Chapter 8 – CALIFORNIA CLEAN AIR ACT TRIENNIAL PROGRESS REPORT AND PLAN REVISION

8 CALIFORNIA CLEAN AIR ACT TRIENNIAL PROGRESS REPORT AND PLAN REVISION

8.1 INTRODUCTION

Section 40910 of the California Health and Safety Code (CH&SC) requires air pollution control districts in the state to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide and nitrogen dioxide at the earliest practicable date. Section 40911 of the CH&SC requires all districts designated as nonattainment for the state standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide to prepare and submit a plan for attaining and maintaining the standards to the California Air Resources Board (ARB). Section 40924 (b) of the CH&SC requires districts to prepare a report every three years summarizing progress in meeting the schedules for developing, adopting, and implementing the air pollution control measures contained in each district's plan for attaining the California air quality standards. Section 40925(a) of the CH&SC requires districts to review and revise their original *1991 Air Quality Attainment Plan (AQAP)* to correct for deficiencies in meeting the interim measures of progress incorporated into the plan pursuant Section 40914 [emission reductions], and to incorporate new data or projections into the Plan. This requirement, termed a Triennial AQAP Revision, is on the same reporting schedule as the Triennial Progress Report, and is usually combined with the progress report.

In January 1992, the District prepared and adopted the *1991 Air Quality Attainment Plan (AQAP)* [SJVUAPCD 1992]. ARB approved this plan in December 1992. The 1991 *AQAP* covers ozone and carbon monoxide, since the District was classified as nonattainment for these two state standards at that time.[1] In accordance with the CH&SC, the District subsequently prepared Triennial Progress Reports and Plan Revisions as updates to this initial *1991 AQAP* in 1998 and in 2001 (SJVUAPCD 1998; SJVUAPCD 2001).

This Chapter of the *Extreme OADP* represents the third Triennial Progress Report and Plan Revision for the District; as such, it covers the period 2000-2002, and its original due date was December 31, 2003. However, for Districts preparing State Implementation Plan (SIP) submittals in 2004, ARB revised the due date to be the time of the 2004 SIP submittal.

Because the District has attained the California ambient air quality standard for carbon monoxide, ARB no longer requires the District to address carbon

[1] The District was also designated as nonattainment for the state particulate matter standard; however, as noted above, Section 40911 does not require the development of plans for districts that are designated nonattainment for California particulate matter standards.

monoxide in progress reports and plan revisions. This chapter of the *Extreme OADP* thus focuses on the state ambient air quality standard for ozone (as opposed to the other chapters of the Extreme OADP that address compliance with federal ozone standards).

In 1998, the District adopted the *California Clean Air Act Triennial Progress Report and Plan Revision 1995-1997* (1997 Triennial Update); ARB approved this report in October 1999. No change in the District's ozone attainment strategy was set forth in the Update. In 2001, the District adopted the *California Clean Air Act Triennial Progress Report and Plan Revision 1997-1999* (2000 Triennial Update). No change in the District's ozone attainment strategy was set forth in the Update. The District's adopted strategy is based on the latter alternative. For the 2000-2002 period, this chapter of the OADP represents the triennial plan (2003 Triennial Update).

8.1.1 Attainment Designation

California's ambient air quality standard for ozone is 0.09 ppm. For an area to attain the state 1-hour ozone standard, representative and complete ambient air quality monitoring data must show that measured 1-hour average ozone levels did not exceed 0.09 ppm (CH&SC 70303, 70304). Unlike the federal standard, the state ozone standard is strictly a level not to be exceeded. Thus, occurrence of even a single one-hour period with measured ozone levels in excess of 0.09 ppm is enough to designate an area as nonattainment for the state standard (unlike the federal 1-hour ozone standard, in which four exceedances in three years are needed for designation as nonattainment). Also unlike the federal standard, State law does not establish attainment dates for ambient standards, but instead requires evaluation of trends and continued progress in reducing emissions that lead to unhealthy pollutant levels.

Based on the designation criteria established by Section 40921.5 of the California Health and Safety Code, ARB has classified the SJVAB as severe nonattainment for the California 1-hour ozone standard. Because of this classification, the District is subject to stringent requirements in the CCAA and must apply all feasible measures to reduce emissions.

8.1.2 Air Basin Description

The San Joaquin Valley (Valley) is a major geographic, population, and agricultural region of California. The District, and the corresponding air basin, includes the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and the Valley portion of Kern County. Comprising about 24,840 square miles, it represents approximately 16% of the geographic area of California and is the second largest air basin in California. The California Department of Finance estimates that the District's population will grow to 3.6

million by 2005. Major urban centers include Bakersfield, Fresno, Modesto and Stockton.

The Valley consists of a continuous inter-mountain valley that is approximately 250 miles long and averages 80 miles wide. It is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Range in the west (reaching 5,020 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The Valley opens to the Carquinez Straits in the north where the San Joaquin-Sacramento Delta empties into San Francisco Bay. Except for its foothill and mountain areas, the SJVAB is essentially flat with a slight downward gradient to the northwest. Approximately 31 percent of the total land area within the SJVAB is under public ownership. The federal government is the largest public landholder, with approximately 94 percent of the total public-owned land under its jurisdiction. For the most part, the holdings consist of National Forest lands, National Parks, wildlife refuge areas, plus a major military air base located on the Valley floor. The Valley is predominately agriculturally oriented, including foothill and mountain areas devoted to grazing and timber sales. Currently, the majority of industry remains directly or indirectly related to providing services, products and support to agriculture. In addition, industries related to the production of natural resources are scattered throughout the District. Various lumbering operations that process timber harvested from the nearby National Forests and private forestlands are located along the east side of the District. The District also has substantial petroleum production fields in the southern counties, while oil refineries are located in Kern County. See Chapter 2 for more detailed information on the SJVAB.

8.2. OZONE AIR QUALITY INDICATORS

8.2.1 Air Quality Indicators

A number of ways exist to characterize ozone air quality trends. ARB has identified three air quality indicators for districts to use in the preparing triennial updates to ozone attainment plans. These are the Expected Peak Day Concentration (EPDC), the Population Weighted Exposure (PWE) and the Area Weighted Exposure (AWE). The following sections provide background information on each, along with an overview of the calculation procedure.

8.2.2 Expected Peak Day Concentration (EPDC)

The EPDC represents the maximum ozone concentration expected to occur once per year, on average. The EPDC is based on a statistical calculation of ambient ozone data collected at each monitoring site in the

district. The EPDC is useful for tracking air quality progress at individual monitoring locations. Because it is based on a robust statistical calculation, it is relatively stable, thereby providing a trend indicator that is not highly influenced by year-to-year changes in meteorology.
The EPDC is calculated using ozone data for a three-year period (the summary year and two years immediately before the summary year). The data included in the calculation are daily maximum 1-hour ozone observations. However, when three years of data are not available, an EPDC can be calculated using only one or two years of data. The EPDC is computed using a statistical procedure that fits an exponential-tail model to the upper tail of the distribution of concentrations. The fitted distribution then is used to determine analytically the concentration that is expected to recur at a one-in-one year rate.

8.2.3 Exposure Indicators

8.2.3.1 Description

The exposure indicators provided are the population-weighted (PWE) and area-weighted exposure (AWE) indictors. These are intended to provide an indication of the potential for chronic adverse health impacts. Unlike the EPDC, which tracks progress at individual locations, the population-weighted and area-weighted exposure indicators consolidate hourly ozone monitoring data from all sites within the district into a single exposure value. The result is a value representing the average potential exposure in an area, which in this case, is a district. The term “potential” is used, because daily activity affects an individual’s exposure. For example, being indoors during peak ozone concentrations will decrease a person’s exposure to outdoor ozone concentrations.
The purpose of the population-weighted indicator is to characterize the potential average outdoor exposure per person to concentrations above the level of the state ozone standard. The population-weighted exposure indicator represents a composite of exposures at individual locations that have been weighted to emphasize equally the potential exposure for each individual in an area. In contrast, the purpose of the area-weighted exposure indicator is to characterize the potential average annual outdoor exposure per unit area. The area-weighted exposure indicator represents a composite of exposures at individual locations that have been weighted to emphasize equally the potential exposure in all portions of the district.

The exposure analysis is based solely on ambient (outdoor) ozone data. The calculation methodology assumes that an “exposure” occurs when a person experiences a 1-hour ozone concentration outdoors that is higher than 0.09 ppm, the level of the State standard. The PWE and AWE consider both the level and duration of ozone concentrations above the State standard.

The annual exposure is the sum of all the hourly exposures during the year and presents the results as an average per exposed person or average per exposed unit land area.

