

Technical Support Document for 2008 Ozone NAAQS Designations

California Area Designations for the 2008 Ozone National Ambient Air Quality Standards

Technical Analysis for Ventura County

Figure 1 is a map of the Ventura County, CA nonattainment area. The map provides other relevant information including the locations and design values of air quality monitors, county names and boundaries and indicates EPA's nonattainment designation. Also shown is the boundary of the existing area that is designated nonattainment for the 1997 ozone NAAQS.

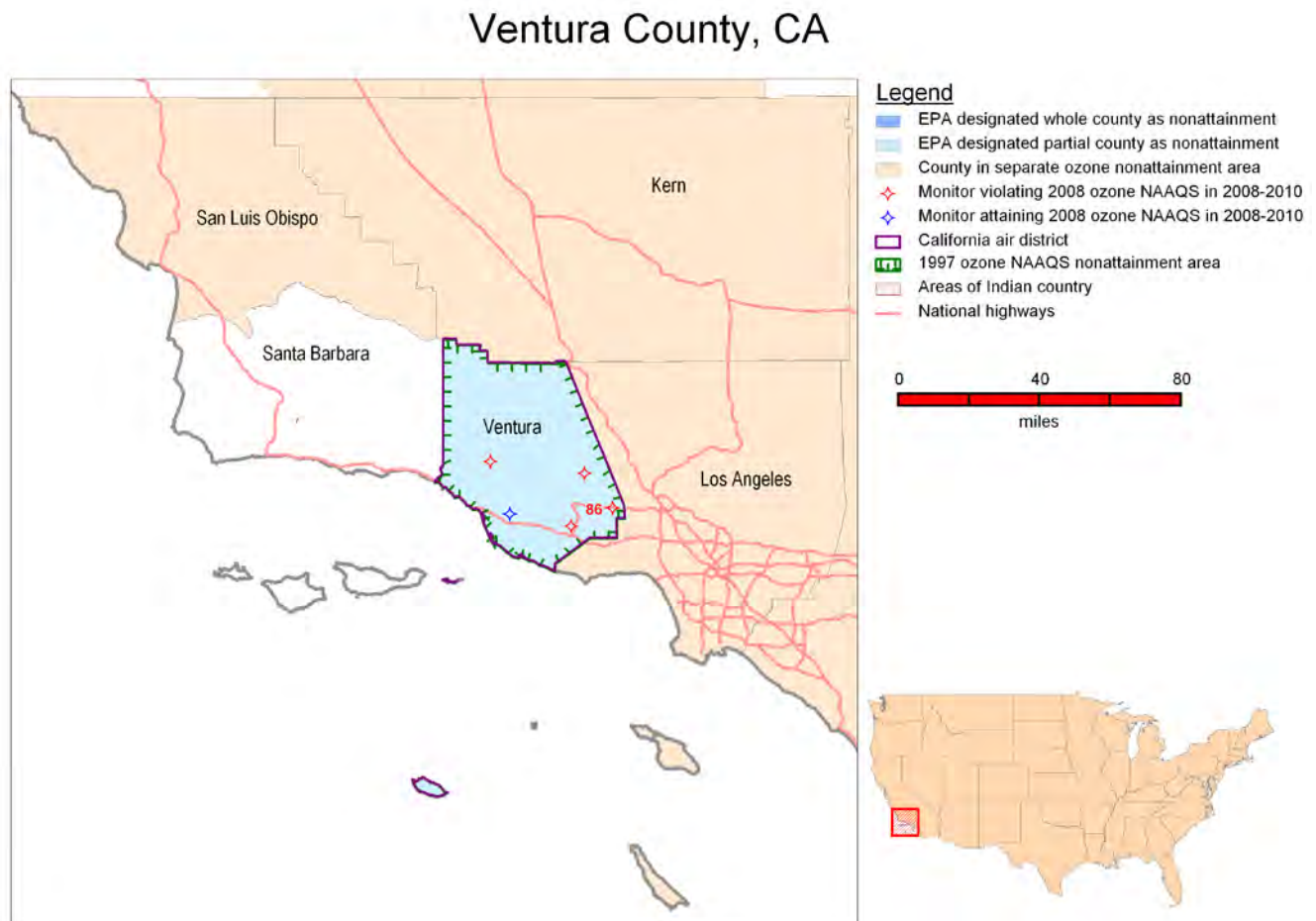


Figure 1

Note: The map shown in Figure 1 provides 8-hour ozone design values in parts per billion (ppb) based on data from the 2008-2010 period (i.e., the 2010 design value, or DV), which are the most recent years with fully-certified air quality data. For each particular area, Factor 1 and Appendix 3 describe the air quality data relevant for our nonattainment decisions.

