

Proposed 2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

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TABLE OF CONTENTS

A.	Introduction	2
A.1	Background	2
B.	Attainment of the Standard	5
B.1	Continued Attainment of the 1-hour Ozone Standard (2020-2022)	5
C.	State Implementation Plan (SIP) Approval.....	13
D.	Permanent and Enforceable Improvement in Air Quality	13
D.1	Enforceable Regulations Have Achieved Permanent Emission Reductions	13
D.2	Attainment is Not Due to Unusually Favorable Meteorology	25
D.3	Attainment is Not Due to Temporary Emissions Reductions	34
D.4	Conclusion	36
E.	Section 110 and Part D Requirements.....	36
F.	Maintenance Plan	36
F.1	Attainment Inventory	37
F.2	Maintenance Demonstration	40
F.3	Monitoring Network	41
F.4	Verification of Continued Attainment	45
F.5	Contingency Plan	45
G.	Summary Checklist.....	47
Appendix A Emissions Inventory		A-1
Appendix B Analysis of Meteorology Affecting Ozone Levels		B-1

A. INTRODUCTION

Since 2014, the San Joaquin Valley Air Control District (District) has been in attainment for the revoked 1-hour ozone National Ambient Air Quality Standard (NAAQS) of 124 parts per billion (ppb). The District is the first and only region in the nation designated as an extreme nonattainment for an ozone standard to attain that standard, specifically for the 1-hour ozone NAAQS.

Since then, and through the efforts to continue to reduce emissions from stationary, area, and mobile sources, the San Joaquin Valley (Valley) has continued to experience dramatic progress in reducing ozone concentrations, keeping the region in attainment of the 1-hour ozone NAAQS, as well as progressing towards attaining the 8-hour ozone NAAQS.

In order to be formally redesignated to attainment of a NAAQS, the District must meet all five criteria of Section 107(d)(3)(E) of the Clean Air Act (CAA). This document, the *2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard*, includes such requirements as well as all provisions for a maintenance plan. This Maintenance Plan also includes a demonstration that would ensure the area remains in attainment of the 1-hour ozone NAAQS through 2036. Therefore, the Valley is requesting to be redesignated to attainment for the 1-hour ozone NAAQS and requesting termination of all anti-backsliding obligations.

A.1 BACKGROUND

EPA set the 1-hour ozone NAAQS at 124 ppb on February 8, 1979¹, and later revoked the standard in 2005, to be replaced by a more health-protective 8-hour ozone NAAQS in 1997 of 84 ppb. This standard was lowered again in 2008 to 75 ppb, and then once more in 2015 to 70 ppb.² When EPA revoked the 1-hour standard, it identified the revoked requirements applicable to implementation of the 1-hour standard, and those that remained in effect. EPA adopted anti-backsliding provisions to preserve existing 1-hour ozone control measures and emission reductions obligations; therefore, nonattainment areas were still obligated to meet Rate of Progress (ROP) emission reduction targets, adopt mandatory control measures, and meet any extant attainment demonstration obligations.

In October 2004, the District adopted its *Extreme Ozone Attainment Demonstration Plan (2004 Ozone Plan)* to address EPA's 1-hour ozone standard. Because EPA had revoked the 1-hour ozone standard in 2005, it did not act on this plan until 2010, when EPA approved the plan and set an attainment deadline of November 15, 2010.³ As a result of EPA's delayed action on the *2004 Ozone Plan*, the District became subject to

¹ 44 FR 8202

² Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 Fed. Reg. 25776-25848. (2018, June 4). (to be codified 40 CFR Part 81) <https://www.govinfo.gov/content/pkg/FR-2018-06-04/pdf/2018-11838.pdf>

³ Approval and Promulgation of Implementation Plans: 1-Hour Ozone Extreme Area Plan for San Joaquin Valley, CA, 75 Fed. Reg. 44, pp. 10420-10438. (2010, March 8). (to be codified at 40 CFR Part 52) <https://www.gpo.gov/fdsys/pkg/FR-2010-03-08/pdf/2010-4752.pdf>

Section 185 fees of the CAA.⁴ Additionally, delayed EPA action on the *2004 Ozone Plan* and subsequent litigation resulted in court rulings requiring the District to develop and implement a second 1-hour ozone attainment plan. On September 19, 2013, the District submitted the *2013 Plan for the Revoked 1-Hour Ozone Standard (2013 Ozone Plan)*, which was approved by EPA on April 6, 2016.⁵

In the meantime, in 2013, the Valley recorded zero exceedances of the revoked 1-hour ozone NAAQS, which was a first for the region, and led to ongoing ozone improvements and further planning actions. Accordingly, on May 5, 2014, the District submitted an *Attainment Determination Request* to EPA based on 2011-2013 data.⁶ The District formally requested that EPA determine that the Valley has attained the federal revoked 1-hour ozone standard and included a clean data finding demonstrating that attainment was due to permanent and enforceable emissions reductions.

However, no action was taken by EPA and the District submitted a second *Attainment Determination Request* on July 13, 2015, based on 2012-2014 data.⁷ On July 18, 2016, EPA published a final action in the Federal Register to determine that the Valley had attained the 1-hour ozone standard.⁸ This determination was based on sufficient, quality-assured, and certified data for the period 2012-2014.

Historically, EPA has not formally redesignated areas for revoked NAAQS. This has resulted in the District remaining subject to continued extreme nonattainment area anti-backsliding requirements under the revoked 1-hour ozone NAAQS, such as Section 185 fees. The 2008 ozone NAAQS Implementation Rule addressed how areas that are in non-attainment should submit a redesignation substitute, which is an alternative approach to formal redesignation for lifting anti-backsliding obligations for the revoked standards. A redesignation substitute allows an area to shift to contingency status requirements, such as penalty fee program requirements under Section 185 of the CAA, to current ozone standards.⁹ However, in *South Coast Air Quality Management District v. EPA*, 882 F.3d 1138 (D.C. Cir. 2018), the court vacated certain parts of the 2008 ozone NAAQS SIP requirements rule, including the redesignation substitute, holding

⁴ Approval and Promulgation of Air Quality Implementation Plans; California; Determinations of Failure to Attain the One-Hour Ozone Standard; Final Rule. 76 Fed. Reg. 10, pp. 82133-82146. (2011, December 30). (to be codified 40 CFR Part 52) <https://www.gpo.gov/fdsys/pkg/FR-2011-12-30/pdf/2011-33475.pdf>

⁵ Clean Air Plans; 1-Hour and 1997 8-Hour Ozone Nonattainment Area Requirements; San Joaquin Valley, California; Final Rule. 81 Fed. Reg. 65, pp. 19492-19495. (2016, April 5). <https://www.gpo.gov/fdsys/pkg/FR-2016-04-05/pdf/2016-07668.pdf>

⁶ SJVAPCD. *Request for EPA Finding that the San Joaquin Valley has Attained the Federal 1-hour Ozone Standard*. May 5, 2014. Retrieved from: http://www.valleyair.org/Air_Quality_Plans/docs/2013Attainment/Cover-Letter.pdf

⁷ SJVAPCD. *Request for EPA Finding that the San Joaquin Valley has Attained the Federal 1-hour Ozone Standard*. July 13, 2015. Retrieved from: http://valleyair.org/Air_Quality_Plans/1hr-Ozone-Attainment-Request-2016/Coverletter.pdf

⁸ EPA. *Determination of Attainment of the 1-Hour Ozone National Ambient Air Quality Standard in the San Joaquin Valley Nonattainment Area in California*. July 18, 2016. Retrieved from: <https://www.govinfo.gov/content/pkg/FR-2016-07-18/pdf/2016-16792.pdf>

⁹ EPA's *Implementation of the 2008 National Ambient Air Quality Standards for Ozone: State Implementation Plan Requirements; Final Rule* (2008 ozone standard SIP requirements rule), was published in the *Federal Register* on March 6, 2015 (80 FR 12264).

that the only appropriate method for requesting redesignation is to satisfy the elements of the CAA section 107(d)(3)(E).

Under the CAA per Section 185, the District has been required to impose and collect nonattainment penalty fees since the 2010 attainment deadline for the 1-hour ozone standard. In conformance with 2010 EPA guidance, the District adopted Rule 3170 (Federally Mandated Ozone Nonattainment Fee)¹⁰ to meet Section 185 requirements under the CAA. EPA approval of this Maintenance Plan would meet the findings necessary under the CAA to stop collection of Section 185 fees under Rule 3170.

Over the past decades, the District has implemented generations of emissions control measures for stationary and area sources under its jurisdiction. Similarly, the California Air Resources Board (CARB) has adopted regulations for mobile sources. Together, these efforts represent the nation's toughest air pollution emissions controls. In addition to having the toughest air regulations in the nation, the District also operates the most effective and efficient incentive grants program, investing over \$5 billion in public/private funding towards clean air projects to date that have replaced thousands of vehicles and equipment with the cleanest technologies and achieved over 240,000 tons of emissions reductions. Due to the significant investments made by Valley businesses and residents, the Valley's ozone and PM_{2.5} precursor emissions are at historically low levels, and air quality has improved significantly, providing Valley residents with associated health benefits.

Ozone Air Quality in the Valley

Despite the significant air quality progress in the Valley, many challenges remain as the District develops new attainment plans to meet increasingly stringent federal standards. The Valley's natural environment (including topography, meteorology, drought and wildfires) favors the formation and retention of ozone air pollution in the Valley. The Valley tends to experience the highest ozone concentrations from June to September, due to the increase in solar radiation and heat during this time of the year, both components of ozone formation, as well as the increased frequency of high pressure systems that create poor atmospheric dispersion conditions across the region. Emissions from wildfires, which often occur during the peak of the Valley's ozone season, can further impact public health and exacerbate the region's attainment challenges.

In addition to these challenges, the Valley is home to major transportation corridors for goods movement, resulting in significant emissions and air pollution impacts from freight activity. State and federal law limits the District's ability to regulate emissions from mobile sources, which represents the vast majority of air pollutant emissions in the region.

Despite these challenges, the innovative control measures and strategies adopted by the District and CARB have resulted in substantial emissions reductions and

¹⁰ SJVAPCD. Rule 3170 Federally Mandated Ozone Nonattainment Fee. Retrieved from: <https://www.valleyair.org/rules/currnrules/3-Rule3170-0511.pdf>

corresponding ozone concentration improvements. Over the last 30 years, the District has observed tremendous reductions in ozone concentrations throughout the Valley.

Required Elements for Redesignation

Section 107(d)(3)(E) of the Federal CAA states that a nonattainment area can be redesignated to attainment if the following conditions are met:

1. EPA has determined that the NAAQS has been attained.
2. EPA has fully approved the applicable implementation plan under Section 110(k) of the Federal CAA.
3. EPA has determined that the improvement in air quality is due to permanent and enforceable emission reductions.
4. The state has met all applicable requirements for the area under Section 110 and Part D.
5. EPA has fully approved a maintenance plan, including a contingency plan, for the area under Section 175(A) of the Federal CAA.

B. ATTAINMENT OF THE STANDARD

As previously stated, EPA published a final action in the Federal Register to determine that the Valley had attained the 1-hour ozone NAAQS through the District's clean data determination for the years 2012-2014. The District has continued to remain in attainment of the 1-hour ozone NAAQS in subsequent years, and is providing supplementary data for the years 2020-2022 to demonstrate continued attainment.

B.1 CONTINUED ATTAINMENT OF THE 1-HOUR OZONE STANDARD (2020-2022)

Expected Number of Exceedances

To demonstrate continued attainment of the 1-hour ozone standard, the District calculated the expected exceedances at each site for 2020-2022. EPA has defined calculation procedures for calculating the expected number of exceedances in 40 CFR 50 Appendix H and in the 1979 document "*Guideline for the Interpretation of Ozone Air Quality Standards.*"^{11,12} The average number of exceedances for three consecutive years is based on summing the number of exceedances each year and dividing by three. If a site has an average of 1.0 or fewer expected exceedance days per year (i.e., a site averages three or fewer exceedance days over three years), then that site meets the federal 1-hour ozone standard. This calculation is simple when the air monitoring site has 365 valid measurements for the year, i.e., one measurement for each day. However, EPA recognizes that agencies do not collect 365 samples per year either due to less frequent sampling schedules or due to either routine maintenance, audits, occasional power outages, or other issues affecting data availability. EPA guidance

¹¹ 40 CFR 50 Appendix H. Retrieved from: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-50/appendix-Appendix%20H%20to%20Part%2050>

¹² EPA. Guideline for the Interpretation of Ozone Air Quality Standards. Retrieved from: <https://archive.epa.gov/ttn/ozone/web/html/guide-o3.html>

thus clarifies the attainment test as:

$$\frac{\# \text{ of exceedances}}{\# \text{ of valid sample days}} * (\# \text{ of days in the year}) = \# \text{ of expected exceedances}$$

The result of this calculation must be equal to or less than 1.0 days per year when averaged over three consecutive years. Table 1 shows the average number of expected exceedance days per year, per monitoring site in the Valley. This data shows that all Valley sites continue to meet the 1-hour ozone NAAQS based on 2020-2022 data. The 1-hour ozone NAAQS is 0.12 ppm rounded to the closest one hundredth. Thus, 1-hour ozone concentrations at or greater than 0.125 ppm exceed the standard, and 1-hour ozone concentrations at or lower than 0.124 ppm meet the standard. If any hour in a day exceeds the standard, then that day is counted as one exceedance day. The highest hourly concentration on a given day is recorded as the 1-hour ozone concentration for that day (though all hourly concentrations are kept on record and analyzed as well). The EPA's Air Quality System (AQS) database serves as the official repository of ambient ozone data collected by the District's air monitoring network.¹³ The expected number of exceedances are available on EPA's iADAM tool from 1973 through 2021.¹⁴ The 2022 expected exceedances are not yet available in the iADAM tool and were thus calculated based on the above formula.

¹³ U.S. Environmental Protection Agency: Technology Transfer Network (TTN), Air Quality System (AQS): AQS Web Application. (2013). Retrieved from: <http://www.epa.gov/ttn/airs/airsaqs/aqsweb/>

¹⁴ EPA Air Quality Data Statistics tool iADAM. Retrieved from: <https://www.arb.ca.gov/adam>

Table 1 Average Expected Exceedance Days and Attainment Test

Station ID	Station Name	Measured Exceedances			Expected Exceedances			Average Expected Exceedances	Pass Test?
		2020	2021	2022	2020	2021	2022		
Bakersfield MSA (SJVAPCD portion of Kern County only)									
0007	Edison	2	0	1	2.0	0.0	1.0	1.0	Yes
0008	Maricopa	0	0	0	0.0	0.0	0.0	0.0	Yes
0014	Bakersfield-California	0	0	0	0.0	0.0	0.0	0.0	Yes
0232	Oildale	0	0	0	0.0	0.0	0.0	0.0	Yes
2012	Bakersfield-Muni	--	0	0	--	0.0	0.0	0.0	Yes
5002	Arvin-Di Giorgio	1	0	0	1.8	0.0	0.0	0.6	Yes
6001	Shafter	0	0	0	0.0	0.0	0.0	0.0	Yes
Fresno MSA									
0007	Fresno-Drummond	0	1	0	0.0	1.0	0.0	0.3	Yes
0011	Fresno-Garland	0	0	0	0.0	0.0	0.0	0.0	Yes
0242	Fresno-Sierra Sky Park	0	0	0	0.0	0.0	0.0	0.0	Yes
2009	Tranquility	0	0	0	0.0	0.0	0.0	0.0	Yes
4001	Parlier	0	0	0	0.0	0.0	0.0	0.0	Yes
5001	Clovis	2	0	0	2.1	0.0	0.0	0.7	Yes
Hanford-Corcoran MSA									
1004	Hanford	0	0	0	0.0	0.0	0.0	0.0	Yes
Madera MSA									
0004	Madera-Pump	0	0	0	0.0	0.0	0.0	0.0	Yes
2010	Madera-City	0	0	0	0.0	0.0	0.0	0.0	Yes
Merced MSA									
0003	Merced-Coffee	0	0	0	0.0	0.0	0.0	0.0	Yes
Modesto MSA									
0005	Modesto	0	0	0	0.0	0.0	0.0	0.0	Yes
0006	Turlock	0	0	0	0.0	0.0	0.0	0.0	Yes
Stockton MSA									
1003	Stockton	0	0	1	0.0	0.0	1.0	0.3	Yes
3005	Tracy	0	0	0	0.0	0.0	0.0	0.0	Yes
Visalia-Porterville MSA									
2002	Visalia	1	0	0	1.0	0.0	0.0	0.3	Yes
2010	Porterville	0	0	0	0.0	0.0	0.0	0.0	Yes

*Includes data impacted by exceptional events, such as wildfires.

Missing Data Analysis

The number of valid sample days must meet or exceed a completeness level established by EPA. The data completeness level for the 1-hour ozone standard is defined as collecting 75% of the hourly data between 9 AM and 9 PM during the ozone season. The Arvin-Di Giorgio site was non-operational from December 2019 to June 2020. The District is confident that this site did not exceed the 1-hour ozone standard during this time period because this site typically records its peak ozone concentrations in June through September each year and has only exceeded the 1-hour ozone standard one time (in August 2020) since the site was established in November 2009. The District's data capture rate exceeded the mandated levels for all other sites during 2020-2022.

Even when the data completeness requirements were met for the ozone monitors in the District's network, there were some data unavailability periods that caused some hours or days to be missed. EPA recognizes that it is highly unlikely for an ozone measurement to be available for every day, and that there are many situations which may cause for a missing-value to occur.¹⁵ For example, an ozone analyzer could be taken offline for multiple days for extensive maintenance, typically performed when ozone levels are expected to be low. Additionally, the analyzer may malfunction, experience an extended power outage, or other events out of the District's control. To accommodate these situations, EPA allows the clean data determination documentation to include a meteorological analysis and/or a missing data analysis that shows that no exceedances would have occurred during time periods when air monitoring data is not available.¹⁶

The District examined sites with missing days in order to show that exceedances would not have occurred on days when insufficient data was collected. The ozone season for California is defined from January to December, but for practical purposes, the District's peak ozone readings are in the afternoon from May through October. When considering incomplete data, one scenario involves having an overall incomplete day while collecting enough afternoon data to either capture an exceedance or show that an exceedance did not happen on that day. Another likely possible scenario that must be considered is when data is not collected during the peak afternoon on a given day even though 75% of the data was collected during the hours between 9:00 AM and 9:00 PM. These scenarios were considered when completing the following missing data analysis. The District examined all ozone sites throughout the Valley for missing days to ensure that sites would have not exceeded the 1-hour ozone standard if the data was collected.

For 2020, various sites across multiple counties experienced outages during the May through October period. With the exception of Kings County, 2020 had at least one missing day in each county. Ozone levels remained low in each county and at individual sites on the day before and after the missing days. Due to the available data

¹⁵ EPA. Guideline for the Interpretation of Ozone Air Quality Standards. Retrieved from: <https://archive.epa.gov/ttn/ozone/web/html/guide-o3.html>

¹⁶ Section 2.2, Guideline for the Interpretation of Ozone Air Quality Standards (EPA, 1979). Retrieved from: <https://archive.epa.gov/ttn/ozone/web/html/guide-o3.html>

at other sites within each county being below the standard at the time of the outage, it can be concluded that the down sites were under the standard as well. All sites operated by CARB and the District met or exceeded the 75% requirement during this period.

Table 2 through

Table 8 summarize missed measurements during peak ozone hours from May-October of 2020. The maximum value columns show the maximum value the day before and the day after the missing data period. The county maximum column shows the highest measured value in each corresponding county during the missing data periods, which in this case are considerably lower than the 1-hour ozone standard. Based on this, it is concluded that these sites would have reported values well below the standard if the analyzers were operating. Even with these missing days, the District collected a minimum of 86% of the required data which is far above the required 75%.

Table 2 2020 Missing Data Analysis for San Joaquin County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Tracy	May 22-27	49	57	56
Tracy	June 1-4	37	50	69

Table 3 2020 Missing Data Analysis for Stanislaus County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Turlock	May 22-26	54	69	71

Table 4 2020 Missing Data Analysis for Merced County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Merced-Coffee	Aug. 30-31	76	65	N/A

Table 5 2020 Missing Data Analysis for Madera County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Madera-Pump	Oct. 12-19	40	78	89

Table 6 2020 Missing Data Analysis for Fresno County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Clovis	Oct. 8	75	47	57
Clovis	Oct. 12	43	64	62
Fresno-Garland	Aug.16-17	73	100	114
Tranquillity	Oct. 17-19	72	53	92
Parlier	July 9-10	73	78	86

Table 7 2020 Missing Data Analysis for Tulare County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Visalia	July 23-30	67	85	89
Visalia	Aug. 9-12	60	61	85
Porterville	Oct. 6-7	71	62	91

Table 8 2020 Missing Data Analysis for Kern County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Edison	July 12-14	91	79	92
Maricopa	Aug. 31- Sep. 1	79	90	97
Bakersfield-California	May 6-7	64	75	87
Bakersfield-California	Sep. 21-22	71	53	99
Bakersfield-Muni	May 2-19	66	53	98
Shafter	Sep. 25-26	57	68	81
Shafter	Oct. 26-28	43	63	62

For 2021, various sites across multiple counties experienced outages during the May through October period. As ozone levels were low throughout each county and at each site on the day before and after the missing days, it is concluded that these days would not have exceeded the standard. Therefore, all sites operated by CARB and the District met or exceeded the 75% requirement during this period.

Table 9 through Table 13 summarize missed measurements during peak ozone hours from May-October. The maximum value columns show the maximum value the day before and the day after the missing data period. The county maximum column shows the highest measured value in each corresponding county during the missing data periods, which in this case are considerably lower than the 1-hour ozone standard. Based on this, it is concluded that these sites would have reported values well below the standard if the analyzers were operating. Even with these missing days, the District collected a minimum of 86% of the required data in every county within the District which is far above the required 75%.

Table 9 2021 Missing Data Analysis for Stanislaus County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Modesto	Oct. 11-15	54	67	65

Table 10 2021 Missing Data Analysis for Fresno County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Parlier	May 21-June 3	51	64	79

Table 11 2021 Missing Data Analysis for Kings County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Hanford	May 5-7	59	58	58
Hanford	June 4-18	67	88	102

Table 12 2021 Missing Data Analysis for Tulare County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Porterville	June 2-3	101	80	85
Porterville	Sep. 19-20	80	49	54

Table 13 2021 Missing Data Analysis for Kern County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Maricopa	Sep. 26-27	63	46	66
Oildale	May 3-5	37	48	79
Oildale	Oct. 25-26	44	50	45

Likewise, during 2022, certain ozone analyzers in Stanislaus, Fresno, and Kern Counties did not operate for a few days during the peak ozone season. Table 14 through Table 16 summarize missed measurements during peak ozone hours from May-October. In every case, the county maximums during the outage are lower than the 1-hour ozone standard, and lower than either the day before or the day after. These sites would have measured values below the standard if the analyzers were operating. All sites operated in the Valley by CARB and the District met or exceeded the 75% requirement during this period.

Table 14 2022 Missing Data Analysis for Stanislaus County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Modesto	Oct. 21- Nov. 9	65	29	68

Table 15 2022 Missing Data Analysis for Fresno County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Tranquillity	Sep. 6-13	68	42	98

Table 16 2022 Missing Data Analysis for Kern County

Site	Date	Maximum Value Day Before Outage (ppb)	Maximum Value Day After Outage (ppb)	County Maximum During Outage (ppb)
Maricopa	June 20-21	51	63	91
Bakersfield-Muni	June 14-15	59	81	91
Arvin-Di Giorgio	Sep. 9-14	74	67	87
Arvin-Di Giorgio	Sep. 24-25	84	83	99

In the few instances that there is missing data at peak locations in the Valley, the District has shown that the county maximum for those time periods were well under the 1-hour ozone standard. Additionally, the ozone concentrations measured for the days before and after the missing hours were well under the standard in all cases. Based on this, the District has continued to show attainment through the 2020-2022 period.

C. STATE IMPLEMENTATION PLAN (SIP) APPROVAL

On April 5, 2016, EPA approved a revision to the California state implementation plan (SIP) which consisted of the *2013 Ozone Plan*. EPA approved the following plan elements, with the exception of the attainment contingency provision:

- Reasonably available control measures (RACM) demonstration
- Rate-of-Progress (ROP) demonstration
- Attainment demonstration
- ROP contingency measures
- Provisions for clean fuels or advanced control technologies for boilers
- Vehicle miles traveled (VMT) emissions offset demonstrations

Thus, all applicable requirements have been approved under Section 110(k) for the purposes of redesignation in accordance with Section 107(d)(3)(E).

D. PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

EPA maintenance plan requirements note that, “the state must be able to reasonably attribute the improvement in air quality to emission reductions which are permanent and enforceable” (Calcagni Memo). EPA further notes that attainment resulting from temporary emission reductions (such as a shutdown or economic downturn) or from “unusually favorable meteorology”, would not qualify as resulting from permanent and enforceable emission reductions. In the sections below, the District is providing supplemental information to demonstrate that emission reductions achieved for the Valley to meet the 1-hour ozone standard are permanent and enforceable.

