in the 2003 Plan would replace the control strategy in the 1997/1999 SIP. This section includes ARB staff's evaluation of the control elements, including clarifications to the State and federal strategy, and suggestions for District evaluation that may help achieve additional benefits to meet the region's long-term emission reduction needs.

Table III-4
Control Strategy for 2003 Ozone SIP
(South Coast Air Basin, Summer Planning, tons per day)

	VOC	NOx
Emissions		
1997 baseline emissions	1222	1165
2010 attainment emissions target	310	530
Reductions		
Total emission reductions needed for attainment	912	635
Emission reductions from adopted measures	560	404
Percent of needed reductions from adopted measures	*61%*	*64%*
Emission reductions from near-term defined measures		
State	49	37
District	22	5
SCAG	16	8
TOTAL	87	50
Total emission reductions from adopted and near-term measures	647	454
Percent of needed reductions from adopted/near-term measures	*71%*	*71%*
Reductions from long-term measures		
District commitment	31	0
Federal responsibility	18	68
Proposed State overall commitment for multi-agency effort	216	113
TOTAL	265	181

1. Local Control Strategy

The District is primarily responsible for controlling emissions from stationary and area-wide sources (with the exception of consumer products). The District can also require cleaner local vehicle fleets, but not set engine standards. In coordination with local agencies, SCAG is responsible for designing the region's transportation system, including measures to reduce motor vehicle activity and emissions. The District, the Mobile Source Air Pollution Reduction Review Committee, and SCAG also control extensive public funding to mitigate the air quality impact of vehicle emissions.

a. District Progress since 1997/1999 SIP

The District adopted measures to achieve about seventy percent of its commitments from the 1997/1999 SIP. In the 1997/1999 SIP, the District committed to achieve 48.1 tpd VOC reductions from short- and intermediate term measures and 28 tpd VOC reductions from long-term measures. Between October 1999 and October 2002, the District adopted measures achieving 50 tpd VOC reductions by 2010, and has a remaining long-term SIP commitment of 26.1 tpd VOC. The District met its 7.6 tpd NOx commitment by adopting measures to achieve 7.8 tpd NOx reductions. Table III-5 shows the District's 1997/1999 SIP measure commitments and reductions achieved.

Table III-5
District Progress on 1997/1999 Ozone SIP Commitments

(As of October 2002, based on 1997/1999 SIP inventory, Summer planning, tons per day in 2010)

Control Measure/Rule	Title	Adoption Date	VOC Reductions		NOx Reductions	
			Planned	Actual	Planned	Actual
CTS-02C(P2) (Rule 1171)	Solvent Cleaning Operations	1999	11.0	11.0*	--	--
CTS-02E (Rule 1168)	Adhesives	2000	1.3	8.3	--	--
CTS-02O (Rule 442)	Solvent Usage	2000	1.0	1.9	--	--
CTS-07(P3) (Rule 1113)	Architectural Coatings and Cleanup Solvents	--	9.8	--	--	--
CTS-08(P1) (Rule 1130)	Industrial Coatings and Solvents	2002	2.0	1.9	--	--
CTS-08(P2) (Rule 1122)	Solvent Degreasing	2001	3.0	6.2	--	--
CTS-09(P1) (Rule1132)	High Emitting Spray Booth Facilities	2000	4.0	5.4	--	--
CTS-09(P2) (Rule 1162)	Polyester Resins	2002	3.0	1.6	--	--
FUG-05(P1) (Rule 1178)	Large Fugitive Sources	2001	1.0	1.7	--	--
FUG-05(P2)	Large Fugitive Sources	2002	1.0	--	--	--
FUG-05(P3)	Large Fugitive Sources	--	1.0	--	--	--
FUG-06 (Rule 1189)	Hydrogen Plants	2000	0.8	1.6	--	--
RFL-02(P2) (Rule 461)	Gasoline Service Stations	2000	2.0	6.2	--	--
PRC-03(P2) (Rule 1138)	Restaurant Operations	--	0.9	--	--	--
PRC-06 (Rule 1131)	Industrial Processes – Food Flavoring	2001	3.0	3.0	--	--
WST-01 (PR 1127)	Livestock Waste	--	3.3	--	--	--
WST-04 (Rule 1150.1)	Disposal of VOC-Containing Materials	2000	0.8	0.8	--	--
ADV-CLNG	Solvent Cleaning and Degreasing	--	16.0	--	--	--
ADV-CTS	Miscellaneous Industrial Coating and Solvent Operations	--	6.0	--	--	--
ADV-FUG	Fugitive Emissions	--	5.0	--	--	--
ADV-PRC	Industrial Process Operations	--	1.0	--	--	--
Rule 1102	Non-Perc Dry Cleaners	2000	--	0.3	--	--
Rule 1104	Wood Flat Stock Coating	1999	--	0.1	--	--
CMB-06	Residential Type Natural Gas Fired Water Heaters	1999	0.0	--	7.6	7.6
Rule 1146	Boilers, Steam Generators, and Process Heaters	2000	0.0	--	--	0.2
TOTAL			**76.1**	**50**	**7.6**	**7.8**
REMAINING COMMITMENT FROM 1997/1999 SIP			**26.1**		**(0.2)**	

* An additional 16 tons of VOC reductions from Rule 1171 are subject to technology assessments prior to rule implementation in 2005 and are not included in this value, but are included in the 2010 baseline.

b. Proposed District Measures

The 2003 Plan indicates that the District's strategy in developing the proposed local control measures was to: "1) meet, at a minimum, the same remaining emission reductions committed to in the 1997/1999 SIP for the District portion; 2) replace the long-term measures with more specific short-term measures, where feasible; and 3) identify new control measures to implement all feasible measures."

The 2003 Plan includes a District commitment to achieve 52.5 tpd VOC and 5.1 tpd NOx reductions from new measures or approved inventory changes. This includes a near-term commitment for 21.5 tpd VOC reductions from defined measures and a 31 tpd VOC long-term commitment. Table III-6 lists the emissions inventory and expected reductions for the District's near-term VOC and NOx control measures.

The District's defined measures will continue progress in the near-term. Because of the need for an additional 265 tpd VOC and 181 tpd NOx from long-term measures, ARB staff has identified some opportunities that may allow the District to achieve additional emission reductions to meet the region’s long-term attainment target. These suggestions are generally based on development efforts in other districts and published information on possible rule effectiveness improvements. Given the magnitude of the long-term emission reduction needed, staff believes these opportunities should be assessed as potential long-term strategies, along with additional strategies for sources under State and federal jurisdiction.

Table III-6
District Near-Term Control Measures for 2003 Ozone SIP
(South Coast Air Basin, Summer planning, tons per day in 2010)

Measure	VOC		NOx	
	Inventory	Reductions	Inventory	Reductions
REMAINING 1997/1999 SIP CONTROL MEASURES				
CTS-07: Architectural Coatings and Cleanup Solvents (VOC)	28.3	8.5	--	--
CTS-10: Miscellaneous Industrial Coatings & Solvent Operations (VOC)	16.3	3.0	--	--
FUG-05: Fugitive Sources (VOC)	15.0	2.0	--	--
MSC-01: Promotion of Lighter Color Roofing & Road Materials & Tree Planting Programs (All Pollutants)	--	TBD	--	--
MSC-03: Promotion of Catalyst-Surface Coating Technology (All Pollutants)	--	TBD	--	--
PRC-07: Industrial Process Operations (VOC)	16.9	2.0	--	--
WST-01: Livestock Waste (VOC)	11.0	4.8	--	--
WST-02: Composting (VOC)	6.8	1.2	--	--
FSS-04: Emission Charges of $5,000 per Ton for Large Stationary Sources (VOC)	--	TBD	--	--
FLX-01: Economic Incentive Programs (All Pollutants)	--	TBD	--	--
NEW SIP CONTROL MEASURES				
CMB-10: NOx RECLAIM (NOx)	--	--	35.7	3.0
MSC-05: Truck Stop Electrification (NOx)	0.14	--	2.5	2.1
MSC-07: Natural Gas Fuel Specifications (NOx)	--	TBD	--	--
MSC-08: Large VOC Sources (VOC)	--	TBD	--	--
FSS-05: Mitigation Fee Program for Federal Sources (All Pollutants)	--	TBD	--	--
FSS-06: In-Use Off-Road Vehicles and Equipment (All Pollutants)	--	TBD	--	--
FSS-07: Emission Fee Program for Port-Related Mobile Sources (All Pollutants)	--	TBD	--	--
TOTAL	**94.3**	**21.5**	**38.2**	**5.1**

CTS-07: Architectural Coatings and Cleanup Solvents This measure would achieve additional emission reductions from District Rule 1113 by establishing lower VOC limits for cleanup and thinning solvents, and for specified categories of architectural coatings including clear wood finishes, exterior opaque stains, semi-transparent stains, sanding sealers, and waterproofing sealers.

CTS-10: Miscellaneous Industrial Coating and Solvent Operations This measure would require a further assessment of emissions from miscellaneous industrial coating and solvent operations, and a technical assessment of further emission reduction opportunities. The measure could utilize reformulation, control equipment, or other strategies to reduce emissions from various industrial coatings and from aerospace handwipe operations, alcohols used in manufacturing and clean room operations, lubricants, and other solvent operation categories.

ARB staff suggests that the District review the following rules for further emission reduction potential in the assessment phase of CTS-10: Rule 481 (Spray Coating Operations); Rule 1104 (Wood Flat Stock Coating Operations); Rule 1107 (Coating of Metal Parts and Products); Rule 1122 (Solvent Degreasers); Rule 1125 (Metal Container, Closure, and Coil Coating Operations); Rule 1126 (Magnet Wire Coating Operations); Rule 1130 (Graphic Arts); Rule 1132 (High-Emitting Spray Booth Facilities); Rule 1145 (Plastic, Rubber, and Glass Coating); Rule 1171 (Solvent Cleaning Operations). Further emission reductions may be possible by eliminating exemptions in these rules, increasing control efficiency requirements, or by reducing VOC limits.

FUG-05: Emission Reductions from Fugitive Sources This measure combines three remaining commitments from the 1997/1999 SIP. It focuses on sources such as oil and gas production facilities, petroleum and chemical products processing and transfer facilities, refineries, and other fugitive sources. Implementation of this measure would require development of a detailed emission inventory for these sources, and an assessment of potential control technologies.

The 2003 Plan includes a proposal to consider a pilot program that would establish a cap for refinery emissions. Refineries that meet this target would be exempt from further controls. The 2003 Plan indicates that the pilot program would provide refineries with flexibility to achieve an overall emission reduction target in the most efficient and cost-effective means, in lieu of complying with District prohibitory rules. It may be useful to explore a cap approach for flexibility as emission reductions from these sources become more technically difficult and expensive. If the District considers an approach that would allow these facilities to meet a cap by obtaining emission reductions from other sources (like vehicles and equipment), it is essential that emission reductions surplus to the SIP are identified.

MSC-01: Promotion of Lighter Color Roofing and Road Materials and Tree Planting Programs The control measure would develop a program to promote the use of light colored roofing and pavement, as well as tree planting to reduce temperatures and improve air quality. The District proposes that these activities could be a required element for new sources, included as recommendations through the District's California Environmental Quality Act (CEQA) Air Quality Handbook, or eligible for generation of emission reduction credits. Given the magnitude of reductions required to attain, we recommend that the District consider applying any reductions to the region’s overall attainment targets.

MSC-03: Promotion of Catalyst-Surface Coating Technology This measure would encourage use of catalyst-surface coating technologies in residential and commercial air conditioners to promote conversion of ground-level ozone and carbon monoxide into oxygen and carbon dioxide. The District proposes that this technology could be a required element for new sources, included as a recommendation through the District's California CEQA Air Quality Handbook, or eligible for generation of emission reduction credits. Given the magnitude of reductions required to attain, we recommend that the District consider applying any reductions to the region's overall attainment targets.

