

Chapter 1

Introduction

2013 Plan for the Revoked 1-Hour Ozone Standard
SJVUAPCD

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CHAPTER 1: INTRODUCTION

The U.S. Environmental Protection Agency (EPA) periodically reviews and establishes health-based air quality standards (also referred to as National Ambient Air Quality Standards, or NAAQS) for ozone, particulates, and other pollutants. Although the San Joaquin Valley's (Valley) air quality is steadily improving, the Valley experiences unique and significant difficulties in achieving these increasingly stringent standards. Over the past couple of decades, the San Joaquin Valley Air Pollution Control District (District) has implemented several generations of emissions control measures for stationary and area sources under its jurisdiction. Similarly, the California Air Resources Board (ARB) has adopted regulations for mobile sources. Together, these efforts represent the nation's toughest air pollution emissions controls and have greatly contributed to reduced ozone and particulate matter concentrations in the Valley. Despite the significant progress under these regulations, greatly aided by the efforts of Valley businesses and residents, many air quality challenges remain.

The District is compiling this *2013 Plan for the Revoked 1-Hour Ozone Standard* to satisfy federal requirements under EPA's revoked 1-hour ozone standard. While this plan does not establish new emissions reductions strategies, it builds upon the District's 8-hour ozone and particulate matter (PM) strategies. Under these combined efforts, the Valley's 1-hour ozone concentrations have been and will continue to improve.

As of the posting of this plan, the Valley could attain the 1-hour ozone standard as early as 2013 with adopted and implemented measures. On the other hand, it takes as little as four hours over a three-year period (where those four hours occur on four separate days at a single air monitoring site) to keep an area out of attainment, and a single episode of ozone build up could prolong nonattainment past 2013. Therefore, 2017 is the official attainment year for this plan, per the modeling and other analyses conducted as part of this planning effort.

1.1 THE VALLEY'S UNIQUE CHALLENGES

The Valley's geography and meteorology exacerbate the formation and retention of high levels of air pollution. Surrounding mountains and consistently stagnant weather patterns prevent the dispersal of pollutants that accumulate within the Valley. The Valley has significant naturally occurring biogenic emissions. The California landscape also allows for air pollutant transport within the Valley, as well as between the Valley and other air basins. The Valley's low precipitation levels, high temperatures, and light winds are conducive to elevated ozone levels. These natural factors will continue to impact the Valley's progress toward attainment of air quality standards.

The Valley is also one of the fastest growing regions in the state (see Appendix B for more information). The Population Research Unit of the California Department of Finance (DOF) released interim revised population growth projections in May 2012.¹

¹ California Department of Finance [DOF]: Interim Population Projections for California and its Counties 2010–2050. (May 2012). Retrieved from <http://www.dof.ca.gov/research/demographic/reports/projections/interim/view.php>

Based on the revised 2010 to 2020 DOF data, the Valley's population is expected to increase by 18% (Table 1-1). In contrast, the total population for the State of California is projected to increase by only 9% over the same time period. Increasing population generally means increases in air pollutant emissions as a result of increased consumer product use and more automobile and truck travel. Between 2010 and 2020, the Valley's total vehicle miles traveled (VMT) will increase about 21%,² consistent with the Valley's population growth. In addition to increased VMT resulting from increased Valley population, the Valley will also see increased vehicular traffic along the State's major goods and people movement arteries, both of which run the length of the Valley.

Table 1-1 Estimated Valley Population by County, 2010–2020³

County	Estimated 2010	Projected 2020
Fresno	932,926	1,083,889
Kern*	841,609	1,041,469
Kings	152,996	179,722
Madera	151,136	183,176
Merced	256,345	301,449
San Joaquin	686,651	795,631
Stanislaus	515,229	582,746
Tulare	443,567	536,429
Total	3,980,459	4,704,511

*Kern County is separated into two air districts: San Joaquin Valley and Eastern Kern. This data is for the Valley portion of Kern County only.

Although reducing mobile source emissions is critical to the Valley's attainment of air quality standards, the District does not have direct regulatory authority to reduce motor vehicle tailpipe emissions. These emissions are regulated by the EPA and ARB. As described in Chapter 3 of this plan and in Appendix D, the District must collaborate with its interagency partners and use innovative and non-regulatory approaches to reduce mobile source emissions, or a combination of regulatory and non-regulatory approaches such as new District Rule 9610 (State Implementation Plan Credit for Emission Reductions Generated through Incentive Programs).

