California: Statewide Notes

2013 SOTA Grades (2009-2011 air data)

Overall Findings

Despite decades of progress, California cities continue to dominate the lists of the ten most polluted cities in America for ozone (smog) and short and long-term particulate pollution. The American Lung Association's annual SOTA reports continue to show many areas of ongoing improvements in Californians' air. (More information on long terms trends is included under the heading "Clean Air Progress" later in this document.)

- Sixty-four percent (32 of 50) of California counties received at least one failing grade for unhealthy air in SOTA 2013.
- Eight of the 11 California cities among the nation's 25 most ozone-polluted cities had their lowest ever reported number of unhealthy ozone days in SOTA 2013: Los Angeles, Visalia, Bakersfield, Fresno, Sacramento, San Diego, Merced and Modesto.
- The metropolitan areas of Bakersfield, Hanford, Los Angeles and Visalia saw their best levels ever of annual particle pollution in SOTA 2013.
- Fresno, Visalia and San Diego had their lowest-ever reported short-term particle pollution levels in SOTA 2013.

Ozone Pollution

- California is home to 7 of the 10 most ozone-polluted cities in the nation, including the top 6.
- Of the 49 counties graded for ozone, 28 counties (57 percent) received an F for ozone pollution in SOTA 2012. Nine counties (18 percent) received an A, 4 (8 percent) received a B, 6received a C (12 percent) and 2 received a D (4 percent).
- San Bernardino County had a three year weighted average of 121.5 unhealthy ozone days, the highest amount reported in SOTA 2013.
- Since SOTA 2012, 8 counties had improved ozone grades, including Inyo (D to a C) and 7 counties that improved from an F in the last SOTA report: Amador (C), San Benito (B), Shasta (C), Solano (D), Sutter (C), Tuolumne (D) and Yolo (C). Much of the improvement in grades is related to seasonal issues (*i.e*. 2008 wildfires are no longer captured).
- Chico and Stockton each dropped out of the top 25 most ozone-polluted cities in America.

