

FINAL

**VENTURA COUNTY
TRIENNIAL ASSESSMENT
AND PLAN UPDATE**

2009 - 2011



**Adopted by the
Ventura County Air Pollution Control Board**

January 8, 2013

VENTURA COUNTY AIR POLLUTION CONTROL DISTRICT
669 COUNTY SQUARE DRIVE, 2ND FLOOR
VENTURA, CALIFORNIA 93003
805-645-1400
www.vcapcd.org

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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 2012 Triennial Assessment shows that Ventura County is still making significant progress towards meeting the state ozone standards. Furthermore, the 2012 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 2012 Triennial Assessment did, however, identify five existing District rules with potential for enhancement. It also identified three possible new control measures that would help Ventura County continue its progress towards attaining the state ozone standards.

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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, 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 2009 – 2011.

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 2012 Triennial Assessment.

Table 1
CCAA Triennial Assessment Requirements

| Requirement | Submittal |
|---|---|
| Air Quality Analysis | Section 3 & Section 4 |
| Population Trends | Section 4 |
| Population Exposure | Not available – no longer provided by ARB |
| Emission Inventory | Section 5 2007 AQMP – Chapter 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 |
| Vehicle Trips & Vehicle Miles Traveled Trends | 2007 AQMP – Chapter 3, Section 3.2.4 & Chapter 4, Sections 4.1 & 4.1.2 |
| Contingency Measures | 2007 AQMP – Chapter 7 |
| Every Feasible Measure | Section 8 |
| Expeditious Adoption | Section 8 |
| Ozone Transport | Section 9 |
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3. AIR QUALITY INDICATORS

For prior triennial assessments, the California Air Resources Board (ARB) has recommended that local districts use three air quality indicators to assess progress in meeting the state ambient one-hour ozone standard: population-weighted exposure, area-weighted exposure, and expected peak day concentration (EPDC). However, due to budget and staff constraints ARB no longer provides the exposure indicators. It only provides the EPDC.

The EPDC represents the concentration expected to be exceeded at a particular air monitoring site 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 over a three-year period and is presented for the end year of the three-year period. For example, the 2011 EPDC values use 2009 – 2011 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.

[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 – 2011. Peak day ozone concentrations have significantly declined over the period and, for the Ventura and El Rio areas, are now less than the state ozone standards. [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 reductions range from a low of 30.7 percent in Ojai to a high of 43.2 percent in El Rio. The average one-hour reduction was over 36.9 percent. The corresponding eight-hour reductions range from a low of 28.2 percent in Ojai to 43.3 percent in El Rio, with the average slightly over 35.3 percent.

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

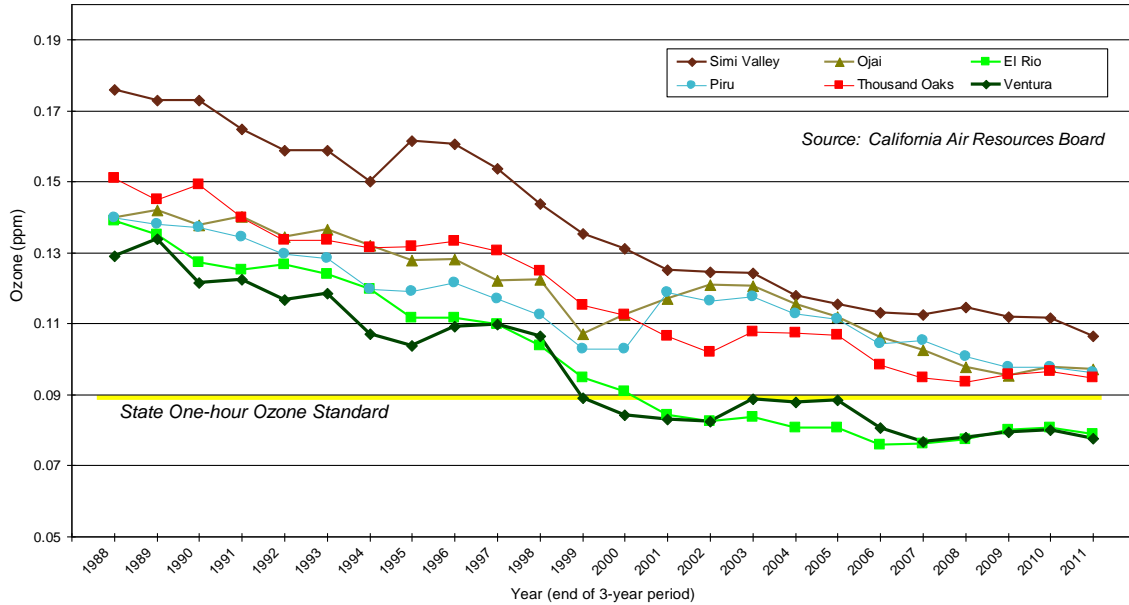


Figure 2
Expected Peak Day Concentration Trends for Ozone (8-hour)

