FINAL

2015 VENTURA COUNTY TRIENNIAL ASSESSMENT AND PLAN UPDATE

2012 - 2014

November 2015

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT
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1. BACKGROUND AND SUMMARY

In 1988, the California Legislature enacted the California Clean Air Act (CCAA) to attain and maintain the state clean air standards by the earliest practicable date. The CCAA required local air pollution control agencies in areas violating the state ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide air quality standards to adopt plans to attain those standards by July 1991. On October 8, 1991, the Ventura County Air Pollution Control Board (APCB or Board) adopted the 1991 Ventura County Air Quality Management Plan (AQMP) for the California one-hour ozone standard. Ventura County remains in attainment of the state carbon monoxide, sulfur dioxide, and nitrogen dioxide standards.

The 2015 Triennial Assessment shows that Ventura County is still making significant progress towards meeting the state ozone standards. Furthermore, the 2015 Triennial Assessment has not identified any deficiencies regarding meeting progress goals towards the state one-hour ozone standard. The "every feasible measure" analysis conducted for the 2015 Triennial Assessment did, however, identify three existing District rules with potential for enhancement. It also identified one possible new control measure that would help Ventura County continue its progress towards attaining the state ozone standards.

2. TRIENNIAL ASSESSMENT AND PLAN UPDATE REQUIREMENTS

The CCAA requires that once every three years, beginning in 1994, the state's air districts are to assess their progress towards attaining the state clean air standards, determine the amount of emission reductions achieved over each three-year period, correct any deficiencies in meeting progress goals, and incorporate new data and projections into their state clean air plans. The most recent triennial assessment period is 2012 – 2014.

The California Health and Safety Code (CH&SC) sections 40924 and 40925 require that triennial assessments include the following:

- Improvement in air quality based upon air quality indicators identified by the ARB (CH&SC section 40924);
- Population-related, industry-related, and vehicle-related emissions growth (CH&SC section 40925);
- Control measures adopted by the District (CH&SC sections 40924 and 40925); and,
- Review of "every feasible measure" (CH&SC Section 40925).

Table 1 provides a summary of all triennial plan requirements and where those requirements are addressed in the 2015 Triennial Assessment.

Table 1
CCAA Triennial Assessment Requirements

Requirement	Submittal
Air Quality Analysis	Section 3 & Section 4
Population Trends	Section 4
Emission Inventory	Section 5 2007 AQMP – Chapter 2
Vehicle Trips & Vehicle Miles Traveled Trends	Section 5 2007 AQMP – Chapter 3, Section 3.2.4 & Chapter 4, Sections 4.1 & 4.1.2
Control Measures	Section 7 & Appendix A 2007 AQMP – Chapter 3
Control Strategy Cost-Effectiveness	Section 7.1
Transportation Control Measures	2007 AQMP – Chapter 3, Section 3.2
Contingency Measures	2007 AQMP – Chapter 7
Every Feasible Measure	Section 8 & Appendix A
Expeditious Adoption	Section 8
Ozone Transport	Section 9
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3. AIR QUALITY INDICATORS

The California Air Resources Board (ARB) recommends that local districts use three air quality indicators to assess progress in meeting the state ambient one-hour ozone standard: Expected Peak Day Concentration (EPDC), Population-Weighted Exposure, and Area-Weighted Exposure.

Expected Peak Day Concentration

Expected Peak Day Concentration represents the concentration expected to be exceeded at each air monitoring site in the county once per year, on average. It is based on a statistical calculation of daily maximum one-hour and eight-hour ozone data collected at each air quality monitoring site in the county averaged over three-year periods and is presented for the end year of each three-year period. For example, the 2014 EPDC values use 2012 – 2014 monitoring data. The EPDC is useful for tracking air quality progress at individual air quality monitoring locations. Because it uses a robust statistical calculation, it is relatively stable, thereby providing a trend indicator not highly influenced by year-to-year variations in meteorology. It does not, however, reflect the number of people exposed to the ambient ozone levels.

Figure 1 and Figure 2 present the one-hour and eight-hour ozone EPDC trend values for each of the county's ozone monitoring stations for 1988 – 2014. Peak day ozone concentrations have significantly declined over the period. Peak day ozone levels in the El Rio, Piru, and Thousand Oaks areas are now less than the state's one-hour ozone standard. Moreover, peak day ozone levels in the El Rio area are now less than the eight-hour ozone standard. Table 2 and Table 3 present the percent reduction in the one-hour and eight-hour EPDC values. Figure 3 and

Figure 4 present these reductions graphically.

The one-hour EPDC reductions range from a low of 35 percent in Ojai to a high of 46 percent in El Rio. The average one-hour EPDC reduction was 41.4 percent. The eight-hour EPDC reductions range from a low of 30.6 percent in Ojai to 45.0 percent in El Rio, with the average slightly over 36.8 percent. These averages are an improvement from the corresponding one and eight-hour EPDC average reductions in the 2012 Triennial Assessment of 36.9 and 35.3 percent, respectively.

Figure 1
Expected Peak Day Concentration Trends for Ozone (1-hour)

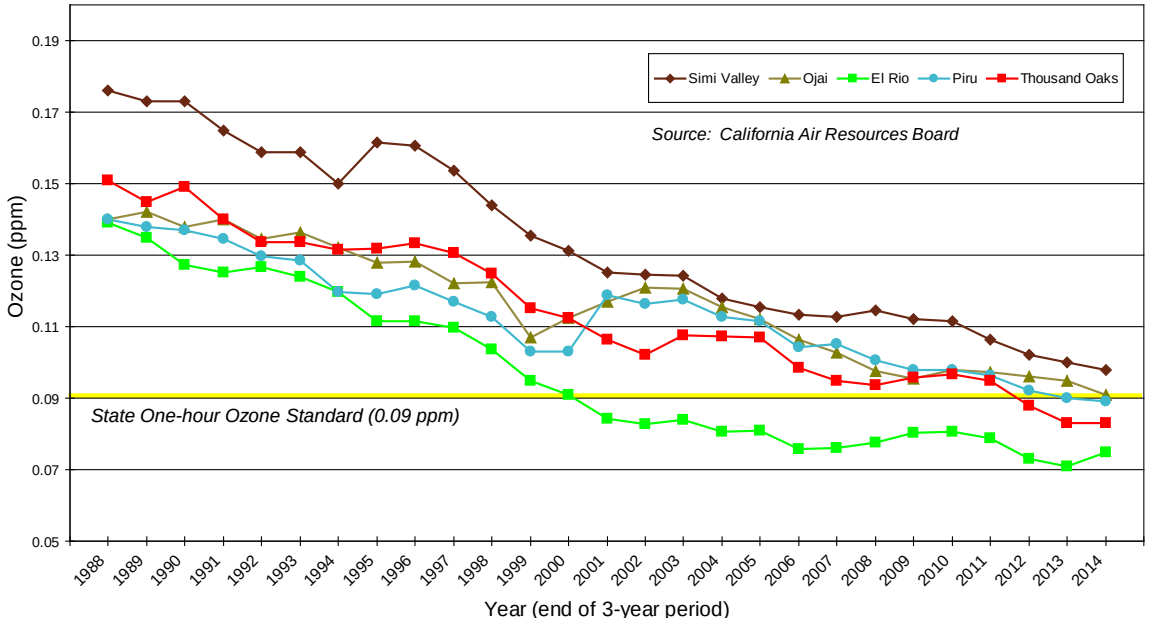

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Figure 2
Expected Peak Day Concentration Trends for Ozone (8-hour)

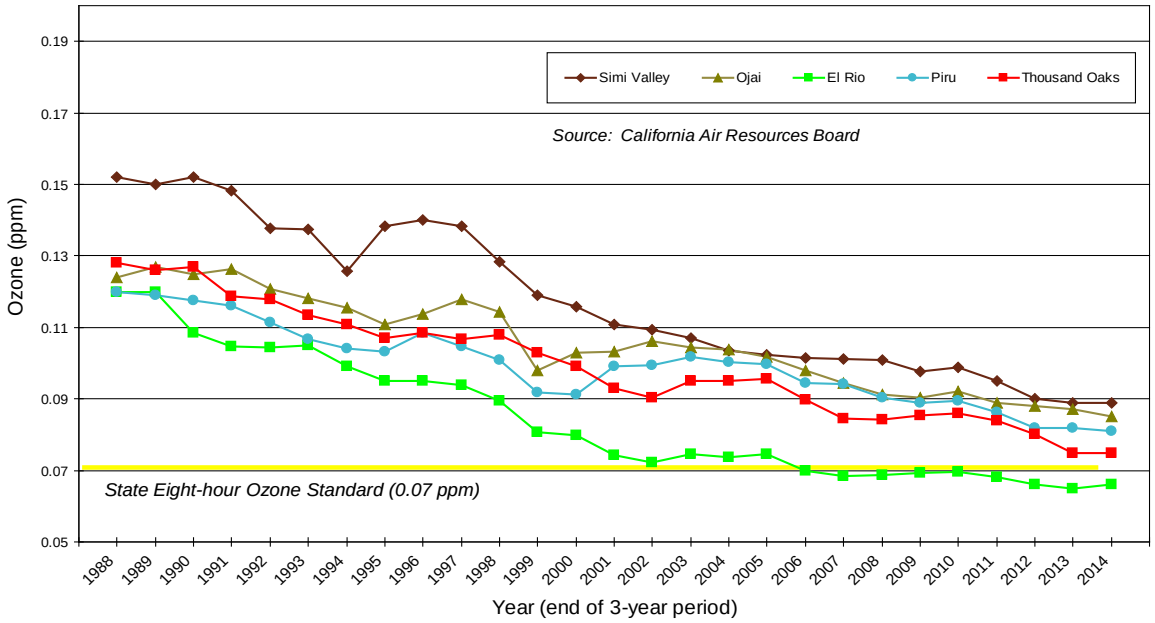

Table 2
Percent Reductions in Expected Peak Day 1-hour Ozone Concentrations: 1988 – 2014