PRC-07: Industrial Process Operations The sources under this control measure are permitted and unpermitted VOC sources involved in manufacturing or fabrication of rubber, plastic, fiberglass or chemical compounds, and those involved in the processing, handling or storage of VOC-containing materials. Potential control methods include process modifications, add-on controls, enhanced inspection, or modifications to work practices.

WST-01: Livestock Waste This measure from the 1997/1999 SIP focuses on ammonia reductions to reduce the associated PM10 formation, and also has the potential to reduce VOC emissions. The 2003 Plan indicates that the emission inventory is decreasing because of dairies relocating outside the District (to the San Joaquin Valley and eastern desert), updated population estimates, and Regional Water Quality Control Board regulations. The District has not adopted a prohibitory rule to reduce emissions from livestock waste.

The District believes that additional VOC reductions could potentially be achieved through use of anaerobic digesters and enclosed composting for animal waste, and increased disposal of waste outside the District. The measure also commits to decrease ammonia emissions through livestock relocation and/or potential controls. If sufficient livestock relocation has occurred by January 1, 2004 to achieve a 50 percent ammonia emission reduction from 1993 levels, the District proposes no action. If ammonia controls are needed, the District will evaluate a number of approaches, including enclosed composting, and increased out-of-Basin manure disposal.

ARB staff encourages the District to focus on approaches that seek to reduce and control emissions from livestock and their wastes in place. ARB staff is involved in university studies examining VOC reactivity and emission factors for livestock waste, in order to better understand the magnitude of livestock waste VOC emissions and the benefits of potential controls. We will share the results with the District staff to aid development of this measure. The San Joaquin Valley District staff is also looking at ways to reduce livestock emissions. We encourage the South Coast District staff to coordinate its efforts with the Valley. A common set of strategies could help ensure that these operations reduce emissions as much as feasible, regardless of their location.

WST-02: Composting This measure, adopted by the District in January 2003, achieves 1.2 tpd VOC and 1.9 tpd ammonia reductions in 2010 by requiring: 1) existing co-composting facilities that produce compost from sewage sludge or livestock manure

and bulking agents such as green waste to reduce VOC and ammonia emissions by 70 percent; 2) new co-composting facilities to apply specific controls or achieve 80 percent emission reductions; and 3) chipping and grinding businesses, which process green waste for use as a landfill cover, biomass fuel or composting feedstock, to limit the time they hold or process green waste to prevent unintentional decomposition.

FSS-04: Emission Charges of $5,000 per Ton for Large Stationary Sources The CAA requires that the District adopt a rule that provides for all stationary VOC sources emitting more than 10 tons per year (tpy) in an extreme nonattainment area to pay a $5,000 per ton emission fee, if U.S. EPA makes a formal finding that the area has failed to attain the federal one-hour ozone standard by 2010. The fee (adjusted for inflation since 1990) would be assessed on each ton of VOC emissions in excess of 80 percent of each source's 2010 emissions.

FLX-01: Economic Incentive Programs This measure is intended to increase compliance flexibility through activities such as trading of stationary and mobile source emission credits, development of pilot credit trading rules between mobile and stationary sources, and other market incentive approaches. Mobile source projects used to subsidize growth in stationary source emissions should promote the early introduction of new pollution control technologies. We encourage the District to continue seeking additional feasible reductions from improved control technologies on stationary facilities as well to help meet the region's long-term attainment target. If the District considers an approach that would allow these facilities to obtain emission reductions from other sources (like vehicles and equipment), it is essential that emission reductions surplus to the SIP are identified.

CMB-10: NOx RECLAIM Under the District's Regional Clean Air Incentives Market (RECLAIM) program, stationary sources emitting 4 tons per year or more of NOx or SOx have the option of meeting control requirements for NOx or SOx through a facility-wide emissions allocation, or "cap." This facility cap can be met by either installing controls, or by purchasing RECLAIM Trading Credits. Under the current SIP, emissions allocated to RECLAIM sources were allowed to remain constant between 2003 and 2010. This measure would reduce the NOx allocation for RECLAIM facilities from 35.7 tpd to 32.7 tpd, or about eight percent, by 2010.

District staff reported that many power plants achieved over 90 percent control when they were temporarily removed from the RECLAIM program and required to comply with District prohibitory rules. The power plants generated emission reductions of 0.5 to 2.5 tpd (annual average) in 2003, and up to 3.8 tpd in 2010, beyond those needed to meet the RECLAIM cap.[1] If these reductions are returned to the RECLAIM program as RECLAIM credits, they will more than fulfill the District's proposed CMB-10 commitment without any new controls. During rule development, we encourage the District staff to evaluate whether a similarly effective overall level of control on the non-power plant

[1] South Coast Air Quality Management District, Board letter, Recommendations Regarding Reentry of Power Producing Facilities into RECLAIM Program, June 6, 2003

sources in RECLAIM could achieve more NOx reductions to help meet the region's long-term needs.

MSC-05: Truck Stop Electrification Many diesel-powered trucks must idle their engines in order to provide power for heat, air conditioning, appliances, and other on-board systems, and must operate auxiliary engines to power trailer refrigeration units. In order to eliminate excess idling at truck stops, this measure would require installation of electric systems to provide power for the truck cab, and external power supplies for transport refrigeration units on trucks. ARB staff is developing statewide measures to reduce emissions from the engines used on transport refrigeration units and from truck idling. ARB staff intends to work with the District staff developing this infrastructure measure to ensure that the local rule for truck stops compliments ARB's requirements for trucks and auxiliary engines.

MSC-07: Natural Gas Fuel Specifications Elevated higher heating values of hot gas relative to normal gas results in higher combustion temperature and increased NOx emissions. This measure would establish a maximum heating value limit for natural gas sold in the District.

MSC-08: Large VOC Sources This measure would require facilities to submit a plan outlining measures they would implement to achieve a specific emission reduction target beyond that achieved by existing regulations. Mechanisms to achieve additional reductions could include add-on controls, process controls, product reformulations, mitigation fees, or other measures. Since all District sources of VOC account for 30 percent of emissions in 2010, we encourage the effort to challenge sources to identify the most effective way to achieve further emission reductions.

FSS-05: Mitigation Fee Program for Federal Sources This measure would establish a fee program for sources under federal jurisdiction that operate in the Basin. The District envisions that U.S. EPA would adopt the proposed program, with the funds provided to the District through U.S. EPA rulemaking and/or grants. FSS-05 is structured to reduce local emissions from federal sources without requiring the imposition of national controls. The District proposes to solicit and fund projects with the collected fees to reduce emissions from either federal or non-federal sources. The 2003 Plan does not quantify or credit emission reductions from this measure in the attainment demonstration.

ARB staff concurs that significant emission reductions are needed from sources under federal jurisdiction, and supports the concept of requiring that these sources contribute (directly or indirectly) to meeting the region's emission reduction targets. U.S. EPA has the authority to promulgate regional regulations, whether control requirements or mitigation fees, in lieu of controls. If funding can be secured, the District will need to address issues such as: the enforceability and quantification of emission reductions, project selection criteria, location of emission reduction projects relative to mitigated sources, and program oversight. ARB staff will provide additional comments on this measure as these details emerge.

FSS-06: In-Use Off-Road Vehicles and Equipment The District is pursuing the legal authority to regulate existing mobile sources through strategies such as retrofit controls or mitigation fees. Under this measure, the District would develop regulations to require the retrofit of existing off-road engines, or to accelerate engine turnover.

ARB and U.S. EPA have primary authority to establish broad-based emission reduction programs for mobile sources. However, the District fleet rules (which are already authorized under State law) and various mobile source incentive programs have demonstrated that there are options that can be implemented locally to help accelerate the reductions from existing mobile sources. ARB staff is supportive of District actions that are consistent with State law and fully coordinated with the statewide program to achieve additional feasible and cost-effective emission reductions.

FSS-07: Emission Fee Program for Port-Related Mobile Sources The District proposes an emissions fee program for in-use port-related mobile sources such as ships, trains, trucks, off-road equipment, and other vehicles and equipment. The District would use funds collected from the program to achieve additional emission reductions from on- and off-road mobile sources. ARB staff supports efforts to reduce emissions from the ports, especially in the absence of more stringent emission standards for federal and international sources. However, as with FSS-05, details about program implementation and oversight have not yet been resolved. We will provide additional comments on this measure as these details emerge.

Contingency Measures Section 172(c)(9) of the Clean Air Act requires the SIP provide for contingency measures. In measure CTY-01: Accelerated Implementation of Control Measures, the District proposes to move up implementation of all District controls with a post-2003 implementation date if contingency provisions are triggered. This measure would not affect the total reductions achieved. The District has listed ARB as an implementing agency for CTY-01. ARB staff is not proposing a State commitment for this measure because the adopted mobile source controls generate increasing benefits over time and provide contingency reductions after the attainment date.

Additional Opportunities for Further Reductions To meet the ozone attainment targets, all agencies are seeking opportunities for further VOC and NOx reductions. In addition to the suggestions described above, we offer the following preliminary ideas for the District staff to consider as possible long-term mechanisms to achieve additional VOC and NOx reductions, along with additional strategies for sources under State and federal jurisdiction, to help meet the region's attainment target.

- Petroleum Refinery Flares -- The District has included CMB-07: Emission Reductions from Petroleum Refinery Flares, as a commitment in the proposed revisions to the PM10 SIP to reduce SOx emissions. The measure will be fully implemented by the PM10 attainment deadline of 2006. The District anticipates

concurrent reductions in VOC, NOx, CO, and PM10 emissions, but does not include them in its near-term control strategy.

Because District Rule 1118 requires refineries to monitor refinery flare emissions, we believe the District will be in a good position to estimate the VOC and NOx benefits that would accrue from this measure as rule development progresses. We encourage the District to apply any resulting benefits to help meet the region's overall VOC and NOx reduction needs.

The Bay Area Air Quality Management District (Bay Area) is actively developing a refinery flare rule as part of its Ozone Plan. We encourage the District staff to coordinate with Bay Area staff to maximize the results of these efforts.

- Wood Products Coatings – We encourage the District to evaluate the potential benefits of amending Rule 1136 to eliminate the exemption for residential noncommercial applications or implement a usage cap for this exemption. The requirements of Sacramento District Rule 463 may provide opportunities for additional reductions.

- Metal Container, Closure, and Coil Coating Operations -- We encourage the District to evaluate the potential benefits of amending Rule 1125 to eliminate the one gallon per day low use exemption and lower the VOC limits for certain can and coil products. The requirements of San Diego District Rule 67.4 may provide opportunities for additional reductions.

- Marine Coating Operations -- We encourage the District to evaluate the potential benefits of amending Rule 1106 to lower the product VOC limits for specific marine coating products. The requirements in place in San Diego may provide opportunities for additional reductions.

- Fleet Rules -- The District is reducing both toxic and criteria pollutants with its fleet rules for sources like school buses, trash trucks, and street sweepers. The benefits of the District fleet rules are not reflected in the 2003 Plan. We encourage the District to revisit the emission reductions from local fleet programs by 2007 so those benefits can be included when we reassess the emission reductions needed from long-term measures.

c. Structure of District Commitment

The structure of the District's commitment in the 2003 SIP is similar to the approach used in the 1997/1999 SIP, with the addition of a proposal to credit emission decreases that result from changes in the inventory methodology or growth assumptions towards the District's emission reduction obligations. The District includes an enforceable commitment to bring each of its control measures to the District Governing Board and to meet a residual emissions target that would be achieved via emission controls or inventory adjustments. If a particular SIP measure does not achieve the anticipated

emission reductions, the District must adopt alternate strategies to fulfill the overall SIP commitment on time. Table III-7 shows the District's proposed schedule for emissions reductions through adoption and implementation of near-term measures or inventory changes.