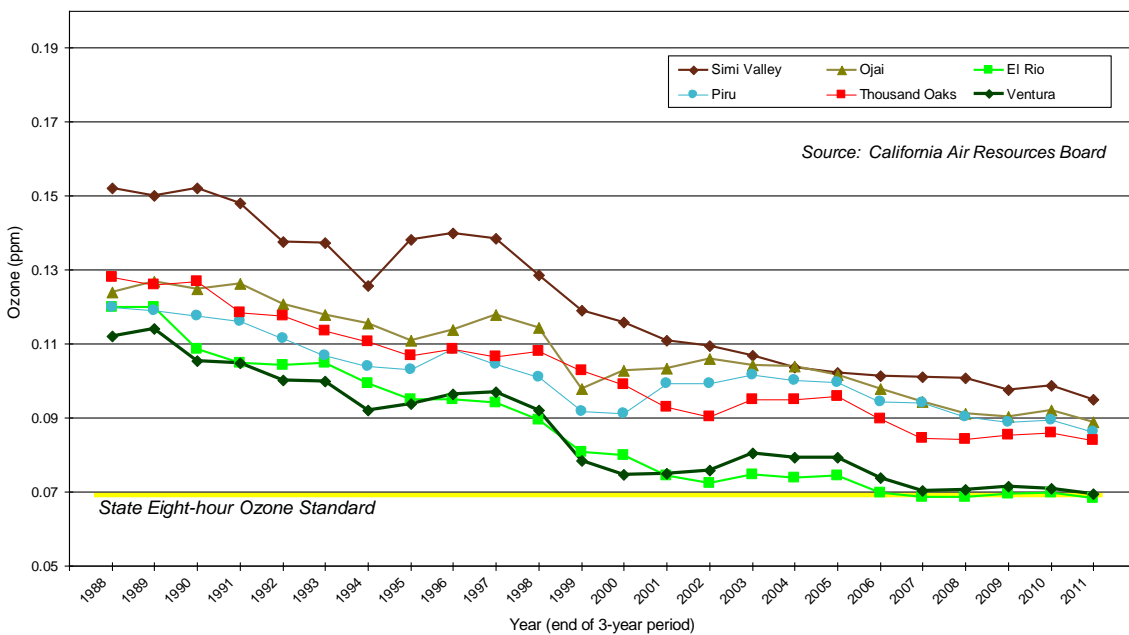
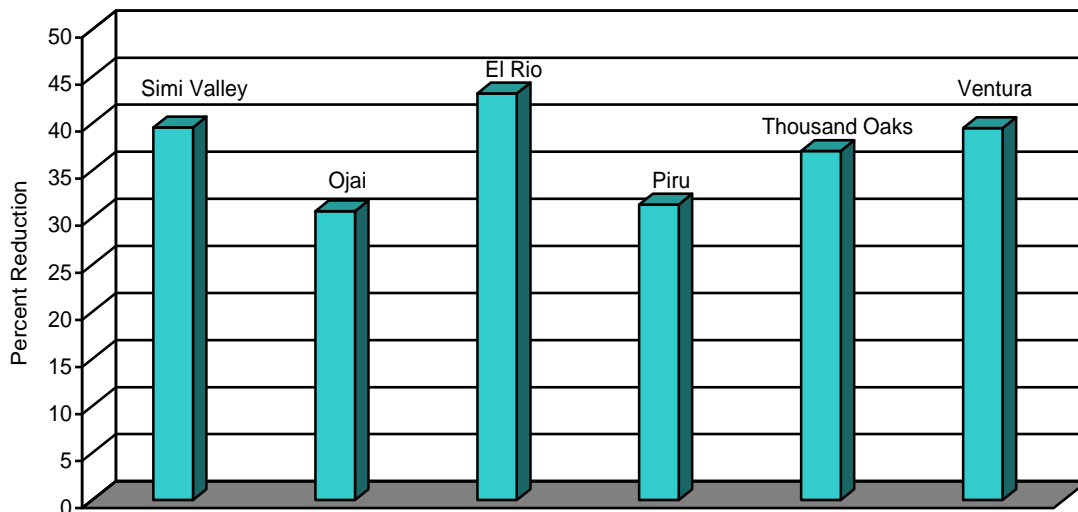


Table 2
Expected Peak Day 1-hour Ozone Reductions

| Monitoring Site | 1986 - 1988* | 2009 - 2011* | Percent Reduction from 1988 - 2011 |
|-----------------|--------------|--------------|------------------------------------|
| Simi Valley | 0.177 | 0.107 | 39.6 |
| Ojai | 0.14 | 0.097 | 30.7 |
| El Rio | 0.139 | 0.079 | 43.2 |
| Piru | 0.14 | 0.096 | 31.4 |
| Thousand Oaks | 0.151 | 0.095 | 37.1 |
| Ventura | 0.129 | 0.078 | 39.5 |

* Expected peak day concentration for ozone, in parts per million (ppm).
Source: Air Resources Board (February 2012)

Figure 3
Percent Reduction in Expected Peak Day 1-hour Ozone Concentrations: 1988 – 2011

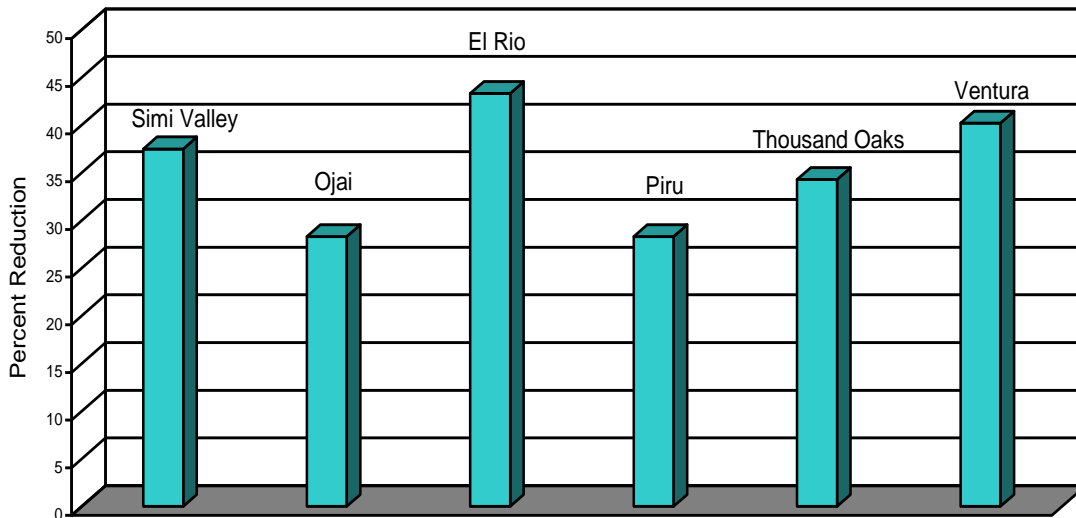


**Table 3
Expected Peak Day 8-hour Ozone Reductions**

| Monitoring Site | 1986 - 1988* | 2009 - 2011* | Percent Reduction from 1988 - 2011 |
|-----------------|--------------|--------------|------------------------------------|
| Simi Valley | 0.152 | 0.095 | 37.5 |
| Ojai | 0.124 | 0.089 | 28.2 |
| El Rio | 0.120 | 0.068 | 43.3 |
| Piru | 0.120 | 0.086 | 28.3 |
| Thousand Oaks | 0.128 | 0.084 | 34.3 |
| Ventura | 0.112 | 0.067 | 40.2 |