For purposes of the 1997 8-hour ozone NAAQS, this area was designated nonattainment. The boundary for the nonattainment area for the 1997 ozone NAAQS included the continental portion of Ventura County.

In March 2009, California recommended that Ventura County be designated as nonattainment for the 2008 ozone NAAQS based on air quality data from 2006-2008 (letter from James Goldstene, Executive Officer, California Air Resources Board, to Laura Yoshii, Acting Regional Administrator, U.S. EPA Region IX, dated March 11, 2009). California provided an update to the original recommendation in October 2011 based on air quality data from 2008-2010 and preliminary 2009-2011 data, but did not revise its recommendation for Ventura County. These 2009 and 2011 recommendations are based on data from Federal Equivalent Method (FEM) monitors sited and operated in accordance with 40 CFR Part 58 (letter from Lynn Terry, Deputy Executive Officer, California Air Resources Board, to Deborah Jordan, Director, U.S. EPA Region IX Air Division, dated October 12, 2011).

After considering these recommendations and based on EPA's technical analysis described below, EPA is designating the continental portion of Ventura County in California (identified in Table 1 below) as the Ventura County nonattainment area for the 2008 ozone NAAQS.

Table 1. State's or Tribe's Recommended and EPA's 2008 ozone NAAQS Nonattainment Counties or Areas of Indian country for Ventura County.

Ventura County	State or Tribe-Recommended Nonattainment Counties or Areas of Indian country	EPA's Nonattainment Counties or Areas of Indian country
Ventura County, CA	Ventura County (p) (excludes Anacapa and San Nicolas islands)	Ventura County (p)
No areas of Indian country in this nonattainment area		

p = partial

Factor Assessment

Factor 1: Air Quality Data

For this factor, we considered 8-hour ozone design values for air quality monitors in Ventura County, based on data from 2008-2010 (i.e., the 2010 design value, or DV), which are the most recent years with fully-certified air quality data. A monitor's DV is the metric or statistic that indicates whether that monitor attains a specified air quality standard. The 2008 ozone NAAQS are met at a monitor when the annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years, is 0.075 parts per million (ppm) (75 parts per billion (ppb)) or less. A DV is only valid if minimum data completeness criteria are met (see 40 CFR part 50 Appendix P). Where several monitors are located in a county (or a designated nonattainment area or maintenance area), the DV for the county or area is determined by the monitor with the highest level.

[Note: Monitors that are eligible for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) that are sited in accordance with 40 CFR Part 58, Appendix D (Section 4.1) and operating with a federal reference method (FRM) or federal equivalent method (FEM) monitor that meets the requirements of 40 CFR part 58, Appendix A. All data from a special purpose monitor (SPM) using an FRM or FEM which has operated for more than 24 months is eligible for comparison to the NAAQS unless the monitoring agency demonstrates that the data came from a particular period

during which the requirements of Appendix A (quality assurance requirements) or Appendix E (probe and monitoring path siting criteria) were not met.]

The existing Ventura County nonattainment area comprises the continental portion of Ventura County (see Map 16a in Appendix 2). The 2010 DV for the ozone NAAQS for Ventura County is shown in Table 2.

Table 2. Air Quality Data.

County	State Recommended Nonattainment?	2008-2010 Design Value (ppb)
Ventura, CA	Yes (partial)	86

Ozone monitors relevant for comparison to the NAAQS and information from additional data sources within Ventura County are shown in Appendix 1, Map 16. California’s ozone season encompasses the entire year. Certified, quality assured data are available in EPA’s Air Quality System (AQS) for all areas through calendar year 2010. Map 16 in Appendix 1 includes preliminary 2011 DVs for the existing Ventura County nonattainment area for informational purposes only. For each monitor, Appendix 1 lists the monitor, the 2008-2010 DV (certified and quality assured in AQS) and the 2009-2011 DV (data that are not yet certified and quality assured in AQS are denoted with an underline). Absence of a DV is symbolized with an “x”.

