California's Progress Toward Clean Air

A Report by the California Air Pollution Control Officer's Association

APRIL 2011

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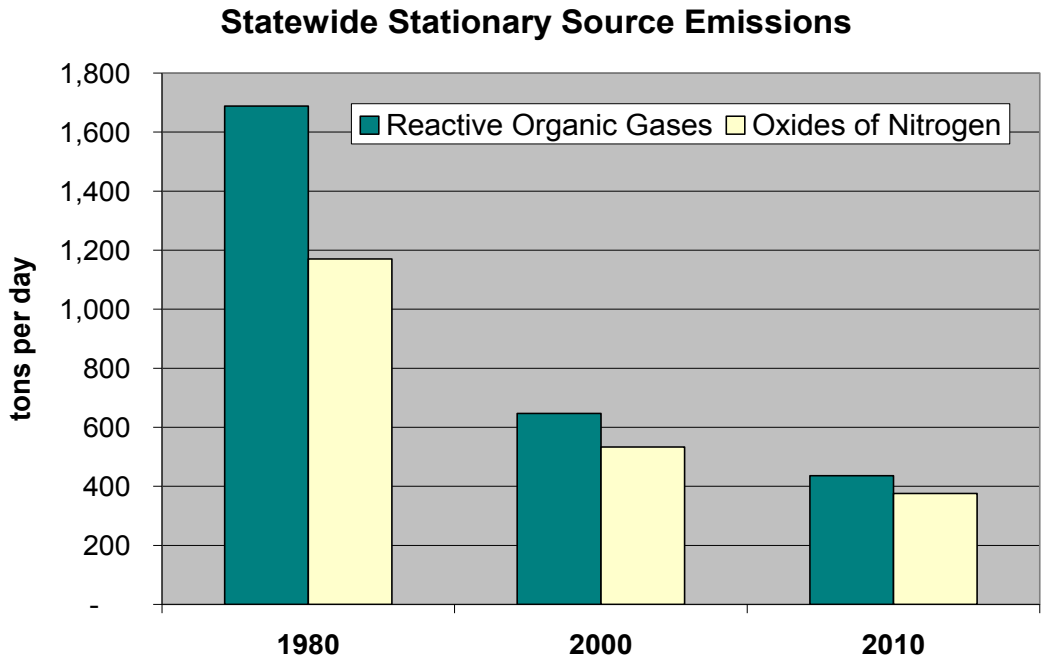
The California Air Pollution Control Officer's Association (CAPCOA) is an association representing all 35 local air quality agencies throughout California. The purpose of this report is to provide objective information for California residents and other interested parties regarding California's remarkable journey toward cleaner air and the challenges that remain.

Comprehensive Strategy for Cleaner Air - California employs a comprehensive strategy aimed at reducing pollutants from a variety of sources of air pollution. This multifaceted strategy targets mobile and stationary sources of pollution emitting a myriad of air contaminants and contains effective regulatory and incentive-based measures. Local air districts have authority to regulate businesses and industrial facilities, while the California Air Resources Board (CARB) regulates air pollution from cars, trucks, buses and other sources. California's regulatory program, one of the strongest in the nation, is also supplemented with significant public and private investments in voluntary incentive-based measures. California's clean air strategies continue to serve as a model for the rest of the nation and throughout the world.

