

## EXECUTIVE SUMMARY

This *Extreme Ozone Attainment Demonstration Plan* (OADP) sets forth the emission reductions and timeline for attaining the federal 1-hour ozone ambient air quality standards in the San Joaquin Valley Air Basin (SJVAB) by November 15, 2010. The San Joaquin Valley Unified Air Pollution Control District (District), in conjunction with the California Air Resources Board (ARB), the U.S. Environmental Protection Agency (EPA), and the eight regional Transportation Planning Agencies (TPAs) in the Valley, developed this plan to provide healthy air for all of the Valley's people and to meet federal and state requirements for ozone planning documents.

For the purposes of this *Extreme OADP*, ozone is a colorless, odorless reactive gas found near the earth's surface. Ozone is formed during summer months when pollutants emitted from society's activities and natural sources react in the presence of light winds, sunlight and warm temperatures. Principal pollutants involved in these reactions are nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs); NO<sub>x</sub> and VOCs are termed ozone precursors.

Ozone is the prime ingredient of smog, and adversely affects human health and environmental resources. When inhaled, even at very low levels, ozone can cause acute respiratory problems, aggravate asthma, significantly decrease lung capacity in healthy adults, inflame lung tissue, and impair the defenses of the body's immune system. Ozone also interferes with the ability of plants to make and store food; compromises growth, reproduction and overall plant health; and makes plants more susceptible to diseases, pest and other environmental stressors. In addition, ozone can also damage materials such as rubber, paper, and plastics, thereby generating additional costs to society.

Because ozone is an air pollutant that can adversely affect human health, damage vegetation, and degrade materials, EPA has established ambient air quality standards under the authority of the Federal Clean Air Act that identify safe levels for ozone in the atmosphere to prevent and minimize these impacts. Ozone levels measured in the atmosphere at levels lower than the standards are viewed as safe, whereas levels above the standards represent a reasonable danger to public health and welfare (non-health related damages), and thus require action to reduce emissions of ozone precursors. EPA has issued two different standards for ozone: a 1-hour average of 0.12 parts per million and an 8-hour average of 0.08 ppm; each of these is subdivided into primary standards that protect public health and secondary standards that protect public welfare (for each of the 1-hour and 8-hour ozone standards, the numeric value of the standard is the same for primary and secondary standards). This Plan addresses only the 1-hour standards.

In 1997, EPA determined that the 1-hour standards were not needed to protect public health given the promulgation of the 8-hour standards. On April 15, 2004 EPA issued a final rule revoking the 1-hour standards, effective June 15, 2005.

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Areas in the United States where ozone levels measured in the ambient air exceed the 1-hour standards of 0.12 ppm are said to be in nonattainment of the standards. An area complies with the federal 1-hour ozone standards when measured 1-hour average ozone levels at any given monitoring station do not exceed 0.12 ppm more than one day per year over any consecutive three-year period (40 CFR 50.9). Thus an area that has a monitoring station with measured 1-hour average ozone levels greater than 0.12 ppm on four or more days over a three-year period has not attained the standards, even if all of the days occurred in only one of the three years.

The severity or magnitude of a given area's ozone nonattainment problem is given by the 1-hour ozone design value, which is based on the fourth highest measured 1-hour ozone level in excess of 0.12 ppm in a three-year period at a given monitoring station. In accordance with the federal Clean Air Act, EPA uses the design value at the time of standard promulgation to assign nonattainment areas to one of several classes that reflect the severity of the nonattainment problem; classifications range from marginal nonattainment to extreme nonattainment. The Federal Clean Air Act contains provisions for changing the classifications using factors such as clean air progress rates and requests from States to move areas to a higher classification. On April 16, 2004 EPA issued a final rule classifying the SJVAB as extreme nonattainment, effective May 17, 2004 (69 FR 20550). Under this rulemaking, the SJVAB's attainment date is November 15, 2010.

This *Extreme OADP* is a roadmap that identifies emission reductions needed to attain the federal 1-hour ozone standards by November 15, 2010. According to the final rule reclassifying the SJVAB as extreme nonattainment for the federal 1-hour ozone standards, the *Extreme OADP* is due to the EPA on November 15, 2004. The principal components of an ozone attainment demonstration plan consist of data describing measured ozone levels in the atmosphere for the area in question, baseline and future emissions inventories, descriptions of emissions controls that will reduce future emissions, and a description of results from a photochemical model relating emissions to ambient ozone levels and demonstrating attainment of the appropriate standards at a future date. This *Extreme OADP* meets federal requirements for extreme 1-hour ozone plans.

Ozone levels measured in the SJVAB's atmosphere in 2003 exceeded the federal 1-hour ozone standards on 37 days, which was a slight increase above 2002 levels. In addition, for the period 2001—2003, eight monitoring sites experienced more than three exceedances of the federal 1-hour ozone standards, with one site (Arvin) experiencing more than 50 exceedances and another site (Parlier) experiencing more than 40 exceedances. The overall 1-hour ozone design value for the SJVAB in 2003 was 0.15 ppm. These data reflect the pervasiveness of the SJVAB's 1-hour ozone nonattainment problem.