D.1 ENFORCEABLE REGULATIONS HAVE ACHIEVED PERMANENT EMISSION REDUCTIONS

To achieve the District’s mission of improving air quality and public health for all Valley residents, the District has developed and implemented several air quality plans to reduce emissions from stationary sources. The control strategies outlined in existing District attainment plans include the adoption of nearly 650 of the most stringent rules in the nation, and strong voluntary incentive programs that have invested more than \$5 billion of combined public and private funds in clean-air projects.

Table 17 shows the latest iteration of the adopted rules, including EPA approval dates. Similarly, CARB has adopted stringent regulations for area and mobile sources under their jurisdiction, which are summarized in Table 18. Together, these efforts represent the nation’s toughest air pollution control program, and have resulted in a significant reduction in ozone precursor emissions (Figure 1). Emissions will continue to be reduced under the District’s current and upcoming ozone and PM_{2.5} attainment planning efforts.

Table 17 Adopted District Regulations Achieving Permanent and Enforceable Emission Reductions

Adopted District Regulatory Control Measures	Date Last Adopted/ Amended	EPA Approval Date	FR citation
Rule 4103 Open Burning	06/17/2021	06/16/22	87 FR 36222-36224
Rule 4106 Prescribed Burning and Hazard Reduction Burning	06/21/01	02/27/02	67 FR 8894-8897
Rule 4306 Boilers, Steam Generators, and Process Heaters-Phase 3	12/17/20	<i>Pending Approval</i>	-
Rule 4307 Boilers, Steam Generators, and Process Heaters-2.0 MMBtu/hr to 5.0 MMBtu/hr	04/21/16	08/14/17	82 FR 37817-37819
Rule 4308 Boilers, Steam Generators, and Process Heaters-0.075 MMBtu/hr to less than 2.0 MMBtu/hr	11/14/13	2/12/15	80 FR 7803-7805
Rule 4309 Dryers, Dehydrators, and Ovens	12/15/05	05/30/07	72 FR 29886-29889
Rule 4311 Flares	12/17/20	12/28/22	87 FR 79806-79808
Rule 4320 Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	12/17/20	<i>Pending Approval</i>	-
Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters	12/16/21	<i>Pending Approval</i>	-
Rule 4354 Glass Melting Furnaces	12/16/21	<i>Pending Approval</i>	-
Rule 4565 Biosolids, Animal Manure, and Poultry Litter Operations	03/15/07	01/17/12	77 FR 2228-2233
Rule 4566 Organic Material Composting Operations	08/18/11	11/29/12	77 FR 71129-71131
Rule 4570 Confined Animal Facilities	10/21/10	01/17/12	77 FR 2228-2233
Rule 4601 Architectural Coatings	04/16/20	12/22/22	87 FR 78544-78545
Rule 4603 Surface Coating of Metal Parts and Products, Plastic Parts and Products, and Pleasure Crafts	09/17/09	11/01/11	76 FR 67369-67370
Rule 4604 Can and Coil Coating Operations	09/20/07	01/19/10	75 FR 2796-2800
Rule 4605 Aerospace Assembly and Component Coating Operations	06/16/11	11/16/11	76 FR 70886-70887
Rule 4606 Wood Products and Flat Wood Paneling Products Coating Operations	10/16/08	10/15/09	74 FR 52894-52895
Rule 4607 Graphic Arts and Paper, Film, Foil, and Fabric Coatings	12/18/08	10/15/09	74 FR 52894-52895
Rule 4612 Motor Vehicle and Mobile Equipment Coating Operations	10/21/10	02/13/12	77 FR 7536-7537
Rule 4621 Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants	12/19/13	02/10/15	80 FR 7345-7347
Rule 4622 Gasoline Transfer into Motor Vehicle Fuel Tanks	12/19/13	02/10/15	80 FR 7345-7347
Rule 4624 Transfer of Organic Liquid	12/20/07	10/15/09	74 FR 52894-52895
Rule 4653 Adhesives and Sealants	09/16/10	02/13/12	77 FR 7536-7537
Rule 4661 Organic Solvents	09/20/07	05/05/10	75 FR 24406-24408
Rule 4662 Organic Solvent Degreasing Operations	09/20/07	07/30/09	74 FR 37948-37949
Rule 4663 Organic Solvent Cleaning, Storage, and Disposal	09/20/07	07/30/09	74 FR 37948-37949

Adopted District Regulatory Control Measures	Date Last Adopted/ Amended	EPA Approval Date	FR citation
Rule 4682 Polystyrene, Polyethylene, and Polypropylene Products Manufacturing	12/15/11	09/20/12	77 FR 58312-58313
Rule 4684 Polyester Resin Operations	08/18/11	02/06/12	77 FR 5709-5710
Rule 4692 Commercial Charbroiling	06/21/18	09/14/20	85 FR 56521-56525
Rule 4694 Wine Fermentation and Storage Tanks	12/15/05	11/29/12	77 FR 71109-71111
Rule 4695 Brandy Aging and Wine Aging Operations	09/17/09	08/04/11	76 FR 47076-47077
Rule 4702 Internal Combustion Engines	08/19/21	<i>Pending Approval</i>	-
Rule 4703 Stationary Gas Turbines	09/20/07	10/21/09	74 FR 53888-53889
Rule 4902 Residential Water Heaters	03/19/09	05/05/10	75 FR 24408-24409
Rule 4905 Natural Gas-Fired, Fan-Type Residential Central Furnaces	12/16/21	<i>Pending Approval</i>	-
Rule 9310 School Bus Fleets	09/21/06	03/08/10	75 FR 10420-10438
Rule 9410 Employer-Based Trip Reduction	12/17/09	02/09/16	81 FR 6761-6763
Rule 9510 Indirect Source Review (ISR)	12/21/17	06/25/21	86 FR 33542-33544
Rule 9610 State Implementation Plan Credit for Emission Reductions Generated Through Incentive Programs	06/20/13	04/09/15	80 FR 19020-19033

Table 18 Adopted CARB Regulatory Mobile Source Control Measures since 2008

Board Action	Hearing Date
Public Hearing to Consider Proposed In-Use Locomotive Regulation: The Board adopted the Proposed In-Use Locomotive Regulation, which aims to reduce emissions from locomotives operating in California. This is the second of two Board Meetings; the Board also adopted findings and a Statement of Overriding Considerations under the California Environmental Quality Act, and certifying the Final Environmental Impact Analysis.	4/27/23
Public Hearing to Consider Proposed Advanced Clean Fleets Regulation: The Board adopted the Advanced Clean Fleets Regulation, which aims to accelerate the widespread adoption of zero-emission vehicles in the medium- and heavy-duty sector and for light-duty package delivery vehicles. This is the second of two Board Meetings; the Board also adopted findings and a Statement of Overriding Considerations under the California Environmental Quality Act, and certifying the Final Environmental Impact Analysis.	4/27/23
Public Hearing to Consider Proposed Amendments to the Procedures for Exemption of Add-On and Modified Part(s) for On-Road Vehicles/Engines Specific to Electric Vehicle Conversions: The Board adopted amendments to the Aftermarket Parts Procedure to clarify the process for electric vehicle conversions to receive an exemption from the anti-tampering prohibitions of the California Vehicle Code section 27156.	3/23/23
Public Hearing to Consider Proposed Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation: The Board adopted the Proposed Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation which will reduce harmful emissions from off-road mobile vehicles.	11/17/22
Public Hearing to Consider Proposed Advanced Clean Cars II Regulation: The Board adopted the Advanced Clean Cars II Regulations. This is the second of two Board hearings on this item. The Board also certified the Final Environmental Analysis and approved the written response to comments received on the Draft Environmental Analysis. The regulations will be submitted to the United States Environmental Protection Agency for approval as a revision to the California state implementation plan required by the federal Clean Air Act.	8/25/22

Board Action	Hearing Date
Public Hearing to Consider Proposed Amendments to the Commercial Harbor Craft Regulation: The Board adopted the Proposed Amendments to the Commercial Harbor Craft Regulation, which aims to further reduce emissions from harbor craft in California. This is the second of two Board hearings on this item; the Board certified the Final Environmental Analysis and approved the written response to comments on the Draft Environmental Analysis.	3/24/22
Public Hearing to Consider Proposed Amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate: The Board adopted amendments to the TRU Airborne Toxic Control Measure. The amendments will achieve additional emission and health risk reductions by requiring zero-emission truck TRUs, a particulate matter (PM) emission standard for newly-manufactured non-truck TRU engines, and the use of lower global warming potential refrigerants. This is the second of two Board hearings on this item; the Board certified the Final Supplemental Environmental Analysis and approved the written response to comments on the Draft Supplemental Environmental Analysis.	2/24/22
Public Hearing to Consider Proposed Amendments to the Small Off-Road Engine Regulation: Transition to Zero Emissions: The Board adopted amended regulations and certification and test procedures for small off-road engines (SORE). The amendments are necessary to accelerate the transition of SORE to zero emissions to reduce emissions. Deployment of zero-emission equipment is key to meeting the expected emission reductions in the 2016 State Implementation Plan Strategy and the goals of California Executive Order N-79-20.	12/9/21
Public Hearing to Consider the Proposed Heavy-Duty Inspection and Maintenance Regulation: The Board adopted the Proposed Heavy-Duty Inspection and Maintenance Regulation. This new regulation requires owners of non-gasoline heavy-duty vehicles with gross vehicle weight ratings over 14,000 pounds to periodically demonstrate that their vehicles' emissions control systems are properly functioning in order to legally operate within the state. This regulation is designed to achieve criteria emissions reductions by ensuring that malfunctioning emissions control systems are timely repaired. This regulation would replace the California Air Resources Board's existing heavy-duty vehicle inspection programs.	12/9/21
Public Hearing to Consider Proposed Revisions to the On-Board Diagnostic System Requirements and Associated Enforcement Provisions for Passenger Cars, Light-Duty Trucks, Medium-Duty Vehicles and Engines, and Heavy-Duty Engines: The Board adopted amendments to the light-duty, medium-duty, and heavy-duty on-board diagnostic (OBD) system regulations to require more data to be stored by the OBD systems, address issues regarding several malfunction monitors, and address manufacturers' implementation concerns.	7/22/21
Public Hearing to Consider Proposed Clean Miles Standard: The Board adopted the Clean Miles Standard Regulation, which includes the annual electrification and greenhouse gas targets for transportation network companies (TNC). This regulation is in response to Senate Bill 1014 (Skinner, Stats. 2018, Ch. 369) adopted in 2018.	5/20/21
Public Hearing to Consider Proposed Amendments to the Antiperspirants and Deodorants Regulation; Consumer Products Regulation; Aerosol Coating Products Regulation; Alternative Control Plan Regulation; the Tables of Maximum Incremental Reactivity Values; and Test Method 310: The Board adopted amendments to the Consumer Products Program Regulations to help attain federal ozone standards by setting or strengthening volatile organic compound standards for certain product categories. The amendments will reduce public exposure to air toxics emissions and provide other clarifications within the program to improve transparency, clarity, and effectiveness.	3/25/21
Public Hearing to Consider Proposed Amendments to the Enhanced Vapor Recovery Regulations: The Board adopted amendments to certification and test procedures for vapor recovery systems at gasoline dispensing facilities. These amendments are necessary to improve cost-effectiveness, preserve emission reductions, and clarify the procedures for better regulatory certainty and enforceability.	12/10/20
Public Hearing to Consider Proposed Control Measure for Ocean-Going Vessels At Berth: The Board adopted the Control Measure for Ocean-Going Vessels At Berth (Control Measure). The Board certified the Environmental Analysis prepared for the Control Measure. The Control Measure will supersede the existing At-Berth Regulation, as specified, and is designed to achieve further reductions in emissions from vessels at berth to reduce adverse health impacts to communities surrounding ports and terminals throughout California. Emission reductions will be achieved through the inclusion of new vessel categories (such as vehicle carriers and tanker vessels), new ports, and independent marine terminals. This is the third hearing of three for this item.	8/27/20

Board Action	Hearing Date
Public Hearing to Consider Proposed Heavy-Duty Engine and Vehicle Omnibus Regulation and Associated Amendments: The Board adopted amendments to the exhaust emission standards and test procedures for 2024 and subsequent model year heavy-duty engines, the heavy-duty in-use testing program, the emissions warranty and useful life period requirements, the heavy-duty durability demonstration program, the emissions warranty information and reporting requirements and corrective action procedures, the heavy-duty on-board diagnostic system requirements, the Phase 2 greenhouse gas regulation, and other requirements.	8/27/20
Public Hearing to Consider Proposed Procedures for the Exemption of Add-On and Modified Part(s) for On-Road Vehicles/Engines: The Board adopted the Procedures for the Exemption of Add-On and Modified Part(s) for On-Road Vehicles/Engines. The updated aftermarket part procedures incorporate language reflecting current vehicle and engine emissions related technologies and standards. It also clarifies the requirements to improve review, testing, and approval timing to get products to market sooner.	7/23/20
Public Hearing to Consider the Proposed Advanced Clean Trucks Regulation: The Board adopted requirements for truck manufacturers to sell zero-emission trucks in California and a one time requirement for large entities to report about their facilities, types of truck services used, and fleet of vehicles. This is the second of two Board hearings on this item; the Board certified the Final Environmental Analysis, approved the written response to comments received on the Draft Environmental Analysis, and adopted the Advanced Clean Trucks Regulation for submission to the United States Environmental Protection Agency as a revision to the California State Implementation Plan.	6/25/20
Public Hearing to Consider the Proposed Amendments to the Regulation on the Commercialization of Alternative Diesel Fuels: The Board adopted amendments to the Regulation on the Commercialization of Alternative Diesel Fuels (ADF). Staff proposed to amend the ADF Regulation to reinforce the emissions certification testing requirements and require biodiesel additives and ADF formulations to be certified according to new certification procedures. The amendments reinforce the originally intended efficacy of additives or alternative diesel formulations certified to mitigate potential oxides of nitrogen (NO _x) emissions increases from the use of biodiesel. The Board also adopted an addendum to a previously certified Environmental Analysis in compliance with the California Environmental Quality Act.	4/23/20
Public Meeting to Consider San Joaquin Valley Agricultural Equipment Incentive Measure: The Board adopted the San Joaquin Valley Agricultural Equipment Incentive Measure for submission to the United States Environmental Protection Agency as a revision to the California State Implementation Plan (SIP). The measure achieves SIP creditable emission reductions from agricultural equipment incentive projects.	12/12/19
Public Hearing to Consider Proposed Amendments to the Low Carbon Fuel Standard: The Board adopted amendments to the Low Carbon Fuel Standard (LCFS) Regulation, focusing on strengthening the program's cost containment provisions and ensuring that LCFS residential charging credit revenue value benefits disadvantaged and low-income communities.	11/21/19
Public Hearing to Consider Proposed Amendments to Certification Procedures for Vapor Recovery Systems for Aboveground Storage Tanks at Gasoline Dispensing Facilities: The Board adopted amendments to Phase II Enhanced Vapor Recovery (EVR) requirements for existing aboveground storage tanks (AST) at gasoline dispensing facilities (GDF). The amendments clarify definitions and improve cost effectiveness of the Phase II EVR equipment upgrade requirements based on annual gasoline throughput at AST GDFs. The Board adopted the environmental analysis set forth in the Initial Statement of Reasons.	7/25/19
Public Hearing to Consider the Proposed Zero-Emission Airport Shuttle Regulation: The Board adopted the Zero-Emission Airport Shuttle Regulation. The regulation will transition combustion powered airport shuttles to zero-emission vehicles and will apply to private and public fixed destination shuttles that serve California's commercial airports. The Board certified the Final Environmental Analysis, approving the written response to any environmental comments received, approving findings and statement of overriding considerations, and adopting the regulation at this meeting.	6/27/19
Public Hearing to Consider Proposed Alternative Certification Requirements and Test Procedures for Heavy-Duty Electric and Fuel-Cell Vehicles and Proposed Standards and Test Procedures for Zero-Emission Powertrains (Zero-Emission Powertrain Certification Regulation): The Board adopted the Zero-Emission Powertrain Certification Regulation, which establishes a new optional certification pathway for heavy-duty electric and fuel-cell vehicles and the zero-emission powertrains they use. The amendments provided additional market transparency and help ensure effective in-use support for such vehicles and powertrains. This is the second of two Board hearings on this item; the Board certified the Final Environmental Analysis, approved written response to any environmental comments received, and approved findings and statement of overriding considerations.	6/27/19

Board Action	Hearing Date
<p>Public Hearing to Consider Proposed Amendments to the Regulation for the Certification of Vapor Recovery Systems for Cargo Tanks: The Board adopted amendments to the Certification of Vapor Recovery Systems on Cargo Tanks Regulation that establish a regulatory mechanism to periodically evaluate program costs and subsequently adjust the certification fee to recover these costs, per the authority under the Health and Safety Code section 41962. In addition, the amendments will establish: (1) a requirement for a public meeting prior to adjusting fees, (2) an effective date of January 1 following a fee revision, (3) the cost of replacement decals, and (4) procedures to request a certification fee refund.</p>	<p>4/25/19</p>
<p>Public Hearing to Consider Proposed Amendments to the Red Sticker Program for Off-Highway Recreational Vehicles: The Board adopted amendments to the Red Sticker Program for Off-Highway Recreation Vehicles (OHRV). OHRV are primarily used in public State parks and federally designated lands, as well as on private tracks. The goal of the amendments is to end the current red sticker program which allows for CARB certification of OHRV that do not meet emissions standards. The amendments include provisions that end the certification of new red sticker vehicles, end riding restrictions on public lands for existing red sticker vehicles, establish new OHRV emissions standards, and increase incentives for fleet emissions averaging and zero emission OHRV. The amendments are intended to cause emissions reductions from OHRV in California while ensuring availability for California dealers and riders.</p>	<p>4/25/19</p>
<p>Public Hearing to Consider the Proposed Amendments to the On-Road Heavy-Duty Diesel-Fueled Residential and Commercial Solid Waste Collection Vehicles Regulation to Include Heavy Cranes: The Board adopted amendments to the On-Road Heavy-Duty Diesel-Fueled Residential and Commercial Solid Waste Collection Vehicles (SWCV) regulation. The amendments include two distinct changes to the regulation, (1) to ensure that compliant SWCVs do not experience registration delays at the California Department of Motor Vehicles due to recent changes in California law; (2) to provide a more cost-effective compliance option for specialized heavy cranes.</p>	<p>1/24/19</p>
<p>Public Hearing to Consider the Proposed Innovative Clean Transit Regulation, a Replacement of the Fleet Rule for Transit Agencies: The Board adopted the Innovative Clean Transit (ICT) Regulation that requires California transit agencies to gradually transition their buses to zero-emission technologies. The ICT regulation is structured to allow transit agencies to take advantage of incentive programs by acting early and in a manner to implement plans that are best suited for their own situations. This is the second of two Board hearings on this item; the Board certified the Final Environmental Analysis, approving the written response to comments received on the Draft Environmental Analysis, and adopting the amendments at this meeting.</p>	<p>12/14/18</p>
<p>Public Hearing to Consider Proposed Revisions to On Board Diagnostic System Requirements, Including the Introduction of Real Emissions Assessment Logging, for Heavy Duty Engines, Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engine: The Board adopted amendments to the heavy-duty (HD) On Board Diagnostic (OBD) and medium-duty OBD II requirements to update the monitoring requirements for gasoline and diesel vehicles, to require more data parameters to be tracked and reported by the engine/vehicle, and to clarify and improve the regulation where necessary. Staff also update the associated HD OBD enforcement regulation to align with the changes to the HD OBD regulation and to modify the manufacturer self-testing requirements.</p>	<p>11/15/18</p>
<p>Public Hearing to Consider Proposed California Certification Procedures for Light-Duty Engine Packages for Use in New Light-Duty Specially-Produced Motor Vehicles for 2019 and Subsequent Model Years: The Board adopted the California Regulation and Certification Procedures for Light-Duty Engine Packages for Use In New Light-Duty Specially-Produced Motor Vehicles for 2019 And Subsequent Model Years. Staff presented regulations and certification procedures for manufacturers of light-duty engine packages for use in new light-duty specially constructed vehicles which resemble heritage vehicles originally produced at least 25 years ago</p>	<p>10/25/18</p>
<p>Public Meeting to Consider Proposed Amendments to California Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks: The Board adopted amendments to Vehicle Fill Pipe Specifications to help ensure new motor vehicle fill pipes are compatible and form a good seal with Phase II recovery nozzles that are certified for use at California gasoline stations as a means to reduce overpressure.</p>	<p>10/25/18</p>
<p>Public Hearing to Consider Proposed Amendments to Enhanced Vapor Recovery Regulations to Standardize Gas Station Nozzle Spout Dimensions to Help Address Storage Tank Overpressure: The Board adopted amendments to Enhanced Vapor Recovery Regulations to standardize gas station nozzle spout dimensions to improve compatibility with newer motor vehicle fill pipes. This compatibility is necessary to reduce air ingestion at the nozzle, which will help reduce storage tank overpressure conditions.</p>	<p>10/25/18</p>

Board Action	Hearing Date
<p>Public Meeting to Consider the Proposed Submission of California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities into the California State Implementation Plan: The Board adopted a resolution directing staff to submit California's Greenhouse Gas Emission Standards for Crude Oil and Natural Gas Facilities into the California State Implementation Plan (Oil and Gas SIP Submittal). California Air Resources Board submitted the Oil and Gas SIP Submittal to the United States Environmental Protection Agency as a revision to the California State Implementation Plan.</p>	<p>10/25/18</p>
<p>Public Hearing to Consider Proposed Amendments to the Low-Emission Vehicle III Greenhouse Gas Emission Regulation: The Board adopted amendments to the Low-Emission Vehicle III greenhouse gas emission regulation to clarify that the "deemed to comply" option for model years 2021 through 2025 is applicable only if the currently adopted federal regulations remain in effect.</p>	<p>9/27/18</p>
<p>Public Hearing to Consider Proposed Amendments to the Low Carbon Fuel Standard Regulation and to the Regulation on Commercialization of Alternative Diesel Fuels: The Board adopted amendments designed to strengthen the Low Carbon Fuel Standard (LCFS) regulation through 2030 in line with the Senate Bill 32 greenhouse gas reduction goals. The amendments would enhance LCFS credit for zero-emission vehicle fueling infrastructure per Governor Brown's Executive Order B-48-18, adopt a protocol to enable credit generation for carbon capture and sequestration projects, expand fuel types and vehicle applications to which the LCFS regulation applies (including adding alternative jet fuel), improve crediting for innovative actions at petroleum refineries, and establish an independent third-party verification and verifier accreditation system to ensure accuracy of LCFS reported data. The amendments also include a number of technical changes to improve, simplify, streamline, and clarify the regulation. As part of this rulemaking, the Board will comply with a California court order by considering supplemental environmental analysis related to oxides of nitrogen (NOx) emissions from biodiesel, and amendments to the Alternative Diesel Fuels regulation based on that analysis. This is the first of two Board hearings on this item; the Board will not vote on the amendments at this meeting.</p>	<p>9/27/18</p>
<p>Public Hearing to Consider Proposed Amendments to California Emission Control System Warranty Regulations and Maintenance Provisions for 2022 and Subsequent Model Year On-Road Heavy-Duty Diesel Vehicles with Gross Vehicle Weight Rating Greater Than 14,000 Pounds and Heavy-Duty Diesel Engines in Such Vehicles: The Board adopted amendments to the California warranty and maintenance provisions for on-road heavy-duty (HD) diesel vehicles, and the engines used in such vehicles. Currently, because the warranty mileage period is disproportionate to the actual service lives of many modern HD vehicles and engines, vehicle owners have no incentive to pay for repairs of emissions-related problems that do not adversely affect fuel economy or performance, which results in additional emissions. Accordingly, staff presented to lengthen both the existing warranty periods and minimum maintenance intervals so as to reduce emissions by incentivizing vehicle owners to perform required maintenance and to seek more timely repairs, and to encourage manufacturers to design and produce more durable parts. Staff also clarified that the warranty coverage extends to any part that causes the illumination of the HD on-board diagnostic system malfunction indicator light.</p>	<p>6/28/18</p>
<p>Public Meeting to Consider Submission of the 2013 Amendments to the Cargo Tank Vapor Recovery Regulation into the California State Implementation Plan: The Board adopted a resolution directing staff to submit the 2013 Amendments to the Cargo Tank Vapor Recovery Regulations into the California State Implementation Plan (Cargo Tank SIP Submittal). CARB submitted the Cargo Tank SIP Submittal to the United States Environmental Protection Agency as a revision to the California State Implementation Plan.</p>	<p>6/28/18</p>
<p>Public Hearing to Consider Proposed Amendments to the Heavy-Duty Vehicle Inspection Program and Periodic Smoke Inspection Program: The amendments lower the allowable opacity limit for HD vehicles operating in California for both the HDVIP and PSIP, establish reporting requirements for the PSIP and smoke tester training requirements, and allow 2013 model year and newer engines to report on-board diagnostic data in lieu of performing the annual PSIP smoke test.</p>	<p>5/25/18</p>
<p>Public Hearing to Consider Proposed Amendments to the Consumer Products Regulation and Method 310: The adopted amendments to the consumer products regulation established an alternate compliance option for multi-purpose lubricant (MPL) products.</p>	<p>5/25/18</p>
<p>Public Hearing to Consider Proposed California Greenhouse Gas Emissions Standards for Medium- and Heavy-Duty Engines and Vehicles, and Proposed Amendments to the Tractor-Trailer Greenhouse Gas Regulation: The adoption creates new, more stringent California Phase 2 GHG emission standards that largely harmonize with the federal Phase 2 standards, and amendments to the Tractor-Trailer GHG regulation to harmonize California's Tractor-Trailer GHG regulation with the Phase 2 trailer standards. The California Phase 2 GHG standards are needed to meet the mandates of both AB 32 and of SB 32, and the California HSC.</p>	<p>2/8/18</p>