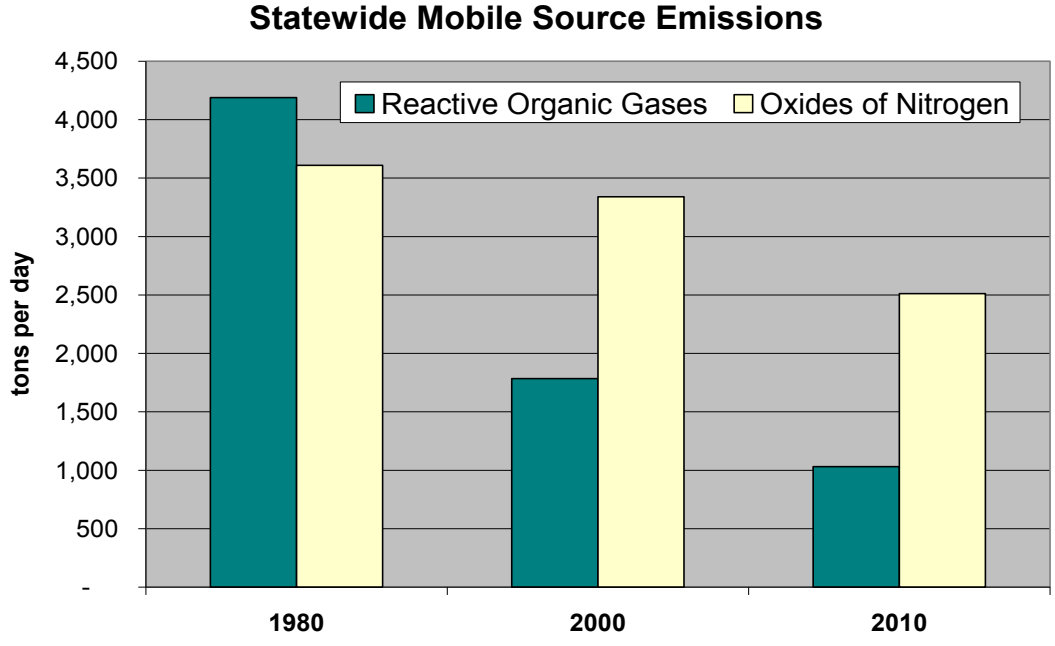
Air Quality Trends - California, the most populous state in the nation includes regions with pristine air quality as well as regions with the highest number of violations of the federal health-based standards for ozone and particulate matter. California's comprehensive strategy has resulted in significant reductions in air pollution. In fact, since 1980, Reactive Organic Gas (ROG) and Nitrogen Oxide (NOx) emissions from stationary sources have been reduced by 74 percent and 68 percent, respectively. During the same period, ROG and NOx emissions from all sources, including mobile and area-wide sources, have been reduced by 68 percent and 39 percent, respectively. ROG and NOx are two fundamental components of ozone. (Please refer to Figures 1, 2, and 3 for a graphical presentation of the historical changes in emissions for stationary, mobile, and area-wide sources.)

Figure 1



Data from ARB 2009 Almanac, California Emissions Projection Analysis Model (CEPAM):
http://www.arb.ca.gov/app/emsinv/fcemssumcat2009.php

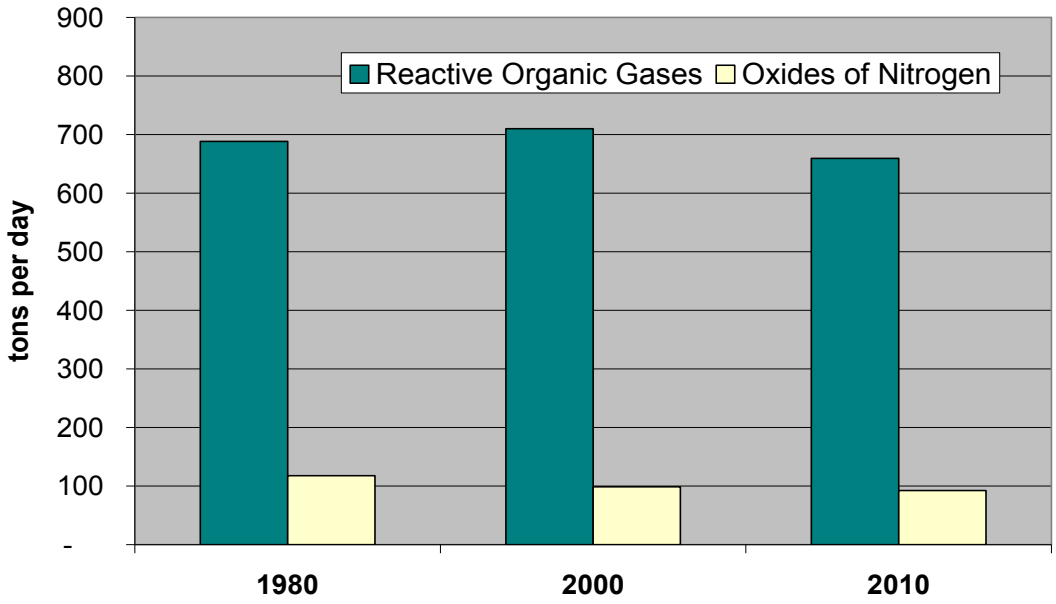
Figure 2



Data from ARB 2009 Almanac, California Emissions Projection Analysis Model (CEPAM):
http://www.arb.ca.gov/app/emsinv/fcemssumcat2009.php

Figure 3

Statewide Area Source Emissions



Data from ARB 2009 Almanac, California Emissions Projection Analysis Model (CEPAM):
http://www.arb.ca.gov/app/emsinv/fcemssumcat2009.php

These major reductions in emissions have resulted in significant improvements in ambient concentrations of ozone and particulate matter throughout California in spite of dramatic increases in population, vehicles and miles driven. These reductions also have occurred in spite of the fact that neither the state nor local air districts have the authority to regulate federally controlled sources of air pollution including ships, locomotives and aircraft.