Short-Term Particulates

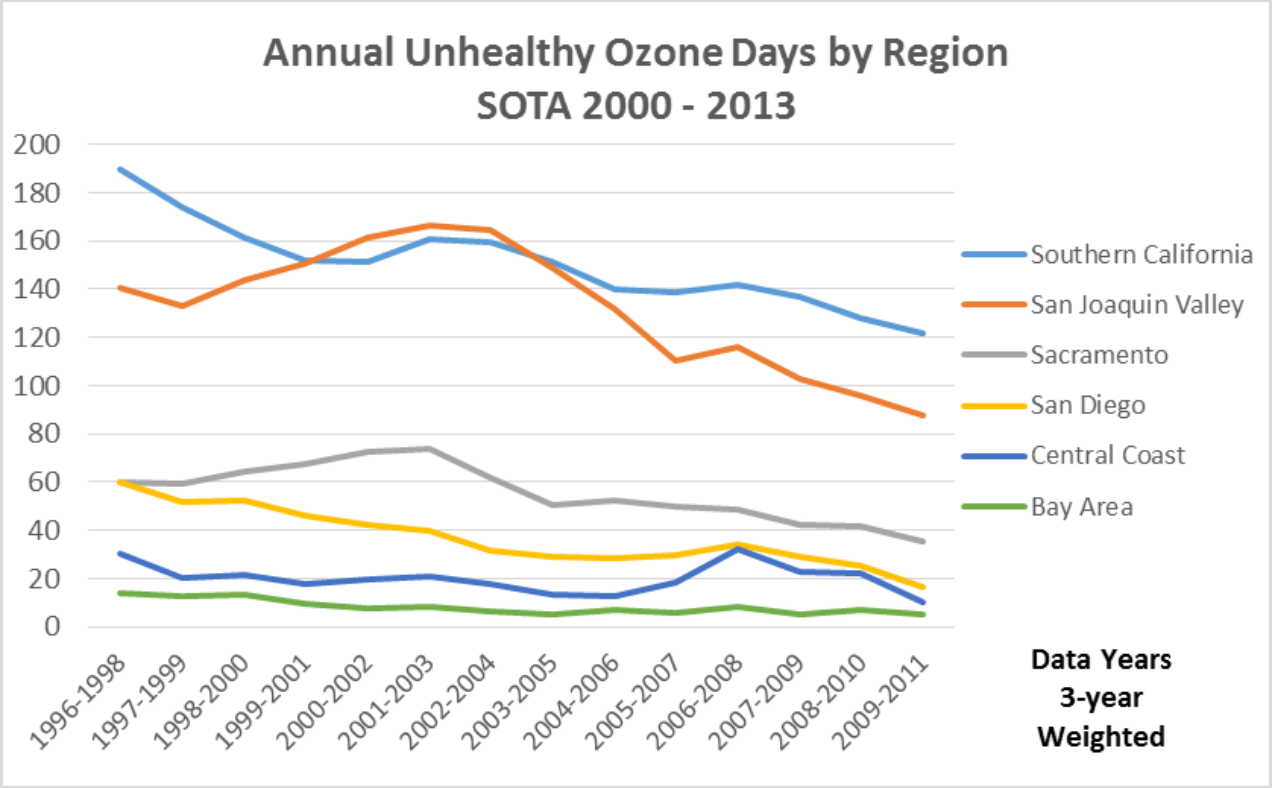
- California is home to 6 of the top 10 cities most polluted by short-term particles, including the top 5. Kern County had a three year weighted average of 46.5 unhealthy particulate pollution days, the highest reported in SOTA 2013.
- Of the 42 counties graded for short-term particulates, 18 counties (43 percent) received an F in SOTA 2013, 14 (33 percent) received an A, 4 (10 percent) received a B, 2 (5 percent) received a C and 4 received a D (10 percent).
- Compared to SOTA 2012, 10 counties had better grades, including seven that received an A (Calaveras, Colusa, Lake, Santa Barbara, Shasta and Ventura). Santa Clara improved from an F to a D, and both Butte and Contra Costa improved from a D to a C since last year. Alameda (C to a D) and Imperial (D to an F) had worse grades reported in SOTA 2013 than in SOTA 2012.