Table III-7
District Near-Term Emission Reduction Commitments
(South Coast Air Basin, Summer planning, tons per day in 2010)

Year	VOC		NOx	
	Based on Adoption Date	Based on Implementation Date	Based on Adoption Date	Based on Implementation Date
2002	0.6	--	--	--
2003	16.9	0.6	--	--
2004	2.0	--	3.0	--
2005	2.0	--	2.1	--
2006	--	4.8	--	--
2007	--	2.0	--	2.1
2008	--	12.1	--	--
2009	--	--	--	--
2010	--	2.0	--	3.0
TOTAL	**21.5**	**21.5**	**5.1**	**5.1**

The District proposes to measure its compliance based on remaining emissions in 2010, allowing emission decreases that result from changes in the inventory methodology or growth assumptions to be credited towards its emission reduction commitment shown in Table III-7. Such inventory changes would have to be peer reviewed and approved by the District Governing Board to be eligible for SIP credit. The 2003 Plan does not indicate whether inventory methodology changes that result in emission increases would increase the District's control responsibilities under the new commitments. The District's approach could result in a different net change in emissions from local sources over time than anticipated in the 2003 Plan. The 2007 SIP revision will need to reconcile any changes in inventory or control effectiveness from the District's near-term measures with an updated attainment demonstration to reassess the long-term emission reduction needs.

ARB has assessed State and federal SIP progress based on emission reductions achieved relative to the approved SIP inventory, consistent with the modeled attainment demonstration. We believe this approach allows an accurate assessment of the control effectiveness achieved versus the effectiveness anticipated in a plan. ARB will continue to track State and federal progress using this SIP inventory currency approach.

d. Transportation Strategy

The 2003 Plan includes a VOC, NOx, and carbon monoxide emission reduction commitment from SCAG, resulting from implementation of its Regional Transportation Plan (RTP) and Transportation Control Measures (TCMs). SCAG's commitment to achieve emission reductions in the Basin is shown in Table III-8.

Table III-8
SCAG 2010 Emission Reduction Commitment
(South Coast Air Basin, Summer planning, tons per day)

Pollutant	Entire RTP (includes TCMs)	Subset of TCMs Only
VOC	15.7	5.6
NOx	7.8	1.0
CO	161.8	60.8

Emission reductions from the RTP are from an expected lower rate of growth in motor vehicle activity due to an improved regional balance between the location of jobs and housing, as well as increased average vehicle speeds and reduced vehicle trips due to transportation measures. The TCMs in the 2003 Plan fall in the following categories:

- High Occupancy Vehicle (HOV) Measures: Construction and dedication of new HOV lanes, and differential tolls for HOVs.

- Transit System and Management Measures: Bus, rail, and shuttle transit expansion and improvements; park and ride lots and inter-modal transfer facilities; bicycle and pedestrian facilities; railroad consolidation programs, such as grade separation projects; intersection improvements; and traffic signalization.

- Information-Based Strategies: Programs that promote alternatives to single occupancy vehicle commutes, and improve congestion management strategies.

Since the transportation sector is the largest contributor to air pollution in Southern California, it must also be the primary source of emission reductions as well. The magnitude of long-term emission reductions needed for attainment require not only a commitment to cleaner vehicles, but also to a lower-emitting transportation system. The work currently being done in many SCAG task forces on the development of the 2004 RTP includes draft policies, actions, and growth scenarios that could help produce sustainable emission reductions through reduced vehicle trips and trip lengths. We encourage SCAG to bring these "green" planning measures before its committees and Regional Council to provide an opportunity for the RTP not only to meet the transportation needs of the region but also to provide the maximum air quality benefits possible. ARB staff expects that SCAG will be an active partner in the process to identify and implement the new long-term strategies needed to attain our air quality goals.

2. State Control Strategy

The 2003 Plan for ozone, PM10, carbon monoxide, and nitrogen dioxide relies on the significant benefits of the existing State control program. The State will continue leading the effort to improve air quality in the South Coast and statewide, providing a greater share of the emission reductions than contributed by sources under its jurisdiction. This is essential since these sources are major contributors to the overall emissions. State actions to date are delivering three-fourths of all emission reductions adopted between the 1997 baseline and 2010 to reduce ozone in the South Coast. The ozone SIP element of the 2003 Plan depends on further State reductions based on ARB staff's draft proposal for new near-term and long-term measures.

ARB is responsible for controlling emissions from mobile sources (except where federal law preempts ARB's authority) and consumer products, developing fuel specifications, establishing gasoline vapor recovery standards and certifying vapor recovery systems. The Bureau of Automotive Repair (BAR) administers California's vehicle inspection and maintenance program, known as "Smog Check", while the Department of Pesticide Regulation (DPR) is responsible for regulating pesticides for commercial/structural and agricultural uses.

(Note: although the State's emission reduction commitments are expressed in terms of reactive organic gases or ROG, we use the VOC label here for consistency with the local elements of the 2003 Plan.)

a. Progress Since 1994 SIP

Most of the existing near-term State measures from the 1994 SIP have been adopted, along with additional measures to reduce emissions. These include strategies to reduce emissions from cars, trucks, buses, motorcycles, marine pleasurecraft, off-road engines and equipment, fuels and fuel dispensing, consumer products, pesticides, and other sources. Table III-9 shows that these measures fulfill most of the existing near-term VOC reduction commitment and exceed the total State commitment for near-term and long-term NOx reductions. The 1997/1999 SIP did not alter the State or federal strategy but updated the SIP commitment based on that Plan's new inventory. The benefits of State measures adopted through October 2002 are reflected in the 2003 Plan baseline.

Table III-9
State Measures Adopted Since 1994 SIP
(As of October 2002, based on South Coast 1997/1999 SIP inventory, tons per day in 2010)

		VOC Reductions		NOx Reductions	
Near-Term Measures	**Adopted**	**Commit-ment**	**Achieved in 2010**	**Commit-ment**	**Achieved in 2010**
M1: Light-duty vehicle scrappage	1998	19	0	17	0
M2: Low Emission Vehicle II program	1998		4		43
M3: Medium-duty vehicles	1995	Baseline[1]	-	Baseline[1]	-
M4: Incentives for clean engines (Moyer Program)[2]	1999	0	0	1	3
M5: California heavy-duty diesel vehicle standards[2]	1998	6	5	42	44
M7: Heavy-duty vehicle scrappage[2]	Replaced with M17	1	NA	7	NA
M17: In-use reductions from heavy-duty vehicles	No		0		0
M8: Heavy-duty gasoline vehicle standards	1995	Baseline[1]	-	Baseline[1]	-
M9: CA heavy-duty off-road diesel engine standards[2]	2000	1	4	20	18
M11: CA large off-road gas/LPG engine standards[2]	1998	15	16	8	5
CP2: Consumer products mid-term measures	1997/1999	34	15	0	0
CP3: Aerosol paint standards	1995/1998	Baseline[1]	-	-	-
Enhanced I/M (Smog Check II) (BAR)	1995	Baseline[1]	(6)	Baseline[1]	-
DPR-1: Emission reductions from pesticides (DPR)	Voluntary	1	1	0	0
Adopted measures not originally included in SIP					
Clean fuels measures	Multiple		13		12
Marine pleasurecraft (reductions beyond M16)	1998/2001		7		0
Motorcycle Standards	1998		1		0
Urban transit buses	2000		0		1
Enhanced vapor recovery program	2000		6		0
Medium/heavy-duty gasoline standards (beyond M8)	2000		0		1
2007 heavy-duty diesel truck standards (beyond M5 and M6)	2001		1		12
Small off-road engine standard revisions	1998		(1)		0
NEAR-TERM TOTAL		**77**	**66**	**95**	**139**
Long-Term Measures (Section 182(e)(5))					
Advanced technology on-road mobile measures	No	37	0	6	-[3]
Advanced technology off-road mobile measures	No	18	0	3	-[3]
CP4: Long-term measure for consumer products	No	43	0	0	0
LONG-TERM TOTAL		**98**	**0**	**9**	-[3]
GRAND TOTAL (near-term + long-term)		**177**	**66**	**105**	**139**

Emission reductions from individual measures may not add to total due to rounding.
( ) = Emission increase relative to baseline.

[1] Measures M3, M8, CP3, and the Smog Check II program from the 1994 SIP had already been adopted when the SIP was revised in 1997. The reductions from these measures are included in the 1997/1999 SIP baseline. Although the Smog Check II program is achieving significant benefits, the emission reductions are less than anticipated in the 1997/1999 SIP as indicated by the negative number under reductions achieved.

[2] The 1997/1999 SIP combined the ARB/U.S. EPA commitment for measures M-4 through M-7, M-9 and M-10, and M-11 and M-12. The emission reduction commitment for the grouped measures have been disaggregated based upon the relative commitment for each measure in the 1994 SIP.

[3] The NOx reductions anticipated from the long-term mobile source commitment have already been achieved from adopted measures.

b. Proposed State Measures

ARB staff is proposing that the State commit to additional reductions of 49 tpd VOC and 37 tpd NOx in South Coast in 2010 through new measures to be adopted between 2003-2006. The State's strategy includes 19 near-term defined measures that ARB staff would develop, plus BAR's planned improvements to the Smog Check program and continuation of DPR's existing commitment to reduce volatile emissions from pesticides. The ARB measures cover on-road vehicles, off-road equipment, marine vessels/ports, fuels and refueling, and consumer products. Lower emission standards for new engines and consumer products are complemented by measures to clean up the existing fleet of mobile sources. Other measures would reduce gasoline vapor emissions from storage tanks, service stations, and fuel tanker trucks. Tighter limits on fuel properties are also proposed. Table III-10 summarizes the measures and the expected emission reductions.

Process As the Board neared adoption of all the defined measures in the 1994 SIP, ARB staff began to outline the next generation of State and federal control measures. In 2001, we initiated a public process to identify new emission reduction strategies for California. In January 2003, ARB staff released a draft document focused on potential measures for sources under State and federal authority that would help reduce ozone and PM10 by 2010. Following twelve public workshops, we issued the Proposed State and Federal Strategy for the California SIP on May 12, 2003. The 2003 Plan for the South Coast Air Basin anticipates the new near-term measures and proposed State commitment for emission reductions in 2010 that are described in the May document. The Air Resources Board will consider adoption of the State Strategy prior to the 2003 South Coast Ozone SIP since the State commitment is essential to complete the SIP's attainment demonstration.

On August 25, 2003, we released the Revised Proposed State and Federal Strategy for the California SIP (State and Federal Strategy) based on subsequent information. This revision retains the same near-term emission reduction commitments for the South Coast. The measures and strategies are largely unchanged except for consolidation of two measures proposed for large spark-ignited equipment like forklifts. The new consolidated strategy is contained in OFF-RD LSI-2: Clean Up Off-Road Gas Equipment Fleet Through Retrofit Controls and New Emission Standards (Spark Ignition Engines 25 hp and Greater).

The August version also reflects the Board's June 26, 2003 approval of the State commitments for the San Joaquin Valley PM10 SIP, and its July 24, 2003 adoption of low-sulfur requirements for on-road and off-road diesel fuel throughout California. Another significant addition is the proposed State long-term strategy for the South Coast, including staff's proposal if U.S. EPA does not carry out its responsibilities for new emission reductions. We also included minor updates to the range of anticipated reductions and timing for a few near-term measures without changing the overall benefits of the proposed State commitment. The Revised State Strategy is available at: http://www.arb.ca.gov/planning/sip/sip.htm.