Local air agencies and CARB maintain a comprehensive air monitoring network throughout California. This provides a wide range of comprehensive data that can be utilized in assessing air quality trends in each region. One measure is the Air Quality Index (AQI) as defined by the federal Environmental Protection Agency (EPA). The AQI is calculated from the measured ambient air concentrations (Attachment A – Definitions of AQI colors). This report utilizes the historic AQI readings throughout California to assess air quality trends by comparing historical changes in the number of days with “Good” and “Unhealthy” air quality designations. California residents are familiar with AQI as reported by many of California’s local air agencies. Attachment B shows changes in the number of Good and Unhealthy days for each county in California for calendar years 2000 and 2010. The following are some highlights from the AQI data in Attachment B:

Counties with no Unhealthy days in 2010: Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, Glenn, Humboldt, Kern (non-San Joaquin Valley portion), Lake, Los Angeles – Antelope Valley portion, Marin, Mariposa, Mendocino, Monterey, Napa, Nevada, San Benito, San Bernardino – Mojave portion, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Solano, Sonoma, Sutter, Tehama, Trinity, Tuolumne, Ventura and Yolo.

Counties with fewer than 5 Unhealthy days in 2010: Alameda, El Dorado, Los Angeles, Madera, Merced, Placer, Orange, Sacramento, and Stanislaus.

Counties with 10 or fewer Unhealthy days in 2010: Kings, Riverside, and Tulare.

Counties with more than 10 Unhealthy days in 2010: Fresno (11), Kern- SJ Valley portion (13), San Bernardino (19), and Imperial (17)

Most improved counties (% reduction in number of Unhealthy days) since 2000: Butte (100%), Calaveras (100%), Placer (100%), San Diego (100%), San Joaquin (100%), Ventura (100%), Stanislaus (94%), Tulare (90%), Fresno (83%), Merced (83%), Los Angeles (82%), Kern-San Joaquin portion (79%), Madera (78%), Riverside-South Coast portion (73%), Kings (72%), Santa Clara (100%), Imperial (60%), and Sacramento (56%).

Air Quality Challenges – Despite significant improvements, air quality remains a major source of public health concern in large metropolitan areas throughout California. The San Joaquin Valley and the South Coast Air Basin continue to face significant challenges in meeting the federal health-based standards for ozone and fine particles, despite their regional and state-level controls on mobile and stationary sources that are the most stringent in the nation. In 2007, both regions sought extension for meeting the 1997 federal ambient air quality standard for 8-hour ozone. A comparable challenge faces each region with respect to attainment of the 1997 PM 2.5 standard. Due to continued progress in health research, the federal EPA lowered the ambient concentration for the 8-hour ozone and 24-hour PM 2.5 standards in 2008 and 2006, respectively and is considering further tightening of these standards in 2011 and 2012. The net effect of these stricter standards is to raise the performance bar for California air basins. This will in effect extend the timeframe for attainment in highly impacted regions as well as increase the number of air basins with non-attainment status.

Regarding health risks and their costs, recent state and national assessments have provided an empirical yardstick for measuring the costs of unhealthy air and the benefits of meeting national air quality standards. For the South Coast and

San Joaquin Valley, the annual health costs of air pollution have been estimated to total $22 billion ($1,250 per person) and $6 billion ($1,600 per person), respectively.[1] Multiple studies have demonstrated that the monetary benefits of achieving air pollution health standards are far greater than the cost of attaining those standards.

As for the health risk posed by PM 2.5 to California residents, a recent analysis conducted by CARB using the federal EPA's methodology estimated that, on average, 9,200 annual cases of premature cardiopulmonary deaths could be avoided if the national annual standard for PM 2.5 was attained.[2]

[1] Hall, J., V. Brajer, and F. Lurmann. (2008) The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Valley Air Basins. California State University--Fullerton, Institute for Economic and Environmental Studies. See http://business.fullerton.edu/centers/iees/

[2] California Air Resources Board. (2010) Estimate of Premature Deaths Associated with Fine Particle Pollution (PM2.5) in California Using a U.S. Environmental Protection Agency Methodology. Sacramento, CA, August 31.

ATTACHMENT A

What is the Air Quality Index (AQI)?

The AQI is an index for reporting daily air quality levels. It tells a person how clean or unhealthy the air is, and what steps a person should take to protect their health.

The AQI is calculated for four major air pollutants regulated by the federal Clean Air Act: ground level ozone, particle pollution, carbon monoxide, and sulfur dioxide. For each of these pollutants, the federal EPA has established National Ambient Air Quality Standards to protect public health and as these health-based standards continue to be revised, the AQI will also be revised.

