

ENCLOSURE 1

State of California

AIR RESOURCES BOARD



**RECOMMENDED
AREA DESIGNATIONS
FOR THE 2010 FEDERAL
NITROGEN DIOXIDE
STANDARDS**

Technical Support Document

January 2011

California Environmental Protection Agency



Air Resources Board

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BACKGROUND

This technical report provides Air Resources Board (ARB) recommendations on designations for the revised federal nitrogen dioxide (NO₂) standard based on air quality monitoring data for California.

On January 22, 2010, the United States Environmental Protection Agency (U.S. EPA) established a new national 1-hour NO₂ standard of 100 parts per billion (ppb) and retained the annual average standard of 53 ppb. In addition, U.S. EPA added new near-roadway monitoring requirements. The final rule was published in the Federal Register on February 9, 2010.

<http://www.epa.gov/ttn/naags/standards/nox/fr/20100209.pdf>

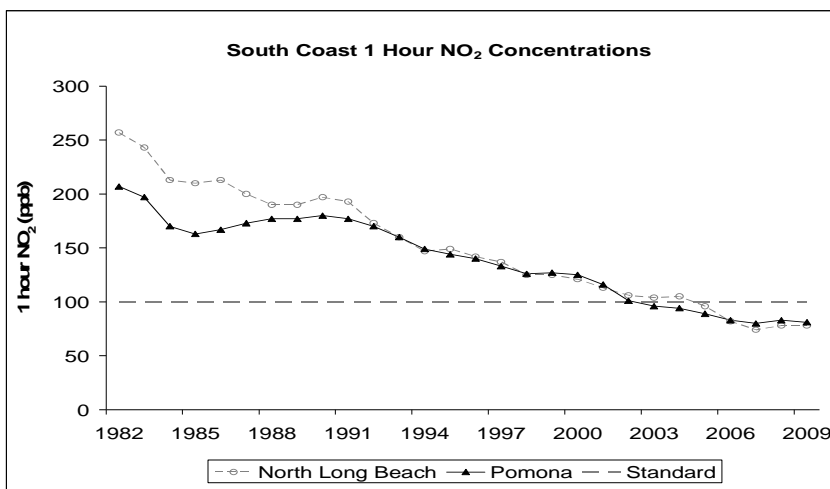
Under the Clean Air Act all states, including California, must develop recommendations for area designations and appropriate boundaries. These area designations specify the status of each area of the State with respect to compliance with the standards. These area designation recommendations are due to U.S. EPA by January 22, 2011. U.S. EPA then has one year to review these recommendations and to issue final designations by January 22, 2012.

NITROGEN DIOXIDE AIR QUALITY

The first federal NO₂ standard was established in 1971, which was an annual average NO₂ standard of 53 ppb. The federal NO₂ standard was not revised until 2010, when the new 1-hour standard of 100 ppb was added and the annual standard was retained. NO₂ is emitted into the atmosphere from combustion processes which include boilers, furnaces, utilities, and mobile sources. U.S. EPA estimates that nationally mobile sources account for 58 percent of NO₂ emissions.

California has attained the annual average standard since 1998, with current annual average NO₂ concentrations ranging from 1 to 28 ppb. In the early 1980's, 1-hour NO₂ concentrations in California were as high as 300 ppb, three times the level of the new 1-hour standard. Today, 1-hour NO₂ concentrations range from 6 to 85 ppb, well below the level of the federal 1-hour NO₂ standard. The long-term trend in 1-hour NO₂ concentrations, shown in Figure 1, shows a decline of 60 percent at two urban sites that currently measure some of the highest NO₂ concentrations (Pomona and North Long Beach). Staff expects NO₂ concentrations to continue to decline as a result of new emission control programs that will be implemented over the next decade to meet federal ozone and PM_{2.5} standards.

FIGURE I
South Coast Maximum 1-Hour NO₂ Concentration
for the Federal Standard



RECOMMENDED AREA DESIGNATIONS

ARB staff evaluated the available ambient NO₂ data to determine appropriate area designations throughout the State. The recommendations in this report are based on NO₂ air quality data collected between 2007 and 2009. The analysis was conducted for each monitoring site in the State for which data are available. Both annual average and 1-hour NO₂ concentrations were evaluated. The annual average is calculated by averaging all hourly NO₂ concentrations measured during a year. Compliance with the 1-hour standard is based on averaging the 98th percentile hourly NO₂ concentration over a 3-year period. Generally, the 98th percentile is the eighth highest 1-hour NO₂ concentration measured during a year. However, if data are incomplete, a higher value may be used, in accordance with established U.S. EPA criteria.

Based on ARB staff’s analysis, no areas in California have monitored violations of either the federal 1-hour or annual average NO₂ standards. Therefore, ARB staff is recommending that all areas with valid data be designated attainment for the revised NO₂ standards, and areas with limited or no NO₂ air quality data be designated unclassified. U.S. EPA has not yet issued guidance on determining the boundaries for attainment or nonattainment areas. In the absence of U.S. EPA guidance, our recommendations are based on a combination of district and district/county boundaries in order to maximize air quality management objectives. The NO₂ federal design values for areas recommended as attainment are listed in Table I, while areas recommended as unclassified are listed in Table II.

