Northern Ada County Air Quality Maintenance Area Second 10-Year Carbon Monoxide Limited Maintenance Plan

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Table of Contents

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1. Introduction

The Clean Air Act requires that an area redesignated from nonattainment to maintenance submit to the Environmental Protection Agency (EPA) a plan for maintaining the National Ambient Air Quality Standards (NAAQS) for a second 10-year period. This Northern Ada County limited maintenance plan was prepared by the Idaho Department of Environmental Quality (DEQ) for inclusion into the Idaho State Implementation Plan (SIP) and will serve as the second 10-year maintenance plan for the Northern Ada County carbon monoxide (CO) maintenance area. The plan demonstrates that Northern Ada County will maintain the CO standard for a second 10-year period following the expiration of the first plan.

2. Background - Nonattainment Designation and Redesignation to Attainment

Northern Ada County (Boise), Idaho, was designated nonattainment for CO and classified as "not classified" upon enactment of the Clean Air Act (CAA) Amendments in 1990 based on violations of the 8-hour CO NAAQS. In January 2002, DEQ submitted a *Limited Maintenance Plan and Request for Redesignation to Attainment for the Northern Ada County Carbon Monoxide Not-Classified Nonattainment Area* to the EPA to support redesignation of the area to attainment status. The plan was approved in December 2002 and the area reclassified to attainment for CO[1].

CO levels in Ada County have dropped since the 1970s due initially to the Vehicle Inspection and Maintenance (I/M) program and subsequently to federal vehicle emissions standards. In addition, efforts to increase the use of alternative transportation, as well as improvements in traffic flow in downtown Boise, have reduced congestion and minimized opportunities for CO pollution to build up in hotspot areas. The last exceedance of the NAAQS for CO in Northern Ada County was in January 1991. No violations (more than one exceedance of the standard in a single year) have been recorded since 1986.

3. Maintenance Area Description

The Northern Ada County Maintenance Area consists of only the portion of Ada County that is north of the Boise baseline (43 degrees north latitude) as shown in Figure 1.

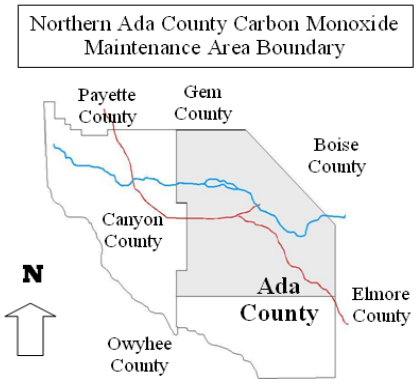

Figure 1 – Map of Northern Ada County CO Maintenance Area (Shaded Area).

[1] Approval and Promulgation of Air Quality Implementation Plans; State of Idaho; Northern Ada County Carbon Monoxide Redesignation to Attainment. 67 Fed Reg. 65713-65718, October 28, 2002. Available at: http://yosemite.epa.gov/r10/airpage.nsf/283d45bd5bb068e68825650f0064cdc2/e2ab2cc6df433b8688256b2f00800ff8/$FILE/67%20FR%2065713.pdf

South of the baseline the land is largely unpopulated and is primarily managed by federal agencies such as the Bureau of Land Management and the Idaho National Guard.

To the east and north, the Boise front blocks movement of air and pollution between Ada County and neighboring Boise, Elmore, and Gem Counties.

Canyon County is located on the western edge of the maintenance area is populated and has sources of carbon monoxide.

The legal description for the maintenance area can be found in Appendix A.

4. Requirement for Second Maintenance Plan

Section 175A of the CAA Amendments requires redesignated areas to submit a second maintenance plan to EPA eight years after the first plan has been approved. The second plan must demonstrate continued compliance with the NAAQS during the 10-year period following expiration of the first plan. As with the first Northern Ada County CO 10-Year Limited Maintenance Plan, this second plan qualifies for the limited maintenance plan option in accordance with the October 6, 1995, EPA memorandum, "Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas," from Joseph W. Paisie, Group Leader, Integrated Policy and Strategies Group (hereafter "the Paisie Memo"; see Appendix B – References Cited). Specific criteria and compliance methods are discussed in the following section.