Table III-10
Proposed State Near-Term Measures for 2003 Ozone SIP
(South Coast Air Basin, Summer planning, tons per day)

Strategy (Agency)	Name	Final Action Date	Implementation Date	Expected Reductions (South Coast 2010)*	
				VOC	NOx
DEFINED STATE MEASURES TO BE DEVELOPED AND PROPOSED					
LT/MED-DUTY-1 (ARB)	Replace or Upgrade Emission Control Systems on Existing Passenger Vehicles – Pilot Program	2005	2007-2008	0-19	0-18
LT/MED-DUTY-2 (BAR)	Improve Smog Check to Reduce Emissions from Existing Passenger and Cargo Vehicles	2002-2005	2002-2006	5.6-5.8	8.0-8.4
ON-RD HVY-DUTY-1 (ARB)	Augment Truck and Bus Highway Inspections with Community-Based Inspections	2003	2005	0-0.1	0
ON-RD HVY-DUTY-2 (ARB)	Capture and Control Vapors from Gasoline Cargo Tankers	2005	2006-2007	4-5	0
ON-RD HVY-DUTY-3 (ARB)	Pursue Approaches to Clean Up the Existing and New Truck/Bus Fleet	2003-2006	2004-2010	1.4-4.5	8-11
OFF-RD CI-1 (ARB)	Pursue Approaches to Clean Up the Existing Heavy-Duty Off-Road Equipment Fleet (Compression Ignition Engines) – Retrofit Controls	2004-2008	2006-2010	2.3-7.8	NQ
OFF-RD CI-2 (ARB)	Implement Registration and Inspection Program for Existing Heavy-Duty Off-Road Equipment to Detect Excess Emissions (Compression Ignition Engines)	2006-2009	2010	NQ	NQ
OFF-RD LSI-1 (ARB)	Set Lower Emission Standards for New Off-Road Gas Engines (Spark Ignited Engines 25 hp and Greater)	2004-2005	2007	0	0.8
OFF-RD LSI-2** (ARB)	Clean Up Off-Road Gas Equipment Through Retrofit Controls and New Emission Standards (Spark-Ignition Engines 25 hp and Greater)	2004	2006-2012	0.8-2.0	2-4
SMALL OFF-RD-1 (ARB)	Set Lower Emission Standards for New Handheld Small Engines and Equipment (Spark Ignited Engines Under 25 hp such as Weed Trimmers, Leaf Blowers, and Chainsaws)	2003	2005	1.9	0.2
SMALL OFF-RD-2 (ARB)	Set Lower Emission Standards for New Non-Handheld Small Engines and Equipment (Spark Ignited Engines Under 25 hp such as Lawnmowers)	2003	2007	6.3-7.4	0.6-1.9

Strategy (Agency)	Name	Final Action Date	Implementation Date	Expected Reductions (South Coast 2010)*	
				VOC	NOx
MARINE-1 (ARB)	Pursue Approaches to Clean Up the Existing Harbor Craft Fleet – Cleaner Engines and Fuels	2003-2005	2005	0.1	2.7
MARINE-2 (ARB)	Pursue Approaches to Reduce Land-Based Port Emissions – Alternative Fuels, Cleaner Engines, Retrofit Controls, Electrification, Education Programs, Operational Controls	2003-2005	2003-2010	0.1	0.1
FUEL-1 (ARB)	Set Additives Standards for Diesel Fuel to Control Engine Deposits	2006-2009	2006-2010	NQ	NQ
FUEL-2 (ARB)	Set Low-Sulfur Standards for Diesel Fuel for Trucks/Buses, Off-Road Equipment, and Stationary Engines	2003	2006	Enabling	Enabling
CONS-1 (ARB)	Set New Consumer Products Limits for 2006	2003-2004	2006	2.3	0
CONS-2 (ARB)	Set New Consumer Products Limits for 2008-2010	2006-2008	2008-2010	8.5-15	0
FVR-1 (ARB)	Increase Recovery of Fuel Vapors from Aboveground Storage Tanks	2003	2007	0-0.1	0
FVR-2 (ARB)	Recover Fuel Vapors from Gasoline Dispensing at Marinas	2006-2009	2006-2010	0-0.1	0
FVR-3 (ARB)	Reduce Fuel Permeation Through Gasoline Dispenser Hoses	2004	2007	0-0.7	0
PEST-1 (DPR)	Implement Existing Pesticide Strategy	---	1996-2010	Baseline	N/A
Potential Range for Defined Near-Term State Measures				**33.3-71.9**	**22.4-47.1**
Minimum Commitment via Adoption 2003-2006				**49**	**37**

c. Structure of Proposed State Commitment

ARB staff is proposing a three-tiered commitment, as detailed in the State Strategy document. The foundation is a near-term commitment to develop and propose for Board consideration 19 defined statewide control measures listed for ARB in Table III-10. The Board could take any action within its discretion in response to these proposals. The next element is an annual commitment to adopt measures through 2006 to achieve specified further emission reductions in the South Coast as shown in Table III-11. The final tier is a long-term commitment to identify additional measures by 2007. These measures would be adopted between 2007 and 2009 in order to reach attainment targets for the federal one-hour ozone standard in the South Coast by 2010.

Table III-11
Proposed State Annual Adoption Commitments for Near-Term Measures
2003 Ozone SIP
(South Coast Air Basin, Summer planning, Emission reductions in tons per day)

	2003	2004	2005	2006	Total State Reductions from Near-Term Measures
VOC	10	4	21	14	49
NOx	11	5	21	0	37

3. Federal Responsibility

Sources of emissions under exclusive federal jurisdiction include cars and trucks registered outside of California which travel within the State, new pre-empt farm equipment and construction equipment, locomotives, marine vessels and aircraft, as well as fuel sold outside California for these engines. Federal agencies also have the lead role representing the United States in the process of developing standards for international aircraft and marine vessels.

Like State and local agencies, the federal government has a responsibility to further control emissions. The federal Clean Air Act directs U.S. EPA to continue reducing mobile source emissions that cause or contribute to air pollution that endangers public health. The ozone and particulate levels in the South Coast clearly meet this test. U.S. EPA needs to pursue new requirements for national and international sources, and complement them with incentives to speed turnover of the diesel fleet to cleaner engines. Federal action is essential to meet health-based air quality goals in this region and other parts of the State.

While U.S. EPA is proposing several initiatives that would help reduce emissions, the agency has stated its unwillingness to make a legal commitment for any new emission reductions to be credited in the 2003 Ozone SIP for the South Coast Air Basin. U.S. EPA has also stated its intention to disapprove the 2003 Ozone SIP if it explicitly relies on federal action to achieve any further reductions in the attainment demonstration. As a result, there are no near-term federal control measures in the 2003 Plan.

This section briefly identifies what federal agencies have done to reduce ozone-forming emissions in the South Coast Air Basin since adoption of the 1994 Ozone SIP and describes the expected emissions contribution from federal sources in 2010 after implementation of the adopted controls. We cover potential concepts for additional federal actions under the Long-Term Strategy discussion.

a. Progress Since 1994 SIP

U.S. EPA and ARB have partnered effectively, sharing technical resources to develop new emission standards and other approaches to reduce emissions from source

categories under shared authority. For example, parallel regulations will require 98 percent control on new heavy-duty trucks, when fully implemented by 2010. The national emission standards for these vehicles are vital to reducing NOx and particulate emissions to meet health-based air quality standards and reduce the cancer risk from exposure to diesel particulate matter. The NOx and VOC benefits of U.S. EPA measures adopted since the 1994 SIP are shown in Table III-12. These emission reductions are reflected in the Plan baseline inventory.

Table III-13
Federal Measures Adopted Since 1994 SIP
(As of October 2002, based on South Coast 1997/1999 SIP inventory, tons per day in 2010)

		VOC Reductions		NOx Reductions	
Near-Term Measures	**Adopted**	**Commit-ment**	**Achieved in 2010**	**Commit-ment**	**Achieved in 2010**
M6: National heavy-duty diesel vehicle standards[1]	1998	2	1	12	11
M10: National heavy-duty off-road diesel engine stds[1]	1998	3	6	26	25
M12: National large off-road gas/LPG engine stds[1]	2002	17	14	9	5
M13: Marine vessel standards	1999	0	0	15	2
M14: Locomotive engine standards	1997	0	0	17	17
M15: Aircraft standards	No	3	0	6	0
M16: Marine pleasurecraft standards	1996	21	17	0	0
Adopted measures not originally included in SIP					
2007 heavy-duty diesel truck standards (beyond M5 and M6)	2001		0		4
NEAR-TERM TOTAL		**46**	**39**	**85**	**64**

Emission reductions from individual measures may not add to total due to rounding.
[1] The 1997/1999 SIP combined the ARB/U.S. EPA commitment for measures M-4 through M-7, M-9 and M-10, and M-11 and M-12. The emission reduction commitment for the grouped measures have been disaggregated based upon the relative commitment for each measure in the 1994 SIP.

b. Emissions Contribution

The emission sources under the exclusive legal or practical control of the federal government account for over 30 percent of NOx emissions and 60 percent of diesel particulate emissions in the South Coast in 2010. Federal sources will contribute approximately eight percent of the 2010 ROG emissions.

Despite continued population and travel growth, ozone-forming emissions from most sources are declining over time due to the effectiveness of adopted controls. However, net emissions from marine and aircraft categories are rising. Between 2000 and 2010 in the South Coast, the total NOx emissions from marine vessels are projected to increase over 20 percent because the effects of activity growth are greater than the benefits of current controls. In contrast, total NOx emissions will drop by 60 percent for passenger vehicles and 30 percent for trucks over the same period in that region. As

State and local agencies continue to make commitments and adopt new measures, the relative contribution of emissions from sources under federal control will increase even faster.

c. New Federal Actions to Reduce Emissions

As U.S. EPA and ARB continue to coordinate on future rulemaking, U.S. EPA is developing three specific proposals to reduce emissions from federal sources. First, U.S. EPA has proposed more stringent emission standards for new off-road diesel equipment based on the transfer of emission control technology for on-road engines. The benefits will be critical in the post-2010 timeframe, both to offset growth and to make progress toward the new, more stringent federal ambient air quality standards. Second, U.S. EPA proposes to phase in the use of low sulfur diesel fuel in off-road applications nationwide. This will enable the use of more sophisticated control technology on off-road diesel engines. Third, U.S. EPA is working in parallel with California to develop on-board diagnostics and to strengthen manufacturers' in-use testing to ensure that new heavy-duty trucks and buses maintain expected emission levels throughout their useful lives. However, U.S. EPA has not proposed to take any legal responsibility for achieving additional reductions needed for ozone attainment in the South Coast.

4. Long-Term Strategy

The federal Clean Air Act recognizes that extreme ozone nonattainment areas, such as the South Coast, must rely on evolving technologies to meet attainment goals. Consistent with section 182(e)(5) of the Act, prior SIPs for South Coast have included a long-term commitment to achieve the last increment of emission reductions, with the remaining measures to be defined by 2007.

After accounting for the anticipated benefits of both adopted and new near-term defined State and local measures, the 2003 SIP demonstrates a need for another 265 tpd ROG reductions and 181 tpd NOx reductions from long-term measures. This represents 30 percent of the total reductions needed by 2010.

We believe that this gap can be bridged through a cooperative effort by the local, State and federal agencies responsible for specific emission sources. This effort should focus on how to most effectively achieve the additional reductions, considering the availability and cost of potential controls. As the State agency charged with ensuring California's SIP compliance, ARB is ultimately responsible for ensuring the necessary measures are identified by 2007 and the emission reductions are achieved by 2010.

a. Primary Attainment Strategy

State ARB staff has proposed to lead a multi-agency (State, federal, local) effort with the public to assess potential control concepts for every type of emission source and develop the full scope of strategies needed to achieve these reductions. In the

Proposed State and Federal Strategy, we identify potential long-term emission reduction concepts to explore for mobile sources, fuels, consumer products, and pesticides, as well as programs to inform consumer choices. We have also received suggestions from others. In early 2004, ARB staff plans to initiate a public process to solicit further ideas to begin development of the long-term measures.