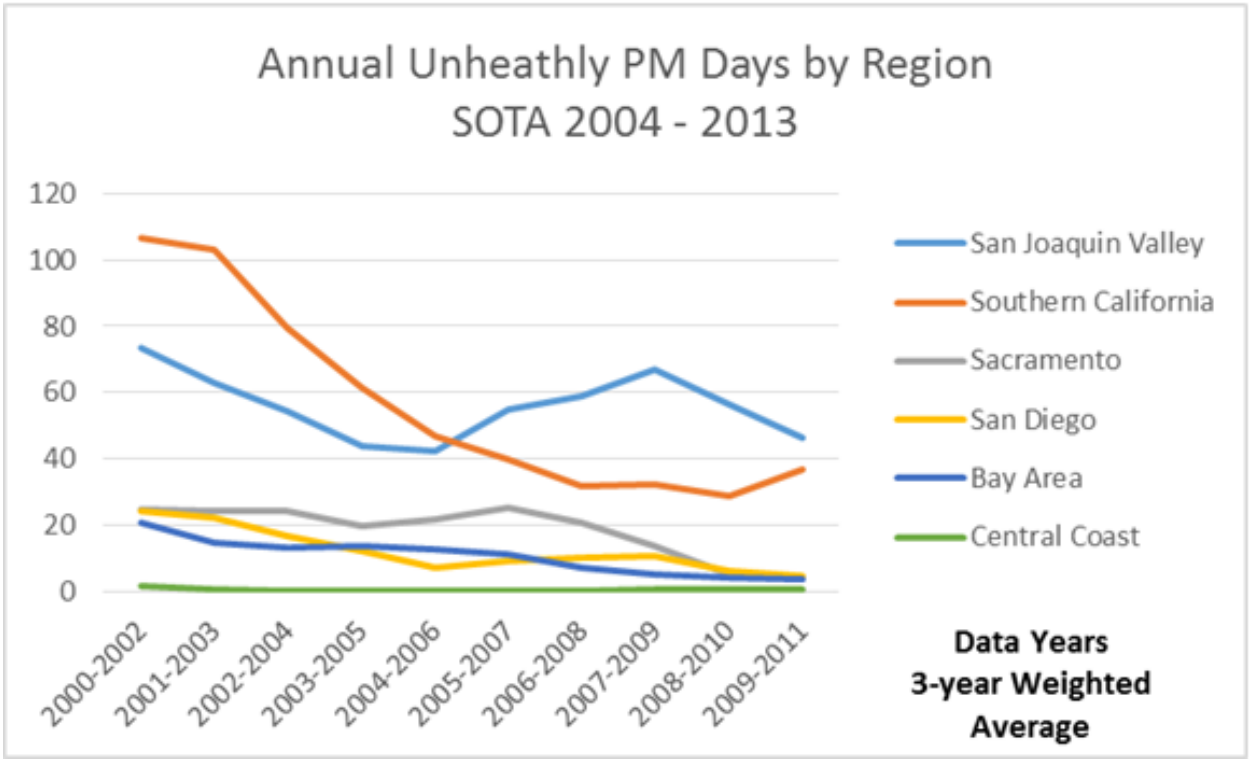
Annual Particulates

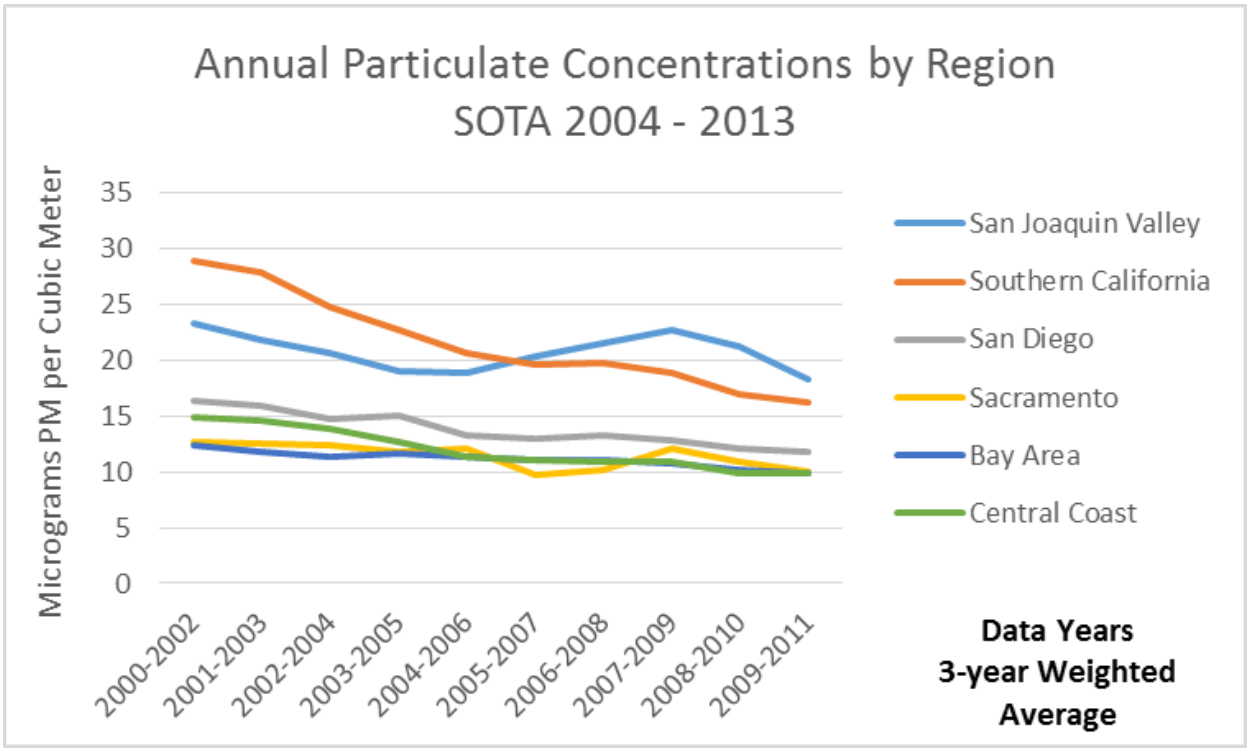
- SOTA 2013 reports that 8 of the 10 cities most polluted by annual particulate pollution in America are in California, including the top 7. Kern and Merced Counties in the San Joaquin Valley each had an annual concentration of 18.2 micrograms per cubic meter of particle pollution, well in excess of the new national standard of 12 micrograms.
- El Centro entered the list of the ten most polluted cities for annual particle pollution. Increased pollution levels are being recorded here due to the location of a second monitoring location in Imperial County that is providing additional data, including pollution transported from Mexico.
- Of the 40 counties graded for annual particulates, 30 counties (86 percent) received a PASS and 10 counties (14 percent) received a FAIL grade in SOTA 2013.
- Imperial, Los Angeles, and San Bernardino counties dropped from a Pass to a Fail since the last SOTA report. Los Angeles and San Bernardino had earned passing grades last year, but failed to achieve the new annual particulate standard adopted by EPA in 2012. Imperial County's grade changed due to the location of a second monitoring location that is providing additional data.
- Merced and Stanislaus earned failing grades after not having had complete data in past years.
- Fresno, Kern, Kings, Tulare and Riverside continue to face annual particle pollution levels well above the previous unsafe standard of 15 micrograms per cubic meter.