Appendix 3 lists the DVs for monitors in Ventura County. Monitors shown in bold are the DV monitors (i.e., the monitor with the highest DV) for each individual county. Monitors shown in red font are the DV monitor for the nonattainment area. Values with an asterisk do not meet data completeness, and therefore those DVs are not relevant for comparison to the NAAQS and are solely provided for informational purposes.



From Appendix 1, Map 16: For map legend describing monitors, emissions, traffic, population, and boundaries, see Appendix 1.

Monitors in the continental portion of Ventura County show a violation of the 2008 8-hour ozone standard based on 2008-2010 data. Therefore, this area is included in the Ventura County 2008 ozone NAAQS nonattainment area. There are no violating monitors on the islands of Ventura County or in Santa Barbara County, based on certified 2011 data (see discussion in this Technical Support Document, State of California Summary, and monitor values in Appendix 3), to the west of the mainland portion of the county. A county (or partial county) must also be designated nonattainment if it contributes to a violation in a nearby area. Each county without a violating monitor that is located near a county with a violating monitor has been evaluated based on the weight of evidence of the five factors to determine whether it contributes to the nearby violation.

Factor 2: Emissions and Emissions-Related Data

EPA evaluated emissions of ozone precursors, nitrogen oxides (NO_x) and volatile organic compounds (VOC), and other emissions-related data that provide information on areas contributing to violating monitors.

Emissions data

EPA evaluated county-level emission data for NO_x and VOC derived from the 2008 National Emissions Inventory (NEI), version 1.5. This is the most recently available NEI. (See <http://www.epa.gov/ttn/chief/net/2008inventory.html>) Emissions in a nearby area indicate the potential for the area to contribute to observed violations. Table 3 shows emissions of NO_x and VOC (given in tons per year) for Ventura County.

Table 3. Total 2008 NO_x and VOC Emissions.

County	State Recommended Nonattainment?	NO _x (tpy)	VOC (tpy)
Ventura, CA	Yes (partial)	15,608	16,136
	Areawide:	15,608	16,136

Point source emissions of ozone precursors are generally located in the southern part of Ventura County, near population centers such as Ventura, Oxnard, Thousand Oaks, and Simi Valley, and along major roadways (see Map 16 of Appendix 1 and Map 16a of Appendix 2). NO_x emissions from Ventura County are over 14 times lower than NO_x emissions from neighboring Los Angeles County to the south and east, and VOC emissions are over 7 times lower than VOC emissions from Los Angeles County. EPA is designating neighboring Los Angeles and Kern Counties as nonattainment as well. Santa Barbara County, located to the west of Ventura County, shows attainment with the 2008 ozone NAAQS using certified 2011 data, and has emissions of ozone precursors that are over 1.3 times lower than emissions from Ventura County.

Population density and degree of urbanization

EPA evaluated the population and vehicle use characteristics and trends of the area as indicators of the probable location and magnitude of non-point source emissions. These include ozone-creating emissions from on-road and off-road vehicles and engines, consumer products, residential fuel combustion, and consumer services. Areas of dense population or commercial development are an indicator of area source and mobile source NO_x and VOC emissions, which contribute to ozone formation. Rapid population growth or growth in vehicle miles traveled (VMT) (see below) in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that it may

be appropriate to include the area associated with area source and mobile source emissions as part of the nonattainment area. Table 4 shows the population, population density, and population growth information for Ventura County.

Table 4. Population and Growth.