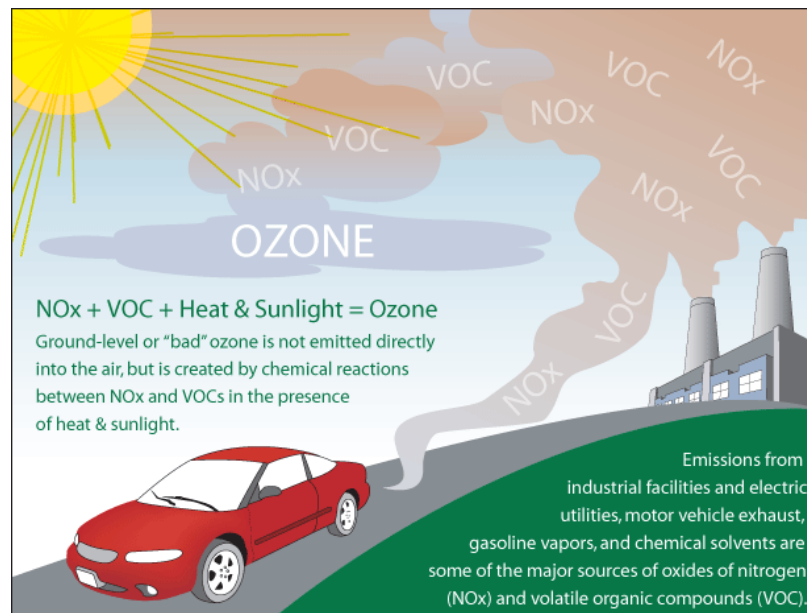
1.2 OZONE AND ASSOCIATED HEALTH IMPACTS

Ozone is a gas of three oxygen atoms (O₃). Ground-level ozone is the main component of smog. It is not directly emitted into the atmosphere, but produced by a photochemical reaction between oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight (see Figure 1-1). The Valley generally experiences its highest ozone concentrations on hot, sunny summer days.

² California Air Resources Board: 2009 Almanac – Population and Vehicle Trends Tool. Retrieved July 2012 from http://www.arb.ca.gov/app/emsinv/trends/ems_trends.php

³ Ibid. footnote 1.

Figure 1-1 Ozone Formation



Source: AirNow, <http://airnow.gov/index.cfm?action=jump.jump_ozone>

Breathing ozone can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. Breathing ozone can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. Other negative symptoms triggered by ozone include wheezing, coughing, and breathing difficulties or pain during exercise or outdoor activities. Children are at a greater risk of experiencing negative health impacts because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, thus increasing their exposure. Studies have linked rising hospital admissions and emergency room visits to higher ozone levels.

The District has several strategies for reducing public health impacts associated with ozone, including the following:

- **2007 Ozone Plan and Related District Regulations.** The District's *2007 Ozone Plan* outlines a comprehensive strategy for reducing ozone precursors to attain EPA's 1997 health-based standard for 8-hour ozone. See Chapter 3 for information on regulations implemented under this plan that have been reducing emissions and improving air quality.
- **Real-Time Air Advisory Network (RAAN).** The District launched RAAN in 2010 to provide the most accurate and timely information about local air quality. RAAN combines real-time, local air quality information with specific health recommendations to help schools, parents, and others make informed decisions about when outdoor activities should be limited and for whom.

- **Air Quality Index (AQI) and Daily Air Quality Forecasting.** An AQI is a color-coded designation for the day that projects the forecasted air quality and recommends corresponding activity modifications based on pollution levels.
- **Health-Risk Reduction Strategy (HRRS).** The District Governing Board adopted the HRRS to maximize public health improvements resulting from the District's attainment strategies and related initiatives. The HRRS works in parallel with the District's other strategies to minimize cumulative population exposure to air pollution and the corresponding regional health risk.
- **Air Alerts.** An Air Alert notifies the Valley of ongoing conditions that may lead to a federal ozone standard exceedance. When the District calls an Air Alert, Valley residents and businesses are advised to reduce vehicle use to proactively reduce emissions and protect public health. See Chapter 3 of this plan for more information.

