Draft

The Missoula County Carbon Monoxide Redesignation Plan

Prepared for the Missoula City-County Air Pollution Control Board
By the Missoula City-County Health Department

Draft
Shannon Therriault, Air Quality Specialist
September 23, 2003

Draft

Return written comments by day, date to:
Shannon Therriault
Missoula City-County Health Department
301 West Alder
Missoula, Montana 59802
therriaults@ho.missoula.mt.us

The Missoula City-County Air Pollution Control Board
will hold a Public Hearing on this document
date
place
address
time

If you would like to be added to the Interested Parties list for air quality information, please contact Shannon Therriault at 258-4755 or therriaults@ho.missoula.mt.us

Draft

Table of Contents

List of Acronyms and Abbreviations

AIRS – Aerometric Information Retrieval System
ARM – Administrative Rules of Montana
BER – the Montana Board of Environmental Review
CAA – the federal Clean Air Act
CAAA – the federal Clean Air Act Amendments of 1990
CFR – Code of Federal Regulations
CO – Carbon Monoxide
COHb – Carboxyhemoglobin
Control Board – The Missoula City-County Air Pollution Control Board
CMAQ – Congestion Mitigation and Air Quality
DEQ – the Montana Department of Environmental Quality
DHES – the Montana Department of Health and Environmental Science (predecessor to DEQ)
EPA – the United States Environmental Protection Agency
EI – Emission Inventory
FMVECP – the Federal Motor Vehicle Emissions Control Program
FR – Federal Register
MCA – Montana Code Annotated
MCCAPCP – the Missoula City-County Air Pollution Control Program
MCCHD – the Missoula City-County Health Department
MPO – Metropolitan Planning Organization
MTBE – Methyl Tertiary Butyl Ether
NAAQS – National Ambient Air Quality Standards
PPM – Parts per Million
PSD – Prevention of Significant Deterioration
RACM – Reasonably Available Control Measures
RWB – Residential Woodburning
SIP – State Implementation Plan
SLAMS – State and Local Air Monitoring Stations
TTAC - Transportation Technical Advisory Committee
U.S.C. – the United States Code

Introduction

1. National Ambient Air Quality Standards for Carbon Monoxide

On April 30, 1971, the United States Environmental Protection Agency (EPA) established two National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO), a rolling 8-hour average concentration of 9.0 parts per million (ppm) and a 1-hour concentration of 35 ppm.[1] Because Missoula has never recorded an exceedance of the 1-hour standard, only the 8-hour standard is addressed in this document. The 8-hour CO NAAQS allows for not more than one exceedance of the standard in each calendar year. A violation occurs when two non-overlapping exceedances of the 8-hour standard are recorded during the calendar year.

The Clean Air Act (CAA) guides how the NAAQS are established, reviewed and revised by EPA. Section 109(b)(1) of the CAA, defines primary standards as "ambient air quality standards the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health." As a result, the Administrator sets a standard that will protect the most sensitive sub-population from adverse effects. The air quality criteria are to reflect the latest scientific information useful in indicating the kind and extent of all identifiable effects on public health or welfare that may be expected from the presence of the pollutant in ambient air.[2]

2. Health Effects of Carbon Monoxide

Carbon monoxide is a colorless, odorless, tasteless, non-irritating gas that enters the body through the lungs where it is absorbed by the bloodstream. It combines with hemoglobin in the red blood cells, creating carboxyhemoglobin (COHb). Hemoglobin normally picks up oxygen from the lungs and carries it to the tissues. However, CO is able to attach to hemoglobin 200-230 times as readily as oxygen. As a result, when CO is present, it outcompetes the oxygen and reduces the amount of oxygen the red blood cells can supply to the body. Compounding the effects of exposure is the long half-life (about 5 hours) of COHb in the blood. As a result, the amount of oxygen being distributed throughout the body is reduced, even after exposure has ended.

The health effects of CO exposure depend on the amount and length of exposure, as well as the individual's health condition.[3] Exposure to higher levels of CO can cause headaches, dizziness, nausea and difficulty concentrating. Other effects include fatigue, loss of visual acuity and mental confusion. At high enough levels, CO can cause disorientation, unconsciousness, and even death.

At the lower levels more commonly associated with ambient air, the health effects of carbon monoxide are less well known. Studies have found that for healthy individuals, exposure to CO reduces the ability to sustain peak exercise, but it probably does not affect most people's ability

[1] US Environmental Protection Agency, "Air Quality Criteria for Carbon Monoxide" (Washington, D.C.: Office of Research and Development, EPA 600/P-99/001F, 2000, 1-2. (www.epa.gov/ncea/pdfs/coaqcd.pdf)

[2] US Environmental Protection Agency, "Air Quality Criteria" 1-1

[3] Consumer Product Safety Commission, "Carbon Monoxide Questions and Answers" (Washington, D.C.: Document #466, undated). (www.cpsc.gov/cpscpub/pubs/466.html)

to perform normal, everyday activities.[4] There are, however, subpopulations that are more negatively affected by low levels of CO.

The EPA, in the 1999 review of the CO standard, concluded that health effects of greatest concern were cardiovascular effects (1-3). Normal, healthy individuals have mechanisms to counter increased CO levels. Their bodies increase blood flow, allowing more blood and more oxygen to get to the tissues. However, many individuals with cardiovascular diseases (which includes disorders of the heart and blood vessels) have a markedly reduced circulatory capacity and lack the ability to compensate by increasing blood flow to the tissues.

Cardiovascular disease is the leading cause of death in the United States. In 2000, it caused forty percent of all deaths.[5] That same year, over sixty percent of all death certificates listed it as a primary or contributing cause of death. One in five Americans, approximately 61.8 million people, has some form of cardiovascular disease. As a result, even a small percentage increase in morbidity (illness) or mortality (death) in the population could have a large impact on public health and health care costs.

In addition to affecting those with cardiovascular disease, low levels of CO potentially affect other groups.[6] These include:

- Fetuses, whose hemoglobin has a higher affinity for CO than adults and who could be more affected by a decrease in available oxygen;
- Newborn infants, who take in more air relative to their body weight and whose blood has a lower capacity to carrying oxygen than most adults;
- Pregnant women who also take in more air and have a tendency to be anemic (which reduces the oxygen-carrying capacity of blood);
- The elderly whose ability to take up oxygen declines with age. CO exposure can further impair oxygen delivery to the tissues and limit the ability to meet daily metabolic requirements;
- People with anemia, who have low blood hemoglobin values and in some cases produce CO internally;
- Individuals with chronic obstructive pulmonary disease (for example, emphysema, bronchitis and asthma), whose lungs' ability to exchange air is impaired;
- People at high altitudes, who have not yet adapted to the lower oxygen content of the air;
- People using medicinal or recreational drugs with central nervous system depressant properties; and
- People exposed to chemical substances (such as methylene chloride), which increase internal CO production.

[4] US Environmental Protection Agency, "Air Quality Criteria" 7-5.
[5] American Heart Association, "Heart Disease and Stroke Statistics – 2003 Update" (Dallas, Texas: 2002), 5. (www.amercianheart.org)
[6] US Environmental Protection Agency, "Air Quality Criteria" 7-6 – 7-10.

Missoula Air Stagnation Zone and Carbon Monoxide Non-Attainment Area

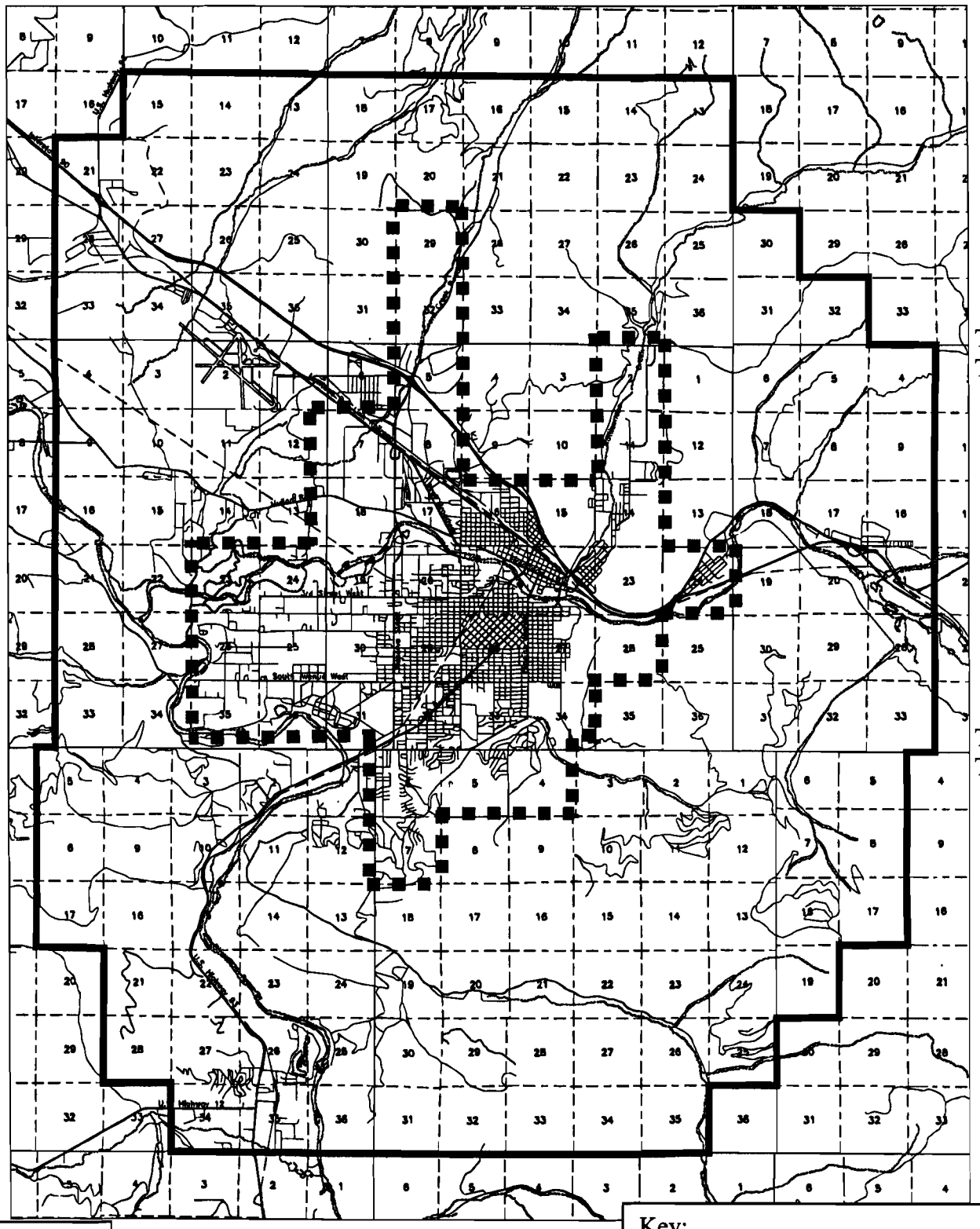


Figure 1

3. The Missoula Carbon Monoxide Non-Attainment Area Boundaries

The current boundaries of the Missoula Non-Attainment Area for Carbon Monoxide were published in the Federal Register (FR) on November 6, 1991.[7] The Non-Attainment Area, which is illustrated in Figure 1, includes the areas within the following Township, Range and Sections:

T 12, R 19, Sections 4, 5, 6, and 7;
T 13, R 19, Sections 2, 5, 7, 8, 11, 14 – 24 and 26 – 34;
T 13, R 20, Sections 23 – 26, 35 and 36; and
T 14, R 19, Sections 29 and 32.

4. Missoula's Carbon Monoxide Problem

Missoula is located in the Rocky Mountains of western Montana. The Missoula urban area, home to about 69,000 people, is situated in a deep mountain valley, with the surrounding hills rising two to three thousand feet over the valley floor. Because of Missoula's meteorology and topography, winter temperature inversions that trap pollution are common. This situation has led to Missoula, a relatively small urban area, being designated as a non-attainment area for both particulate and CO.