Monitoring Site	1986 - 1988*	2012 - 2014*	Percent Reduction from 1988 - 2014
Simi Valley	0.177	0.098	44.6
Ojai	0.140	0.091	35.0
El Rio	0.139	0.075	46.0
Piru	0.140	0.089	36.4
Thousand Oaks	0.151	0.083	45.0

* Expected peak day concentration for ozone, in parts per million (ppm).
Source: Air Resources Board (May 2015)

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Figure 3
Percent Reductions in Expected Peak Day 1-hour Ozone Concentrations: 1988 – 2014

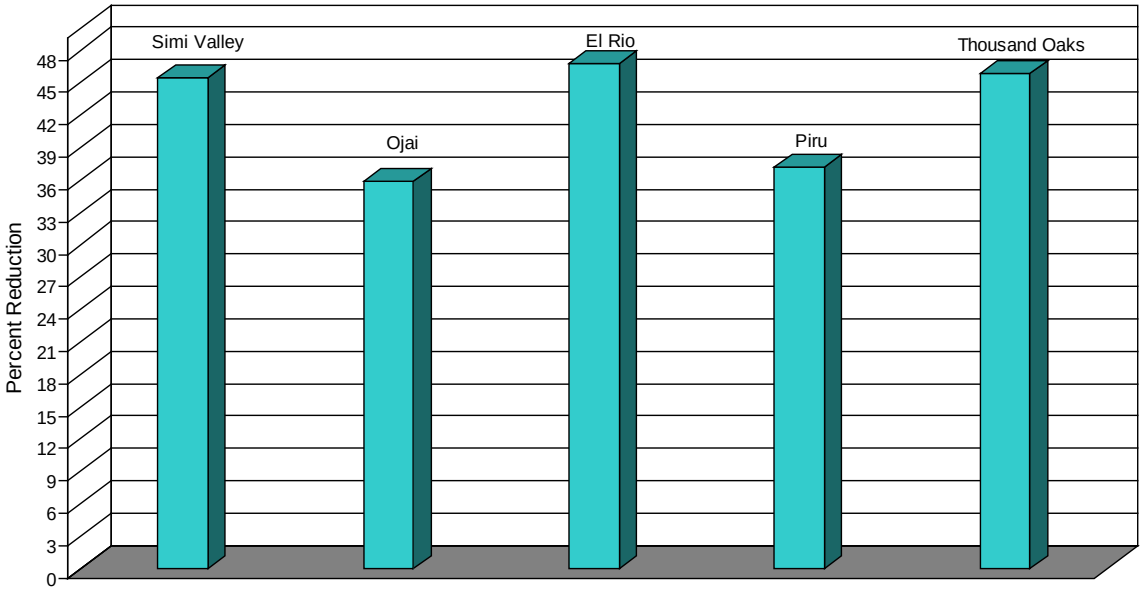

Table 3
Percent Reductions in Expected Peak Day 8-hour Ozone Concentrations: 1988 – 2014

Monitoring Site	1986 - 1988*	2012 - 2014*	Percent Reduction from 1988 - 2014
Simi Valley	0.152	0.090	40.7
Ojai	0.124	0.086	30.6
El Rio	0.120	0.066	45.0
Piru	0.120	0.081	32.5
Thousand Oaks	0.128	0.080	37.5

* Expected peak day concentration for ozone, in parts per million (ppm)
Source: Air Resources Board (May 2015)

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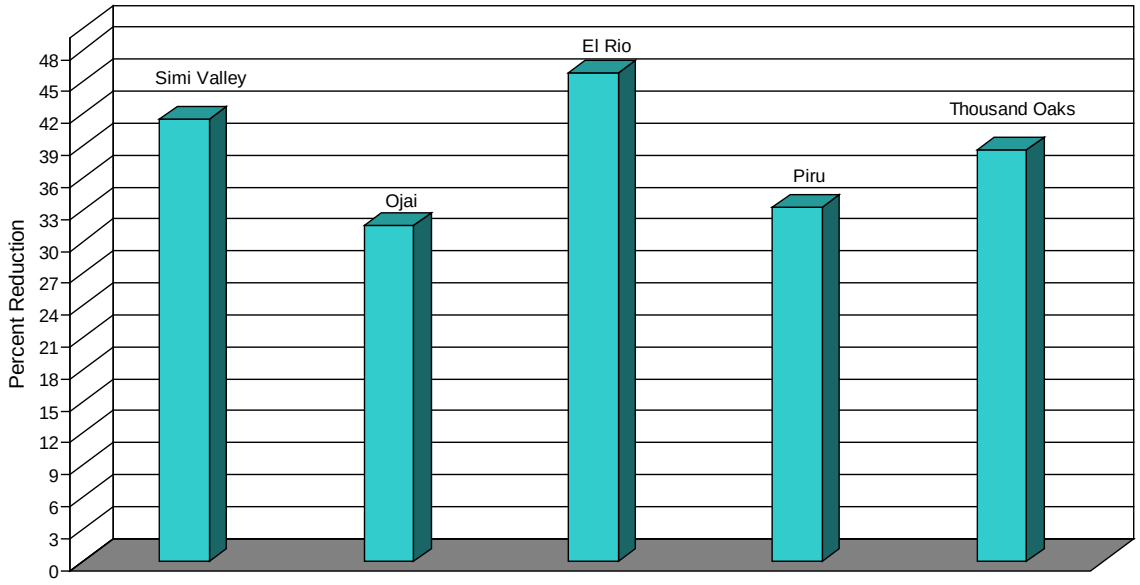
Figure 4
Percent Reductions in Expected Peak Day
8-hour Ozone Concentrations: 1988 – 2014



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Population-Weighted Exposure

The population-weighted exposure indicator consolidates ozone monitoring data from all air monitoring sites within the county into a single composite exposure value. This composite value characterizes the potential average annual outdoor exposure per person in Ventura County to concentrations above the level of the state ozone standards. The exposure value therefore represents the number of hours multiplied by the ozone concentration over the California standard that the average person experiences, expressed in ppm-hours per person. For example, a measured concentration of 0.13 ppm for two hours represents an exposure of 0.08 ppm hours [(0.13 ppm – 0.09 ppm) x 2 hours] above the state ozone standard of 0.09 ppm.

It should be noted that population-weighted exposure represents the average potential exposure in Ventura County, and not health impacts on individuals. The term "potential" is used, because daily activity affects an individual's exposure. For example, being indoors during peak ozone concentrations will minimize a person's exposure to outdoor ozone concentrations.

Table 4 and Figure 5 present a summary of the 1-hour ozone population-weighted exposure values calculated by ARB for the 3-year average base period (1986-1988) and the 3-year average end period (2012-2014) for Ventura County. The population-weighted exposure indicator shows a 99.8% decrease from the baseline period (1986-1988). This result shows that remarkable progress has been made in reducing the human population exposure to ozone in Ventura County.

Table 4
Percent Reduction in 1-hour Ozone Population-Weighted Exposure Indicator: 1988 – 2014

Exposure Indicator	Population Weighted (ppm-hrs/person)
Base Period (1986-1988) 3-Yr Avg	2.843
End Period (2012-2014) 3-Yr Avg	0.0064
Difference (Base – End)	2.837
Documented Progress	-99.8%

Source: California Air Resources Board (CARB, 2015)

