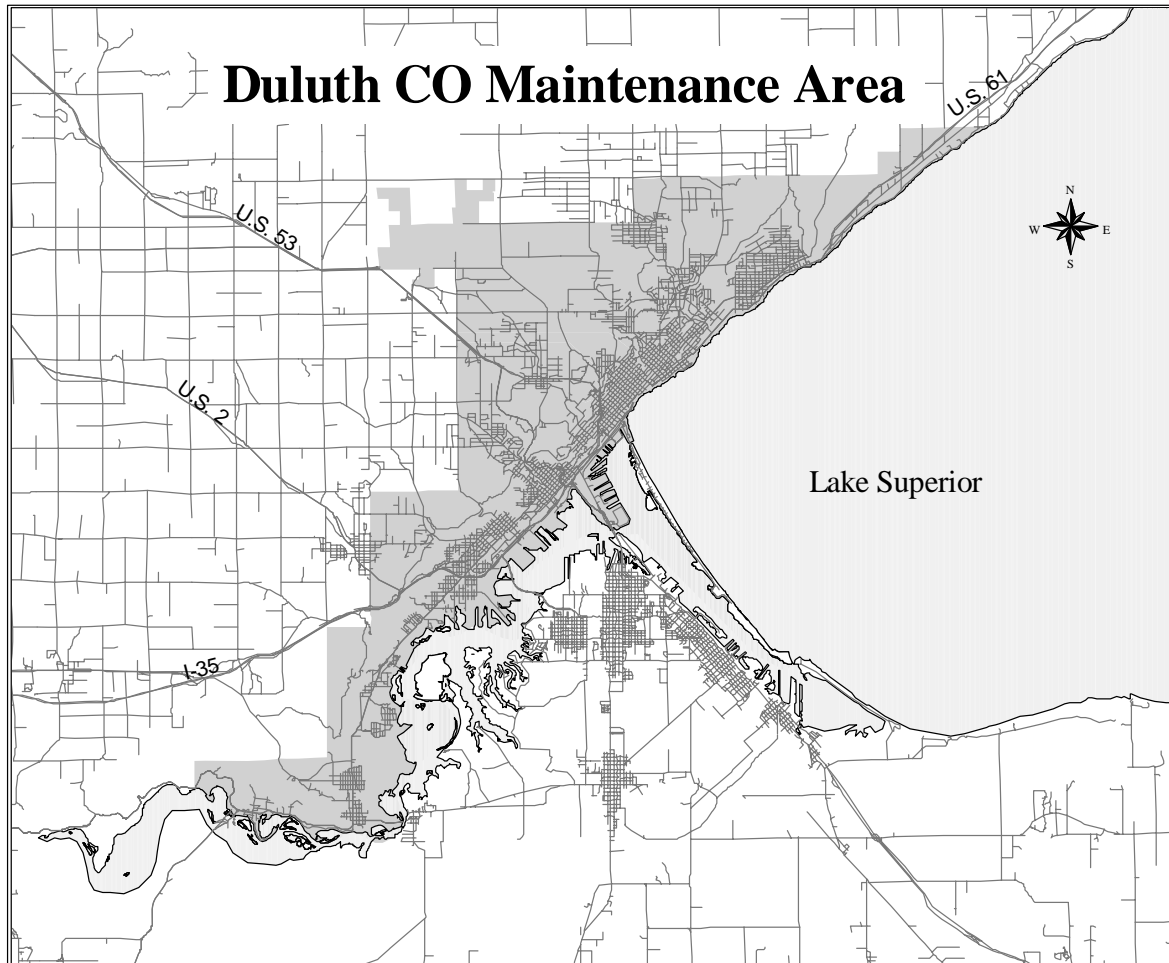


Air Quality Maintenance Plan Update

Duluth, Minnesota

September 2002



Prepared by the
Duluth-Superior Metropolitan Interstate Committee (MIC)



A joint venture of the Arrowhead Regional Development Commission (ARDC) and the
Northwest Regional Planning Commission



Background

The Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments (CAAA) of 1990 allowed the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for various pollutants. NAAQS standards have been developed for carbon monoxide, nitrogen dioxide, ozone, lead, particulate matter and sulfur dioxide. The EPA designated the City of Duluth a non-attainment area for carbon monoxide (CO) in 1977. Since the designation, air quality has improved in spite of increased regional travel. Air quality improvements can be attributed to various technological advancements (gasoline, Intelligent Transportation Systems or ITS) and the completion of Interstate 35 (I-35) through the downtown area. In 1994, the City of Duluth was redesignated to an air quality maintenance area (rather than non-attainment area) for CO, a designation that will apply for twenty years (2014).