* Expected peak day concentration for ozone, in parts per million (ppm).
Source: Air Resources Board (February 2012)

**Figure 4
Percent Reduction in Expected Peak Day
8-hour Ozone Concentrations: 1988 – 2011**

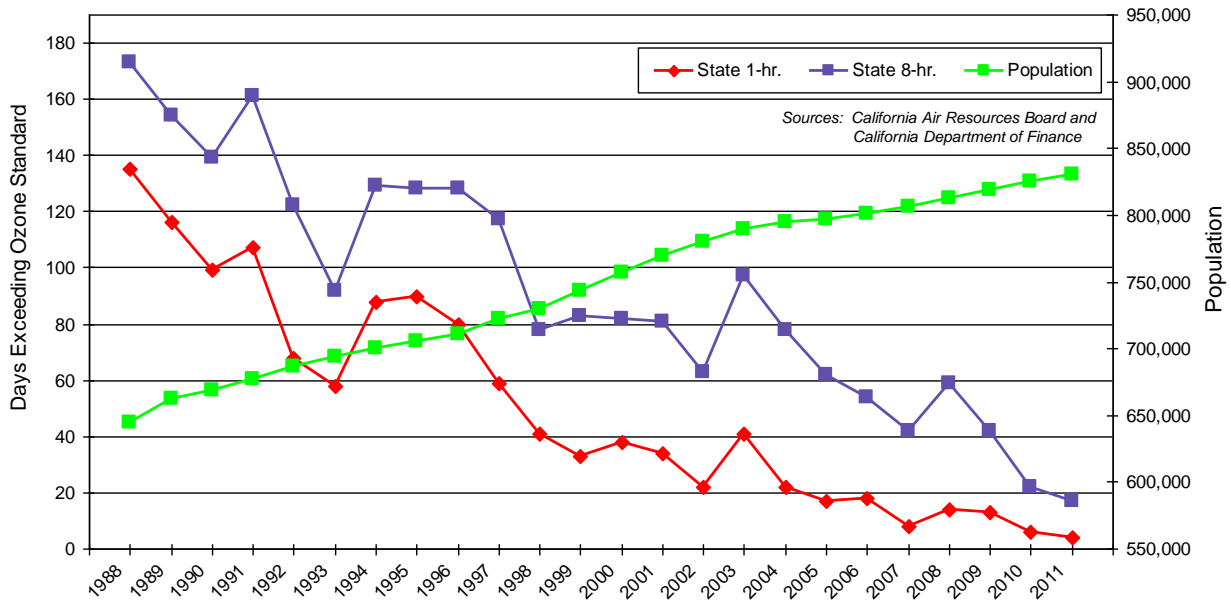


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4. OZONE AND POPULATION TRENDS

As shown in [Figure 5](#), ambient ozone concentrations in Ventura County have improved dramatically since 1988. In 1988, Ventura County had 135 days over the state one-hour standard and 173 days over the state eight-hour ozone standard. However, in 2011 there were only 4 days over the state one-hour standard and 17 days over the state eight-hour standard, down from 14 and 59 days, respectively, in 2008. These improvements have occurred despite a 29 percent increase in Ventura County’s population since 1988.

Figure 5
1-hour and 8-hour Ozone and Population Trends: 1988 – 2011



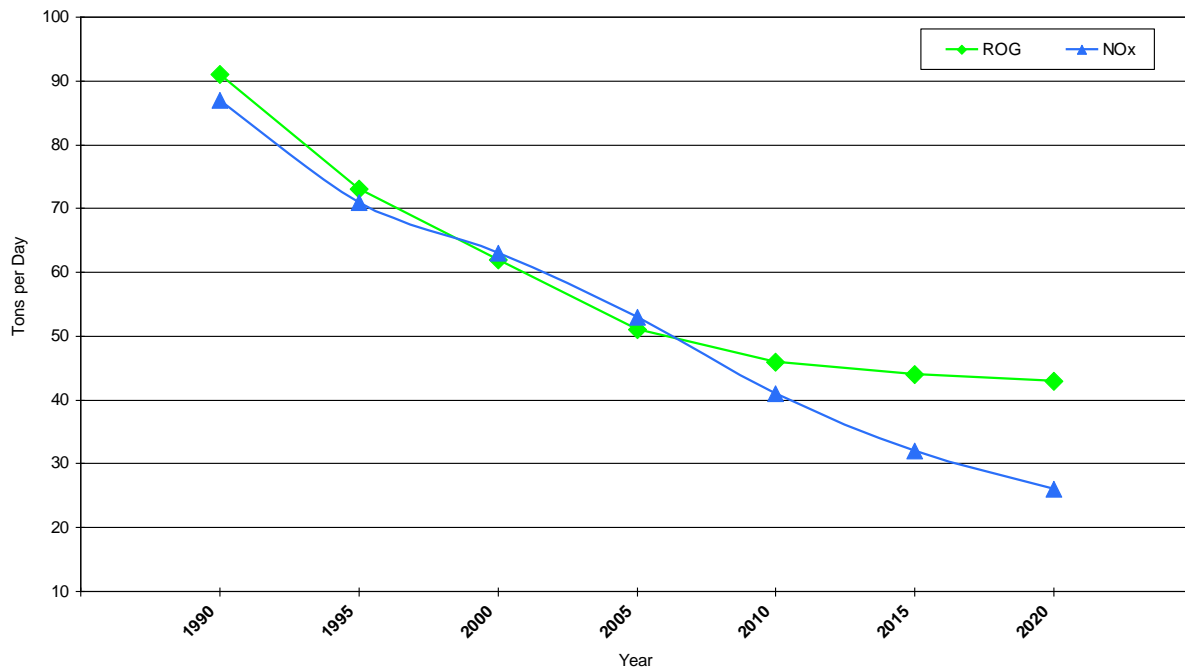
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5. EMISSION INVENTORY TRENDS

This section presents reactive organic gases (ROG) and nitrogen oxide (NOx) emission inventory trends for Ventura County (onshore Ventura County and within three miles of the coastline) for years 1990 – 2020. 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 been for many years, continuing Ventura County’s progress towards meeting the state and federal ozone standards. This decline in ozone precursor emissions is occurring despite growing population and motor vehicle usage. As shown in [Figure 6](#), from 1990 – 2020, ROG emissions are expected to decline by 52.7 percent and NOx by 70.1 percent. Although still trending downward, the decline in ROG emissions is starting to level off, but NOx emissions are expected to continue declining through at least 2020. The greatest ROG and NOx declines are coming from mobile sources, mostly a result of ARB’s mobile source control strategies.