8.2.3.2 Calculation

The Time Period: The population-weighted and area-weighted exposure indicators are computed as an annual value for each year.

Air Quality Data: The air quality data used for computing the exposure indicators are hourly ozone data. All available data for sites in the district are used, regardless of whether the data meet designation criterion for complete and representative data. Because the individual exposure values are interpolated from data for several monitoring sites, the data for all the sites do not need to be complete for all hours.

Census Data: The exposure computations are based on census data collected by the federal government. For the years from 1985 to 1999, the population statistics are based on the 1990 census. For the years 2000, 2001, 2002, population data from the 2000 census was used.

The federal government has divided the nation into census tracts for the purpose of counting population and obtaining demographic information. Each of these census tracts has associated with it: a (1) centroid of the census tract, (2) the population residing within the census tract, and (3) the land area of the census tract. The population within each census tract is used in computing the annual population-weighted exposure, whereas, the land area of the census tract is used in computing the annual area-weighted exposure. The centroid of the census tract is used in computing both exposure indicators.

Calculation Procedure for Population-Weighted Exposure: Hourly ozone concentrations are interpolated to each census tract centroid. Hourly ozone exposures are computed for each centroid by subtracting the value of the State ozone standard (0.09 ppm) from each interpolated hourly concentration. If negative, the result is set equal to zero. The hourly exposures for each census tract are multiplied by the number of people residing in the census tract. These hourly exposures are then added together and divided by the total population of all of the census tracts for which interpolated exposure values are available.

The result represents an hourly population-weighted exposure for the district. The hourly exposures are aggregated into a daily population-weighted exposure.

The daily exposures are then aggregated into an annual population-weighted exposure. This is done for each year from 1985 through 2002, for which data are available.

Calculation Procedure for Area-Weighted Exposure: The procedure for computing the area-weighted exposure is similar. In this case, the hourly exposures for each census tract are multiplied by the square kilometer land area of the census tract. These hourly exposures are then added together and divided by the total land area of all of the census tracts for which interpolated exposure values are available. The result represents an hourly area-weighted exposure for the district. The hourly exposures are aggregated into a daily area-weighted exposure. The daily exposures are then aggregated into an annual area-weighted exposure. This is done for each year from 1985 through 2002, for which data are available.

8.3 PROGRESS TOWARD AIR QUALITY STANDARD ATTAINMENT

Pursuant to California Health and Safety Code (H&SC) section 40924, on or before December 31, 2003, the District is required to assess the extent of air quality improvement achieved during the preceding three years (2000-2002)[1]. The assessment of improvement should be based on: 1) ambient pollutant measurements; 2) best available modeling techniques; and 3) air quality indicators identified by the State Board for that purpose. Based on the ARB guidance document, Guidance for Using Air Quality-Related Indicators in Reporting Progress in Attaining the State Ambient Air Quality Standards, the District's assessment of improvement is based on air quality indicators and confirmed by ambient measurements and modeling.

Ambient pollutant measurements are collected from monitoring stations within the SJVAB and are incorporated into the ARB's annually published Air Quality Data. Data used to prepare the annual statistics shown in Air Quality Data are reflected in the air quality indicators discussed below. Table 8-1 provides trend data for the SJVAB with respect to the state ozone standard.[2] As shown in Table 8-1, the number of days per year with 1-hour ozone levels above the state standard in the SJVAB has decreased slightly from 1990 through 2002. The remainder of this section emphasizes the indicators required by ARB for inclusion in this report.

[1] For triennial Reports due in 2003, ARB modified the due date for air basins also preparing SIP submittals, and stated that the triennial Reports could be submitted with, and at the same times as, SIP submittals in the 2003-2004 time frame.
[2] Chapter 2 presents SJVAB monitoring data with respect to the federal 1-hour ozone standard.

ARB staff has prepared data showing EPDC trends, population-weighted ozone exposure and area-weighted ozone exposure for many of the monitoring sites in the District that have been in operation long enough to have the necessary data (six years). The EPDC trends for the SJVAB for the period 2000—2002 show a wide degree of variability in that some are relatively steady, others decreasing, and a few showed increases (Figures 8-1 through 8-8). Of the three-year period of interest for this Triennial Progress Report and Plan Revision (2000—2002), the year 2002 seemed to be when most sites experienced an increase in EPDC values. Comparison of Figures 8-1 through 8-8 with the SJVAB trends for the federal standard (Chapter 2) indicates that 2002 also showed deteriorating ozone air quality, reflecting the same emissions levels and meteorological conditions that shaped the trends in EPDC levels in this time frame.

TABLE 8-1
SJVAB Ozone Exceedances
1990-2002

Year	No. of Hours Above State Standard	No. of Days Above State Standard
1990	711	131
1991	788	133
1992	735	127
1993	743	125
1994	808	118
1995	807	124
1996	936	120
1997	586	110
1998	801	90
1999	775	123
2000	691	114
2001	221	123
2002	850	127

Source: ARB 2004b

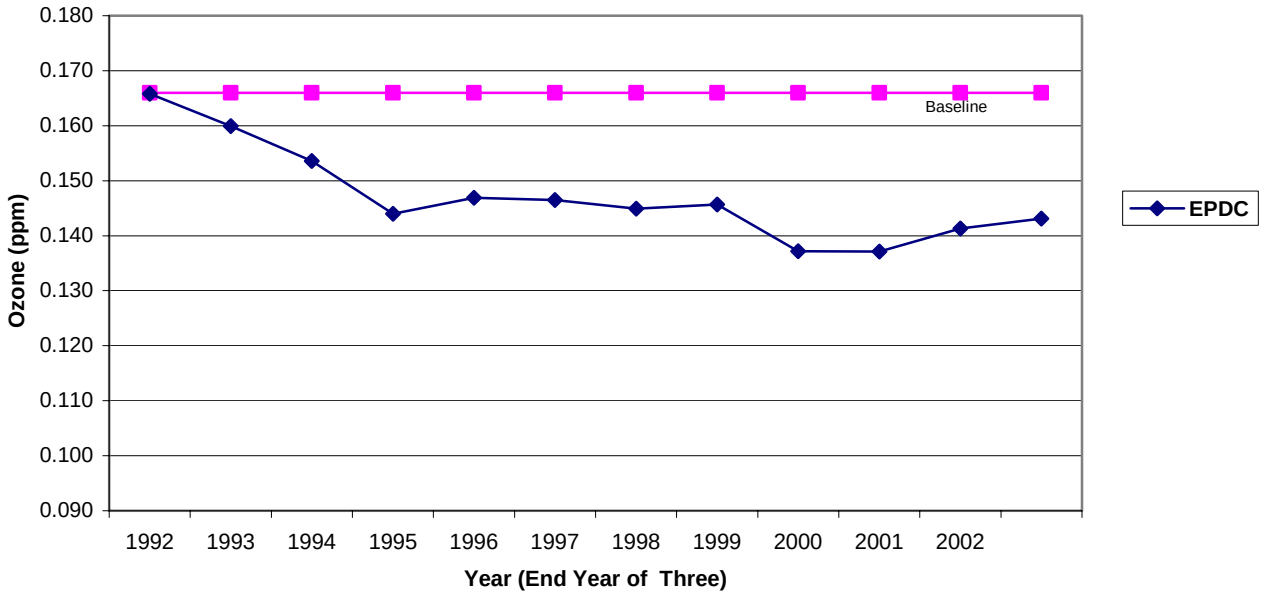
The area-weighted exposure chart (Figure 8-9) shows a general improvement in air quality since 1996. For the most recent reporting period (2000-2002), the trend in this metric is generally downward, thereby showing continued improvement. However, AWE does show an increase from 2001 to 2002, again reflecting the same conditions affecting the EPDC trends and federal ozone standard tracking given in Chapter 2.

The population-weighted exposure chart (Figure 8-10) prepared by the ARB shows that exposure to ozone (adjusted to reflect population distribution

and to give more "weight" to higher ozone values) has declined approximately 100 hours per person per year within the District between 1986 and 1993. Since 1993, the metric has shown year-to-year fluctuation near the value of 1.60 ppm-hrs per person. For the most recent reporting period (2000-2002), the metric showed a downward trend, with again a slight increase from 2001 to 2002.

In summary, the data prepared pursuant to H&SC section 40924 shows that expected "peak day" concentration, per-capita annual exposure, and per-unit-area annual exposure for ozone have slightly declined within the SJVAB since reporting of these statistics began. The nature of the trends varies with monitoring site, and each site's trend reflects emissions and meteorological conditions, as well as the influence of other parameters (for example, the population weighted average is also affected by trends in population in the SJVAB. As shown in the following sections, the District has been aggressively developing and implementing ozone precursor emission control measures to improve ozone air quality in the SJVAB. Though these emissions reductions have been driven by compliance with federal requirements, they will help the SJVAB demonstrate continued progress toward meeting state ambient air quality standards as well.