Board Action	Hearing Date
Public Hearing to Consider Proposed Amendments to the Airborne Toxic Control Measure For Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater – and to the Statewide Portable Equipment Registration Program Regulation: The proposed amendments will provide more time for cleaner engine replacement while preserving the expected emission reductions, and make other improvements to the ATCM. PERP will have corresponding amendments and make other improvements to the program.	11/16/17
Public Hearing to Consider the Proposed Amendments to California's Evaluation Procedures for New Aftermarket Catalytic Converters: The proposed amendments are for procedures used to evaluate and approve aftermarket catalytic converters designed for use on California passenger cars and trucks to allow them to be used for Low Emission Vehicle III emission standards.	9/28/17
Public Meeting to Consider the Proposed Amendments to the Evaporative Emission Requirements for Small Off-Road Engines: The proposed amendments will address to non-compliance of small off-road engines (SORE) with existing evaporative emission standards, as well as amendments to streamline the certification process by harmonizing where feasible with federal requirements.	11/17/16
Notice of Public Hearing to Consider Proposed Regulation to Provide Certification Flexibility for Innovative Heavy-Duty Engine and California Certification and Installation Procedures for Medium and Heavy-Duty Vehicle Hybrid Conversion Systems: This proposed regulation's certification flexibility is tailored to encourage development and market launch of heavy-duty engines meeting California's optional low oxides of oxides of nitrogen emission standards, robust heavy-duty hybrid engines, and high-efficiency heavy-duty engines.	10/20/16
Public Hearing to Consider Proposed Amendments to the Large Spark-Ignition Engine Fleet Requirements Regulation: The proposed amendment will establish new reporting and labeling requirements and extend existing recordkeeping requirements. The proposed regulatory amendments are expected to improve the reliability of the emission reductions projected for the existing LSI Fleet Regulation by increasing enforcement effectiveness and compliance rates.	7/21/16
Public Hearing to Consider Proposed Evaluation Procedure for New Aftermarket Diesel Particulate Filters Intended as Modified Parts for 2007 through 2009 Model Year On-Road Heavy-Duty Diesel Engines: The proposed amendment would establish a path for exempting aftermarket modified part DPFs intended for 2007 through 2009 on-road heavy-duty diesel engines from the prohibitions of the current vehicle code. Staff is also proposing to incorporate a new procedure for the evaluation of such DPFs.	4/22/16
Amendments to the Portable Fuel Container Regulation Amendments to the Portable Fuel Container (PFC) regulation, which include requiring certification fuel to contain 10 percent ethanol, harmonizing aspects of the Board's PFC certification and test procedures with those of the U.S. EPA, revising the ARB's certification process, and streamlining, clarifying, and increasing the robustness of ARB's certification and test procedures.	2/18/16
Technical Status and Proposed Revisions to On-Board Diagnostic System Requirements and Associated Enforcement Provisions for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines (OBD II) Amendments to the OBD II regulations that update requirements to account for LEV III applications and monitoring requirements for gasoline and diesel vehicles, and clarify and improve the regulation; also, updates to the associated OBD II enforcement regulation to align it with the proposed amendments to the OBD II regulations and a minor amendment to the definition of "emissions-related part" in title 13, CCR section 1900.	9/25/15
2015 Low Carbon Fuel Standard (LCFS) Amendments (2 of 2) Re-adoption of the Low Carbon Fuel Standard, which includes updates and revisions to the regulation now in effect. The proposed regulation was first presented to the Board at its February 2015 public hearing, at which the Board directed staff to make modifications to the proposal.	9/24/15
Proposed Regulation on the Commercialization of Alternative Diesel Fuels (2 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel.	9/24/15
Intermediate Volume Manufacturer Amendments to the Zero Emission Vehicle Regulation (2 of 2) Amendments regarding intermediate volume manufacturer compliance obligations under the Zero Emission Vehicle regulation.	5/21/15

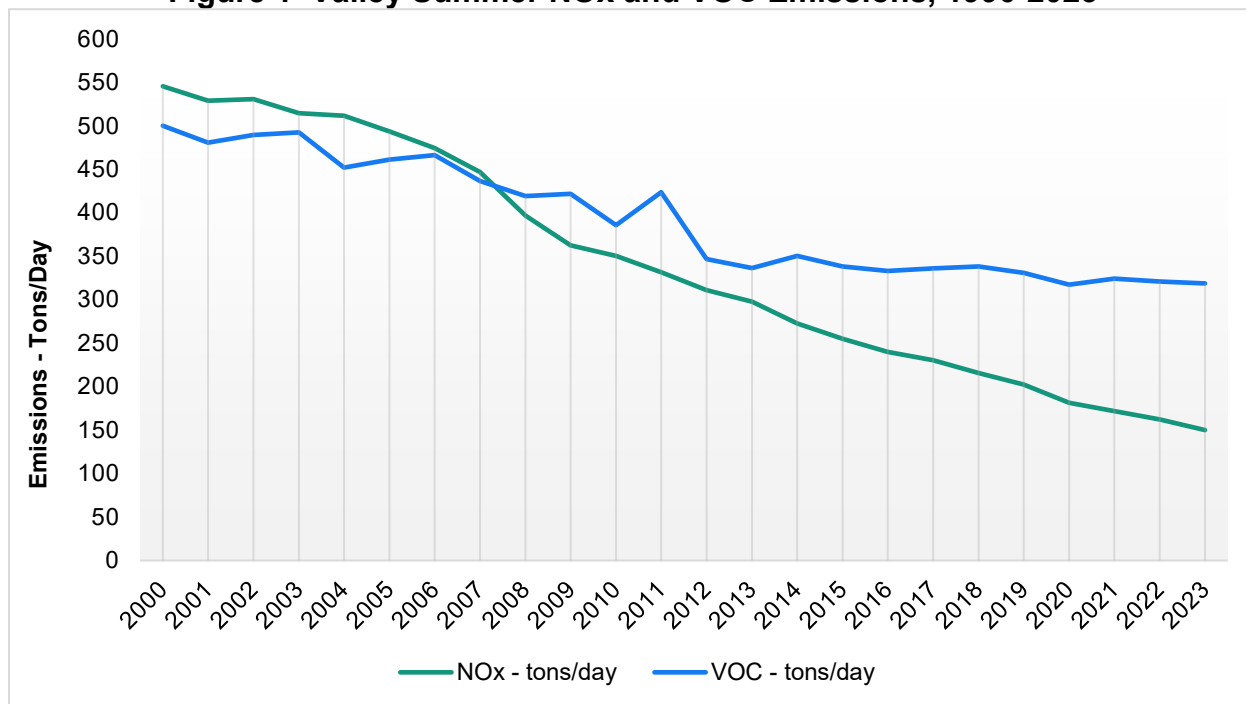
Board Action	Hearing Date
<p>2015 Amendments to Certification Procedures for Vapor Recovery Systems at Gasoline Dispensing Facilities—Aboveground Storage Tanks and Enhanced Conventional Nozzles Amendments would establish new performance standards and specifications for nozzles used at fleet facilities that exclusively refuel vehicles equipped with onboard vapor recovery systems, would provide regulatory relief for owners of certain existing aboveground storage tanks, and would ensure that mass-produced vapor recovery equipment matches the specifications of equipment evaluated during the ARB certification process.</p>	4/23/15
<p>Proposed Regulation for the Commercialization of Alternative Diesel Fuels (1 of 2) Regulation governing the introduction of alternative diesel fuels into the California commercial market, including special provisions for biodiesel. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.</p>	2/19/15
<p>Evaporative Emission Control Requirements for Spark-Ignition Marine Watercraft Regulation for controlling evaporative emissions from spark-ignition marine watercraft. The proposed regulation will harmonize, to the extent feasible, with similar federal requirements, while adding specific provisions needed to support California's air quality needs.</p>	2/19/15
<p>2015 Low Carbon Fuel Standard (LCFS) Amendments (1 of 2) Regulation for a Low Carbon Fuel Standard that includes re- adoption of the existing Low Carbon Fuel Standard with updates and revisions. This is the first of two hearings on the item, and the Board will not take action to approve the proposed regulation.</p>	2/19/15
<p>2014 Amendments to ZEV Regulation Additional compliance flexibility to ZEV manufacturers working to bring advanced technologies to market.</p>	10/23/14
<p>LEV III Criteria Pollutant Requirements for Light- and Medium-Duty Vehicles the Hybrid Electric Vehicle Test Procedures, and the HD Otto-Cycle and HD Diesel Test Procedures Applies to the 2017 and subsequent model years.</p>	10/23/14
<p>Low Carbon Fuel Standard 2014 Update As a result of a California Court of Appeal decision, ARB will revisit the LCFS rulemaking process to meet certain procedural requirements of the APA and CEQA. Following incorporation of any modifications to the regulation, the Board will consider the proposed regulation for adoption at a second hearing held in the spring of 2015.</p>	7/24/14
<p>Truck and Bus Rule Update Amendments to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen, and Other Criteria Pollutants From In-Use On-Road Diesel-Fueled Vehicles: increasing low-use vehicle thresholds, allowing owners to newly opt-in to existing flexibility provisions, adjusting "NOx exempt" vehicle provisions, and granting additional time for fleets in certain areas to meet PM filter requirements.</p>	4/24/14
<p>Heavy-Duty GHG Phase I: On-Road Heavy-Duty GHG Emissions Rule, Tractor-Trailer Rule, Commercial Motor Vehicle Idling Rule, Optional Reduced Emission Standards, Heavy-Duty Hybrid-Electric Vehicles Certification Procedure New GHG standards for MD and HD engines and vehicles identical to those adopted by the USEPA in 2011 for MYs 2014-18.</p>	12/12/13
<p>Zero emission vehicle test procedures Existing certification test procedures for plug-in hybrid vehicles need to be updated to reflect technology developments. The ZEV regulation will require minor modifications to address clarity and implementation issues.</p>	10/24/13
<p>Vapor Recovery for Gasoline Dispensing Facilities Amendments to certification and test procedures for vapor recovery equipment used on cargo tanks and at gasoline dispensing facilities.</p>	7/25/13
<p>Off-highway recreational vehicle evaporative emission control Staff proposes to set evaporative emission standards to control hydrocarbon emissions from Off-Highway Recreational Vehicles. The running loss, hot soak, and diurnal performance standards can be met by using proven automobile type control technology.</p>	7/25/13

Board Action	Hearing Date
LEV III and ZEV Programs for Federal Compliance Option Adopted amendments to deem compliance with national GHG new vehicle standards in 2017-2025 as compliance with California GHG standards for the same model years.	11/15/12 12/6/12 EO
Amendments to Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines Approved amendments to the verification procedure used to evaluate diesel retrofits through emissions, durability, and field testing. Amendments will lower costs associated with required in-use compliance testing, streamline the in-use compliance process, and will extend time allowed to complete verifications.	8/23/2012 EO 07/02/13
Amendments to On-Board Diagnostics (OBD I and II) Regulations Approved amendments to the light- and medium-duty vehicle and heavy-duty engine OBD regulations.	8/23/2012 EO 06/26/13
Advanced Clean Cars (ACC) Regulation: Low-Emission Vehicles and GHG Adopted more stringent criteria emission standards for MY 2015-2025 light and medium duty vehicles (LEV III), amended GHG emission standards for model year 2017-2025 light and medium duty vehicles (LEV GHG), amended ZEV Regulation to ensure the successful market penetration of ZEVs in commercial volumes, amended hydrogen fueling infrastructure mandate of the Clean Fuels Outlet regulation, and amended cert fuel for light duty vehicles from an MTBE-containing fuel to an E10 certification fuel.	1/26/12
Zero Emission Vehicle (ZEV) Adopted amendments to increase compliance flexibility, add two new vehicle categories for use in creating credits, increase credits for 300 mile FCVs, increase requirements for ZEVs and TZEVs, eliminate credit for PZEVs and AT PZEVs, expand applicability to smaller manufacturers, base ZEV credits on range, and make other minor changes in credit requirements	1/26/12
Amendments to Low Carbon Fuel Standard Regulation The amendments address several aspects of the regulation, including: reporting requirements, credit trading, regulated parties, opt-in and opt-out provisions, definitions, and other clarifying language.	12/16/11 10/10/12 EO
Amendments to Small Off-Road Engine and Tier 4 Off-Road Compression-Ignition Engine Regulations And Test Procedures; also "Recreational Marine" Spark-Ignition Marine Engine Amendments (Recreational Boats) adopted. Aligns California test procedures with U.S. EPA test procedures and requires off-road CI engine manufacturers to conduct in-use testing of their entire product lines to confirm compliance with previously established Not-To-Exceed emission thresholds.	12/16/2011 10/25/12 EO
Regulations and Certification Procedures for Engine Packages used in Light-Duty Specially Constructed Vehicles (Kit Cars) Ensures that certified engine packages, when placed into any Kit Car, would meet new vehicle emission standards, and be able to meet Smog Check requirements.	11/17/11 9/21/12 EO
Amendments to the California Reformulated Gasoline Regulations Corrects drafting errors in the predictive model, deletes outdated regulatory provisions, updates the notification requirements, and changes the restrictions on blending CARBOB with other liquids.	10/21/11 8/24/12 EO
Amendments to the In-Use Diesel Transport Refrigeration Units (TRU) ATCM Mechanisms to improve compliance rates and enforceability.	10/21/11 8/31/12 EO
Amendments to the Regulation for Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Port Yard Trucks Regulation) Provides additional compliance flexibility, and maintains anticipated emissions reductions. As applicable to yard trucks and two-engine sweepers.	9/22/11 8/2/12 EO
Amendments to the Enhanced Vapor Recovery Regulation for Gasoline Dispensing Facilities New requirement for low permeation hoses at gasoline dispensing facilities.	9/22/11 7/26/12 EO
Amendments to Cleaner Main Ship Engines and Fuel for Ocean-Going Vessels Adjusts the offshore regulatory boundary. Aligns very low sulfur fuel implementation deadlines with new federal requirements.	6/23/11 9/13/12 EO
Particulate Matter Emissions Measurement Allowance For Heavy-Duty Diesel In-Use Compliance Regulation Emission measurement allowances provide for variability associated with the field testing required in the regulation.	6/23/11

Board Action	Hearing Date
Amendments to Cleaner In-Use Heavy-Duty On-Road Diesel Trucks and LSI Fleets Regulations Amends five regulations to provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 9/19/11 EO
Amendments to Cleaner In-Use Off-Road Diesel-Fueled Fleets Regulation Amendments provide relief to fleets adversely affected by the economy, and take into account the fact that emissions are lower than previously predicted.	12/16/10 10/28/11 EO
In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities Amendments add flexibility to fleets' compliance schedules, mitigate the use of noncompliant trucks outside port and rail properties, and provide transition to the Truck and Bus regulation.	12/16/10 9/19/11 EO
Amendment of the ATCM for Diesel Transportation Refrigeration Units (TRU) Amendments expand the compliance options and clarify the operational life of various types of TRUs.	11/18/10 2/2/11 EO
Amendments to the ATCM for Stationary Compression Ignition Engines Approved amendments to closely align the emission limits for new emergency standby engines in the ATCM with the emission standards required by the federal Standards of Performance.	10/21/10 3/25/11 EO
Diesel Vehicle Periodic Smoke Inspection Program Adopted amendments to exempt medium duty diesel vehicles from smoke inspection requirements if complying with Smog Check requirements.	10/21/10 8/23/11 EO
Amendments to Commercial Harbor Craft Regulation Approved amendments to require the use of cleaner engines in diesel-fueled crew and supply, barge, and dredge vessels.	6/24/10 4/11/11 EO
Accelerated Introduction of Cleaner Line-Haul Locomotives Agreement with railroads sets prescribed reductions in diesel risk and target years through 2020 at four major railyards.	6/24/10
Amendments to the Statewide Portable Equipment Registration Regulation and Portable Engine ATCM Approved amendments that extend the deadline for removal of certain uncertified portable engines for one year.	1/28/10 8/27/10 EO 12/8/10 EO
Diesel Engine Retrofit Control Verification, Warranty, and Compliance Regulation Amendments Approved amendments to require per-installation compatibility assessment, performance data collection, and reporting of additional information, and enhance enforceability.	1/28/10 12/6/10 EO
Passenger Motor Vehicle Greenhouse Gas Limits Amendments Approved amendments granting credits to manufacturers for compliant vehicles sold in other states that have adopted California regulations.	9/24/09 2/22/10 EO
Amendments to In-Use Off-Road Diesel-Fueled Fleets Regulation Approved amendments to implement legislatively directed changes and provide additional incentives for early action.	7/23/09 12/2/09 EO 6/3/10 EO
Amendments to Heavy-Duty On-Board Diagnostics Regulations Approved amendments to the light and medium-duty vehicle and heavy duty engine OBD regulations.	5/28/2009 4/6/10 EO
Smog Check Improvements BAR adopted amendments to implement changes in state law and SIP commitments adopted by ARB between 1996 and 2007.	5/7/09 by BAR 6/9/09 EO
Pesticide Element Reduce volatile organic compound (VOC) emissions from the application of agricultural field fumigants in the South Coast, Southeast Desert, Ventura County, San Joaquin Valley, and Sacramento Metro federal ozone nonattainment areas.	4/20/09 10/12/09 EO (2) 8/2/11 EO
Low Carbon Fuel Standard Approved new standards to lower the carbon content of fuels.	4/20/09 11/25/09 EO
Pesticide Element for San Joaquin Valley DPR Director approved pesticide ROG emission limit of 18.1 tpd and committed to implement restrictions on non-fumigant pesticide use by 2014 in the San Joaquin Valley.	4/7/09 DPR
Tire Pressure Inflation Regulation Approved a regulation requiring automotive service providers to perform tire pressure checks as part of every service.	3/26/09 2/4/10 EO

Board Action	Hearing Date
In-Use Off-Road Diesel-Fueled Fleets Amendments Makes administrative changes to recognize delays in the supply of retrofit control devices.	1/22/09
Aftermarket Critical Emission Parts on Highway Motorcycles Allows for the sale of certified critical emission parts by aftermarket manufacturers.	1/22/09 6/19/09 EO
Cleaner In-Use Heavy-Duty Diesel Trucks (Truck and Bus Regulation) Approved a regulation to reduce diesel particulate matter and oxides of nitrogen through fleet modernization and exhaust retrofits. Makes enforceability changes to public fleet, off-road equipment, and portable equipment regulations.	12/11/08 10/19/09 EO 10/23/09 EO
Large Spark-Ignition Engine Amendments Approved amendments to reduce evaporative, permeation, and exhaust emissions from large spark-ignition (LSI) engines equal to or below 1 liter in displacement.	11/1/08 3/12/09 EO
Small Off-Road Engine (SORE) Amendments Approved amendments to address the excessive accumulation of emission credits.	11/21/08 2/24/10 EO
Portable Outboard Marine Tanks and Components (part of Additional Evaporative Emission Standards) Approved a regulation that establishes permeation and emission standards for new portable outboard marine tanks and components.	9/25/08 7/20/09 EO
Cleaner Fuel in Ocean Going Vessels Approved a regulation that requires use of low sulfur fuel in ocean-going ship main engines, and auxiliary engines and boilers.	7/24/08 4/16/09 EO
Spark-Ignition Marine Engine and Boat Amendments Provides optional compliance path for > 500 hp sterndrive/inboard marine engines.	7/24/08 6/5/09 EO
Zero emission vehicles Updated California's ZEV requirements to provide greater flexibility with respect to fuels, technologies, and simplifying compliance pathways. Amendments give manufacturers increased flexibility to comply with ZEV requirements by giving credit to plug-in hybrid electric vehicles and establishing additional ZEV categories in recognition of new developments in fuel cell vehicles and battery electric vehicles.	3/27/08 12/17/08 EO

**Table provided by the California Air Resources Board*

Figure 1 Valley Summer NOx and VOC Emissions, 1990-2023

D.2 ATTAINMENT IS NOT DUE TO UNUSUALLY FAVORABLE METEOROLOGY

Ozone formation is strongly driven by several factors, including horizontal and vertical ventilation, high pressure, temperature, and solar radiation. These factors contribute to high temperatures on the valley floor. High temperatures can be used as a metric that shows ozone forming potential for a given summer and can be used to compare one ozone season to another. The Valley has maintained attainment of the 1-hour ozone standard from 2013-2022. The analysis in this section shows that the average high temperatures over 2020-2022 were consistent or higher than averages over the 2012-2019 period and that temperatures from 2012-2019 were higher than the temperatures from 1950-2011. Additionally, 2020-2022 did not have lower ozone-forming potential than prior years, and meteorology did not become unusually favorable causing for the Valley to maintain attainment. The Valley is in attainment of the 1-hour ozone standard due to significant investments in cleaner technologies and practices, not because of unusually favorable meteorology.

This section also demonstrates that peak temperature days at Stockton, Modesto, Fresno, and Bakersfield are evenly and normally distributed throughout the May-October ozone season across 2020-2022, similar to the longer 2012-2019 period as shown in the charts below. Furthermore, even when average high temperatures increased, the 1-hour ozone concentrations have decreased in some areas. These results demonstrate that the Valley's improvement in ozone concentrations are not due to unusually favorable meteorology, and that the ozone forming potential during the 2020-2022 period was at least equal to or stronger than longer term averages. It is therefore reasonable to conclude that the reduced ozone concentrations of 2020-2022

and continued attainment of the 1-hour ozone standard are the result of District and CARB emission control programs. For further information on how temperature can effect ozone formation see Appendix B.

Average High Temperatures, 1950-2022

To demonstrate that ongoing and sustained improvements in ozone concentrations are not caused by favorable meteorology, a comparison of daily and average high temperatures was completed for three temperature data sets (1950-2011, 2012-2019, and 2020-2022) over the ozone season each year (May-October). Table 19 reveals that average high temperature and range of daily maximum temperatures over the past three years are greater than (i.e., warmer) or equal to the 62-year average from 1950-2011 and the more recent 8-year average (2012-2019) which covers the period from the District's previous ozone attainment demonstration.

Table 19 Summary of Average High Temperatures and Average Range of Daily Maximum Temperatures during the Ozone Season (May-October)

	1950-2011		2012-2019		2020-2022	
	High Temp (Average)	High Temp (Range)	High Temp (Average)	High Temp (Range)	High Temp (Average)	High Temp (Range)
Stockton	87.2°F	70.4°F to 100.4°F	89.0°F	76.5°F to 99.6°F	90.3°F	74.1°F to 98.3°F
Modesto	87.2°F	71.7°F to 100.0°F	89.2°F	77.8°F to 99.9°F	89.2°F	73.9°F to 96.4°F
Fresno	90.0°F	72.5°F to 103.4°F	92.1°F	77.2°F to 102.8°F	93.4°F	76.6°F to 103.3°F
Bakersfield	90.3°F	72.6°F to 102.3°F	92.0°F	79.2°F to 102.8°F	93.0°F	77.2°F to 102.8°F
Average	88.7°F	86.7°F	90.6°F	89.5°F	90.5°F	87.8°F

Comparing High Temperature Days to 1-hour Ozone Exceedance Days

A comparison of two sets of data (2012-2019 and 2020-2022) for the 'average number of high temperature days per year' for days with maximum daily temperatures equal to and greater than 95 degrees Fahrenheit reveals a range of values and their average value (Table 20). This table demonstrates that the 2020-2022 'average number of high temperature days per year' are very similar (with an average slightly higher) than those of the previous years of 2012-2019 and that the number of high temperature days per year would not be a causative factor in reduced ozone concentrations that occurred during that time period. See Appendix B for further analysis on the relationship of high temperatures and ozone concentrations.

**Table 20 Average Number of High Temperature Days per Year $\geq 95^{\circ}\text{F}$
(May-October)**

	2012-2019	2020-2022
Stockton	58	72
Modesto	60	62
Fresno	94	98
Bakersfield	93	97
Average	82	89

In Figure 2 through Figure 5, the maximum daily temperatures from 2020-2022 are distributed throughout the ozone season (May-October) similar to the ozone seasons in the previous years of 2012-2019. Since the distribution analysis shows a normal summer temperature distribution for all sites for all 11 years (2012-2022), it can be concluded that the chances for ozone formation for the 2020-2022 seasons were very similar to past seasons and therefore would not be a factor in the overall reduced ozone concentrations. For further evidence on the maximum temperatures measured in the Valley, see Appendix B.