As an air quality maintenance area, the City of Duluth (city limits) must conform with the Minnesota State Implementation Plan (SIP) for air quality and NAAQS set by the EPA as mandated by the CAAA. The SIP is a state required planning document to implement all reasonably available transportation control measures (TCM's) as expeditiously as practicable to ensure achievement of NAAQS. The CAAA broadens the interpretation by prohibiting the expenditure of any funds on projects in a transportation plan or program unless the plan and program conform to the SIP. The intent of the CAAA is to ensure conformity determination is completed on individual federally funded projects before federal funding is approved. Therefore all Long Range Transportation Plans (LRTP) and Transportation Improvement Programs (TIP) must categorize projects (pursuant 40 CFR part 51, subpart T, section 51.462 projects exempt from regional emissions analysis) for air quality conformity purposes. Those projects that require a conformity determination or hot spot analysis are mandated to include Transportation Control Measures (TCM's) in their projects to mitigate adverse air quality affects.

The City of Duluth is located adjacent to Lake Superior at the bottom of a steep geologic basin. There are three distinct climates in the City of Duluth: on top of the hill, downtown and near the lake. Downtown Duluth is a microclimate influenced by Lake Superior and temperature inversions are common. These inversions typically occur downtown on summer days and it can be 85 degrees over the hill and 60 degrees downtown near the lake. Downtown air can be trapped by tall buildings, while near the lake where the I-35 freeway runs, air moves over Lake Superior. Prior to the 1992 construction of the eastern extension of I-35 through Duluth, traffic was funneled downtown on Superior Street causing congestion. The tall buildings downtown, little wind and warm air above trapped CO as it was emitted from vehicles causing the initial violations in the 1970's. The last violation, which was 9.9 parts per million (ppm) the second highest average of the eight-hour standard (9.0 ppm), occurred on October 23, 1989. Through-traffic has been permanently rerouted onto the eastern extension of I-35.

- 1) The EPA, pursuant to Section 107 (d) (3) (E) of the CAAA, determined that the City of Duluth had attained CO standards in 1994. Accordingly, the EPA redesignated the City of Duluth to an air quality maintenance area for CO.

- 2) The City of Duluth developed a Transportation Control Plan (TCP) identifying alternative strategies for the reduction of carbon monoxide concentrations. The TCP (1979) contained TCM's to obtain and maintain ambient air quality standards for CO. The following is a list of these measures:

PARKING & SIGNALIZATION STRATEGIES:		
	Jurisdiction	Status
I. Encourage use of Trunk Hwy 61		
A. Mesaba & 2 nd St. temporary channelization	Duluth	Completed
B. Improve enforcement of on-street parking	Duluth	Completed
C. Improve signal phasing at 6 th Ave. E., 3 rd & 4 th Streets	Duluth	Completed
D. Improve turning radius at 14 th Ave. E. & 3 rd	Duluth	Completed
E. Interconnect 3 rd St. signals	MnDOT	Completed
F. Evaluate right on red restrictions	MIC	Completed
II. Improve signage of parking facility access routes		
A. Short-term parking access loop signage	Duluth	Completed
B. Long-term parking (DECC) routes signage	Duluth	Completed
III. Encourage voluntary ban on peak hour goods deliveries		
A. Private sector	Duluth	Completed

Duluth-Superior Transportation System Management Plan (1990)

The Transportation System Management (TSM) element contains short-term recommendations to improve traffic flow and reduce congestion through non-capital intensive means. These TSM improvement strategies consist entirely of minor intersection geometric improvements, pedestrian and bicycle facilities, and safety improvements, which improved flow and reduced emissions. These measures have almost entirely been implemented and the eastern extension of I-35 has taken a considerable amount of pressure off these locations. The EPA has determined hot spot analysis should be conducted on a localized basis.