County	State Recommended Nonattainment?	2010 Population	2010 Population Density (1000 pop/sq mi)	Absolute change in population (2000-2010)	Population % change (2000-2010)
Ventura, CA	Yes (partial)	823,318	0.44	66,904	+9%
Areawide:		823,318	0.44	66,904	+9%

Sources: U.S. Census Bureau population estimates for 2010 as of August 4, 2011

(http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_PL_GCTPL2.STO5&prodType=table)

The population of Ventura County is nearly double Santa Barbara County, but smaller than other counties in the Los Angeles-South Coast Air Basin nonattainment area. The population density of Ventura County is nearly three times higher than Santa Barbara County. Los Angeles and Orange counties are more densely populated than Ventura County, while compared to Ventura County, Riverside and San Bernardino counties are more sparsely populated (see technical analysis for Los Angeles-South Coast Air Basin). Similar to the location of point sources, the population of Ventura County is centered mostly in the southern portion of the county, around Oxnard, Thousand Oaks, and Simi Valley, with additional population centers north of Oxnard, in Ventura and Mira Monte (see Maps 16 and 16a in Appendices 1 and 2, respectively). Over 2000-2010, the population of Ventura County has grown by 9%, which is a higher rate of growth compared to Los Angeles and Orange counties, but lower than growth rates observed in Riverside and San Bernardino counties. Population growth is associated with even greater growth in traffic and commuting patterns, which are themselves associated with emissions of ozone precursors (see next section).

Traffic (VMT) data

EPA evaluated the commuting patterns of residents in the area, as well as the total VMT for each county. In combination with the population/population density data and the location of main transportation arteries (see above), this information helps identify the probable location of non-point source emissions. A county with high VMT indicates the presence of motor vehicle emissions that may contribute to ozone formation and nonattainment in the area. Rapid population or VMT growth in a county on the urban perimeter signifies increasing integration with the core urban area, and indicates that the associated area source and mobile source emissions may be appropriate to include in the nonattainment area. Table 5 shows total 2008 VMT for Ventura County.

Table 5. Traffic (VMT) data.

County	State Recommended Nonattainment?	2008 VMT* (million miles)
Ventura, CA	Yes (partial)	7,795
Areawide:		7,795

*MOBILE model VMTs are those inputs into the NEI version 1.5.

In Ventura County, 2008 VMT is nearly double the VMT in Santa Barbara County, but is relatively low compared to counties in the Los Angeles-South Coast Air Basin, where counties range from over 20,000 to nearly 80,000 VMT in 2008. Non-truck traffic is highest between Oxnard and Los Angeles County to the southeast, and in the Simi Valley area in the southeast portion of Ventura County, near the Los Angeles County border.

Factor 3: Meteorology (weather/transport patterns)

EPA evaluated available meteorological data to help determine how meteorological conditions, such as weather, transport patterns and stagnation conditions, would affect the fate and transport of precursor emissions contributing to ozone formation. EPA reviewed the discussion of ozone formation in the “Final Ventura County 2007 Air Quality Management Plan,” as well as the wind frequency distribution of wind direction data.

The “Final Ventura County 2007 Air Quality Management Plan,” by Ventura County Air Pollution Control District (APCD), discusses the meteorological conditions that would affect the fate and transport of precursor emissions contributing to ozone formation.¹ This information is presented below:

“In Ventura County, ozone generally reaches peak levels by mid-afternoon and, along with ozone precursors, is often blown inland by the prevailing winds. Thus, inland areas such as Simi Valley², Thousand Oaks, Ojai, Fillmore, and Piru often have higher ozone levels and the most days over the federal and state ozone standards than the county’s coastal areas. The smoggiest days tend to occur from May through October (smog season) when high temperatures and stable atmospheric conditions produce conditions conducive to ozone formation and accumulation.”

The modeling protocol also discusses how meteorological conditions would affect the fate and transport of precursor emissions contributing to ozone formation. This discussion provides a rationale for considering Ventura and Los Angeles-South Coast as separate air basins.

“[...] the political boundary between Los Angeles and Ventura Counties is also a region of convergent air flow. Therefore, it was appropriate to represent Ventura County as a subregion separate from Los Angeles County.”³

In addition, EPA reviewed the wind frequency distribution of wind direction data in Figure 2 below. The figure is based on an average of 30 years of National Weather Service information for the months of June, July, and August. The prevailing winds during the ozone season have a strong west-southwesterly component. This information is consistent with the information provided in the “Final Ventura County 2007 Air Quality Management Plan.”