**Figure 2 Stockton Airport Maximum Daily Temperatures (°F),
May-October (2012-2019 & 2020-2022)**

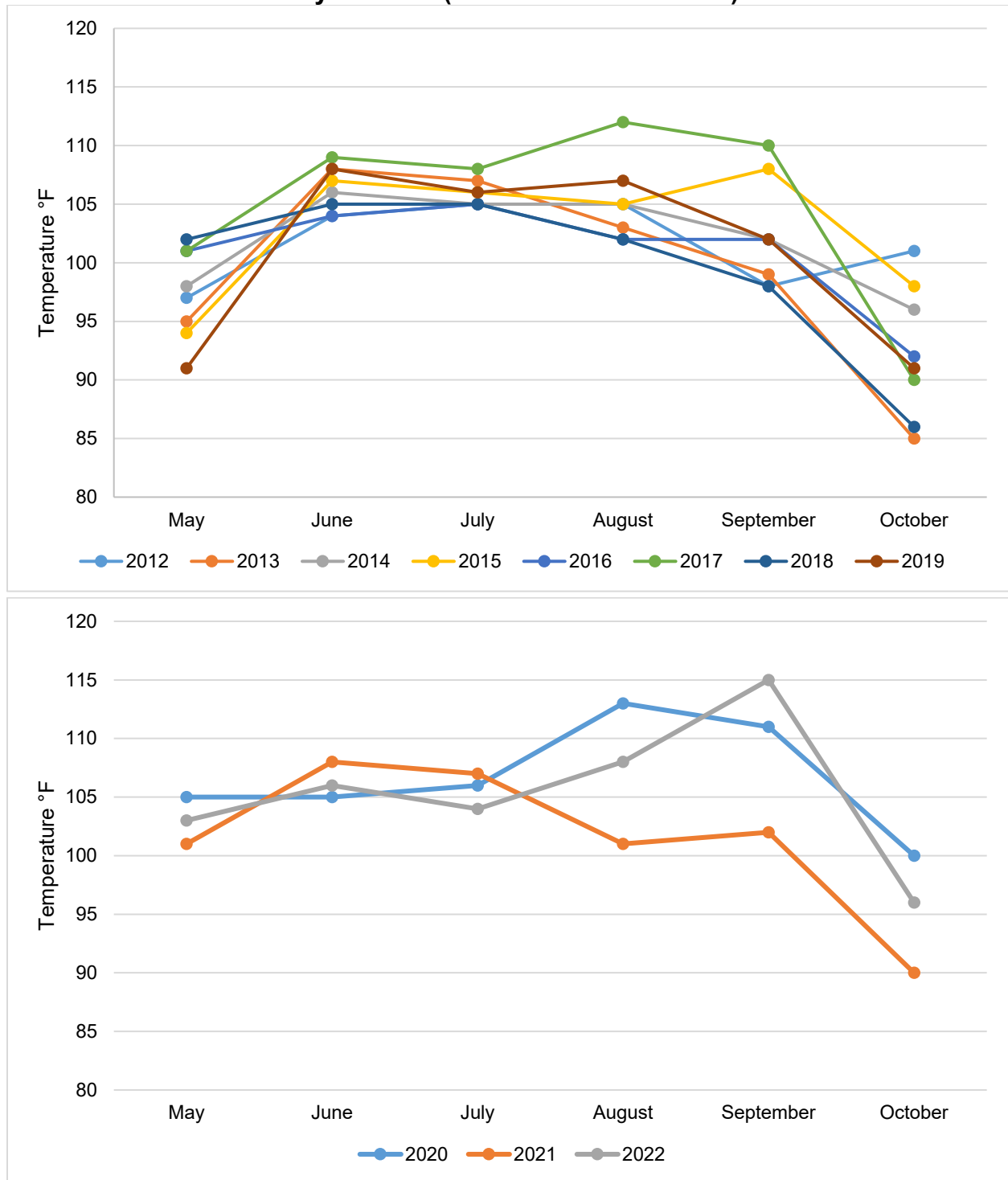


Figure 3 Fresno Yosemite International Airport Maximum Daily Temperatures (°F), May-October (2012-2019 & 2020-2022)

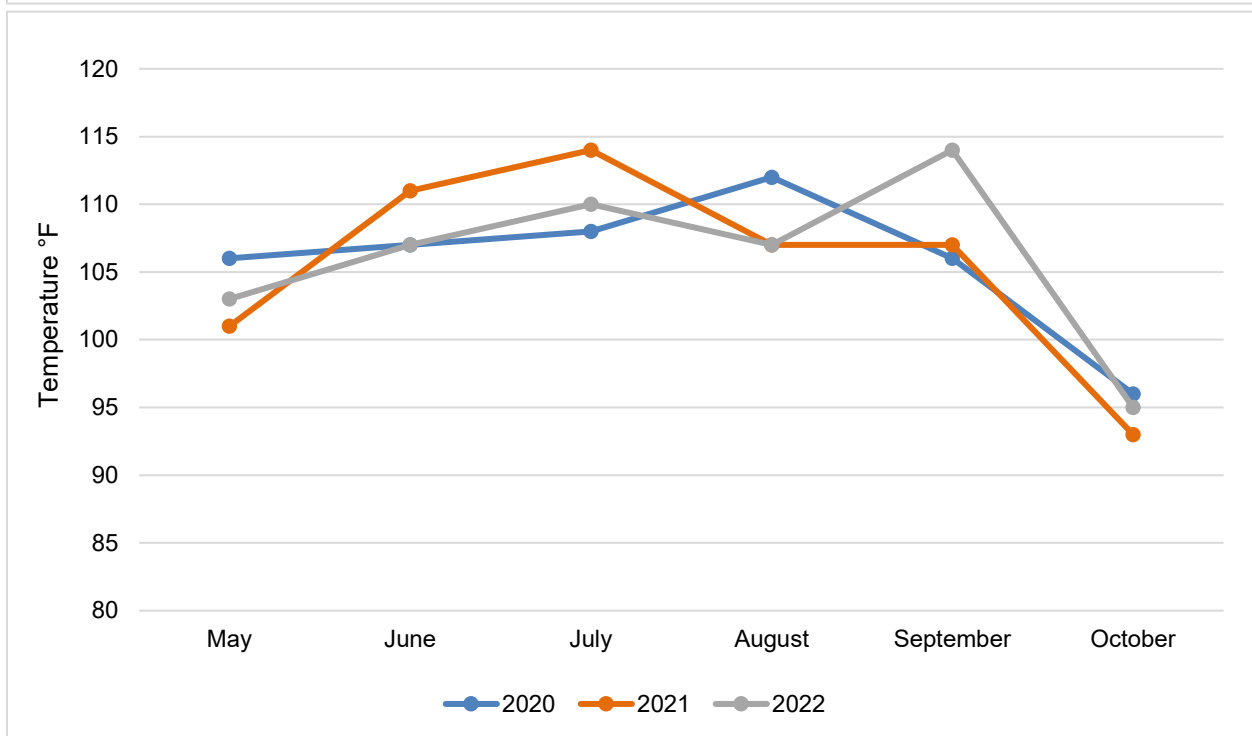
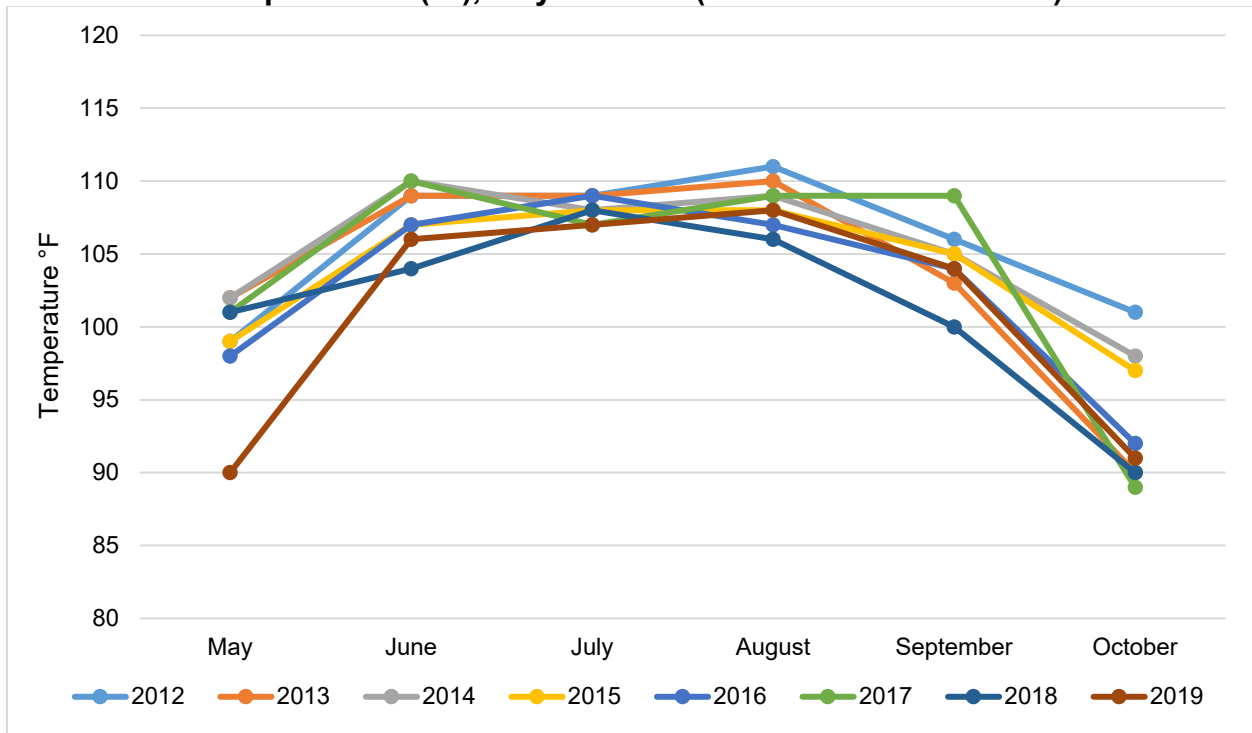


Figure 4 Bakersfield Meadows Airport Maximum Daily Temperatures (°F) May-October (2012-2019 & 2020-2022)

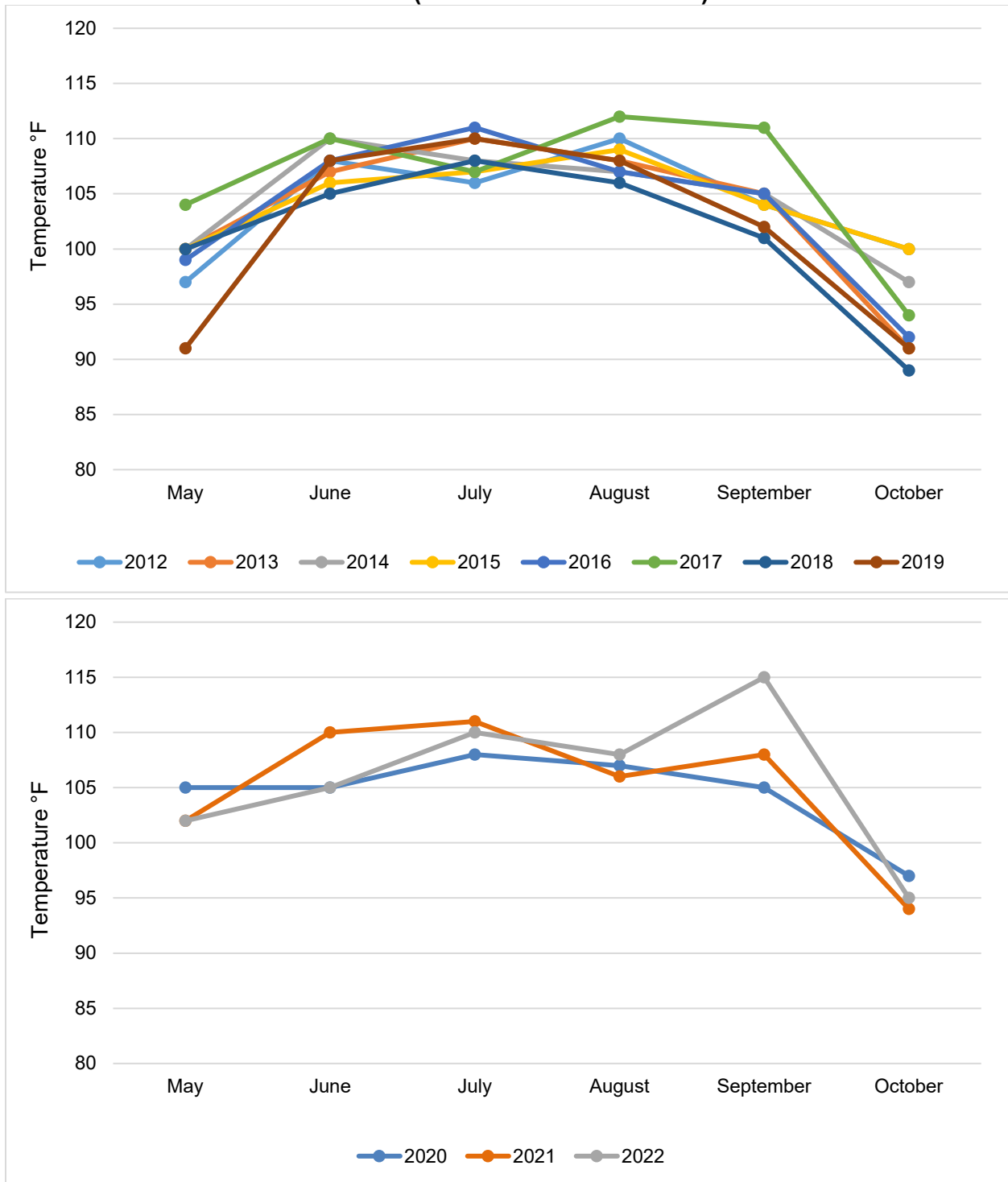
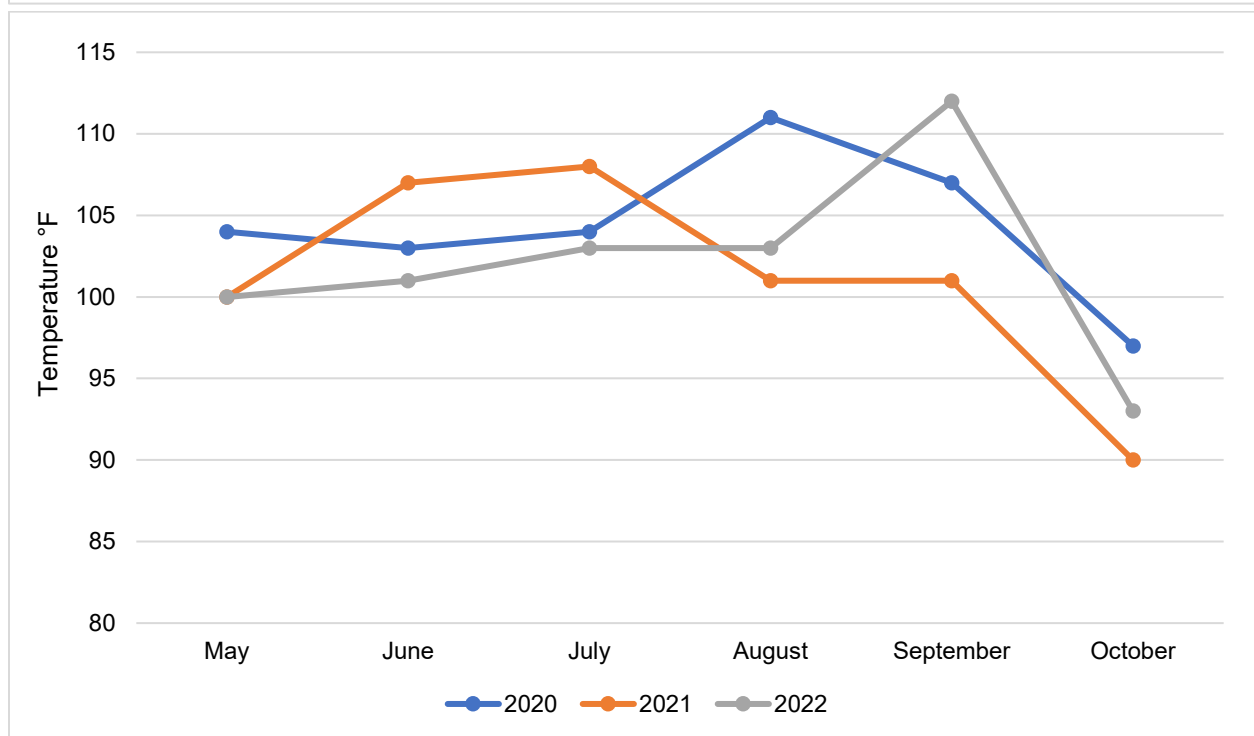
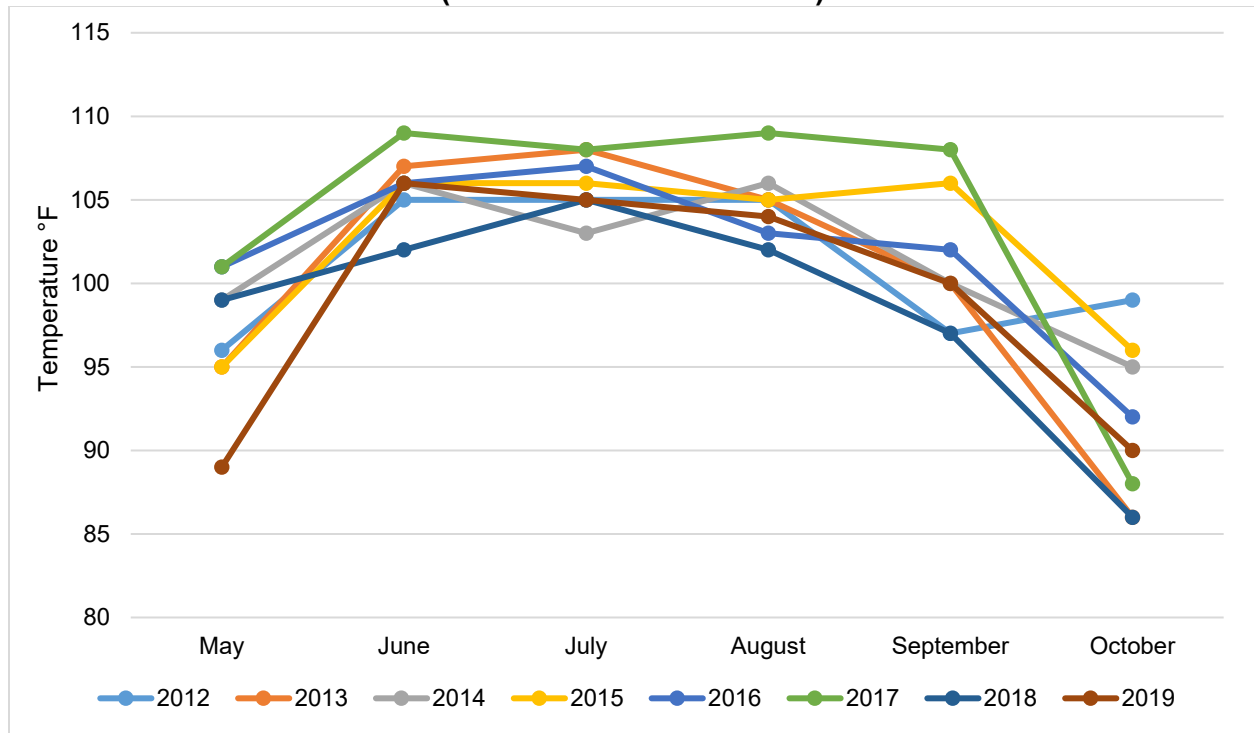


Figure 5 Modesto City Airport Maximum Daily Temperatures (°F) May October (2012-2019 & 2020-2022)



Drought in the San Joaquin Valley

Through daily forecasting and through longer-term analysis, the District tracks the ongoing drought and its impact on air quality across the Valley.¹⁷ In general, drought conditions often bring warmer temperatures and longer periods of poor dispersion, which can lead to higher concentrations of pollutants in the Valley.

Beginning in April 2021, the Governor of California signed a set of emergency proclamations directing state agencies to take immediate action to bolster drought resilience across the state, and declared a State of Emergency due to severe drought conditions.^{18,19,20}

According to the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) statewide climatological rankings²¹, the January 2022 to April 2022 period was the driest on record for California, with a -9.7 inch precipitation deficit. Further, the May 2020 to April 2022 period was the 2nd driest on record. Figure 6 depicts the worsening of the California drought between May 2020 and May 2022.

As drought conditions are often correlated with long periods of poor atmospheric dispersion and warmer temperatures, the District has continued to attain the 1-hour ozone standard through this extreme drought period. This is yet another example that these ongoing improvements are not due to unusually favorable meteorology, but are rather due to permanent emission reductions.

¹⁷ See, for example, the District's April 21, 2022 "Report on the 2021-2022 Winter Residential Woodsmoke Reduction Strategy," (pages A-7 through A-9). Retrieved from:

https://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2022/April/final/11.pdf

¹⁸ Executive Department, State of California. State of Emergency Proclamation. April 2021. Retrieved from:

<https://www.gov.ca.gov/wp-content/uploads/2021/04/4.21.21-Emergency-Proclamation-1.pdf>

¹⁹ Executive Department, State of California. State of Emergency Proclamation. May 2021. Retrieved from:

<https://www.gov.ca.gov/wp-content/uploads/2021/05/5.10.2021-Drought-Proclamation.pdf>

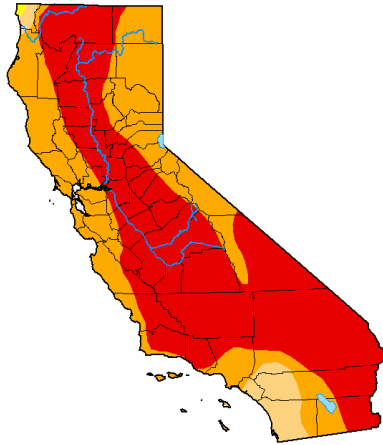
²⁰ Executive Department, State of California. State of Emergency Proclamation. October 2021. Retrieved from:

<https://www.gov.ca.gov/wp-content/uploads/2021/10/10.19.21-Drought-SOE-1.pdf>

²¹ National Oceanic and Atmospheric Administration National Centers for Environmental Information. California Precipitation Rankings, April 2022. Retrieved from: <https://www.ncdc.noaa.gov/cag/statewide/rankings/4/pcp/202204>

Figure 6 Drought Extent and Severity in California²²

U.S. Drought Monitor
California



May 10, 2022

(Released Thursday, May 12, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.86	95.14	59.81	0.00
Last Week 05-03-2022	0.00	100.00	100.00	95.18	40.51	0.00
3 Months Ago 02-09-2022	0.00	100.00	99.25	66.42	1.39	0.00
Start of Calendar Year 01-01-2022	0.00	100.00	99.30	67.62	16.60	0.84
Start of Water Year 09-26-2021	0.00	100.00	100.00	93.93	87.88	45.66
One Year Ago 05-11-2021	0.00	100.00	100.00	94.31	73.33	13.53

Intensity:

None	D0 Abnormally Dry	D1 Moderate Drought	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought	D4 Exceptional Drought	

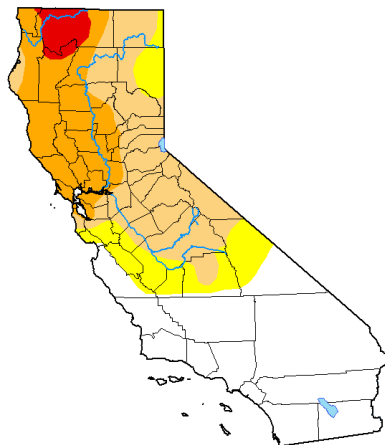
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

U.S. Drought Monitor
California



May 12, 2020

(Released Thursday, May 14, 2020)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.80	58.20	46.67	20.84	2.99	0.00
Last Week 05-07-2020	41.80	58.20	42.87	19.56	3.94	0.00
3 Months Ago 02-12-2020	53.85	46.15	9.54	0.00	0.00	0.00
Start of Calendar Year 01-01-2020	96.43	3.57	0.00	0.00	0.00	0.00
Start of Water Year 09-22-2019	95.29	4.71	2.06	0.00	0.00	0.00
One Year Ago 05-16-2019	94.03	5.97	0.00	0.00	0.00	0.00

Intensity:

None	D0 Abnormally Dry	D1 Moderate Drought	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought	D4 Exceptional Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

²² National Drought Mitigation Center. U.S. Drought Monitor. Retrieved from: <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?CA>

D.3 ATTAINMENT IS NOT DUE TO TEMPORARY EMISSIONS REDUCTIONS

Since the Valley's ozone precursor emissions are dominated by mobile sources which are a key component of economic activity in California, gasoline and diesel fuel sales were analyzed as indicators of economic activity.²³ This analysis shows that the District has continued to maintain attainment since EPA determined the Valley had attained the 1-hour ozone standard in 2016 and that the improvement in ozone throughout 2020-2022 was not due to a temporary economic downturn.