CO is the product of incomplete combustion of carbon-containing fuels. Typical sources include vehicles, wood-burning stoves and fireplaces, coal burning, industry, outdoor burning and wildfires. In 1970, nationally, on-road vehicles accounted for more than 68% of all CO emissions.[8] As a result, high concentrations of CO often occurred along heavily traveled roadways, especially at congested intersections. When the state was setting up its CO monitoring network in 1977, they wanted to monitor at the most congested intersection in each of the larger towns. Malfunction Junction, where three major streets, Brooks, South and Russell, come together, was the obvious choice in Missoula. That intersection had long been the site of lengthy waits and accidents. How to fix the Junction had been the subject of community debate for ten years or more.

Monitoring results from December 1977 and January 1978 showed that Missoula had a problem with CO – there were 135 exceedances of the NAAQS in 1977 and 100 more in 1978. Subsequent work showed that vehicles were the largest contributor to Missoula's CO problem, with wood burning playing a major role. The Department initially hoped that some minor intersection improvements and the Federal Motor Vehicle Emission Control Program would solve Missoula's CO problem, but exceedances of the NAAQS continued into the 1980's. Through public education and then by adopting a series of increasingly stringent regulations, Missoula worked on reducing residential wood burning (RWB) emissions (in part because of CO, but also because RWB had been identified as the largest source of particulate emissions in the valley). Missoula tried to reduce vehicle emissions by improving traffic flow through the intersection, and then, when required by the 1990 CAA, implemented an oxygenated fuel

---

[7] 56 FR 56694

[8] U.S. Environmental Protection Agency, "National Air Pollutant Emission Trends, 1900 – 1998" (Research Triangle Park, NC: Office of Air Quality Planning and Standards, EPA-454/R-00-002, 2000), 3-9. (www.epa.gov/ttn/chief/trends/trends98/chapter3.pdf)

program. The oxygenated fuel program produced dramatic results. Missoula has not recorded an exceedance of the NAAQS since the community started using oxygenated fuels in the fall of 1992.

However, in 1996, modeling of CO concentrations at the Brooks/South/Russell intersection showed there was still a potential problem.[9] Based on the worst case scenario, it was possible Missoula would violate the standard even with oxygenated fuel use and with the projected improvements in the motor vehicle fleet from the Federal Motor Vehicle Emission Control Program. As a result, the Missoula community committed to fixing the traffic congestion problem at that intersection, electing to realign South Avenue so that it no longer entered the intersection. This project will greatly reduce delays at the intersection and allow for the synchronization of traffic lights along Brooks Street. This will ease congestion at other intersections along the corridor as well. Modeling shows that with the realignment of South Avenue, Missoula will not violate the CO standard under worst-case conditions at any location around the intersection.

In a 1992 study by Benjamin Schmidt, the Department looked at other potential hot-spots around town.[10] The study showed that Brooks/South/Russell had the highest CO readings, thereby affirming Missoula's focus on that intersection. While other intersections are also congested, none are the confluence of three major streets, with their associated lines of idling vehicles. The built environment, which limits the dispersion of CO and the relative proximity to areas with residential wood burning are other factors that increase CO levels at that intersection in relation to other congested intersections around town.

5. Redesignation Process

The Clean Air Act allows states to request the EPA redesignate areas that they have designated as non-attainment, as long as those areas have fulfilled five specific criteria: they must have attained the NAAQS; they must have a fully approved State Implementation Plan; they must demonstrate that air quality improvements are permanent and enforceable; they must have fulfilled Section 110 and Part D of the CAA; and they must have a fully approved maintenance plan. The CAA requires that maintenance plans include adequate provisions to ensure attainment of the NAAQS for at least ten years after redesignation. Because it takes the EPA up to 18 months to approve a plan, maintenance plans need to cover at least twelve years. (The plan included in this request demonstrates continued attainment of the standard until 2015.) Eight years after the EPA approves a redesignation request, the state must submit a second 10-year maintenance plan (again, including 2 additional years to allow for EPA approval.) As a result, Missoula will submit a second plan in 2013 showing Missoula will continue to meet the NAAQS standard until at least 2025.

In most parts of Montana, the Department of Environmental Quality (DEQ) prepares redesignation requests and other State Implementation Plan documents. However, through an agreement with the Department of Health and Environmental Sciences (DHES), the predecessor

[9] HNTB Corporation, "Intersection Air Quality Modeling Analysis Technical Report for the Brooks/South/Russell Intersection Transportation Improvement Project (South Avenue Realignment Alternative), May 1996, page 15.
[10] Benjamin Schmidt, "Missoula, Montana Carbon Monoxide Saturation Study December 5, 1992 to December 20, 1992," (Missoula, MT: Missoula City-County Health Department, April 1993.)

of DEQ, and a proclamation of the Governor of Montana, the Missoula City-County Air Pollution Control Board (Board) performs these activities with the assistance of DEQ.[11] As a result, the Missoula City-County Health Department has prepared this document for the Board. DEQ has provided invaluable assistance by helping with research, coordinating with EPA and performing essential emission inventory and modeling work.

REDESIGNATION REQUEST

The Missoula City-County Health Department, with the assistance of the Montana DEQ, prepared this redesignation request for the Missoula City-County Air Pollution Control Board. The Board has been recognized as the lead agency for State Implementation Plan (SIP) planning purposes for the Missoula area. This request has been developed using guidance from the 1990 Clean Air Act and the September 4, 1992 EPA memo from John Calcagni to the EPA Regional Directors.[12] Section 107(d)(3)(E) of the CAAA defines the five required criteria of a redesignation request. The criteria are as follows:

Criterion 1: Attainment of the Applicable National Ambient Air Quality Standard
Criterion 2: State Implementation Plan Approval [under 7410(k) – CAA §110]
Criterion 3: Permanent and Enforceable Improvements in Air Quality
Criterion 4: Fulfillment of CAA §110 and Part D Requirements
Criterion 5: Fully Approved Maintenance Plan Under CAA §175A

Missoula has fulfilled Criteria 1-4, as demonstrated by this document, and submits a Maintenance Plan developed in accordance with CAA §175A with this request.

Criterion 1:
Attainment of the Applicable National Air Quality Standard

A. Ambient Air Quality Data

Ambient CO data was collected at the Missoula Malfunction Junction SLAMS site (30-063-0005) located at the intersection of Brooks, South and Russell Streets. Data was collected and quality assured in accordance with 40 CFR Part 58 and recorded in the Aerometric Information Retrieval System (AIRS). EPA has approved this SLAMS site and the data collected.

Until 1998, Missoula monitored CO at Malfunction Junction for the entire year. However, once it was well established that CO violations occurred only in the late fall and winter, Missoula was able to reduce its monitoring to the first and last quarter of the calendar year (January through March and October through December, respectively.)

[11] 44 FR 45420
[12] Calcagni, 1992.

The CO Quick Look Report for the monitoring site contains data from 1999, 2000, 2001 and 2002, representing the 8 most recent quarters of monitoring data. The data is summarized in the table below. The site recorded no exceedances of the CO NAAQS during this time.

Carbon Monoxide Levels in ppm at Malfunction Junction, Missoula, MT[13] Site 30-063-0005, Method 093							
YEAR	**# OBS**	**1ST MAX 1-HR**	**2ND MAX 1-HR**	**OBS >35**	**1ST MAX 8-HR**	**2nd MAX 8-HR**	**OBS >9**
1999	3750	6.0	5.8	0	4.9	4.4	0
2000	4354	5.4	4.9	0	3.9	3.3	0
2001	4171	7.0	6.6	0	5.5	3.9	0
2002	4168	5.7	5.2	0	4.6	3.6	0

Table 1

In 1992, the Health Department conducted a CO saturation study that confirmed that the Brooks/South/Russell intersection had the highest concentrations of carbon monoxide in Missoula.[14] As a result, the State and EPA agreed that Missoula only had to monitor at the Brooks/South/Russell intersection and efforts to reduce CO concentrations could focus on that intersection.

Figure 2 shows that Missoula has not violated the CO NAAQS since 1991, and has not exceeded the standard since early 1992. (The 8-hour CO NAAQS allows for not more than one exceedance of the standard in each calendar year. A violation occurs when two non-overlapping exceedances of the 8-hour standard are recorded during the calendar year.)

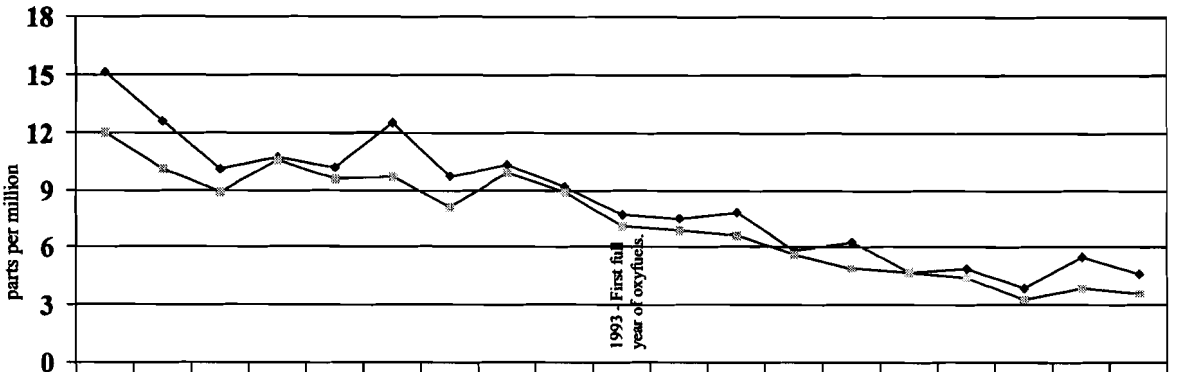
Missoula's CO levels rose slightly in 2001, although they were still well below the NAAQS. This increase is not fully understood, although it might be due to the popularity of sports utility vehicles, which have not had to meet as stringent of vehicle emission standards as cars.

[13] United States Environmental Protection Agency Air Quality System Quick Look Report (AMP450), United States Environmental Protection Agency, September 10, 2003.

[14] Benjamin Schmidt, 1993, "Missoula, Montana Carbon Monoxide Saturation Study December 5, 1992 to December 20, 1992," Missoula City-County Health Department, Missoula, MT April 1993.

Missoula Carbon Monoxide Levels

1982-2002 Malfunction Junction
1st and 2nd Highest 8-Hour Average



	82	83	86	87	88	89	90	91	92	93	94	95	96	97	98	99	2000	2001	2002
1st	15.1	12.6	10.1	10.7	10.2	12.5	9.7	10.3	9.2	7.7	7.5	7.8	5.8	6.3	4.7	4.9	3.9	5.5	4.6
2nd	12	10.1	8.9	10.6	9.6	9.7	8.1	9.9	8.9	7.1	6.9	6.6	5.6	4.9	4.7	4.4	3.3	3.9	3.6

Federal 8-Hour Average Standard = 9 parts per million, not to be exceeded more than once per calendar year.
No data available for 1984 or 1985.

Figure 2

B. Supplemental EPA-approved Air Quality Modeling

Since a small number of monitors may not be representative of areawide air quality, some places have to use dispersion modeling to more fully evaluate sources' impacts and to determine the locations of expected high CO concentrations. However, moderate CO non-attainment areas with design values below 12.7 do not have to do supplemental air quality modeling in order to be redesignated.[15] Missoula's design value is 9.6 ppm, so this modeling is not required.

Criterion 2: State Implementation Plan Approval

A. 1977 Clean Air Act Amendments

The Clean Air Act Amendments of 1977 required EPA to establish the attainment status of all states in relation to the NAAQS. On March 3, 1978, EPA published the list of non-attainment areas, thereby designating the area within the Missoula city limits as non-attainment for CO.[16] As a result, Montana was required to prepare a Missoula CO SIP. The Clean Air Act Amendments of 1977 required states to submit the necessary plan revisions to the EPA by January 1, 1979.

