

CHAPTER 1

INTRODUCTION

Purpose

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2007 AQMP

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PURPOSE

The purpose of the 2007 Air Quality Management Plan (AQMP or Plan) for the South Coast Air Basin (Basin) is to set forth a comprehensive program that will lead the region into compliance with federal 8-hour ozone and PM_{2.5} air quality standards. The Plan will be submitted to U.S. EPA as a SIP revision once it is approved by the District's Governing Board and the California Air Resources Board (CARB). The key federal planning requirements are summarized briefly later in this chapter. Additional technical refinements are still underway to improve the planning assumptions, proposals, pollution control strategy, and attainment demonstration. Nonetheless, AQMD staff believes it is time to initiate broad public dialogue, to inform the public regarding the challenge ahead, and to solicit public input.

This Final 2007 AQMP sets forth programs which require the cooperation of all levels of government: local, regional, state, and federal. Each level is represented in the Plan by the appropriate agency or jurisdiction that has the authority over specific emissions sources. Accordingly, each agency or jurisdiction commit to specific planning and implementation responsibilities.

At the federal level, the U.S. Environmental Protection Agency (U.S. EPA) is charged with establishing emission standards of 49-state on-road motor vehicle standards; train, airplane, and ship pollutant exhaust and fuel standards; and regulation of non-road engines less than 175 horsepower. The CARB, representing the state level, also oversees on-road vehicle emission standards, fuel specifications, some off-road source requirements and consumer product standards. At the regional level, the District is responsible for stationary sources and some mobile sources, including operational limitations. In addition, the District has lead responsibility for the development and adoption of the Plan. Lastly, at the local level, the cities and counties and their various departments (e.g., harbors and airports) have a dual role related to transportation and land use. Their efforts are coordinated through the regional metropolitan planning organization; for the South Coast Air Basin, the Southern California Association of Governments (SCAG) is the District's major partner in the preparation of the AQMP. Interagency commitment and cooperation are the keys to success of the AQMP.

Since air pollution physically transcends city and county boundaries, it is a regional problem. No one agency can design or implement the Plan alone and the strategies in the Plan reflect this fact.

CONSTRAINTS IN ACHIEVING STANDARDS

The District is faced with a number of constraints or confounding circumstances that make achieving clean air standards difficult. These include the physical and

meteorological setting, the large pollutant emissions burden of the Basin (including pollution from international goods movement), and the rapid population growth of the area.

Setting

The District has jurisdiction over an area of approximately 10,743 square miles, consisting of the four-county South Coast Air Basin (Basin), and the Riverside County portions of the Salton Sea Air Basin (SSAB) and Mojave Desert Air Basin (MDAB). The Basin, which is a subregion of the SCAQMD's jurisdiction, is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. It includes all of Orange county and the nondesert portions of Los Angeles, Riverside, and San Bernardino counties. The Riverside county portion of the SSAB is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley. The federal nonattainment area (known as the Coachella Valley Planning Area) is a subregion of Riverside county and the SSAB that is bounded by the San Jacinto Mountains to the west and the eastern boundary of the Coachella Valley to the east. The Los Angeles county portion of the MDAB (known as north county or Antelope Valley) is bounded by the San Gabriel Mountains to the south and west, the Los Angeles/Kern county border to the north, and the Los Angeles/San Bernardino county border to the east. The SSAB and MDAB were previously included in a single large Basin called the Southeast Desert Air Basin (SEDAB). On May 30, 1996, the California Air Resources Board replaced the SEDAB with the SSAB and MDAB. In July 1997, the Antelope Valley area of MDAB was separated from the District and incorporated into a new air district under the jurisdiction of the newly formed Antelope Valley Air Pollution Control District (AVAPCD). The entire region is shown in Figure 1-1.

The Coachella Valley Planning Area is impacted by pollutant transport from the South Coast Air Basin. In addition, pollutant transport occurs to the Antelope Valley, Mojave Desert, Ventura county, and San Diego county. As part of this AQMP revision, transport issues relative to the Coachella Valley Planning Area are specifically addressed in Chapter 8 – Future Air Quality – Desert Nonattainment Areas.

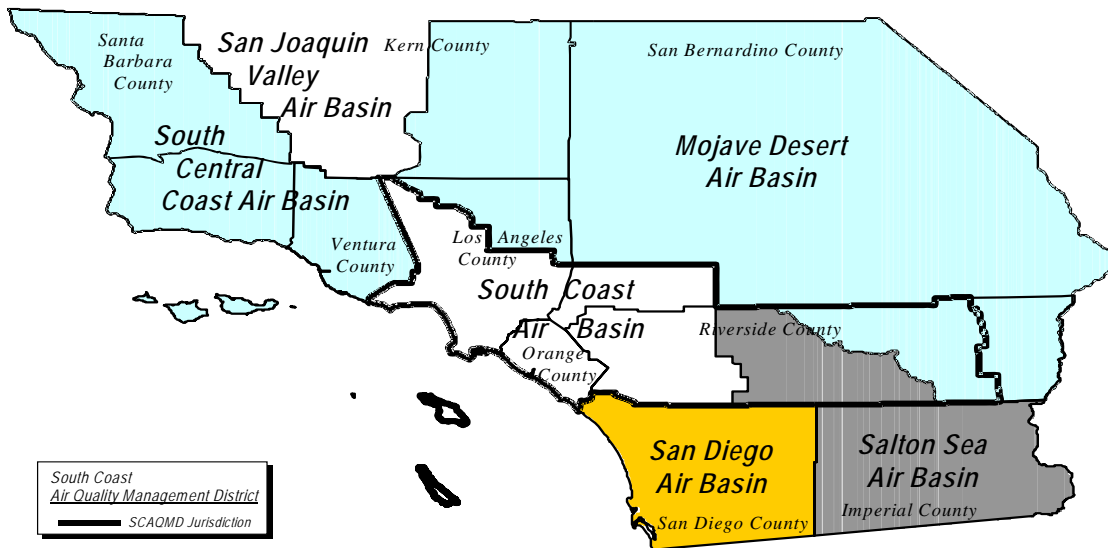


FIGURE 1-1

Boundaries of the South Coast Air Quality Management District
and Federal Planning Areas

The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions which produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix.

The Basin's economic base is diverse. Historically, the four counties of the Basin have collectively comprised one of the fastest-growing local economies in the United States. Significant changes have occurred in the composition of the industrial base of the region in the past twenty years. As in many areas of the country, a large segment of heavy manufacturing, including steel and tire manufacturing and automobile assembly, has been phased down. Small service industries and businesses resulting from growth in shipping and trade have replaced much of the heavy industry.

The Coachella Valley Planning Area is impacted by pollutant transport from the South Coast Air Basin. In addition, pollutant transport occurs to the Antelope Valley, Mojave Desert, Ventura county, and San Diego county. As part of this AQMP revision, transport issues relative to the Coachella Valley Planning Area will be specifically addressed in the next several months and incorporated into the final 2007 AQMP.