Analysis of California gasoline and diesel sales from May to October shows some variation from year to year, including slight decreases. Figure 7 demonstrates these variations as well as the vehicles miles traveled (VMT) for both gasoline and diesel-fueled vehicles. Even though California gasoline sales and VMT over 2020-2022 were inconsistent as compared to previous years, diesel sales and VMT continued at a steady rate.

Gasoline sales decreased in 2020 as a result of the COVID-19 pandemic; however, it did not play a significant role in the District's continued attainment of the 1-hour ozone standard. The District was in continual attainment of the 1-hour ozone standard in the years since EPA's clean data determination (based on 2012-2014 data), as well as during and after the COVID-19 pandemic. In fact, the Valley experienced a higher number of exceedances in 2020/2021 as a result of California wildfires. Figure 8 displays acres burned statewide from 2013 to 2022.

The Valley's ozone improvement is not attributable to a temporary economic downturn based on the provided analysis. The improvement in the Valley's ozone levels can be attributed to the implementation of new rules in the years since the District attained the 1-hour ozone standard as well as enforcement of rules throughout the District over the past 10 years.

²³ These were also the economic indicators used in analysis of Sacramento Metropolitan AQMD's 1-hour ozone attainment request. See EPA's proposed approval of their request at 76 FR 28696. Retrieved from: <http://www.gpo.gov/fdsys/pkg/FR-2011-05-18/pdf/2011-12063.pdf>.

Figure 7 State-Wide Fuel Sales and Vehicle Miles Travelled (May-October)

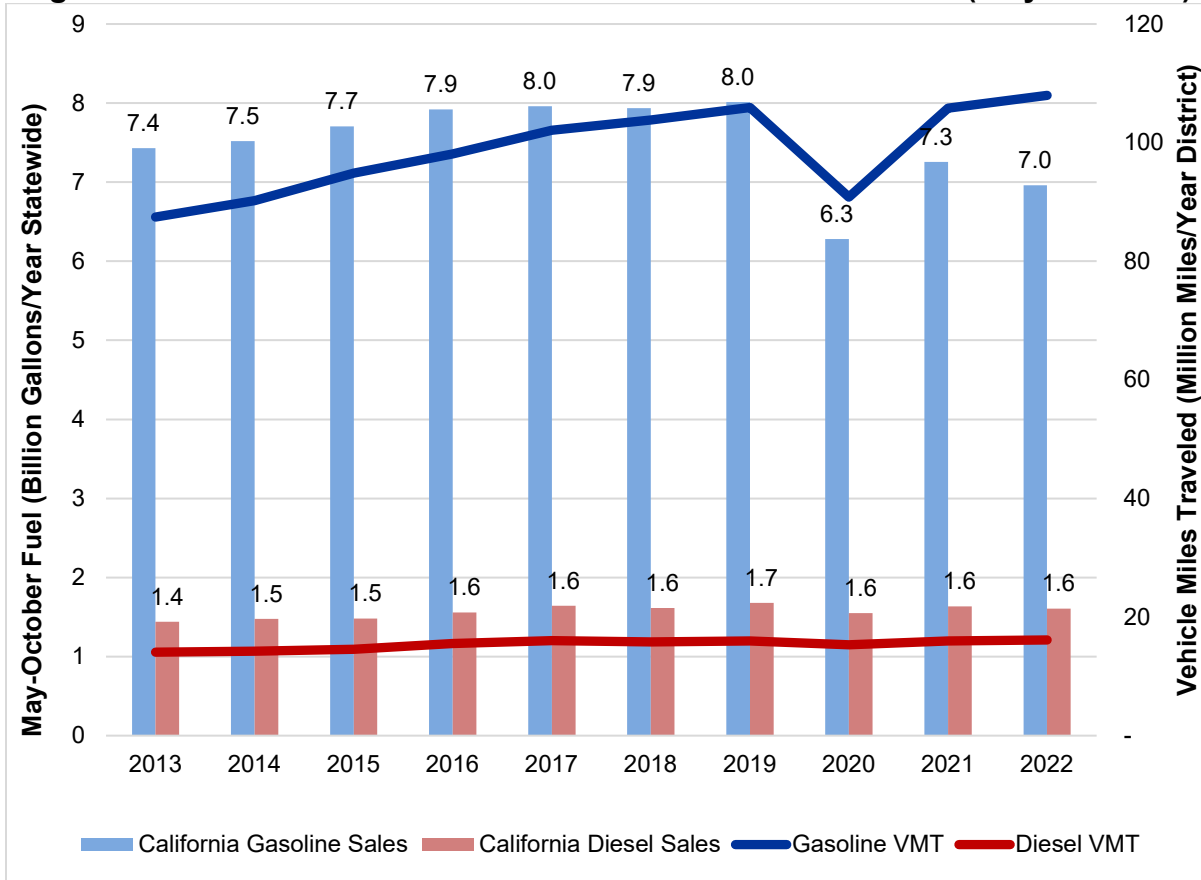
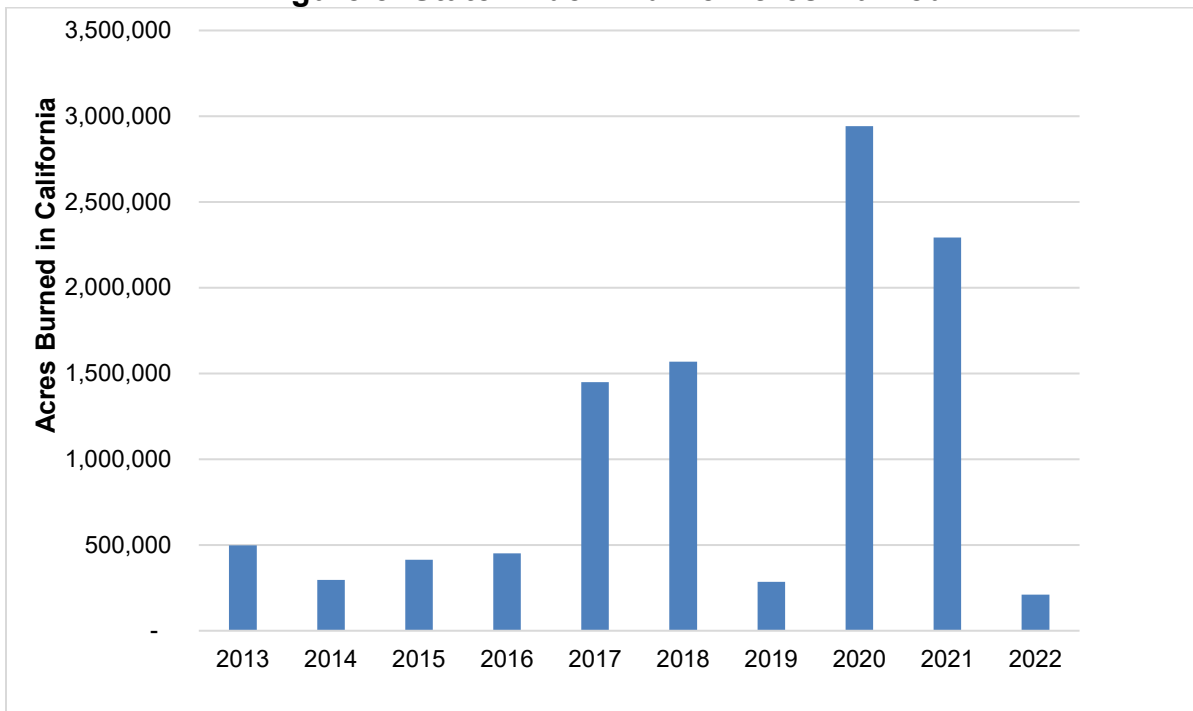


Figure 8 State-Wide Wildfire Acres Burned



D.4 CONCLUSION

The District has continued to attain the 1-hour ozone standard through permanent and enforceable emission reductions. The Valley has achieved this through stringent District and CARB air quality rules and regulations. Despite the high temperature and drought in the Valley, the District has continued to attain the 1-hour ozone standard. Additionally, attainment of the 1-hour ozone standard was not a result of temporary emission reductions such as an economic downturn. As previously mentioned, the District has continued to be in attainment despite the inconsistency in gasoline sales, VMT, the COVID-19 pandemic, and state-wide wildfires through the period. Therefore, attainment of the 1-hour ozone standard is due to permanent and enforceable emission reductions.

E. SECTION 110 AND PART D REQUIREMENTS

The District has met all 1-hour ozone SIP requirements for the purposes of redesignation under Section 110 of the CAA. In addition, EPA has approved the *2013 Ozone Plan* as meeting Section 110 requirements and as meeting applicable requirements under Part D of Title I of CAA. No outstanding 1-hour ozone SIP submittals exist for the District.

F. MAINTENANCE PLAN

The EPA Office of Air Quality Planning and Standards (OAQPS) memorandum *Procedures for Processing Requests to Redesignate Areas to Attainment*²⁴ (Calcagni Memo) also provides guidance of what is expected from a maintenance plan under existing policy. The core provisions of a maintenance plan are as follows:

Attainment Inventory

- Identify the emission reductions sufficient to attain the NAAQS in the Valley.
- The inventory should be consistent with EPA's most recent guidance on emission inventories for nonattainment areas available at the time and should include the emissions during the time period associated with the monitoring data showing attainment.

Maintenance Demonstration

- Demonstrate maintenance of the NAAQS for another period of ten years following EPA redesignation to attainment by either:
 - Showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory; or
 - Modeling to show that the future mix of sources and emissions rates will not cause a violation of the NAAQS; and

²⁴ Calcagni, John. Memorandum: *Procedures for Processing Requests to Redesignate Areas to Attainment*. (1992, September 8). United States Environmental Protection Agency Office of Air Quality Planning and Standards. Retrieved from: <https://www.epa.gov/ozone-pollution/procedures-processing-requests-redesignate-areas-attainment>

- Show that emission rate projections are based on permanent, enforceable reductions.

Air Monitoring Network

- Demonstrate that the state will continue to operate an appropriate air quality monitoring network to verify the attainment status of the area.
- Discuss provisions for continued operation of air quality monitors that will verify attainment.

Verification of Continued Attainment

- Ensure that the state has the legal authority to implement and enforce all measures needed to maintain the NAAQS, including the acquisition of ambient and source emission data.
- Show how continued maintenance of the standard will be tracked.

Contingency Plan

- Verify implementation of emission control measures in the fully approved implementation plan.
- Identify indicators and provisions to promptly correct any violation occurring after redesignation.

The maintenance plan constitutes a SIP revision. EPA has 18 months to act on the maintenance plan. For the purposes of the *2023 Maintenance Plan and Redesignation Request for the Revoked 1-Hour Ozone Standard*, the District is assuming that EPA's action would be complete sometime in the 2025/2026 timeframe. Since the maintenance plan must provide for continued attainment 10 years after designation, the District selected 2036 as the target maintenance year. The sections below address the District's fulfillment of the maintenance plan requirements.

F.1 ATTAINMENT INVENTORY

An emissions inventory is a systematic listing of air pollution sources along with the amount of pollution emitted from each source or category over a given time period. Emissions inventory data is used as a primary input to air quality modeling used in attainment demonstrations, developing control strategies, and provide a means to track progress in meeting the emission reduction commitments. Emissions inventories are an estimate of the air pollution emissions that are actually released into the environment—they are not measurements of ambient concentrations. The following are examples of pollution sources grouped by major industry sectors:

- Industrial or stationary point sources – power plants and oil refineries
- Area-wide sources – consumer products and residential fuel combustion
- On-road sources – passenger vehicles and heavy-duty trucks
- Off-road mobile sources – aircraft, trains, ships, recreational boats, construction equipment and farm equipment
- Non-anthropogenic (natural) sources – biogenic (or vegetation), geogenic (petroleum seeps), and wildfires

Emissions Inventory

The emissions inventory for this maintenance plan was generated using the California Emission Projection Analysis Model (CEPAM) 2022, San Joaquin Valley PM2.5 Nonattainment Area - Version 1.00,²⁵ which is the most comprehensive and current emission inventory for the Valley, and is consistent with EPA's most recent guidance on emissions inventories.

CARB and the District have developed a comprehensive current emissions inventory consistent with the requirements set forth in Section 182(a)-(f) of the CAA²⁶. CARB and District staff conducted a thorough review of the inventory to ensure that the emission estimates reflect accurate emissions reports for point sources and that estimates for mobile and areawide sources are based on the most recent approved models and methodologies. CARB also reviewed the growth profiles for point and areawide source categories and updated them as necessary to ensure that the emission projections are based on data that reflect historical trends, current conditions, and recent economic and demographic forecasts.

EPA regulations require that the emissions inventory contains emissions data for precursors; i.e. NOx and VOC²⁷ for the formation of ozone. The inventory included substitutes VOC with reactive organic gases (ROG), which, in general, represent a slightly broader group of compounds than those in EPA's list of VOCs.

CARB and the District are selecting 2017 as the planning inventory base year for this maintenance plan, and are using the California specific emissions inventory developed through CEPAM.²⁸ In selecting 2017 as the base year, CARB and the District relied on the Emission Inventory Guidance²⁹, which allows agencies to consider the availability of data, the implementation of rule requirements, and consistency in the base year across planning and modeling inventories in choosing an appropriate baseline inventory year.

The Emission Inventory Guidance indicates that a common reason for choosing an alternate base year is the desire to have the base year for planning inventories be consistent with the base year for modeling inventories. For modeling purposes, 2019, 2020, and 2021 are not years with representative air quality suitable for modeling future air quality. Modeled attainment demonstrations are based on a five-year weighted design value centered around the base year inventory, giving the base year the most weight. To ensure the model is accurately predicting air quality, it is best to have the base year not be a year of extensive wildfires. Wildfires have become more intense in California. The two largest wildfire years on record occurred in 2020 and 2021. In the

²⁵ Source: CEPAM 2022 – San Joaquin Valley PM2.5 Nonattainment Area - Version 1.00

²⁶ Section 182(a)-(f) of the Act. <https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapl-partD-subpart2-sec7511a.htm>

²⁷ Section 182(a)(1) of the Act. <https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapl-partD-subpart2-sec7511a.htm>

²⁸ Criteria Pollutant and Emission Inventory Data. <https://ww2.arb.ca.gov/criteria-pollutant-emission-inventory-data>

²⁹ EPA. Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations. Retrieved from: https://www.epa.gov/sites/default/files/2017-07/documents/ei_guidance_may_2017_final_rev.pdf

Valley, these extensive wildfires impacted air quality throughout the Valley for months. 2020 and 2021 are also unusual, non-representative years due to COVID-19 impacts. Furthermore, in 2020, Valley sites collected incomplete speciation data due to laboratory and monitoring site shutdowns because of the pandemic.

Additionally, CARB and the District prefer to use a National Emissions Inventory (NEI) year as the base year for the inventory, where the two most recent NEI years are 2020 and 2017. However, in 2020, the COVID-19 pandemic affected a range of industries economy-wide, making 2020 emissions atypical; therefore, 2020 is unsuitable for use as a base year for the inventory. Alternatively, the year 2017 did not experience any similar disruption and reflects typical emissions, while retaining the benefits of being an NEI year based on actual emissions data that has undergone quality assurance and quality control (QA/QC) evaluation by EPA.

Using 2017 as the base modeling year ensures that anthropogenic emissions are accurately reflected, speciation data are available and robust, and the model can more accurately reflect the impacts of control strategies; therefore, CARB and the District are using 2017 as the base modeling year. Selecting 2017 for the planning inventory base year would allow for more consistency across the planning and modeling inventories used in this maintenance plan.

Attainment Inventory

EPA requires maintenance plans to present the emissions inventory for the time period used to define attainment for a particular area (Calcagni Memo). As previously mentioned, EPA took final action to determine that the District attained the 1-hour ozone NAAQS through a clean data determination for the period 2012-2014. The final action in the Federal Register states that the District must also, “*submit a demonstration that the area attained the revoked ozone NAAQS due to permanent and enforceable emission reductions and that the area will maintain the revoked NAAQS for 10 years.*”

Therefore, the District is submitting such a demonstration to fulfill these requirements for the 1-hour ozone NAAQS. Since the 2014 clean data determination, the District has continued to maintain the 1-hour ozone NAAQS as demonstrated in section B of the document.

The District has selected the year 2020 as its base year inventory for the 10 year maintenance demonstration (from the 2020-2022 attainment period), projected from the 2017 base year in CEPAM. Table 21 shows NO_x emissions totaled 181.29 tons per day (tpd) in 2020, and the VOC emission inventory was 317.05 tpd, both of which are precursors to the formation of ozone. Notably, the emission inventory data reflects a “summer day” as required by EPA in the Calcagni Memo. Appendix A provides a detailed summary of the attainment inventory and projected inventory.

Table 21 2020 Ozone Attainment Inventory

Pollutant	Summer Average Emissions (tpd)
NOx	181.29
VOC	317.05

F.2 MAINTENANCE DEMONSTRATION

According to the Calcagni Memo, a state may “*demonstrate maintenance of the NAAQS by either showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory or by modeling to show that the future mix of sources and emission rates will not cause a violation of the NAAQS.*”³⁰ Consistent with the Calcagni Memo, this maintenance plan demonstrates maintenance of the 1-hour ozone NAAQS by showing that future ozone precursor emissions (NOx and VOC) will not exceed the level of the attainment inventory for at least ten years after redesignation to attainment.

Since the future date of redesignation is undetermined, the District has selected 2026-2036 as the ten year maintenance period. EPA is allowed up to 18 months to perform its review under Section 107(d)(3)(D) of the CAA, and therefore redesignation could potentially occur in the 2025/2026 timeframe.

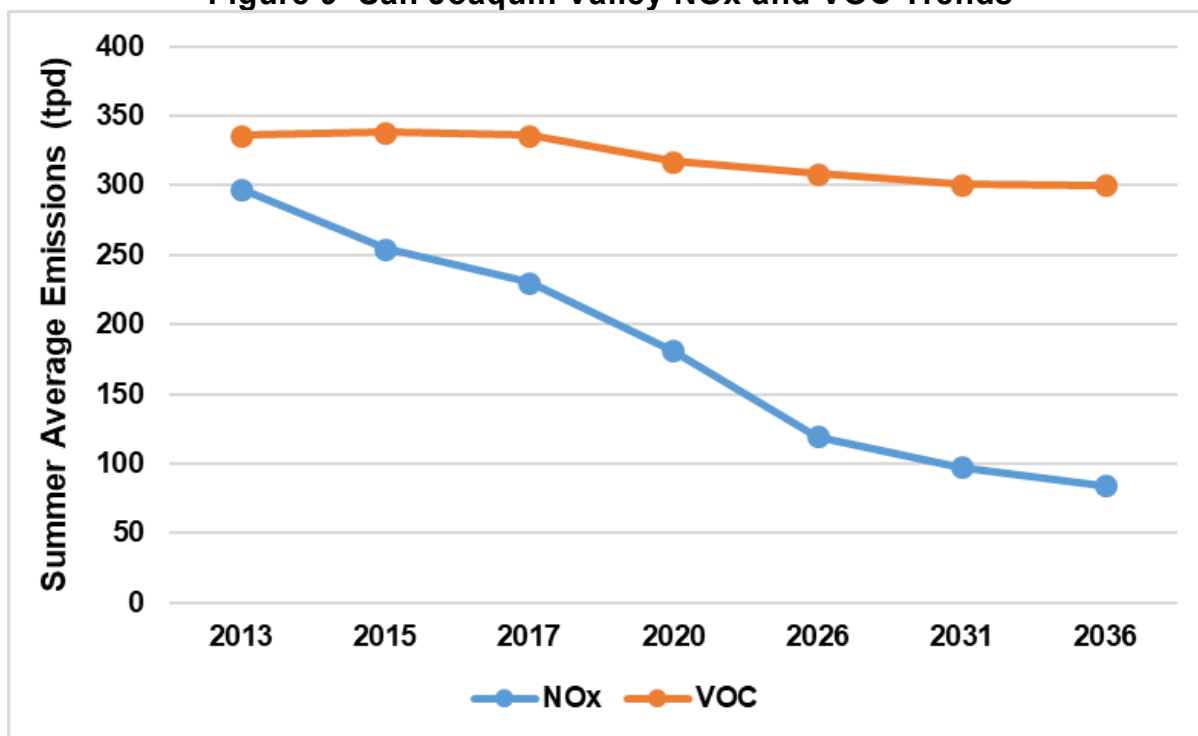
To demonstrate that the Valley will maintain attainment of the 1-hour ozone NAAQS, this plan demonstrates that projected emissions in 2036 will not exceed those established as the 2020 baseline attainment inventory. If the projected precursors for ozone (NOx and VOC) concentrations in 2036 are lower than the 2020 baseline attainment inventory levels for each, then the District has demonstrated that the Valley will maintain attainment status. Specifically, NOx emissions must stay below 181.29 tpd and VOC emissions must stay below 317.05 tpd.

This emissions projection shows that emissions will not increase to a level that would exceed the 1-hour ozone standard. The projected inventory considers future consistent growth, including population and industry, consistent with the attainment inventory, and documents data inputs and assumptions. As demonstrated in Table 22 below, emissions in 2036 are well below the attainment year concentrations. Figure 9 shows that NOx and VOC trends have significantly decreased since the District reached attainment in 2013 and continue to decrease over the ten year demonstration.

Table 22 Ozone Maintenance Demonstration (tpd)

	2020	2026	2031	2036
NOx	181.29	119.5	97.49	84.13
VOC	317.05	308.5	301	300.3

³⁰ “Procedures for Processing Requests to Redesignate Areas to Attainment,” (page 9). Retrieved from: https://www.epa.gov/sites/production/files/2016-03/documents/calcagni_memo_-_procedures_for_processing_requests_to_redesignate_areas_to_attainment_090492.pdf

Figure 9 San Joaquin Valley NOx and VOC Trends

F.3 MONITORING NETWORK

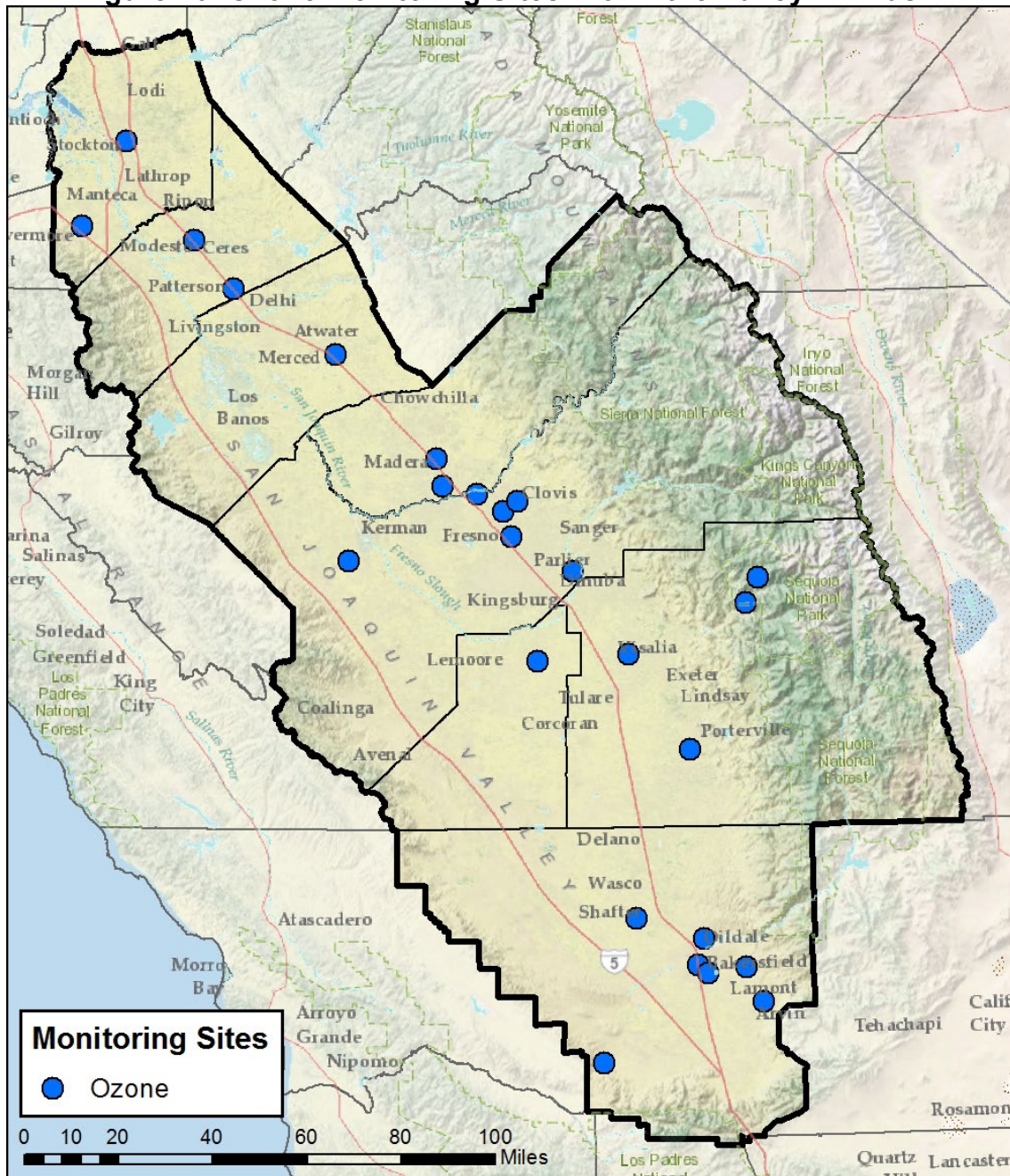
Pursuant to Calcagni Memo requirements, the State shall continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR 58, to verify the attainment status of the area. This maintenance plan contains provisions for continued operation of air quality monitors that will provide such verification.