- 3) Air quality improvements are largely due to the permanent travel network rerouting which occurred in 1992 with the completion of the eastern extension of I-35 from Mesaba Avenue (194) to 26th Avenue East. Prior to this construction, traffic was funneled downtown on Superior Street causing congestion. The tall buildings downtown, little wind and warm air above trapped CO as it was emitted from vehicles causing the initial violations in the 1970's.
- 4) All applicable requirements for the City of Duluth have been met under Section 110 and part D. In the SIP submittal, the MIC agreed to examine contingency measures and submit an implementation schedule within two months of the notice of violation. The CO SIP identified specific measures for attainment of the CO standard. The City is expected to continue to do so given the present eight-hour monitor levels of 2.1 ppm (2001) and 4.1 ppm (2000).

- 5) Pursuant to Section 175A, the City of Duluth is required to submit an additional plan pertaining to the second ten-year maintenance period. This document is intended to serve as an update to the Limited Maintenance Plan.

Limited Maintenance Plan Qualifications & Elements

A. Attainment Inventory

- City of Duluth CO emissions were identified by the EPA as localized and intersection specific therefore, the MPCA does not currently maintain an emissions inventory.

B. Maintenance Demonstration

- The current federal eight-hour air quality standard for CO is 9.0 ppm, the federal one-hour standard is 35 ppm and Minnesota's is 30 ppm. The eight-hour standard is triggered on the 2nd maximum 8-hour value. A historical snapshot of ambient levels of CO as monitored at the West Superior Street and 3rd Avenue West (Torrey Building 314 West Superior Street) location is as follows:

Year	2nd maximum 8-hour Standard: 9.0 ppm
1990	4.4
1991	5.2
1992	4.0
1993	4.1
1994	4.3
1995	4.5
1996	4.5
1997	3.2
1998	3.7
1999	2.3
2000	4.1
2001	2.1

Prior to the 1992 construction of the east extension of I-35 through Duluth, traffic was funneled downtown on Superior Street causing congestion. The tall buildings downtown, little wind and warm air above trapped CO as it was emitted from vehicles causing the initial violations in the 1970's.

Implemented air quality strategies include traffic signal improvements, incident management techniques (including MnDOT & Duluth Transit Authority (DTA) ITS initiatives including cameras, message boards, automatic vehicle locators etc.), transit improvements and travel demand management techniques. Accordingly in 1999, five years after redesignation, the City of Duluth's 2nd maximum eight-hour concentration was 2.3 ppm compared to the primary standard of 9.0 ppm. The City of Duluth is well below both the federal eight-hour standard (9.0 ppm) and one-hour standard (35.0 ppm) and these trends are expected to continue as through-traffic has

been permanently rerouted onto the eastern extension of I-35 and CO is no longer trapped between downtown buildings. Intersection geometrics and traffic signal improvements are ongoing and will continue to reduce congestion.

Given the current CO levels and projected city growth rates for the next ten years, it is unlikely that the City will violate NAAQS for CO. Therefore, it is our belief that the City of Duluth will undoubtedly remain in conformity over the next ten-year period.

C. Monitoring Network/Verification of Continued Attainment

- To verify attainment status for the City of Duluth, over the duration of the 20-year maintenance period, a continuous air quality monitor was installed. The monitor is mounted on the north side of the Torrey Building, which is located at 314 West Superior Street. The MPCA will continue to operate this monitoring network in accordance with 40 CFR Part 58.

D. Contingency Plan

- Section 175A of the 1990 CAAA requires that a maintenance plan include contingency measures, as necessary to promptly correct any violation of NAAQS for CO that occurs after redesignation of the area. Section 175A also requires that the State will implement all measures contained in the Part D nonattainment plan for the area prior to redesignation.
- Triggering Event: To promptly correct any violation of the NAAQS that occurs, the MPCA will use a monitored air quality violation as the triggering event for the contingency measure. The triggering event date will be the date that the State certifies to EPA that the air quality data are quality assured, which will be no later than 30 days after an ambient air quality violation is monitored.
- Contingency Measures: If a violation of the NAAQS for CO occurs and the identified triggering event is confirmed, the City of Duluth will work with MPCA and MnDOT to implement one or more appropriate contingency measures. The MPCA Commissioner, within six months of a triggering event, will finalize a decision on contingency measure selection.
 - ❖ The MPCA identifies TCM's as the most easily implemented and effective contingency measures. The MPCA will require the implementation of one or more appropriate TCM's to correct CO hot spot problems. Potential TCM's include traffic signalization improvements, intersection improvements and improved transit service. Implementation of this measure will be required within one year following the decision to apply this contingency measure.
 - ❖ The City of Duluth believes that allowing one year to implement this measure is reasonable because cooperation will have to be obtained from other local and/or state government entities, and in the case of transit, the Federal Transit Administration (FTA). These local and/or state government entities will need time to form policies, develop or change ordinances, and amend existing