¹ Ventura County 2007 Air Quality Management Plan, May 13, 2008. Ventura County Air Pollution Control District. http://www.vcapcd.org/pubs/Planning/AQMP/VC07_AQMP_Final_w_Appendices.pdf

² P. 6, “Final Ventura County 2007 Air Quality Management Plan,” May 13, 2008.

³ D-4, “Final Ventura County 2007 Air Quality Management Plan,” May 13, 2008.

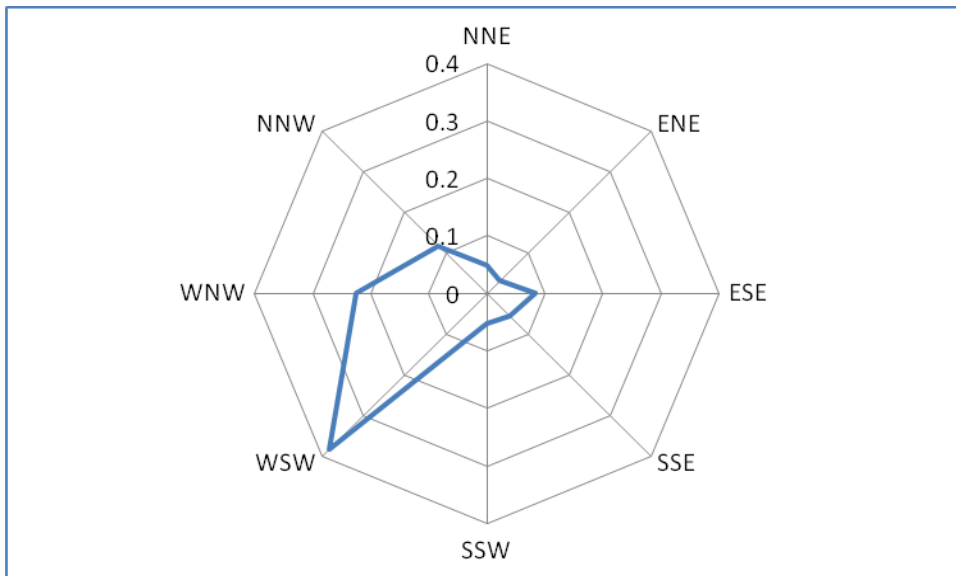


Figure 2: Ventura County - Summer Wind Frequency Distribution

Factor 4: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might affect the airshed and, therefore, the distribution of ozone over the area.

The Ventura County area is shown in Appendix 1, Map 16. The Coastal Plain and Valley is bounded by the Pacific Ocean on the west and south, the Santa Monica-Santa Susana Mountains on the east, and the Western Transverse Ranges on the north. The Santa Clara River Valley extends for approximately 45 miles (72 kilometers) from the mouth of the Santa Clara River to east of Castaic Junction in Los Angeles County and ranges in elevation from sea level to approximately 1,010 feet (308 meters), measured from the riverbed to Castaic Junction (in Los Angeles County). The valley trends east to west, and is the largest valley in Ventura County, and generally bisects the county north and south geographically.

The Santa Monica-Santa Susana Mountains trend east and west, with its western terminus at the eastern end of the Oxnard Plain. The mountains at the northwestern end of the Santa Monica Mountains are called the Conejo Mountains. The Santa Monica Mountains extend eastward towards Los Angeles, ending at the Los Angeles River in the Griffith Park area (in Los Angeles County) and are part of the Transverse Ranges and generally included within the Western Transverse Ranges sub-region of the California Floristic Province. These mountains are rugged and have high relief, ranging from sea level along their southern edge to 948 meters (3,111 feet) on Sandstone Peak, immediately south of Boney Mountain, both located within Ventura County. The Santa Susana Mountains also trend east-west, originating in the west at the northeast corner of the Oxnard Plain and extend eastward to the Newhall Pass in Los Angeles County. The Santa Clara River Valley creates the northern boundary of these mountains.