Figure 6
ROG and NOx Emission Trends: 1990 – 2020



Source: http://www.arb.ca.gov/aqd/almanac/almanac09/excel/tableA_31.xls

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6. OVERALL PROGRESS

The air quality indicators presented in [Section 3](#), together with the ozone concentration declines presented in [Section 4](#), and the emission trends in [Section 5](#), indicate that Ventura County has made exceptional progress towards attaining the state one-hour ozone standard. This improvement should continue as new local, state, and federal control strategies and programs presented in the [2007 AQMP](#) are implemented.

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7. AQMP CONTROL MEASURE AND RULEMAKING UPDATE

This section summarizes the District's rulemaking activity for District rules to reduce ROG and NOx emissions during the 2009 – 2011 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 2009 – 2011

[Table 4](#) presents those District ROG and NOx rules adopted or revised during the triennial period along with their respective maximum emission reductions and the year in which those reductions are expected to occur.

**Table 4
ROG and NOx Rules Adopted or Revised 2009 – 2011**

| Rule Number | Rule Name | Date Adopted/ Amended | Year Fully Implemented | Year Max Emission Reduction | Pollutant | Emission Reduction (tons/summer day) |
|---------------------------------------|---------------------------|--------------------------|------------------------|-----------------------------|-----------|--------------------------------------|
| 74.2 | Architectural Coatings | 1/12/2010 | 2012 | 2012 | ROG | 0.529 |
| 74.11 | Residential Water Heaters | 5/11/2010 | 2010 | 2020 | NOx | 0.473 |
| 74.19 | Graphic Arts | 6/14/2011 | 2012 | 2012 | ROG | 0.035 |
| Total ROG Emission Reductions: | | | | | | 0.564 |
| Total NOx Emission Reductions: | | | | | | 0.473 |

Source: Ventura County Air Pollution Control District

7.3. Status of Rules Scheduled for Adoption or Revision 2009 – 2011

[Table 5](#) presents the status of all seventeen ROG and NOx control rules scheduled for adoption or revision during the 2009 - 2011 triennial assessment period to meet the “every feasible measure” requirements of the CCAA. Of the seventeen rules in [Table 5](#), the District’s governing board adopted eight: Rule [74.2](#), *Architectural Coatings*; Rule [74.11](#), *Residential Water Heaters*; Rule [74.11.1](#), *Large Water Heaters and Small Boilers*; Rule [74.13](#), *Aerospace Operations*; Rule [74.15.1](#), *Boilers, Steam Generators, and Process Heaters*; Rule [74.19](#), *Graphic Arts*; Rule [74.20](#), *Adhesives and Sealants*; and Rule [74.24](#), *Marine Coatings*.

Revisions to Rule [74.2](#) were based on the updated Suggested Control Measure (SCM) adopted by the ARB on October 26, 2007. Revisions to Rule [74.2](#) also were adopted to implement Control Measure R-329 (Architectural Coatings) from the District's [2007 AQMP](#) to comply with the federal Clean Air Act and the state Clean Air Act. The primary revisions to Rule [74.2](#) lowered the allowable ROC or solvent content of several coating categories.

The revisions to Rule [74.11](#) were based on South Coast Air Quality Management District (AQMD) Rule [1121](#), which, in part, requires a NO_x emission limit of 10 nanograms of NO_x per joule of heat output (ng/J). Revised Rule [74.11](#) also imposed a 40 ng/J NO_x limit on mobile home water heaters, which are no longer exempt.

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 NO_x limit. Larger units must comply starting on January 1, 2013, and smaller units on January 1, 2014. The future effective dates will enable existing equipment to be sold. As noted above, 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 limits the partial vapor pressure of 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 revisions to Rule [74.15.1](#) were based in part on South Coast AQMD Rule [1146.2](#). New equipment equal to or greater than 1 MMBtu/hr and less than or equal to 2 MMBtu/hr capacity are now required to meet a 20 ppm NO_x limit. Moreover, "high use" units with a capacity equal to or less than 2 MMBtu/hr will be required to source test once every 48 months, instead of every 24 months. However, an annual screening analysis will be required. All "high use" units over 2 MMBtu/hr will continue to source test every 24 months. Tune-up requirements do not change.

The revisions to Rule [74.19](#) implement various new ROG limits for fountain solutions and solvent cleaners. The revisions are based on existing requirements in four other air district (South Coast AQMD, San Joaquin Valley Unified APCD, Bay Area AQMD, and the Sacramento Metropolitan AQMD) rules that have been in effect for several years. The rule amendments recognize these technological advances in printing industry materials to reduce ROC emissions.

The revisions to Rule [74.20](#) were based in part 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.

Table 5
Status of District Rules Scheduled for Adoption or Revision 2009 – 2011

| Rule Number | Rule Name | Affected Source Type | Status/Comments |
|-------------------------|--|---|---|
| 70 | Storage and Transfer of Gasoline | Gasoline storage and dispensing facilities | <i>Not yet adopted – adoption date TBD*.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.2 | Architectural Coatings | Suppliers of architectural coatings | <i>Adopted 1/12/2010</i> Rule revisions in response to ARB’s SCM for architectural coatings and to meet CCAA “every feasible measure” requirements. |
| 74.6 | Surface Cleaning and Degreasing | Facilities cleaning medical or electrical components | <i>Not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.6.1 | Batch Loaded Vapor Degreasing | Vapor degreasing operations (aerospace/electronics, etc.) | <i>Not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.11 | Residential Water Heaters | Manufacturers and suppliers of water heaters and boilers | <i>Adopted 5/11/2010</i> 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) | <i>Adopted 9/11/2012</i> 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 Operations | Aerospace operations | <i>Adopted 9/11/2012</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.15 | Boilers, Steam Generators, and Process Heaters | Boilers (5 MMBtu +) | <i>Not yet adopted – adoption date TBD.</i> Rule revisions adopted to meet CCAA “every feasible measure” requirements. |
| 74.15.1 | Boilers, Steam Generators, and Process Heaters | Boilers (1 - 2 MMBtu) | <i>Adopted 9/11/2012</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.19 | Graphic Arts | Graphic arts operations | <i>Adopted 6/14/2011</i> Rule revisions to meet CCAA “every feasible measure” requirements. |