Emission Sources

The pollution burden of the Basin is substantial. In spite of substantial reductions already achieved, additional significant reductions of volatile organic compounds, oxides of nitrogen, sulfur oxides, and particulate matter in the South Coast Basin (including SSAB and MDAB) are needed to attain the federal and state air quality standards.

Air pollution forms either directly or indirectly from pollutants emitted from a variety of sources. These sources can be natural, such as oil seeps, vegetation, or windblown dust. Emissions also result from fuel combustion, as in automobile engines; from evaporation of organic liquids, such as those used in coating and cleaning processes; and through abrasion, such as from tires on roadways. The air pollution control strategy in the Final 2007 AQMP is directed almost entirely at controlling man-made sources. The emission sources in the Basin are described in Chapter 3. Natural emissions are accounted for in the background and initial conditions for the air quality modeling analysis in Chapter 5.

Population

Since the end of World War II, the Basin has experienced faster population growth than the rest of the nation. Although growth has slowed somewhat, the region's population is expected to increase significantly through 2020. Table 1-1 shows the projected growth based on SCAG's regional growth forecast.

Per-capita exposures to air pollutants have declined significantly over the years, primarily due to the impacts of the region's air quality control program. Figures 1-2 and 1-3 show the decline in per-capita exposure for levels above the 1-hour and 8-hour federal ozone standard, while Figure 1-4 depicts the trends in maximum recorded PM10 and PM2.5 concentration levels. As shown in the figures, drops in exposure levels above the federal ozone standards and maximum recorded annual average PM10 and PM2.5 concentration levels are significant. Although per-capita exposure to pollution has been brought down substantially in the Basin through several decades of implementing pollution controls, increases in the population over that time have made overall emission reductions more difficult. Many sources, such as automobiles, have been significantly controlled. However, increases in the number of sources, particularly those growing proportionally to population, reduce the potential air quality benefits of

past and existing regulations. The net result is that unless significant steps are taken to further control air pollution, growth will overwhelm much of the improvement expected from the existing control program.

TABLE 1-1
Population Growth

| Year | Population | Average Percent Increase Per Year Over the Period |
|------|--------------|---|
| 1990 | 13.0 million | -- |
| 2000 | 14.8 million | 1.4 |
| 2010 | 16.9 million | 1.4 |
| 2020 | 18.4 million | 0.9 |
| 2025 | 19.0 million | 0.7 |
| 2030 | 19.6 million | 0.6 |

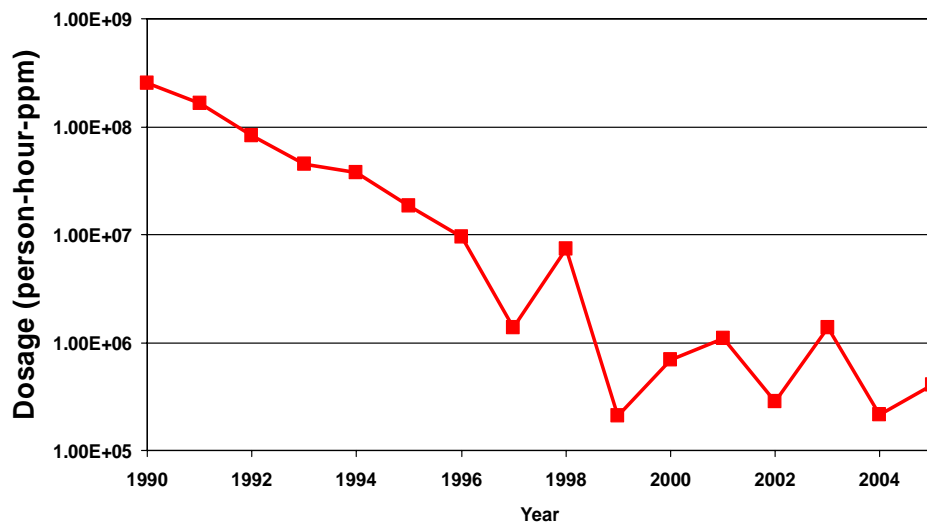


FIGURE 1-2
Basinwide Ozone Exposure Above Federal 1-Hour Standard

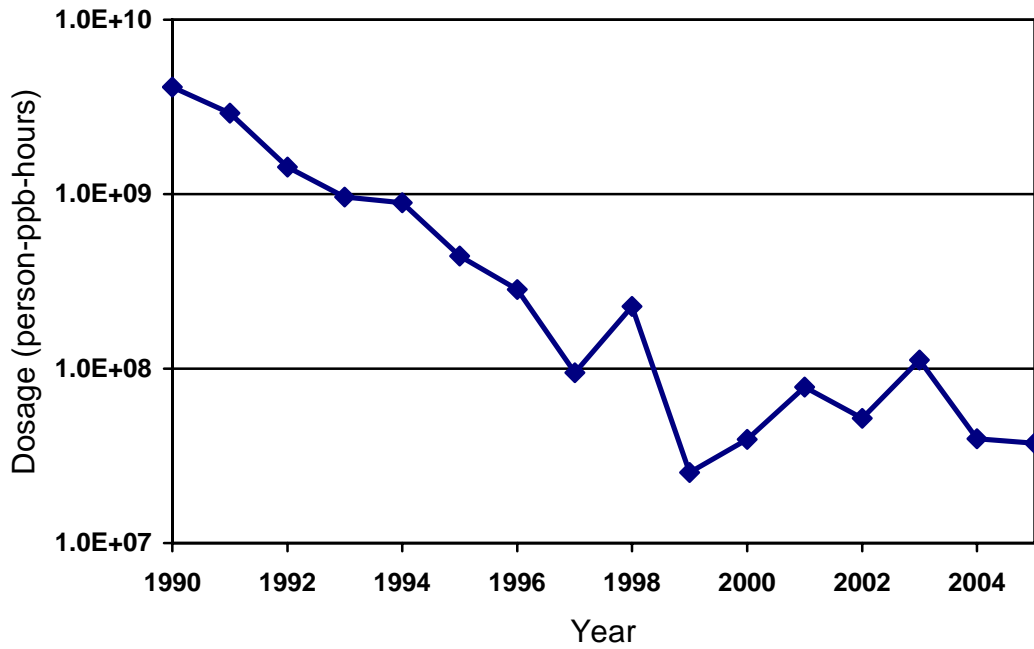


FIGURE 1-3

Basinwide Dosage Above the Federal 8-Hour Ozone Standard
(based on ozone season, May through October inclusive)