The Western Transverse Ranges are the dominant landform of Ventura County, occupying the northern two-thirds of the land area of the county. The Western Transverse Ranges are a collection of east-west trending mountain ranges with intervening valleys. The Western Transverse Ranges are extremely

rugged and have high relief, ranging from sea level west of Ventura along the Rincon coast to 2,682 meters (8,831 feet) on Mount Piños at the very northern edge of Ventura County.⁴

Factor 5: Jurisdictional boundaries

For each potential nonattainment area, we considered existing jurisdictional boundaries to provide a clearly defined legal boundary and to help identify the areas appropriate for carrying out the air quality planning and enforcement functions for nonattainment areas. Examples of jurisdictional boundaries include existing/prior nonattainment area boundaries for ozone or other urban-scale pollutants, county lines, air district boundaries, township boundaries, areas covered by a metropolitan planning organization, state lines, areas of Indian country, and urban growth boundary. Where existing jurisdictional boundaries were not adequate or appropriate to describe the nonattainment area, other clearly defined and permanent landmarks or geographic coordinates were considered.

The Ventura County area has previously established nonattainment boundaries associated with both the 1-hour and the 1997 8-hour ozone NAAQS. The state recommended the same boundary for the 2008 ozone NAAQS. The Ventura County Air Pollution Control District has jurisdiction over the entirety of Ventura County, including the continental portion as well as the Anacapa and San Nicolas islands portions. Likewise, the entire county's (mainland and island portions) transportation planning falls under the jurisdiction of the Southern California Association of Governments (SCAG), which is the Metropolitan Planning Organization (MPO) for the region. The mainland portion of Ventura County forms the southern end of California's South Central Coast Air Basin. The entirety of Ventura County forms the Oxnard-Thousand Oaks-Ventura metropolitan statistical area (MSA). This MSA is part of the larger Los Angeles-Long Beach-Riverside combined statistical area (CSA). Therefore, the state recommendation for a partial county designation is not along jurisdictional lines, but is due to the physical separation of the islands from the mainland.

However, jurisdiction is a factor in designating this mainland portion of Ventura County as a separate area from San Joaquin Valley to the north. San Joaquin Valley is its own air district, is a separate air basin with a mountain range separating it from Ventura County, and at the southern end of the valley has a separate MPO, Kern Council of Governments, from the SCAG MPO that has jurisdiction over Ventura County. Kern County in San Joaquin Valley is also not a part of the Los Angeles-Long Beach-Riverside CSA.

Similar distinctions can be made between the mainland portion of Ventura County, Santa Barbara County, which is attaining the standard, and the South Coast area, which EPA is designating as a separate nonattainment area. Santa Barbara County, which is west of Ventura, is a separate air basin and has a separate air district from Ventura County. The Los Angeles-South Coast nonattainment area, which is east and south of Ventura, is also a separate air basin and has a separate air district from Ventura County.

⁴ Ventura County Geography <http://venturaflora.com/files/vcgeography.htm> .

Conclusion

Based on the assessment of factors described above, EPA is designating the continental portion of Ventura County, CA nonattainment because the area violates the 2008 ozone NAAQS.

The Clean Air Act requires EPA to designate any area as nonattainment if it violates a NAAQS or if it contributes to a violation in a nearby area. Air quality data (Factor 1) indicate that monitors in the existing Ventura County nonattainment area (which includes the continental portion of the county as noted in Table 1) violate the 2008 8-hour ozone standard based on 2008-2010 data. Additionally, there are no violating monitors on the islands of Ventura County or in Santa Barbara County, based on certified 2011 data (see discussion in this Technical Support Document, State of California Summary), to the west of the mainland portion of the county. Therefore, Factor 1 supports the state's recommended boundary of the continental portion of Ventura County for nonattainment.

EPA's review of emissions and emission related data (Factor 2) shows that sources of ozone precursor emissions from Ventura County are higher than those from Santa Barbara County to the west, and lower than those from adjacent counties in the San Joaquin Valley or South Coast Air Basin. EPA believes that the state's recommended nonattainment area encompasses both source and receptor populations in the county.

Based on our consideration of meteorology and weather or transport patterns (Factor 3), geography and topography (Factor 4), and jurisdictional boundaries (Factor 5), EPA concurs with the state's recommendation and is designating the continental portion of Ventura County, CA as nonattainment for the 2008 ozone NAAQS. This boundary is the same as the boundaries used for earlier ozone NAAQS (both 1-hour and the 1997 8-hour) and essentially follows the boundaries of the county, the air district, the MPO and the air basin.