Figure 5
Population-Weighted Exposure 1-hour Ozone Trend: 1988 – 2014

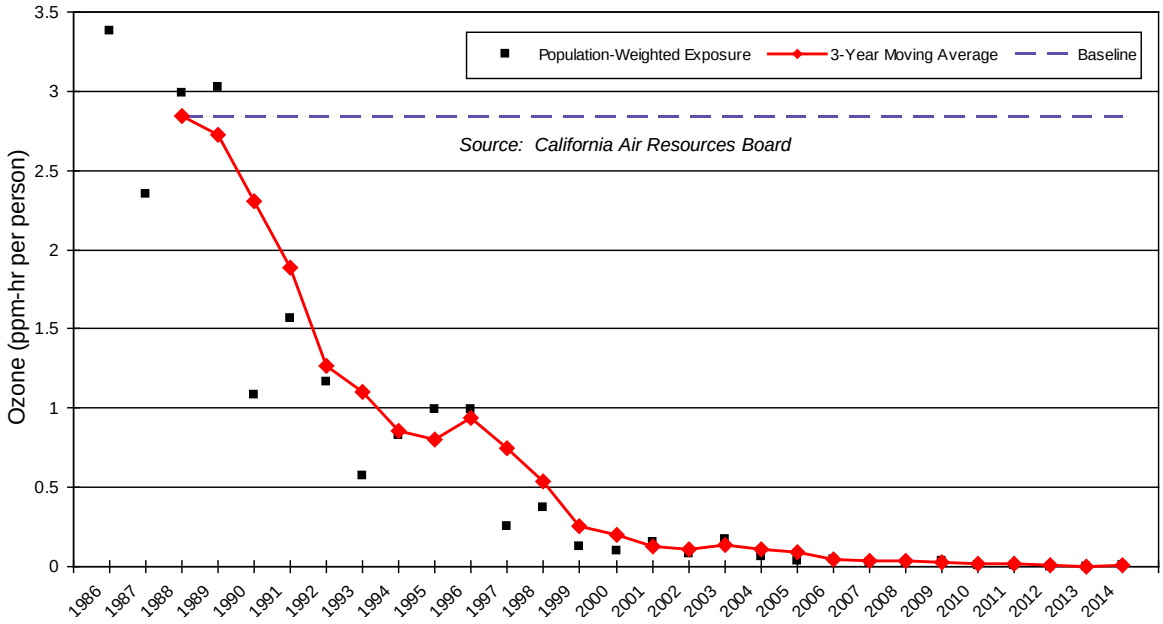

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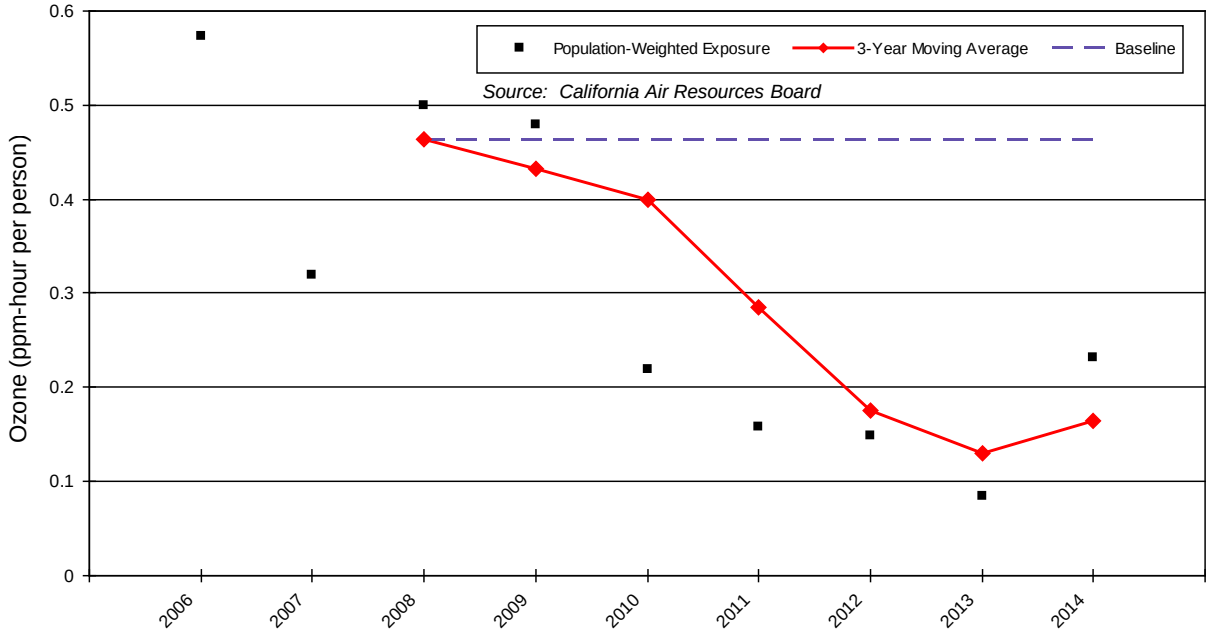
Table 5 and Figure 6 present a summary of the 8-hour ozone population-weighted exposure values calculated by ARB for the 3-year average base period (2006-2008) and the 3-year average end period (2012-2014) for Ventura County. The population-weighted exposure 8-hour indicator shows a 64.7% decrease from the baseline period (2006-2008).

Table 5
Percent Reduction in 8-hour Ozone Population-Weighted Exposure Indicator: 2008 – 2014

Exposure Indicator	Population Weighted (ppm-hrs/person)
Base Period (2006-2008) 3-Yr Avg	0.468
End Period (2012-2014) 3-Yr Avg	0.165
Difference (Base – End)	0.303
Documented Progress	-64.7%

Source: California Air Resources Board (2015)

Figure 6
Population-Weighted Exposure 8-hour Ozone Trend: 2008 – 2014



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Area-Weighted Exposure

The area-weighted exposure indicator characterizes the potential average annual outdoor exposure per unit area. It represents a composite of exposure around each monitoring site weighted to emphasize equally the exposure throughout Ventura County. It is calculated in a similar fashion to population-weighted exposure, except the census tract ozone concentration is multiplied by the square kilometers in the census tract. Exposures are then summed and divided by the total square kilometers in the county.

Table 6 and Figure 7 present a summary of the 1-hour ozone area-weighted exposure values calculated by ARB for the 3-year average base period (1986-1988) and the 3-year average end

period (2012-2014) for Ventura County. The 8-hour area-weighted exposure indicator shows a 99.8% decrease from the baseline period (1986-1988). This result also shows that remarkable progress has been made in reducing ozone levels in Ventura County.

Table 6
Percent Reduction in 1-hour Ozone Area-Weighted Exposure Indicator: 1988 – 2014

Exposure Indicator	Area-Weighted (ppm-hrs/sq km)
Base Period (1986-1988) 3-Yr Avg	1.394
End Period (2012-2014) 3-Yr Avg	0.0034
Difference (Base – End)	1.391
Documented Progress	-99.8%

Source: California Air Resources Board (2015)

Figure 7
Area-Weighted Exposure 1-hour Ozone Trend: 1988 – 2014

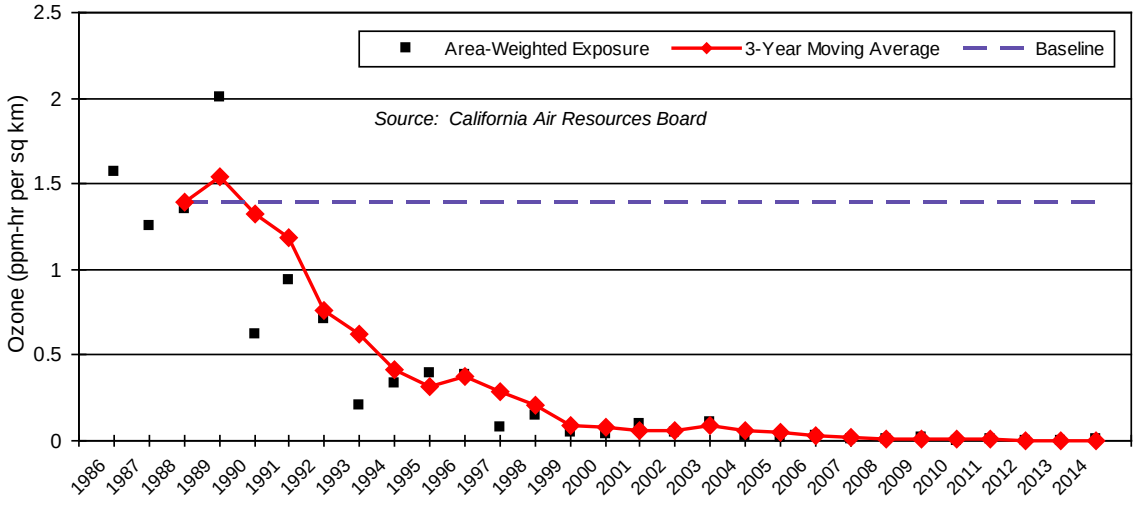

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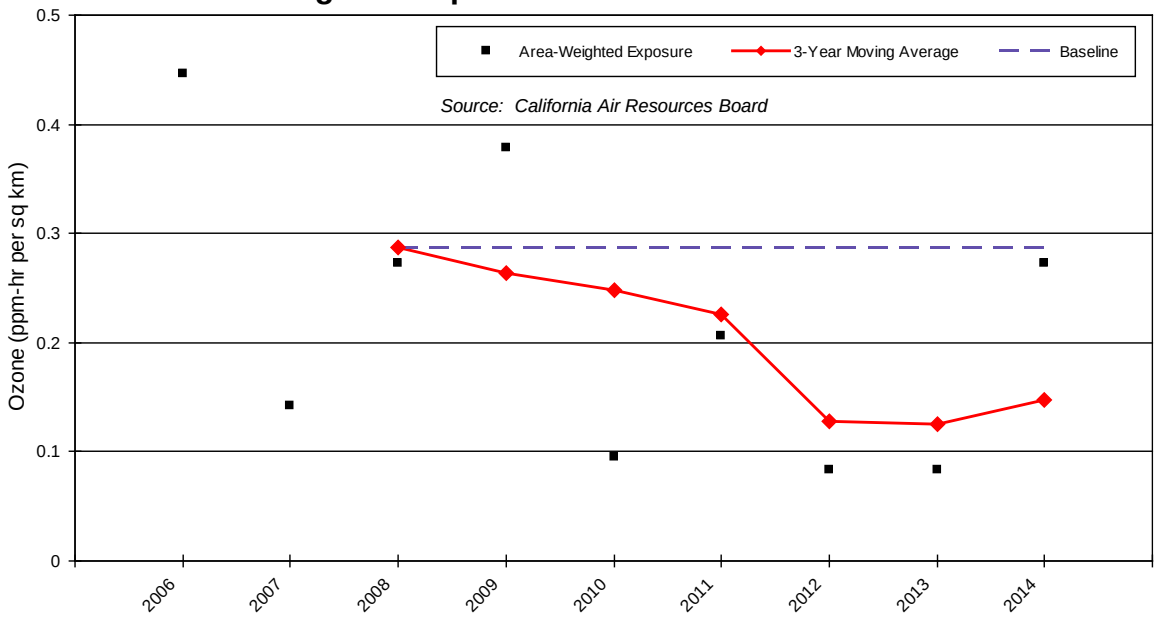
Table 7 and Figure 8 present a summary of the 8-hour ozone area-weighted exposure values calculated by ARB for the 3-year average base period (2006-2008) and the 3-year average end period (2012-2014) for Ventura County. The area-weighted exposure indicator shows a 46.2% decrease from the baseline period (2006-2008).