Table 5 (cont'd)

| Rule Number | Rule Name | Affected Source Type | Status/Comments |
|-----------------------|--|--|--|
| 74.20 | Adhesives and Sealants | Adhesive operations and users | <i>Adopted 9/11/2012</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.21 | Semiconductor Manufacturing | Semiconductor manufacturing operations | <i>Not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.24 | Marine Coatings | Marine coating operations | <i>Adopted 9/11/2012</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| 74.30 | Wood Products Coating | Wood coating operations | <i>Not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| TBD | Oil Well Degassing | Oil wells | <i>Rule revisions not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| TBD | Metal Working Fluids and Direct Contact Lubricants | Metal working facilities | <i>Rule revisions not yet adopted – adoption date TBD.</i> Rule revisions to meet CCAA “every feasible measure” requirements. |
| TBD | Flaring or Flare Minimization | Oil and gas facilities | <i>Rule revisions not yet adopted – adoption date TBD.</i> Rule revisions 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 2008 by the South Coast AQMD, the San Joaquin Valley APCD, the Bay Area AQMD, Sacramento Metropolitan AQMD, and the Santa Barbara APCD, with an emphasis on those adopted since the last “every feasible measure” assessment completed in 2010. This latest review identified five possible revisions to current District rules and three possible new rules for

Ventura County. These have been added to [Table 6](#) (and indicated with an asterisk). [Table 6](#) 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 6](#), 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 6
ROG and NOx Rules Potentially Feasible for Ventura County

| Rule Number | Rule Name | Control Measure Description | Rule-making Schedule |
|-------------------------|---|---|----------------------|
| 74.9 | Stationary Internal Combustion Engines* | Revise rule to establish new NOx limits for stationary internal combustion engines consistent with San Joaquin Valley APCD Rule 4702 . | 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 |
| 74.15.1 | Boilers, Steam Generators, and Process Heaters* | Revise rule to reduce NOx limits for new units equal to or greater than 2 MMBtu/hr capacity and less than 5 MMBtu/hr from the current 30 ppm to either 9 or 12 ppm, depending on unit type, consistent with South Coast AQMD Rule 1146.1 . | 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 | Crude Oil Storage Tank Degassing Operation* | 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 |
| 74.27 | Gasoline and ROC Liquid Storage Tank Degassing Operation* | | |

Table 6 (cont'd)

| Rule Number | Rule Name | Control Measure Description | Rule-making Schedule |
|-------------|--|---|----------------------|
| TBD | Metal Working Fluids and Direct Contact Lubricants | Adopt a new rule with VOC content limits consistent with South Coast AQMD Rule 1144 . | TBD |
| 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 |
| TBD | LPG Transfer and Dispensing* | Adopt a new rule to limit fugitive VOC emissions released during the transfer and dispensing of Liquefied Petroleum Gas at residential, commercial, industrial, chemical, agricultural, and retail sales facilities similar to South Coast AQMD Rule 1177 . | TBD |
| TBD | Greenwaste Composting Operation* | Adopt a new rule to limit VOC emissions from greenwaste composting operations consistent with South Coast AQMD Rules 1133.1 and 1133.3 and state requirements. | TBD |

* New in the 2012 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 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 20 plus years provides

direct evidence that Ventura County has mitigated and is continuing to mitigate ozone transport into the South Coast Air Basin.

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10. PUBLIC INFORMATION

The District conducts a public information program through its Public Information Division. It does this through a variety of both traditional and innovative public information techniques including: the [District's website](#), publications and creative materials, educational programs, outreach events, advertising programs, media relations, social media, and special projects. For more information about the District's public information program, visit the District's [Public Information Division](#) webpage.

In summary, during the period 2009 – 2011, the Public Information Division distributed 35,128 pieces of public information material; spoke to over 8,500 individuals through educational programs, outreach events, and movie screenings; and printed or ordered over 36,700 public information materials.

Publications & Creative Materials: The Public Information Division created the general information booklet *Destination: Clean Air*, the *Skykeeper Clean Air placemat*, *The Ventura County Climate Change Almanac*, the Educator's Guide to the film *Air: the search for one clean breath*, and the marketing card for the film. It also reprinted 8,000 copies of public information materials and produced 36 issues of the District's monthly report, *Skylines*.

Educational Programs: The Public Information Division actively informs Ventura County students about air pollution through outreach events and presentations. In 2010, the online 250-page Educator's Guide to the District's award-winning film *Air: the search for one clean breath* was completed. It had 765 internet hits in 2010. Prior to Earth Day, the District sent 150 DVD copies of the film to county teachers.

In 2010, another Earth Day outreach effort was to the Spanish-speaking community with an ad in *La Vida*, which ran for 2 weeks prior to Earth Day. The Public Information Division also conducted teacher trainings on the Educator's Guide in Thousand Oaks, Ventura, and Oxnard schools.

Between 2009 and 2011, the District attended the Science, Technology, Engineering and Math (STEM) Expo and County Science Fair. It gave awards to the top three air pollution projects at the Science Fair.

Movie Screenings: Between 2009 and 2011, the Public Information Division showed the District film, *Air: the search for one clean breath* at 50 county locations including schools, service organizations, libraries, cities, and other public forums.

Summer Public Awareness Campaign: The Public Information Division launched the environmental coupon program, *Sky Savers*, on Earth Day 2011. The campaign consisted of partnering with local merchants/service providers to distribute coupons for “green” community products and services. The goals were:

- To educate residents on clean air actions they can take
- To provide residents with coupon discounts for local green services and products
- To remind residents that by reducing their impact on the environment, they can make a real difference in our county’s clean air effort
- To give residents a chance to save money as well as help the environment.

Businesses had to meet certain criteria to participate. Thirty local companies signed up and the coupons were available for download at the Sky Savers website. Paid advertising was via radio ads on local radio stations KBBY, KHAY, and KCLU. Cumulus Media also became a media sponsor of the program, donating additional radio spots, interviews about the program, online mentions, and DJ mentions. Print media ads ran in the Ventura County Star, The Acorn, and The Reporter.