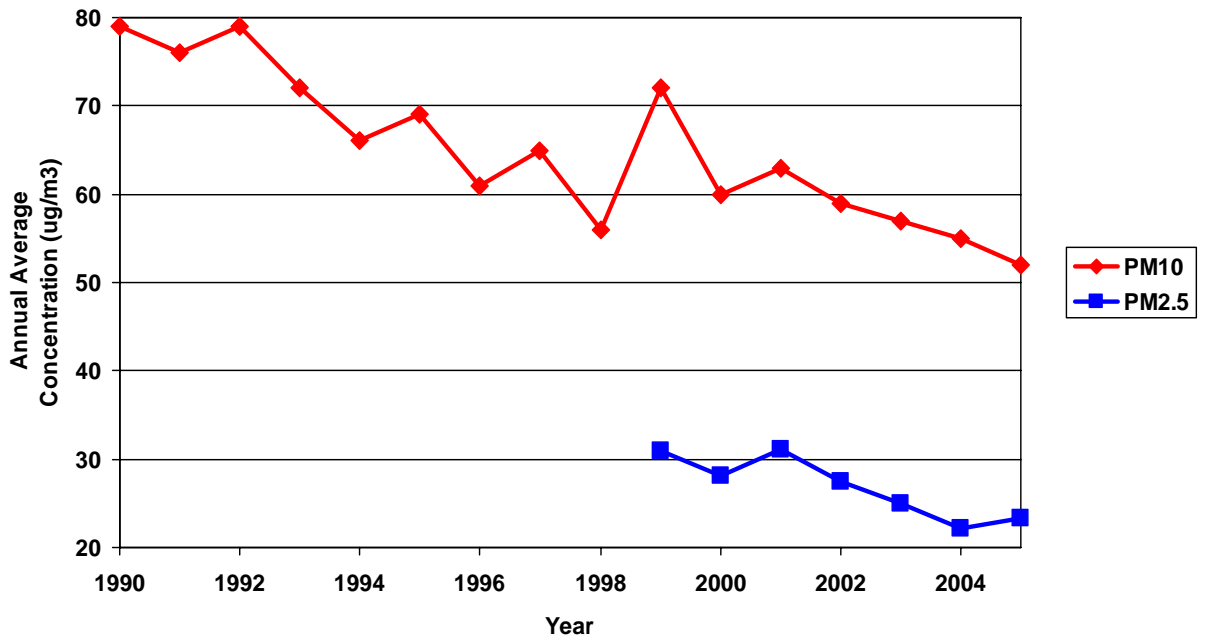


FIGURE 1-4

PM10 & PM2.5 Trends Basin Maximum

CONTROL EFFORTS

History

The seriousness of the local air pollution problem was recognized in the early 1940s. In 1946, the Los Angeles County Board of Supervisors established the first air pollution control district in the nation to address the problems of industrial air pollution. In the mid-1950s, California established the first state agency to control motor vehicle emissions. Countywide or regional air pollution districts were required throughout the state by 1970. Many of the controls, originating in California, became the basis for the federal control program which began in the 1960s.

Nearly all control programs developed to date have relied on the development and application of cleaner technologies and add-on emission control devices. Industrial and vehicular sources have been significantly affected by the use of these technologies. Only recently have preventive efforts come to the forefront of the air pollution control program, (e.g., alternative materials, waste minimization, and maintenance procedures for industrial sources).

In the 1970s, it became apparent at both the state and federal levels that local programs were not enough to solve a problem that was regional in nature and did not stay within city and county jurisdictional boundaries. Instead, air basins, defined by geographical boundaries, became the basis for regulatory programs.

In 1976, the California Legislature adopted the Lewis Air Quality Management Act which created the South Coast Air Quality Management District from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The new agency was charged with developing uniform plans and programs for the region to attain federal standards by the dates specified in federal law. The agency was also mandated to meet state standards by the earliest date achievable, using reasonably available control measures.

Rule development in the 1970s through 1990s resulted in dramatic improvement in Basin air quality (see Appendix II). However, the effort to impose incremental rule changes on the thousands of stationary sources through the command-and-control regulatory process had its limitations in economic efficiency. The 1991 AQMP introduced the concept of a Marketable Permits Program and outlined the framework of an idea that was forerunner to what is now known as the Regional Clean Air Incentives Market (RECLAIM). RECLAIM, a cap-and-trade program, calls for declining mass emission limits on the total emissions from all sources within a facility. In addition to the market trading program to achieve more cost-effective emission reductions, other incentive programs such as the Carl Moyer Memorial Air Quality Standards Attainment

Program (Carl Moyer Program) have been implemented and provided additional reductions that would otherwise have been difficult to obtain through regulatory mandates and their associated lead time for implementation.

In summary, while the District's effort to achieve applicable ambient air quality standards continues to rely on the successful command-and-control regulatory structure, the strategy is supplemented where appropriate with market incentive and compliance flexibility strategies.

Impact of Control Efforts

Air pollution controls have had a positive impact on the Basin's air quality relative to the 1-hour ozone standard. The number of days where the Basin exceeds the federal 1-hour ozone standard has continually declined over the years. However, while the number of days exceeding the federal 1-hour ozone standard has dropped since the 1990s, the rate of progress has slowed since the beginning of the decade. The Basin currently still experiences ozone levels over the federal standard on more than 20 days per year. By 2010, this plan shows that the Basin will still exceed the federal 1-hour ozone standard by 115 percent.

Although past controls were designed to address the federal 1-hour ozone and PM10 standards, they also improved on our ability to attain the 8-hour ozone and PM2.5 standards. The 8-hour ozone levels have been reduced by half over the past 30 years, nitrogen dioxide, sulfur dioxide, and lead standards have been met, and other criteria pollutant concentrations have significantly declined. The federal and state CO standards were also met as of the end of 2002. The Basin has met the PM10 standards at all stations except for western Riverside where the annual PM10 standard has not been met as of 2006. Additional effort is under way to comply with the PM10 standards for the entire Basin and is discussed in Chapter 4. The Basin still experiences substantial exceedances of health-based standards for 8-hour ozone and PM2.5. Air quality summaries and health effects in the Basin are briefly discussed in Chapter 2; Appendix II provides an in-depth analysis of air quality as measured within the District's jurisdiction.

PROGRESS IN IMPLEMENTING THE 2003 AQMP

District's Actions

While the 2003 AQMP has not been approved by U.S. EPA into the SIP, the District continues to implement the 2003 AQMP. Progress in implementing the 2003 AQMP can be measured by the number of control measures that have been adopted as rules and

the resulting tons of pollutants targeted for reduction. Emission reduction commitments and reductions achieved in 2010 are based on the emissions inventory from the 2003 AQMP. Since October 2002, sixteen control measures or rules have been adopted or amended by the District through June 2006. Table 1-2 lists the District's 2003 AQMP short-term commitment and the control measures or rules that were adopted through June 2006. The primary focus of the District's efforts had been the adoption and implementation of VOC control measures. As shown in Table 1-2, for the control measures adopted by the District, 29.2 tons per day of VOC reductions, 7.1 tons per day of NO_x, 3.8 tons per day of SO_x, and 2.4 tons per day of PM₁₀ will result. Based on the updated 2002 emissions inventory, adopted rules as of June 2006, and the 2007 AQMP growth assumptions, the projected VOC and NO_x emissions from District sources in 2010 will be 137 and 74 tons per day, respectively, representing 10 to 12 tons per day below the AQMD allowable emission commitment in the 2003 AQMP (Figure 1-5).