The District operates and will continue to operate an extensive network of air quality monitors throughout the Valley to support its mission of improving and protecting public health. District staff uses the hourly readings from real-time monitors to communicate the state of the air quality to Valley residents. Through programs and venues such as the EPA AirNow tool, the daily air quality forecast, the District website, and Valley media, residents are able to obtain air quality information that can help them with their activity planning. The District also uses real-time air quality data to manage prescribed burning, agricultural burning, hazard reduction burning, and residential wood combustion to ensure these activities do not result in adverse air quality impacts.

As part of the District's long-term efforts to improve public health, District staff rigorously analyze air monitoring data to ensure the data is of the highest quality. This air monitoring data determines the state of the Valley's air quality and is fundamental in the Valley's effort for continual improvement and to achieve attainment of EPA's health-based ambient air quality standards as quickly as possible.

As a part of this effort, the District and CARB manage the majority of the currently operating 37 air monitoring stations throughout the Valley, 25 of which measure ozone using EPA approved analyzers. The figure below provides a map of the ozone air monitoring stations operating in the Valley. Per requirements outlined in 40 CFR Part 58 Subpart B Section 58.10, the District conducts an assessment of its monitoring network every five years. The assessment includes reevaluating the effectiveness and efficiency of the District’s ozone air monitoring network.

Figure 10 Ozone Monitoring Sites within the Valley Air Basin



Additionally, the most recent information regarding the Valley's air monitoring network has been made available in the *2022 Air Monitoring Network Plan*³¹ and is available on the District's website. This plan summarizes monitoring requirements for various pollutants and demonstrates how air monitoring in the Valley meets or exceeds all applicable requirements for State and Local Air Monitoring Stations (SLAMS).

The number of ozone monitors required is determined by population and measured ozone concentrations in metropolitan statistical areas (MSA). There are eight MSAs in the Valley, with each having the same boundaries as the county.³² Table 23 shows that the Valley meets or exceeds the minimum number of ozone monitors required in each MSA. Figure 10 shows the location of all Valley air monitoring sites.

Ozone monitoring networks are designed to monitor areas with high population densities, areas with high pollutant concentrations, areas impacted by major pollutant sources, and areas representative of background concentrations. Most air monitoring sites in the District represent population exposures and/or maximum concentrations representative of neighborhood and regional scales. Among the ozone monitors operating in the Valley, the majority are suitably located to measure representative concentrations in areas of high population density. The remaining monitors are mostly located in high ozone concentration areas, regions intended to measure air moving into the District, air moving into larger urban areas, and in remote areas to measure background ozone concentrations.

Table 23 Ozone Monitoring Requirements for the Valley

Metropolitan Statistical Area (MSA)	2022 Population	Highest 2022 8-hour Ozone Design Value in MSA (ppb)	≥85% of 2008 8-hour ozone NAAQS (75 ppb)	Number of monitors required	Number of active SLAMS ozone monitor sites
Bakersfield ³³	909,813	87	Yes	2	7
Fresno	1,011,273	84	Yes	2	6
Hanford-Corcoran	152,023	78	Yes	1	1
Madera	157,396	78	Yes	1	2
Merced	284,338	76	Yes	1	1
Modesto	549,466	79	Yes	2	2
Stockton	784,298	66	Yes	2	2
Visalia- Porterville	475,014	89	Yes	2	2

³¹ SJVAPCD. *2022 Air Monitoring Network Plan*. (October 11, 2022). Retrieved from: <https://ww2.valleyair.org/air-quality-information/air-monitoring/>

³² 40 CFR 58 Appendix D, Table D-2. Retrieved from: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-58>

³³ Air monitors in the Eastern Kern County Air Pollution Control District would count towards the monitors required for the Bakersfield MSA. However, the "Number of active ozone monitors" listed here includes those only in the Valley Portion of Kern County.

EPA requires air monitoring agencies to include a variety of monitoring site types in their air monitoring networks. The monitoring site types within the District's ozone monitoring network measure concentrations for population exposure, highest concentrations, regional transport, and background levels. Often more than one monitoring site type applies to a given location. Table 24 identifies the monitoring site types for the ozone monitoring sites operating in the Valley.

Table 24 Ozone Monitoring Site Types in 2023

Site Name	Population Exposure	Highest Concentration	Regional Transport	Background Levels
Stockton-University Park*	X	X		
Tracy-Airport			X	
Modesto-14th St*	X	X		
Turlock	X	X		
Merced-Coffee	X	X		
Madera-City		X		X
Madera-Pump Yard		X		X
Tranquility	X			
Fresno-Sky Park	X	X	X	
Clovis-Villa	X	X		
Fresno-Garland*	X	X		
Fresno-Drummond	X	X	X	
Parlier		X	X	
Hanford-Irwin	X	X		
Visalia-Ashland*				X
Porterville	X	X		
Ash Mountain [^]		X	X	
Lower Kaweah [^]			X	
Shafter*	X			X
Oildale*		X	X	
Bakersfield-California*		X		X
Edison*		X	X	
Bakersfield-Muni		X		
Arvin-Di Giorgio*	X	X		
Maricopa		X	X	

[^]Monitor operated by the National Park Service

*Monitor operated by CARB

Additionally, the District annually participates in EPA's enhanced Photochemical Assessment Monitoring Stations (PAMS) program. PAMS sites measure ozone precursors, including NOx and VOC, in addition to a variety of meteorological parameters in serious, severe, or extreme ozone nonattainment areas. Table 25 identifies the PAMS monitoring site types operating in the Valley.

Table 25 San Joaquin Valley PAMS Network

MSA	Site	Site Type
Fresno	Madera-Pump Yard	Type 1: Upwind/Background site
	Clovis-Villa	Type 2: Maximum precursor emissions
	Parlier	Type 3: Maximum ozone concentrations
Bakersfield	Shafter	Type 1: Upwind/Background site
	Bakersfield-Muni	Type 2: Maximum precursor emissions
	Arvin-Di Giorgio*	Type 3: Maximum ozone concentrations

*PAMS equipment may be installed for the Type 3 site at the Arvin-Di Giorgio when space becomes available.

F.4 VERIFICATION OF CONTINUED ATTAINMENT

The District is a duly constituted unified district as provided in California Health and Safety Code (CH&SC) sections 40150 to 40161, and as such has regulatory authority under these and other sections of the CH&SC to issue permits, collect fees, impose penalties, develop rules, regulations and plans, and collect air monitoring and emissions data. This authority continues after redesignation to attainment.

The District will continue the operation of the ozone air monitoring to verify ongoing attainment of the 1979 1-hour ozone NAAQS. EPA's Final Rule providing revisions to ambient air quality regulations (71 *FR* 61236) required development and submittal of an annual air monitoring network plan. As such, the District will continue to develop and make available its annual air monitoring network plan document, which includes details of its ozone air monitoring network, and a summary of the previous year's peak ozone concentrations, which can be used to track progress and continued verification of attainment. The District submitted the *2022 Air Monitoring Network Plan* to EPA on October 11, 2022, as available on the District's website.³⁴

F.5 CONTINGENCY PLAN

[This section prepared in collaboration with the California Air Resources Board]

For maintenance plans, CAA Section 175A(d) requires contingency provisions to assure prompt correction of any post-redesignation NAAQS violations. As clarified in the Calcagni Memo, the contingency plan for a maintenance plan differs from that of an attainment plan. For the purposes of Section 175A, a State is not required to have fully adopted contingency measures that will take effect without further action by the State in order for the maintenance plan to be approved. The maintenance contingency plan should ensure that the contingency measures are adopted expediently once they are triggered. Maintenance plan contingencies should include specific triggers that will be

³⁴ SJVAPCD. *2022 Air Monitoring Network Plan*. (October 11, 2022). Retrieved from: <https://www.valleyair.org/aqinfo/Docs/2022-Air-Monitoring-Network-Plan.pdf>

used to determine when the contingency measures need to be implemented. Possible triggers are emissions inventory "action levels" or NAAQS violations (monitored or modeled) with a specific time limit for appropriate State actions, including a control measure adoption schedule and procedures for adoption and implementation.

The District is selecting an action level equivalent to the level of the 1-hour ozone NAAQS: 124 ppb. Should the action level be reached, the District will evaluate the event and take appropriate action within 18 months of the event date, which includes sufficient time for the evaluation and validation of the appropriate air monitoring data. Should this evaluation conclude that the ozone exceedances leading to a violation of the 1-hour ozone standard were due to impacts from exceptional events, the District will follow EPA's Exceptional Events Initial Notification procedures to determine what documentation would need to be prepared.

However, if the air quality monitoring data indicates that the area has violated the 1-hour ozone NAAQS due to ozone readings not influenced by exceptional events as discussed above, the District will consider rule amendments where an opportunity is identified, which may include amendments to the following rules and regulations:

- **Rule 4306/4320** (Boiler, Steam Generators, and Process Heaters > 5 MMBtu/hr)
- **Rule 4307** (Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr)
- **Rule 4308** (Boilers, Steam Generators, and Process Heaters - 0.075 MMBtu/hr to 2.0 MMBtu/hr)
- **Rule 4309** (Dryers, Dehydrators, and Ovens)
- **Rule 4311** (Flares)
- **Rule 4352** (Solid Fuel Fired Boilers, Steam Generators, and Process Heaters)
- **Rule 4354** (Glass Melting Furnaces)
- **Rule 4702** (Internal Combustion Engines)
- **Rule 4703** (Stationary Gas Turbines)
- **Rule 4902** (Residential Water Heaters)
- **Rule 4905** (Natural Gas Fired, Fan-type Central Furnaces)

Additionally, CARB will consider the impact of approved measures listed below to pursue as part of the 2022 State SIP Strategy and that were also included in the San Joaquin Valley SIP for the 70 ppb 8-hour ozone NAAQS.

Table 26 CARB Measures from 2022 State SIP Strategy

Proposed Measure	Agency	Action	Implementation Begins
On-Road Heavy-Duty			
Advanced Clean Fleets Regulation	CARB	2023	2024
Zero-Emissions Trucks Measure	CARB	2028	2030
On-Road Light-Duty			
On-Road Motorcycle New Emissions Standards	CARB	2022	2025
Clean Miles Standard	CARB	2021	2023
Off-Road Equipment			
Tier 5 Off-Road Vehicles and Equipment	CARB	2025	2029
Amendments to the In-Use Off-Road Diesel-Fueled Fleets Regulation	CARB	2022	2024
Transport Refrigeration Unit Regulation Part 2	CARB	2026	2028
Commercial Harbor Craft Amendments	CARB	2022	2023
Cargo Handling Equipment Amendments	CARB	2025	2026
Off-Road Zero-Emission Targeted Manufacturer Rule	CARB	2027	2031
Clean Off-Road Fleet Recognition Program	CARB	2025	2027
Spark-Ignition Marine Engine Standards	CARB	2029	2031
Other			
Consumer Products Standards	CARB	2027	2028
Zero-Emission Standard for Space and Water Heaters	CARB	2025	2030
Enhanced Regional Emission Analysis in State Implementation Plans ³⁵	CARB	2025	2023
Pesticides: 1,3-Dichloropropene Health Risk Mitigation	DPR	2022	2024
Primarily-Federally and Internationally Regulated Sources – CARB Measures			
In-Use Locomotive Regulation	CARB	2023	2024
Future Measures for Aviation Emissions reductions	CARB	2027	2029

*Table provided by the California Air Resources Board

G. SUMMARY CHECKLIST

As described in section B of the document, the air monitoring data provided demonstrates that the District continues to be in attainment of the 1-hour ozone NAAQS. Section C and E demonstrate that the District has met all applicable Section 110 requirements of the CAA. Additionally, the District shows in section D that the emission reductions achieved are permanent and enforceable.

Table 27 summarizes the status of the elements that need to be satisfied in order to meet CAA requirements for Section 175A as outlined in the Calcagni Memo. Sections F.1 and F.2 of the document demonstrates continued attainment of the 1-hr ozone NAAQS through 2036. Section F.3 commits the District to maintain the ongoing ozone air monitoring network. Section F.4 commits the District to verify continued attainment of the 1-hour ozone NAAQS by reviewing information and assumptions used for the emission inventory when new information becomes available. If the District finds that this information has changed significantly, the District will update the existing emissions inventory in coordination with CARB, evaluate the revised inventory against the

³⁵ Proposed CARB finalization

inventories presented in this maintenance plan, and evaluate the potential impacts. Section F.5 commits to establish a contingency plan that is triggered by a measured violation of the 1-hour ozone NAAQS.

Table 27 Summary Checklist of Document References

CAA/U.S. EPA Requirements	Status	Document Reference
Attainment inventory	Conditions met	Section F.1
Maintenance demonstration	Conditions met	Section F.2
Monitoring network	Commitment established	Section F.3
Verification of continued attainment	Commitment established	Section F.4
Contingency Plan	Commitment established	Section F.5

Appendix A

Emissions Inventory



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APPENDIX A: EMISSIONS INVENTORY

This Appendix contains the following emissions inventory tables:

- Table A-1 NOx Inventories, Summer Daily Averages (tons/day)
- Table A-2 VOC Inventories, Summer Daily Averages (tons/day)

These tables include summer average tons per day emissions for the years 2013, 2015, 2017, 2020, 2026, 2031, and 2036. The base year (the year from which the inventory is projected forward and backward) for these inventories is 2017. The year 2020 is the base year used in the maintenance demonstration to project forward to the year 2036.

Table A-1 NOx Emissions (Summer Daily Averages in Tons per Day)

NOX SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
STATIONARY SOURCES							
FUEL COMBUSTION							
ELECTRIC UTILITIES	3.89	4.11	2.84	2.69	2.48	2.23	2.19
COGENERATION	1.62	0.88	0.74	0.71	0.72	0.73	0.83
OIL AND GAS PRODUCTION (COMBUSTION)	3.44	3.32	2.75	2.42	1.75	1.38	1.19
PETROLEUM REFINING (COMBUSTION)	0.19	0.14	0.24	0.22	0.18	0.16	0.16
MANUFACTURING AND INDUSTRIAL	1.82	1.78	1.59	1.61	1.48	1.46	1.52
FOOD AND AGRICULTURAL PROCESSING	14.95	10.35	7.12	6.23	4.71	3.74	3.46
SERVICE AND COMMERCIAL	7.47	4.27	4.26	4.39	3.80	3.66	3.58
OTHER (FUEL COMBUSTION)	0.84	0.72	0.68	0.57	0.57	0.57	0.57
* TOTAL FUEL COMBUSTION	34.22	25.57	20.20	18.82	15.68	13.91	13.48
WASTE DISPOSAL							
SEWAGE TREATMENT	0.04	0.04	0.05	0.05	0.04	0.04	0.04
LANDFILLS	0.18	0.18	0.23	0.24	0.15	0.16	0.17
INCINERATORS	0.05	0.04	0.04	0.04	0.04	0.04	0.04
SOIL REMEDIATION	0.01	0.01	0.00	0.00	0.00	0.00	0.00
OTHER (WASTE DISPOSAL)	0.00	0.01	0.01	0.01	0.01	0.01	0.01
* TOTAL WASTE DISPOSAL	0.27	0.27	0.32	0.33	0.23	0.24	0.25

NOX SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
CLEANING AND SURFACE COATINGS							
LAUNDERING	0	0	0	0	0	0	0
DEGREASING	0	0	0	0	0	0	0
COATINGS AND RELATED PROCESS SOLVENTS	0	0	0	0	0	0	0
PRINTING	0	0	0	0	0	0	0
ADHESIVES AND SEALANTS	0	0	0	0	0	0	0
OTHER (CLEANING AND SURFACE COATINGS)	0	0	0	0	0	0	0
* TOTAL CLEANING AND SURFACE COATINGS	0	0	0	0	0	0	0
PETROLEUM PRODUCTION AND MARKETING							
OIL AND GAS PRODUCTION	0.27	0.24	0.23	0.21	0.10	0.09	0.08
PETROLEUM REFINING	0.01	0.01	0.01	0.01	0.01	0.01	0.01
PETROLEUM MARKETING	0.04	0.06	0.06	0.06	0.05	0.05	0.05
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.31	0.31	0.30	0.28	0.17	0.15	0.13
INDUSTRIAL PROCESSES							
CHEMICAL	0.34	0.28	0.32	0.31	0.32	0.34	0.37
FOOD AND AGRICULTURE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MINERAL PROCESSES	0.22	0.23	0.25	0.23	0.24	0.24	0.24
METAL PROCESSES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WOOD AND PAPER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GLASS AND RELATED PRODUCTS	5.70	2.95	3.08	3.16	2.79	1.75	1.75
ELECTRONICS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER (INDUSTRIAL PROCESSES)	0.00	0.00	0.01	0.01	0.01	0.01	0.01
* TOTAL INDUSTRIAL PROCESSES	6.26	3.46	3.66	3.71	3.36	2.33	2.37
** TOTAL STATIONARY	41.06	29.61	24.49	23.14	19.43	16.63	16.23

NOX SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
AREAWIDE SOURCES							
SOLVENT EVAPORATION							
CONSUMER PRODUCTS	0	0	0	0	0	0	0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0	0	0	0	0	0	0
PESTICIDES/FERTILIZERS	0	0	0	0	0	0	0
ASPHALT PAVING / ROOFING	0	0	0	0	0	0	0
* TOTAL SOLVENT EVAPORATION	0	0	0	0	0	0	0
MISCELLANEOUS PROCESSES							
RESIDENTIAL FUEL COMBUSTION	3.58	2.94	3.15	3.03	2.73	2.57	2.36
FARMING OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONSTRUCTION AND DEMOLITION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAVED ROAD DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UNPAVED ROAD DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUGITIVE WINDBLOWN DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIRES	0.03	0.03	0.03	0.03	0.04	0.04	0.04
MANAGED BURNING AND DISPOSAL	0.84	2.65	4.65	4.30	1.38	1.37	1.36
COOKING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER (MISCELLANEOUS PROCESSES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
* TOTAL MISCELLANEOUS PROCESSES	4.46	5.63	7.83	7.37	4.14	3.98	3.77
** TOTAL AREAWIDE	4.46	5.63	7.83	7.37	4.14	3.98	3.77
MOBILE SOURCES							
ON-ROAD MOTOR VEHICLES							
LIGHT DUTY PASSENGER (LDA)	10.03	8.29	6.47	4.20	2.69	1.87	1.17
LIGHT DUTY TRUCKS - 1 (LDT1)	2.60	2.12	1.73	1.24	0.65	0.34	0.17
LIGHT DUTY TRUCKS - 2 (LDT2)	7.12	6.36	5.20	3.14	2.02	1.46	1.04
MEDIUM DUTY TRUCKS (MDV)	8.60	7.70	6.86	4.66	2.45	1.45	0.95

NOX SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
LIGHT HEAVY DUTY TRUCKS - 1 (LHDT1)	9.45	8.67	7.94	5.73	3.87	2.27	1.31
LIGHT HEAVY DUTY TRUCKS - 2 (LHDT2)	2.26	2.17	2.02	1.49	1.09	0.72	0.48
MEDIUM HEAVY DUTY TRUCKS (MHDT)	11.63	10.11	9.22	5.01	2.01	1.30	0.90
HEAVY HEAVY DUTY TRUCKS (HHDT)	90.01	67.33	56.65	34.51	12.28	9.53	9.09
MOTORCYCLES (MCY)	0.34	0.32	0.29	0.22	0.20	0.17	0.15
BUSES	1.86	1.68	1.50	0.91	0.54	0.37	0.22
MOTOR HOMES (MH)	0.31	0.28	0.26	0.19	0.16	0.12	0.09
* TOTAL ON-ROAD MOTOR VEHICLES	144.20	115.02	98.14	61.28	27.95	19.57	15.57
OTHER MOBILE SOURCES							
AIRCRAFT	2.54	2.54	2.53	4.62	4.60	4.59	4.59
TRAINS	10.58	12.86	13.12	14.56	15.69	16.58	14.93
OCEAN GOING VESSELS	0.37	0.14	0.05	0.05	0.05	0.05	0.05
COMMERCIAL HARBOR CRAFT	0.11	0.07	0.07	0.06	0.03	0.03	0.03
RECREATIONAL BOATS	3.70	3.53	3.42	3.29	3.09	2.99	2.92
OFF-ROAD RECREATIONAL VEHICLES	0.09	0.08	0.08	0.08	0.09	0.10	0.10
OFF-ROAD EQUIPMENT	24.48	24.49	24.01	21.59	14.52	11.18	9.58
OFF-ROAD EQUIPMENT (PERP)	6.83	6.32	5.87	4.28	2.55	2.16	2.10
FARM EQUIPMENT	58.91	54.44	50.45	40.97	27.35	19.64	14.27
FUEL STORAGE AND HANDLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
* TOTAL OTHER MOBILE SOURCES	107.61	104.47	99.59	89.50	67.97	57.31	48.56
** TOTAL MOBILE	251.81	219.48	197.73	150.78	95.92	76.88	64.14
GRAND TOTAL FOR SAN JOAQUIN VALLEY	297.32	254.72	230.04	181.29	119.50	97.49	84.13

Table A-2 VOC Emissions (Summer Daily Averages in Tons per Day)

VOC SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
STATIONARY SOURCES							
FUEL COMBUSTION							
ELECTRIC UTILITIES	0.30	0.24	0.19	0.17	0.15	0.12	0.09
COGENERATION	0.52	0.47	0.43	0.41	0.41	0.42	0.48
OIL AND GAS PRODUCTION (COMBUSTION)	1.22	1.39	1.15	1.05	0.88	0.76	0.66
PETROLEUM REFINING (COMBUSTION)	0.10	0.03	0.04	0.04	0.04	0.04	0.04
MANUFACTURING AND INDUSTRIAL	0.30	0.28	0.23	0.24	0.19	0.19	0.20
FOOD AND AGRICULTURAL PROCESSING	1.30	1.12	0.82	0.74	0.65	0.62	0.63
SERVICE AND COMMERCIAL	0.73	0.54	0.54	0.57	0.55	0.54	0.55
OTHER (FUEL COMBUSTION)	0.07	0.05	0.05	0.04	0.04	0.04	0.04
* TOTAL FUEL COMBUSTION	4.52	4.11	3.43	3.26	2.91	2.73	2.68
WASTE DISPOSAL							
SEWAGE TREATMENT	0.03	0.04	0.05	0.05	0.05	0.05	0.06
LANDFILLS	1.54	1.56	1.51	1.55	1.61	1.70	1.77
INCINERATORS	0.02	0.01	0.01	0.01	0.01	0.01	0.01
SOIL REMEDIATION	0.16	0.08	0.09	0.09	0.10	0.10	0.10
OTHER (WASTE DISPOSAL)	21.00	21.30	21.54	22.13	23.02	24.56	26.50
* TOTAL WASTE DISPOSAL	22.75	22.98	23.19	23.83	24.79	26.41	28.44

VOC SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
CLEANING AND SURFACE COATINGS							
LAUNDERING	0.07	0.08	0.08	0.08	0.09	0.09	0.09
DEGREASING	1.60	1.82	1.79	1.79	1.95	2.08	2.27
COATINGS AND RELATED PROCESS SOLVENTS	7.55	8.45	8.84	9.64	10.14	10.63	11.66
PRINTING	4.74	5.81	5.61	5.09	5.34	5.40	5.60
ADHESIVES AND SEALANTS	0.59	0.59	0.62	0.63	0.63	0.63	0.64
OTHER (CLEANING AND SURFACE COATINGS)	5.56	6.30	7.03	7.37	8.05	8.15	8.64
* TOTAL CLEANING AND SURFACE COATINGS	20.11	23.06	23.98	24.59	26.20	26.98	28.90
PETROLEUM PRODUCTION AND MARKETING							
OIL AND GAS PRODUCTION	13.52	13.01	11.46	10.49	8.75	7.55	6.52
PETROLEUM REFINING	0.41	0.50	0.44	0.44	0.44	0.44	0.44
PETROLEUM MARKETING	5.63	5.13	5.09	4.64	4.05	3.82	3.77
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.00	0.00	0.01	0.01	0.01	0.01	0.01
* TOTAL PETROLEUM PRODUCTION AND MARKETING	19.56	18.65	17.00	15.58	13.24	11.82	10.74
INDUSTRIAL PROCESSES							
CHEMICAL	2.09	2.39	2.63	2.51	2.63	2.78	3.02
FOOD AND AGRICULTURE	11.42	12.96	12.76	12.97	13.92	15.17	16.77
MINERAL PROCESSES	0.18	0.20	0.22	0.20	0.21	0.20	0.21
METAL PROCESSES	0.17	0.15	0.17	0.18	0.20	0.21	0.23
WOOD AND PAPER	0.01	0.01	0.01	0.01	0.01	0.01	0.01
GLASS AND RELATED PRODUCTS	0.02	0.01	0.01	0.01	0.01	0.01	0.01
ELECTRONICS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER (INDUSTRIAL PROCESSES)	0.80	0.50	0.49	0.48	0.52	0.56	0.61
* TOTAL INDUSTRIAL PROCESSES	14.68	16.22	16.28	16.37	17.50	18.94	20.86
** TOTAL STATIONARY	81.61	85.01	83.88	83.61	84.65	86.87	91.61

