

**Revision To 1996 Carbon Monoxide Maintenance Plan  
For 10 Federal Planning Areas**

**Staff Report**

**October 6, 1998**

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## EXECUTIVE SUMMARY

In response to many areas of California achieving attainment of both the state/federal carbon monoxide (CO) standard, the ARB at a public hearing conducted on August 27, 1998, approved amendments to section 2262.5 in Title 13 of the California Code of Regulations. These amendments removed the state requirement for oxygen in gasoline for certain CO attainment areas of California. The Board also directed staff to facilitate approval by the U.S. EPA in removing the wintertime oxygenate requirement for those areas from the State Implementation Plan (SIP) for Carbon Monoxide.

The ARB staff has evaluated the impacts of the Board action and have determined that CO emissions will increase by approximately 9 percent in those areas as a result of the removal of the wintertime oxygen requirement in gasoline. Staff has prepared a revision to the CO SIP which updates the original 1996 maintenance demonstration to remove the effects of the wintertime requirement for oxygen in gasoline. This revised maintenance demonstration depicts emission levels remaining well below the levels required to maintain the federal ambient CO standard even without the effects of the wintertime oxygen requirement. Staff recommends to the Board that it approve this revision and authorize the Executive Officer to transmit this SIP revision to the U.S. EPA as a revision to the State Implementation Plan for Carbon Monoxide.

## BACKGROUND

On November 6, 1991, the U.S. EPA designated the ten areas listed below as nonattainment for the federal 8-hour carbon monoxide standard of 9 parts per million (ppm) (Federal Register Vol. 56, No. 215, pp. 56723-56725).

Bakersfield Metropolitan Area	Chico Urbanized Area
Fresno Urbanized Area	Lake Tahoe No. Shore Area <sup>1</sup>
Lake Tahoe So. Shore Area <sup>2</sup>	Modesto Urbanized Area
Sacramento Area <sup>3</sup>	San Diego Area <sup>4</sup>
San Francisco-Oakland-San Jose Area <sup>5</sup>	Stockton Urbanized Area

U.S. EPA requires an area to have two consecutive calendar years of complete, quality-assured monitoring data with no violations before it can be redesignated attainment for the CO standard. The attainment demonstration must be based on representative air monitoring data collected with approved measuring instruments and procedures and with adequate quality assurance and quality control.

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<sup>1</sup> Placer County part of Lake Tahoe Air Basin

<sup>2</sup> El Dorado County part of Lake Tahoe Air Basin.

<sup>3</sup> Urbanized parts of Sacramento, Placer, and Yolo Counties.

<sup>4</sup> Western part of County only.

<sup>5</sup> Urbanized parts of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties.

ARB's emission control programs, including strict motor vehicle emission standards and the clean fuels program, have reduced carbon monoxide emissions dramatically. By 1995, the decrease in emissions had improved CO air quality enough for the ARB's air monitoring network to gather two years of clean data showing that these ten areas could be redesignated to attainment for the national 8 hour CO standard.

Section 107(d)(3)(e) of the CAA lists the following five conditions that must be met before the U.S. EPA Administrator can redesignate an area from nonattainment to attainment:

1. The area has attained the NAAQS;
2. The area has a U.S. EPA fully-approved SIP;
3. The area's improved air quality is due to permanent and enforceable emission reductions resulting from the implementation of the applicable implementation plan;
4. The area has a Maintenance Plan that meets the requirements of CAA section 175A; and
5. The area has met all the requirements in section 110 and part D of the CAA, and other applicable sections.

In 1996, a revision to the State Implementation Plan (SIP) for Carbon Monoxide was prepared titled "Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas" In this SIP revision compliance with each of the 5 criteria noted above is documented. On April 26, 1996, the Board approved this revision to the State Implementation Plan for Carbon Monoxide. On March 31, 1998 the U.S. EPA published in the Federal Register a proposal to approve California's SIP revision as a direct final rule (Federal Register Vol. 63, no. 61, pp. 15305-15312). Because U.S. EPA received no adverse comments on the proposal, the redesignation became effective on June 1, 1998.

#### 1996 Maintenance Demonstration

A required element of the plan is a maintenance demonstration showing that emission levels will remain below that required to attain the standard for at least ten years beyond the date of redesignation. Table 1, shown below as submitted in the original 1996 redesignation request, makes the required demonstration. Note that the emissions estimates in the table include the effects of the wintertime requirement for oxygen in gasoline and some of the CO contingency measures (e.g., California cleaner burning gasoline, LEV and clean fuels). The emission estimates in Table I do not reflect the benefits of the following contingency measures:

1) enhancement to basic inspection and maintenance; 2) enhanced inspection and maintenance; and 3) on-board diagnostics II. The benefits from these programs will only add to the margin of safety.