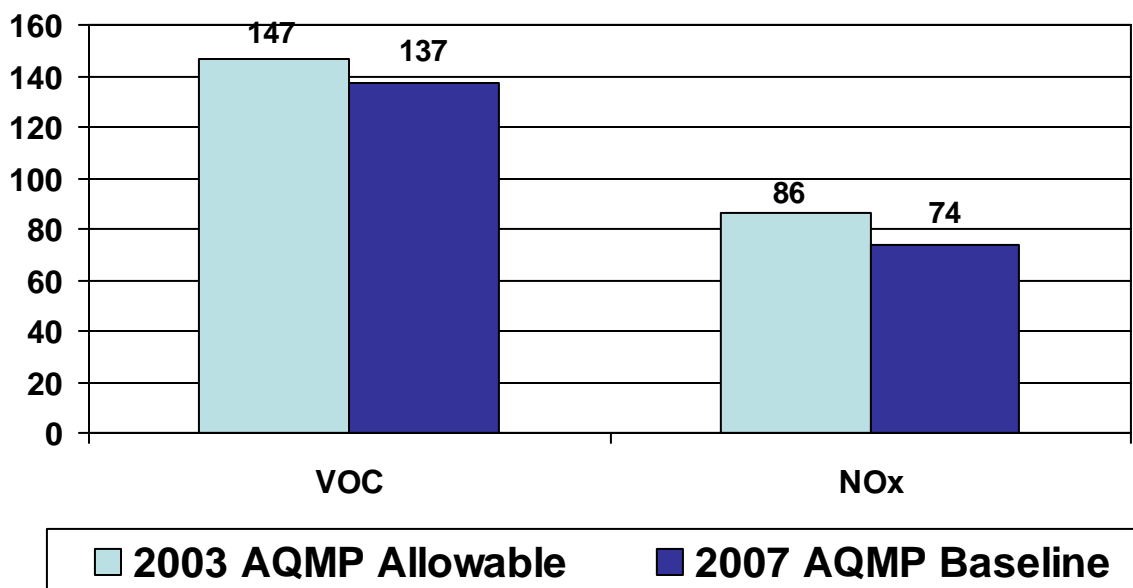


FIGURE 1-5

Projected 2010 Emissions from AQMD Sources Compared with 2010 Allowable Emissions Committed To Under the 2003 AQMP

CARB Actions

Table 1-3 lists the control measures committed to in the 2003 AQMP that have been adopted (either entirely or partially) by CARB since 2002. To date, CARB has achieved an estimated combined VOC and NO_x reductions for 2010 of 51 tons per day as compared to the short-term commitment in the 2003 AQMP of 168 tons per day (low

end), representing 30% of the combined VOC and NOx commitment for short-term measures.

TABLE 1-2

Rules and Regulations Adopted by District Since Adoption of 2003 AQMP
(October 2002 through June 2006^a)

| Control Measure (Rule) | Title | SIP Commitment (tons/day) | Emission Reductions Achieved Through Rule Implementation (tons/day) | Adoption Date |
|------------------------------------|---|----------------------------------|--|----------------------|
| FUG-05(I) (Rule 1173) | Fugitive Emission Sources at Petroleum Facilities and Chemical Plants (VOC) | 0.6 | 0.6 | 2002 |
| WST-02 (Rule 1133.2) | Co-Composting Operations (VOC) | 1.2 | 1.2 | 2003 |
| CTS-07 ^f (Rule 1171) | Architectural Coatings; Solvent Cleaning Operations (VOC) | 8.5 | 8.5 | 2003 |
| CTS-10 (I) (Rule 1113) | Architectural Coatings (VOC) | 1.0 | 4.5 0.9 | 2003/ 2006 |
| FUG-05 (II) (Rule 1148.1) | Oil and Gas Production Wells (VOC) | 1.4 | 1.3 | 2004 |
| WST-01 (Rule 1127) | Livestock Waste (VOC) | 4.8 | 6.0 | 2004 |
| CTS-10 (II) (Rule 1145) | Plastic, Rubber, and Glass Coatings (VOC) | 1.0 | 0.9 | 2004 |
| PRC-7 (I) | Industrial Process Operations (VOC) | 1.0 | b | b |
| PRC-07 (II) (Rule 1151) | Motor Vehicle and Mobile Equipment Non-Assembly Line Coating Operations (VOC) | 1.0 | 4.2 | 2005 |
| CTS-10 (III) (Rule 1107) | Metal Parts and Products Coatings (VOC) | 1 | 1.1 | 2005 |
| | Total VOC | 21.5 | 29.2^c | |

TABLE 1-2
(continued)
Rules and Regulations Adopted by District Since Adoption of 2003 AQMP
(October 2002 through June 2006^a)

| Control Measure (Rule) | Title | SIP Commitment (tons/day) | Emission Reductions Achieved Through Rule Implementation (tons/day) | Adoption Date |
|--|---|----------------------------------|--|----------------------|
| CMB-09 ^f (Rule 1105.1) | Fluid Catalytic Cracking Units (PM ₁₀) | 0.5 | 0.5 | 2003 |
| BCM-07 ^f (Rule 403 /Rule 1186) | Fugitive Dust/PM ₁₀ Emissions From Paved and Unpaved Roads, and Livestock Operations (PM ₁₀) | -- | 1.0 | 2004 |
| PRC-03) | Restaurant Operations (PM ₁₀) | 1.0 | ^d | ^d |
| BCM-08 (Rule 1156/ Rule 1157) | Cement Manufacturing and Aggregate and Related Operations (PM ₁₀) | 0.7 | 0.9 | 2005 |
| | Total PM₁₀ | 2.2 | 2.4 | |
| CMB-10 ^{f, g} (RECLAIM) | Regional Clean Air Incentives Market (NO _x) | 3.0 | 7.1 | 2005 |
| MSC-05 | Truck Stop Electrification | (2.1 ^e) | -- | 2005 |
| | Total NO_x | 3 | 7.1 | |
| CMB-07 (Rule 1118) | Refinery Flares (SO _x) | 2.1 | 3.8 | 2005 |
| | Total SO_x | 2.1 | 3.8 | |

^a SCAQMD summer planning emissions in 2010 (rounded to the nearest whole number), based on 2003 SIP inventory.

^b SIP commitment for this measure was achieved from Rule 1113 reductions of 4.5 tpd which was in excess of one tpd commitment under CTS-10(I).

^c The excess reductions will be accounted toward 182(e)(5) reduction commitment.