VOC SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
AREAWIDE SOURCES							
SOLVENT EVAPORATION							
CONSUMER PRODUCTS	24.34	25.29	25.78	28.74	28.66	30.93	33.15
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	6.54	6.62	6.74	6.92	7.28	7.69	8.01
PESTICIDES/FERTILIZERS	19.56	15.41	20.81	18.86	18.71	18.46	18.23
ASPHALT PAVING / ROOFING	0.92	0.97	1.04	1.13	1.25	1.31	1.38
* TOTAL SOLVENT EVAPORATION	51.35	48.29	54.37	55.66	55.90	58.39	60.76
MISCELLANEOUS PROCESSES							
RESIDENTIAL FUEL COMBUSTION	0.48	0.40	0.42	0.41	0.41	0.41	0.41
FARMING OPERATIONS	93.99	93.86	93.76	93.63	93.45	93.37	93.32
CONSTRUCTION AND DEMOLITION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PAVED ROAD DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UNPAVED ROAD DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FUGITIVE WINDBLOWN DUST	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FIRES	0.13	0.13	0.13	0.14	0.14	0.15	0.16
MANAGED BURNING AND DISPOSAL	1.06	14.31	16.38	7.46	14.84	14.83	14.83
COOKING	0.59	0.59	0.61	0.62	0.65	0.68	0.71
OTHER (MISCELLANEOUS PROCESSES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
* TOTAL MISCELLANEOUS PROCESSES	96.24	109.30	111.30	102.25	109.50	109.45	109.43
** TOTAL AREAWIDE	147.59	157.59	165.67	157.91	165.40	167.84	170.19
MOBILE SOURCES							
ON-ROAD MOTOR VEHICLES							
LIGHT DUTY PASSENGER (LDA)	15.22	13.14	10.82	8.61	6.20	4.86	3.82
LIGHT DUTY TRUCKS - 1 (LDT1)	4.03	3.37	2.89	2.50	1.35	0.84	0.56
LIGHT DUTY TRUCKS - 2 (LDT2)	6.45	5.99	5.26	4.00	3.26	2.70	2.28

VOC SUMMER AVERAGE (tons/day)							
SUMMARY CATEGORY NAME	2013	2015	2017	2020	2026	2031	2036
MEDIUM DUTY TRUCKS (MDV)	6.91	6.65	6.42	5.49	3.92	2.91	2.32
LIGHT HEAVY DUTY TRUCKS - 1 (LHDT1)	1.85	1.88	1.75	1.45	1.05	0.70	0.50
LIGHT HEAVY DUTY TRUCKS - 2 (LHDT2)	0.32	0.31	0.32	0.27	0.22	0.16	0.12
MEDIUM HEAVY DUTY TRUCKS (MHDT)	1.11	0.90	0.77	0.34	0.11	0.07	0.05
HEAVY HEAVY DUTY TRUCKS (HHDT)	5.63	3.03	2.19	1.10	0.64	0.66	0.71
MOTORCYCLES (MCY)	2.79	2.73	2.55	2.27	2.09	1.90	1.80
BUSES	0.16	0.17	0.14	0.08	0.05	0.05	0.04
MOTOR HOMES (MH)	0.22	0.18	0.16	0.11	0.06	0.04	0.02
* TOTAL ON-ROAD MOTOR VEHICLES	44.68	38.36	33.27	26.21	18.95	14.88	12.22
OTHER MOBILE SOURCES							
AIRCRAFT	3.00	3.01	3.01	3.89	3.91	3.91	3.92
TRAINS	0.58	0.64	0.61	0.65	0.65	0.67	0.57
OCEAN GOING VESSELS	0.02	0.01	0.00	0.00	0.00	0.00	0.00
COMMERCIAL HARBOR CRAFT	0.01	0.00	0.00	0.00	0.00	0.00	0.00
RECREATIONAL BOATS	24.67	22.37	20.37	17.72	13.65	11.19	9.32
OFF-ROAD RECREATIONAL VEHICLES	2.80	2.51	2.35	2.19	1.80	1.33	1.03
OFF-ROAD EQUIPMENT	16.87	15.66	14.95	14.56	11.70	7.85	5.88
OFF-ROAD EQUIPMENT (PERP)	0.53	0.51	0.49	0.39	0.30	0.30	0.32
FARM EQUIPMENT	11.15	10.00	9.03	7.79	5.60	4.28	3.35
FUEL STORAGE AND HANDLING	2.67	2.45	2.29	2.11	1.90	1.85	1.91
* TOTAL OTHER MOBILE SOURCES	62.30	57.17	53.10	49.32	39.51	31.38	26.32
** TOTAL MOBILE	106.97	95.52	86.38	75.53	58.46	46.26	38.54
GRAND TOTAL FOR SAN JOAQUIN VALLEY	336.18	338.13	335.92	317.05	308.50	300.97	300.33

Appendix B

Analysis of Meteorology Affecting Ozone Levels



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APPENDIX B: ANALYSIS OF METEOROLOGY AFFECTING OZONE LEVELS

Introduction

The San Joaquin Valley Air Pollution Control District (District) has been in attainment of the 1-hour ozone standard for a decade, and though meteorology is not the driving force behind the attainment of the 1-hour ozone standard, it can have a significant influence on ozone concentrations. This appendix presents a summary of temperature and rainfall totals analyses that support the influence of meteorological conditions on ozone formation and concentrations.

Ambient Air Temperature

High temperatures can intensify and increase ozone formation, and as such ozone concentrations typically become elevated during the summer months. The Valley experiences very hot summers with an average of 36 days over 100°F, and months that typically have maximum temperatures over 100°F are highlighted yellow in the tables below. The Modesto, Fresno, and Bakersfield monthly temperature data shown in Table B-1, Table B-2, and Table B-3 provides the comparison of maximum temperatures recorded for the period 2000-2022. Table B-1, Table B-2, and Figure B-3 show the correlation between maximum temperatures and 1-hour maximum ozone concentrations during the summer season. Surface ozone is driven by the photochemical reactions between volatile organic compounds and nitrogen oxides in the presence of sunlight. In general, surface ozone is linearly and positively correlated with temperature depending on emissions and meteorological conditions.

Table B-1 Modesto, CA temperature data for the period 2000-2022 (°F)¹

Month	Maximum Monthly Temperature					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	70	73	66	67	74	66
February	76	77	67	80	73	76
March	87	87	78	79	81	85
April	99	93	94	91	89	92
May	107	101	89	104	100	100
June	111	109	106	103	107	101
July	113	108	105	104	108	103
August	107	109	104	111	101	103
September	105	108	100	107	101	112
October	99	99	90	97	90	93
November	82	82	79	81	72	67
December	70	71	68	71	73	60

¹ Source: Western Region Climate Data Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5738>

Table B-2 Fresno, CA temperature data for the period 2000 - 2022 (°F)²

Month	Maximum Monthly Temperature					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	70	78	67	67	70	67
February	77	80	69	83	73	82
March	87	91	83	82	84	90
April	98	96	96	91	95	96
May	106	102	90	106	101	103
June	110	110	106	107	111	107
July	113	109	107	108	114	110
August	110	111	108	112	107	107
September	106	109	104	106	107	114
October	99	101	91	96	93	95
November	90	90	81	82	75	71
December	77	73	68	69	73	-----

Table B-3 Bakersfield, CA temperature data for the period 2000 - 2022 (°F)³

Month	Maximum Monthly Temperature					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	75	82	72	66	71	70
February	85	85	73	83	75	85
March	94	93	82	85	88	91
April	99	98	96	92	94	97
May	107	104	91	105	102	102
June	110	110	108	105	110	105
July	112	111	110	108	111	110
August	111	112	108	107	106	108
September	105	111	102	105	108	115
October	98	100	91	97	94	95
November	94	94	82	87	75	79
December	81	75	74	74	77	-----

² Source: Western Region Climate Data Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257>³ Source: Western Region Climate Data Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0442>

Figure B-1 Turlock 1-hour Ozone Max Concentrations and Modesto City Airport Temperatures

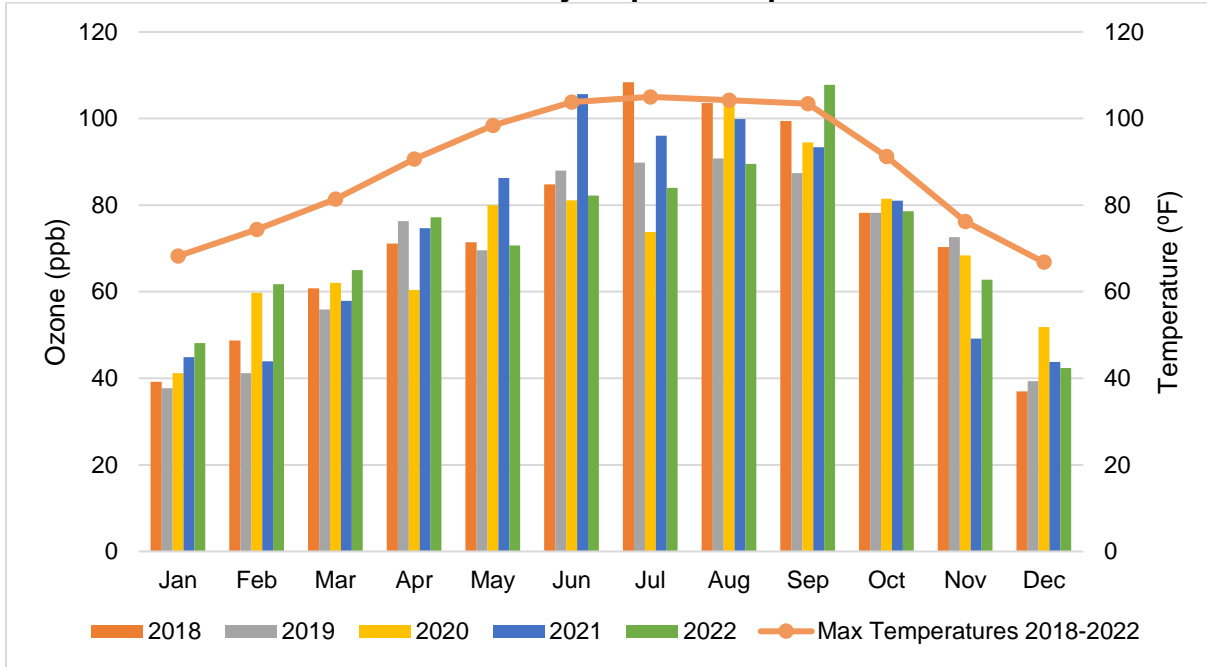


Figure B-2 Fresno-Garland 1-hour Ozone Max Concentrations and Fresno Air Terminal Temperatures

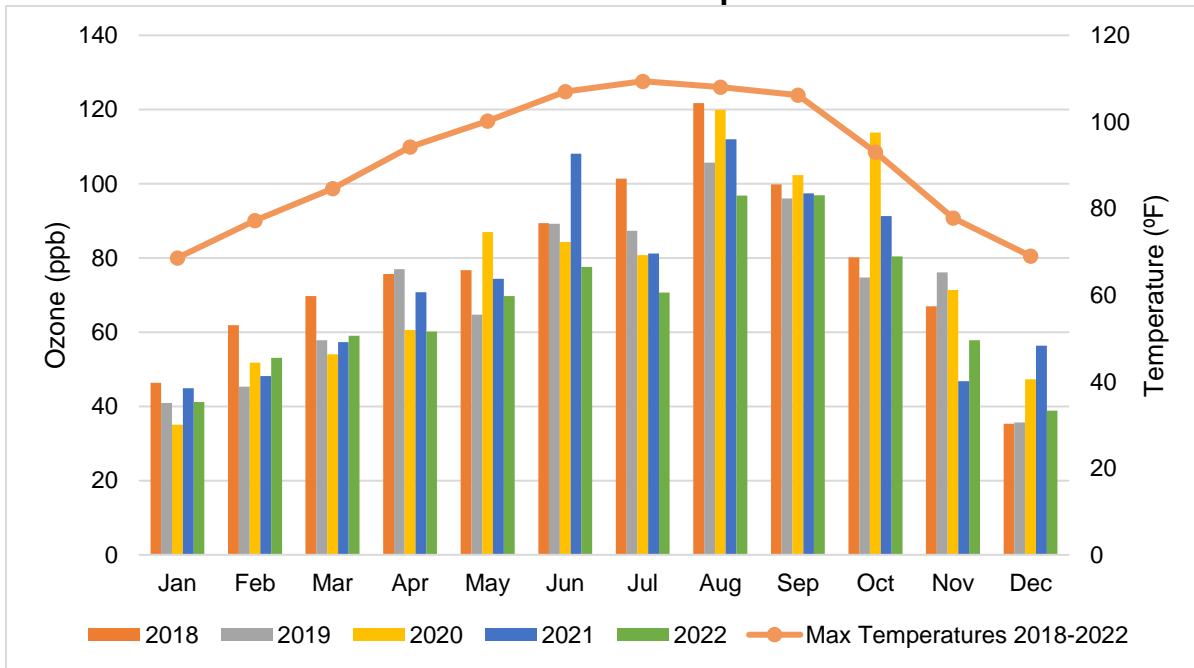
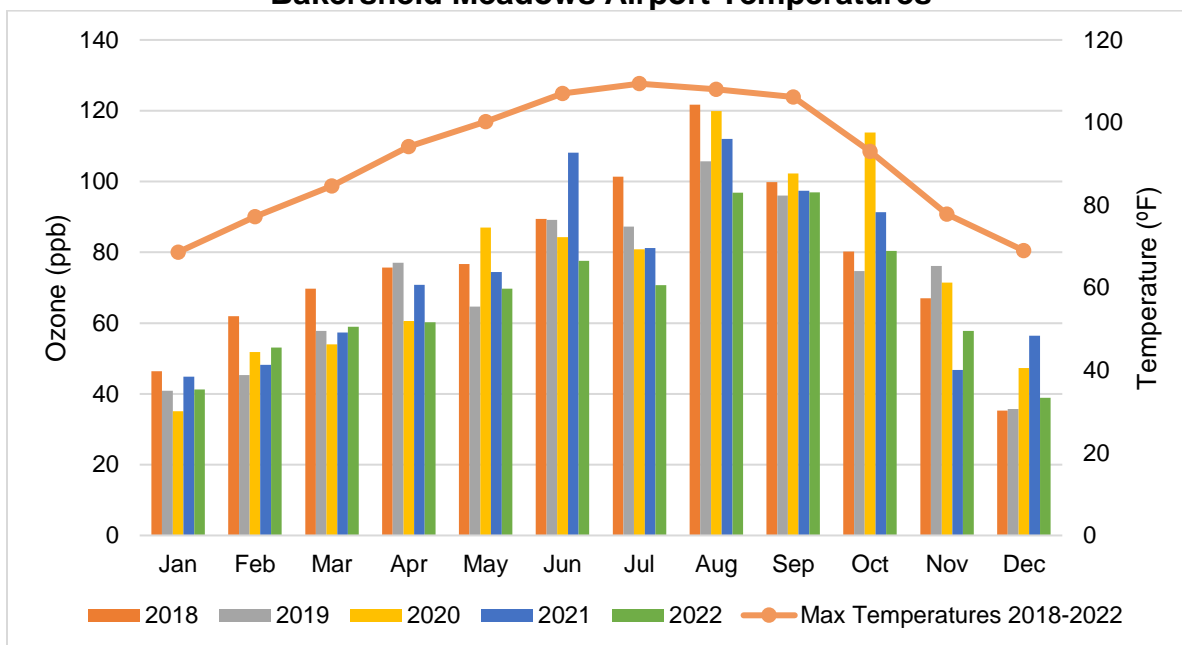


Figure B-3 Edison 1-hour Ozone Max Concentrations and Bakersfield Meadows Airport Temperatures



Distribution of High Temperature Days

Figure B-4 through Figure B-6 illustrate that the 2012-2019 and 2020-2022 average daily maximum temperatures at the Stockton Airport, Fresno Yosemite International (FYI) Airport, and Bakersfield Meadows (BM) Airport are close to the 62-year average (1950-2011). The daily maximum temperatures in Stockton, Fresno, and Bakersfield have all either slightly increased over time, or remained consistent, thus providing evidence that the 2020-2022 years were not unusually conducive to lower ozone concentrations and that the District maintained the 1-hour ozone standard without the influence of improved meteorology.

Figure B-4 Ozone Season Average Range of Daily Maximum Temperatures – Stockton Airport, Averaged May-October (2012-2022)

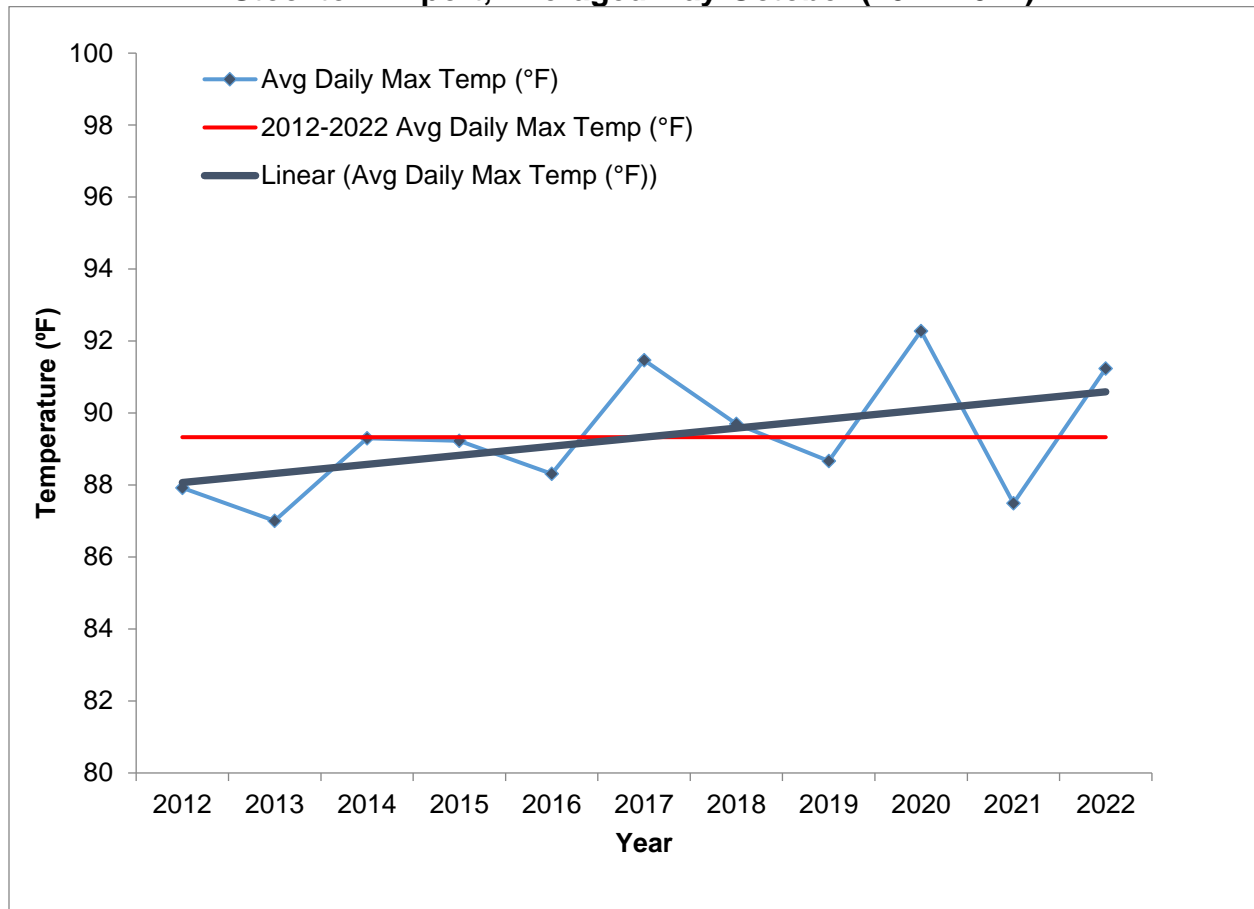


Figure B-5 Ozone Season Average Range of Daily Maximum Temperatures – Fresno Yosemite International Airport, Averaged May-October (2012-2022)

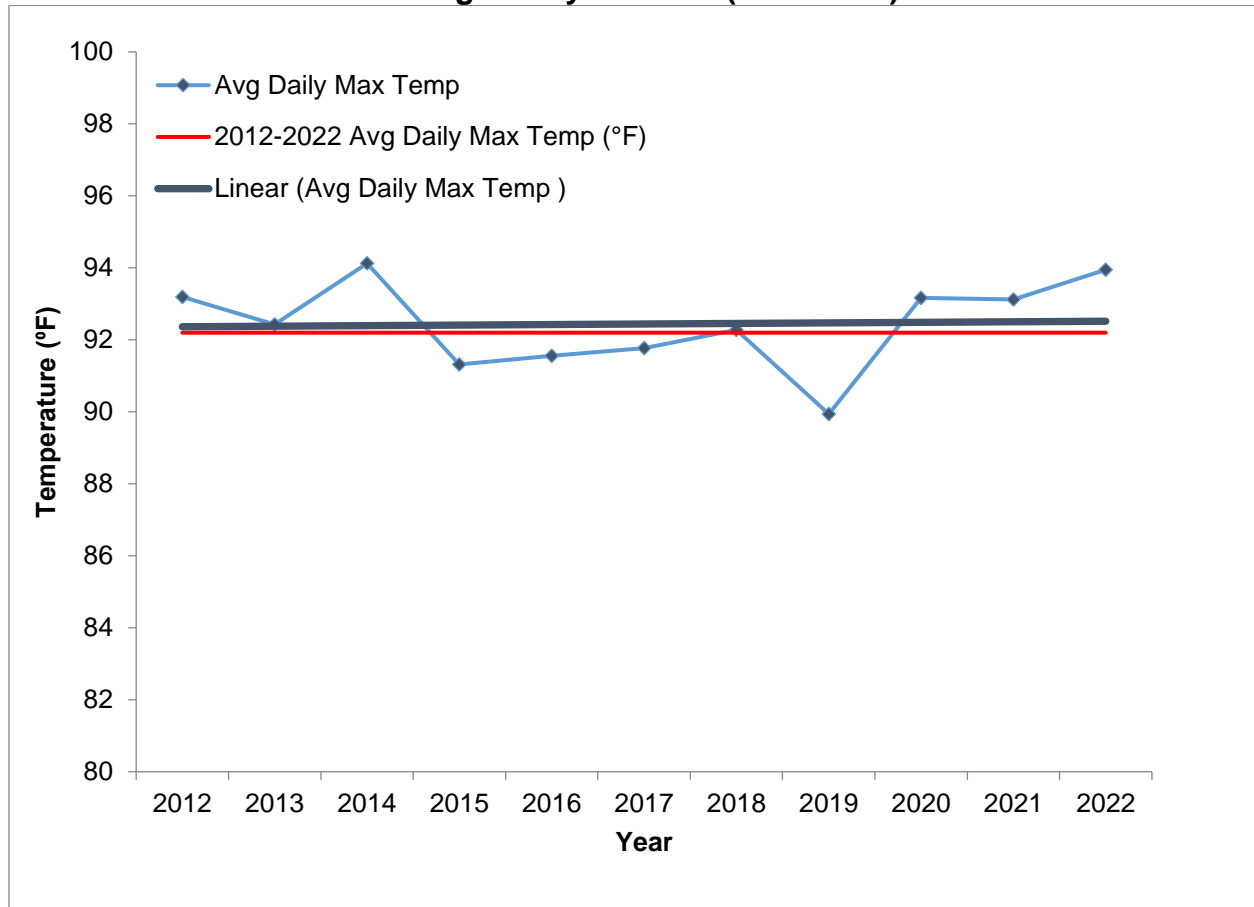


Figure B-6 Ozone Season Average Range of Daily Maximum Temperatures – Bakersfield Meadows Airport, Averaged May-October (2012-2022)

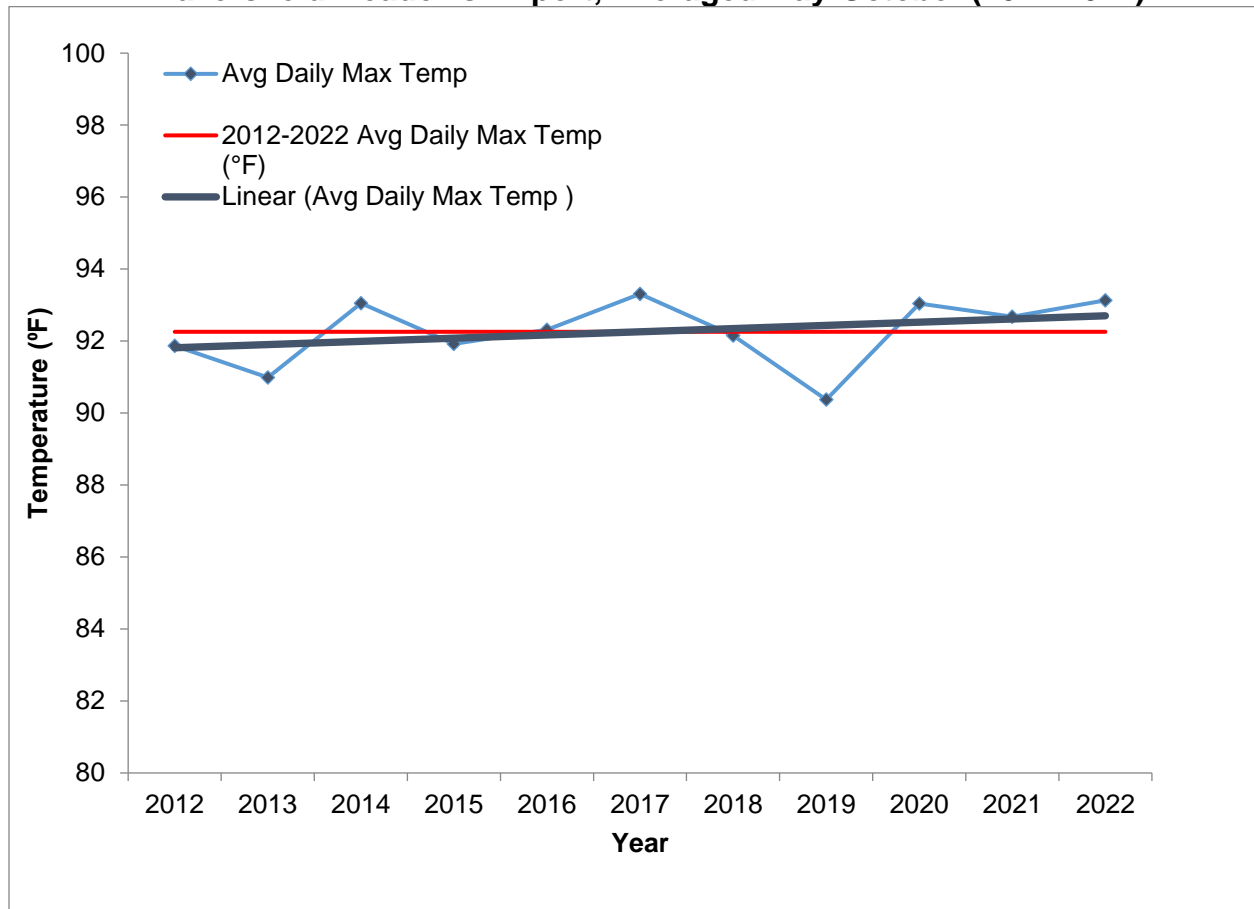


Figure B-7 through Figure B-9 compare the annual number of days with high temperatures ($\geq 95^{\circ}\text{F}$) at the Stockton, FYI, and the BM Airports to the annual number of days exceeding the 1-hour ozone standard locally (County) for 2012 to 2022.