Air Quality Index	Protect Your Health
Good (0-50)	No health impacts are expected when air quality is in this range.
Moderate (51-100)	Unusually sensitive people should consider limiting prolonged outdoor exertion.
Unhealthy for Sensitive Groups (101-150)	The following groups should limit prolonged outdoor exertion: • People with lung disease, such as asthma • Children and older adults • People who are active outdoors
Unhealthy (151-200)	The following groups should avoid prolonged outdoor exertion: • People with lung disease, such as asthma • Children and older adults • People who are active outdoors Everyone else should limit prolonged outdoor exertion.
Very Unhealthy (201-300)	The following groups should avoid all outdoor exertion: • People with lung disease, such as asthma< • Children and older adults • People who are active outdoors Everyone else should limit outdoor exertion.

ATTACHMENT B

County	Air District	Good Days 2000	Good Days 2010	Unhealthy Days 2000	Unhealthy Days 2010
Alameda	Bay Area	308	297	1	1
Alpine	Great Basins	-	-	-	-
Amador	Amador	261	313	0	0
Butte	Butte	253	233	2	0
Calaveras	Calaveras	267	307	4	0
Colusa	Colusa	314	332	0	0
Contra Costa	Bay Area	276	327	0	0
Del Norte *	North Coast	-	-	0	0
El Dorado	El Dorado	304	300	0	1
Fresno	San Joaquin	64	130	66	11
Glenn	Glenn	357	316	0	0
Humboldt *	North Coast	-	-	0	0
Imperial	Imperial	323	268	43	17
Inyo	Great Basins	-	-	-	-
Kern	Eastern Kern	213	281	0	0
Kern	San Joaquin	96	131	63	13
Kings	San Joaquin	101	118	25	7
Lake	Lake	366	365	0	0
Lassen	Lassen	N/A	No Data Yet	0	No Data Yet
Los Angeles	Antelope Valley	244	217	0	0
Los Angeles	South Coast	65	169	27	2
Madera	San Joaquin	152	180	9	2
Marin	Bay Area	365	323	0	0
Mariposa	Mariposa	239	260	0	0
Mendocino	Mendocino	366	365	0	0
Merced	San Joaquin	133	196	17	3
Modoc	Modoc	N/A	N/A	N/A	N/A
Mono	Great Basins	-	-	-	-
Monterey	Monterey	354	327	0	0
Napa	Bay Area	360	323	0	0
Nevada	Northern Sierra	259	293	0	0
Orange	South Coast	163	298	7	1
Placer	Placer	266	284	6	1
Plumas	Northern Sierra	362	No Data Yet	0	No Data Yet
Riverside	Mojave Desert	N/A	N/A	0	0
Riverside	South Coast	85	130	49	10

ATTACHMENT B (cont.)

Sacramento	Sacramento	282	264	9	4
San Benito	Monterey	333	310	0	0
San Bernardino	Mojave Desert	173	204	0	0
San Bernardino	South Coast	139	190	51	19
San Diego	San Diego	361	364	5	0
San Francisco	Bay Area	307	293	0	0
San Joaquin	San Joaquin	223	256	3	0
San Luis Obispo	San Luis Obispo	343	233	0	0
San Mateo	Bay Area	305	335	0	0
Santa Barbara	Santa Barbara	255	316	0	0
Santa Clara	Bay Area	261	304	2	0
Santa Cruz	Monterey	355	327	0	0
Shasta	Shasta	356	350	0	0
Sierra	Northern Sierra	N/A	No Data Yet	N/A	No Data Yet
Siskiyou	Siskiyou	269	No Data Yet	0	No Data Yet
Solano	Bay Area	316	312	0	0
Solano	Yolo-Solano	318	351	0	0
Sonoma	Bay Area	340	342	0	0
Sonoma	Northern Sonoma	364	365	0	0
Stanislaus	San Joaquin	190	208	16	1
Sutter	Feather River	324	352	0	0
Tehama	Tehama	332	315	0	0
Trinity *	North Coast	-	-	0	0
Tulare	San Joaquin	97	152	62	6
Tuolumne	Tuolumne	211	297	0	0
Ventura	Ventura	186	276	6	0
Yolo	Yolo-Solano	303	358	0	0
Yuba	Feather River	N/A	N/A	N/A	N/A

Data in Attachment B reflects good and unhealthy days for 2000 and 2010 for all AQI pollutants.

* No ozone data to report; did not begin measuring ozone until 2005. No exceedances of federal PM2.5 standards for last 10 years.

- Air District did not respond.