Federal Based on the emissions from sources under federal jurisdiction, the 2003 Plan identifies a federal responsibility for additional reductions of 68 tpd NOx and 18 tpd VOC by 2010 to help attain the federal one-hour ozone standard in the South Coast. Long-term strategies for new engines in locomotives, ocean-going ships, harborcraft, and commercial and non-tactical military aircraft are feasible and effective means to cut emissions and will be critical to make progress toward all of the national air quality standards. Because of the extended life of these engines, we believe the long-term strategy will need to rely heavily on programs to replace existing engines with cleaner models or to add emission control equipment. Given the volume of equipment in operation and the public health impact of the emissions, it is important that U.S. EPA and its federal partners take early action in this regard. The State and Federal Strategy document includes concepts that the federal government should consider to achieve these reductions, as summarized in Table III-13.

Table III-13
ARB Staff Concepts for Federal Action

On-Board Diagnostics for New Truck/Bus Fleet and In-Use Testing for Existing Truck/Bus Fleet
Lower Emission Standards for New Off-Road Compression Ignition Engines
Low-Sulfur Standards for Diesel Fuel for Off-Road Equipment, Locomotives, and Marine Vessels
More Stringent Emission Standards for New Harbor Craft and Ocean-Going Ships
Clean Up the Existing Ocean-Going Ship Fleet through Approaches such as Cleaner Fuels, Incentives for Cleaner Ships, Smoke (Opacity) Limits
Reduce Emissions from Jet Aircraft through Approaches such as More Stringent Engine Standards, Retrofit Controls, Cleaner Fuel, and Applying Standards to Non-Tactical Military Aircraft
More Stringent Emission Standards for New and Remanufactured Locomotive Engines
Incentives to Accelerate Clean Up of Existing Diesel Engines

Local The District adopted a two-part commitment for long-term VOC measures: (a) Tier I with 11 tpd VOC reductions to be adopted 2005-2007 and implemented 2007-2009; and (b) Tier II with 20 tpd VOC reductions to be adopted 2006-2008 and implemented 2008-2010. Although sources under District jurisdiction contribute over ten percent of NOx emissions in 2010, the District did not propose any long-term NOx commitment.

The District identified several mechanisms to develop the strategies to achieve the VOC reductions, including: working with the public via advisory groups and technical forums, updating the emission inventory assumptions (see discussion under Structure of District Commitment), considering reactivity-based approaches, and conducting periodic technology evaluations. As potential new measures are defined, the District staff will update the District Governing Board each December.

Over the next four years, the District will also evaluate the legal, technical, and economic feasibility of 12 strategies suggested by stakeholders – ten are for mobile sources, primarily at ports. In 2004-2008, District staff will propose for District Governing Board consideration any of these measures that it has found to be feasible and within the District's legal authority.

Recommendation In the 2003 Plan, the District assigned responsibility for all of the long-term emission reductions by agency -- 31 tons of VOC to itself and the remaining 234 tons of ROG and all 181 tons of NOx reductions to be achieved by ARB and U.S. EPA. We view this as a placeholder between now and 2007, when the long-term measures must be defined. Until that process is complete, the relative long-term emission reduction split among agencies can't realistically be defined. Nonetheless, it's clear that ARB, U.S. EPA, the District and local government need to obtain additional reductions and we acknowledge ARB's responsibility to ensure that measures to achieve those reductions are ultimately identified and implemented.

To reconcile the District's adopted strategy with ARB staff's recommendations, we have proposed that: (1) the Board approve the District commitment for 31 tpd long-term VOC reductions and the targets for the federal government of 18 tpd ROG and 68 tpd NOx reductions, and (2) the State assume overall responsibility to assure that measures are identified by 2007 and implemented by 2010 to achieve the remaining 216 tpd ROG and 113 tpd NOx reductions needed for ozone attainment in the South Coast.

We believe that all agencies must actively seek to identify additional cost-effective control strategies to achieve the maximum feasible reductions from all source categories. Part of this evaluation will include a discussion of which agency or agencies can most effectively obtain the emission reductions in practice. We expect that the appropriate agency will begin development as soon as practicable. Once all of the specific long-term measures are identified, the resulting reductions to be achieved by each agency may be different than envisioned by the District.

By 2007, the District and ARB will prepare a revision to the Ozone SIP that (1) reflects any modifications to the carrying capacity based on updated science, and (2) identifies the additional strategies, including the implementing agencies, needed to achieve the necessary emission reductions by 2010.

b. Alternative Attainment Strategy

ARB intends to continue working with the U.S. EPA and other federal agencies on both near-term activities and the long-term strategy. However, we do not yet have assurance that the federal government will achieve the emissions targets in the needed timeframe.

If U.S. EPA does not accept the primary attainment strategy (called Option 1) that sets emission targets based on reductions from local, State, and federal elements, the District created an alternative strategy (Option 2) that excludes reductions from federal sources and modifies the attainment emission targets. If Option 2 is triggered, the District proposes to relax the NOx control target by 68 tpd (the federal responsibility) and assign the federal 18 tpd VOC reductions to ARB. As discussed in section III.B, the modeling shows that the South Coast Air Basin could demonstrate attainment with the Option 2 strategy.

However, the attainment emission targets in Option 1 provide the greatest protection for public health and the best foundation for meeting the upcoming federal fine particulate and eight-hour ozone standards. (NOx is the dominant contributor to PM2.5 in the Basin.) Achieving federal PM2.5 standards will require aggressive action over the next decade to demonstrate attainment by the 2014 federal target.

Because stringent NOx control is essential for addressing the health threat from fine particulate pollution, ARB staff is proposing that the Board allow the federal reductions of 18 tpd ROG and 68 tpd NOx to be added to the overall State long-term commitment if U.S. EPA does not agree to carry out its legal responsibility. The State would provide this backstop as part of the Option 1 attainment strategy, maintaining the primary attainment emission targets without modification at this time. As part of the process of developing the long-term measures, we will continue to use every possible means to press our federal counterparts to act where the State and local air agencies cannot.

IV. 2003 PARTICULATE MATTER SIP FOR SOUTH COAST AIR BASIN

The 2003 Plan includes a PM10 emission inventory, attainment demonstration, control strategy, and other elements required by the CAA. If approved by ARB and U.S. EPA, the PM10 element of 2003 Plan would replace the existing 1997 PM10 Plan. The following sections provide ARB staff's analysis of the PM10 element of the 2003 Plan.

A. Emission Inventory

PM10 is a complex mixture of primary or directly emitted particles (from soot and geologic dust), and secondary particles formed in the atmosphere from PM10 precursors such as NOx, sulfur dioxides (SOx), and VOC. VOC acts as a catalyst in the atmosphere, reacting with NOx to form nitric acid, and with SOx to form sulfuric acid. Both nitric acid and sulfuric acid react with ammonia to form ammonium nitrate or ammonium sulfate particles.

The largest source of direct PM10 emissions is paved and unpaved road dust entrained to the atmosphere during vehicle travel. Construction and demolition activities, waste burning and disposal, and windblown dust are also major contributors to direct PM10. Entrained road dust and PM10 from construction activities will decline through 2006 due to adopted local controls, but are projected to increase thereafter due to increased vehicle travel and growth in the region.

The largest ammonia sources in the Basin include livestock waste, fertilizers, and domestic sources. About 50 percent of SOx emissions in the Basin are emitted from commercial ships and boats, while facilities in the District's RECLAIM program contribute another 20 percent. Table IV-1 shows trends in PM10 and PM10 precursor emissions between the 1995 base year for the PM10 Plan and the 2006 attainment year.

Table IV-1
PM10 and PM10 Precursor Emission Trends
(South Coast Air Basin, Annual Average, tons per day)

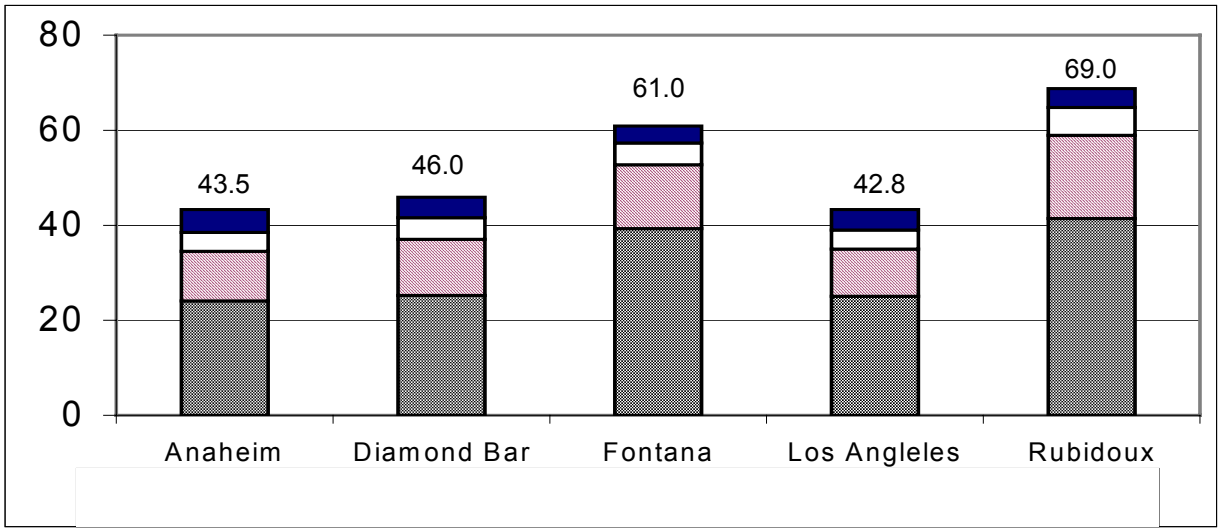
Source Category	PM10		NOx		SOx		VOC	
	1995	2006	1995	2006	1995	2006	1995	2006
Paved and Unpaved Road Dust	180	143	0	0	0	0	0	0
Construction and Demolition	29	44	0	0	0	0	0	0
Fugitive Windblown Dust	23	14	0	0	0	0	0	0
Other Stationary And Area-wide	43	51	164	95	36	19	427	292
On-Road Mobile Sources	19	20	869	563	17	5	623	266
Off-Road Vehicles/Equip.	20	21	311	292	29	36	257	139
TOTAL	**314**	**293**	**1344**	**950**	**82**	**60**	**1307**	**697**

The relative contribution of precursor and direct PM10 to ambient PM10 levels varies throughout the South Coast, based upon the local geography, human activities, and other factors. In the eastern part of the Basin, direct PM10 from windblown dust, construction, and entrained road dust are the greatest contributors to ambient PM10. In the more urbanized western part of the Basin, industrial activities, road dust, and vehicle exhaust play a greater role in PM10 concentrations. Figure IV-1 shows the relative contribution of direct and secondary PM10 emissions to measured PM10 concentrations at key monitoring sites in the Basin.

1. Inventory Updates

The 2003 Plan updates the 1997 PM10 Plan inventory for several sources of PM10 and PM10 precursors. The 2003 Plan utilizes EMFAC2002 rather than EMFAC7G to generate on-road mobile source emissions, and the OFF-ROAD model to generate most of the off-road emission inventory (See Section III-A, above). Methodologies for estimating stationary and area-wide source emissions of PM10 and PM10 precursors have also been updated using the latest available information. Key inventory methodology updates to the PM10 element of the 2003 Plan are described below.