During the campaign run, there were over 450 internet hits on the Sky Savers website.

Outreach Events: District public outreach and speaker’s bureau programs took place at many public events and functions in Ventura County, including Oxnard Earth Day, Amgen Earth Day, Wings over Camarillo Air Show, First Friday Forum Simi Valley, Southern California Yachting Association, Ventura County Home & Garden Show, Simi Valley Living Green Expo, Green Jobs, Climate Change & the Economy Town Hall Meeting, STEM Expo Ventura, Earth Day Simi Valley, Kid’s Day Camarillo, and Science Career Day at California State University Channel Islands.

Media Relations: The Public Information Division handles media calls and news releases and provides local reporters with ideas for feature articles. The Public Information Division also coordinates all news conferences, radio and print interviews, and media sponsorships. In the period 2009 – 2011, the District distributed 10 news releases and was featured in 55 news articles and radio interviews.

Special Projects: In 2010, the Public Information Division worked with the staff of Ventura County Supervisor and APCD Board Chair John Zaragoza on the Green Jobs, Climate Change and the Economy Town Hall Meeting on October 23 at the Oxnard Library. The event was sponsored by Supervisor and District Board Member John Zaragoza, Stewards of the Earth, and the District. The keynote speaker was State Senator Fran Pavley. Over 70 people attended the event.

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APPENDIX A
“EVERY FEASIBLE MEASURE” ANALYSIS

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Summary of Analysis

Rule [74.9](#), *Internal Combustion Engines*

Rule [74.9](#) applies to any stationary spark-ignited or diesel internal combustion engine rated at 50 or more horsepower, operated on any gaseous fuel, including liquid petroleum gas, or liquid fuel, and not subject to the provisions of Rule [74.16](#), *Oilfield Drilling Operations*. The rule limits NO_x and ROG emissions from affected units to no more than specified levels, depending on engine type and usage. The NO_x limits range from 25 ppm by volume (ppmv) to 125 ppmv. ROG limits range from 250 ppmv to 750 ppmv. In lieu of compliance with the specified NO_x emission limits, engines may achieve and maintain specified percent NO_x reductions by weight, also depending on engine type and usage. The percent reductions range from 90 to 96 percent.

This prospective rule revision would revise the NO_x limits in Rule [74.9](#) to be consistent with those of San Joaquin Valley APCD Rule [4701](#), *Internal Combustion Engines*.

The District's last "every feasible measure" analysis for Rule [74.9](#), conducted in 2010, concluded that Rule [74.9](#) was the most stringent stationary internal combustion engine rule in the state and no revisions were necessary. However, since then both the South Coast AQMD and the San Joaquin Valley APCD have revised their respective stationary internal combustion engine rules to include more stringent NO_x limits than those in Rule [74.9](#).

South Coast AQMD Rule [1110.2](#), *Emissions from Gaseous and Liquid-Fueled Engines*, was amended in 2010, and San Joaquin Valley APCD Rule [4702](#), *Internal Combustion Engines*, was amended in 2011, and both rules now have NO_x emission limits down to 11 ppmv, corrected to 15 percent oxygen, which is more stringent than those in Rule [74.9](#). The most stringent NO_x limits in Rule [74.9](#) are 25 ppmv for rich-burn engines and 45 ppmv for lean-burn engines. The NO_x limits for other types of internal combustions engines, such as rich-burn waste gas engines, are higher.

Although Ventura County is adjacent to the South Coast AQMD region, it is more similar to the San Joaquin Valley region in terms of the types and usages of stationary internal combustion engines. Both air districts have substantial oil production and agricultural operations and therefore both have a large number of stationary gas-fired internal combustion engines used in those industries. Hence, Rule [74.9](#) was compared with San Joaquin Valley APCD Rule [4702](#) for possible revision rather than to South Coast AQMD Rule [1110.2](#) due to these similarities.

The 11 ppm NO_x limit in San Joaquin Valley APCD Rule [4702](#) for rich-burn engines can be met using existing non-selective catalytic reduction equipment. However, source tests conducted for these units report NO_x emissions as high as 15 ppm. More sophisticated air-fuel ratio controllers may be required to consistently achieve the 11 ppm NO_x limit. Since such equipment has already been installed on rich-burn engines, any modifications needed to meet the 11 ppm NO_x limit should be cost-effective. It is a different story for the lean-burn engines, because these

engines would have to be retrofitted with more expensive selective catalytic reduction systems with urea injection. This is not cost-effective according to San Joaquin's staff report for Rule [4702](#), which reports cost-effectiveness for lean-burn engine control of \$10.80 to \$29.65 per pound of NOx reduced.

Another important NOx control provision in the San Joaquin Valley APCD rule is the control of stationary natural-gas fired internal combustion engines used in agriculture operations. Such engines are exempt in Rule [74.9](#). The NOx limits for agricultural engines in San Joaquin Valley APCD Rule [4702](#) are 90 ppmv for rich-burn and 150 ppmv for lean-burn. The control equipment for these engines has been around for a long time, is off-the-shelf technology similar to those on passenger vehicles, and includes 3-way catalyts, air-fuel ratio controllers, and oxygen sensors.

The San Joaquin Valley APCD staff estimated that they have 160 rich-burn engines and 62 lean-burn engines subject to revised Rule [4702](#) and that the revised NOx limits in Rule [4702](#) would reduce NOx emissions in their region by 1.4 tons per day with a cost-effectiveness of between \$23,600 and \$51,800 per ton NOx removed.

There are approximately 30 stationary natural gas fired engines in Ventura County, each emitting three or four tons of NOx per year. Assuming the same level of control as assumed for San Joaquin Valley APCD Rule [4701](#), the proposed revisions to Rule [74.9](#) would reduce NOx emissions in Ventura County by approximately 0.19 tons per day. However, these revisions would be adopted only if further analysis demonstrates that they would be cost-effective in Ventura County.