In 1978, DHES hired a contractor to model CO concentrations at the Brooks/South/Russell intersection to evaluate the extent of Missoula's CO problem. None of the available models could accommodate Missoula's situation, with its stagnant air, high background levels of CO, mid-level elevations and complicated meteorology. As a result, they were not able to find a

[15] John Calcagni, 1992, "Procedures for Processing Requests to Redesignate Areas to Attainment," Memorandum to Regional Air Directors, Environmental Protection Agency, September 4, 1992.
[16] 43 FR 9009

model that could produce realistic results. Since the scope of Missoula's non-attainment area could not be determined and suspected violations at other locations could not be verified, Missoula could not complete the work needed to develop a CO SIP by the January 1, 1979 deadline.

In April 1978, Montana Governor Thomas Judge submitted a letter to the EPA, certifying that the Missoula City-County Air Pollution Control Board had primary responsibility for preparing the area's non-attainment plans. Once plans were developed and approved at the local level, they were submitted to the Governor via DHES, who in turn submitted them to the EPA.

Following this process, the state submitted a SIP revision to the EPA in April 1979, consisting of a schedule for developing a Missoula CO Control Plan. The schedule called for updating the emission inventory, developing a calibrated model for Malfunction Junction by February 1980, selecting potential control measures by April 1980 and modeling of the control measures by May 1980.[17] On August 2, 1979, the EPA proposed to reject the Missoula CO portion of the SIP because the control plan was inadequate.[18] On March 4, 1980, the EPA formally disapproved Missoula's plan, but stated that if the State submitted a control plan by August 15, 1980, they would not institute the procedures for imposing federal funding limitations authorized under Sections 176 and 316 of the Clean Air Act.[19]

When the state did not submit a control plan by August 15, 1980, the EPA imposed a moratorium on the construction and modification of major stationary sources of carbon monoxide, as required by Section 110(a)(2)(1) of the Clean Air Act and 40 CFR 52.24. [20]

On August 14, 1981, the state submitted a control plan that relied on projected federal automobile emission standards and reconstruction of the intersection of Brooks Street, South Avenue and Russell Street. However, since the reconstruction would not be completed until 1985, the modeling predicted that it would not be possible to attain the standard by December 31, 1982, as required by the Clean Air Act. The modeling did show that by 1987, CO concentrations at the intersection would be reduced to 8.33 ppm for an 8-hour average, which was below the standard of 9.0 ppm. As a result, the submittal included a request to extend the attainment deadline from 1982 to 1987. On July 5, 1983, the EPA proposed to approve the control plan, but to deny the deadline extension and continue the industrial construction ban for the Missoula area.[21] They argued that in order to be eligible, Missoula would have had to request the extension with the initial submittal in 1979.

Missoula completed the intersection reconstruction in the fall of 1985. The EPA approved the Missoula CO SIP on January 16, 1986, lifting the construction ban on industrial sources. However, in doing so, the EPA expressed concern about the potential impact of residential wood

[17] (Pedco, 1980).
[18] (44 FR 45420)
[19] (45 FR 14072)
[20] (48 FR 30698)
[21] 48 FR 30696

burning on attainment.[22] Missoula did not violate the CO NAAQS in 1986, but by 1987 Missoula was once again violating the federal standard.

On June 6, 1988, in response to the Mitchell-Conte amendment of the Budget Reconciliation Act of 1987, the EPA published a new list of CO non-attainment areas.[23] At that point, EPA increased several CO non-attainment areas, including Missoula's, to incorporate the entire county. They reasoned that suburban and rural areas impact urban air quality and that attainment could only be achieved by controlling emissions throughout the region. EPA did concede that in certain locations CO violations could be attributed to localized traffic problems (or "hotspots") and agreed to consider requests to modify non-attainment area boundaries in such instances.

The Missoula City-County Health Department (MCCHD) and DHES felt it was unreasonable to designate all of Missoula County as non-attainment. On June 8, 1988, the State submitted a request to reduce the CO non-attainment boundary to coincide with the nearest section line outside the city limits. DHES submitted additional required technical support documentation on April 12, 1989. The State argued that 80% of the Missoula County population resided in the urban area and that mountains separated much of the outlying area from the urban airshed. The rest of the county was considered "rural" or "remote", and no areas outside the initial study area were expected to reach a population of 50,000 by the year 2000. On November 6, 1991, the EPA approved the revised boundaries.[24]

On June 17, 1988, EPA notified Montana that the Missoula CO SIP was substantially inadequate because of continued exceedances of the 8-hour CO NAAQS near Malfunction Junction. In accordance with its Post-1987 Attainment Policy, EPA required Montana to submit a new plan that demonstrated attainment within three to five years of plan approval. The state also had to complete a new CO emission inventory for Missoula. In November 1989, Montana submitted a 1988 base year CO emission inventory to the EPA.

B. 1990 Clean Air Act Amendments

The Clean Air Act Amendments of 1990 authorized EPA to classify CO non-attainment areas based on the severity of the air pollution problem. They based the classification on CO design values. The CO design value was determined by finding the highest and second highest non-overlapping 8-hour values at a monitoring site for each quarter for two years. The highest second value was used as the design value for the monitoring site. Non-attainment areas with CO design values of less than 9.1 were determined to be unclassified (but still non-attainment areas); areas with CO design values between 9.1 and 16.4 were designated as moderate; and those areas with design values above 16.4 were classified as serious. Moderate areas were further broken down into moderate-1 and moderate-2, with a design value between 9.1 – 12.7 and 12.8 – 16.4, respectively.

[22] 51 FR 2397
[23] 53 FR 20722
[24] 56 FR 56694

Based on monitoring at the Brooks/South/Russell intersection from 1986 through 1988, Missoula's design value was 9.6.[25] As a result, on November 6, 1991, EPA classified Missoula as a moderate-1 non-attainment area for CO (56 FR 56694). This designation required Missoula to develop a new base year inventory for 1990 and to establish an oxygenated fuel program by November 1, 1992.

MCCHD and DHES completed a 1990 base year emission inventory and submitted it to EPA on July 18, 1995. In addition to the base year inventory, the Clean Air Act Amendments require moderate CO non-attainment areas to submit emission inventories every three years. In 2000, the State submitted the 1993 and 1996 emissions inventories to EPA for approval. In 2003, as a part of this redesignation request, the state is submitting a 2000 emission inventory.

In June 1992, Missoula incorporated an oxygenated fuels program into the Missoula City-County Air Pollution Control Program. It was approved by the State in September 1992, and implemented that November. On November 6, 1992, the State submitted the oxygenated fuels program to the EPA for approval. On November 8, 1994, the EPA approved the SIP revisions containing Missoula's oxygenated gasoline program.[26]

The Montana Clean Air Act requires local programs to have rules that are consistent with and at least as stringent as state regulations. As a result, Missoula has to periodically update and revise its Program to keep up with changes in the state's rules and laws. Once approved locally and by the Montana Board of Environmental Review (BER), changes are submitted to the EPA for inclusion into the SIP. Using this procedure, the EPA approved revisions on December 13, 1994 regarding CO contingency measures[27] and on December 6, 1999 regarding an update to the SIP narrative.[28]

On October 31, 1997, the Montana BER approved revisions to the Missoula program regarding general definitions, open burning, and criminal penalties. The fine was increased from $1000 to $10,000 per day of violation. The EPA approved the changes with a direct final rule issued on January 3, 2000.[29]

On November 17, 2000, the Montana BER approved revisions to the Missoula program rules which included extensive renumbering of the regulations. In addition, changes were made to chapters regarding program authority and administration, definitions, failure to attain standards, emergency episode planning, general provisions, standards for stationary sources, outdoor burning, fugitive particulate, solid fuel burning devices, fuels, motor vehicles, enforcement and administrative procedures, and penalties. In most cases, the rule revisions were to allow for easier use through reorganization, to clarify existing policy, and/or to ensure consistency with the Montana and Federal Clean Air Acts. The Governor requested that these be incorporated into

[25] In 2003, DEQ reviewed the ambient monitoring data, and concluded that Missoula's design value should have been 10.6 instead of 9.6. However, this would not have changed Missoula's designation as a moderate-1 non-attainment area for CO. Cain, 2003, page 13.
[26] 59 FR 55585
[27] 59 FR 64133
[28] 64 FR 68034
[29] 65 FR 16

the SIP in a letter dated April 30, 2001. On November 15, 2001, the EPA proposed a direct final rule that approved the changes as submitted, resulting in a fully approved SIP.[30]

Criterion 3:
Permanent and Enforceable Improvements in Air Quality

A. Overview

The State must demonstrate, based on Section 107(d)(3)(E) of the 1990 Clean Air Act Amendments (CAAA), that the improvement in air quality leading to attainment of the NAAQS and the redesignation request is based on permanent and enforceable measures, and that the reductions are not the result of temporary reductions in emissions or unusually favorable meteorology.

Between 1990 and 2000, CO emissions in the Missoula area decreased by 43%. Table 2 illustrates these changes by source category.

Missoula Area CO Emissions[31] Comparison between 1990 and 2000				
Source	**1990 Emissions[32] kg CO/day**	**2000 Emissions[33] kg CO/day**	**Change from 1990 to 2000 in kg CO/day**	**Percent Change**
Aircraft Exhaust	444.98	741.45	+296.47	+ 67
Industrial Processes	320.21	234.18	- 86.03	- 27
Natural Gas	143.34	256.61	+ 113.27	+ 79
Non-road motors	Not Included	2,168.02	+ 2,168.02	NA
On-road Vehicles	63,901.35	44,284.92	- 19,616.43	- 31
Railroad	261.27	47.30	- 213.97	- 82
Residential Wood Burning	29,773.85	6,090.28	-23,683.57	- 80
TOTAL	94,845	53,822.76	-41,022.24	- 43

Table 2

While this comparison shows increases in emissions from aircraft and natural gas combustion, these two sources together only account for 1.85 % of the total CO emissions. The decrease in industrial emissions is due, in part, to the 1996 closure of White Pine and Sash, a precision milling and wood-treating factory. Railroad emissions, which also account for a very small

[30] 66 FR 57391

[31] Emissions were compared for the 1990 Emission Inventory Area. The 2000 Emission Inventory Area was quite a bit bigger, but only those emissions from the grids studied in 1990 were included for this comparison.

[32] Jerry Schneider, Ken Anderson and Mike Kress, 1992, "1990 Base Year Carbon Monoxide Emission Inventory, State of Montana – Missoula County," Air Quality Bureau, Department of Health and Environmental Sciences, Helena, MT, November 1992, page 23.

[33] Cyra Cain, 2003, "2000 Missoula, Montana, Carbon Monoxide Emission Inventory," Planning, Prevention and Assistance Division of the Monitoring and Data Management Bureau of the Montana Department of Environmental Quality, Helena, MT, June 2003, page 97.

percent of the total CO emissions, are hard to compare because the method for calculating emissions changed between 1900 and 2000. The decrease may in part be due to fewer trains were running through the area in 2000 than in 1990. EPA's recent adoption of emission standards for diesel locomotives will affect these emissions in the future.

The two largest sources of CO in the Missoula valley are residential wood burning and on-road vehicles. These two sources have shown large decreases in CO emissions between 1990 and 2000: 80% for residential wood burning and 31% for on-road vehicles. It is reasonable to attribute the reductions for both these sources to the implementation of federal, state and local controls. These controls are explained in more detail in Section B, "Control Measures".

A downturn in the economy is clearly not responsible for improved ambient CO levels in Missoula. Between 1990 and 2000, the City of Missoula's population increased by 32.9%, growing from 42,918 people to 57,053.[34] The county's population increased 21.8% in that same period.[35] With the population increases have come corresponding increases in employment activities and traffic. Within the 1990 CO Emission Inventory area, vehicle miles traveled (VMT) grew from 908,105 in 1990 to 1,220,376 in 2000, a 34% increase.[36] It can be assumed that, absent current measures, growth in population, employment and traffic would increase CO emissions and the potential for elevated CO concentrations, not the other way around.