Figure IV-1
Relative Contribution of Primary PM10 and Precursors to Measured Annual Average PM10 Concentrations
(1995, μg/m3 in South Coast Air Basin)



Fugitive Dust PM10 emissions estimates for paved and unpaved road dust, construction operations, windblown dust, and farming operations have all declined due to updated emission factors and activity data. The updated emission factors incorporate information that is more specific and representative of the Southern California region. For example, large decreases in the windblown dust category are due to an updated methodology that now uses climate, wind speed, and soil data specific to Southern California. Although estimates of vehicle miles traveled have increased slightly since the 1997 PM10 Plan, the overall entrained paved road dust emissions have declined. This is due to better allocation of traffic on each road type and emission factor refinements, which lowered the effective overall emissions per mile traveled. Similar updates, using the most current emission factor and activity information, were also applied to the unpaved road dust, construction, and farming operation categories.

Residential Wood Combustion The 2003 Plan utilizes the District's methodology to estimate emissions from residential wood combustion. Residential wood combustion includes emissions from both fireplaces used for primary home heating and those used for aesthetic purposes. The South Coast methodology assumes that 50 pounds of wood is burned by 70 to 90 percent of fireplaces for aesthetic purposes, while the remaining 10 to 30 percent of fireplaces burn 800 pounds of wood per year for primary home heating. With this methodology, wood-burning fireplaces in the Basin were estimated to emit 3.6 tpd PM10 in 1997. ARB staff believes the District PM10 emissions estimate for fireplaces may be low. However, additional survey data is needed to more fully understand the extent of residential wood-burning in the Basin. The 2003 Plan indicates the District will work with ARB and other stakeholders to reevaluate the inventory, if necessary, prior to adopting a control measure for this source category.

Ammonia Sources The District conducted a comprehensive revision to the ammonia inventory, based on a report by AeroVironment Environmental Services Inc. (AVES), which updated emission levels and activity factors for ammonia sources in the Basin.[1] Relative to the 1997/99 SIP, overall ammonia emission estimates for the Basin remained relatively unchanged. Estimated emissions from dairy cows increased due to higher population estimates and emission factors, while the inventory decreased for poultry (lower emission factor) and horses (lower population estimates and emission factor). Estimates for domestic ammonia sources have also risen. ARB staff concurs with this inventory methodology update and believes these emission updates reflect the latest scientific data.

Composting Operations As part of the overall ammonia emissions inventory update, ammonia emissions from composting operations were quantified for the first time. VOC emissions from this source are estimated to be 6.8 tpd in the Basin.

B. Attainment Demonstration

The 2003 Plan includes two modeling approaches to demonstrate attainment of the 24-hour and annual average PM10 standards. The District uses a linear rollback method to model the 24-hour average, and the Urban Airshed Model for Aerosols - Long-Term (UAMAERO-LT) to model the annual average. UAMAERO-LT is based on the annual average PM10 and PM10 precursor inventory, with adjustments made for weekly and monthly variation. Both the 24-hour and annual average modeling approaches use data from the 1995 PM10 Technical Enhancement Program (PTEP). This intensive monitoring program provides the most robust data set for modeling in the South Coast in terms of sampling frequency and information about the chemical components of PM10. The five PTEP monitoring sites were operated at Anaheim, Diamond Bar, Los Angeles, Fontana, and Rubidoux.

24-Hour Standard The plan demonstrates attainment of the 24-hour standard at the five PTEP intensive monitoring sites for an exceedance of the PM10 24-hour standard that occurred in November 1995. This data reflects the highest PM10 concentrations observed in the air basin over the last eight years that are not windblown dust events. The District further notes that since 1997, the only 24-hour PM10 exceedances that have occurred have been associated with high winds. The linear rollback method is considered preferable to UAMAERO-LT for demonstrating attainment of the short-term 24-hour standard due to difficulty in adequately representing day-specific spatial variability in emissions, particularly fugitive dust emission categories. The linear rollback approach apportions the PM10 concentration at a monitoring site into its chemical components. The rollback method assumes that future PM10 levels above background concentrations will decrease in proportion to projected emission reductions associated with each chemical component. With projected controls, PM10

[1] 1997 *Gridded Ammonia Emission Inventory Update for the South Coast Air Basin*, AeroVironment Environmental Services Inc., August 2001.

concentrations in 2006 are predicted to be below the level of the 24-hour standard at all five PTEP monitoring sites.

Annual Average Standard While the 1997 PM10 Plan modeling focused on demonstrating attainment of the annual average at the five PTEP intensive monitoring sites, the 2003 Plan evaluates attainment at each modeling grid cell basin-wide. However, data from the five PTEP monitoring sites is used to evaluate the performance of the model. The District established model performance goals and compared model predictions by chemical component to the ambient data at each of the five PTEP monitoring sites. Overall, the performance of UAMAERO-LT averaged over the five monitoring sites is within or near the performance goals. With projected controls, PM10 concentrations in 2006 are predicted to be below the level of the annual average standard at all five PTEP monitoring sites. Table IV-2 shows the projected concentrations at each of the five sites for comparison to the federal 24-hour standard of 150 μg/m3 and the federal annual average standard of 50 μg/m3.

Table IV-2
Projected 2006 24-Hour and Annual Average PM10 Concentrations with 2003 PM10 SIP Controls
(South Coast Air Basin)

Site	Projected 24-Hour Concentration (μg/m3)	Projected Annual Average Concentration (μg/m3)
Anaheim	137.5	49.9
Diamond Bar	123.3	39.9
Fontana	128.4	47.2
Los Angeles	116.7	38.0
Rubidoux	150	47.6

The UAMAERO-LT model also indicates that, with projected controls, all but thirteen grid cells attain the federal annual average PM10 standard in 2006. These "hot spot" grid cells are located in Los Angeles and Orange counties in areas that experience heavy traffic and are impacted by paved road dust, as well as in parts of San Bernardino and Riverside Counties heavily impacted by fugitive windblown dust, construction dust, and paved road dust. The District utilizes a weight-of-evidence analysis to demonstrate that the annual average PM10 standard will be attained in these thirteen grid cells and throughout the Basin. Citing studies suggesting paved road dust emissions do not continue increasing once a certain vehicle traffic threshold has been reached, the Plan indicates that these emissions are likely to be overstated by a factor of two in Los Angeles and Orange Counties. The District also presents evidence that unpaved road dust, fugitive windblown dust and construction dust emissions are likely misallocated, and that these factors are likely to directly impact the thirteen "hot

spot" grid cells. ARB staff has examined the weight-of-evidence analysis for the annual average PM10 attainment demonstration and has found it to be credible.

C. Control Strategy

The PM10 control strategy in the 2003 Plan benefits from about 400 tpd NOx, 600 tpd VOC, and 20 tpd PM10 emission reductions between 1995 and 2006 from adopted local, State, and federal measures. To support the PM10 attainment demonstration, the District will adopt additional measures achieving 1.02 tpd PM10, 2.1 tpd SOx, and 10.6 tpd ammonia by 2006. The District will achieve additional PM10 and ammonia emission reductions by 2010, to help mitigate projected increases in paved road dust and construction operation emissions.

1. District Control Measures

Table IV-3 shows emission reductions for the new control measures which address PM10, SOx, and ammonia (NH_3). An additional 5.4 tpd VOC emission reductions will be achieved by 2006 from new District ozone control measures described in Section III.C.1.

CMB-07: Refinery Flares District Rule 1118, adopted in 1998, requires petroleum refinery operators to monitor, record, and report data on gas flaring operations. CMB-07 would require a District evaluation of this data to determine the source and extent of emissions and, if the data indicates emissions are significant, implementation of controls to reduce SOx. Potential control options include physical modifications, implementation of flaring minimization plans, and improvements to operation and maintenance procedures to reduce emergency venting of liquids or gases. See Section III.C.1 for additional discussion.

CMB-09: Petroleum Refinery Fluid Catalytic Cracking Units Six petroleum refineries in the Basin operate fluid catalytic cracking units to convert heavy oils into gasoline and lighter petroleum products. District Proposed Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, scheduled to be considered for adoption by the District Governing Board on September 5, 2003, would implement control measure CMB-09. The proposed rule establishes emission limits for filterable PM10 and ammonia and requires periodic source testing to ensure compliance.

WST-01: Livestock Waste See Section III.C.1.

WST-02: Composting See Section III.C.1.

Table IV-3
Additional 2003 Plan District Control Measures
(South Coast Air Basin, 2006 annual average emission reductions)

Measure	PM10	SOx	NH_3
Remaining 1997/1999 SIP Control Measures			
CMB-07: Refinery Flares (SOx)	--	2.1	--
CMB-09: Petroleum Refinery Fluid Catalytic Cracking Units (PM10/NH_3)*	0.0	--	0.0
WST-01: Livestock Waste (NH_3)	--	--	8.7
WST-02: Composting (NH_3)	--	--	1.9
PRC-03: Restaurant Operations (PM10)	0.2	--	--
New Control Measures			
BCM-07: Further PM10 Reductions from Fugitive Dust Sources (PM10)	tbd	--	--
BCM-08: Further Emission Reductions from Aggregate and Cement Plant Manufacturing Operations (PM10)	0.6	--	--
MSC-04: Miscellaneous Ammonia Sources (NH_3)	--	--	tbd
MSC-06: Wood-Burning Fireplaces and Wood Stoves (PM10)	tbd	--	--
TCB-01: Transportation Conformity Backstop Measure (PM10)*	0.0	--	--
TOTAL REDUCTIONS IN 2006	**1.02****	**2.1**	**10.6**

* Measures intended to achieve post-2006 emission reductions.
** This total reflects 0.8 tpd PM10 reductions intended to be achieved from PRC-03 and BCM-08, and 0.22 tpd additional PM10 reductions to be achieved through a combination of the above control strategies.

PRC-03: Restaurant Operations This control measure would target under-fired charbroilers, which are responsible for 84 percent of PM10 emissions and 71 percent of VOC emissions from all restaurant operations. The District has a contract with the University of California, College of Engineering, Center for Environmental Research and Technology (CE-CERT) to examine potential cost-effective controls for this source category. Potential emission reduction strategies include use of a cyclonic air scrubbing device, which employs water and filters to reduce PM10, and replacement of under-fired charbroilers with a Smokeless™ Broiler. The Plan indicates PRC-03 targets PM10 emission reductions only, due to the projected high cost of VOC reduction technologies

BCM-07: Further Emission Reductions from Fugitive Dust Sources Section 189(b)(1)(B) of the Act requires the District to implement BACM for major sources of fugitive dust. Upon local adoption, the 1997 PM10 Plan included fugitive dust regulations at least as stringent as controls achieved in other areas or included in other PM10 SIPs. However, other areas have since developed and adopted controls more stringent than District requirements. BCM-07 would require the District to review its

BACM requirements and consider updates to achieve additional fugitive dust emission reductions. Potential control strategies include watering of dust sources, chemical stabilization, paving, and track-out controls for roads, and revegetation of vacant lands. ARB encourages the District evaluate strategies adopted in Las Vegas, Nevada and Mariposa County (Phoenix), Arizona during its BACM analysis.

BCM-08: Further Emission Reductions from Aggregate and Cement Plant Manufacturing Operations Aggregate plants produce sand, gravel, and crushed stone used in the construction of housing, commercial buildings, highways, bridges, airports, and other projects. PM10 emissions occur from quarrying, crushing, and grinding operations at aggregate plants, as well as from wind-blown storage piles, and unpaved haul road traffic. Additional PM10 emissions can occur during the cement kiln process which processes raw materials such as limestone and silica into cement. While existing rules control these sources based on visible emissions and other criteria, additional controls may be feasible and cost-effective. Potential controls for aggregate plants include application of water prior to material extraction, application of chemical dust suppressants or ground cover to disturbed areas, chemical stabilization or paving of internal haul roads, and other strategies. Potential controls for cement kilns include electrostatic precipitators, high efficient baghouses, and improved maintenance practices.