Figure 8-1
Expected Peak Day Concentration (EPDC) at the Arvin-Bear Site



State Standard: 0.09 ppm
Source: ARB and SJVUAPCD

Figure 8-2
Expected Peak Day Concentration (EPDC) at the Bakersfield Golden State Site.

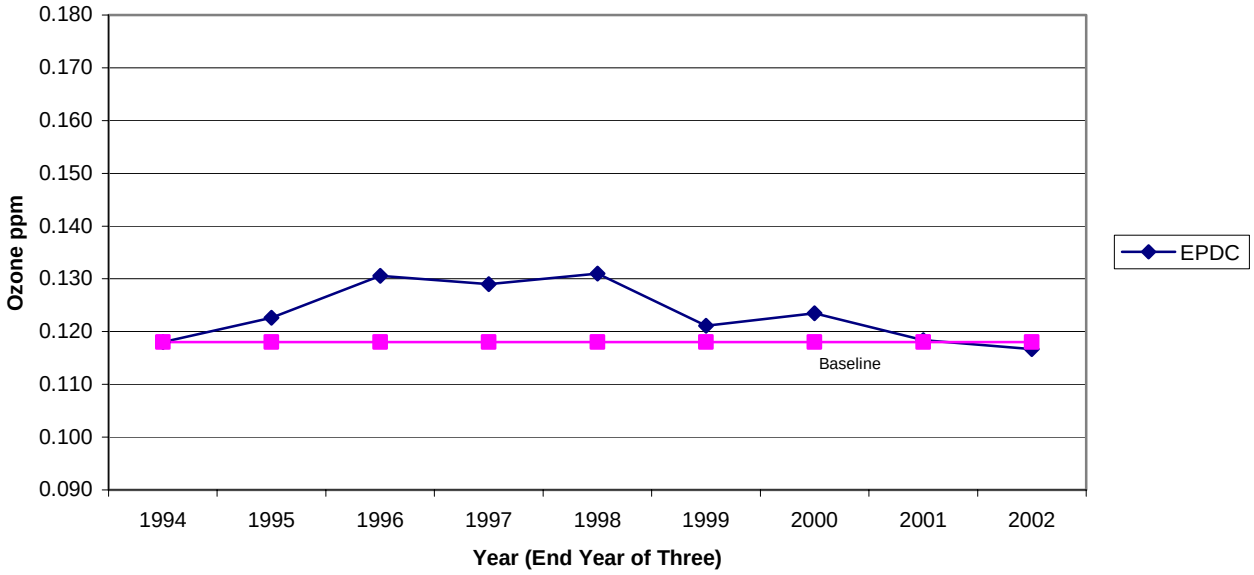
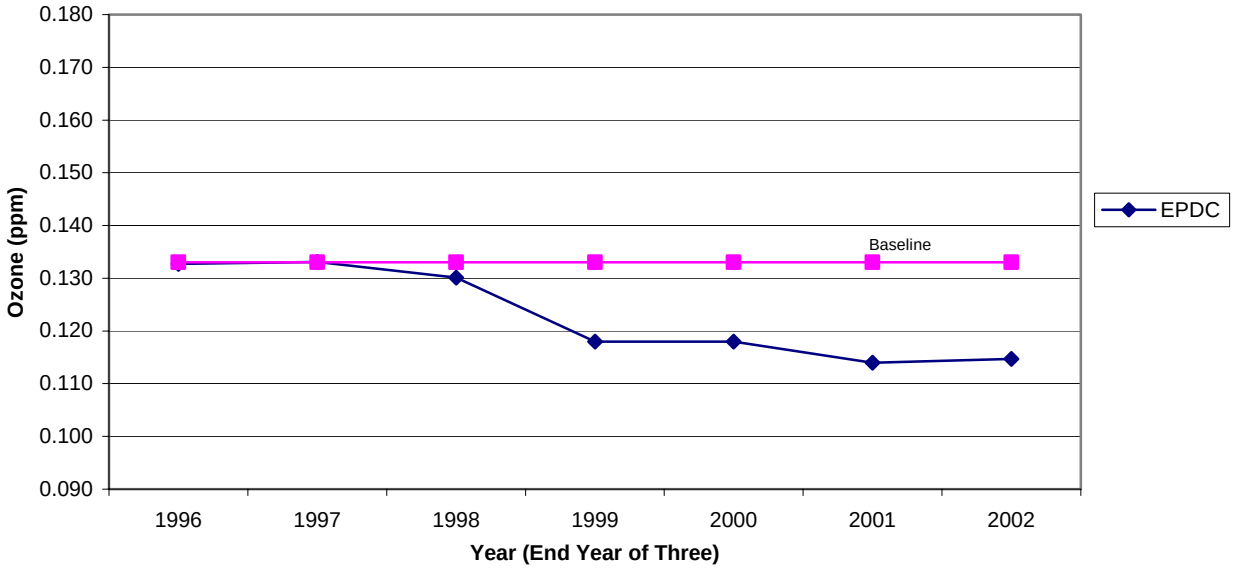


Figure 8-3
Expected Peak Day Concentration (EPDC) at the Bakersfield California Ave. Site



State Standard: 0.09 ppm
Source: ARB and SJVUAPCD

Figure 8-4
Expected Peak Day Concentration (EPDC) at the Clovis N. Villa Ave. Site

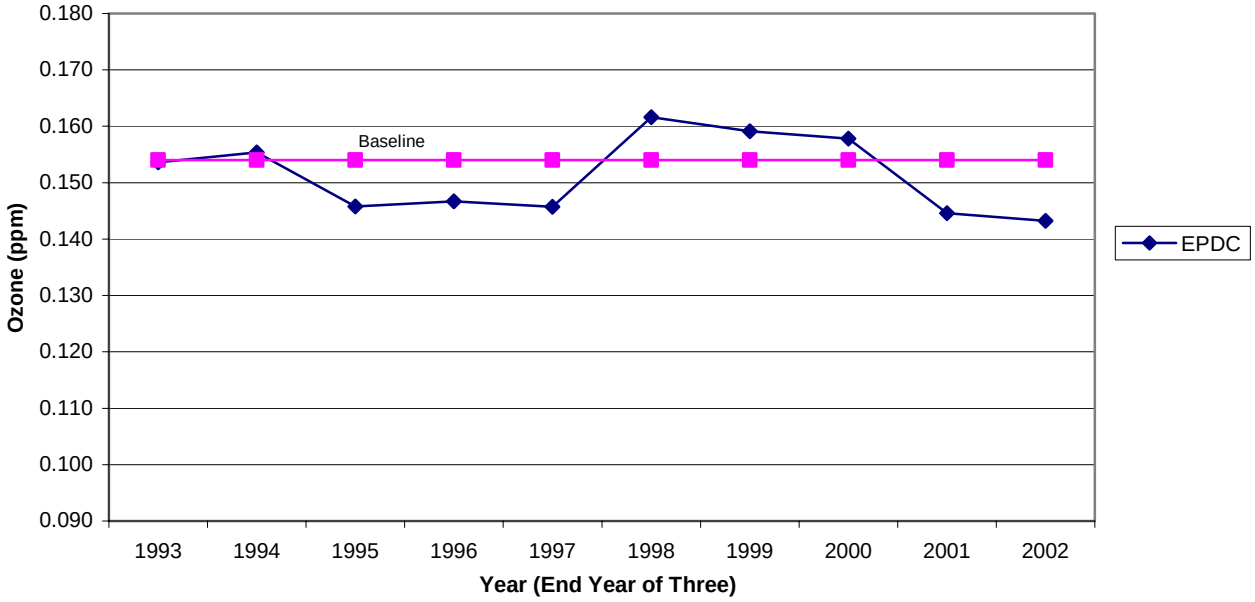
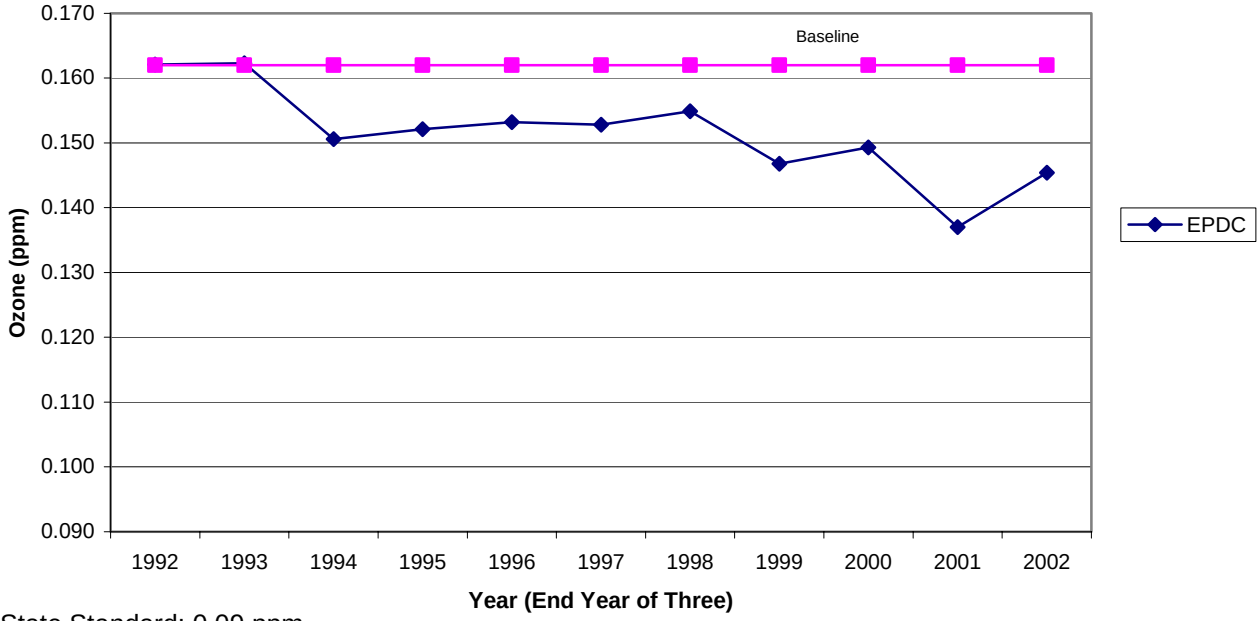