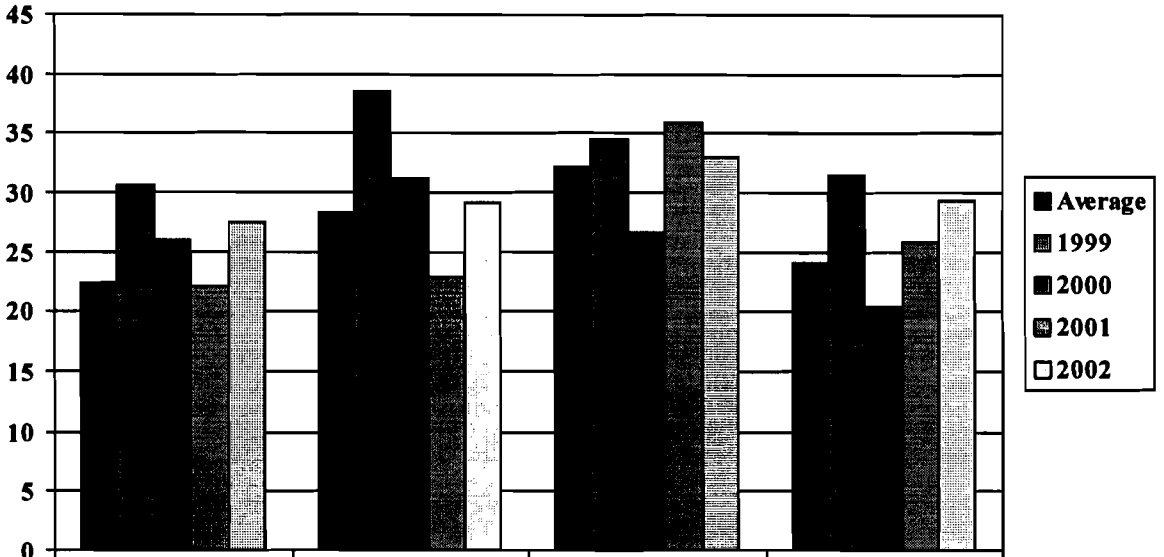
Favorable meteorology does not appear to be responsible for the improvement in CO levels. Since the introduction of oxygenated fuels in November 1992, CO design values for Missoula ranged between 8.9 and 3.3 ppm. Except for 2001, the design values show a clear downward trend (Figure 2). In the same time period, average monthly temperatures have varied, with some years above the average and other years below (Figure 3).

[34] United States Census Bureau, Geographic Comparison Table GCT-Pa. Age, Sex and Group Quarters: 1990" http://factfinder.census.gov/servlet/GCTTable?_ts=81449261812 and Quick Tables "DP-1. Profile of General Demographic Characteristics, Data Set: Census 2000 Summary File (SF 1) 100 % Data, Geographic Area: Missoula city, Montana," http://factfinder.census.gov/servlet/GCTTable?_ts=81449261812.

[35] United States Census Bureau, 2003, State and County Quickfacts, July 14, 2003. http://quickfacts.census.gov/qfd/states/30/30063.html

[36] Schneider, Anderson and Kress, 1992, page 17 and Cain, 2003, page 56.

Average Monthly Temperature in Degrees Fahrenheit for Missoula, MT



	January	February	November	December
Average	22.5	28.3	32.2	24.1
1999	30.6	38.6	34.6	31.6
2000	25.9	31.2	26.6	20.4
2001	22.1	22.9	35.9	25.8
2002	27.5	29.2	33	29.3

Figure 3

B. Control Measures

The State concludes that the following permanent and enforceable control measures have resulted in the improvement in air quality in Missoula. The enforceable measures will remain in place for the duration of the initial maintenance period (through 2015) to ensure continued maintenance of the CO NAAQS in the Missoula area. Below is a brief description of each of these measures:

1. Oxygenated Fuels

As required by the Clean Air Act Amendments of 1990, Missoula incorporated an oxygenated fuels program into its regulations in November 1992. From November 1 through the last day of February, all gasoline sold within the control area must have a minimum oxygen content of 2.7%. In the first season of implementation, the area fuel was oxygenated with MTBE. However, because of a public outcry against the use of the chemical, Missoula reached a

voluntary agreement with the area fuel distributors to use ethanol, and not MTBE, as the oxygenate.

This program has had dramatic results on Missoula's ambient wintertime CO levels. Since the oxygenated fuels program was implemented in the fall of 1992, Missoula has not exceeded the 8-hour average for CO.

2. Federal Motor Vehicle Emission Control Program

The Federal Motor Vehicle Emission Control Program (FMVECP) has dramatically reduced CO emissions through a continuing process of requiring manufacturers to produce new vehicles that meet tighter and tighter standards.

The FMVECP began in 1966 when Congress required minimal emission controls on all 1968 and later cars. The Clean Air Act of 1970 called for a 90 percent reduction in automobile emissions, requiring new cars to meet a 3.4 grams per mile CO standard by 1975. Congress delayed implementation of the standard several times, in order to give the industry enough time to find practical, technological solutions. In 1975, the industry introduced the first catalytic converters and, with them, unleaded gasoline. By 1981, most new cars had sophisticated three-way catalysts and on-board diagnostic computers with oxygen sensors. For the first time, new cars were able to meet the 3.4 grams per mile CO standard. In 1990, Congress amended the CAA, directing EPA to create Tier I standards and to study whether more stringent Tier II standards would be needed in the future for American cities to be able to meet the NAAQS. The Tier I standards, which went into effect in 1994, did not change the CO emission requirements for light duty cars, but lowered the CO emission standard for light duty trucks to 4.4 grams of CO per mile. In 1992, the EPA set emission limits for CO at cold temperatures (20°F). The EPA finalized Tier II standards in 2000, requiring light duty trucks and sports utility vehicles to match the emission rates of passenger cars.

The effect of federal emission standards was illustrated in the air quality modeling completed for the Brooks/South/Russell intersection modifications that are discussed in more detail in section 4, "Changes in Transportation Infrastructure." HNTB Corporation modeled a "no-action alternative" that took into account decreasing woodstove use and the effect of the FMVECP.[37] The modeling also assumed continued use of oxygenated fuels.

Peak Eight-Hour Maximum CO Concentrations in Parts Per Million (ppm)									
Intersection	Brooks/South/Russell			Brooks/Fairview			Brooks/East South		
Year	1993	1996	2015	1993	1996	2015	1993	1996	2015
CO in ppm	21.1	15.6	10.8	9.6	6.9	5.5	5.3	4.2	3.6

Table 3

[37] HNTB Corporation, 1996, "Intersection Air Quality Modeling Analysis Technical Report for the Brooks/South/Russell Intersection Transportation Improvement Project (South Avenue Realignment Alternative), May 1996, page 15.

As this modeling shows, federal standards will continue to provide emission reduction benefits as older vehicles are retired and vehicles meeting the newest standards replace them in the fleet. However, even with oxygenated fuels and reductions expected through the FMVECP, Missoula still has the potential to violate the federal eight-hour standard without further control measures.

3. Residential Wood Burning Regulations

Wood smoke is a source of CO. In the late 70's and mid-80's, the Department recorded violations of the CO standard in low traffic, residential areas. These violations could be attributed primarily to residential wood burning instead of vehicle exhaust. In addition, Missoula's base year 1990 carbon monoxide emissions inventory indicated that residential wood combustion was responsible for 26.1% of Missoula's wintertime CO emissions.

To reduce the amount of CO emitted from residential wood burning, Missoula adopted progressively more stringent solid fuel burning device regulations.[38] Currently, the only new solid fuel burning devices permitted in the Air Stagnation Zone by Missoula's air regulations are pellet stoves. Additionally, the regulations require that most woodstoves be removed at the time of sale of the property. As a result, far less wood is now burned in Missoula than in the 1980's and 1990's, as illustrated by the following summary of residential wood burning (RWB) surveys:

Woodstove Survey Comparison, 1977 – 1996

Survey Year	Number of Households	Number of Households Burning Wood	% Households Burning Wood	Tons of Wood Burned	Tons of CO Emitted
1977	21,305	8,032	37.7	25,912	2,462
1980	21,970	11,666	53.1	54,120	5,141
1983	22,875	11,483	50.2	40,296	6,363
1986	23,325	10,193	43.7	33,174	6,316
1992	26,930	6,732	25.0	22,297	3,595
1996	27,205	5,332	19.6	15,151	1,569

Table 4

4. Changes in Transportation Infrastructure

When Missoula was designated as non-attainment for CO in 1978, the City was already planning to improve traffic flow at Brooks/South/Russell. The project, which was to be completed by 1985, added some turn lanes, restricted some left turns and added some departure lanes. The model showed that it would improve the worst days at the junction, but would not get rid of violations entirely until 1987 (as a result of projected decreased in automobile emissions based on the federal emission standards.) After completion of the intersection project in late 1985, Missoula briefly attained the standard, but a little over a year later, Missoula once again violated the federal standard for CO.

In 1991, as Montana's only moderate CO non-attainment area, Missoula received $27 million in federal transportation funding from the Congestion Mitigation Air Quality Improvement (CMAQ) Program, to be spent over the six years. The purpose of the funding was to help non-

[38] The woodstove regulations were also aimed at reducing particulate pollution in the Missoula valley.

attainment areas come into compliance with the NAAQS. In 1993, the Brooks/South/Russell intersection was identified as one of the projects to receive CMAQ funding. The City undertook a long and involved process to find a solution the community would accept that would solve the congestion and air quality problems at the intersection. Many alternatives were explored, including an overpass, an underpass, various roundabouts, system improvements to surrounding arterials, traffic demand management; an urban interchange, and a combination of an overpass or underpass with other system improvements. Most of these alternatives were rejected because they would not solve the air quality problem at the intersection. The overpass alternative, which would significantly reduce the CO at the intersection, was overwhelmingly rejected by the public. Finally, the city settled on an at-grade realignment of South Avenue, so that South Avenue no longer enters the intersection. This solution simplifies the intersection, reducing the projected peak-hour delay from 120 seconds to 20 seconds. It also allows better synchronization of all the traffic lights along the Brooks Street from Reserve to Mount, which will reduce congestion along the whole corridor. The City Council held a public hearing in September of 1997 and approved the project that October. In April 1999, the City Council and the community reaffirmed its commitment to the project with the hiring of a contractor for the final design. The project is expected to be completed by the end of 2004.

Air quality modeling showed that, given worst-case meteorological conditions, Missoula would exceed the national ambient air quality standards for CO if nothing were done at the intersection.[39] However, with the project, Missoula will continue to attain the standard with current controls at least through 2015.

Peak 8-Hour Maximum Carbon Monoxide Concentrations in Parts per Million (ppm)			
Alternative	1993	1998	2015
Existing/No Action	21.1	15.6	10.8
South Ave. Realignment	NA	8.3	6.6

Table 5

The model assumes that oxygenated fuels will continue to be used in Missoula, that background levels will continue to decrease as more woodstoves are removed from homes in the Missoula area, and that the fleet will emit less CO as older vehicles are removed from the fleet and replaced with newer, lower emitting models. As a result, the "Existing/No Action" alternative shows that CO levels decrease over the years. However, at some point, the improvements from fleet turn-over could be overwhelmed by increased congestion and the ever-increasing vehicle miles traveled.

In addition to reconstructing the Brooks/South/Russell intersection, Missoula has invested in several other transportation projects designed to reduce CO emissions. These include several transit projects, including replacing old diesel buses with cleaner running models, building a

[39] HNTB, 15.

downtown transfer center, establishing a downtown circulator trolley, improving amenities at bus stops, installing bike racks on the buses and enhancing transit operations. Another project replaced traffic signals at 50 locations in order to synchronize traffic signals to reduce delays and congestion. Other projects include several new sidewalk, walkway and bike lane projects, a bike shelter at city hall, and funding for the city's Bicycle Pedestrian Coordinator and Missoula In Motion, an organization that promotes transportation demand management strategies.

5. Outdoor Burning

Like woodstoves, outdoor burning is a source of CO. Missoula's outdoor burning regulations severely limit the amount of outdoor burning that occurs in December, January and February, the months in which Missoula has violated the CO standard. The impact of outdoor burning on CO levels is minimized by outdoor burning regulations that:

- Require a permit for every burn;
- Allow only untreated lumber and natural vegetation to be disposed of through outdoor burning. (In the Air Stagnation Zone, there are additional restrictions that prohibit the burning of piles of leaves or grass);
- Require burners to call the Outdoor Burning Hotline on the day they wish to burn for notification of any fire hazard or air quality restrictions that may be in effect;
- Establish an Impact Zone to allow for more stringent restrictions in the areas around the urban core;
- Establish burning seasons to reduce the generation and accumulation of smoke; and
- Prohibit all outdoor burning in the winter months of December, January and February, except ceremonial bonfires and essential wintertime burning.