MSC-04: Miscellaneous Ammonia Sources This measure would reevaluate potential control strategies for ammonia sources, based upon the updated ammonia inventory. Potential control strategies include expansion of rules to reduce ammonia emissions from livestock waste and composting, and changing fertilizer formulation and application procedures.

MSC-06: Wood-Burning Fireplaces and Wood Stoves The South Coast does not currently regulate residential wood burning. This measure identifies several potential strategies for evaluation and possible implementation to reduce PM10 emissions from new and existing residential fireplaces and wood stoves. U.S EPA has particulate emission standards for wood stoves and fireplace inserts that are manufactured and sold in the U.S. and ARB has developed a suggested control strategy for emissions from residential wood combustion.

Several air districts have also developed residential wood burning rules. These rules range from programs to discourage burning on days with poor air quality, to mandatory installation of lower-emitting wood stoves, to limiting the installation of wood burning devices in new buildings.

In July 2003, the San Joaquin Valley District amended its Rule 4901 - Wood Burning Fireplaces and Wood Heaters, to:

- require existing wood stoves be U.S. EPA-certified, removed from the residence, or made inoperable upon sale of a residence;
- set a limit on the number of wood burning devices allowed in new subdivisions; and

- prohibit burning in residential wood fireplaces on days with unhealthy air quality (as indicated by a U.S. EPA Air Quality Index > 150).

ARB staff encourages the District to consider strategies for residential wood burning as effective as those in the San Joaquin Valley in developing MSC-06.

TCB-01: Transportation Conformity Backstop Measure The attainment year emission budgets for PM10 also serve as the budgets for future years to ensure that emissions from the transportation sector are consistent with continued attainment of the standard. However, by 2020 and 2030 increased vehicle travel on paved and unpaved roads may result in PM10 emissions from the transportation sector which exceed then 2006 budget. The District has committed to achieve additional emission reductions of up to 9 and 16 tons per day of PM10 by 2020 and 2030, respectively, if necessary to assist SCAG in its future year conformity determinations. These reductions could be achieved through dust controls, vehicle travel reduction strategies, or other local measures.

The District identified ARB as an implementing agency for this measure. ARB staff is not proposing a State commitment for this measure. However, staff believes it is appropriate for PM10 reductions from regulations adopted by the Board be creditable in transportation conformity determinations.

Contingency Measures The 2003 Plan includes the following contingency measures for PM10:

- CTY-01: Accelerated Implementation of Control Measures -- See Section III.C.1.

- CTY-14: Control of Emissions from Miscellaneous Sources -- This contingency measure would reduce PM10 emissions from weed abatement operations. Potential controls include requiring mowing instead of discing (which churns up the soil), weed abatement vehicle speed limits, limiting weed abatement to morning hours when winds are lower, and requiring pre-treatment of the site with a watering truck.

Low Sulfur Diesel Fuel In September 2000, the District adopted a rule prohibiting the use of diesel fuel with a sulfur content greater than 15 ppm by January 1, 2005, unless ARB adopted a similar rule to be implemented by June 1, 2006. In July 2003, the Board adopted a 15 ppm low-sulfur diesel fuel regulation. The rule will enable the use of advanced exhaust aftertreatment devices, and achieve significant decreases in diesel particulate matter, NOx, and SOx emissions statewide. The ARB limits will achieve 2006 emission reductions in the South Coast Air Basin beyond those from the District rule. The statewide regulation will also reduce emissions from trucks and off-road equipment that are fueled in other areas of California but travel through the Basin.

District staff has expressed concerns that the implementation schedule for the ARB regulation (2006 rather than 2005 under the District rule) would leave a shortfall in the progress and attainment demonstrations for the PM10 SIP element of the 2003 Plan.

The District Board Resolution adopting the 2003 Plan requests that ARB offset 6 tpd SOx and PM10 emission reductions that the 2003 Plan had assumed would occur by 2006. This reduction estimate seems to reflect the projected benefits described in the September 2000 South Coast staff report on the District's proposed 15 ppm low sulfur diesel rule. [1] However, the benefits credited in the 2003 Plan for low-sulfur fuel use are more modest. The 2003 Plan assumes 15 ppm sulfur diesel fuel use for off-road sources beginning on January 1, 2005, but does not assume 15 ppm sulfur diesel for on-road sources until January 1, 2007, six months after the ARB (and national) implementation date. The on-road benefits of the low-sulfur fuel rule far exceed the off-road benefits in 2006.

We conclude that the regulation adopted by the Board will achieve the emission reductions credited in the 2003 PM10 SIP for progress and attainment. There is no shortfall.

2. Structure of District Commitment

The 2003 Plan includes an enforceable commitment to bring each District PM10 control measure to the District Board and meet an emissions reduction target in a certain timeframe. The District Board does not commit to adopt each specific control measure or achieve the anticipated emission reductions from each measure. However, if a plan measure does not achieve the anticipated emission reductions, the District must adopt and implement alternate strategies to fulfill the overall Plan commitment on time. The plan commits the District to achieve 2.2 tpd PM10 emission reductions from measures to be adopted in 2003 and 2004, with the reductions to be achieved between 2005 and 2010. The 2003 Plan also commits the District to adopt measures achieving 2.1 tpd SOx reductions by 2004, with implementation by 2005. Section III describes the District's enforceable commitment to reduce NOx and VOC emissions. While the District does not explicitly define a SIP commitment for ammonia reductions, measures achieving 10.8 tpd ammonia emission reductions by 2006 were included in the PM10 attainment demonstration and are therefore enforceable.

[1] Staff Report - Proposed Amended Rule 431.2: Sulfur Content of Liquid Fuels, South Coast Air Quality Management District, September 6, 2000.

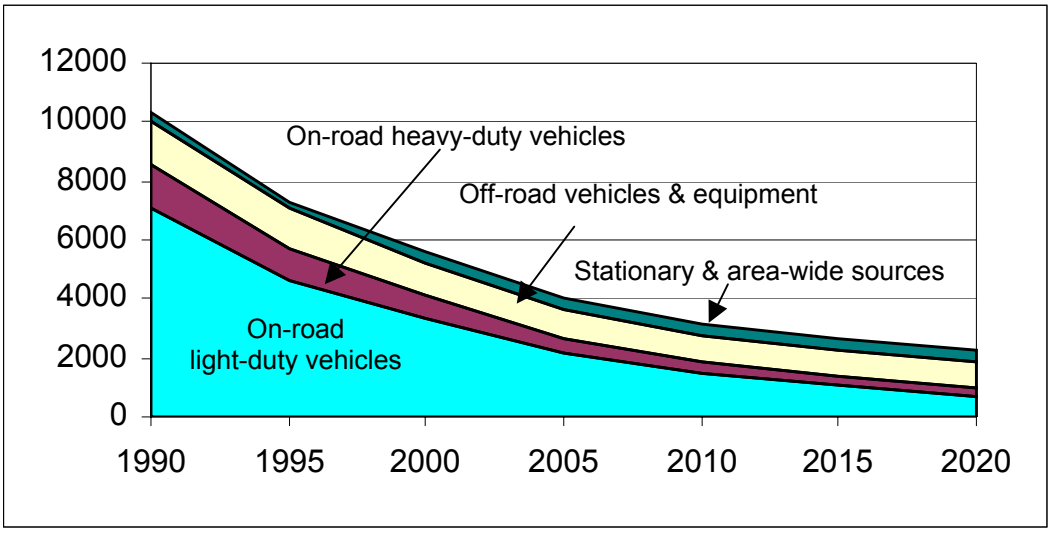
V. 2003 CARBON MONOXIDE SIP FOR SOUTH COAST AIR BASIN

The CAA requires an area not exceed the federal carbon monoxide standard more than once in a two-year period. The Basin has achieved this air quality milestone by recording no violations of the federal carbon monoxide standard in 2001 and only one violation in 2002. This occurred during stagnant air conditions on January 8, 2002, when the Lynnwood monitoring station near downtown Los Angeles recorded an eight-hour carbon monoxide concentration of 10.1 ppb, exceeding the standard of 9.5 ppb. Although the South Coast Air Basin meets the criteria for attainment, the District has not yet chosen to request redesignation and prepare a maintenance plan. Meanwhile, the 2003 Plan revises the existing attainment demonstration.

A. Emission Inventory

The 2003 Plan uses EMFAC2002 to generate the on-road mobile source carbon monoxide inventory. In 2003, cars, trucks, and other on-road mobile sources emitted two-thirds of the total wintertime carbon monoxide emissions in the Basin. Off-road equipment such as lawn mowers, forklifts and generators are the primary off-road mobile source of carbon monoxide, while residential fuel combustion and waste burning and disposal contribute the majority of carbon monoxide from stationary and area-wide sources. ARB motor vehicle regulations have helped reduce overall carbon monoxide emissions by almost sixty percent between 1990 and 2003. Emissions are projected to continue declining significantly due to fleet turnover. Figure V-1 shows carbon monoxide trends for the Basin by major source category from 1990 to 2020.

Figure V-1
Carbon Monoxide Emission Trends
(South Coast Air Basin, Winter planning inventory, tons per day)



B. Attainment Demonstration

In 2003, South Coast Air Basin air quality met the criteria specified in the CAA for attainment of the federal CO standard. The 2003 Plan also uses an October 31-November 1, 1997 episode day and the CAMx air quality model to project attainment of the federal carbon monoxide standard beginning in 2003. This episode had an eight-hour maximum carbon monoxide concentration of 17 ppb, which was the highest observed carbon monoxide concentration since 1996. The projected maximum eight-hour carbon monoxide concentration in the Basin in 2002 was 10.0 ppb, similar to the observed concentration at Lynnwood during the January 8, 2002 exceedance. The maximum eight-hour carbon monoxide concentration for 2003 through 2005 is projected through linear rollback, whereby the projected CO concentration is reduced in proportion to projected CO emission reductions. With this approach, the maximum predicted eight-hour CO concentration is 9.4 ppm in 2003, 8.9 ppm in 2004, and 8.4 ppm in 2005. Continued CO emission reductions should ensure the region remains in attainment of the federal CO standard after 2005.

C. Control Strategy

The District assigned a contingency measure to ARB and U.S. EPA -- CTY-04: Enhanced Oxygenated Fuels Content -- to reduce carbon monoxide emissions by increasing the oxygen content of gasoline in the winter. ARB staff is not proposing a State commitment for this measure. ARB staff believes the increasing CO reductions that will be achieved with adopted motor vehicle and equipment controls as the fleet turns over to cleaner engines provide sufficient contingency for the 2003 CO SIP.

Regardless of authority, we don't think the District's proposal would be advisable. While increasing fuel oxygen content may tend to decrease CO emissions, it also tends to increase NOx emissions.

VI. 2003 NITROGEN DIOXIDE SIP FOR THE SOUTH COAST

The South Coast Air Basin was redesignated to attainment for the federal nitrogen dioxide (NO2) standard on July 24, 1998.[1] The 2003 Plan revises the approved 1997 NO2 Maintenance Plan with updated conformity budgets based upon the latest emission inventory and planning assumptions. The 1997 NO2 maintenance plan demonstrated continued maintenance of the standard through 2010. The 2003 Plan demonstrates that NOx emissions will continue to decline through 2010 as a result of adopted controls, and that the rate of decline will accelerate after 2006 if the proposed ozone strategy is implemented.

[1] Federal Register, July 24, 1998, Volume 68, No. 142.

VII. 2003 PARTICULATE MATTER SIP FOR COACHELLA VALLEY

The 2003 Coachella Valley PM10 Plan updates the region's emission inventory and PM10 attainment demonstration.