Figure 8-5
Expected Peak Day Concentration (EPDC) at the Fresno 1st Street Site



State Standard: 0.09 ppm
Source: ARB and SJVUAPCD

Figure 8-6
Expected Peak Day Concentration (EPDC) at the Hanford-Irwin Street Site

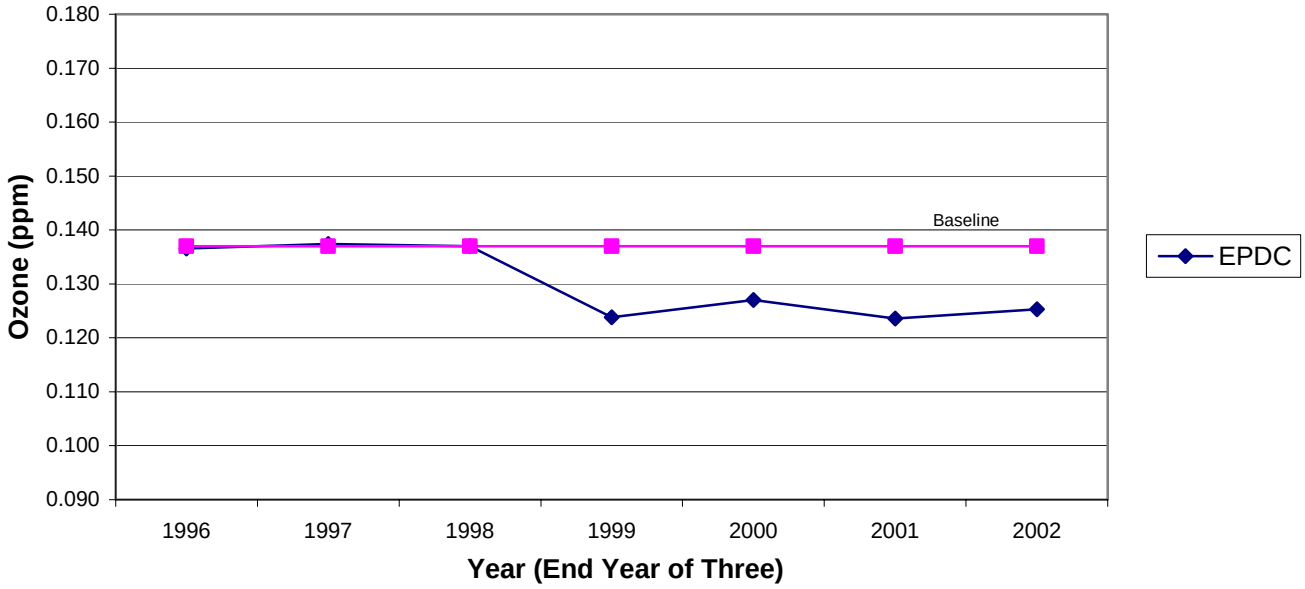
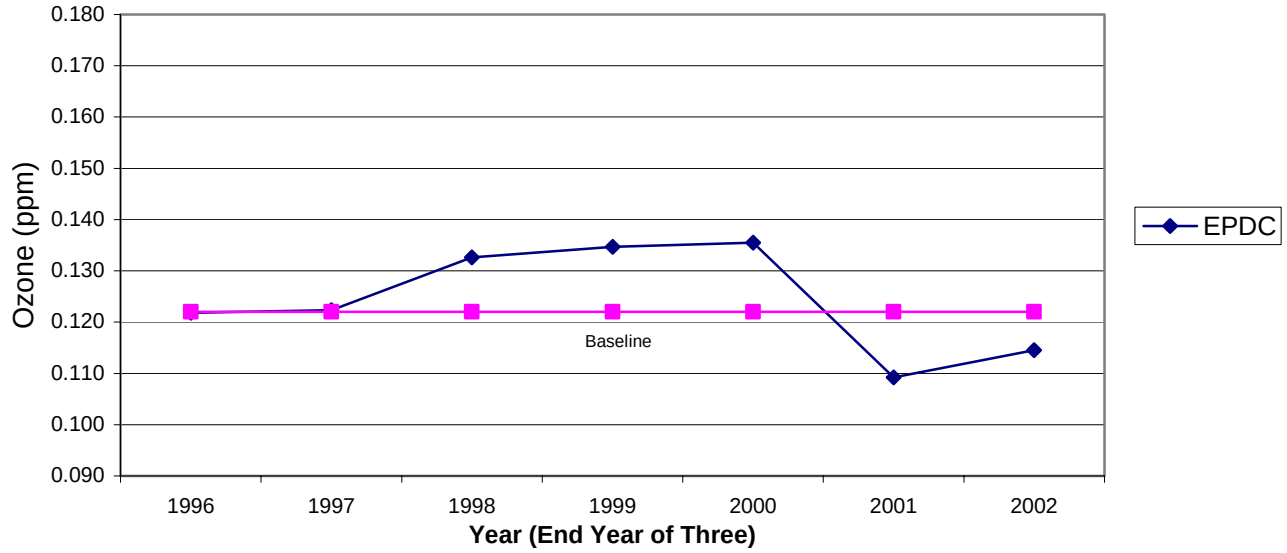


Figure 8-7
Expected Peak Day Concentration (EPDC) at the Maricopa-Stanislaus Street Site



State Standard: 0.09 ppm
Source: ARB and SJVUAPCD

Figure 8-8
Expected Peak Day Concentration (EPDC) at the Merced-South Coffee Ave. Site