5. Limited Maintenance Plan Option

As required by the limited maintenance plan option, the core provisions to be included in a limited maintenance plan for CO nonclassifiable areas are an attainment inventory, a maintenance demonstration, continued operation of a monitoring network, a contingency plan, and conformity determinations.

5.1 Attainment Year Emissions Inventory

In accordance with the Paisie Memo, Idaho is advised to provide an emissions inventory that *"should represent emissions during the time period associated with the monitoring data showing attainment. The inventory should be based on actual "typical winter day" emissions of CO."*

A comprehensive emissions inventory has been completed for carbon monoxide for 2008. The emissions inventory includes Ada County in its entirety, as opposed to just the Northern Ada County Maintenance Area. This is a more conservative approach that meets the maintenance plan requirements, while supporting the "airshed management" approach used by DEQ. The emissions inventory is attached as Appendix C. Table 1 shows the 2008 annual as well as average winter day carbon monoxide emissions for the maintenance area. The average winter day season used was calculated from November 1 through February 29, 2008 (2008 was a leap year).

Table 1. 2008 Ada County Carbon Monoxide Emissions – Annual and Average Winter Day Emissions (*2008, 2015, and 2023 Emissions Inventories for the Treasure Valley Airshed*)

Source	2008 Annual Emissions		2008 Average Winter Day Emissions	
	Tons Per Year	Percent of Total	Tons Per Day	Percent of Total
Point Sources	198.5	.2	0.5	.2
Major Point Sources w/in 25 miles	862.4	1.1	4.2	1.6
Area Sources	7,715.1	9.5	49.7	18.8
On-Road Mobile	45,574.2	55.9	146.1	55.2
Non-Road Mobile	24,870.5	30.5	62.5	23.6
Total Anthropogenic	**79,220.7**		**263.0**	
Biogenic	2,246.5	2.8	1.5	.6
Total	**81,467.2**		**264.5**	

A. Point Sources

The emissions inventory developed for Ada County is a multi-pollutant inventory. To capture all pollutants and all facilities, facilities were divided into point or area sources based on emissions of all pollutants. If a facility exceeds a defined point for any pollutant, it is included as a point source for all pollutants. The Treasure Valley Emissions Inventory defines point sources as any facility emitting greater than any of the following thresholds: 5 tons per year of PM_{10}, $PM_{2.5}$, SO_x, or NH_3; 10 tons per year of volatile organic compounds; or 25 tons per year of NO_x or CO. Therefore, facilities were included in the point source category for CO if they exceeded the limit for any pollutant.

To be consistent with the approved December 2002 maintenance plan and included emissions inventory, facilities that emit in excess of 100 tons per year of CO and are within a 25-mile radius of the maintenance area, but are not within the maintenance area boundaries, are included in the CO inventory for Northern Ada County. These facilities are included in a separate line item in Table 1. This adds an additional 862.4 tons per year or 1.1% of the total to the CO emissions for the maintenance area. In total, point sources accounted for 1,060.9 tons per year or 1.3% of the CO emissions.

B. Area Sources

In the *Handbook for Criteria Pollutant Inventory Development: A Beginner's Guide for Point and Area Sources*, the EPA describes area sources as "facilities or activities whose individual emissions do not qualify them as point sources. Area sources represent numerous facilities or activities that individually release small amounts of a given pollutant, but collectively they can release significant amounts of a pollutant." For the purposes of this emission inventory, area sources are defined as those sources emitting annual emissions less than the point source thresholds. Area sources accounted for 7,715.1 tons per year or 9.5% of the annual total.

C. On Road Mobile Sources

Motor vehicles remain the largest carbon monoxide source in the maintenance area, accounting for 55.9% of the annual total and 55.2% of the average winter day emissions. On-road mobile source emissions were estimated using vehicle miles traveled (VMT) data and emissions factors from EPA's MOBILE6 vehicle model using outputs from the Community Planning Association

(COMPASS) transportation demand model (TDM). COMPASS is the metropolitan planning organization (MPO) for Northern Ada County and the Treasure Valley.