These components have reduced the contribution of outdoor burning to the carbon monoxide levels in the non-attainment area, especially during the typical CO season of November through February.

CRITERION 4:
Fulfillment of CAAA Section 110 and Part D Requirements

For the purposes of redesignation, an area must meet all of the general nonattainment area requirements of the Clean Air Act (CAA) Section 110 and Part D. Missoula meets all of these requirements as described below.

A. Clean Air Act Section 110

Section 110(a)(1) requires each state to adopt a plan that provides for the implementation, maintenance and enforcement of any primary or secondary standard adopted by EPA under section 7409 of the Clean Air Act. Missoula has satisfied this requirement, most recently with the EPA approval of an extensive rewrite and reorganization of its Program on November 15, 2001.[40]

[40] 66 FR 57391

Section 110(a)(2) outlines what states must include in their implementation plans. Missoula and the state of Montana have satisfied these requirements, as is explained below.

A. Enforceable emission limits and other control measures: The Missoula City-County Air Pollution Control Program contains emissions standards and or control measures for stationary sources, area sources (such as woodstoves, outdoor burning and fugitive particulate) and mobile sources. EPA approved the latest version of these standards, measures and techniques on November 15, 2001.[41]

B. Monitoring: The State has an approved ambient monitoring program that meets the requirements of section 110(a)(2)(B). Specifically, ARM 17.8.204 and 17.8.206 regarding the Montana Quality Assurance Plan for ambient air quality monitoring was approved by EPA on December 21, 1993.[42]

C. Enforcement: The Missoula City-County Air Pollution Control Program, Chapter 14 contains the enforcement procedures of the Missoula program and Chapter 15 outlines the potential penalties. EPA approved the latest version of these procedures on November 15, 2001.[43]

D. Adequate provisions: The Missoula City-County Air Pollution Control Program contains adequate provisions to prohibit any activity that will contribute significantly to non-attainment or maintenance of the Montana and NAAQS, including provisions regarding stationary sources, outdoor burning, vehicle emissions and solid fuel burning devices. Montana state law and a June 1991 stipulation between the MCCHD and DHES delineates the responsibility and authority between the two entities. The State has retained the authority for prevention of significant deterioration (PSD) program. EPA first approved the State's program on May 5, 1983.[44] The Administrative Rules of Montana, Title 17, Chapter 8, Subchapter 11 contains the necessary requirements to protect visibility. The State's PSD and Operating Permit regulations both contain adequate provisions to ensure compliance with sections 7426 and 7415 of the CAA (relating to interstate and international pollution abatement.) All of these rules are contained in the approved SIP and are in full force and effect in Missoula County.

E. Program requirements: Missoula and the State have adequate staffing, funding and authority to carry out and enforce the requirements found in the Missoula City-County Air Pollution Control Program and Montana law and regulations. The State receives federal 105 funds, which are distributed to local air programs. Local sources of funding make up the remainder of Missoula's program. To ensure Missoula's Air Pollution Control Board complies with the requirements of 42 U.S.C. section 7428, Missoula recently adopted the federal language into its rules, which were adopted into the SIP on

[41] 66 FR 57391
[42] 58 FR 67324
[43] 66 FR 57391
[44] 48 FR 20231

November 15, 2001.[45] The State assesses Missoula's program through quarterly reports and other reporting, as agreed upon in a yearly contract with Missoula.

F. Stationary Source requirements: Missoula issues permits to stationary sources that emit more than 25 but less than 250 tons of pollutants a year, sources that emit more than 5 tons but less than 250 tons of lead a year and all incinerators, asphalt plants, concrete plants and rock crushers without regard to size. EPA approved Missoula's revised permitting regulations on November 15, 2001.[46] These rules meet the requirements of this section. DEQ retains jurisdiction over sources that emit more than 250 tons of pollutants per year, sources that require the preparation of an Environmental Impact Statement, and sources that are subject to the major facility siting act. By agreement, DEQ also permits sources that need a PSD permit. DEQ's air quality and operating permit programs meet these requirements and have both been approved into the SIP.

G. Emergency Powers and Contingency Plans. Missoula has an Emergency Episode Avoidance Plan, which is described in Chapter 4 of the MCCAPCP. Specifically, Rule 4.103(b) authorizes MCCHD and the Control Board to protect the public from imminent danger caused by any air pollutant. Chapter 3 of the Missoula City-County Air Pollution Control Program addresses contingency measures, should Missoula fail to attain the NAAQS, or make reasonable progress in reducing emissions.

H. Revision. Rule 5.111 of the Missoula City-County Air Pollution Control Program describes how provisions of the MCCAPCP may be revised. After local and BER approval, the Governor forwards any SIP changes to the EPA for approval.

I. Revision in a non-attainment area. When a plan for a non-attainment area is revised, it must meet the conditions of Part D. Missoula's program currently meets these requirements, which are discussed in more detail later in this document.

J. Missoula's program meets the requirements of section 7421, which provides for consultation with local governments, designated organizations of local officials and federal officials. Some of these processes are outlined in Rule 5.111 of the Missoula City-County Air Pollution Control Program as EPA approved it on November 15, 2001. In addition to the processes described in that rule, MCCHD consults with the Missoula Air Quality Advisory Council, the Transportation Technical Advisory Committee, the Transportation Policy Coordinating Committee, affected federal land managers and other affected parties as part of the public review process for rule revisions.

The Missoula Program fulfills the requirements of section 7427, which provides for public notification in areas where the NAAQS is exceeded or has been exceeded in the previous calendar year. Appendix B outlines operations and procedures of Missoula's Emergency Episode Avoidance Plan, including communication with the public during pollution episodes.

[45] 66 FR 57391
[46] 66 FR 57391

Missoula has not adopted a PSD or a visibility program. The State's PSD program is in effect in Missoula County. The EPA authorized the State's PSD program on May 5, 1983.[47] The State has not yet adopted a visibility program; EPA has primacy for the visibility program in Montana.

K. Modeling. When EPA requires modeling for predicting the effect of emissions on Missoula's air quality, DEQ provides modeling assistance to Missoula.

L. Fees. Rule 5.108 of the Missoula City-County Air Pollution Control Program satisfies the requirements of section 7410 (L), which requires the owner of any major stationary source to pay fees sufficient to cover reasonable costs associated with permitting, inspection and enforcement of the source. Rule 5.108(2) states, "The fees must adequately compensate, but may not exceed, the direct and indirect costs to the department of administering the Program."

M. Consultation. Rule 5.111 of the Missoula City-County Air Pollution Control Program satisfies requirements of 7410 (M), which provides for consultation and participation by local political subdivisions affected by the plan. Both the Board of County Commissioners and the Missoula City Council must approve or veto any amendments and revisions before they can be forwarded to the state BER for approval. The City of Missoula is the only incorporated city in Missoula County.

Sections 110(b) through 110(h) do not require action by Missoula.

Section 110 (i) prohibits any action modifying any Clean Air Act requirement applicable to any stationary source. Missoula's program does allow temporary variances, as is required by the Clean Air Act of Montana, MCA 75-2-301 and 75-2-212. However, Missoula's variance procedures have not been approved into the SIP. As a result, Missoula's actions cannot modify or suspend an applicable requirement contained in the approved SIP with respect to a stationary source.

Section 110(j) requires that any new or modified stationary source show that its emission reduction technology will enable it to comply with the applicable standards and requirements of the CAA. The MCCAPCP Rule 6.506 adopts 40 CFR 60.2 by reference, pertaining to standards of performance for new stationary sources and modifications, and requires owners and operators of stationary sources to comply with the standards and provisions of that Part. In addition, Missoula's air quality permitting rules require that stationary sources comply with applicable emission limitations imposed by the Missoula City-County Air Pollution Control Program, the Clean Air Act of Montana and the federal Clean Air Act, as well as all other applicable provisions of the Program and the Montana SIP.

Section 110(l) requires public notice and public hearings for any revisions to the SIP. All changes to the Missoula City-County Air Pollution Control Program go through multiple notices

[47] 48 FR 20231

and hearings. Rule 5.111 describes the public notice and hearing procedures used by the Control Board. Following adoption by the Control Board, the Board of County Commissioners and the City Council must also approve the revisions at a public meeting. Once approved, the revisions go before the Montana BER, which also provides notice and holds a public hearing, specifically for SIP revisions, as required by the CAA and the Montana Administrative Procedures Act, MCA Title 2, Chapter 4.

Sections 110(m) through 110(o) do not require action by Missoula.

Section 110(p). Missoula provides quarterly reports, inspection reports, emission inventory information, road dust silt samples, sanding material tests, copies of permits, monitoring and meteorological data, multiyear trends reports, and other information as required by the air quality contract between DEQ and MCCHD. Missoula and the DEQ work together to provide other information and reports as EPA requires.

B. Clean Air Act , Part D - Plan Requirements for Non-Attainment Areas
Part D consists of general requirements applicable to all non-attainment areas. The general requirements in subpart 1 are followed by a series of subparts specific to each pollutant. Requirements for CO non-attainment areas are found in subpart 3. In situations where an area is subject to both the general non-attainment provisions in subpart 1 as well as one of the pollutant-specific subparts, the general provisions may be subsumed within or superseded by the more specific requirements in subpart 3.[48]

Subpart 1 – Non-Attainment Areas in General.

(a) Classifications and attainment dates.
This section described how long an area has to come into attainment once it is designated as a non-attainment area. As described above, Missoula did not meet the initial attainment deadline of December 31, 1982, as required by the 1977 amendments to the Clean Air Act. Once the intersection of Brooks/South/Russell was reconstructed in late 1985, the area attained the standard, but attainment was short-lived. By 1987, Missoula was once again violating the CO 8-hour NAAQS. The Clean Air Act Amendments of 1990 required moderate non-attainment areas to come into compliance with the NAAQS by December 31, 1995. Missoula has been in compliance with the standard since 1992.

(b) Schedule for Plan Submissions. This section requires the Administrator to establish a schedule for plan submissions. Missoula's historical compliance with the established schedules is described in detail under Criterion 2 earlier in this document.

(c) Non-attainment plan provisions

(1) The plan must provide for implementation of all reasonably available control measures (RACM) and provide for attainment of the NAAQS. Missoula's program requires new and altered sources use the maximum air pollution control capability that is practicable and economically feasible. At a minimum, Best Available Control

[48] Calcagni, 1992.

Technology (BACT) must be used, and when required by the federal CAA Lowest Achievable Emission Reduction (LAER) must be used. Missoula has staff, permitting requirements, resources, regulatory authority and enforcement authority to ensure these requirements are implemented.

(2) Plan provisions must require reasonable further progress. This requirement applies to areas that are violating the NAAQS. Missoula has not recorded a violation of the standard since 1991. However, Chapter 3 of the Missoula City-County Air Pollution Control Program describes what actions Missoula will take in the event that the area fails to maintain the NAAQS.

(3) Inventory. Montana has provided a 1988 and 1990 base year CO emission inventory for Missoula, as well as updates for the years 1993 and 1996. In June 2003, DEQ submitted a 2000 CO emission inventory to EPA for approval. A summary of the emission inventory results can be found later in this document.

(4) Identification and quantification. Missoula's rules specify that any major source or modification as defined in 40 CFR 51.165 or 51.166 is not required to get a permit from the local program if it is required to obtain an air quality permit from the DEQ in conjunction with ARM Title 17, Chapter 8, subchapters 8, 9 or 10. These chapters address Prevention of Significant Deterioration, Permit Requirements for Major Sources in Non-attainment Areas and Preconstruction Permit Requirements for Major Sources in Attainment or Unclassified Areas.

(5) Permits for new and modified major stationary sources. DEQ requires new or modified major stationary sources to obtain a permit that satisfies the provisions of section 7503.