Regional Trend Charts

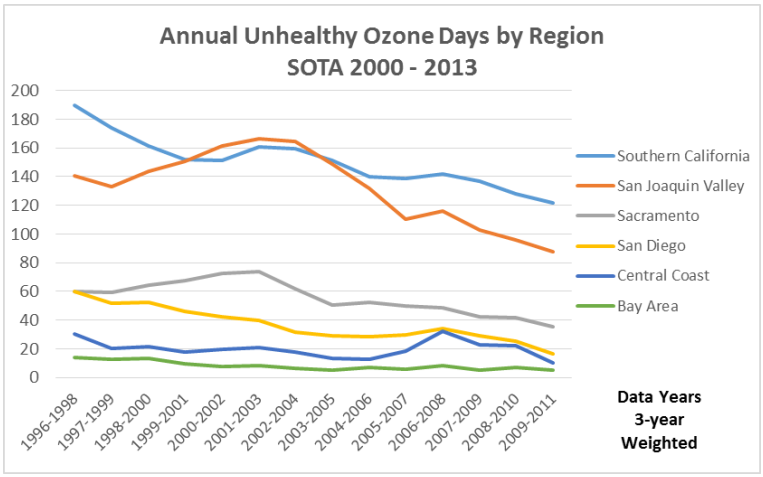
The charts below represent changes in SOTA during the course of the report. Ozone data runs from SOTA 2000 (1996-1998 data), annual particulates and short-term particulate (SOTA 2004) data charts begin later.




Annual Unheathly PM Days by Region
SOTA 2004 - 2013
120
100
80
60
40
20
0
2000-2002
2001-2003
2002-2004
2003-2005
2004-2006
2005-2007
2006-2008
2007-2009
2008-2010
2009-2011
San Joaquin Valley
Southern California
Sacramento
San Diego
Bay Area
Central Coast
Data Years
3-year Weighted
Average


Annual Particulate Concentrations by Region
SOTA 2004 - 2013
Micrograms PM per Cubic Meter
35
30
25
20
15
10
5
0
2000-2002
2001-2003
2002-2004
2003-2005
2004-2006
2005-2007
2006-2008
2007-2009
2008-2010
2009-2011
San Joaquin Valley
Southern California
San Diego
Sacramento
Bay Area
Central Coast
Data Years
3-year Weighted
Average

Clean Air Progress (Based on 2000-2013 reports)



Over the past 14 years, the American Lung Association SOTA data shows that the number of unhealthy days for ozone and fine particulate matter ($PM_{2.5}$) has declined in most of the highest polluted areas of the state. Once again, data shows that many areas of the state had their lowest pollution levels since the initial 2000 report. California's strong leadership and investment in clean cars and clean fuels, and local air district incentive programs to clean up diesel engines and curtail wood burning has helped bring significant ozone and particulate reductions to many areas of the state.