Rule [74.14](#), *Polyester Resin Operations*

Rule [74.14](#) applies to the manufacture of products from or the use of polyester resin material, including touch-up, repair, and rework activities. The rule limits the monomer content of the polyester resin material to no more than specified percentages, by weight, as applied. The monomer content limits range from 10 percent for marble or cultured resins to 48 percent for specialty gel resins and corrosion resistant resins. Moreover, material application must be done using closed-mold systems. The rule also requires that airless, air-assisted airless, electrostatic, or high volume-low pressure spray equipment must be used in any spray application, except for touch-up or repair using a hand-held, air-atomized spray gun utilizing an attached resin container of no more than one quart capacity. In lieu of complying with the forgoing requirements, a person may reduce VOC emissions from material application by at least 90 percent by weight.

Control efficiency must be continuously monitored across an emission control device and the results must be averaged over a rolling 24 hour period. Touch-up or repair work must not be excluded. Cleaning material used on lines, rollers, brushes, spray equipment and personnel must

be a clean air solvent not exceeding 25 g/l ROC as applied. The rule exempts sources using not more than 20 gallons per month of polyester resin material.

This prospective rule revision would lower the 20 gallons per month (240 gallons per year) of polyester resin material exemption in District Rule [74.14](#) to 50 gallons per source per year, consistent with that of Santa Barbara County APCD Rule [349](#), *Polyester Resin*. However, a feasibility analysis will have to be conducted to determine if lowering the small source exemption to 50 gallons per year would be cost-effective in Ventura County before it would be recommended for adoption.

Rule [74.15.1](#), *Boilers, Steam Generators, and Process Heaters (units equal to or greater than 2 Million Btu/hr and less than 5 Million Btu/hr)*

Rule [74.15.1](#) applies to boilers, steam generators, and process heater with rated heat input capacities equal to or greater than 1 MMBtu/hr and less than 5 MMBtu/hr. The rule requires that NOx emissions of “high use” equipment (using more than 1.8 billion Btu of fuel per year) not exceed 30 ppm and be periodically source tested. Most units using less fuel per year must be periodically tuned up but are not required to be source tested.

Rule [74.15.1](#) was revised on September 11, 2012 to require that new equipment equal to or greater than 1 MMBtu/hr and less than or equal to 2 MMBtu/hr capacity to meet a 20 ppm NOx limit, down from 30 ppm. South Coast AQMD Rule [1146.2](#), *Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters*, also regulates units in this size range. Moreover, the adopted revision to Rule [74.15.1](#) requires “high use” units with a capacity equal to or less than 2 MMBtu/hr be source tested once every 48 months. All “high use” units over 2 MMBtu/hr are required to be source tested every 24 months. Tune-up requirements were not changed.

This prospective Rule [74.15.1](#) revision targets units larger than those affected by the September 11, 2012 revision. The revised rule would lower the current 30 ppm NOx limit to either 9 or 12 ppm, depending on unit type, on units equal to or greater than 2 MMBtu/hr capacity and less than 5 MMBtu/hr. These are the same NOx limits as in South Coast AQMD Rule [1146.1](#), *Emissions of Oxides of Nitrogen from Small Industrial, Institutional, and Commercial Boilers, Steam Generators, and Process Heaters*, which was similarly revised on September 5, 2008.

The South Coast AQMD estimates that there are 1,070 boilers in that region affected by the revisions to Rule 1146. The revised rule is expected to reduce NOx emissions by approximately 0.29 tons per day by 2015, which reflects an overall 71 percent reduction in NOx emissions from this source category. The average cost-effectiveness of devices subject to the revised rule range from \$14,400 to \$33,500 per ton. The cost differential was attributed to unit size, types of burners, and each unit’s operation and load.

In 2010, there were about 74 potentially affected units, all of which are natural gas fired. Of those, 59 operated during that year, resulting in 8.5 tons of NOx.

Assuming the same level of control as assumed for South Coast Rule [1146](#), the proposed revisions to Rule [74.15.1](#) would reduce NOx emissions in Ventura County by approximately 0.02 tons per day. However, the proposed revisions to Rule [74.15.1](#) would be adopted only if further analysis demonstrates them to be appropriate and cost-effective in Ventura County.

Rule [74.26](#), *Crude Oil Storage Tanks Degassing Operations*, and Rule [74.27](#), *Gasoline and ROC Liquid Storage Tank Degassing Operations*

Rule [74.26](#), *Crude Oil Storage Tanks Degassing Operations*, adopted in 1994, applies to aboveground crude oil or produced water storage tanks that are equipped with vapor recovery systems, and have storage capacities of 2,000 barrels and store liquids having modified Reid vapor pressures (mRVP) of 3.4 pounds per square inch (psi) absolute or greater, or have storage capacities greater than 2,000 barrels. Rule [74.26](#) also applies to external or internal floating roof crude oil tanks that have vapor spaces of 2,000 barrels or more when the tanks' roofs are resting on their inner roof supports.

Rule [74.26](#) prohibits the degassing of any storage tank subject to the rule, unless the emissions are controlled by liquid displacement into a vapor recovery system, flare, or fuel gas system, or through an air pollution control device that has a vapor destruction and removal efficiency of at least 95 percent until the vapor concentration in aboveground crude oil or produced water tanks equipped with a vapor recovery system, is less than 10 percent of the tank's initial vapor concentration determined immediately prior to the tank degassing, or less than 10,000 ppmv, measured as methane, or for floating roof tanks, is less than 10,000 ppmv, measured as methane.

Rule [74.27](#), also adopted in 1994, applies to any gasoline storage tank with a storage capacity greater than 5,000 gallons; and, any other storage tank with a storage capacity greater than 5,000 gallons that stores a reactive organic compound liquid, excluding petroleum liquids, having a true vapor pressure equal to or greater than levels determined in part by the volume of the tank in gallons.

This prospective rule revision would revise Rules [74.26](#) and [74.27](#) to align their applicability and emission control requirements with those of South Coast AQMD Rule [1149](#), *Storage Tank and Pipeline Cleaning and Degassing*.

Rule [1149](#) applies to the cleaning and degassing of pipelines and above ground storage tanks that store gasoline and other organic liquids, including crude oil. Rule [1149](#) was first adopted in 1987 and has been revised three times with the latest revision adopted May 2, 2008. That revision established a new vapor concentration limit of 5,000 ppmv before releasing the vapors

to the atmosphere. Moreover, the rule now extends 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, the revised rule requires vacuum trucks that 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.