1.3 NATIONAL AMBIENT AIR QUALITY STANDARDS

1.3.1 EPA's Standard-Setting Process

Clean Air Act (CAA) Sections (§) 108 and 109 require EPA to set health-based standards for six criteria pollutants. EPA periodically reviews existing standards to consider the most recent health studies. These reviews are to be conducted every five years, though in the past, some standard revisions did not meet the 5-year deadline.

The review process starts as the Clean Air Scientific Advisory Committee (CASAC) analyzes available science and then, if supported by research, suggests to EPA a range of revised standards that would protect public health from the adverse effects of air pollution. The EPA Administrator appoints CASAC members, who are non-EPA experts in the fields of science, engineering, or the social sciences. The committee is to provide objective, independent advice to EPA on the technical basis for the standard. Thousands of peer-reviewed scientific studies are considered as EPA formulates its proposed standard, which is made available for scientific peer review and public comment. EPA then sets the standard.

In evaluating and setting new standards, federal law prohibits EPA from taking into account economic feasibility. However, economic feasibility issues *can* be considered as EPA promulgates the implementation rules that establish the deadlines for meeting the standards and in devising individual control measures aimed at attaining the standards.

Once a standard is set, EPA designates an area as *attainment* or *nonattainment* based on the most recent three years of air quality data available. For ozone, EPA classifies nonattainment areas as *marginal*, *moderate*, *serious*, *severe*, or *extreme*. The classification sets the attainment deadline and other planning requirements. The classification is to be based on certain air quality parameters, though areas can request reclassification with adequate documentation.

EPA also adopts implementation rules to guide states and local air districts as they prepare state implementation plans (SIPs) to bring areas into attainment with the standard. While EPA cannot consider costs or difficulty in setting the standards, costs and difficulty are inescapable for local air districts as they determine the best way to bring areas into attainment. That being said, local air districts must meet planning and attainment requirements to avoid federal sanctions and to improve public health.

There are a number of serious penalties and risks associated with any failure to submit approvable attainment strategies for meeting federal standards. Upon development of an attainment strategy, an area submits the plan to EPA for approval. If EPA finds that an area fails to submit an approvable plan on time or fails to implement plan commitments after the plan has been approved, then the following sanctions may be applied:

- Two-to-one offset requirement for major sources, leading to a de facto ban on new and expanding business
- Loss of federal highway funds, which would cost the Valley an estimated \$250 million per year
- A federal implementation plan (FIP), which would result in a loss of local control

Once EPA approves a SIP, that plan becomes federally enforceable. The plan can then be enforced by the public or EPA through lawsuits. In addition, failure to reach attainment by the deadline would result in the assessment of CAA §185 penalty fees.

1.3.2 Federal Ozone Standards and Implementation

Table 1-2 summarizes EPA's ozone standards and the timing of attainment plans under those standards consistent with CAA requirements. EPA established the first ozone standard in 1979, setting this standard at 0.12 parts per million (ppm) over a 1-hour exposure, or 124 parts per billion (ppb) when accounting for the adopted rounding conventions. An area meets the 1-hour ozone standard when, for each monitoring station, the 1-hour ozone levels do not exceed 124 ppb more than one day per year over any three-year period.⁴ The CAA Amendments of 1990 established attainment planning requirements and attainment deadlines for the 1979 1-hour ozone standard, and the District subsequently adopted various 1-hour ozone plans and plan amendments. EPA revoked the 1-hour standard effective June 15, 2005,⁵ maintaining that the 84 ppb 8-hour ozone standard adopted in 1997 was more health protective. In response, the District and other agencies nationwide shifted their ozone efforts to 8-hour ozone.