However, the biggest challenge continues to be in the San Joaquin Valley that is not experiencing as much progress as other areas of the state and in some areas has experienced increased levels of pollution. The continuing trend of increasing numbers of unhealthy days for particulate matter in some parts of the San Joaquin Valley deserves continued focus and attention from air quality regulators.

Key trends tracked over the course of the SOTA reports are highlighted below:

Ozone Pollution

- Since SOTA 2000 (1996-1998 data), the ***Bay Area*** has experienced a 65 percent reduction in unhealthy ozone days. While fluctuations have occurred in recent years in several counties, all counties had fewer days than in last year's report. The overall trend is toward cleaner air in the Bay Area, including significant reductions in high ozone days since the first SOTA report in 2000 in Alameda (70 percent reduction) and Solano (82 percent).
- California's ***Central Coast*** counties have experienced significant improvements in reducing ozone pollution. San Benito has seen a near complete (96 percent) reduction in unhealthy ozone days since SOTA 2000, dropping from a high of 18.7 days to 0.7 days in SOTA 2013. Likewise, Santa Barbara County has seen the number of unhealthy ozone days drop by 87 percent (from an annual average of 30 down to 4) over the same time period. Other Central Coast counties have seen reductions in unhealthy ozone days in the 65 – 85 percent range.
- The ***Southern California*** region has seen a 36 percent reduction in annual unhealthy ozone days between the 189.5 days reported in SOTA 2000 (1996-1998 data) and the 121.5 average annual number of unhealthy days reported in SOTA 2013 (2009-2011 data). Los Angeles, Orange, Riverside and San Bernardino all had their fewest number of unhealthy ozone days reported in SOTA 2013.
- Many ***San Joaquin Valley*** counties have achieved reductions in high ozone days between 39 and 68 percent in SOTA 2013 as compared with SOTA 2000 (1996-1998 data). Six of the 8

Valley counties had their fewest ever number of unhealthy ozone days reported in SOTA 2013 (2009-2011 data).

- ***San Diego*** has reduced unhealthy ozone days 73 percent since 2000 SOTA (1996-1998 data). San Diego experienced an annual average of 60 days per year in SOTA 2000 reporting, down to its annual average of 16.2 days reported in SOTA 2013 (2009-2011 data).
- The ***Sacramento*** metropolitan area has experienced a 41 percent reduction in ozone pollution since the SOTA 2000 (1996-1998 data) report. While still ranked 6th in the nation for ozone pollution, 2013 SOTA finds that the Sacramento metro area achieved its best ever annual average for unhealthy ozone days, dropping to 35.3 days from 41.5 days in the 2012 report.

Particulate Pollution

Short Term Particulates

- The ***Bay Area's*** average number of high particle pollution days per year has dropped significantly, from average of over 20 days in SOTA 2004 (2000-2002 data), to 3.7 days reported in SOTA 2013 (2009-2011 data), an 82 percent reduction.
- With the exception of San Luis Obispo County with just 0.7 unhealthy particulate days reported, there were zero unhealthy particulate pollution days reported for ***Central Coast*** counties in SOTA 2013 (2009-2011 data years).
- ***Southern California*** has made significant progress in reducing the numbers of unhealthy particulate pollution days over the past ten SOTA reports, but Los Angeles, Riverside and Orange counties each saw an uptick in unhealthy particulate days reported in SOTA 2013 (2009-2011 data). San Bernardino County has seen a 90 percent reduction in unhealthy particulate days since SOTA 2004 -the first year this data was reported – and is no longer among the top 25 most polluted in the nation.
- In contrast to more national trends, many parts of the ***San Joaquin Valley*** continue to struggle with unhealthy particulate days. After more progress from SOTA 2004, the general trend since SOTA 2007 (2003-2005 data) has been an increasing number of days recorded for short-term particulate pollution in much of the Valley.
- For the first time, the ***Sacramento*** metro area has dropped off the list of the nation's 25 most particle polluted cities, and continues to reduce unhealthy particulate days. The Sacramento region has cut unhealthy particulate days by 84 percent, down to 4 days from a high of 25.3 days reported in the SOTA 2009 (2005-2007 data).
- ***San Diego's*** annual weighted average of unhealthy particulate pollution days has dropped by 81 percent (from 24.3 to 4.7 days annually) since SOTA 2004 (2000-2002 data).