legislation, etc. The FTA will need time to issue grants. Therefore, the MPCA believes that a one-year implementation schedule allows sufficient time for these entities to complete their appropriate processes.

Conformity Determinations

The MIC, City of Duluth and MPCA have shared responsibilities for air quality planning in the Duluth metropolitan area. The MIC has been responsible for developing TCM's to reduce air pollution by increasing the efficiency of the intermodal transportation system. Implemented strategies include traffic signal improvements, incident management, transit improvements and travel demand management techniques.

The CAAA mandated the EPA to set NAAQS for both primary (human health) and secondary (environmental) harmful pollutants. The State of Minnesota has developed a SIP for air quality, which is a formal submission listing air quality strategies and plans to the federal government. Long range metropolitan improvements listed in the LRTP and TIP must conform to NAAQS and SIP guidelines. An air quality conformity determination is made in consultation with MPCA, EPA, MnDOT and USDOT. For projects requiring a conformity determination or hot spot analysis, TCM's are mandated. TCM's and other federal air quality regulations must be listed in LRTP's.

The MIC is a member of the Minnesota Interagency Air Quality Transportation Planning Task Force. The committee is comprised of members from MnDOT, MPCA, FHWA, St. Cloud Area Planning Organization and the Metropolitan Council (Twin Cities Area). The mission of the committee is to ensure air quality conformity consultation is conducted and to serve as a forum for discussing information on transportation air quality issues.

The MIC oversees federally funded transportation plans, programs and projects and must ensure air quality conformity with the existing Minnesota SIP. Project exemptions are documented in both the TIP and LRTP. These tasks will continue to be conducted with the assistance of MPCA and EPA. Accordingly, the MIC prepares the following documents relative to air quality:

- **Transportation Improvement Program (TIP)**: The MIC annually prepares the TIP and categorizes each project within the City of Duluth for air quality purposes.
- **Long Range Transportation Plan (LRTP)**: Every three years the MIC updates the LRTP which documents the long range multimodal transportation needs for the region and categorizes these project needs for air quality purposes. Many of these project needs are based on transportation demand modeling (TRANPLAN) which illustrates current and projected transportation deficiencies. Periodic modeling efforts are done between LRTPs for specific planning initiatives and to monitor level of service deficiencies (LOS).
- **Transit Development Program (TDP)**: Approximately every three years the MIC updates the Transit Development Program (TDP) which is currently *Transit Vision*. The TDP serves as a mid-range planning document to guide the DTA operations.

Due to the localized nature (intersection specific) of CO concentrations in Duluth, no regional or localized air quality emissions modeling has been required nor have air quality budgets. Accordingly, all state and federal transportation projects within the City of Duluth continue to address air quality impacts, to ensure continued conformity to comply with CAAA (NAAQS) and Minnesota SIP standards.

Conclusion

In conclusion, given the nature of the original violations, the current low CO concentrations (well below state and federal eight-hour and one-hour standards) and the permanent rerouting of traffic off Superior Street and onto the eastern extension of I-35, the MIC expects that the City of Duluth will continue to remain in conformity of NAAQS for CO through the year 2014. All TCM's have been implemented from the TCP as well as the majority of TSM recommendations (1990). ITS technology is being implemented on MnDOT facilities and DTA on buses and facilities. There are ongoing strategies in place to ensure conformity. Finally, the City of Duluth and the Duluth-Superior MIC will continue to work cooperatively with the MPCA and EPA to ensure that all the necessary steps are taken to ensure federally funded transportation projects will not cause or contribute to new air quality violations.