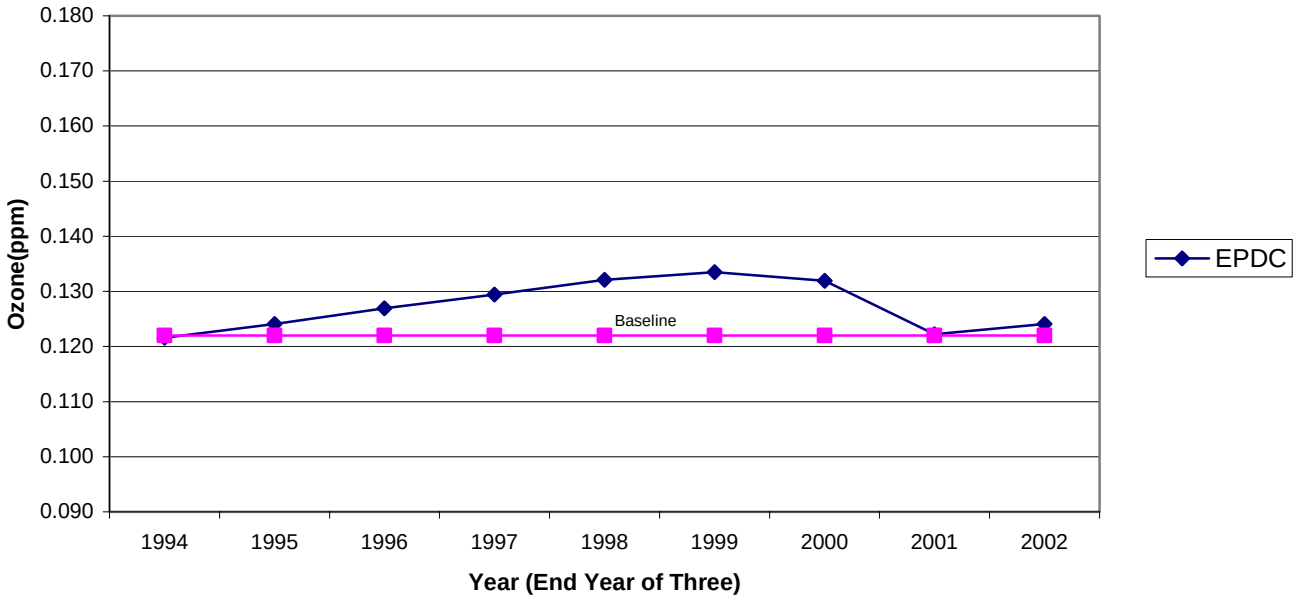


Figure 8-9
Area Weighted Exposure per Square Kilometer

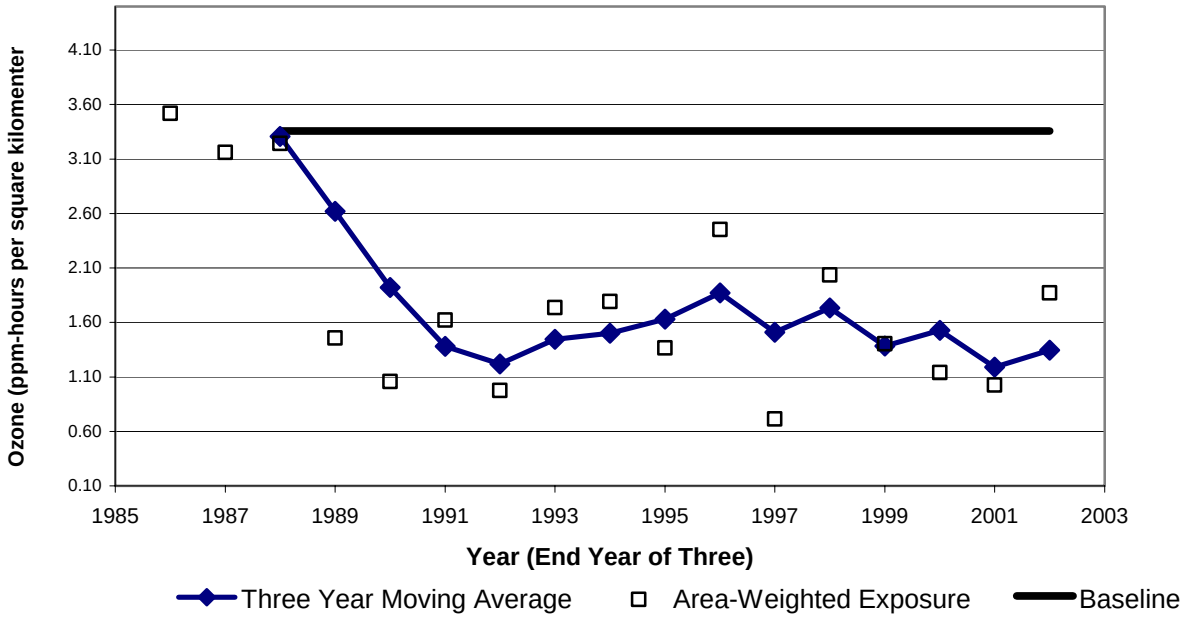
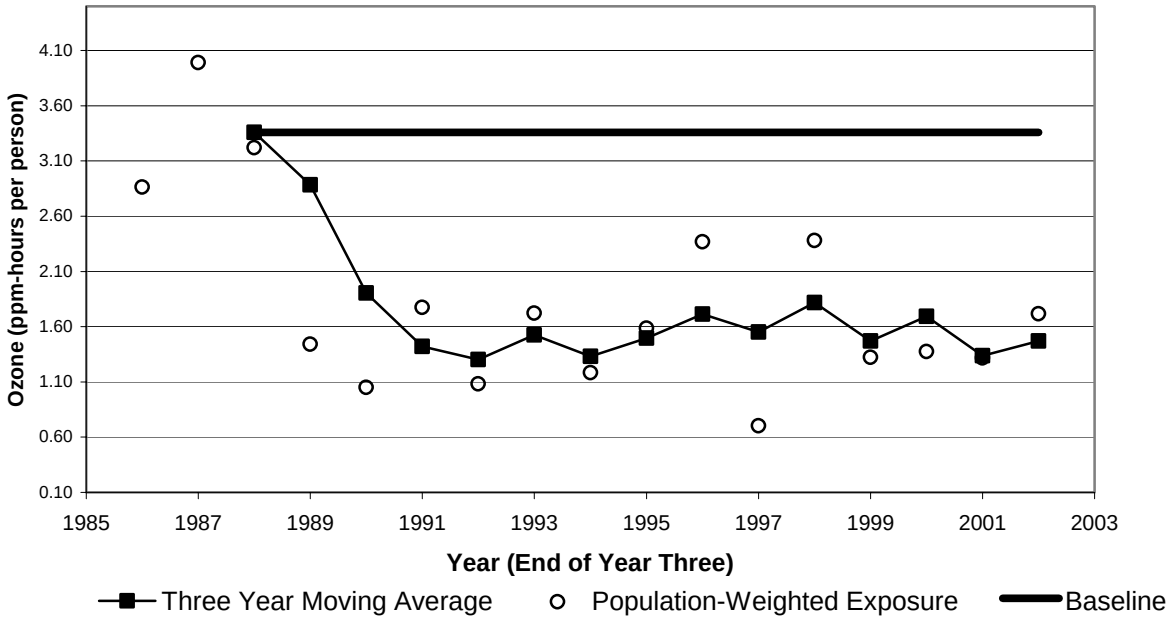


Figure 8-10
Population Weighted Exposure per Person



8.4 TRANSPORT MITIGATION

The movement of air pollutants across jurisdictional boundaries is called long-range transport, or simply transport. ARB, in cooperation with local air districts, is required by the CCAA to evaluate intrastate transport and to suggest mitigation for such transport.

Most violations of ozone ambient air quality standards occur under stagnant weather conditions, when pollutant concentrations build up because emitted pollutants do not disperse either horizontally or vertically. For ozone, these conditions occur on hot, summer days with low wind speed limiting horizontal dispersion, and temperature inversions in the atmosphere limiting vertical dispersion. Prevailing winds carry air pollutants and precursors from emission points to downwind locations, mixing with cleaner air or other emissions along the way. Pollutant and precursor concentrations are much lower on windy days because emissions are dispersed through larger volumes of ambient air.

The air quality management community in California generally agrees that pollutant transport does occur among the various air districts and air basins in California. The wind direction and resulting transport direction may change significantly from day to day, depending on specific weather conditions. The ARB has identified transport couples (source and receptor areas) throughout

California. The San Joaquin Valley Air Basin is identified as both a source and a receptor of transported pollutants.

ARB issued its most recent assessment of ozone transport in California in April 2001 (ARB 2001), and concluded that transport from the San Francisco Bay Area Air Basin and the Broader Sacramento Area contributes to some exceedances of the state 1-hour ozone standard in the SJVAB, and that the degree of contribution ranges from overwhelming to inconsequential[3]. ARB also found that the SJVAB contributes overwhelmingly to ozone exceedances in the Mojave Desert, Mountain Counties, and Great Basin Valley Air Basins, significantly to the North Central Coast, and significantly to inconsequentially to the Broader Sacramento Area and the South Central Coast (ARB 2001).

ARB is in the process of analyzing CCOS 2000 data to develop improved technical capabilities to better quantify transport. Future triennial progress reports and plan revisions will include the results from this body of work.

In 2003, ARB amended state regulations on ozone transport mitigation. ARB retained, with minor revisions to eliminate outdated provisions, the requirement for upwind transport districts such as the San Joaquin Valley to apply best available retrofit control technology (BARCT). To ensure that upwind districts minimize their impact on downwind districts, ARB also added two new requirements related to the adoption of all feasible measures and no net increase thresholds for new source review permitting programs. The San Joaquin Valley was already required to comply with these provisions due to other existing CH&SC requirements. The District already had the most stringent new source review thresholds and had implemented all feasible measures in lieu of meeting the annual five percent ozone precursors emissions reductions requirements.