Table 7
Percent Reduction in 8-hour Ozone Area-Weighted Exposure Indicator: 2008 – 2014

Exposure Indicator	Area-Weighted (ppm-hrs/sq km)
Base Period (2006-2008) 3-Yr Avg	0.273
End Period (2012-2014) 3-Yr Avg	0.147
Difference (Base – End)	0.126
Documented Progress	-46.2%

Source: California Air Resources Board (2015)

Figure 8
Area-Weighted Exposure 8-hour Ozone Trend: 2008 – 2014



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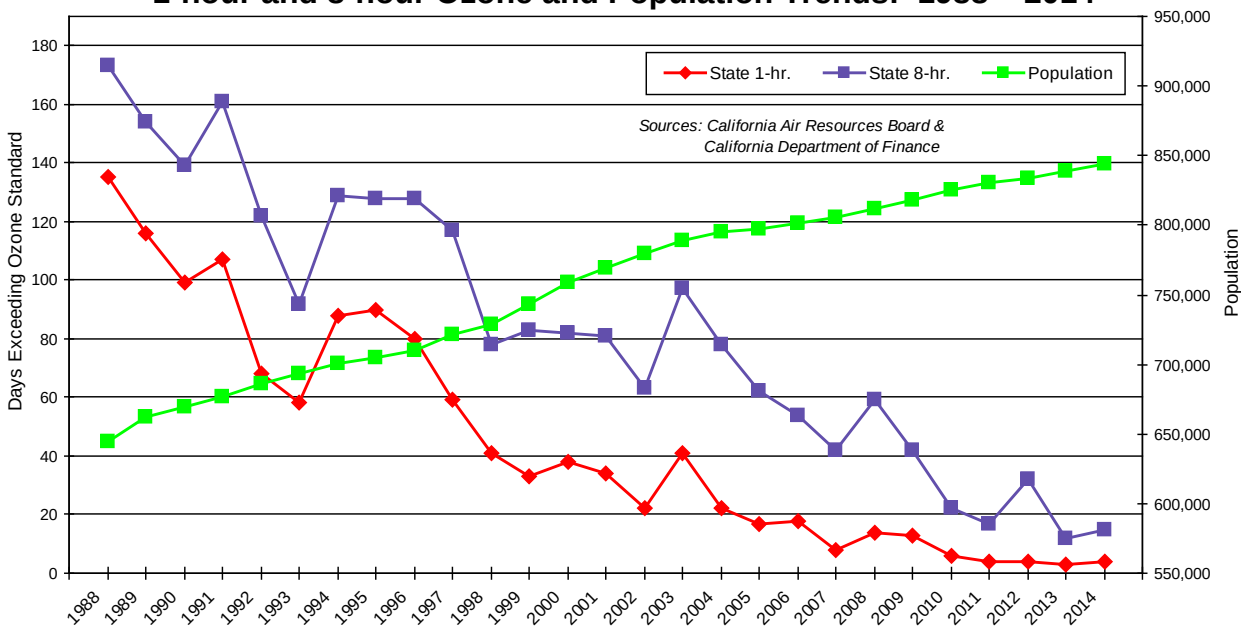
4. OZONE AND POPULATION TRENDS

Figure 9 shows that ambient ozone concentrations in Ventura County have improved dramatically since 1988. In 1988, Ventura County had 135 days and 173 days over the state one-hour and eight-hour ozone standard, respectively. However, in 2014 there were only 4 days over the state one-hour standard and only 15 days over the state eight-hour standard (up slightly from 3 and 12 days, respectively, in 2013). These improvements have occurred despite a 31 percent increase in Ventura County's population since 1988.

Figure 9
1-hour and 8-hour Ozone and Population Trends: 1988 – 2014



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5. EMISSION INVENTORY AND MOTOR VEHICLE TRENDS

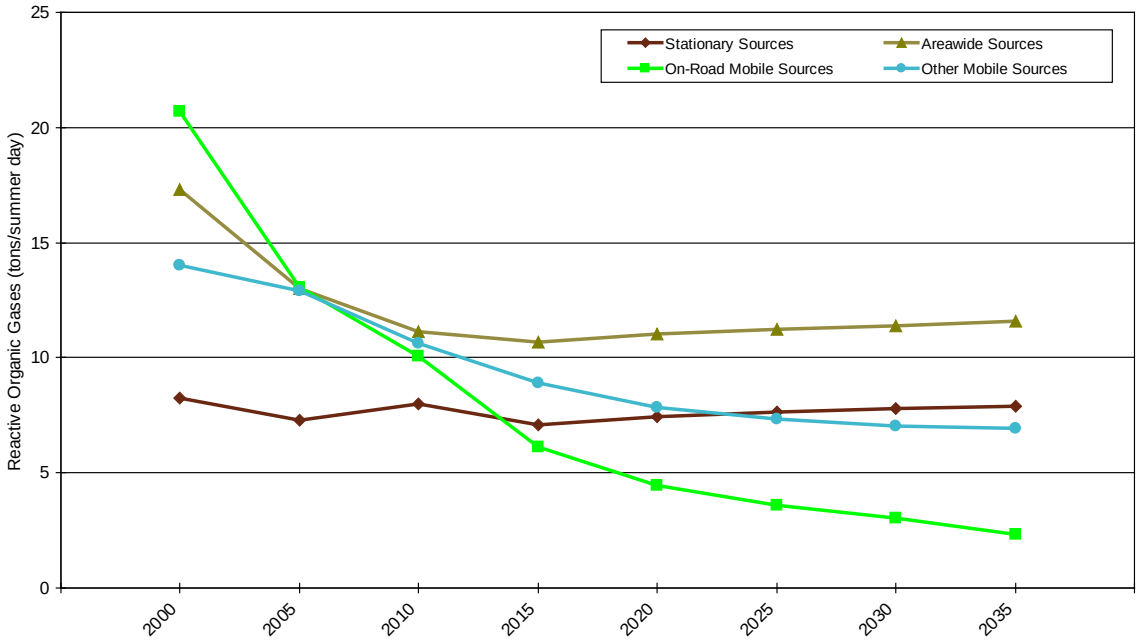
This section presents reactive organic gases (ROG) and nitrogen oxide (NOx) emission inventory (onshore Ventura County and within three miles of the coastline) and motor vehicle trends for Ventura County for years 2000 – 2035. Emission forecasts reflect the anticipated effects of socioeconomic changes and implementation of local, state, and federal control measures during the forecast years.

Overall, ROG and NOx emissions are still declining countywide, as they have for many years, continuing Ventura County's progress towards meeting the state and federal ozone standards. These declines in ozone precursor emissions are occurring despite growing population and motor vehicle usage.

Figures 10 and 11 show past and expected future countywide ROG NOx emission trends, respectively, from the four major emission categories in Ventura County: stationary sources, areawide sources, on-road mobile sources, and other mobile sources. ROG and NOx emissions from all four categories have declined since 2000 with mobile sources, both on-road and other, showing the greatest ROG and NOx declines, largely due to California's comprehensive motor vehicle emissions regulations. Moreover, ROG and NOx emissions from both mobile source categories are expected to continue declining out to at least 2035, but with ROG emissions from the "other mobile source" category starting to level off around 2025. Figure 12 shows that the decline in on-road motor vehicle emissions has and will continue to occur despite an increase in both vehicle trips and vehicle miles traveled (VMT) in the county.

ROG emissions from stationary and areawide sources have declined only slightly between 2000 and 2015, and are expected to begin increasing starting in about 2015. This is a consequence of ROG emission increases associated with population and economic growth gradually overtaking further ROG reductions from current and anticipated ROG control strategies.