D. Non-Road Mobile Sources

Non-road mobile sources encompass a wide variety of equipment that either move under their own power or are capable of being moved from site to site. Non-road mobile equipment sources not licensed or certified as highway vehicles are defined as those that move or are moved within a 12-month period and are covered under EPA's emissions regulations as non-road mobile sources. The three types of non-road mobile sources are non-road equipment, locomotives, and aircraft. Non-road mobile sources accounted for 30.5% of the annual and 23.6% of the average winter day carbon monoxide emissions.

5.2 Maintenance Demonstration

In accordance with the Paisie Memo *"The maintenance demonstration requirement is considered to be satisfied for nonclassifiable areas if the monitoring data show that the area is meeting the air quality criteria for limited maintenance areas (7.65 ppm or 85% of the CO NAAQS.....The EPA believes if the area begins the maintenance period at or below 85 percent of exceedances levels, the air quality along with the continued applicability of PSD requirements, any control measures already in the SIP, and Federal measures, should provide adequate assurance of maintenance over the initial 10-year maintenance period."* All of these criteria have been met in the Northern Ada County carbon monoxide maintenance area.

A. Air Quality Criteria

The last exceedance of the NAAQS for CO was in January 1991; however, no violation of the NAAQS occurred at that time. No violations (more than one exceedance of the standard in a single year) have been recorded since 1986. Current CO levels are well below the 8-Hour NAAQS of 9 ppm, with a 2008 design value of 2.9, or 32.2% of the NAAQS. Additionally, as illustrated in Figure 2, the maintenance area has shown a generally declining trend in the ambient eight-hour concentrations over the past several years.