(6) Other Measures. Missoula's Program includes enforceable emission limitations and adequate control measures and techniques to provide for attainment and maintenance of the NAAQS. Both the solid fuel burning device regulations found in Chapter 9 and the Oxygenated Fuels Program found in Chapter 10 of the MCCAPCP are examples of other measures that provide for attainment of the CO NAAQS in Missoula.

(7) Compliance with section 7410(a)(2). Missoula's compliance with this section, which describes requirements for state implementation plans, is described in detail above – it is the same as Section 110(a)(2).

(8) Equivalent techniques. Can be allowed by the Administrator at the state's request. Not applicable for Missoula.

(9) Contingency Measures. Chapter 3 of the Missoula City-County Air Pollution Control Program describes the contingency measures Missoula will implement if the area fails to maintain the NAAQS. Their implementation does not require any further action by the State or Administrator.

Subsections (d) and (e) do not require action by Missoula.

Section 7503 (CAA §173). Permit requirements for new or modified major stationary sources. Missoula's rules specify that any major source or modification as defined in 40 CFR 51.165 or 51.166 is not required to get a permit from the local program if it is required to obtain an air quality permit from the DEQ in conjunction with ARM Title 17, Chapter 8, subchapters 8, 9 or 10. These chapters address PSD, permit requirements for major sources in nonattainment areas and air quality permit requirements for major sources in attainment or unclassified areas. Specifically, Chapter 9, "Permit Requirements for Major Stationary Sources or Major Modification Locating Within Nonattainment Areas" meets the requirements of 7503. New Source Review regulations apply to major stationary sources in non-attainment areas. PSD regulations, on the other hand, apply to major stationary sources in maintenance areas. Montana's PSD regulations have been approved by the EPA and will apply to the Missoula area upon redesignation.[49]

Section 7504 (CAA§174). Planning Procedures.

(a) This section requires that Montana and Missoula jointly review and, if necessary, update the planning procedures for revising the CO implementation plan to determine which portions of the plan would be implemented and enforced by the state, and which by local government. The state undertook such a review in 1990, and as a result, Missoula had to update and revise many of its regulations to ensure they were consistent with and at least as stringent as the state and federal regulations. In 1991, the Missoula Control Board and the state DHES signed a stipulation outlining each agency's responsibilities and authorities. This was submitted to the EPA in 1992, and incorporated as part of the Missoula SIP on November 8, 1994.[50] The Missoula SIP, Section 32.2, contains a lengthy discussion on Missoula's legal authority, and delineation of State and local responsibilities. Furthermore, DEQ and MCCHD annually negotiate an agreement, which defines each party's responsibilities for the coming year.

The implementation plan is to be prepared by an organization certified by the state, and is to include elected officials of local governments, the state air quality planning agency, the state transportation, the Metropolitan Planning Organization (MPO), the organization responsible for air quality maintenance planning and any other organization responsible for developing submitting or implementing the plan. In 1978, the Governor designated the Missoula Air Pollution Control Board as the lead agency for SIP planning in Missoula. Missoula has established the necessary cooperation with the Transportation Technical Advisory Committee (TTAC), the MPO and other participating agencies.

(b) Coordination. SIP planning shall be coordinated with transportation planning. Montana has adopted Conformity regulations that apply to Missoula. These regulations will continue to apply to the area after redesignation. EPA approved Montana's revised conformity regulations on November 19, 2001.[51] In addition to the conformity regulations, this redesignation request has been prepared in conjunction with the 2002

[49] 48 FR 20231
[50] 59 FR 55585
[51] 66 FR 57882

Missoula Transportation Plan Update, to ensure that both plans are based on the same underlying information. The Missoula Air Program participates in transportation planning as a member of the Transportation Technical Advisory Committee and involves TTAC and other participating agencies in air quality planning.

(c) Joint planning. This section is not applicable to Missoula.

Section 7505 – Environmental Protection Agency Grants (CAA §175)
(a) Plan revision development costs. Missoula is partially compensated for the plan revision process with federal 105 funds, passed through the State of Montana. The rest of the costs are funded with local money.

Section 7505(a) – Maintenance Plans (CAA §175A)

(a) Maintenance Plans must include adequate provisions to ensure maintenance of the national primary air quality standard for at least 10 years after redesignation. The Maintenance Plan included with this request demonstrates compliance until at least 2015 as shown by the compliance modeling.

(b) Eight years after redesignation to attainment, Missoula must submit an additional revision to EPA that shows Missoula will continue to attain the standard for an additional 10 years. Missoula will submit a plan by 2013 showing that Missoula will continue to attain the standard. If necessary, the plan will include additional measures to ensure Missoula continues to meet the NAAQS.

(c) Until EPA officially redesignates Missoula, Missoula's current designation and program as approved on November 15, 2001 will remain in full force and effect.[52]

(d) Missoula's maintenance plan contains the necessary contingency measures to promptly correct any violation of the standard that may occur after the area is redesignated. Chapter 3 of the Missoula City-County Air Pollution Control Program lists contingency measures and under what circumstances they go into effect.

Section 7506 – Limitations on certain Federal assistance. (CAA §176)

(c) Neither the state nor MCCHD supports, permits, licenses or approves any activity that does not conform to the approved SIP. As ensured by the Conformity regulations, the Transportation Policy Coordinating Committee, Missoula's MPO, cannot approve any project that does not conform to the SIP.

Sections 7506a through 7509a do not require action by Missoula.

Subpart 3 – Additional Provisions for Carbon Monoxide Nonattainment Areas
Section 7512 (CAA §186)
(a) Classification by operation of law and attainment dates. Missoula was designated as a Moderate-1 non-attainment area upon the passage of the Clean Air Act Amendments of 1990.

[52] 66 FR 57391

As a moderate area, Missoula was to attain the standard no later than December 31, 1995. Missoula attained the 8-hour CO standard in 1992, when it had only one 8-hour reading over 9 ppm. Missoula has not recorded an 8-hour reading over 9 ppm since January 23, 1992.

Section 7512a. Plan submission and requirements. (CAA §187)
(a) Moderate areas. Missoula has met the requirements of this section as described below.
(1) Inventory. A 1990 base year emission inventory was submitted to the EPA on November 15, 1992, in accordance with this section.

(2)(A) Vehicle miles traveled. This requirement is only applicable to areas with a design value of 12.7 or more.

(2)(B) Special rule for Denver. Not applicable to Missoula.

(3) Contingency Measures. This section pertains to areas with design values of 12.7 or more.

(4) Savings clause for vehicle inspection and maintenance provisions of the State implementation plan. Missoula was not required to have an inspection and maintenance plan before November 15, 1990. As a result, this provision is not applicable to Missoula.

(5) Periodic inventory. This provision requires Missoula to submit emission inventories every three years. In 2000, the Montana submitted a 1993 and 1996 inventory to EPA for approval. A 2000 emission inventory is submitted with this request.

(6) Enhanced vehicle inspection and maintenance. This provision applies to areas with design values of 12.7 or above.

(7) Attainment demonstration and specific annual emission reductions. This section requires moderate areas with design values of less than 12.7 to submit an attainment demonstration and any necessary revisions to the program to attain the standard by December 31, 1995. In order to meet the CO 8-hour NAAQS, Missoula adopted an oxygenated fuels program and revised several sections of the Missoula CO SIP to support the program in 1992. The program and other SIP revisions were submitted to EPA for approval on November 6, 1992.

Subpart 6 – Savings Provisions
Section 7515. General savings clause. (CAA § 193)
This section states that any regulation in effect before passage of the Clean Air Act Amendments of 1990 must remain in effect, unless modified as provided by the Act. In addition, in a non-attainment area, existing control measures cannot be modified unless the modification insures equivalent or greater emission reductions of the target pollutant. Since November 15, 1990, Missoula has not removed or modified any rules except to the extent that the new or modified rules would provide equivalent or greater emission reductions of carbon monoxide.

Criterion 5:
Fully Approved Maintenance Plan Under CAAA Section 175A

Provision 1: Attainment Inventory

Cyra Cain of DEQ completed Missoula's 2000 CO Emission Inventory (E.I.) in June 2003 and submitted it to Tim Russ at EPA, Region 8 in Denver, CO on June 9, 2003. The results of the inventory are summarized below.

The 2000 E.I. area is identical to the Air Stagnation Zone (Figure **.) Emissions are calculated for a "CO season day," which is the day of the week with the highest average daily traffic (ADT) within the CO season. The "CO Season" is defined as the three consecutive months with the highest number of NAAQS violations. In Missoula, a "CO season day" is an average weekday in December, January and February.

DEQ calculated emissions from seven source categories: industry, aircraft, natural gas combustion, non-road gasoline and diesel exhaust, on-road gasoline and diesel exhaust, railroad locomotive exhaust and residential wood burning. Using actual (instead of permitted) industrial emissions, the total CO emissions for a CO season day was 68,006.87 kilograms, or 75 tons. Table 6 lists the total actual CO season day emissions, percentage contributions, and ranking.

2000 Total Actual CO Emissions, Percentage Contributions, and Rank of Emissions from Seven Primary Source Categories for a CO Season Day in the 2000 Missoula Air Stagnation Zone

Source	CO Season Day Emissions (kg CO/CO Day)	Percentage Contribution (%)	Rank of Emissions
Industrial Processes	267.62	0.39	6
Aircraft Exhaust	1,194.00	1.75	4
Natural Gas Combustion	478.84	0.71	5
Nonroad Gas and Diesel Motor Exhaust	2,168.02	3.19	3
Onroad Vehicle Exhaust	56,747.40	83.44	1
Railroad Locomotive Exhaust	50.59	0.08	7
Residential Wood Burning	7,100.40	10.44	2
Total	68,006.87	100.00	

Table 6

The following figure displays the total daily, actual CO emissions from the seven source categories on a percentage basis.

2000 CO Emission Source Contributions for a CO Season Day in the Missoula Air Stagnation Zone

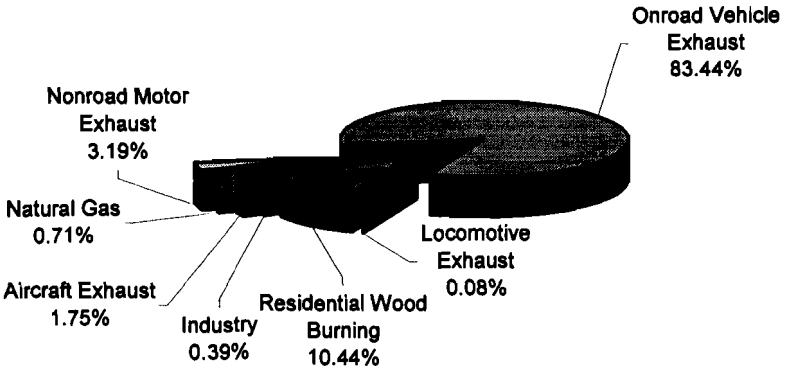


Figure 4

Exhaust from on-road motor vehicles was overwhelmingly the most significant CO contributor (83.4%) compared to the other categories. Residential wood burning followed a distant second with 10.4%. The other five categories combined contributed less than seven percent. Railroad locomotive exhaust emitted the least amount of carbon monoxide at 0.08%.

The E.I. also looked at the emissions within the non-attainment area, which is considerably smaller than the Air Stagnation Zone (Figure 1). In this analysis, aircraft CO emissions were not included, since the airport is located outside the non-attainment area. The sources that were analyzed include natural gas combustion, non-road gasoline and diesel motor exhaust, on-road gasoline and diesel exhaust, railroad locomotive exhaust and residential wood burning. Table 7 lists the total actual CO season day emissions, percentage contributions and ranking for the non-attainment area.

2000 Total CO Emissions, Percentages, And Rank of Six Source Categories for a CO Season Day in the Missoula CO Non-Attainment Area			
Source	CO Season Day Emissions (kg CO/CO Day)	Percentage Contribution (%)[a]	Rank of Emissions
Industrial Processes	267.62	0.59	5
Natural Gas Combustion	421.26	0.92	4
Non-road Gas and Diesel Motor Exhaust	1,747.83	3.82	3
On-road Vehicle Exhaust	37,714.95	82.49	1
Railroad Locomotive Exhaust	27.56	0.06	6
Residential Wood Burning	5,542.84	12.12	2
Total	45,722.06	100.00	

a. Variance may occur due to rounding conventions.