Figure 10
ROG Emission Trends By Source Category: 2000 – 2035



Source: CEPAM: 2013 Almanac - Standard Emissions Tool
http://www.arb.ca.gov/app/emsinv/fcemssumcat2013.php

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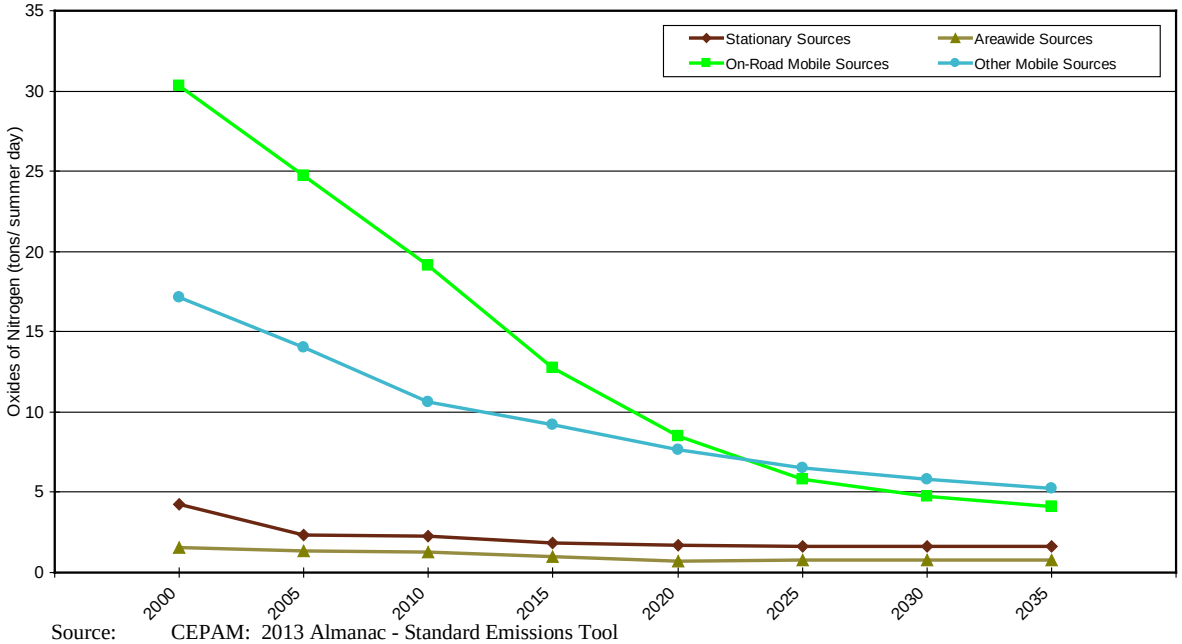
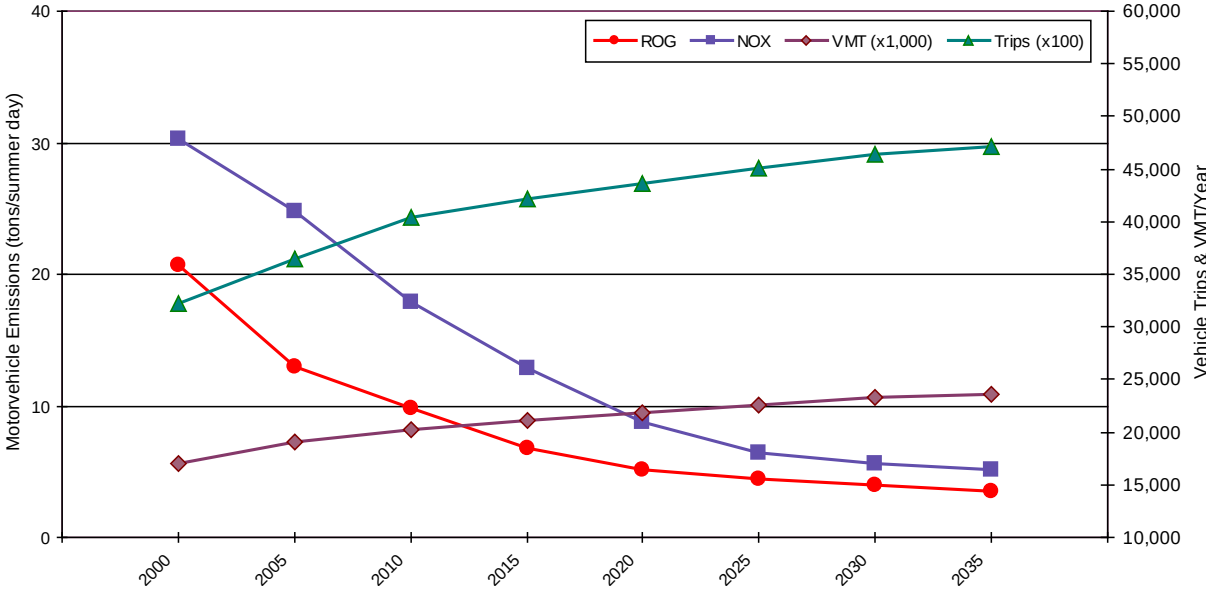
Figure 11
NOx Emission Trends By Source Category: 2000 – 2035



Source: CEPAM: 2013 Almanac - Standard Emissions Tool
http://www.arb.ca.gov/app/emsinv/fcemssumcat2013.php

Figure 12
Motor Vehicle Emissions, Vehicle Trips, & Vehicle Miles Traveled: 2000 – 2035



Source: California Air Resources Board's EMFAC2011 Web Database
http://www.arb.ca.gov/emfac/2011

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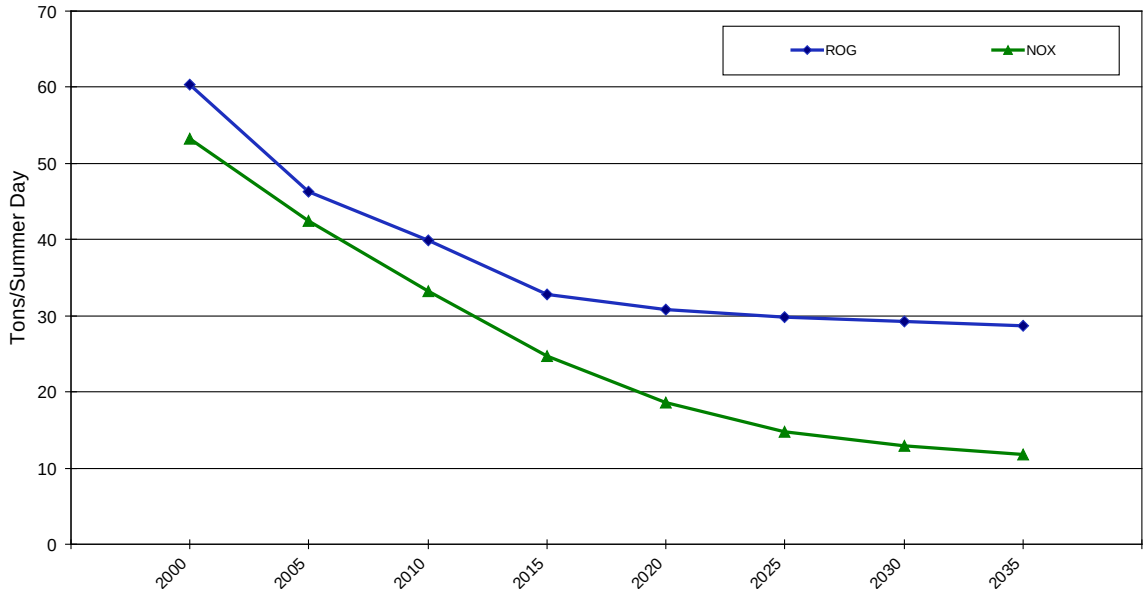
Figure 13 shows the overall decline in ROG and NOx emissions in Ventura County from 2000 to 2035. During this time period, ROG emissions are expected to decline by 52.3 percent and NOx by 78 percent.

Figure 13
Overall ROG and NOx Emission Trends: 2000 – 2035



Source: CEPAM: 2013 Almanac - Standard Emissions Tool (onshore Ventura County only)
http://www.arb.ca.gov/app/emsinv/fcemssumcat2013.php

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6. OVERALL AIR QUALITY PROGRESS

The air quality indictors presented in Section 3, together with the ambient ozone concentration declines presented in Section 4 and the emission trends in Section 5, show that Ventura County has made exceptional progress towards attaining the state one-hour and eight-hour ozone standards. This improvement should continue as new local, state, and federal control strategies and programs presented in the 2007 AQMP are implemented.

7. AQMP CONTROL MEASURE AND RULEMAKING UPDATE

This section summarizes the District's rulemaking activity for District rules developed to reduce ROG and NOx emissions during the 2012 – 2014 triennial assessment period. These rules implement emission control measures in the District's clean air plans for the federal and state ozone standards. This section does not include other rulemaking activities, such as rules for other air pollutants, administrative rule changes, rule language cleanups and fix-ups, and air permitting rules. Information regarding the District's current rulemaking activities is available on the District's Rule Development website.

7.1. Control Strategy Cost-Effectiveness

The CCAA requires that an emissions control strategy for the state one-hour ozone standard be cost-effective, when viewed in its entirety. Furthermore, the cost-effectiveness of individual control measures must be determined and presented in rank order. The 1991 AQMP, prepared for the state one-hour ozone standard, included cost-effectiveness estimates for each proposed control measure. Only those control measures determined to be cost-effective and technologically feasible for Ventura County were included in that plan. Such has been the case for every Ventura County AQMP before or since, including the 2007 AQMP, Ventura County's most recent clean air plan. The proposed rule revisions included in this Triennial Assessment were based on multi-factor evaluations that included estimates of cost-effectiveness. Likewise, District staff will not recommend any rule for adoption unless it is shown to be cost-effective, technologically feasible, and appropriate for Ventura County.

7.2. District ROG and NOx Rules Adopted or Revised 2012 – 2014

Table 8 presents those District ROG and NOx rules adopted or revised during the 2012 - 2014 triennial assessment period along with their respective maximum emission reductions and the year in which those reductions are expected to occur.