At the time of adoption, South Coast AQMD staff estimated that the rule revisions would affect 72 facilities and would reduce VOC emissions in the South Coast AQMD region by 1.27 tons per day by 2010. The cost-effectiveness was estimated to be \$13,159 per ton of VOC reduced.

Ventura County no longer has any petroleum refineries, but it does have numerous petroleum production and processing facilities, gasoline bulk tanks and terminals, and miscellaneous other tanks that store organic liquids.

Tank degassing emissions are estimated based on the ideal gas law ($PV=nRT$) and the assumption that the weight of VOC vapor purged from a tank equals the vapor weight in the tank prior to the degassing operation. The emissions associated with degassing each tank type depend on several variables, including vapor molecular weight, tank volume, reactive fraction of the vapor, molar volume, and frequency of tank degassing. Frequency of degassing for aboveground crude oil fixed and floating roof tanks, produced water fixed roof tanks and gasoline floating roof tanks is about once every ten years. Underground gasoline tanks are not degassed unless they are replaced or removed. Aboveground fixed roof gasoline storage tanks are assumed not to be degassed on a routine basis, according to assumptions by South Coast AQMD's Engineering Division.

Total VOC emissions in 2006 from tank degassing operations in Ventura County were 14.4 tons per year. About 57 percent of total emissions were subject to control. For 2011 estimated tank degassing VOC emissions were 13.8 tons per year.

Vacuum Trucks

This prospective new rule would be based on Bay Area AQMD Rule 8-53, *Vacuum Truck Operations*, to limit VOC emissions vented when vacuum trucks load organic liquids. Rule 8-53 was adopted April 18, 2012 and applies to the following facilities: petroleum refineries, bulk plants, bulk terminals, marine terminals, and organic liquid pipeline facilities. Moreover, on May 2, 2008, the South Coast AQMD revised their Rule [1149](#), *Storage Tank and Pipeline Cleaning and Degassing*, to, among other provisions, require that until certain other provisions are met, vacuum trucks that remove residual product and sludge from pipeline and storage tanks subject to the rule must exhaust vapors into a control device and the exhaust concentration of control devices must not exceed 500 ppmv, measured as methane.

Bay Area AQMD staff estimates that Rule 8-53 will reduce VOC emissions from vacuum truck operations by 1.05 ton per day. This represents an 85 percent reduction in emissions from moving regulated materials and a 70 percent reduction of overall organic emissions from vacuum truck operations. Emissions of toxic air contaminants such as benzene, toluene, xylene, hexane, and possibly GHG emissions also will be reduced.

Opportunities for significant emission reductions from vacuum trucks are more limited in Ventura County than in the Bay Area AQMD and South AQMD regions. Ventura no longer has any refineries or marine terminals and only a few bulk plants and terminals. It does, however, have numerous oil production, storage, and processing facilities, including storage tanks, sumps, boxes, and pipelines. Moreover, vacuum trucks are often used in the county to transport produced crude oil from small and isolated production locations to storage and processing facilities. This new rule would be adopted only if further analysis demonstrates it to be appropriate and cost-effective in Ventura County.

LPG Transfer and Dispensing

This prospective new rule would be based on South Coast AQMD Rule [1177](#), *LPG Transfer and Dispensing*, to reduce fugitive VOC emissions released during the transfer and dispensing of Liquefied Petroleum Gas (LPG) at residential, commercial, industrial, chemical, agricultural and retail sales facilities.

Rule [1177](#), adopted by the South Coast AQMD on June 1, 2012, applies to the transfer of LPG to and from stationary storage tanks, cylinders and cargo tanks, including bobtails, truck transports and rail tank cars, and into portable refillable cylinders. The rule requires use of low-emission fixed liquid level gauges or equivalent alternatives during filling of LPG-containing tanks and cylinders, use of LPG low emission connectors, routine leak checks and repairs of LPG transfer and dispensing equipment, and recordkeeping and reporting requirements to demonstrate compliance. Rule [1177](#) does not apply to facilities subject to South Coast AQMD Rule [1173](#), *Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants*. South Coast AQMD staff estimates that LPG transfer and dispensing results in 8.6 tons per day of VOC in that region. Based on the requirements for low-emission connectors and low-emission fixed liquid lever gauges, Rule [1177](#) will reduce 6.1 tons per day of VOC emissions upon full implementation.

Air emissions from LPG transfer and dispensing operations in Ventura County are not in the District's emission inventory system and are largely unknown. Therefore, if this new rule is to be adopted, air emissions associated with the LPG transfer and dispensing operations would have determined and added to the District's emission inventory system. This new rule would be adopted only if further analysis demonstrates it to be appropriate and cost-effective in Ventura County.

Greenwaste Composting Operations

This prospective new rule would be based on South Coast AQMD Rules [1133.1](#), *Chipping and Grinding Activities*, and 1133.3, *Emission Reductions from Greenwaste Composting Operations* to minimize VOC emissions through inadvertent decomposition during chipping and grinding activities (Rule [1133.1](#)) and during greenwaste composting operations (Rule 1133.3).

Rule [1133.1](#) was revised July 8, 2011 to establish best management practices (BMPs) for chipping and grinding of greenwaste to produce materials other than compost material, and to better manage stockpile operations associated with chipping and grinding activities, consistent with greenwaste processing requirements established in the state regulation Title 14 of the California Code of Regulations. Rule [1133.1](#) covers 70 facilities in that region. Emission reductions were not quantified for the rule revisions.

Rule 1133.3 was adopted as a new rule on July 8, 2011 to establish operational BMPs for greenwaste composting operations that produce compost material and applies to greenwaste composting operations involving greenwaste, woodwaste, manure, or foodwaste. Rule 1133.3 affects 17 facilities in that region and is estimated to reduce 0.9 tons of VOCs per day from greenwaste composting operations. Cost-effectiveness was estimated to be \$1,340 per ton of VOC reduced.

Greenwaste composting is a new and increasing source of VOC emissions in California. Ventura County has several greenwaste composting facilities to which this new rule could apply. However, the District does not currently require air permits for such facilities and none of the existing facilities are in the District's emission inventory system. If this new rule were adopted, District permit rules would have to be amended to require that composting facilities obtain District air permits and air emissions associated with the facilities would have to be determined and added to the District's emission inventory system. This new rule would be adopted only if subsequent analysis demonstrates it to be appropriate and cost-effective in Ventura County.