Table 8-2 identifies BARCT rules adopted by the District since 1991. The District adopted the majority of these rules before 1994 and continues to update them as new technology is demonstrated. To ensure that the District continues to include all feasible measures applicable to sources under its authority, the District reviewed adopted rules of other California Air Districts to determine if other measures should be incorporated. The California Air Pollution Control Officers Association (CAPCOA) has taken a proactive step to assist in this process by developing a list of the most stringent rules adopted by California Air Districts. The District participated in the process of developing the list and has reviewed its own adopted rules and proposed control measures in the *Extreme OADP* to ensure it meets the “all feasible measure” requirement.

[3] ARB uses three classifications to describe transport: inconsequential, significant, and overwhelming (ARB 1990).

Table 8-2
BARCT Rules

VOC BARCT	
Rule	**Rule Name**
4401[4]	Steam-Enhanced Crude Oil Production Well Vents
4402[4]	Crude Oil Production Sumps
4403[4]	Components Serving Light Crude Oil or Gases at Light Crude Oil and Gas Production Facilities & Components at Natural Gas Processing Facilities
4404	Heavy Oil Test Station - Kern County
4407	In-situ Combustion Well Vents
4451[4]	Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants
4452[4]	Pump/Compressor Seals at Petrol. Refineries and Chemical Plants
4453	Refinery Vacuum Producing Devices or Systems
4454	Refinery Process Unit Turnaround
4601[3]	Architectural Coatings
4602[3,4]	Motor Vehicle and Mobile Equipment Coating Operations
4603[3,4]	Surface Coating of Metal Parts and Products
4604[3]	Can and Coil Coating Operations
4605[3,4]	Aerospace Assembly and Component Manufacturing Operations
4606[3,4]	Wood Products Coating Operations
4607[1,3,4]	Graphic Arts
4621[1,4]	Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants
4622[1]	Gasoline Transfer into Vehicle Fuel Tanks
4624[4]	Organic Liquid Loading
4625	Wastewater Separators
4641[4]	Cutback, Slow Cure, and Emulsified Asphalt Paving and Maintenance Operations
4642[1]	Solid Waste Disposal Sites
4651[4]	Volatile Organic Compound Emissions from Soil Decontamination
4652	Coatings and Ink Manufacturing
4653[4]	Adhesives
4672	Petroleum Solvent Dry Cleaning Operations
4681	Rubber Tire Manufacturing
4682[4]	Polystyrene Foam, Polyethylene, and Polypropylene Manufacturing
4684[4]	Polyester Resin Operations
4691	Vegetable Oil Processing Operations
NOx BARCT	
4305[2,3]	Boilers, Steam Generators, and Process Heaters
4352[4]	Solid Fuel Fired Boilers, Steam Generators and Process Heaters
4354[1,3]	Glass Melting Furnaces
4701[1,3]	Internal Combustion Engines
4703[3]	Stationary Gas Turbines

[1] BARCT rules adopted or amended in 1995-1998.
[2] BARCT for larger units was adopted in 1993. BARCT for smaller units was adopted in 1996.
[3] Last updated in the 2001 to 2003 time frame
[4] Scheduled for update in this Extreme OADP (see Tables 4-1 and 4-2)

8.5 CONTROL MEASURE IMPLEMENTATION

8.5.1 Stationary Source Control Measures

Table 8-3 presents the District's rulemaking schedule and adoption activity for 2001-2003 as developed in the 2000 Triennial Plan Update and Plan Revision (SJVUAPCD 2001).

Table 8-3*
2001-2003 Rulemaking Schedule

RULE	CONTROL MEASURE	2000 TRIENNIAL PLAN SCHEDULE	ACTIVITY	COMMITMENT
4103	Open Burning	2Q/01	Amendment	1997 Triennial Plan & EPA Requirement
4106	Prescribed Burning and Hazard Reduction Burning	2Q/01	New Rule	1997 Triennial Plan & EPA Requirement
4623	Organic Liquid Storage	2Q/01	Amendment	1997 Triennial Plan & EPA Requirement
4662	Organic Solvent Degreasing	2Q/01	Amendment	1997 Triennial Plan & EPA Requirement
4663	Organic Solvent Cleaning, Storage and Disposal	2Q/01	New Rule	1997 Triennial Plan & EPA requirement
Regulation 8	Fugitive Dust	2Q/01	Amendment	PM10 ADP & EPA SIP Deficiency
4411	Oil Production Well Cellars	3Q/01	New Rule	1997 Triennial Plan & EPA Requirement
4601	Architectural Coatings	3Q/01	Amendment	1997 Triennial Plan & EPA Requirement
4692	Commercial Charbroiling	3Q/01	New Rule	1997 Triennial Plan & EPA Requirement

Table 8-3
2001-2003 Rulemaking Schedule (cont.)

RULE	CONTROL MEASURE	2000 TRIENNIAL PLAN SCHEDULE	ACTIVITY	COMMITMENT
4354	Glass Melting Furnaces	2Q/02	Amendment	EPA SIP Deficiency
4305**	Boilers, Process Heaters, and Steam Generators	3Q/02	Amendment	EPA SIP Deficiency
4307	Dryers & Ovens	3Q/02	New Rule	EPA RACT Requirement
4311	Flares	3Q/02	New Rule	EPA RACT Requirement
4312	Nitric Acid Plants	3Q/02	New Rule	EPA RACT Requirement
4313	Foundries	3Q/02	New Rule	EPA RACT Requirement
4351**	Boilers, Steam Generators and Process Heaters – Reasonably Available Control Technology	3Q/02	Amendment	EPA SIP Deficiency
4610	Mirror Coating Operations	3Q/02	New Rule	EPA RACT Requirement
4693	Bakeries	3Q/02	New Rule	EPA RACT Requirement
4696	Food Products Cooking	3Q/02	New Rule	EPA RACT Requirement
4104	Reduction of Animal Matter	3Q/02	Amendment	EPA RACT Requirement
4701**	Internal Combustion Engines	3Q/02	Amendment	EPA SIP Deficiency
4703**	Stationary Gas Turbines	3Q/02	Amendment	EPA SIP Deficiency

Table 8-3
2001-2003 Rulemaking Schedule (cont.)

RULE	CONTROL MEASURE	2000 TRIENNIAL PLAN SCHEDULE	ACTIVITY	COMMITMENT
4403	Components Serving Light Crude Oil or Gases at Light Crude Oil and Gas Production Facilities and Components at Natural Gas Processing Facilities	3Q/03	Amendment	Feasible Control Measure
4451	Valves, Pressure Relief Valves, Flanges, Threaded Connections and Process Drains at Petroleum Refineries and Chemical Plants	3Q/03	New Rule	Feasible Control Measure
4452	Pump and Compressor Seals at Light Crude oil and Gases Production Facilities & Components at Natural Gas Processing Facilities	3Q/03	Amendment	Feasible Control Measure
4701	Internal Combustion Engines	3Q/03	Amendment	Feasible Control Measure
4703	Stationary Gas Turbines	3Q/03	Amendment	Feasible Control Measure

Projected emissions reductions associated with the control measures are not included on this table. District staff is still in the process of developing this information. Projected emission reductions and a revised rulemaking schedule are included in Section 4 of this *Extreme OADP*. Some measures listed above were included in the *Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone* adopted December 19, 2002. Source: SJVUAPCD 2001.

Section 40924(b)(2) of the CH&SC, as well as ARB's guidance for triennial progress reports and plan revisions, directs districts to report actual emissions reductions achieved for each measure scheduled for adoption in the three year period addressed by each progress report and plan revision. Table 8-4 presents this information for the SJVAB, in the 2000—2002 time frame that is the focus of this Triennial Progress Report and Plan Revision.

8.5.2 Mobile Source Control Measures

8.5.2.1 Introduction

Under the CCAA's severe nonattainment classification for the state ozone standard, the District is required to include "reasonably available transportation control measures sufficient to substantially reduce the rate of increase in passenger vehicle trips and miles traveled per trip…" in its state air quality plans. The 2000 Triennial Progress Report and Plan Revision addressed a number of TCMs, and this 2003 report updates those discussions and addresses new measures identified after the 2000 Triennial Progress Report and Plan Revision.

Table 8-4
Actual Emission Reductions
for District Rules Affecting Ozone Precursor Emissions[1] (2000-2002)

Rule	Date	Title	Pollutant	Baseline (tons/day)	Actual Reductions (tons/day)
4408	12/19/2002	Glycol Dehydration Systems	VOC	1.7	1.5
4601	10/31/01	Architectural Coatings	VOC	9.3	1.3
4610	12/19/02	Glass Coating Operations	VOC	0.2	0.2
4623	12/20/01	Storage of Organic Liquids	VOC	2.8	0.2
4662	4/19/01	Organic Solvent Degreasing Operations	VOC	14.0	11.3
4692	3/21/02	Commercial Charbroiling	VOC	0.04	0.03
4693	5/16/02	Bakery Ovens	VOC	0.2	0.2
4703	4/25/02	Stationary Gas Turbines	NOx	9.6	5.4

[1] Rules may also reduce emissions of other pollutants (e.g., PM), but only ozone precursors are shown.