Annual Particulates

- ***Bay Area*** counties have all experienced reductions in annual PM concentration in the 18-31 percent range since SOTA 2004 (2000-2002 data). All counties assessed in the region receive a "Pass" grade for the new annual particle pollution standard of 12 micrograms per cubic meter, with Contra Costa County having the lowest levels (7.8).
- All ***Central Coast*** l counties earn a "PASS" grade in SOTA 2012 and have continued success in control of annual PM levels, with all but Santa Barbara County having achieved reductions of 22 - 37 percent since SOTA 2004 (2000-2002 data).
- Annual particulate concentrations in ***San Diego*** remain within the federal standard and have

fallen by 28 percent since SOTA 2004.

- Despite more failing grades due to the more protective annual particulate standard adopted in 2012, tremendous progress has been made in reducing annual particulate pollution in ***Southern California***, with reductions between 43 and 47 percent in all counties since SOTA 2004 (2000-2002 data).
- Several ***San Joaquin Valley*** counties have experienced an overall 14-34 percent reduction in annual PM concentrations since SOTA 2004. However, most of the improvements were made prior to SOTA 2007 as progress in many areas has leveled off more recently, and crept upward in Fresno and Stanislaus counties in SOTA 2013 over past reports.
- ***Sacramento*** County has achieved a 20 percent reduction in annual particulate concentrations since SOTA 2004 (2000-2002 data). El Dorado, Nevada, Placer, Sutter and Yolo counties have each achieved 30 - 38 percent reductions in PM concentrations since then.

Summary

California is home to some of the most polluted air in the United States, with 89% of residents living in counties with unhealthy air during some parts of the year. California's air quality challenges are compounded by a population of 37.5 million, heavy dependency on petroleum for transportation, and climate and geographic and weather conditions that are more conducive to poor air quality. The Central Valley and Los Angeles regions fare the worst for air pollution where residents can experience unhealthy air several months of the year. Still, the long term trends show California's air quality significantly improving, thanks to four decades of regulations and programs to reduce emissions from cars, trucks, buses, fuels, construction and agricultural equipment and wood burning devices. These trends are expected to lead to public health improvements but could be offset by worsening ozone pollution from global warming. Known as the "climate penalty," increasing levels of ozone pollution attributed to a warming climate have been projected to interfere with ozone control programs in the Los Angeles, Central Valley and Sacramento regions. Ozone increases due to increased heat could overwhelm existing control programs in the Bay Area by mid-century.

Key emission sources:

- Mobile sources (motor vehicles, diesel trucks and buses, off-road sources including construction equipment, ports, trains, etc.) are responsible for over 70% of smog forming emissions in California and about 20% of the fine particulate emissions in the state.
- Stationary sources like oil refineries, electric utilities and manufacturing plants
- Residential wood burning (significant contributor to wintertime particulate levels).
- Managed agricultural and forest burning is also a major source of particulate pollution.

Pollution hotspots like freeways and major roadways, ports, and rail yards pose real health risks to nearby residents and should be the focus of additional monitoring (monitoring stations are distributed throughout California counties and are not always in close proximity to major or localized pollution sources).

Statewide Charts

The charts presented on the following page provide an overview of the changes in high pollution days reported in SOTA 2012 (2008-2010 air data) versus the high pollution days reported in SOTA 2013. The counties on the left of the chart (blue bars) experienced fewer bad air days, counties on the right of the chart showed fewer improvements, and in some cases had more bad air days (red bars, circled).

Overview of Changes from SOTA 2012 to SOTA 2013

Blue bars in the charts below indicate clean air progress in the counties, red bars indicate increases in unhealthy air days between SOTA 2012 (2008-2010 data) and SOTA 2013 (2009-2011 data).