^d Due to the infeasibility of available control technologies, this measure is carried over to 2007 AQMP and the reduction commitment is fulfilled through BCM-07.

^e AQMD's commitment of 2.1 tpd of NO_x was achieved through CARB's truck idling regulation with a total reduction of 23.7 tpd. Not accounted toward AQMD's commitment.

^f Rules which have been approved by U.S. EPA.

^g Total reductions are 7.7 tpd to be achieved by 2011.

TABLE 1-3
State Measures Adopted Since 2003 AQMP

| Strategy | Name | Adopted Date | ROG | ROG | NOx | NOx |
|-----------------------------------|--|----------------------------|-------------------------------|------------------------|-------------------------------|------------------------|
| | | | Commitment (tpd) ¹ | Achieved By 2010 (tpd) | Commitment (tpd) ¹ | Achieved By 2010 (tpd) |
| NEAR-TERM CONTROL MEASURES | | | | | | |
| LT/MED-DUTY-1 (ARB) | Replace or Upgrade Emission Control Systems on Existing Passenger Vehicles | In Progress | 0-20 | TBD | 0-20 | TBD |
| LT/MED-DUTY-2 (BAR) | Improve Smog Check to Reduce Emissions from Existing Passenger and Cargo Vehicles ² | 2003 | 5.6-5.8 | 5.6 | 8.0-8.4 | 10 |
| ON-RD HVY-DUTY-1 (ARB) | Augment Truck and Bus Highway Inspections with Community-Based Inspections | In Progress | 0-0.1 | TBD | 0 | 0 |
| ON-RD HVY-DUTY-2 (ARB) | Capture and Control Vapors from Gasoline Cargo Tankers | In Progress | 4-5 | TBD | 0 | 0 |
| ON-RD HVY-DUTY-3 (ARB) | Pursue Approaches to Clean Up the Existing and New Truck/Bus Fleet ³ | 2003-2006 (In Progress) | 1.4-4.5 | 2.8-2.9 | 16-21 | 13-16 |
| OFF-RD CI-1 (ARB) | Pursue Approaches to Clean Up the Existing Heavy-Duty Off-Road Equipment Fleet (Compression Ignition Engines) – Retrofit Controls | In Progress | 2.3-7.8 | TBD | 8-10 | TBD |
| OFF-RD CI-2 (ARB) | Implement Registration and Inspection Program for Existing Heavy-Duty Off-Road Equipment to Detect Excess Emissions (Compression Ignition Engines) | In Progress | NQ | TBD | NQ | TBD |
| OFF-RD LSI-1 (ARB) | Set Lower Emission Standards for New Off-Road Gas Engines (Spark Ignited Engines 25 hp and Greater) ⁴ | Combined with OFF-RD LSI-2 | 0 | 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) ⁴ | 2006 | 0.8-2.0 | 2.6 | 2-4 | 2.6 |

TABLE 1-3 (CONTINUED)
State Measures Adopted Since 2003 AQMP

| Strategy | Name | Adopted Date | ROG | ROG | NOx | NOx |
|---|---|------------------------------|-------------------------------|------------------------|-------------------------------|------------------------|
| | | | Commitment (tpd) ¹ | Achieved By 2010 (tpd) | Commitment (tpd) ¹ | Achieved By 2010 (tpd) |
| 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) ⁵ | Combined with SMALL-OFF-RD-2 | 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) ⁶ | 2003 | 6.3-7.4 | 7.7 | 0.6-1.9 | 1.3 |
| MARINE-1 (ARB) | Pursue Approaches to Clean Up the Existing Harbor Craft Fleet – Cleaner Engines and Fuels ⁶ | In Progress | 0.1 | TBD | 2.7 | 0.4 |
| MARINE-2 (ARB) | Pursue Approaches to Reduce Land-Based Port Emissions – Alternative Fuels, Cleaner Engines, Retrofit Controls, Electrification, Education Programs, Operational Controls ⁷ | In Progress | 0.1 | TBD | 0.1 | 2.8 |
| FUEL-1 (ARB) | Set Additives Standards for Diesel Fuel to Control Engine Deposits | | NQ | TBD | NQ | TBD |
| FUEL-2 (ARB) | Set Low-Sulfur Standards for Diesel Fuel for Trucks/Buses, Off-Road Equipment, and Stationary Engines | 2003 | Enabling | Enabling | Enabling | Enabling |
| CONS-1 (ARB) | Set New Consumer Products Limits for 2006 | 2004 | 2.3 | 2 | 0 | 0 |
| CONS-2 (ARB) | Set New Consumer Products Limits for 2008-2010 | In Progress | 8.5-15 | TBD | 0 | 0 |
| FVR-1 (ARB) | Increase Recovery of Fuel Vapors from Aboveground Storage Tanks | In Progress | 0-0.1 | TBD | 0 | 0 |
| FVR-2 (ARB) | Recover Fuel Vapors from Gasoline Dispensing at Marinas | In Progress | 0-0.1 | TBD | 0 | 0 |
| FVR-3 (ARB) | Reduce Fuel Permeation Through Gasoline Dispenser Hoses | In Progress | 0-0.7 | TBD | 0 | TBD |
| PEST-1 (DPR) | Implement Existing Pesticide Strategy | --- | Baseline | Baseline | NA | NA |
| Total for Near-Term Control Measures | | | 33.3-72.9 | 20.7-20.8 | 38.4-69.1 | 30.1-33.1 |

TABLE 1-3 (CONTINUED)
State Measures Adopted Since 2003 AQMP

| Strategy | Name | Adopted Date | ROG | ROG | NOx | NOx |
|--------------------------------------|--|--------------|-------------------------------|------------------------|-------------------------------|------------------------|
| | | | Commitment (tpd) ¹ | Achieved By 2010 (tpd) | Commitment (tpd) ¹ | Achieved By 2010 (tpd) |
| ADDITIONAL NEAR-TERM MEASURES | | | | | | |
| (ARB) | Achieve Further Emission Reductions from On-Road and Off-Road Mobile Sources and Consumer Products | 2005-2008 | 97 ⁸ | | --- | |

1. Based on CARB's summer planning emission inventory for the 2003 South Coast SIP.
2. Includes benefits from test only direction and truck loaded mode testing only.
3. Includes benefits from solid waste collection vehicles, chip reflash, engine manufacturer diagnostics (EMD), idling limits, heavy duty on-board diagnostics (OBD), new truck idling, in-use testing, and on-road public fleets.
4. OFF-RD LSI-1/LSI-2 adopted in one board action and achieved reductions are combined and shown under OFF-RD LSI-2. The amount of emission reductions shown under ROG achieved is reflective of a combined 2.6 tpd ROG + NOx.
5. SMALL OFF-RD-1/OFF-RD-2 adopted in one board action and achieved reductions are combined and shown under OFF-RD-2.
6. Reductions shown reflect implementation of CARB's low sulfur diesel fuel rule for harbor craft adopted in 2004.
7. Reductions shown reflect implementation of CARB's statewide cargo handling equipment rule adopted in 2005.
8. Shown as combined ROG and NOx

U.S. EPA Actions

Since the 2003 AQMP, the U.S. EPA has adopted low sulfur fuel standards for diesel fuel used in nonroad diesel engines, which phase in over time for a variety of sources including construction equipment, locomotives, and marine vessels. Several sources under federal control are being evaluated for future actions, including more stringent standards for locomotives, marine vessels, and aircraft. It should be noted that the reductions achieved for the low sulfur diesel fuel rule overlap with CARB regulations already adopted.