⁴ National 1-Hour Primary and Secondary Ambient Air Quality Standards for Ozone, 40 C.F.R. §50.9 (2012)

⁵ Air Quality Designations and Classifications for the 8-Hour Ozone National Ambient Air Quality Standards; Early Action Compact Areas with Deferred Effective Dates, 69 Fed. Reg. 84, pp. 23858–23951. (2004, April 30). (to be codified at 40 C.F.R. Part 81)

Table 1-2 Federal Air Quality Standards and Valley Status for Ozone

Federal Standard	Ozone Standards and Timelines			
	1979 1-hour 124 ppb (1-hour average)	1997 8-hour 84 ppb (8-hour average)	2008 8-hour 75 ppb (8-hour average)	2014 8-hour TBD
1979–2003	EPA sets standard (1979)	EPA sets standard (1997)		
2004	SJV attainment plan	EPA finalizes attainment designations and classifications		
2005	EPA revokes standard	EPA implementation rule		
2006				
2007	<i>Litigation reinstates portions of implementation requirements under the revoked standard</i>	Attainment plan due (SJV's 2007 Ozone Plan)		
2008			EPA sets standard	
2009				
2010	EPA approved SJV 2004 plan	Midcourse review	EPA proposes to revise standard: down to 60 or 70 ppb	
2011	Ninth Circuit remands plan approval to EPA; EPA finds SJV failed to attain		EPA announces that it won't revise the standard	
2012	EPA finalizes withdrawal of approval of 2004 1-hour ozone plan. SJV plan withdrawn	EPA approves SJV's 2007 Ozone Plan	EPA attainment designation (SJV: extreme nonattainment)	
⇒ 2013	SJV to submit new 1-hour ozone plan (final attainment year to be determined)		EPA proposes implementation rule	EPA to propose standard
2014		District/ARB to revisit 2007 plan		EPA to finalize standard
2015			SJV to submit 8-hour ozone plan (2015 or 2016, based on proposed implementation rule)	
2016				
2017				
2018				<i>Designations & attainment plan timing to be determined</i>
2019		Identify specific "Long-Term Control Measures"		
2020		Contingency measures needed if advanced technologies don't achieve planned emissions reductions		
2021–2040		Final attainment deadline: 2024 (2021–2023 data)	Final attainment deadline: 2032	

The District's *2007 Ozone Plan* demonstrates attainment of the 1997 8-hour ozone standard no later than the 2024 attainment deadline. In 2008, EPA revised its 8-hour ozone standard, lowering the standard to 75 ppb. EPA considered lowering the standard once again in 2010, but ultimately retained the 75 ppb standard. EPA designated the Valley as nonattainment of the 2008 8-hour ozone standard in 2012, and the attainment plan for the 2008 standard is due in 2015 or 2016 based on the EPA implementation rule. However, EPA has not revoked the 1997 standard, so planning commitments related to that standard also remain in place. EPA is expected to review and consider further revision to the 8-hour ozone standard in the 2013–2014 timeframe.

Despite the complexity of overlapping standards and plans, efforts to reduce ozone precursors under one standard and plan also will help to reduce ozone precursors necessary to meet other ozone standards, including more stringent ozone standards on the horizon. The control measures adopted by the District and ARB under the *2007 Ozone Plan* and other attainment plans are achieving significant reductions of ozone precursors. These measures and strategies will continue to achieve intended emissions reductions as they are implemented. These reductions help decrease both 1-hour ozone and 8-hour ozone concentrations, contributing to attainment of the revoked 1-hour ozone standard and the multiple 8-hour ozone standards. Building on the District's *2007 Ozone Plan*, *2008 PM_{2.5} Plan*, and the *2012 PM_{2.5} Plan*, the District continues to coordinate emission reduction strategies whenever possible to address multiple standards, to maximize efficiency for staff and stakeholders, and to maximize health benefits.

1.3.3 1-Hour Ozone Requirements

The most recent full-attainment planning effort for 1-hour ozone was the *2004 Extreme Ozone Attainment Demonstration Plan (2004 Plan)*, which used the best available information at the time and projected that the Valley would attain the 1-hour ozone standard in 2010. However, as discussed above, the District and other agencies nationwide shifted their ozone efforts to 8-hour ozone when EPA revoked the 1-hour ozone standard in 2005.