Figure B-7 Number of Days per Year with High Temperatures $\geq 95^{\circ}\text{F}$ at Stockton Airport (May-October) and Days Exceeding the 1-hour Ozone NAAQS (2012-2022)

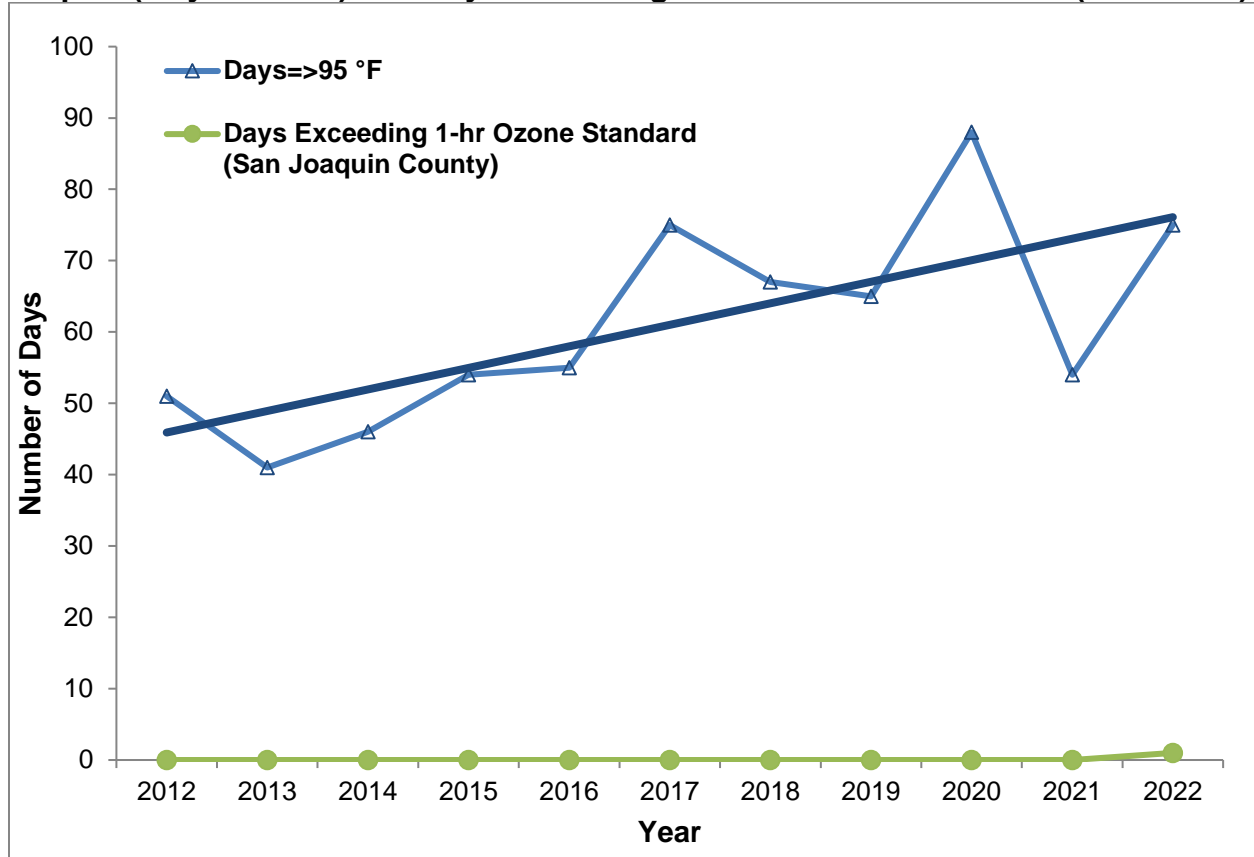


Figure B-8 Number of Days per Year with High Temperatures $\geq 95^{\circ}\text{F}$ at Fresno Yosemite International Airport (May-October) and Days Exceeding the 1-hour Ozone NAAQS (2012-2022)

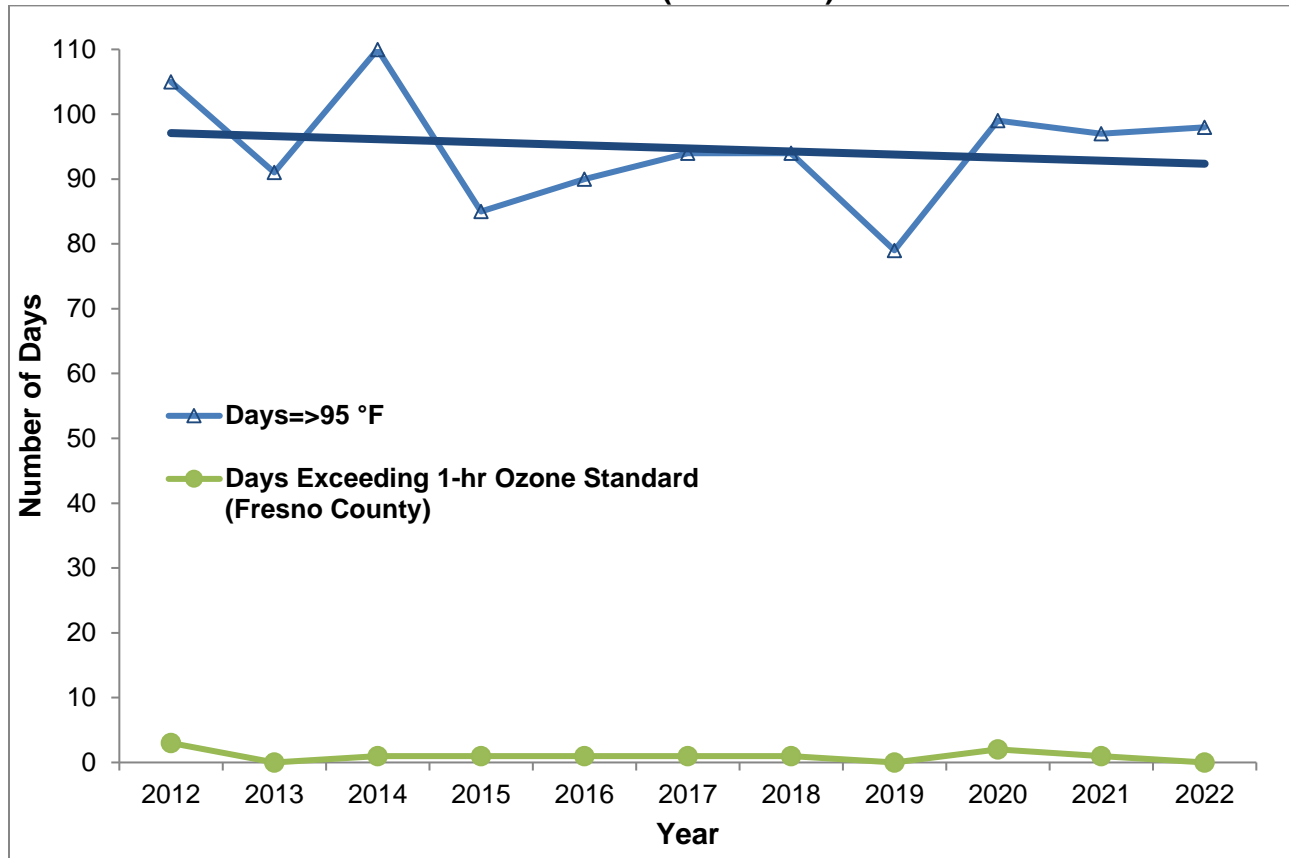
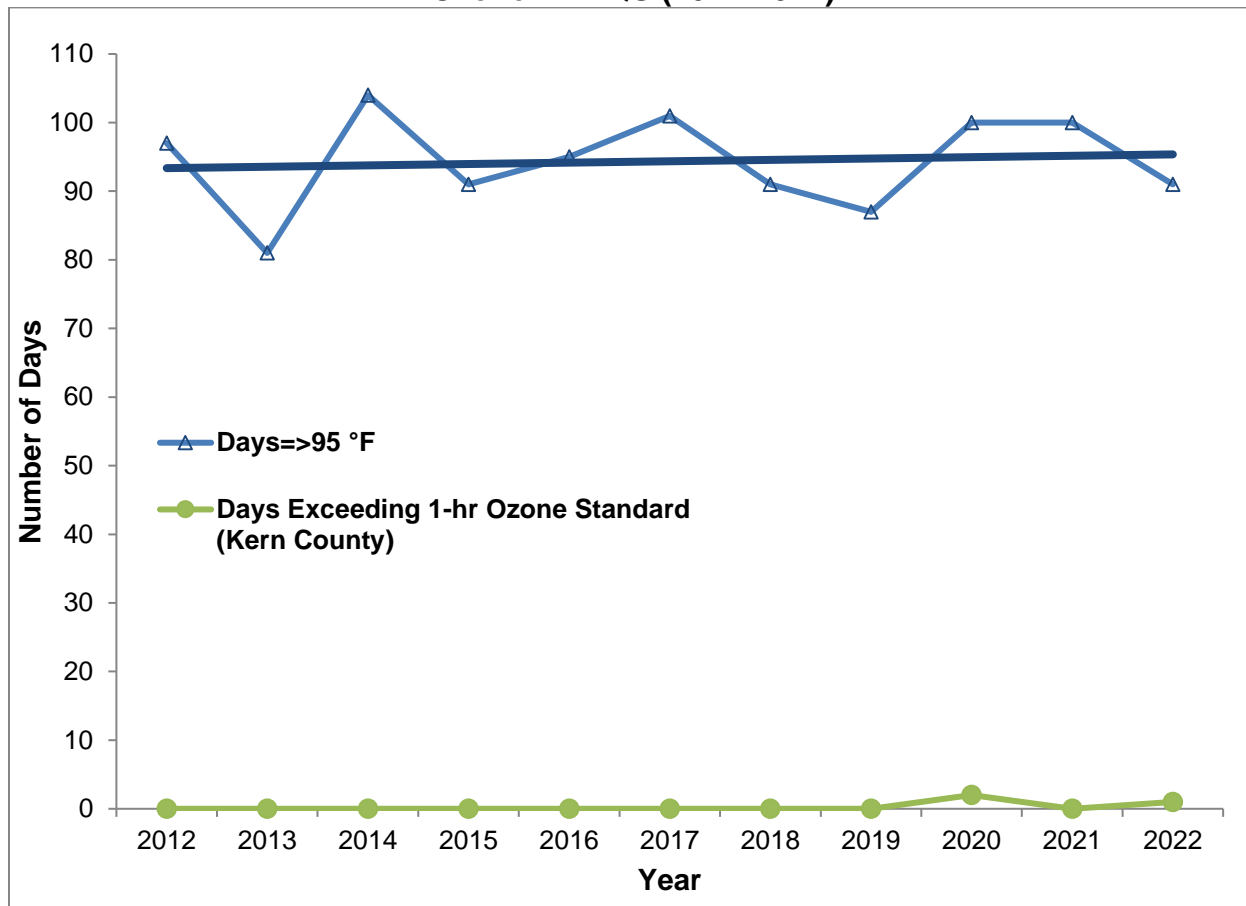


Figure B-9 Number of Days per Year with High Temperatures $\geq 95^{\circ}\text{F}$ at Bakersfield Meadows Airport (May-October) and Days Exceeding the 1-hour Ozone NAAQS (2012-2022)



Drought in the San Joaquin Valley

As described in Section 4, the San Joaquin Valley was declared in a State of Emergency due to severe drought conditions in 2021. The District is located in an arid climate with hot, dry summers, and cool, wet winters. Sunlight is necessary in order to form ozone and increased cloud cover can deter the ozone life cycle. Additionally, precipitation generally accompanies dispersive low pressure systems that move through the region and reduce ozone concentrations. During the winter and early spring the Valley tends to receive the most precipitation, with the highest rainfall in January, March, and December. Likewise the lowest ozone concentrations are typically measured during these periods, due to increased dispersion and cloud cover.

Drought conditions are often coupled with warmer temperatures, and longer periods of poor dispersion. Periods with minimal precipitation can be correlated with poor dispersion and increased ozone concentrations. Months with minimal to no precipitation are highlighted yellow in Table B-4, Table B-5, and Table B-6 below. High pressure systems and drought conditions tend to dominate during the summer season with hot

temperatures and stagnation. The lack of dispersion coupled with the dry conditions easily exacerbates ozone formation and contributes to elevated ozone concentrations throughout the summer months, as shown in Figure B-10, Figure B-11, and Figure B-12.

Even with the described drought conditions, which could cause for elevated ozone concentrations, the District has maintained the 1-hour ozone standard for nearly a decade. This provides further assurance that unusually favorable meteorology did not cause for the attainment nor maintenance of the 1-hour ozone standard.

Table B-4 Modesto, CA monthly precipitation for the period 2000-2022⁴

Month	Monthly Precipitation (Inches)					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	2.4	2.3	2.0	0.7	3.9	0.0
February	2.2	1.6	2.9	0.0	0.9	0.0
March	1.3	1.9	2.6	1.9	0.7	0.6
April	1.2	1.3	0.2	1.0	0.0	0.2
May	0.5	0.3	1.3	0.0	0.0	0.0
June	0.1	0.2	0.0	0.1	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0
September	0.1	0.0	0.1	0.0	0.0	0.1
October	0.6	0.5	0.0	0.0	2.8	0.0
November	0.9	1.5	0.2	0.1	0.3	1.2
December	2.6	2.2	2.6	1.4	5.1	6.9

Table B-5 Fresno, CA monthly precipitation for the period 2000-2022⁵

Month	Monthly Precipitation (Inches)					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	1.9	2.0	2.2	0.7	3.4	0.0
February	2.2	1.4	3.3	0.0	0.3	0.0
March	1.4	1.8	1.3	2.3	1.3	0.7
April	1.2	1.3	0.4	1.7	0.2	0.3
May	0.4	0.2	2.4	0.1	0.0	0.0
June	0.1	0.2	0.0	0.0	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.1
September	0.0	0.1	0.0	0.0	0.0	0.1
October	0.7	0.4	0.0	0.0	1.3	0.0
November	0.8	1.1	0.7	0.3	0.3	0.7
December	2.3	1.8	2.2	1.1	3.6	-----

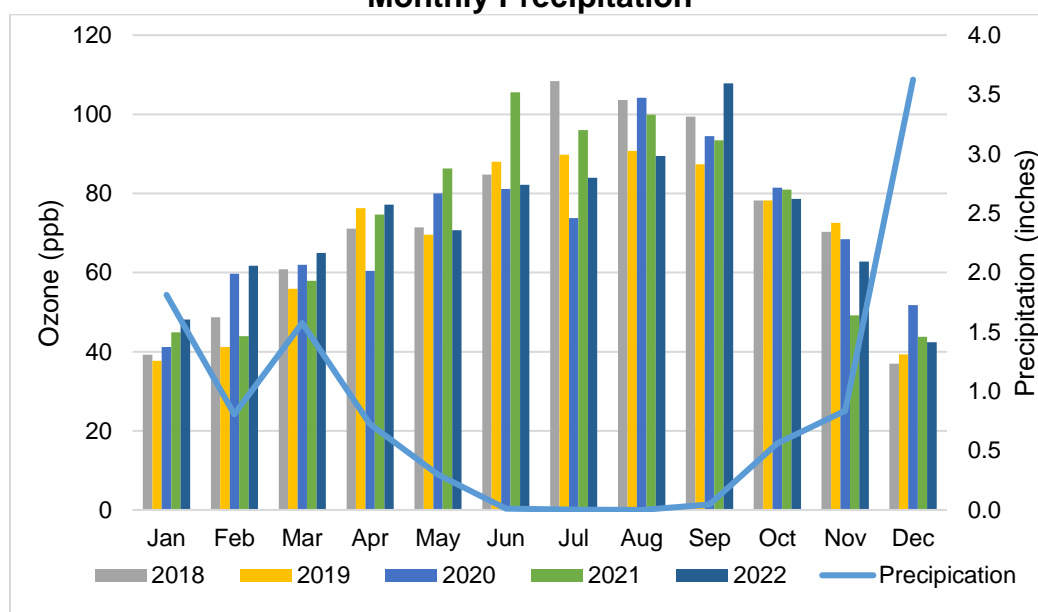
⁴ Source: Western Region Climate Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5738>

⁵ Source: Western Region Climate Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257>

Table B-6 Bakersfield, CA monthly precipitation for the period 2000-2022⁶

Month	Monthly Precipitation (Inches)					
	2000 - 2010	2010 - 2018	2019	2020	2021	2022
January	1.1	2.3	2.0	0.7	3.9	0.0
February	1.4	1.6	2.9	0.0	0.9	0.0
March	0.8	1.9	2.6	1.9	0.7	0.6
April	0.8	1.3	0.2	1.0	0.0	0.2
May	0.2	0.3	1.3	0.0	0.0	0.0
June	0.0	0.2	0.0	0.1	0.0	0.0
July	0.0	0.0	0.0	0.0	0.0	0.0
August	0.0	0.0	0.0	0.0	0.0	0.0
September	0.0	0.0	0.1	0.0	0.0	0.1
October	0.4	0.5	0.0	0.0	2.8	0.0
November	0.6	1.5	0.2	0.1	0.3	1.2
December	1.1	2.2	2.6	1.4	5.1	6.9

Figure B-10 Turlock 1-hour Ozone Max Concentrations and Modesto City Airport Monthly Precipitation



⁶ Source: Western Region Climate Center <https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0442>

Figure B-11 Fresno-Garland 1-hour Ozone Max Concentrations and Fresno Air Terminal Airport Monthly Precipitation

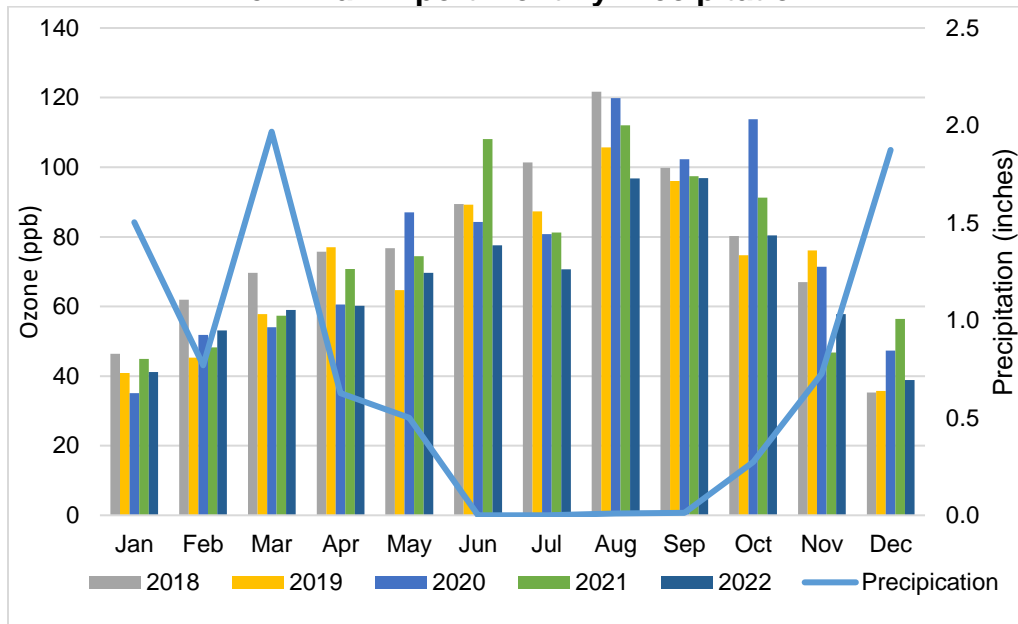
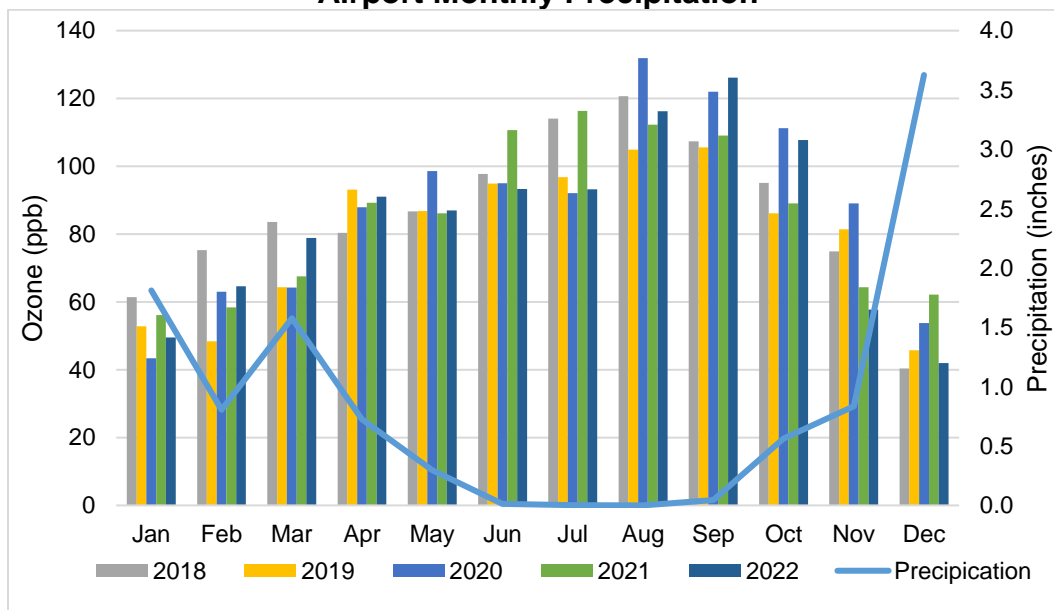


Figure B-12 Edison 1-hour Ozone Max Concentrations and Bakersfield Meadows Airport Monthly Precipitation



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