2007 AQMP

As mentioned earlier in this chapter, this 2007 AQMP is designed to address the federal 8-hour ozone and PM_{2.5} air quality standards, to satisfy the planning requirements of the federal Clean Air Act, and to develop transportation emission budgets using the latest approved motor vehicle emissions model and planning assumptions. Once approved by the District Governing Board and CARB, the 2007 AQMP will be submitted to U.S. EPA as a SIP revision. The 2007 AQMP contains measures based on current technology assessments. The emission reduction commitment takes into account technical feasibility, cost effectiveness, and current emission estimates.

CAA Planning Requirements Addressed by the 2007 AQMP

In November 1990, Congress enacted a series of amendments to the Clean Air Act (CAA) intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 CAA Air Act Amendments was an overhaul of the planning provisions for those areas not currently meeting National Ambient Air Quality Standards (NAAQS). The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and an attainment demonstration, and incorporates more stringent sanctions for failure to attain or to meet interim milestones.

The U.S. EPA promulgated the 8-hour ozone standard in July 1997; it was followed by legal actions, and eventually upheld in March 2002. The U.S. EPA finalized Phase 1 of the ozone implementation rule in April 2004. This rule set forth the classification scheme for nonattainment areas and continued obligations with respect to the existing 1-hour ozone requirements. As described by the Phase 1 rule, the Basin is classified as Severe 17 with an attainment date of June 2021, while the portion of the Salton Sea Air Basin under the District's jurisdiction (Coachella Valley Planning Area) is classified as serious, with an attainment date of June 2013. On November 9, 2005, the U.S. EPA followed up its Phase 1 implementation rule with the Phase 2 rule. The Phase 2 rule outlines the emission controls and planning requirements regions must address in their implementation plans. The U.S. EPA also revoked the 1-hour ozone standard, which had an attainment deadline of 2010. The AQMD, along with environmental group, has sued to challenge U.S. EPA's revocation. The 8-hour ozone attainment plan must be submitted to U.S. EPA by June 2007.

Similar to the 8-hour ozone standard, the U.S. EPA promulgated the PM_{2.5} standards in July 1997. The U.S. EPA issued designations in December 2004, and they became effective on April 5, 2005. Under the 1990 CAA Amendments and U.S. EPA's "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards," each state having a non-attainment area must submit to U.S. EPA an attainment demonstration three years after the designations became effective. The final date for submittal of attainment demonstrations is April 5, 2008. The AQMD has elected to submit the PM_{2.5} attainment demonstration for the Basin concurrently with their 8-hour ozone attainment demonstration because many of the control strategies that reduce PM_{2.5} precursor emissions (e.g., NO_x) are also needed to help attain the 8-hour ozone standard.

Unlike the 8-hour ozone standard, area designations for the PM_{2.5} standard did not have a classification system (e.g., serious, severe) and were designated as attainment, non-attainment, or unclassifiable. For the Basin and the portions of the Salton Sea Air Basin under the District's jurisdiction, the regions were designated non-attainment and unclassifiable, respectively. The initial attainment date for areas such as the Basin is April 2010. Unclassifiable regions such as the Coachella Valley Planning Area do not

require a planning demonstration for the federal standard and are not addressed in this document. Projected air quality data for the Basin shows that the region will not be able to meet the April 2010 deadline. Under Section 172 of the CAA, U.S. EPA may grant an area an extension of the initial attainment date for a period of one to five years. In the case of the Basin, the District plans to request the full five year extension until April 2015.

There are several sets of general planning requirements, both for nonattainment areas [Section 172(c)] and for implementation plans in general [Section 110(a) (2)]. These requirements are listed and very briefly described in Tables 1-4 and 1-5, respectively. The general provisions apply to all applicable pollutants unless superseded by pollutant-specific requirements.

TABLE 1-4
Nonattainment Plan Provisions
[CAA Section 172(c)]

| Requirement | Description |
|---|--|
| Reasonably available control measures | Implementation of all reasonably available control measures as expeditiously as practicable. |
| Reasonable further progress | Provision for reasonable further progress which is defined as “such annual incremental reductions in emissions of the relevant air pollutant as are required for the purpose of ensuring attainment of the applicable national ambient air quality standard by the applicable date.” |
| Inventory | Development and periodic revision of a comprehensive, accurate, current inventory of actual emissions from all sources. |
| Allowable emission levels | Identification and quantification of allowable emission levels for major new or modified stationary sources. |
| Permits for new and modified stationary sources | Permit requirements for the construction and operation of new or modified major stationary sources. |
| Other measures | Inclusion of all enforceable emission limitations and control measures as may be necessary to attain the standard by the applicable attainment deadline. |
| Contingency measures | Implementation of contingency measures to be undertaken in the event of failure to make reasonable further progress or to attain the NAAQS. |

TABLE 1-5
General CAA Requirements for Implementation Plans

| Requirement | Description |
|----------------------------------|---|
| Ambient monitoring | An ambient air quality monitoring program. [Section 110(a)(2)(B)] |
| Enforceable emission limitations | Enforceable emission limitations or other control measures as needed to meet the requirements of the CAA [Section 110(a)(2)(A)] |
| Enforcement and regulation | A program for the enforcement of adopted control measures and emission limitations and regulation of the modification and construction of any stationary source to assure that the NAAQS are achieved. [Section 110(a)(2)(C)] |
| Interstate transport | Adequate provisions to inhibit emissions that will contribute to nonattainment or interfere with maintenance of NAAQS or interfere with measures required to prevent significant deterioration of air quality or to protect visibility in any other state. [Section 110(a)(2)(D)] |
| Adequate resources | Assurances that adequate personnel, funding, and authority are available to carry out the plan. [Section 110(a)(2)(E)] |
| Source testing and monitoring | Requirements for emission monitoring and reporting by the source operators. [Section 110(a)(2)(F)] |
| Emergency Authority | Ability to bring suit to enforce against source presenting imminent and substantial endangerment to public health or environment [Section (a)(2)(G)] |
| Plan revisions | Provisions for revising the air quality plan to incorporate changes in the standards or in the availability of improved control methods. [Section 110(a)(2)(H)] |
| Other CAA requirements | Adequate provisions to meet applicable requirements relating to new source review, consultation, notification, and prevention of significant deterioration and visibility protection contained in other sections of the CAA. [Section 110(a)(2)(I),(J)] |
| Impact assessment | Appropriate air quality modeling to predict the effect of new source emissions on ambient air quality. [Section 110(a)(2)(K)] |
| Permit fees | Provisions requiring major stationary sources to pay fees to cover reasonable costs for reviewing and acting on permit applications and for implementing and enforcing the permit conditions. [Section 110(a)(2)(L)] |
| Local government participation | Provisions for consultation and participation by local political subdivisions affected by the plan. [Section 110(2)(2)(M) & 121] |

The CAA requires that most submitted plans include information on tracking plan implementation and milestone compliance. Requirements for these elements are described in Section 182(g). Chapter 7 will address these issues.