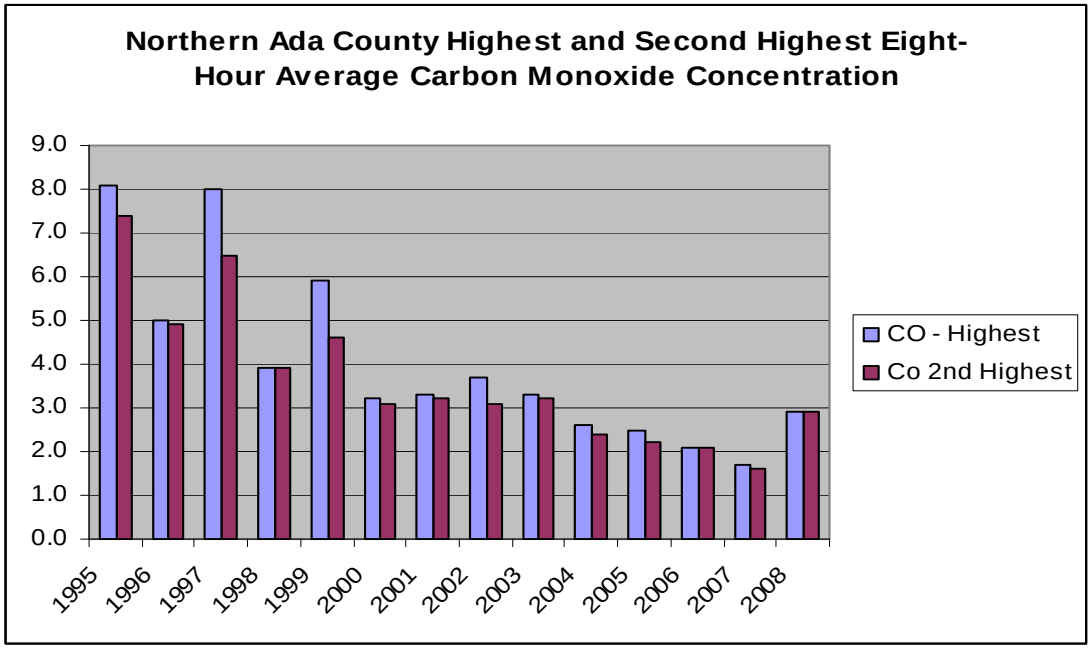

Figure 2 – Northern Ada County Carbon Monoxide Trend

Design value is based on the second highest non-overlapping running eight-hour ambient carbon monoxide concentrations measured in eight consecutive quarters (two years of data). The method for calculating design values is presented in the June 18, 1990, EPA memorandum "Ozone and Carbon Monoxide Design Value Calculations," from William G. Laxton, former director of the OAQPS Technical Support Division to Regional Air Directors (see *Appendix B – References Cited)*. 2007 and 2008 data are used for this maintenance plan. These years are representative of current emissions levels. Design values for the last five years are presented in Table 2.

Table 2. 2nd Max, 8-Hour Monitored CO Values

Year	2nd Max Value
2004	2.4 ppm
2005	2.2 ppm
2006	2.1 ppm
2007	1.6 ppm
2008	2.9 ppm

Source: U.S. EPA Air Quality System Quick Look Report – see Appendix D.

As shown in Table 2, the highest 2nd Max value of 2.9 ppm is well below the 7.65 ppm threshold established for the limited maintenance plan option and significantly below the eight-hour NAAQS of 9 ppm.

B. Maintenance Plan Control Measures

The control measures included in the initial Northern Ada County maintenance plan will be continued in the second 10-year maintenance plan.

1. Federal Motor Vehicle Emissions Control Program

A significant reduction in carbon monoxide emissions can be attributed to the federal motor vehicle emissions control program. Emissions standards for motor vehicles are established under Title II of the Clean Air Act. As newer vehicles replace older, more polluting vehicles, these standards will continue to have an increasing role in reducing carbon monoxide emissions. This program is federally enforced.

2. Controls on Stationary Sources

Idaho has a federally approved New Source Review Program, including a Prevention of Significant Deterioration program. Major sources that are new or are undergoing major modifications will continue to be required to undergo Prevention of Significant Deterioration review, which includes requirements for Best Available Control Technology. New minor sources or sources undergoing minor modifications must obtain a Permit to Construct, which includes provisions to ensure protection of the NAAQS.

3. *Ada County Vehicle Inspection and Maintenance (I/M) Program*

Vehicles registered in Ada County are required to pass an emissions test or face revocation of registration.

Under local ordinances emissions testing is mandatory in Ada County, the cities of Boise, Meridian, Garden City, and Eagle. Modifications enacted between July 2000 and January 2001 have made the I/M Program even more effective. Changes include:

- Lowering the carbon monoxide cut-point, or allowable percentage

- Adding a standard for hydrocarbon emissions
- Modifying the waiver policy so initial waivers can be issued only after at least $300 in repair work has been done on the vehicle
- Adding diesel vehicles to the list of vehicles required to pass an emissions test
- Expanding the test from idle only to a two-speed test conducted at both idle and at 2,500 revolutions per minute
- Eliminating the test and repair option for test stations and their owners.
- Stations are no longer permitted to offer repair services to correct emissions.

These improvements were not required by the Air Quality Improvement Plan.

Although the I/M Program is currently operated under local ordinances, the Idaho State Constitution authorizes the legislature to impose rules relating to motor vehicles.

State legislation passed by the 2008 legislature will impact implementation of I/M programs in Idaho in the future. Idaho Code § 39-116B mandates a vehicle emission testing program, or a program that results in equivalent motor vehicle emission reductions if the following triggers are met: the design value of any criteria pollutant exceeds 85% of a NAAQS and motor vehicles constitute one of the top two sources of that pollutant. Based on the ozone design value exceeding 85% of the NAAQS, and motor vehicles being one of the top two sources of ozone precursors, these triggers have been met in the Treasure Valley and as a result, an emission testing or equivalent program is now mandated in Ada County by state law, in addition to the local ordinances previously relied upon to mandate the program. Also as a result of the 2008 state law, an I/M program requiring biennial testing was implemented in adjacent Canyon County in June 2010. While not federally mandated or included as a control measure in the State Implementation Plan (SIP), this program is expected to provide additional air quality benefits for the Northern Ada County Maintenance Area.