Reductions from mobile source measures differ from stationary source reductions in that they are limited to a specific time period rather than being permanent, and they are calculated over the projects' lifetimes (in large part because they are tied to state and federal funding cycles for transportation projects).[4] Stationary source reductions are referenced on a tons/day basis

[4] This statement primarily reflects mobile source measures for which the District has authority to implement or assist in implementation. Mobile source measures for which ARB is responsible

because they are cumulative in that they continue to occur day after day, year after year, from the same source. The control measures continue to generate reductions as long as the controlled source is operating. Due to the nature of mobile source emissions control measures, quantifying the actual years in which reductions will occur is not possible. For some projects, reductions may be limited or tied to a set number of years. For others, emission reductions may occur over a set number of years.

8.5.2.2 District Committed Measures

The District is continuing to work with the Transportation Planning Agencies (TPAs) in implementing previously-committed TCMs and in developing new TCMs for SIP submittals**.** The Memorandum of Understanding (MOU) among the District and the eight county TPAs is still in effect. The 2000 Triennial Progress Report and Plan Revision mentioned several 9000-series rules that were no longer being pursued due to state action; these rules are still inactive.

District and TPA staffs are working on specific actions and programs to reduce vehicle miles traveled (VMT) or to reduce emissions through other activities. Local governments in the SJVAB have committed to hundreds of Reasonably Available Control Measures in the period 2000—2002. The reader is referred to the *Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone* for more information. The document is available on the District's website at www.valleyair.org. Descriptions of specific control measures are available in hardcopy at the District office in Fresno, at ARB's office in Sacramento, or at EPA Region 9's office in San Francisco.

In addition, The District is working on a number of rules involving mobile sources. As shown in Chapter 4 of this *Extreme OADP*, the rule making schedule includes a school Bus Fleet Rule and Indirect Source Rules. Each of these rules is directed at reducing emissions from mobile sources.

The Indirect Source Rules represent a major rule development activity. Indirect Source Mitigation is aimed at controlling secondary emissions from development that attracts or generates motor vehicle trips. The District is currently evaluating rules to implement the Indirect Source Mitigation measure that would require mitigation measures and/or emission based fees to fund projects that reduce emissions. Developers would have the option for mitigating emissions on-site through project design and location, credit for the installation of infrastructure and equipment at the project site that would reduce vehicle trips or emissions, and/or the payment of a fee. During the 2000—2002 period, the District began the

address motor vehicle technology changes and are quantifiable in amount of reductions and time period in which reductions occur.

process of revisiting prior rule development activities in this area (that did not result in development of indirect source rules). The 2003 *PM10 Plan* and state legislation signed into law in 2003 (SB 700 series) are driving the District to adopt indirect source rules in the late 2004/early 2005 time frame.

8.5.2.3 Voluntary Programs

The District continued to implement several successful voluntary mobile source emission reduction programs in the 2000-2002 time frame. These programs are described below.

During the 2000—2002 time frame covered by this report, the **RE**duce **Mo**tor **V**ehicle **E**missions (REMOVE) Program utilized a portion of a $4 motor vehicle registration surcharge fee allowed by State legislation for nonattainment areas for District-operated planning, monitoring, enforcement, technical studies, and emission reduction projects necessary to implement the California Clean Air Act (CCAA). The REMOVE Program funded projects that reduce motor vehicle emissions within the Valley through a competitive request for proposal (RFP) process. During the 2000-2001 funding cycle (2 years were treated as one cycle) and 2001-2002 funding cycles, the District continued to implement the REMOVE Program; projects funded at a cost of almost $3,633,389 resulted in an estimated 460 tons of emissions reduction over the lifetime of the projects. The REMOVE Program is no longer in existence as of July 2004, but the District plans to replace it later in 2004 with a similar program.

During 2000, 2001 and 2002, the District received 5,997 calls or report slips regarding smoking vehicles, with about a 17 percent response rate from individuals receiving a “Smoking Vehicle” letter. This voluntary program reduces motor vehicle emissions by encouraging owners of smoking vehicles to have repairs made to correct problems of high emissions.

The *Heavy Duty Vehicle Emission Reduction Program* provides financial incentives to municipalities, companies, fleet operators and individuals who purchase new heavy-duty, low-emission on-road vehicles from original equipment manufacturers (OEM); new OEM heavy-duty, low-emission engines for replacements; or retrofit technologies for heavy-duty on-road and non-road vehicles meeting criteria guidelines.

The District is funding its *Heavy Duty Vehicle Emission Reduction Program* with Carl Moyer funds, provided through state legislative action. Since 1999, The District has received $18,308,227 on Carl Moyer Program funding. The District has provided additional match funding in the amount of $7,658,671. To date, the District has obligated all Moyer Program funds for years one, two and three (CMI, CMII and CMIII) and approximately 30% of funds for year four (CMIV).

Implementation has been successful, particularly with the agricultural community. The District has provided Moyer Program incentive funds for projects including agricultural pump engines, refuse haulers, street sweepers, tractors, grape harvesters, delivery trucks, and almond sweepers. Approximately $25,000,000 in Moyer Program funds and matching funds has been awarded to fund over 1,300 cleaner burning engines. Approximately 9,500 tons of NOx reductions have resulted from Moyer Program projects.

Additionally, in 1996, the District began a *Spare the Air Program*. This voluntary program is designed to encourage ridesharing and discourage use of equipment and products that emit ozone precursors during the ozone season. The program is directed both to employers and the general public. In 1996, 75 employers were enrolled in the employer component. By September 1997, the employer component had increased to nearly 500 participants, while in 1998 and 1999, the employer component ran about 730. The focus of the program in 1999 was increasing the active participation of employers already enrolled in the program rather than increasing the number of employers in the program. Between 2000-2002, the employer component grew from 710 to 749.

8.5.3 Land Use Programs

Land use programs contain three basic elements: District CEQA review of projects in the SJVAB, District *Guidelines for Assessing and Mitigation Air Quality Impacts*, and District *Air Quality Guidelines for General Plans*.

In the CEQA Program, the District reviews projects each year from nearly all local planning agencies in the San Joaquin Valley. Local jurisdictions routinely include air quality mitigation measures recommended by the District in development projects. For the period 2000-2002, the District reviewed almost 4000 projects of varying complexity throughout the 8-county region. In addition, the District is increasingly functioning as lead on CEQA documents due to its discretionary action of permit issuance. For the period 2000-2002, the District reviewed and updated the *Guide for Assessing and Mitigating Air Quality Impacts* (SJVUAPCD 2002) to further assist local jurisdictions in analyzing and mitigating impacts, and issued a revised version on January 10, 2002. The District is preparing another update in 2004.

In the District's program to encourage air quality elements in city and county general plans, District staff provides assistance to cities and counties via its *Air Quality Guidelines for General Plans* (AQGGP) [SJVUAPCD 1994] and by reviewing general plans as they are updated. The AQGGP has been very well accepted. Nearly all cities and counties in the District that have prepared general plan updates have used the AQGGP since its approval in 1994. In 2002 the

District began updating the AQGGP, and expects to issue a revised version in 2004.

Also in 2002, the District began developing a manual entitled *Internal CEQA Guidelines for District Staff.* When completed, this manual will guide District staff on how to comply with CEQA for the range of District activities, which include serving as lead agency on development projects. Other activities related to land use include Indirect Source Rules discussed above under Mobile Sources.

8.6 PLAN REVISION

8.6.1 Introduction

The California Clean Air Act requires the District to establish a strategy that will achieve an annual average five percent reduction in ozone precursor emissions, or alternatively, to commit to taking all feasible measures to reduce emissions within its boundaries in an expeditious time frame. The District's adopted strategy is based on the latter alternative. During the 2000-2002 period, the District continued to implement its original control strategy of adopting rules to fulfill the District's SIP commitment and then to address additional measures needed for attainment of the California ozone standard. The District met all of its federally required emission reduction rates (three percent per year for every three year period post 1996 until attainment) for 1-hr ozone precursors for the 2000—2002 period addressed by this report.

During the 2003-2005 planning cycle, the District will continue its efforts to improve its emissions inventory. This will consist of both in-house efforts, joint efforts with ARB, and contracting with consultants for updating or developing inventories for specific sources. The District will also continue to participate with ARB and other districts on analyzing CCOS data and developing modeling tools to improve ozone standard attainment planning. In particular, work in 2003-2005 will focus on developing modeling tools for 8-hour ozone.