U.S. EPA also requires a public hearing on many of the required elements in SIP submittals before considering them officially submitted. The District's AQMP adoption process includes a public hearing on all of the required elements prior to submittal.

The CAA requires SIPs for most nonattainment areas to demonstrate reasonable further progress (RFP) toward attainment through emission reductions phased in from the time of the SIP submission out to the attainment date. The RFP requirements in the CAA are intended to ensure that each ozone nonattainment area provide for sufficient precursor emission reductions to attain the ozone NAAQS. Chapter 6 contains the detailed calculations of the RFP demonstration. Chapter 6 also provides an estimation of the emission levels at each of the milestone years compared to the CAA target levels.

The South Coast Air Basin both transports to and receives air pollutants from the coastal portions of Ventura and Santa Barbara counties in the South Central Coast Air Basin. The South Coast Air Basin also receives air pollutants from oil and gas development operations on the outer continental shelf. The control measures in this Plan meet the CAA transport requirements and will assist downwind areas in complying with the federal ozone air quality standard.

Monitoring data for the past several years have shown that the nitrogen dioxide concentrations were below the federal air quality standard. As required under Section 175A(a), the plan must provide for maintenance of the air quality standard for at least 10 years after the area is redesignated to attainment (which occurred in 1998). The 2007 AQMP will serve as an update to the maintenance plan for nitrogen dioxide submitted with the 2003 AQMP. Similarly, the Basin met the carbon monoxide (CO) standard by December 2002. The 2003 AQMP revision to the carbon monoxide plan served a dual purpose: it replaced the 1997 attainment demonstration that lapsed at the end of 2000, and it provided the basis for a carbon monoxide maintenance plan in the future. In 2004, the AQMD formally requested U.S. EPA to redesignate the Basin as in attainment with the CO ambient air quality standard. EPA has just approved the redesignation request and maintenance plan, which will be effective June 11, 2007. The 2007 AQMP serves as an update to the maintenance plan submitted as part of the 2003 AQMP.

Table 1-6 summarizes the key CAA planning requirements addressed by the 2007 AQMP. The table lists the relevant CAA section along with the AQMP document or chapter where the submittal is discussed. It may be used as a reference guide showing where each of the CAA planning requirements is addressed.

TABLE 1-6
CAA SIP Revisions and Submittals in the 2007 AQMP

| Submittal | CAA Section | 2007 AQMP Reference |
|---|--------------------|--|
| PM2.5 Attainment Demonstration (Basin) | 172(c) | Chapter 5 Appendix V |
| PM2.5 Reasonable Further Progress Milestones | 172(c)(2) | Chapter 6 Appendix V |
| PM2.5 Motor Vehicle Emissions Budget | 176(c)(2)(A) | Chapter 6 |
| PM2.5 RACM/RACT Demonstration | 172(c)(1) | Appendix VI |
| 8-Hour Ozone Attainment Demonstration (Basin) | 182(c)(2)(A) | Chapter 5 Appendix V |
| 8-Hour Ozone Attainment Demonstration for Salton Sea Air Basin (under District jurisdiction) ¹ | 182(c)(2)(A) | Chapter 8 Appendix V |
| 8-Hour Ozone Reasonable Further Progress Milestones | 182(c)(2)(B) | Chapter 6 Appendix V |
| 8-Hour Ozone RACM/RACT Demonstration | 172(c)(1) | Appendix VI |
| Maintenance Plan for Carbon Monoxide ¹ | 175A | Chapter 5 and 6 Appendix V |
| Maintenance Plan for Nitrogen Dioxide ¹ | 175A | Chapter 5 and 6 Appendix V ¹ |

State Law Requirements

The California Clean Air Act (CCAA) was signed into law on September 30, 1988, became effective on January 1, 1989, and was amended in 1992. Also known as the Sher Bill (AB 2595), the CCAA established a legal mandate to achieve health-based state air quality standards at the earliest practicable date. The Lewis Presley Act provides that the plan must also contain deadlines for compliance with all state ambient air quality standards and the federally mandated primary ambient air quality standards [Health and Safety Code (H&SC) 40462(a)]. In September 1996, AB 3048 (Olberg) amended Sections 40716, 40717.5, 40914, 40916, 40918, 40919, 40920, 40920.5, and 44241, and repealed Sections 40457, 40717.1, 40925, and 44246 of the Health and

Safety Code relating to air pollution. The amendments to the Health and Safety Code became effective January 1, 1997. This plan revision reflects state planning requirements as they pertain to the South Coast Air Quality Management District. Through its many requirements, the CCAA serves as the centerpiece of the Basin’s attainment planning efforts since it is generally more stringent than the federal Clean Air Act.

Based on pollutant levels, the CCAA divides nonattainment areas into categories with progressively more stringent requirements (H&SC 40918 - 40920.5). The categories are outlined in Table 1-7. The state nonattainment designations are on a county basis. The entire Basin is an extreme nonattainment area for ozone. Although PM10 and PM2.5 are not explicitly addressed in the CCAA, it is governed by the Lewis Presley Act. The plan therefore provides achieving all federal ambient air quality standards by their applicable date and state ambient air quality standards as early as possible.

TABLE 1-7

California Clean Air Act Nonattainment Area Classifications (H&SC 40921.5)

| Category | Concentration Level (ppm) |
|----------|---------------------------|
| | Ozone |
| Moderate | 0.09 to 0.12* |
| Serious | 0.13 to 0.15* |
| Severe | 0.16 to 0.20* |
| Extreme | > 0.20 |

* Inclusive range.

Serious and above nonattainment areas are required to revise their air quality management plan to include specified emission reduction strategies, and to meet milestones in implementing emission controls and achieving more healthful air quality. The key planning requirements are provided in Table 1-8. Some of these requirements are discussed in further detail in the next section. Chapter 6 addresses how these requirements are met in the Basin. The CCAA also includes some additional requirements that can significantly affect control strategy selection. These requirements are provided in Table 1-9. All of these mandates have either already been met through District regulations or are included/considered in the preparation of the Final 2007 AQMP.