The current I/M testing in Ada County will continue, but to ensure consistency with existing or future potential I/M programs administered under state law and rules, frequency of testing will be adjusted to biennial. The move to biennial testing was addressed in Appendix B1 of the 2002 approved CO Maintenance Plan for Northern Ada County which stated, *"Moving from annual to biennial (every other year) testing was planned to begin in July of 2000. The Emissions Inventory for the Northern Ada County Carbon Monoxide Limited Maintenance Plan reflects this change. The Mobile 5b model used to estimate emissions interprets this change to result in slightly increased carbon monoxide emissions, as vehicles with excessive emissions would potentially not be repaired as often."* The switch to biennial testing is also supported by the CO Emissions Inventory for the Treasure Valley (see Appendix C).

The new testing protocol in effect in Ada County is as follows:

- Testing is required biennially
- Vehicles from model year 1981 to 1995 are tested using the tailpipe/exhaust (TSI) method
- Vehicles from model year 1996 and newer are tested using the OBD II method
- First five model years are exempt from testing
- All cut-points will remain unchanged

See appendix E - *Description of Ada County Vehicle Inspection and Maintenance Program* for links to rules and ordinances related to and requiring emissions testing.

5.3 Monitoring Network /Verification of Continued Attainment

In accordance with the Paisie Memo*"…the maintenance plan should contain provisions for continued operation of an appropriate, EPA-approved air quality monitoring network, in accordance with 40 CFR Part 58."*

Ambient CO concentrations continue to be low, with a current design value of 32% of the NAAQS. With monitoring data used as the triggering mechanism, DEQ will continue to closely track CO concentrations and to verify continued attainment via the approved monitoring network operated in accordance with 40 CFR Part 58.

5.4 Contingency Plan

In accordance with the Paisie Memo *"Section 175A of the Clean Air Act requires that a maintenance plan include contingency provisions as necessary, to promptly correct any violation of the NAAQS that occurs after redesignation of the area. These contingency measures do not have to be fully adopted at the time of redesignation. … The State should also identify specific indicators, or triggers, which will be used to determine when the contingency measures need to be implemented."*

A. Contingency Measure Triggering Protocol

Implementation of carbon monoxide contingency measures will be triggered under the following two circumstances: (1) immediately upon any exceedance of the Carbon Monoxide NAAQS, based on quality assured data, recorded at any site within the maintenance area or (2) if quality assured monitoring data show non-overlapping eight-hour average carbon monoxide concentrations of 8.0 ppm on four or more days within a single winter season (November through March) within the maintenance area.

B. Contingency Measures

If either of these two triggers is activated, DEQ will initiate one of the following contingency measures:

(1) Oxygenated Fuels Program

DEQ will promulgate a rule through the Board of Environmental Quality requiring all gasoline fuels dispensed in the maintenance area to contain ethanol at a minimum of ten percent (10%) by volume.

(2) Alternative EPA-Approved Contingency Measure

DEQ understands EPA is reviewing the effectiveness of oxygenated fuels as a carbon monoxide reduction measure and may provide guidance on more effective alternative contingency measures for carbon monoxide reduction. Should a more effective EPA-approved contingency measure become available DEQ will negotiate and implement the alternative.

5.5 Conformity

In accordance with the Paisie Memo *"…In areas with approved limited maintenance plans, Federal actions requiring conformity determinations under the transportation conformity rule could be considered to satisfy the "budget test" required in sections; 93.118, 93.119 and 93.120 of the rule. Similarly, in these areas, Federal actions subject to the general conformity rule*

could be considered to satisfy the "budget test" specified in section 93.158(a)(5)(i)(A) of the rule."

A. Transportation Conformity

Although a budget test is not required, EPA has not precluded states and local agencies from satisfying other requirements of the conformity process. For transportation conformity, components of the conformity process include analysis of hotspots, consultation on applicable actions, and implementation of any Transportation Control Measures specified in state and federal transportation conformity rules.