TABLE I
Recommended California Attainment Areas
for the Federal 1-Hour and Annual Average NO₂ Standard

<i>Designation</i>	<i>Attainment Area</i>	<i>1-hour Design Value (ppb)</i>	<i>Annual Average Design Value (ppb)</i>
Attainment	Bay Area AQMD	54	16
	Butte County AQMD	38	8
	Feather River AQMD	49	9
	Imperial County APCD	72	14
	Mendocino County AQMD	32	5
	Mojave Desert AQMD	63	16
	Monterey County – Monterey Bay Unified APCD	34	6
	Santa Cruz County – Monterey Bay Unified APCD	22	2
	Placer County APCD	53	10
	Sacramento Metropolitan AQMD	56	13
	San Diego County APCD	85	21
	San Joaquin Valley Unified APCD	61	18
	San Luis Obispo County APCD	42	7
	Santa Barbara County APCD	35	10
	Los Angeles County - South Coast AQMD portion	81	28
	Orange County – South Coast AQMD	69	21
	Riverside County – South Coast AQMD portion	63	20
	San Bernardino County – South Coast AQMD portion	74	24
	Ventura County APCD	45	11
	Yolo-Solano AQMD	36	7

TABLE II
Recommended California Unclassified Areas
for the Federal 1-Hour and Annual Average NO₂ Standard

<i>Designation</i>	<i>Unclassified Area</i>
Unclassified	Antelope Valley AQMD
	Amador County APCD
	Calaveras County APCD
	Colusa County APCD
	Eastern Kern APCD
	El Dorado County AQMD
	Glenn County APCD
	Great Basin Unified APCD
	Lake County AQMD
	Lassen County APCD
	Mariposa County APCD*
	Modoc County APCD
	San Benito County – Monterey Bay Unified APCD
	North Coast Unified AQMD*
	Northern Sierra AQMD*
	Northern Sonoma County APCD
	Shasta County AQMD
	Siskiyou County APCD
	Tehama County APCD
	Tuolumne County APCD

* These areas have incomplete data. Remaining areas have no data.

NITROGEN DIOXIDE MONITORING NETWORK REQUIREMENTS

In addition to revising the NO₂ standard, U.S. EPA also established new monitoring requirements that are oriented towards assessing the impact of emissions from mobile sources. The most significant change is the requirement for a new monitoring network to measure NO₂ concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites will be required in California. These monitors are required to be deployed by January 2013.

U.S. EPA is developing near-road monitoring guidance to address many technical issues related to deploying near-road monitors. In conjunction with the development of near-roadway guidance, U.S. EPA and the National Association of Clean Air Agencies are collaborating to conduct a near-road monitoring pilot study. The purpose of the pilot is primarily to allow U.S. EPA, state, and local air monitoring stakeholders to evaluate, improve, and document the near-road monitor siting process.

Table III shows where new near-roadway monitors will be required in California.

TABLE III
Required Near-Roadway Monitors in California for the Federal NO₂ Standard
Core Based Statistical Areas (CBSA) with a Population of 500,000 or more

Core Based Statistical Areas	County(ies)	Population	Number of Monitors
Bakersfield	Kern	800,458	1
Fresno	Fresno	909,153	1
Los Angeles-Long Beach-Santa Ana	Los Angeles, Orange	12,872,808	2
Modesto	Stanislaus	510,694	1
Oxnard-Thousand Oaks-Ventura	Ventura	797,740	1
Riverside-San Berd-Ontario	Riverside, San Bernardino	4,115,871	2
Sacramento-Arden Arcade-Roseville	Sacramento, Placer	2,109,832	2
San Diego-Carlsbad-San Marcos	San Diego	3,001,072	2
San Francisco-Oakland-Fremont	Alameda, Contra Costa, San Francisco, San Mateo, Marin	4,274,531	2
San Jose-Sunnyvale-Santa Clara	Santa Clara	1,819,198	1
Stockton	San Joaquin	672,388	1

There are also two additional monitoring requirements. First, states are required to continue operating monitors to measure community-wide exposures. There are 99 NO₂ monitors of this type in California, which far exceeds the minimum federal requirements. The second monitoring requirement will be implemented by the U.S. EPA. Working with the states, EPA Regional Administrators will specify at least 40 additional NO₂ monitors across the United States to help protect communities that are susceptible and vulnerable to NO₂-related health effects. The new monitoring data may result in a need to change area designations in the future. ARB will revise the area designation recommendations, as appropriate, once the new monitoring data becomes available.

SUMMARY

ARB has used California's air quality monitoring data to develop recommended area designations for U.S. EPA's revised NO₂ air quality standard. Currently no counties in California exceed the revised standard. All urban areas are recommended to be designated as attainment. Several rural areas are recommended to be unclassified at this time since additional data is needed to meet U.S EPA requirements for designation as attainment. U.S. EPA is expected to issue final designations by January 22, 2012. These designations may later need revision when the results of the newly required near-road monitoring are available.