Table 7

The total CO emissions in the non-attainment area were 45,722.06 kilograms, or 50.4 tons. This was about 67.2% of the total CO emissions in the entire Air Stagnation Zone. As in the larger perspective, on-road vehicle exhaust contributed the highest amount of CO (82.5%), with residential wood burning a distance second at 12.1%. The other sources combined contributed less than 6% to the total CO emissions.

DEQ compared 2000 emissions with the 1993 and 1996 inventories. Table 8 displays these results.

Comparison of 1993, 1996, and 2000 CO Emissions for a CO Season Day in the Missoula CO Non-Attainment Area					
Source	1993 (kg CO/CO Day)	1993 Change Compared to 2000 (%)	1996 (kg CO/CO Day)	1996 Change Compared to 2000 (%)	2000 (kg CO/CO Day)
Industrial Processes (Louisiana Pacific Corporation)	120.94	48.36	151.29	35.40	234.18
Aircraft Exhaust (Air Carrier, Air Taxi, & General Aviation)	455.91	38.51	551.93	25.56	741.45
Natural Gas Combustion (Residential only)	257.04	-0.17	266.11	-3.70	256.61
Nonroad Gas and Diesel Motor Exhaust	1,903.54	12.20	2,016.89	6.97	2,168.02
Onroad Vehicle Exhaust	39,468.86	10.88	36,060.06[a]	18.57	44,284.92
Railroad Locomotive Exhaust (Line Haul & Switch Yard)	64.42	-36.19	70.29	-48.60	47.30
Residential Wood Burning (Eight Wood Burning Devices)	9,465.24	-55.42	6,934.17	-13.86	6,090.28
Total	51,735.95	3.88 (to Total)	46,050.74	14.44 (to Total)	53,822.76

a. Variance may occur due to rounding conventions.

Table 8

However, there were so many differences in inventory methods, emission factors and other inventory parameters, that it is a bit like comparing apples to oranges. In the largest source category, on-road vehicle emissions increased 14.4% between 1996 and 2000. A portion of this increase may be superficial, due to higher emission factors and more accurate traffic data. However, during that time, vehicle kilometers traveled also increased from 36,057 to 44,284, and the proportion of sports utility vehicles, which have not been as vigourously regulated as passenger vehicles also increased. These increases illustrate the importance of continuing to control emissions from all sources over time.

Provision 2: Maintenance Demonstration

As required by CAA Section 175(A), each request for redesignation must be accompanied by a SIP revision that provides for maintenance of the NAAQS for at least 10 years after redesignation. According to the EPA guidance, Missoula is not required to perform area wide dispersion modeling for this demonstration.[53] Instead, Missoula focused on the Brooks/South/Russell intersection, which had been determined to be the intersection of highest CO concentrations in the 1992 CO saturation study.[54] Cyra Cain of the Montana DEQ modeled CO concentrations at the EPA approved monitoring site (AIRS 30-063-0005.)[55] The model showed that CO concentrations at the monitoring site decreased over time. Cain stated that the most important factors contributing to the decrease were the elimination of South Avenue within the signalization process, reduced traffic access and the reduction of total signalization cycle time from 180 seconds for the 2000 base year to 120 seconds for outlying years.[56] Other contributing factors were the benefits of the reduced sulfur content in gasoline (sulfur reduced the efficiency of catalytic converters in vehicles) and fleet turnover of new vehicles. At Missoula's request, Cain modeled CO concentrations at the monitoring site with and without oxygenated fuels. The results are summarized below:

Monitoring Site Highest and Second Highest 8-Hour CO Concentrations Including Background CO Concentrations and Persistence Factor.

Analysis Year	CO Concentration (ppm)[a]		Concentration Reduction Relative to 2000 Base Year (%)	
	With Oxygenated Fuel	Without Oxygenated Fuel	With Oxygenated Fuel	Without Oxygenated Fuel
2000	10.4	12.1	NA[b]	NA
2005	6.1	6.4	41.4	47.1
2010	4.6	4.9	55.8	59.5
2015	3.9	4.3	62.5	64.4

a. ppm = parts per million.
b. NA = Not Applicable

Table 9

[53] Calcagni, 1992.
[54] Schmidt, 1992.
[55] Cyra Cain, 2003, "Carbon Monoxide Air Quality Analysis of Brooks Street, South Avenue, and Russell Street in Missoula, Montana, for CO Redesignation to NAAQS Attainment," Montana Department of Environmental Quality, Planning, Prevention and Assistance Division, Monitoring and Data Management Bureau, Analytical Services Section, Helena, Montana, September 2, 2003.
[56] Cain, 2003, "Carbon Monoxide Air Quality Analysis...," page 14.

As illustrated in the table, the model indicated that in 2000, there had been a possibility of violating the 8-hour average NAAQS at the monitoring site. However, Missoula's highest CO concentration recorded that year was 3.9 ppm, a 63% difference. This difference can be attributed to a couple of things. First of all, Missoula may not have experienced worst-case scenario conditions during 2000. Secondly, the inputs into the model are very conservative.

In the mid-1990's, as the Missoula community searched for a permanent solution to the congestion and air quality problems at the Brooks/South/Russell intersection, air quality modeling was performed that showed under worst case scenario conditions, unless something was done to change the intersection, Missoula would exceed the NAAQS at the intersection in 2015, even with oxygenated fuels and fleet turnover.[57] This modeling did not just look at where the monitoring site was located, but evaluated dozens of receptor sites, as required by EPA modeling protocol.

Peak 8-Hour Maximum Carbon Monoxide Concentrations, in Parts Per Million (ppm

Alternative	Study Intersection								
	Brooks/South/Russell			Brooks/Fairview			Brooks/East South		
	1993	1998	2015	1993	1998	2015	1993	1998	2015
Existing (No Action)	21.1	15.6	10.8	9.6	6.9	5.5	5.3	4.2	3.6
South Ave. Realignment	NA	8.3	6.6	NA	8.5	6.0	NA	7.4	5.8

Table 10

The highest CO concentrations did not occur at the monitoring site. Instead the sites of highest concentrations were receptors on South Avenue – about half a block west of the intersection, and about a block east of the intersection. The modeling showed, that by realigning South Avenue, Missoula would not exceed the 8-hour CO NAAQS under worst case conditions at any location around the intersection.

The CAA requires areas to use the latest planning and modeling assumptions when requesting redesignation. Between 1996 and 2003, EPA approved a new emissions model, Mobile 6.2. As a result, Cyra Cain of the Montana DEQ remodeled this intersection in 2003, using the new modeling software.[58] As HNTB had in 1996, Cain modeled dozens of receptor sites around the intersection (not just the location of the monitor.) Receptors were sited in the vicinity of the intersection, approximately 10 feet beyond the travel lanes. All receptors had a height of 5.9 feet, except for the receptor meant to represent the present CO monitor, which had a height of 12.5 feet to match the monitoring inlet.[59] The results are shown in the table below:

[57] HNTB Corporation, May 1996, page 15.
[58] Cain, September 2003.
[59] Cain, September 2003, page 10.

Highest and Second Highest 8-Hour Averaged CO Concentrations Including Background CO Concentrations and Persistence Factor								
Analysis Year	CO Concentration (ppm)[a]				Concentration Reduction Relative to 2000 Base Year (%)			
	With Oxyfuel		Without Oxyfuel		With Oxyfuel		Without Oxyfuel	
	Highest	Second Highest	Highest	Second Highest	Highest	Second Highest	Highest	Second Highest
2000	15.2	14.3	18.1	17.6	NA[b]	NA	NA	NA
2005	8.8	8.2	9.3	8.7	42.1	42.7	48.6	50.6
2010	6.5	6.2	7.2	7.1	57.2	56.6	60.2	59.7
2015	5.8	5.7	6.3	6.1	61.8	60.1	65.2	65.3

a. ppm = parts per million.
b. NA = Not Applicable

Table 11

The results show that in 2000, it would be possible for Missoula to violate the 8-hour NAAQS at the worst-case receptor site under worst-case conditions. (In this modeling, the receptor site with the highest concentrations was located on Brooks Street, north of the intersection.) While oxygenated fuels help, reducing CO concentrations by more than 15% in 2000, they were not enough to guarantee compliance with the standards. As a result, the realignment project at Brooks/South/Russell, which is included in Missoula's CO maintenance plan, continues to be an important air quality improvement strategy.

Provision 3: Monitoring Network and Verification of Continued Attainment

CO compliance monitoring in the Missoula area, including the Malfunction Junction location, will continue in accordance with the QAPP, the EPA Quality Assurance Manual (EPA-600/9-76-005, revised December 1984), 40 CFR Part 50 including Appendix C, and 40 CFR Part 58 including Appendices A though G. The state will continue to regularly submit accuracy data for the Missoula CO site and precision data for the Montana CO network to the EPA through the federal Precision and Accuracy Reporting System.

DEQ and MCCHD intend to operate the Malfunction Junction site indefinitely. Any changes in CO monitoring in the future will be addressed in the annual Montana Network Review (MNR). The State will submit an EPA network modification request form for EPA approval before making any changes. Emergency episode CO monitoring in Missoula shall be conducted, if

necessary, in accordance with Missoula's Emergency Episode Avoidance Plan (MCCAPCP, Appendix B.)

EPA guidance requires Missoula to track progress of the maintenance plan, either by periodic updates of an emission inventory or by a periodic review of modeling assumptions and input data. Since Missoula's maintenance demonstration is based upon modeling at the Brooks/South/Russell intersection, Missoula will review modeling assumptions and inputs. After the intersection is reconstructed in 2005, Missoula will perform traffic counts at the intersection (on a weekday during the CO season) and will verify the cycle time and red time. If these inputs are significantly different from those predicted in 2003, DEQ will remodel the intersection, using the latest planning assumptions. In addition, every five years starting in 2005, Missoula will review whether there have been any major changes in either the transportation models or air quality models that could affect predicted CO levels. If necessary, modeling will be repeated to ensure Missoula continues to attain the standard.

Provision 4: Control Plan

Missoula's Control Plan has two main components: maintaining the enforceable controls contained in the Missoula Air Pollution Control Program that help reduce CO levels in Missoula and completing the intersection reconfiguration project at Brooks/South/Russell Streets.

A. Current Controls in the Missoula Air Pollution Control Program.

Missoula will continue to maintain the NAAQS by keeping essential programs in place, including stationary source permitting, outdoor burning permitting, solid fuel burning device restrictions and the oxygenated fuels program. These programs are contained within the Missoula City-County Air Pollution Control Program and are not being revised at this time.

B. South Avenue Reroute at Brooks and Russell

Air quality modeling has shown that, given worst-case meteorological conditions at the existing Brooks/South/Russell intersection, Missoula would exceed the national ambient air quality standards for CO. However, Missoula must show that it will not exceed the NAAQS between now and 2015 in order to be redesignated as a maintenance area. Therefore, Missoula is including the South Avenue Reroute project in its Control Plan. **The inclusion of this project in the SIP will ensure the project is fully funded and completed on the schedule outlined below.** (See ARM 17.8.1302 and 40 CFR 93.113.) Missoula's Transportation Plan Updates and the Transportation Improvement Programs will have to provide for the timely completion and implementation of this project consistent with the schedule included in this document.

Project description. After a lengthy public process, Missoula chose an at-grade reroute of South Avenue as the preferred project in late May 1997. Vehicles traveling west on South Avenue will be rerouted to the Brooks/Sussex intersection, and vehicles traveling east on South Avenue will be re-routed to the Brooks/Fairview/Catlin intersection. See Figure 5.

The westbound route, identified as Alternate E5 in the Environmental Assessment, will be a new route that crosses an open field behind the School District building and feeds into Sussex Avenue at Stephens. The route will continue west on Sussex to the Brooks Street intersection. A free right turn onto Brooks Street will be incorporated into the modified Sussex/Brooks intersection. Stephens Avenue will essentially remain the same, except the new route will include a left turn lane and a free right turn northbound onto Stephens.