A. 2003 Coachella Valley PM10 Plan

On August 1, 2003, the District Governing Board adopted the 2003 Coachella Valley PM10 Plan, which updates the 2002 Coachella Valley PM10 Plan emission inventory, attainment demonstration, and conformity emission budgets. The 2003 Coachella Valley PM10 Plan does not alter the 2002 plan control strategy.

1. Emission Inventory

The 2003 Coachella Valley PM10 Plan updates the on-road mobile source inventory used in the 2002 Coachella Valley PM10 Plan with an EMFAC2002-based inventory. The 2003 Coachella Valley PM10 Plan also updates the fugitive dust inventory based on the methodology improvements described in Section IV. As a result, windblown dust estimates for the Coachella Valley have decreased, from about 31 tpd to about 9 tpd in the year 2000. Paved and unpaved road dust, and PM10 from construction operations are also about 4 tpd lower.

2. Attainment Demonstration

The Coachella Valley attainment demonstration utilizes a linear rollback approach to model attainment of the 24-hour standard and UAMAERO-LT for the annual average PM10 standard. The 2003 Coachella Valley PM10 Plan utilizes a 1995 base year, an updated emission inventory, and the benefits of the 2002 Coachella Valley PM10 Plan controls, to demonstrate attainment by 2006. Table VII-1 includes a summary of the contribution of various PM10 constituents to PM10 levels in 1995, and in 2006 with and without new plan controls.

Table VII-1
Base-Year and 2006 Modeled PM10 Concentrations
(Coachella Valley, μg/m3)

Source Category	1995 Design Value		2006 Without New Controls		2006 With New Controls	
	Annual	24-Hour	Annual	24-Hour	Annual	24-Hour
Background	3.0	3.0	3.0	3.0	3.0	3.0
Transport	8.8	14.2	6.4	14.2	6.3	14.2
Mobile Sources	1.3	3.6	1.3	3.8	1.3	3.8
Construction Dust	0.8	2.7	5.0	18.4	4.5	16.6
Paved Road Dust	4.4	15.8	4.6	16.7	3.6	13.2
Unpaved Road Dust	3.2	11.6	3.2	11.6	2.8	10.1
Agriculture	0.6	2.2	0.5	1.9	0.5	1.9
Windblown Dust	18.3	67.7	18.2	66.7	18.2	66.7
Vegetation Burning	5.9	10.4	4.9	8.7	4.9	8.7
Other	3.4	2.8	4.4	3.6	4.4	3.6
TOTAL	**49.7**	**134.0**	**51.5**	**148.5**	**49.6**	**141.6**

Federal annual standard is 50 μg/m3; 24-hour standard is 150 μg/m3

IX. ON-ROAD MOTOR VEHICLE EMISSION BUDGETS

The 2003 Plan sets forth the strategy for achieving the federal one-hour ozone, PM10, and CO standards, and maintaining the federal NO2 standard. For on-road mobile sources, Section 176(c) of the CAA requires that transportation plans and programs do not cause or contribute to any new violation of a standard, increase the frequency or severity of any existing violation, or delay the timely attainment of the air quality standards. In other words, emissions from on-road mobile sources must "conform" to the attainment demonstration contained in the SIP.

U.S. EPA's transportation conformity rule, found in 40 CFR parts 51 and 93, details the requirements for establishing motor vehicle emissions budgets in SIPs for the purpose of ensuring the conformity of transportation plans and programs with the SIP attainment and progress demonstration. The on-road motor vehicle emissions budgets act as a "ceiling" for future on-road mobile source emissions.

Emissions resulting from regional transportation plans and projects must fit within the budgets established in the SIP. A positive conformity finding is required for federal approval and funding of transportation improvements.

The on-road motor vehicle emissions estimates for the 2003 Plan were developed using ARB's on-road mobile source emission factor model, EMFAC2002, in conjunction with the most recent motor vehicle activity data from SCAG. Emissions forecasts were generated for the summer, winter, and annual average planning inventory using EMFAC2002 for each milestone and attainment or maintenance year. The model outputs were then adjusted to account for existing emission reduction programs not reflected in the model. These include: Smog Check improvements in place as of Fall 2002; the benefits of the District's employer rideshare program, and the emission reductions attributable to SCAG's Regional Transportation Plan.

The ozone emissions budgets for VOC and NOx are derived from the adjusted summer planning inventory and the 2010 reductions from near-term defined measures. The PM10 emissions budgets for PM10 and the PM10 precursors VOC and NOx are derived from the adjusted annual average planning inventory. The CO and NO2 emissions budgets for CO and NOx, respectively, are both derived from the adjusted winter planning inventory. The District and ARB request that U.S. EPA replace the existing emission budgets with the 2003 Plan budgets once the new budgets are determined to be adequate. Tables VIII-1 through VIII-4 include the 2003 Plan motor vehicle emission budgets for ozone, PM10, carbon monoxide, and nitrogen dioxide for the South Coast Air Basin. Table VIII-5 shows the PM10 budgets for Coachella Valley.

Table VIII-1
Ozone Budgets -- South Coast Air Basin
(Summer planning, tons per day)

VOC	**2005**	**2008**	**2010**
Baseline EMFAC2002	267.5	233.6	208.6
SCAG TCM Benefits	0.0	-13.7	-15.7
Adjusted EMFAC2002	267.5	219.9	192.8
District Rule 2202	-2.7	-2.1	-1.7
I/M Improvements	-2.7	-2.2	-1.9
Adjusted Inventory	262.1	215.6	189.2
New Defined State Measures	0.0	0.0	-34.2
New Local Measures	0.0	0.0	0.0
Mobile Source Emission Budgets*	**263**	**216**	**156**
NOx	**2005**	**2008**	**2010**
Baseline EMFAC2002	522.9	474.9	413.9
SCAG TCM Benefits	0.0	-5.5	-7.8
Adjusted EMFAC2002	522.9	469.4	406.0
District Rule 2202	-2.9	-2.3	-1.8
I/M Improvements	-4.2	-3.7	-3.4
Adjusted Inventory	545.8	463.4	400.9
New Defined State Measures	0.0	0.0	-37.4
New Local Measures	0.0	0.0	0.0
Mobile Source Emission Budgets*	**546**	**464**	**364**

* Rounded up to the nearest ton.

The ozone budgets for the South Coast Air Basin reflect the reductions from adopted measures and the near-term defined measures. When the strategies to achieve the needed long-term emission reductions are identified, the District, SCAG, and ARB have agreed to modify the budgets to incorporate any additional reductions expected from on-road motor vehicles. This approach is consistent with U.S. EPA's transportation conformity rule.

Table VIII-2
PM10 Budgets-- South Coast Air Basin
(Annual average, tons per day)

VOC	**2003**	**2006**
Baseline EMFAC2002	315.8	363.8
SCAG TCM Benefits	0.0	-8.5
Adjusted EMFAC2002	315.8	255.3
District Rule 2202	-3.5	-2.6
I/M Improvements	-1.9	-2.6
Adjusted Inventory	310.4	250.1
New Defined State Measures	0.0	0.0
New Local Measures	0.0	0.0
Mobile Source Emission Budgets*	**311**	**251**
NOx	**2003**	**2006**
Baseline EMFAC2002	641.8	562.9
SCAG TCM Benefits	0.0	-7.0
Adjusted EMFAC2002	641.8	555.9
District Rule 2202	-4.1	-2.9
I/M Improvements	-2.8	-4.1
Adjusted Inventory	634.9	548.9
New Defined State Measures	0.0	0.0
New Local Measures	0.0	0.0
Mobile Source Emission Budgets*	**635**	**549**
PM10	**2003**	**2006**
Baseline EMFAC2002	18.9	19.9
SCAG TCM Benefits	0.0	-0.6
Adjusted EMFAC2002	18.9	19.3
District Rule 2202	-0.1	-0.1
I/M Improvements	0.0	0.0
Reentrained Road Dust (paved)	136.8	134.9
Reentrained Road Dust (unpaved)	9.7	8.7
Road Construction Dust	2.2	2.2
Adjusted Inventory	167.6	165.0
New Defined State Measures	0.0	0.0
New Local Measures	0.0	0.0
Mobile Source Emission Budgets*	**168**	**166**

* Rounded up to the nearest ton.

Table VIII-3
Carbon Monoxide Budget-- South Coast Air Basin
(Winter planning, tons per day)

CO	**2002**
Baseline EMFAC2002	3402.4
SCAG TCM Benefits	0.0
Adjusted EMFAC2002	3402.4
District Rule 2202	-41.9
I/M Improvements	0.0
Adjusted Inventory	3360.5
New Defined State Measures	0.0
New Local Measures	0.0
Mobile Source Emission Budgets*	**3361**

*Rounded up to the nearest ton.

Table VIII-4
Nitrogen Dioxide Budgets-- South Coast Air Basin
(Winter planning, tons per day)

NOx	**2003**
Baseline EMFAC2002	692.3
SCAG TCM Benefits	0.0
Adjusted EMFAC2002	692.3
District Rule 2202	-4.4
I/M Improvements	-2.8
Adjusted Inventory	685.0
New Defined State Measures	0.0
New Local Measures	0.0
Mobile Source Emission Budgets*	**686**

* Rounded up to the nearest ton.

Table VIII-5
PM10 Budgets-- Coachella Valley
(Annual average, tons per day)

PM10	**2003**	**2006**
Baseline EMFAC2002	0.39	0.42
Reentrained Road Dust (paved)	7.64	5.80
Reentrained Road Dust (unpaved)	4.23	3.68
Road Construction Dust	0.06	0.06
Additional Margin (based on modeling)	0.0	0.97*
Mobile Source Emission Budgets	**12.3****	**10.9*****

* Additional margin based on over-attainment of the PM10 standard.
** Represents remaining emissions at the end of 2003.
*** Non-transportation emissions represent an additional 19.1 tpd, 0.37 tpd of which are from off-road sources. Non-transportation emissions are shown in case a future SIP revision provides for budget trading between transportation and non-transportation sectors.

IX. STAFF RECOMMENDATIONS

The 2003 Plan reflects significant progress towards cleaner air for the residents of the South Coast Air Basin and Coachella Valley. Approval of the SIP elements will incorporate existing measures into the baseline and make enforceable the new commitments for actions to achieve the federal one-hour ozone standard by 2010 in the South Coast Basin, and by 2007 in the Coachella Valley. Approval of the SIP will also update the strategy to attain the federal PM10 standards in the Basin and in the Coachella Valley by 2006.

ARB staff recommends that the Board take the following actions and direct the Executive Officer to submit these elements to U.S. EPA as revisions to the California SIP:

- Contingent upon the Board's approval of the Proposed State and Federal Strategy, approve the ozone element of the 2003 Plan for the South Coast Air Basin intended to attain the federal one-hour ozone standard, including the local control strategy, emission inventories, attainment demonstration, and motor vehicle emission budgets. The final State and Federal Strategy entirely replaces the draft State and federal elements in the 2003 Plan.

- Approve the PM10 element of the 2003 Plan for the South Coast Air Basin intended to attain the federal 24-hour and annual standards for PM10, including the local control strategy, emission inventories, attainment demonstration, and motor vehicle emissions budgets.

- Approve the carbon monoxide element of the 2003 Plan for the South Coast Air Basin intended to attain the federal eight-hour carbon monoxide standard, including the local control strategy, emission inventories, attainment demonstration, and motor vehicle emissions budgets.

- Approve the nitrogen dioxide element of the 2003 Plan for the South Coast Air Basin intended to maintain the federal nitrogen dioxide standard, including emission inventories and motor vehicle emissions budgets.

- Approve the 2003 PM10 Plan for the Coachella Valley intended to attain the federal 24-hour and annual PM10 standards, including the emission inventories, attainment demonstration, and motor vehicle emissions budgets.