Plan Effectiveness

The CCAA requires, beginning on December 31, 1994 and every three years thereafter, that each district demonstrate the overall effectiveness of its air quality program. For those areas that do not attain state air quality standards by 2000, a comprehensive plan update was required to be submitted by December 31, 1997. In addition, Section 40925 of the Health and Safety Code requires that the plan incorporate new data or projections including, but not limited to, the quantity of emission reductions actually achieved in the preceding three-year period and the rates of population-related, industry-related, and vehicle-related emissions growth actually experienced in the district and projected for the future. The Final 2007 AQMP serves as the comprehensive plan update for the South Coast Air Basin.

TABLE 1-8
California Clean Air Act Planning Requirements

| Requirement | Description |
|--|---|
| Indirect and area source controls | An indirect and area source control program [H&SC 40918(a)(4)], |
| Best available retrofit control technology | Best available retrofit control technology (BARCT) for existing sources of specified sizes [H&SC 40918(a)(2)], |
| New source review | A program to mitigate all emissions from new and modified permitted sources [H&SC 40918(a)(1)) and 40920.5(b)], |
| Transportation control measures | Transportation control measures as needed to meet plan requirements [H&SC 40918(a)(3)], and |
| Clean fleet vehicle programs | Significant use of low-emission vehicles by fleet operators [H&SC 40919(a)(4)]. |

The CCAA suggests a number of air quality indicators to show plan effectiveness, including actual emission reductions, ozone design value improvements, population exposure reductions, and pollutant concentration hours. In Chapter 6, plan effectiveness is illustrated by trends in the following indicators:

- volatile organic compound and oxides of nitrogen emissions,
- ozone air quality (i.e., exceedance days),
- PM10 and PM2.5 concentration, and
- ozone population exposure above air quality standards.

TABLE 1-9

California Clean Air Act Requirements for Control Strategy Development

| Requirement | Description |
|-----------------------------|---|
| Rate-of-progress | Reducing pollutants contributing to nonattainment by five percent per year or all feasible control measures and an expeditious adoption schedule (H&SC 40914), |
| Public education programs | Public education programs [H&SC 40918(a)(6)], |
| Per-capita exposure | Reducing per-capita population exposure to severe nonattainment pollutants according to a prescribed schedule [H&SC 40920(c)], |
| Any other feasible controls | Any of the feasible controls that can be implemented or for which implementation can begin, within 10 years of adoption date of the most recent air quality plan [H&SC 40920.5(c)], and |
| Control measure ranking | Ranking control measures by cost-effectiveness and implementation priority (H&SC 40922). |

Emission Reductions

According to the CCAA, districts must design their air quality management plan to achieve a reduction in basinwide emissions of five percent or more per year (or 15 percent or more in a three-year period) for each nonattainment pollutant or its precursors (H&SC 40914). However, an air basin may use an alternative emission reduction strategy which achieves a reduction of less than five percent per year if it can be demonstrated that either of the following applies:

- The alternative emission reduction strategy is equal to or more effective than the five percent per year control approach in improving air quality; or
- That despite the inclusion of every feasible measure, and an expeditious adoption schedule, the air basin is unable to achieve the five percent per year reduction in emissions.

For each district that is designated nonattainment for both state and federal ambient air quality standards for a single pollutant subject to the planning requirements (i.e., ozone), reductions in emissions shall be calculated with respect to the actual emissions during the baseline year applicable to the implementation plan required by the federal CAA. This baseline year is 2002.

Population Exposure

The CCAA also requires that exposure to severe nonattainment pollutants above standards must be reduced from 1986 through 1988 levels by at least 25 percent by December 31, 1994; 40 percent by December 31, 1997; and 50 percent by December 31, 2000. Reductions are to be calculated based on per-capita exposure and the severity of exceedances. This provision is applicable to ozone in the Basin [H&SC 40920(c)]. The definition of exposure is the number of persons exposed to a specific pollutant concentration level above the state standard times the number of hours. The per-capita exposure is the population exposure (units of pphm-persons-hours) divided by the total population. While this requirement has already been met in previous AQMPs, the exposure demonstration is provided again in the Final 2007 AQMP for consistency.

Control Measure Ranking

The CCAA requires the District Governing Board to determine that the AQMP is a cost-effective strategy that will achieve attainment of the state standards by the earliest practicable date (H&SC 40913). In addition, the Plan must include an assessment of the cost-effectiveness of available and proposed measures and a list of the measures ranked from the least cost-effective to the most cost-effective [H&SC 40922(a)].

In addition to the relative cost-effectiveness of the measures, the District must consider other factors as well in developing an adoption and implementation schedule [H&SC 40922(b)]. The other factors noted in the CCAA include technological feasibility, emission reduction potential, rate of reduction, public acceptability, and enforceability. Efficiency, equity, and legal authority were also included in the 2007 AQMP for prioritization purposes because of their importance. The results of the cost-effectiveness prioritization are given in Chapter 6 of the Final 2007 AQMP.

FORMAT OF THIS DOCUMENT

This document is organized into eleven chapters, each addressing a specific topic. Each of the remaining chapters is summarized below.

Chapter 2, “Air Quality and Health Effects,” discusses the Basin’s air quality in comparison with federal and state air pollution standards.

Chapter 3, “Base Year and Future Emissions,” summarizes recent updates to the emissions inventories, estimates current emissions by source and pollutant, and projects future emissions with and without growth.

Chapter 4, “AQMP Control Strategy,” presents the attainment strategies.

Chapter 5, “Future Air Quality,” describes the modeling approach used in the AQMP and summarizes the Basin’s future air quality projections with and without controls.

Chapter 6, “Clean Air Act Requirements,” discusses specific federal and state requirements as they pertain to the 2007 AQMP.

Chapter 7, “Implementation,” presents the implementation schedule of the various control measures and delineates each agency’s area of responsibility.

Chapter 8, “Future Air Quality - Desert Nonattainment Areas,” describes the future air quality in the Coachella Valley Planning Area.

Chapter 9, “Contingency Measures,” presents contingency measures as required by the federal CAA.

Chapter 10, “Looking Beyond Current Requirements,” examines the recently approved lowering of the 24 hour PM_{2.5} standard from 65 ug/m³ to 35 ug/m³ as well as the technical uncertainties associated with the current plan analysis.

Chapter 11, “Ultrafine Particles,” examines the extent, impacts, and sources of the air pollution problem caused by particles smaller than PM_{2.5}.

Chapter 12. “Request to Redesignate the South Coast Air Basin as Extreme nonattainment and the Coachella Valley Portion of the Salton Sea Air Basin as Severe-15” describes the Basin’s needs to reclassify to an extreme nonattainment area as well as requesting a bump-up for the Coachella Valley from serious to severe-15.

For convenience, a “Glossary” is provided at the end of the document, presenting definitions of commonly used terms found in the Final 2007 AQMP.