Table 8
ROG and NOx Rules Adopted or Revised 2012 – 2014

Rule Number	Rule Name	Date Adopted/ Amended	Year Fully Implemented	Year Max Emission Reduction	Pollutant	Emission Reduction (tons/year)
74.11.1	Large Water Heaters and Small Boilers	9/11/2012	2014	2023	NOx	9.3
74.15.1	Boilers, Steam Generators and Process Heaters	9/11/2012	2013	2022	NOx	1.2
74.13	Aerospace Assembly and Component Manufacturing Operations	9/11/2012	2013	2013	ROG	2.3
74.20	Adhesives and Sealants	9/11/2012	2013	2013	ROG	*
74.24	Marine Coating Operations	9/11/2012	2013	2013	ROG	*
74.31	Metal Working Fluids and Direct Contact Lubricants	11/12/2013	2014	2015	ROG	35.7
				Total NOx Emission Reductions:		**10.5**
				Total ROG Emission Reductions:		**38.0**

* Emission reductions for Rules 74.20 and 74.24 included in the ROG reduction listed for Rule 74.13.
Source: Ventura County Air Pollution Control District

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7.3. Status of Rules Scheduled for Adoption or Revision 2012 – 2014

Table 9 presents the status of all sixteen ROG and NOx control rules scheduled for adoption or revision during the 2012 - 2014 triennial assessment period to meet the "every feasible measure" requirements of the CCAA. Of the sixteen rules in Table 9, the District's governing board has adopted seven: Rule 74.11.1, *Large Water Heaters and Small Boilers*; Rule 74.13, *Aerospace*

Assembly and Component Operations; Rule 74.15.1, *Boilers, Steam Generators, and Process Heaters(1 to 5MMBtu/hr)*; Rule 74.20, *Adhesives and Sealants*; Rule 74.24, *Marine Coating Operations;* Rule 74.31, *Metalworking Fluids and Direct-Contact Lubricants; and* Rule 74.33, *Liquefied Petroleum Gas Transfer or Dispensing*.

The revisions to Rule 74.11.1 changed the rule applicability from less than or equal to 2 million (MM) British thermal units per hour (Btu/hr) to units less than 1 MMBtu/hr. This eliminates the overlap with Rule 74.15.1. In addition, the new threshold aligns well with the point-of-sale aspect of the rule because Permits to Operate are not required for units in this size range. All large water heaters and small boilers are now required to meet a 20-ppm NOx limit. Larger units were required meet the limit starting on January 1, 2013, and smaller units on January 1, 2014. The effective dates enabled existing equipment to be sold. A long list of complying equipment is already certified by the South Coast AQMD.

The revisions to Rule 74.13 were based in part on other similar District rules and South Coast AQMD Rule 1171, *Solvent Cleaning Operations*. The rule lowers the partial vapor pressure for coating application equipment cleaners from 45 to 5 mm Hg at 20 degrees Celsius. The lower vapor pressure limit requires the use of solvent cleaners that evaporate more slowly.

The September 11, 2012 revisions to Rule 74.15.1 were based in part on South Coast AQMD Rule 1146.2, *Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters.* Units equal to or greater than 1 MMBtu/hr and less than or equal to 2 MMBtu/hr capacity are required to meet a 20 ppm NOx limit. Units with a rated heat input capacity of less than or equal to 2 million BTU/hr must be tested for compliance upon initial installation and then no less than once every 48 months. Moreover, units with a rated heat input capacity of 2 million BTU/hr or greater must be tested for compliance upon initial installation and then no less than once every 24 months. Tune-up requirements did not change.

The June 23, 2015 revisions to Rule 74.15.1 were based in part on San Joaquin Valley APCD Rule 4307, *Boilers, Steam Generators and Process Heaters*, 2 MMBtu/hr to 5 MMBtu/hr New or replacement equipment with heat input capacity equal to or greater than 2 MMBtu/hr and less than 5 MMBtu/hr installed after January 1, 2016 are required to meet specific NOx limits, depending on the fuel used and whether the combustion occurs under atmospheric pressure or a pressurized system. Units using natural gas as fuel must meet NOx limits of 9 ppm and 12 ppm for pressurized and atmospheric units, respectively, corrected to 3 percent oxygen. New or replacement units subject to these limits must be tested at least once every 48 months and screened for compliance every 12 months. Tune-up requirements did not change. It should be noted this rule was adopted by the District Board on June 23, 2015, so it was actually adopted outside the triennial assessment period but prior to preparation of this update.

The revisions to Rule 74.20 were based in part on other similar District rules and South Coast AQMD Rule 1171, *Solvent Cleaning Operations.* The rule limits the substrate surface cleaner ROG content to 25 grams per liter (g/l) for facilities that have bonding operations subject to the

rule. In addition, adhesive cleanup, including spray equipment cleaning, is also subject to the new 25-g/l ROG content limit.

The revisions to Rule 74.24 were based in part on other similar District rules and South Coast AQMD Rule 1171, *Solvent Cleaning Operations.* The rule limits the ROG content of solvents subject to the rule to 25 g/l and applies to substrate preparation, cleanup, and spray gun cleaning at marine coating operations.

Newly adopted Rule 74.31 was based in part on South Coast AQMD Rule 1144, *Metalworking Fluids and Direct-Contact Lubricants.* The rule limits the ROG content of fluids used for metalworking where the metalworking fluid or direct-contact lubricant comes into contact with products or parts. This rule also applies to ROC-containing fluids used for metal protection, including rust and corrosion prevention and inhibition, but does not apply to coatings, sealants, adhesives, or lubricants regulated by other District rules.

Newly adopted Rule 74.33 was based in part on South Coast AQMD Rule 1177, *Liquefied Petroleum Gas Transfer and Dispensing*. The rule limits the ROG emissions associated with the transfer or dispensing of liquefied petroleum gas (LPG). This rule applies to the transfer of LPG to or from any cargo tank, any stationary or portable storage tank, or any cylinder. It should be noted this rule was adopted by the District Board on January 13, 2015 and as such was actually adopted outside the triennial assessment period but prior to preparation of this update.

Table 9
Status of District Rules Scheduled for Adoption or Revision 2012 – 2014

Rule Number	Rule Name	Affected Source Type	Status/Comments
70	Storage and Transfer of Gasoline	Gasoline storage and dispensing facilities	*Not yet adopted – adoption date TBD*.* Rule revisions to meet CCAA "every feasible measure" requirements.
74.6	Surface Cleaning and Degreasing	Facilities cleaning medical or electrical components	*Not yet adopted – adoption date TBD.* Rule revisions to meet CCAA "every feasible measure" requirements.
74.6.1	Batch Loaded Vapor Degreasing	Vapor degreasing operations (aerospace/electronics, etc.)	*Not yet adopted – adoption date TBD.* Rule revisions to meet CCAA "every feasible measure" requirements.
74.11.1	Large Water Heaters and Small Boilers	Large water heaters and small boilers (<1MMBtu)	***Adopted 9/11/2012.*** Rule revisions to further reduce NOx emissions from large water heaters and small boilers and to meet CCAA "every feasible measure" requirement.
74.13	Aerospace Assembly and Component Manufacturing Operations	Aerospace operations	***Adopted 9/11/2012.*** Rule revisions to meet CCAA "every feasible measure" requirements.

Table 9 (cont'd)

Rule Number	Rule Name	Affected Source Type	Status/Comments
74.15	Boilers, Steam Generators, and Process Heaters	Boilers (5 MMBtu +)	*Not yet adopted – adoption date TBD.* Rule revisions adopted to meet CCAA "every feasible measure" requirements.
74.15.1	Boilers, Steam Generators, and Process Heaters	New or replaced units ≥1MMBtu/hr and ≤2MMBtu/hr	***Adopted 9/11/2012.*** Rule revisions to meet CCAA "every feasible measure" requirements.
74.15.1	Boilers, Steam Generators, and Process Heaters	New or replaced units >2MMBtu/hr and <5MMBtu/hr	***Adopted 6/23/2015.*** Rule revisions to meet CCAA "every feasible measure" requirements.
74.20	Adhesives and Sealants	Adhesive operations and users	***Adopted 9/11/2012.*** Rule revisions to meet CCAA "every feasible measure" requirements.
74.21	Semiconductor Manufacturing	Semiconductor manufacturing operations	*Not yet adopted – adoption date TBD.* Rule revisions to meet CCAA "every feasible measure" requirements.
74.24	Marine Coatings	Marine coating operations	***Adopted 9/11/2012.*** Rule revisions to meet CCAA "every feasible measure" requirements.
74.30	Wood Products Coatings	Wood coating operations	*Not yet adopted – adoption date TBD.* Rule revisions to meet CCAA "every feasible measure" requirements.
74.31	Metal Working Fluids and Direct Contact Lubricants	Metal working facilities	***Adopted 11/12/2013.*** Rule revisions to meet CCAA "every feasible measure" requirements.
74.32	Compostable Material Handling Operations	Composting, digesting and chip-and-grind operations	*New rule not yet adopted – adoption date TBD.* New rule to meet CCAA "every feasible measure" requirements.
74.33	Liquefied Petroleum Gas Transfer or Dispensing	Liquefied petroleum gas transfer or dispensing facilities	***Adopted 1/13/2015.*** Rule revisions to meet CCAA "every feasible measure" requirements.
TBD	Oil Well Degassing	Oil wells	*New rule not yet adopted – adoption date TBD.* New rule to meet CCAA "every feasible measure" requirements.
TBD	Flaring or Flare Minimization	Oil and gas facilities	*New rule not yet adopted – adoption date TBD.* New rule to meet CCAA "every feasible measure" requirements.

* To be determined

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8. EVERY FEASIBLE MEASURE

CH&SC Section 40914 requires that clean air plans for attaining the California one-hour ozone standard reduce emissions of ROG and NOx by a minimum of five percent per year, averaged over each consecutive three-year period. The 1991 Ventura County AQMP did not meet that emission reduction target. However, it was able to satisfy the alternative requirement of including "every feasible measure (also known as "all feasible measures") and an expeditious adoption schedule," as allowed by CH&SC Section 40914(b)(2). On August 13, 1992, the ARB approved the 1991 AQMP based on this "every feasible measure" determination of progress.