**TABLE 1**  
**CARBON MONOXIDE WINTER SEASONAL EMISSION INVENTORY TRENDS**  
**WITH THE EFFECTS OF OXYGENATED FUEL**  
**1995 ATTAINMENT YEAR**  
**(TONS PER DAY)<sup>1</sup>**

CO NONATTAINMENT AREA	1995 <sup>2</sup>	2000	2005	2010
Bakersfield <sup>3</sup>	348	329	304	286
Chico	183	167	155	153
Fresno	414	362	328	321
Lake Tahoe North Shore	26	22	19	18
Lake Tahoe South Shore	86	76	66	64
Modesto	270	239	216	212
Sacramento Area <sup>4</sup>	971	822	690	635
San Diego	1345	1062	904	832
San Francisco-Oakland-San Jose <sup>5</sup>	2786	2268	1896	1716
Stockton	380	334	297	285

<sup>1</sup> ARB 1993 base year emission inventory (10/3/95 run date--based on EMFAC7F). Except where noted, emissions data reflect county totals.

<sup>2</sup> Attainment year cap.

<sup>3</sup> Reflects corrected Kern County emission inventory (1/29/96 run date).

<sup>4</sup> Combined emission inventory for Sacramento, Placer, and Yolo Counties.

<sup>5</sup> Emission inventory for San Francisco Bay Area Air Basin.

### Contingency Measures In The 1996 Plan

Maintenance plans for attainment areas must include contingency provisions, or extra measures beyond those needed for attainment, to offset any unexpected increase in emissions and ensure that the standard is maintained. Typically, contingency measures are held in reserve and implemented only if an area violates the standard in the future. However, California's on-going motor vehicle program created a unique situation and allowed ARB to offer, as contingency, several regulations that have been, or will be implemented regardless of monitored CO levels. Table 2 shows adopted ARB measures with multi-pollutant benefits which will "come on line" from 1996 through 2003. These measures will continue to generate new reductions in CO emissions above and beyond those needed for attainment. These measures provide sufficient reductions in future years to guarantee an ample margin of safety to ensure maintenance of the standard and to provide adequate additional reductions to cover the contingency requirements.

**TABLE 2**  
**CONTINGENCY MEASURES**

Implementation Date(s)	Regulation
1996	Improved Basic Inspection and Maintenance Program (Bay Area, Chico, North and South Shore Lake Tahoe <sup>1</sup> )
1996	Enhanced Inspection and Maintenance Program (Bakersfield, Fresno, Modesto, Sacramento Area <sup>2</sup> , San Diego, Stockton)
1996	On-Board Diagnostics II (Statewide)
1996	California Cleaner-Burning Gasoline (Statewide)
1997	Off-Highway Recreational Vehicles (Statewide)
1999	Lawn and Garden Equipment - Tier II (Statewide)
1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003 and later	Low-Emission Vehicles and Clean Fuels - Post 1995 Standards (Statewide)

<sup>1</sup> Program applies to change of ownership only.

<sup>2</sup> Pilot program implemented in 1995.

**Board Action To Rescind The Wintertime Oxygen Requirement**

In February 1998, a broad range of California refinery operators requested that the ARB consider several changes and additions to the California Reformulated Gasoline regulations to provide refiners with more compliance flexibility. Among these changes and additions was a request to rescind the wintertime oxygen requirement in gasoline.

At a public hearing conducted on August 27, 1998, the Board adopted amendments to section 2262.5 in Title 13 of the California Code of Regulations which removed California's requirement for oxygen in wintertime gasoline. The rescission of the minimum oxygen content in winter gasoline applies to all of the state except the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. The rescission took effect upon approval by the Office of Administrative Law except in Fresno and Madera Counties and in Lake Tahoe where it will take effect in 2001. It should be noted that two additional areas of California (Sacramento and San Diego) will still, however, realize the benefits of oxygenates in gasoline due to Federal Reformulated Gasoline (Federal RFG) requirements for ozone nonattainment areas with a classification of "severe" and above. The ARB staff has evaluated the impacts of this Board action and has determined that emissions of carbon monoxide will increase about 9 percent over levels estimated in the original maintenance demonstration, but will continue to remain well below levels required to maintain the carbon monoxide standard.

## Revision Of The Maintenance Demonstration

As noted above, the maintenance demonstration in the original plan incorporates the effects of the wintertime requirement for oxygen in gasoline. Table 3 represents an update to the maintenance demonstration as required by section 110 of the Clean Air Act, and reflects the results of the Air Resources Board action to remove the wintertime oxygen requirement for gasoline. Emissions of carbon monoxide from motor vehicles have been increased by approximately 9 percent in future years for all areas, which removes the effect of the wintertime oxygen requirement.

As previously mentioned, the Sacramento and San Diego areas will continue to experience the benefits of oxygenates as a result of Federal RFG. However, the emission estimates in Table 3 for those two areas, as well as the two areas for which the ARB is delaying the elimination of the wintertime oxygen requirement (Fresno and Lake Tahoe), assume no benefit of oxygenated fuels whatsoever. In other words, the emission estimates in Table 3 assume a “worst case” scenario in which Federal RFG requirements would not apply, and no oxygenates would be used in gasoline in any of the ten areas. As demonstrated here, emission levels will remain well below the levels in the attainment year for all CO nonattainment areas. As a point of clarification, the forecasted CO inventory demonstrating the maintenance of the CO standard in the future years incorporates the benefits of four of the seven contingency measures listed in the CO Maintenance Plan. The contingency measures for which emission reduction benefits are not accounted for in future years include the following: 1) enhancement to basic inspection and maintenance; 2) enhanced inspection and maintenance; and 3) on-board diagnostics II. The benefits from these programs will only add to the margin of safety.