The eastbound route, identified as Alternate W7 in the Environmental Assessment, takes South Avenue traffic along a new route that uses Garfield Street and then accesses Brooks Street southbound. The new route will require additional right-of-way from two or more commercial properties to create a free right turn onto Garfield using the existing right-of-way to approximately Fairfield Avenue. Additional right-of-way from one commercial property will be needed to make the engineered turn from Garfield onto Fairview Avenue. The route will access Brooks Street at Fairview Avenue and Catlin Street. Sidewalks will be constructed along the entire new route. Traffic moving south along Garfield from South Avenue could access Brooks Street or Catlin Street or continue on through to Russell Street.

The project includes intersection improvements, at Brooks/Russell, at Brooks/Catlin and at Brooks/Sussex. These include new traffic lights, bike lanes, sidewalks and improved pedestrian crossings.

Project Schedule	To be completed by:
Final Design	September 2003
Right-of-Way Acquisition	March 2004
Alternate E5 Construction	July 2005
Alternate W7 Construction	July 2005
Intersection Improvements	July 2005

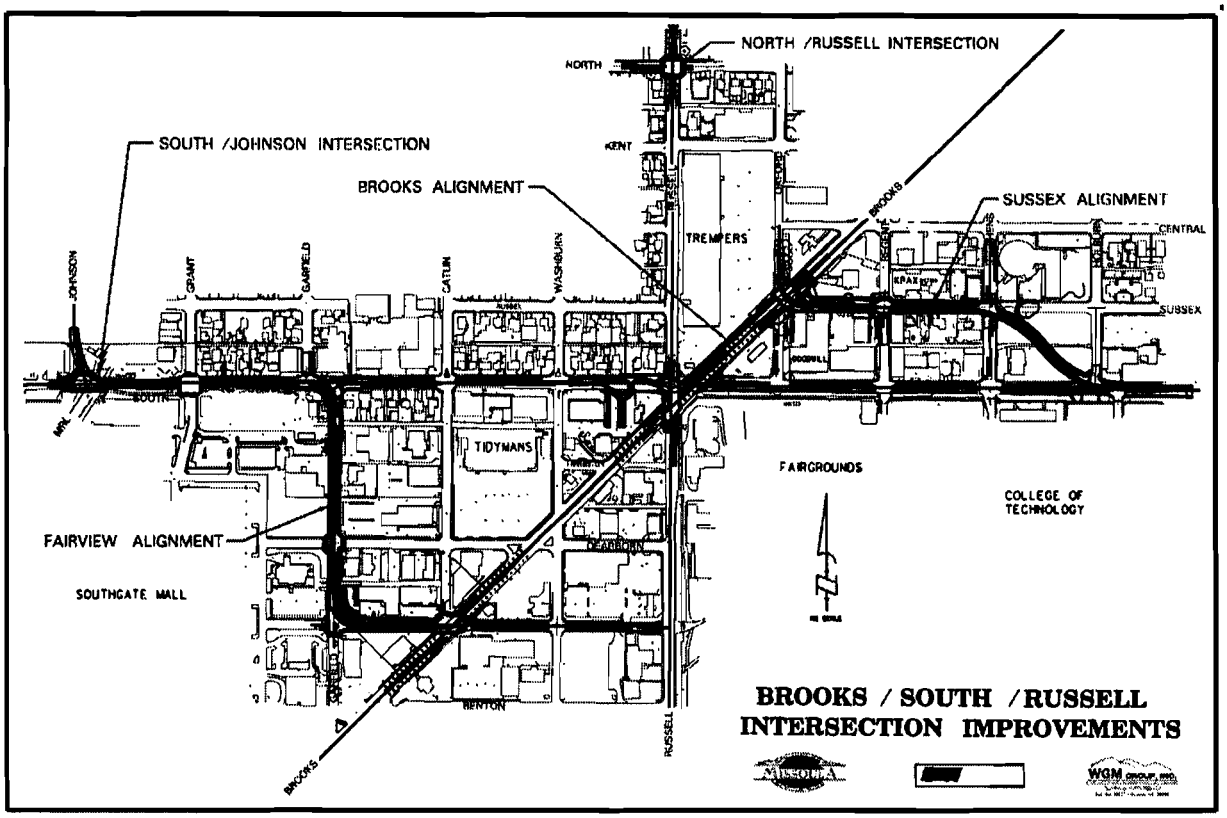


Figure 5

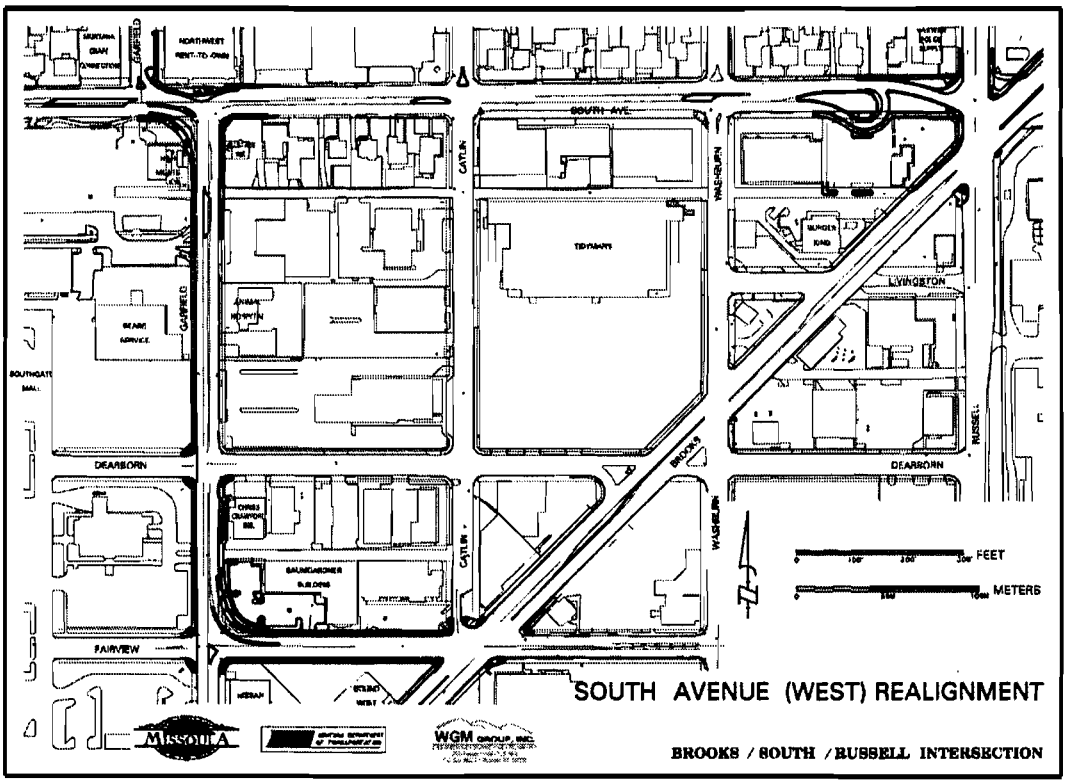

SOUTH AVENUE (WEST) REALIGNMENT
BROOKS / SOUTH / RUSSELL INTERSECTION
Missoula
WGM GROUP, INC.
FEET
METERS
DEARBORN
FAIRVIEW
SOUTH AVE
BROOKS
RUSSELL
LIVINGSTON
CATLIN
WASHBURN
GARFIELD

Figure 6

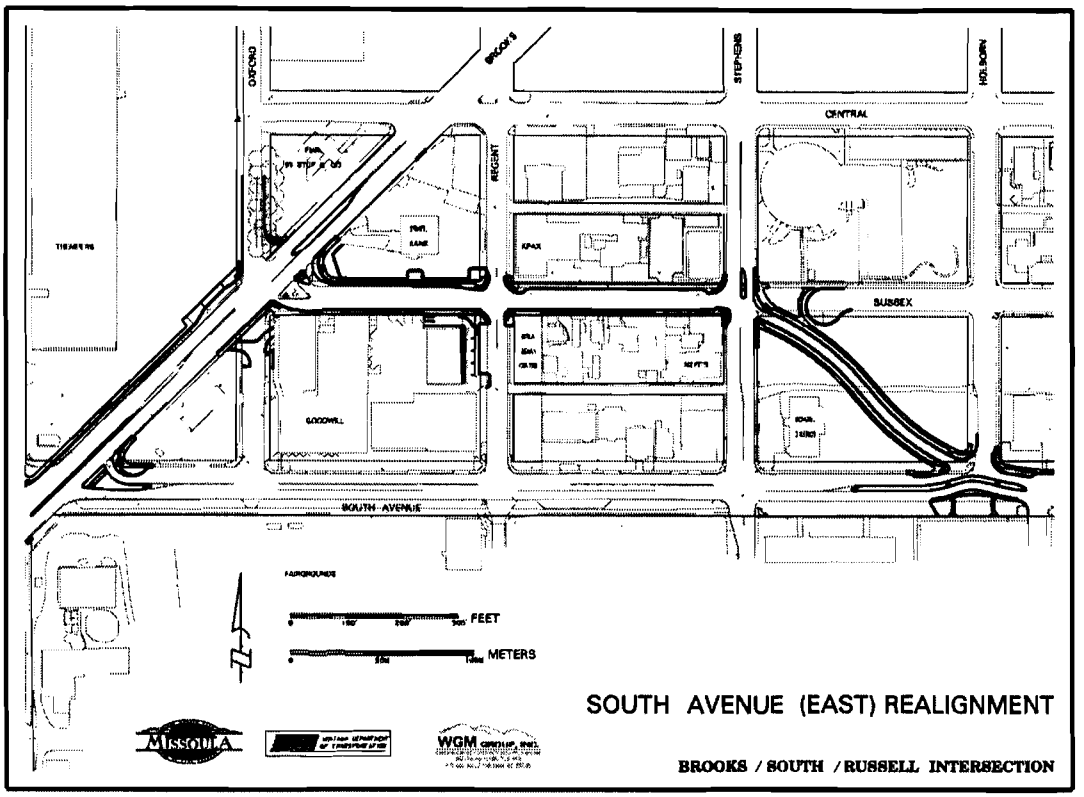


Figure 7

Provision 5: Contingency Plan

Missoula's contingency measures are contained within the Missoula City-County Air Pollution Control Program, and include the following:

Rule 3.103 - Carbon Monoxide Contingency Measures

Within sixty (60) days of notification by the DEQ and the EPA that the area has failed to attain the carbon monoxide NAAQS or make reasonable further progress in reducing emissions, the department will implement Rule 9.119 and if the department determines that motor vehicles are greater than 40 percent of the cause, the department will implement Rule 10.110.

Rule 3.104 - Early Implementation of Contingency Measures

Early implementation of a contingency measure will not result in the requirement to implement additional moderate area contingency measures if the area fails to attain the NAAQS or make reasonable further progress in reducing emissions. However, if the area is redesignated as serious, additional control measures including Best Available Control Measures and serious area contingency measures will be necessary.

Rule 9.119 - Contingency Measures

(1) Rule 9.106(1) and 9.106(2) are modified to delete Alert class permitted devices, and Rules 9.106(3) and 9.111(1) are void. (See Chapter 3.)

(2) All portions of this chapter that allow Alert permits to burn during alerts or warnings are hereby rescinded.

Rule 10.110 - Contingency Measure

(1) Upon notification by the DEQ and the EPA that a violation of the 8-hour NAAQS for carbon monoxide has occurred, and with departmental determination that motor vehicles are greater than 40 percent of the cause, the control period must be extended to include the month of the violation and any intervening months.

Provision 6: Conformity Determinations Under Maintenance Plans

The conformity provisions ensure that federally funded or approved projects and actions are consistent with the air quality planning goals of the Missoula CO control plan. The transportation conformity rule of November 24, 1993 and the general conformity rule of November 30, 1993 apply to nonattainment areas and maintenance areas operating under maintenance plans.[60] Under either rule, conformity can be demonstrated by indicating that the expected emissions from planned actions are consistent with the emissions budget for the area.

For CO, federally funded and approved transportation plans, programs, projects and actions are required to demonstrate that emissions of CO from implementing the plan will either be less than emissions from a no-build scenario or less than 1990 emissions.

[60] 58 FR 62188, 58 FR 63214