District staff has conducted "every feasible measure" assessments for all the District's triennial assessments. For this triennial assessment, District staff reviewed ROG and NOx rules adopted since 2011 by the South Coast AQMD, the San Joaquin Valley APCD, the Bay Area AQMD, the Monterey Bay Unified APCD, Sacramento Metropolitan AQMD, and the Santa Barbara County APCD, with an emphasis on those adopted since the last "every feasible measure" assessment completed in 2013. This latest review identified three possible revisions to current District rules (Rule 71.2, *Storage of Reactive Organic Compound Liquids*, Rule 74.2, *Architectural Coatings*, and Rule 74.13, *Aerospace Assembly and Component Manufacturing Operations*); and one possible new rule (Rule 74.34, *NOx Reductions from Miscellaneous Sources*) for Ventura County. These possible new rules have been added to Table 10 (and indicated with an asterisk). Table 10 also includes those rules in the District's last "every feasible measure" assessment that are still to be fully considered for adoption in Ventura County.

Appendix A presents a summary of the "every feasible measure" analysis conducted for this Triennial Assessment.

The District commits to rulemaking for the rules in Table 10, during which District staff will further evaluate the feasibility (including a cost-effectiveness assessment) of each for Ventura County. Emission reductions will be estimated for those rules determined to be feasible prior to rule adoption. District staff believes that Ventura County APCD rules implement "every feasible measure" for all other emission source categories under its jurisdiction.

It should be noted that several control measures that were in previous AQMPs or Triennial Assessments were not retained in the 2007 AQMP for either the federal eight-hour ozone standard or the state one-hour ozone standard, and therefore are not addressed in this Triennial Assessment. Section 3.1.8 of the 2007 AQMP presents these measures.

Table 10
ROG and NOx Rules Potentially Feasible for Ventura County

Rule Number	Rule Name	Control Measure Description	Rule-making Schedule
71.2*	Storage of Reactive Organic Compound Liquids	Revise rule to set lower leak detection thresholds similar to South Coast AQMD Rule 463.	TBD**
74.2*	Architectural Coatings	Revise rule to reduce ROG emissions from architectural coatings by limiting the allowable ROG content of previously unregulated colorants used to tint coatings; establishing ROG limits for certain new coating categories; and reducing the allowable ROG content for several existing coating categories similar to South Coast AQMD Rule 1113.	TBD
74.9	Stationary Internal Combustion Engines	Revise rule to set new NOx limits for stationary internal combustion engines consistent with San Joaquin Valley APCD Rule 4702.	TBD
74.13*	Aerospace Assembly and Component Manufacturing Operations	Revise rule to reduce ROG emissions from coatings used on aerospace components by establishing ROG limits for certain new coating categories and reducing the allowable ROG content for several existing coating categories similar to South Coast AQMD Rule 1124 and San Joaquin Valley APCD Rule 4605.	TBD
74.14	Polyester Resin Operations	Revise rule to include a small source exemption limit of 50 gallons per year, consistent with Santa Barbara County APCD Rule 349.	TBD
74.19.1	Screen Printing Operations	Revise rule to limit screen printing cleaners to 100 g/l consistent with South Coast AQMD Rule 1171.	TBD
74.22	Natural Gas Fan-Type Central Furnaces	Revise rule to limit NOx from natural gas fan-type central furnaces to levels consistent with South Coast AQMD Rule 1111.	2019
74.26 74.27	Crude Oil Storage Tank Degassing Operations Gasoline and ROC Liquid Storage Tank Degassing Operations	Revise both rules to establish a new vapor concentration limit of 5,000 ppmv before releasing the vapors to the atmosphere. Extend rule applicability to formally exempt small aboveground gasoline storage tanks, pipelines, and large aboveground storage tanks, depending upon the RVP of the stored organic liquids and tank size. In addition, require that vacuum trucks used to remove product residuals and sludge from pipeline and storage tanks subject to the rule to exhaust the collected vapors into a control device with the exhaust concentration of the vapors from the control device limited to no more than 500 ppmv, measured as methane, consistent with South Coast AQMD Rule 1149.	TBD
74.32	Compostable Material Handling Operations	Adopt a new rule to limit VOC emissions from compostable handling operations consistent with South Coast AQMD Rules 1133.1 and 1133.3 and state requirements.	2017
74.34*	NOx Reductions from Miscellaneous Sources	Adopt a new rule to control NOx emissions from currently unregulated sources similar to South Coast AQMD Rule 1147 and 1153.1.	2017
TBD	Flaring or Flare Minimization	Adopt a new rule to control gas flaring at oil and gas facilities similar to Bay Area AQMD Rule 12-12 and/or South Coast AQMD Rule 1118.	TBD
TBD	Vacuum Trucks Operations	Adopt a new rule to limit organic vapor emissions from vacuum truck operations similar to Bay Area AQMD Rule 8-53.	TBD

* New in the 2015 Triennial Assessment
** To be determined

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9. OZONE TRANSPORT

The CCAA directs ARB to assess the contribution of ozone and ozone precursors in upwind basins or regions on ozone concentrations that violate the state ozone standard in downwind basins or regions. The movement of ozone and ozone precursors between basins or regions is

termed ozone transport. The CCAA also directs ARB to establish mitigation requirements for upwind districts commensurate with their contributions to the air quality problems in downwind basins or regions.

Over the last decade, ARB has published several transport reports that include assessments of transport relationships between air basins and regions in California. Along with these assessments, the reports have included mitigation requirements for ensuring that upwind areas do their part to limit the effects of transport on their downwind neighbors. These two important components are available on the following ARB websites: Transport Assessments and Transport Mitigation. ARB completed its most recent transport assessment, *Ozone Transport Mitigation in California*, in 2004.

ARB transport assessments indicate that Ventura County, as part of the South Central Coast Air Basin, impacts ozone levels in the South Coast Air Basin. This means that Ventura County must comply with ARB's transport mitigation requirements. The District complies with these requirements through its rules and permitting programs, including adoption of "every feasible measure," and application of Best Available Retrofit Control Technology to existing sources of ozone precursors. The county's greatly improved air quality over the last 26 years provides direct evidence that Ventura County has mitigated, and is continuing to mitigate, ozone transport between Ventura County and the South Coast Air Basin.

10. PUBLIC INFORMATION

The District conducts an outreach program through its Public Information (PI) Division. This division uses traditional and innovative public information techniques including: the District's website, publications and creative materials, outreach events, public awareness advertising programs, media relations, social media, and special projects. For more information about the District's PI program, visit the District's Public Information Division webpage. During 2012 to 2014, PI distributed 118,200 pieces of public information; spoke to over 8,800 individuals through educational programs and outreach events; and printed/ordered 26,600 pieces of public information.

Publications and Creative Materials

- An 8-page supplement for Earth Day 2012 in the Ventura County Star newspaper (85,000 inserts);
- *The Air Zone*, a 22-page booklet containing clean air tips and information;
- *Skykeeper 2*, a revision of the 1996 children's activity book, updated for 2015, including information on solar energy and electric cars and boats, with new locations including: Channel Islands National Park, Gull Wings Children's Museum, and the Ventura County Agriculture Museum;
- 36 issues of the District's monthly report, *Skylines;* and,
- PI also began researching and writing the 2nd edition of the *Ventura County Climate Change Almanac*, which was published in August 2015.

Outreach Events

During 2012 to 2014, PI participated in the Science, Technology, Engineering and Math Expo. Over 700 students came to the APCD booth for information. PI also participated in: Oxnard Earth Day, Amgen Earth Day, Ojai Valley Employer Fair, Green Day Thousand Oaks, 2012 Home & Garden Show, Living Green Expo Simi Valley, Environmental Science Career Day Cal State Channel Islands, Better Breathers Ventura, Thousand Oaks Earth Day, Cal State Channel Islands Employer Health Fair, National Plug-In Day (Oxnard), Ojai Day, Ventura County Energy Fair, Banana Festival Port Hueneme, Simi Valley Senior Center Program, Moorpark Seniors, and Ojai Valley Wellness Day.

Public Awareness and Advertising Programs

In 2012 and 2013, the District put an advertisement on its educational programs in the winter *Focus on Education* supplement in the Ventura County Star, with a distribution of 85,000 inserts.

"The Air Zone Campaign" was created in 2013 as an outreach tool to County residents. The campaign consists of (1) The Air Zone publication on air quality actions, tips and stories, (2) a traveling display with available copies of The Air Zone, and (3) The Air Zone Facebook page. Between 2013 and 2014, the traveling display visited 15 locations, including many city halls and libraries throughout the County.

Social Media

In 2012, PI created the Air Streams section on the District's website. The goal was to give the APCD a YouTube presence with short videos highlighting what the District, businesses and individuals are doing to protect our air. Between 2012 and 2014, seven videos were uploaded to the site, including an interview with APCO Mike Villegas, an interview with the director of The Port of Hueneme about its Green program, and a visit to a local "sustainable" home in Newbury Park.

Since 2013, the Air Zone Facebook page is a resource for news about local, national and international air quality issues. The site is updated daily and between 2013 and 2014; it has had over 3,000 visits.