It should be noted that if pending federal legislation is enacted which eliminates the federal oxygenate requirement for gasoline for those affected areas and when the two year delay in rescinding the requirement in Fresno and Lake Tahoe come about, this demonstration shows that those regions will still be able to demonstrate attainment and maintenance of the federal CO ambient air quality standard. This possible future action would in no way jeopardize attainment and maintenance of the CO standard in California.

**TABLE 3  
CARBON MONOXIDE WINTER SEASONAL EMISSION INVENTORY TRENDS  
WITHOUT THE EFFECTS OF OXYGENATED FUEL  
1995 ATTAINMENT YEAR  
(TONS PER DAY)**

CO NONATTAINMENT AREA	1995 <sup>2</sup>	2000	2005	2010
Bakersfield <sup>3</sup>	348	346	318	298
Chico	183	173	160	157
Fresno	414	382	343	335
Lake Tahoe North Shore	26	23	20	19
Lake Tahoe South Shore	86	80	69	67
Modesto	270	251	225	220
Sacramento Area <sup>4</sup>	971	873	727	665
San Diego	1345	1132	958	877
San Francisco-Oakland-San Jose <sup>5</sup>	2786	2398	1988	1789
Stockton	380	351	310	296

<sup>1</sup> ARB 1993 base year emission inventory (10/3/95 run date--based on EMFAC7F). Except where noted, emissions data reflect county totals.

<sup>2</sup> Attainment year cap

<sup>3</sup> Reflects corrected Kern County emission inventory (1/29/96 run date).

<sup>4</sup> Combined emission inventory for Sacramento, Placer, and Yolo Counties.

<sup>5</sup> Emission inventory for San Francisco Bay Area Air Basin.

There are no changes proposed to the original contingency measures listed previously in Table 2. These implemented measures, coupled with continued fleet turnover, ensure that emission reductions will continue to be more than enough to maintain the standard even with the increase in emissions due to the removal of the wintertime oxygen requirement in gasoline. In addition, the ARB commits to tracking ambient levels of carbon monoxide and to periodically assess the need to reinstate the wintertime oxygen requirement for gasoline.

### Transportation Conformity Requirements

CAA section 176(c) requires federally-supported transportation activities to be consistent with the SIP. This requirement is referred to as conformity. Transportation plans, programs, and projects must not cause or worsen violations of federal air quality standards, or impede attainment or maintenance of those standards. Moreover, transportation agencies must show that emissions from proposed regional transportation systems will not exceed the emissions attributed to on-road mobile sources in submitted implementation plans.

Metropolitan Planning Organizations and the U.S. Department of Transportation demonstrate that proposed transportation plans and programs are consistent with the SIP by showing that emissions associated with these plans and programs do not exceed applicable carrying capacities or "emission budgets."



The ARB action to remove the wintertime oxygen requirement in gasoline does not impact the CO emission budgets because the emission estimates are those in the attainment year. The conformity demonstrations performed by Metropolitan Planning Organizations and project sponsors will incorporate future year emissions estimates that do not reflect the impact of the wintertime requirement for oxygen in gasoline.

The budgets in Table 4 are derived from the on-road motor vehicle emission inventory for CO in the attainment year for each county, and are identical to Table 10 in the original CO Maintenance Plan.

**TABLE 4**  
**ON-ROAD CARBON MONOXIDE EMISSION BUDGETS**

CO NONATTAINMENT AREA	EMISSIONS BUDGET <sup>1</sup> (TONS/DAY)
Bakersfield (Kern Co.) <sup>2</sup>	223
Chico (Butte Co.)	100
Fresno (Fresno Co.)	296
Lake Tahoe North Shore	21
Lake Tahoe South Shore	63
Modesto (Stanislaus Co.)	177
Sacramento Urbanized Area <sup>3</sup>	780
San Diego (San Diego Co.)	1195
San Francisco Bay Area <sup>4</sup>	2193
Stockton (San Joaquin Co.)	261

<sup>1</sup> Emission budgets represent ARB's seasonal on-road motor vehicle emission inventory, MVEI7F; 1993 base year.

<sup>2</sup> Reflects corrected Kern County emission inventory (1/29/96 run date).

<sup>3</sup> Combined budgets for Placer (Sacramento Valley Air Basin portion), Sacramento, and Yolo Counties.

<sup>4</sup> Combined budgets for all nine counties in the San Francisco Bay Area Air Basin.

### Environmental Impacts

The environmental impacts of the amendments to Title 13 of the California Code of Regulations removing the wintertime oxygen requirement in gasoline are addressed in the Staff report accompanying the August 27, 1998, Board action. (Proposed Amendments to the California Cleaner-Burning Gasoline Regulations, pp. 15-16). Because this SIP revision simply revises the maintenance demonstration to reflect the impact of the amended regulations, there are no environmental impacts associated with this plan update.

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