8.6.2 Control Strategy

The District's control strategy to reduce ozone pollution is largely driven at present by emissions reductions needed to attain the federal 1-hour ozone standards and needed to attain the federal PM10 standards. The District is implementing an intense rule development schedule to meet commitments in the *Amended 2002 and 2005 Rate of Progress plan for San Joaquin Valley Ozone* (which includes control measures though 2005) and in the 2003 *PM10 Plan* (which contains control measures for PM10 and its precursors, including the VOC and NOx out to the year 2010). For ozone rate of progress, the District has demonstrated a 33% reduction in ozone precursor emissions over the period

1990-2002 by a large margin, thus exceeding federal requirements for ozone precursor emissions reductions. The 2003 *PM10 Plan* calls for a total annual NOx reduction of 45.3 tons/day and a total annual VOC reduction of 20.8 tons/day by 2010.

Table 8-5 presents the District's 2003-2005 rulemaking schedule. Beyond 2005, the District's rulemaking schedule becomes even more intense. The *PM10 Plan* identifies NOx, VOC and PM10 direct emissions controls through 2010. This plan will be revised and resubmitted to EPA in March 2006, so a significant evaluation of the control measure commitments will occur in 2005. This *Extreme OADP* identifies control measure commitments through 2010 for VOC and NOx. In 2007, the District must develop and submit to EPA an OADP for the 8-hour ozone standard, which is expected to call for even more emissions reductions than have been identified to date for PM10 and the 1-hour ozone standard. By early 2008, the District must develop and submit to EPA plans for attaining the PM2.5 standard and the regional haze standard. These plans will also include control measure commitments for ozone precursor emissions. The District will continue to pursue emissions reductions for VOC and NOx unless and until gridded photochemical modeling results indicate air quality benefits from controlling emissions of one precursor more than the other. The District also intends to continue its strategy of regional control measures and rules; no new rules, nor exemptions to existing rules, are being considered for specific sub-regions within the SJVAB. All of these future federal planning activities will be addressed in future Triennial Progress Reports and Plan Revisions. The reader is referred to the *Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone,* to the 2003 *PM10 Plan;* both documents are available on the District's website at www.valleyair.org. Table 4-1 of this *Extreme OADP* includes measures for the 2005 to 2007 time frame.

The previous Triennial Progress Report and Plan Revision (SJVUAPCD 2001) referred to a number of requirements related to classification of the SJVAB as severe nonattainment for the federal 1-hour ozone standard. EPA eliminated these requirements upon the effective date of the reclassification to extreme nonattainment (69 *FR* 20550).

Table 8-5
Rule Making Schedule for 2003-2005

Rule	Control Measure	Adopt/ Amend Date	Reason
4313 (New)	**Lime Kilns**	**2Q/03 1Q-2003**	**RACT/RACM**
4305, 4351, & 4306	**Boilers, Steam Generators and Process Heaters**	**3Q – 2003**	**Sanction Clock/Fix-up/RACM**
4701 & 4702	**Stationary IC Engines**	**3Q – 2003**	**Sanction Clock/Fix-up/RACM**
4604	**Can and Coil Coating**	**1Q – 2004**	**RACM**
4409 New	**Oil and Gas Fugitives**	**2Q – 2005**	**EOADP (Ch. 4)**
4455 New	**Refinery & Chemical Fugitives**	**2Q – 2005**	**EOADP (Ch. 4)**
9510 New 3180 New	Indirect Source Mitigation	4Q – 2005	EOADP (Ch. 4)
4307 New	Small Boilers, Process Heaters, Steam Generators, 2.0 – 5.0 MMBtu/hr	4Q – 2005	EOADP (Ch. 4)
4694 New	Wineries – Fermentation and Storage	4Q – 2005	EOADP (Ch. 4)
4702	**Stationary IC Engines**	**2Q – 2005**	**EOADP (Ch. 4)**
4309 New	Commercial Dryers	4Q – 2005	EOADP (Ch. 4)

Source : SJVAPCD 2002; EOADP Ch.4, Table 4-1
*Control measures shown as deleted were moved into the post-2005 time frame and thus are beyond the scope of this Triennial Progress Report and Plan Revision, they will be addressed in the next Triennial Progress Report and Plan Revision
Note: Bold Text indicates that the control measure has been adopted.

8.6.3 Updated Strategy & Expected Reductions

As requested by ARB in the 2003 "Triennial Assessment and Plan Revisions" guidance, the District has included projections of the planning inventory out to the year 2020. Table 8-6 presents the requested years of 2010, 2015 and 2020 by primary source sector of stationary, area, and mobile sources to provide a long-term view of how emissions are expected to change in the future in the SJVAB. Table 8-6 shows that ARB projects the SJVAB emissions to decline over the long term. Trends for all three pollutants show a downward trend, with the exception

of VOC, which slightly increases from 2010 to 2020, primarily due to area sources (but also stationary sources). This increase is most likely due to population growth outstripping the ability of area source emission controls in the out years. Also of note is a significant downward trend in NOx emissions for on-road and off-road mobile sources, reflecting state and federal emissions controls on engines.

Table 8-6
Planning Emissions Inventories (summer, tons/day)*

Source Category	2010 VOC	2015 VOC	2020 VOC	2010 CO	2015 CO	2020 CO	2010 NOx	2015 NOx	2020 NOx
Stationary	93.6	97.4	101.2	53.5	54.5	58.0	136.6	138.3	139.1
Area	171.1	180.7	190.7	419.1	413.8	405.7	5.9	5.9	5.9
On-Road Mobile	58.5	43.3	34.3	592.0	406.2	291.7	137.4	92.3	64.7
Other Mobile	41.5	35.4	32.0	380.2	371.5	376.3	118.5	96.0	81.8
Total	364.7	356.8	358.2	1444.8	1246.0	1131.6	398.3	332.5	291.4

* Represents direct inventory output, CCOS Version 2.11_RF932PEI; no local or state line item adjustments made. Also may not match Table 3-1 due to changes in Version 2.11 over time.

8.6.4 Further Study Measures

Further study measures are measures that need to be researched in order to determine its feasibility as a control measure in the future. The District identified several emission source categories that appear to have the potential for emission reductions, but they have highly uncertain emission inventories or estimates of control measure effectiveness. For those sources, the District proposes further study to enable an informed decision on whether to pursue a control measure and to determine a realistic emission reduction estimate. The District's "Further Study Measures" are presented in Section 4.2 of this *Extreme OADP*. Note that Chapters 4, 5, and 7 of this *Extreme OADP* identify and evaluate state and District ozone precursor emission control measures that would be adopted outside the time frame of the California Clean Air Act Plan Revision, and are therefore not mentioned in this Chapter.

8.7 REFERENCES

ARB 1990 — California Air Resources Board, *Assessment and Mitigation of the Impacts of Transported Pollutants on Ozone Concentrations within California,* June 1990, CARB, Sacramento, California.

ARB 2001 — California Air Resources Board, *Ozone Transport: 2001 Review*, California Air Resources Board, Sacramento, California, April 2001.

ARB 2004a — California Air Resources Board, EPCD Data Sacramento, California.

ARB 2004b — The *2004 California Almanac of Emissions and Air Quality,* California Air Resources Board, Sacramento, California.

SJVAPCD 1992 — San Joaquin Valley Air Pollution Control District, *1991 Air Quality Attainment Plan*, January 1992, SJVUAPCD, Fresno, California.

SJVAPCD 1994 — San Joaquin Valley Air Pollution Control District, *Air Quality Guidelines for General Plans,* SJVUAPCD, Fresno, California, October 20, 1994.

SJVAPCD 1998 — San Joaquin Valley Air Pollution Control District, *California Clean Air Act Triennial Progress Report and Plan Revision 1995-1997* (1997 Triennial Update), 1998, SJVUAPCD, Fresno, California. Approved by ARB October 1999.

SJVAPCD 2001 — San Joaquin Valley Air Pollution Control District, *California Clean Air Act Triennial Progress Report and Plan Revision 1997-1999* (2000 Triennial Update), SJVUAPCD, Fresno, California, 2001.

SJVAPCD 2002a — San Joaquin Valley Air Pollution Control District, *Guide for Assessing and Mitigating Air Quality Impacts*, SJVUAPCD, Fresno, California, January 10, 2002 revision (originally adopted August 20, 1998).

SJVAPCD 2002b — San Joaquin Valley Air Pollution Control District, *Amended 2002 and 2005 Rate of Progress Plan for San Joaquin Valley Ozone*, SJVUAPCD, Fresno, California, December 19, 2002 revision.