

EXECUTIVE SUMMARY

This *Extreme Ozone Attainment Demonstration Plan* (OADP) sets forth the emission reductions and timeline for attaining the National Ambient Air Quality Standards (NAAQS) for ozone (1-hr standard) in the San Joaquin Valley Air Basin (SJVAB) by 2010. It also provides the technical information and analyses supporting the emissions reductions proposed in the control measures. 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 requirements in the Federal Clean Air Act.

Ozone is a colorless, odorless reactive gas comprised of three oxygen atoms. It is found naturally in the earth's stratosphere, where it absorbs the ultraviolet component of incoming solar radiation that could be harmful to life on earth. Ozone is also found near the earth's surface, where pollutants emitted from society's activities and natural sources react in the presence of sunlight to form ozone. Principal pollutants involved in these reactions are nitrogen oxides (NO_x) and volatile organic compounds (VOCs); NO_x and VOCs are termed ozone precursors. Hot sunny weather with stagnant wind conditions favors ozone formation, so the period from May through September is when high ozone levels tend to occur in the SJVAB. This Plan addresses only ozone formed near the earth's surface.

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. Children are most at risk from exposure to ozone, primarily due to their time spent outdoors and their developing respiratory systems. Asthmatics are also highly susceptible to ozone levels. Even healthy adults can experience reduction in lung function and damage to lung tissue from exposure to ozone. Ozone 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 kill or damage leaves on trees, and can adversely impact ecological functions of trees such as water movement, mineral nutrient cycling, and the provision of habitat. Ozone can also damage materials such as rubber, paper and plastics, thereby generating additional cost to society.

Because ozone is an air pollutant that can adversely affect human health, damage vegetation, and degrade materials, EPA has established standards (termed National Ambient Air Quality Standards or NAAQS), 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

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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-hr and 8-hr 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 standard was not necessary to protect public health given the promulgation of the 8-hour standard. On April 15, 2004 EPA issued a final rule revoking the 1-hour standard, effective June 15, 2005.

Areas in the United States where ozone levels measured in the ambient air exceed the 1-hour standard of 0.12 ppm are said to be in nonattainment of this standard. The 1-hour ozone NAAQS is based on the number of days per year with a 1-hour average concentration of 0.12 ppm or greater. An area is in compliance with the ozone NAAQS 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 standard, 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 ozone design value, which is based on the fourth highest measured level in excess of 0.12 ppm in a three-year period at a given monitoring station. The overall design value for the SJVAB is given by the highest design value of all of the individual monitoring stations in the SJVAB. The SJVAB, which is comprised of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern (Valley portion only) counties, has a 2003 design value of 0.15 ppm. 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 standard by this date. According to the final rule reclassifying the SJVAB as extreme nonattainment for the federal 1-hour ozone standard, the *Extreme OADP* is due to the EPA on November 15, 2004.

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The principal components of an ozone attainment demonstration plan consist of a baseline emissions inventory, data describing measured ozone levels in the atmosphere for the area in question, descriptions of emissions controls that will reduce future emissions, a future emissions inventory that reflects decreases due to implementation of emissions controls as well as increases due to increased population, and a description of results from a photochemical model relating emissions to ambient ozone levels and demonstrating attainment of the appropriate standard at a future date.

In addition, this plan fulfills requirements of the California Clean Air Act regarding the development of a triennial update 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 time period covered by the triennial update and plan revision is 2000-2002.

The information presented in this *Extreme OADP* projects attainment of the one-hour national ambient air quality standard for ozone by the year 2010 using a combination of District, state and federal emissions controls. In accordance with requirements in the Federal Clean Air Act, the District will monitor, evaluate, and report progress to the public on achieving this important clean air milestone. The District commits to revising the *Extreme OADP* in 2007 (unless the Federal 1-hour ozone standard is revoked as planned). If the Federal 1-hour ozone standard is revoked effective June 15, 2005, the District will then focus its resources on developing an 8-hour ozone attainment demonstration plan, which will be due to EPA in June 2007.

Photochemical modeling using EPA-approved techniques was used to predict 1-hour ozone concentrations throughout the SJVAB based on emissions of ozone precursors. Because this type of modeling relates emissions of ozone precursors to ozone levels it is a critical tool in estimating the level of emissions needed to attain the ozone standards. Modeling performed to support this *Extreme OADP* suggests that reductions in VOC emissions of about 15% and reductions in NO_x emissions of about 14% of 2010 levels, beyond those planned or committed to as of 2002, are needed to attain the standards. This percent reduction translates to about 55 tons/day of VOC and about 57 tons/day of NO_x that must be reduced using future emission reduction control measures from the District and from ARB and EPA. These measures are District, state, and federal measures contained in the 2003 *PM10 Plan* that EPA approved in 2004, and in new state and District measures developed for this *Extreme OADP*, including 5 tons/day each of VOC and NO_x emissions reductions to be achieved by control measures not yet identified. In accordance with the federal Clean Air Act, the District will identify the source of these emissions reductions by spring of 2007. Lastly, emissions calculations in this plan show that the SJVAB meets rate of progress requirements for 2008 and 2010 for the federal 1-hour ozone standards.