In its 2005 revocation of the 1-hour standard, EPA clarified which requirements were revoked and which remained in place. EPA adopted anti-backsliding provisions to preserve existing 1-hour ozone control measure and emissions reductions obligations; therefore, areas were still obligated to meet Rate of Progress (ROP) emissions reductions targets, adopt mandatory control measures, and meet any unmet attainment demonstration obligations (i.e., submit a 1-hour attainment demonstration or satisfy one of EPA's alternative compliance options). However, EPA revoked attainment designations and classifications, and stated that they would no longer make failure-to-attain findings, and would not require areas to demonstrate conformity for the revoked 1-hour standard. Furthermore, EPA found that contingency measures for failure to

make the appropriate Rate of Progress (ROP) milestones or to attain by the applicable attainment date were no longer required for 1-hour ozone.⁶

Agencies moved forward based on these findings, but subsequent litigation and regulatory actions have reinstated many of the revoked 1-hour ozone requirements. For example, EPA issued a failure-to-attain finding for the Valley (and other areas) in 2011, noting in that finding that contingency measures and 185 fees (as discussed below) were required when an area fails to attain. When EPA withdrew its 2010 approval of the District's *2004 Plan* in 2012, it specified that the plan elements summarized in Table 1-3 must be included in a new 1-hour ozone plan. The District's *2013 Plan for Revoked 1-Hour Ozone Standard* meets all applicable federal requirements.

Table 1-3 2013 Plan for the Revoked 1-Hour Ozone Standard Federal Requirements

Requirement	Federal CAA	Location in plan
Rate of Progress (ROP) demonstration	§172(c)(2) and 182(c)(2)	Chapter 4
Contingency measures: <ul style="list-style-type: none"> • For ROP • For attainment year 	§172(c)(9) and 182(c)(9)	Chapter 4
Attainment demonstration	§182(c)(2)(A) and 172(a)(2)	Chapters 2 and 4
Reasonably Available Control Measures (RACM) demonstration	§172(c)(1)	Chapters 3 and 4; Appendix C
Clean fuels/clean technologies for boilers	§182(e)(3)	Chapter 4
Vehicle miles traveled (VMT) offset demonstration	§182(d)(1)(A) ⁷	Appendix D

Nonattainment of the revoked federal 1-hour ozone standard past the 2010 attainment deadline also requires the District, per CAA §185, to impose and collect nonattainment penalty fees, all of which were to be deposited in the federal treasury with no likely expenditures in the Valley. However, using 2010 EPA guidance and 2008 California Assembly Bill 2522 (Arambula), codified as Health and Safety Code §40610, the District was allowed to implement a more equitable approach for collecting §185 fees through Department of Motor Vehicle (DMV) fees. These fees ultimately fund incentive programs to reduce emissions in the Valley. Together, DMV fees and District Rule 3170 (Federally Mandated Ozone Nonattainment Fee, amended May 19, 2011) meet the nonattainment fee requirements of CAA §185.

⁶ Implementation of the 8-Hour Ozone National Ambient Air Quality Standard – Phase 1: Reconsideration. 70 Fed. Reg. 101, pp 30592–30604 at p. 30592. (2005, May 26). Retrieved from <http://www.epa.gov/fedrgstr/EPA-AIR/2005/May/Day-26/a10580.pdf>

⁷ See also EPA Guidance: Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled. (2012, August). Retrieved from <http://www.epa.gov/otaq/stateresources/policy/general/420b12053.pdf>.

1.3.4 State Standards

California also sets ambient air quality standards for several pollutants, including ozone. The California ambient air quality standards are considerably more stringent than the federal standards and are more protective of human health. California's 1-hour ozone standard is 0.09 ppm, and its 8-hour ozone standard is 0.070 ppm.

Despite the more stringent California standards, California Health and Safety Code §39602 states, "Notwithstanding any other provision of this division, the state implementation plan shall only include those provisions necessary to meet the requirements of the [federal] Clean Air Act." While the federal standards provide the framework for SIPs, including this ozone plan, progress toward federal standards also brings areas closer to attainment of the lower, California standards.

1.4 PUBLIC PROCESS OF PLAN DEVELOPMENT

The District and ARB worked collaboratively on the required 1-hour ozone plan components. The District expected to present this plan to the Governing Board at a public hearing in June 2013, but postponed plan adoption to allow for additional modeling. The District ultimately used the following timeline for the public process (Table 1-4).

Table 1-4 2013 Plan for Revoked 1-Hour Ozone Standard Timeline

April 2013	Public workshop and commenting period
May – July 2013	Additional modeling and analysis
August 2013	Proposed draft of the plan
September 2013	District Governing Board public hearing to adopt the plan
November 2013	ARB hearing to adopt the SJV plan

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