Special Projects

In November 2013, the APCD Board approved an educational program that involves the District partnering with Oxnard's Gull Wings Children's Museum on an air quality exhibit. The project went through the County's RFP process in 2014 and began the design/fabrication elements in 2015. The exhibit opened fall 2015. The museum has an annual an attendance of 35,000 children.

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APPENDIX A

"EVERY FEASIBLE MEASURE" ANALYSIS

Summary of Analysis

A.1, Rule 71.2, *Storage of Reactive Organic Compound Liquids*

Rule 71.2 applies to equipment used to store crude oil or reactive organic compound (ROC) liquids with a modified Reid vapor pressure greater than 0.5 pounds per square inch. The provisions of this rule do not apply to any storage equipment subject to Rule 71.1, *Crude Oil Production and Separation*, to any gasoline storage container with a capacity equal to or less than 40,000 gallons, or to any other storage container with a capacity equal to or less than 5,000 gallons. The rule prohibits storage of regulated liquids in tanks subject to the rule unless the tanks are equipped with specified emission control equipment maintained in a vapor-tight condition. The prospective rule revision would revise the definition of "vapor tight" to be consistent with the SCAQMD rules 463, *Organic Liquid Storage*, and 1178, *Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities*.

A recent analysis of Rule 71.2 to determine if it meets the requirements for "reasonably available control technology" (RACT) concluded that the requirements of Rule 71.2 are functionally equivalent to South Coast AQMD Rules 463 and 1178 and San Joaquin Valley APCD Rule 4623, *Storage of Organic Liquids*. However, the South Coast AQMD rules define a vapor tight condition as

> "… a condition that exists when the reading on a portable hydrocarbon analyzer is less than 500 parts per million (ppm), expressed as methane, above background, measured using EPA Reference Method 21."

The definition of a gas leak that applies to Rule 71.2 is provided in District Rule 71, *Crude Oil and Reactive Organic Compound Liquids*, and states:

> "A leak exists when a reading in excess of 10,000 ppm, as methane, above background, is obtained using an appropriate portable hydrocarbon analyzer and when sampling is performed according to the procedures specified in EPA Method 21..."

A gas leak is defined in Rule 4623 as:

> "… a reading in excess of 10,000 parts per million by volume (ppmv), as methane, above background on a portable hydrocarbon detection instrument that is calibrated with methane…"

This prospective rule revision would lower the 10,000 ppm leak threshold in District Rule 71.2 to 500 ppm as defined in South Coast AQMD Rules 463 and 1178. However, a feasibility analysis will have to be conducted to determine if lowering the leak threshold to 500 ppm would be cost-effective in Ventura County before it would be recommended for adoption.

A.2, Rule 74.2, *Architectural Coatings*

Rule 74.2 applies to any person who supplies, sells, offers for sale, or manufactures, blends, or repackages any architectural coating for use within the District, as well as any person who applies or solicits the application of any architectural coating within the District. The rule limits the ROG content of architectural coatings that may be sold and/or applied in the District based

on the type of coating. Limits are expressed as "VOC Regulatory" thinned to the manufacturer's maximum recommendation, excluding colorant added to the tint bases.

Rule 74.2 was last revised on January 12, 2010 as a result of an earlier "every feasible measure" analysis. The revisions integrated the ARB Suggested Control Measure for architectural coatings adopted on February 1, 2008. South Coast AQMD amended Rule 1113, *Architectural Coatings*, on June 3, 2011. The amendments to Rule 1113 established limits on the ROG content of colorants used to tint coatings at the point of sale and certain new coating categories, and reduced the allowable ROG content for several existing coating categories.

Since Ventura County is adjacent to the South Coast AQMD, the District has often successfully adopted South Coast AQMD limits on industrial and consumer products. Manufacturers and distributors already handle compliant products, so expanding distribution to an area adjacent to South Coast AQMD jurisdiction is relatively simple and cost-effective.

The staff report for the June 2011 amendments to Rule 1113 shows the ROG limit reductions of 0.4 tons per day for the specified coating types at an average cost-effectiveness of $7,172 per ton reduced. However, the cost-effectiveness for the individual coating types ranges from $0 per ton ROG reduced to $12,952 per ton ROG reduced. Therefore, a detailed cost-effectiveness evaluation must be performed prior to adopting individual coating ROG content reductions in Ventura County.

The June 2011 amendments to Rule 1113 also imposed new limits on the ROG content of colorants used in architectural coatings at the point of sale. The staff report shows these limits generate an emissions reduction of 2.8 tons ROG per day at a cost-effectiveness of $7,990 per ton of ROG reduced. This includes an incremental cost increase of $1.80 per gallon of colorant. However, the staff report states colorant manufacturers expect low-VOC colorants to become less expensive than conventional colorants due to the reduction in the amount of glycols used and the reduced volatility in petroleum-based raw materials.

Architectural coating use in Ventura County is only a fraction of the consumption in the South Coast AQMD. This prospective rule revision would implement the 2011 limits on specified coating ROG content and ROG content of colorants used at point of sale similar to Rule 1113. Preliminary calculations based on population ratio indicate possible ROG emission reductions of 0.02 tons per day from the reduced ROG limits in specified coating types. In addition, requiring low ROG colorants in Ventura County has the potential to reduce emissions by 0.14 tons ROG per day. However, the proposed revisions to Rule 74.2 would be adopted only if further analysis demonstrates them to be appropriate and cost-effective in Ventura County.

A.3, Rule 74.13, *Aerospace Assembly and Component Manufacturing Operations*

Rule 74.13 applies to the manufacturing, assembling, coating, masking, bonding, paint stripping, and surface cleaning of aerospace components and the clean-up of equipment associated with these operations. The rule limits the ROG content of coatings, adhesives, and solvents used in the aerospace industry in the District based on the type of material and its use at the facility. Limits for coatings and adhesives are expressed as mass per volume less water and exempt compounds. Cleaning solvent and coating stripper limits are expressed in grams ROG per litre of material or vapor pressure in millimeters of mercury.

Rule 74.13 was last revised on September 11, 2012 as a result of an earlier "every feasible measure" analysis. The revisions were focused on updating the solvent cleaning provisions of the rule to reduce emissions of ROG and maintain consistency with other rules containing solvent cleaning provisions. South Coast AQMD Rule 1124, *Aerospace Assembly and Component Manufacturing* (amended 9/21/2001), and San Joaquin Valley APCD Rule 4605, *Aerospace Assembly and Component Coating Operations* (amended 6/16/2011), apply to sources similar to those subject to Rule 74.13. Rules 1124 and 4605 include limits on additional categories of materials and more restrictive limits on some categories also specified in Rule 74.13.

Since Ventura County is adjacent to the South Coast AQMD, the District has often successfully adopted South Coast AQMD limits on industrial and consumer products. Manufacturers and distributors already handle compliant products, so expanding distribution to an area adjacent to South Coast AQMD jurisdiction is relatively simple and cost-effective.

It should be noted that the stricter limits on material ROG content in the South Coast and San Joaquin Valley rules have been in place for a significant period of time. Some of the limits are technology forcing, and the latest revisions to the South Coast rule actually relaxed some limits due to unavailability of compliant coatings. Previous feasibility analyses have determined the stricter limits were not feasible or cost-effective in Ventura County. However, since significant time has passed since the last review of the coating ROG content limits, it is appropriate to conduct another review.

The aerospace industry in Ventura County is only a small fraction of the activity in the South Coast AQMD. This prospective rule revision would implement the strictest limits achieved in practice on specified coating, adhesive and solvent ROG content. However, the prospective revisions to Rule 74.13 would be adopted only if further analysis demonstrates them to be appropriate and cost-effective in Ventura County.

A.4. NOx Reductions from Miscellaneous Sources

This prospective new rule would be based on South Coast AQMD Rule 1147, *NOx Reductions from Miscellaneous Sources* and Rule 1153.1, *Emissions of Oxides of Nitrogen from Commercial Food Ovens.* The purpose of the rule would be to reduce NOx emissions from a variety of sources not currently regulated.

Rule 4309 was adopted on December 15, 2005. It applies to dryers, dehydrators and ovens fired on gaseous and/or liquid fuel with heat rated heat input of 5 MMBtu/hr or greater. The rule includes a table of source types and associated emission limits. Rule 4309 applies to 108 units with initial NOx emissions of approximately 706 tons per year. The rule is expected to result in NOx emission reductions of 237 tons per year.

Rule 1147 was originally adopted on December 5, 2008 and requires equipment with rated heat input of 1 MMBtu/hr or greater to meet NOx emission limits in the range of 30 ppm to 60 ppm (referenced to 3% oxygen) depending upon the process and process temperature. The emission limits in Rule 1147 can be achieved with low-NOx burners. Rule 1147 applies to approximately 6,600 units located at approximately 3,000 facilities. Emission reductions were phased in over several years and are expected to eventually achieve 3.8 tons NOx emissions reduced per day. Rule 1147 was amended on September 9, 2011 to delay implementation of some emission limits, but no changes were made to the emission limits themselves.

Initial research indicates that there are approximately 23 sources in Ventura County potentially subject to this new rule. Since it is generally more cost effective to control emissions from larger sources, feasibility analysis will start with the source mix similar to Rule 4309. Initial research indicates a cost effectiveness of $1.35 to $2.25 per pound of NOx reduced ($2,700 to $4,500 per ton). While these cost-effectiveness values are generally acceptable, this prospective new rule would be adopted only if subsequent analysis demonstrates it to be appropriate and cost-effective in Ventura County.