As identified in 40 CFR 93.105, the lead transportation planning agency is responsible for demonstrating compliance with transportation conformity requirements. The lead transportation agency in Ada County is COMPASS, the metropolitan planning organization. COMPASS will oversee transportation conformity determinations of the Interagency Consultation Committee (ICC), a group of representatives of state and local transportation agencies, the state air quality agency, Department of Transportation (DOT) and EPA, as specified in 40 CFR 93.105 (51.402) and the Idaho Transportation Conformity Rule located in the Rules for the Control of Air Pollution in Idaho, IDAPA 58.01.01.563 through 574. The ICC is responsible for overseeing development of conformity analyses. The Idaho Transportation Conformity Rule was finalized on April 12, 2001. This rule adopts by reference portions of 40 CFR Part 93, Subpart A, Section 100-129 (see *Appendix F - Rules Establishing State Authority*).

DEQ will continue use of the build/no-build analysis conducted by COMPASS. This analysis will be used for planning purposes, future emission analyses, and as assurance that transportation activities will not lead to carbon monoxide emissions that could contribute to exceedances of the NAAQS. If the build scenario is larger than no-build, the next test step for determining conformity will be to compare the build scenario to 1990 emissions, as allowed by the conformity rule under 40 CFR Part 93.119(c)(ii). If the build scenario is below 1990 emissions, conformity is demonstrated.

Regionally significant projects are also subject to conformity analysis.
The ICC has developed the following definition of a "Regionally Significant" project:

A transportation project in Ada County, Idaho is designated "Regionally Significant" if:

(a) the project is for the improvement of either:

(i) a principal arterial or higher functional classification; or

(ii) a minor arterial which will have a twenty (20) year projected traffic volume of at least 45,000 vehicles a day after completion of the project; and

(b) the project will add at least one new continuous vehicular lane which either:

(i) extends from one intersecting principal or minor arterial to another intersecting principal or minor arterial; or

(ii) in the case of an interstate, extends from the on ramp of one interstate interchange to a point beyond the off ramp of the next adjacent interstate interchange.

This definition is based on the federal definition of regional significance, as specified in 40 CFR 93, and takes into account local features. This definition is a dynamic process that may change as conditions change. COMPASS is the designated contact for the most current definition.

For any transportation plans, programs, or projects that meet these criteria, the ICC will conduct an analysis to determine if the action could cause or contribute to an exceedance of the carbon monoxide NAAQS. The analysis will be conducted according to procedures specified in 40 CFR 93.100-182. For any regionally significant plans, programs, or projects that show potential carbon monoxide concentrations exceeding the standards, mitigation measures will be required.

B. General Conformity

Although a budget test is not required, EPA has not precluded states and local agencies from satisfying other requirements of the general conformity process. For any new projects or actions identified in 40 CFR 93.150, the federal agency overseeing the project is responsible for conducting a conformity analysis. DEQ will provide guidance to the federal agency to ensure compliance is achieved. IDAPA 58.01.01.123 authorize DEQ to require responsible agencies to provide certified information about the project. Agencies are advised to begin to work with DEQ during early stages of planning to determine the expected quantity of carbon monoxide emissions. If expected carbon monoxide emissions are greater than or equal to 100 tons per year, the deminimus threshold analysis specified in 40 CFR 51.853 must be conducted to determine the magnitude of emissions and impact on carbon monoxide concentrations. This analysis must be conducted according to procedures specified in 40 CFR 93.158. If necessary, mitigation measures must be applied as specified in 40 CFR 93.160. DEQ will review and comment on conformity determinations.

6. Conclusion

DEQ has shown that the Northern Ada County CO Maintenance Area has stayed well below the NAAQS for CO, and that there is little risk of future NAAQS violations. Having met all criteria for the Second 10-year maintenance plan, DEQ asks EPA to approve this Second 10-year CO Limited Maintenance Plan for the Northern Ada County CO Maintenance Area.