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The *Extreme OADP* presents an emissions inventory developed under the Central California Ozone Study that describes the baseline (2000) and future (2008 and 2010) emissions rates for VOC and NO<sub>x</sub>, the pollutants that combine in the atmosphere to form ozone. The Plan includes transportation conformity emissions budgets for the years 2008 and 2010, which affect the planning activities of the Valley TPAs. Information provided by the TPAs, the mobile source emissions model EMFAC2002 (Version 2.2), and emission reductions calculated by ARB and the District form the basis of the conformity budgets.

The *Extreme OADP* presents emissions reductions sufficient to demonstrate attainment of the federal 1-hour standards by November 15, 2010 and to meet federal rate of progress emission reduction milestones for the years 2008 and 2010. The District and ARB will implement the control measures achieving these reductions. Many of the District measures used in the *Extreme OADP* were presented in the 2003 *PM10 Plan* that EPA approved effective June 25, 2004. In addition, the District developed other emission control measures to meet federal and state requirements outside of this *Extreme OADP*, and identified them in the January 2004 *Extreme OADP Status Report*. Many of the ARB emission control measures also stem from the 2003 *PM10 Plan*. Additional ARB measures for this *Extreme OADP* were first described in the January 2004 *Extreme OADP Status Report*, and before that in the *State and Federal Strategy for the California State Implementation Plan (SIP)*, adopted by ARB on October 23, 2003.

The District and ARB evaluated the potential for these reductions to reduce 1-hour ozone levels in the SJVAB by using a gridded photochemical model in accordance with EPA-approved procedures. This model uses a series of computer programs to relate VOC and NO<sub>x</sub> emissions to ozone levels. All of the reductions described in the previous paragraph, combined with minor reductions from incentive programs and other state mobile source emission control programs, were almost sufficient to demonstrate attainment of the federal 1-hour ozone standards in the SJVAB by November 15, 2010. To provide the needed additional reductions, the District, in accordance with federal Clean Air Act provisions for extreme nonattainment areas, identified additional emission reductions to be provided by long-term measures that will be identified no later than spring of 2007, unless EPA revokes the federal 1-hour ozone standards as planned on June 15, 2005. The total reductions identified as being needed to demonstrate attainment in the SJVAB represent about 15% of 2010 VOC emissions and about 14% of 2010 NO<sub>x</sub> emissions, beyond those reductions planned or committed to as of 2002. These percent reductions translate to about 55 tons/day of VOC emissions and about 57 tons/day of NO<sub>x</sub> emissions that must be reduced using future emission reduction control measures (including 5 tons per day each of VOC and NO<sub>x</sub> emissions reductions to be achieved by the long-term measures). The resulting 2010 emissions inventory that demonstrates attainment of the federal 1-hour ozone standards in the SJVAB is about 312 tons per day of VOC and about 345 tons per day of NO<sub>x</sub>.

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An additional important function of this *Extreme OADP* is to determine if planned emissions reductions meet federal requirements for rate of progress in reducing emissions of ozone precursors for the specified years of 2008 and 2010. The emission reductions identified in this *Extreme OADP* as needed to demonstrate attainment of the federal 1-hour ozone standards, exclusive of the long-term measures, were more than sufficient to meet federal rate of progress emission reduction milestones for 2008 (a 51% reduction compared to 1990 emissions) and 2010 (a 57% reduction compared to 1990 emissions). Most of these reductions were achieved using VOC emissions controls, though some NOx controls were needed to meet the milestones. In addition, the District used the emissions inventory in the *Extreme OADP* to show that the most recent prior rate of progress evaluations for the SJVAB (2002 and 2005) are still valid.

In addition, this plan fulfills requirements of the California Clean Air Act regarding the development of a triennial progress report and California Air Quality Attainment Plan revision that examines air pollutant exposure data, control measure implementation, and other air quality information with emphasis on meeting California ambient air quality standards. The California Clean Air documents in this *Extreme OADP* focus on the historical time period of 2000-2002, and project, where recommended by ARB guidance, into the next three-year planning period (2003-2005). The California Clean Air Act components of this plan meet state requirements for triennial progress reports and plan revisions.

For state requirements, the *Extreme OADP* presents trends in ozone air quality indicators developed by ARB for reporting progress towards attaining the California 1-hour ozone standard and discusses the implementation of all feasible emission control measures. The information presented in this part of the plan shows that the SJVAB trends for most of the ARB-mandated ozone air quality indicators showed either a downward trend (improvement) or little movement up or down for the period of interest (2000—2002), although the overall long-term trend for most of the indicators in the SJVAB is one of improving air quality. The District continues to be actively involved in determining and implementing all feasible control measures, and works closely with downwind adjacent districts to evaluate control measures implemented and planned.