

RESPONSE TO COMMENTS

In November 2008, MassDEP issued for public review and comment a proposed revision to the *Massachusetts Carbon Monoxide (CO) Maintenance State Implementation Plan (SIP) for the City of Lowell (Proposed Lowell SIP revision)*¹. In the Proposed Lowell SIP revision, MassDEP proposed to discontinue CO monitoring in Lowell and to use data from the Worcester monitor as a surrogate for purposes of determining when contingency control measures must be implemented under the SIP.

MassDEP received comments from 19 residents and public officials from nearby communities opposing the proposal and one comment in support of the proposal. MassDEP has categorized and summarized the comments and provides its responses below.

COMMENTERS:

1. Nicholas Waggener – N.Billerica
2. Piage Impink – Tewksbury
3. Leo Manning – Chelmsford
4. Rebecca Clarke & Thomas Hostage – N.Billerica
5. Karyn Sliva – Tewksbury
6. Lou-Ann Clement – Board of Health, Tewksbury
7. Rep. James R. Miceli, 19 Middlesex District – Tewksbury and Wilmington
8. Mary Anne Kochenderfer – Chelmsford
9. Greg Eakman – Billerica
10. Christine Kinnon – Board of Health, Tewksbury
11. Caroline Ahdab - Pepperell
12. William F. Williams – Town Manager, Billerica
13. Robert M. Correnti – Selectman, Town of Billerica
14. Geraldine E. Foskitt – N.Billerica
15. Helena Pisetsky – Billerica
16. Jeanne Landers – Billerica
17. Lynn Santos, Consultant for Edward Campese of the Billerica Watchers Group
18. U.S. Environmental Protection Agency (EPA) Region I, Boston -Anne Arnold, Manager, Air Quality Planning Unit
19. State Senator Steven C. Panagiotakos

¹The Proposed Lowell SIP revision is at: www.mass.gov/dep/air/priorities/sip.htm#co

Summary of Comments Received and MassDEP Responses

A. Public Health Impacts of CO

Commenters stated that continued CO monitoring is needed to protect public health in the Lowell area. Commenters are concerned that removal of the Lowell CO monitor would result in the loss of data needed to track ambient CO levels in Lowell and other communities in the Merrimack Valley.

Response:

MassDEP appreciates the concerns of residents of Lowell and surrounding towns who have a strong interest in protecting public health in their communities. Protecting public health and maintaining air quality is fundamental to MassDEP's mission. In order to protect public health, the U.S. Environmental Protection Agency (EPA) sets National Ambient Air Quality Standards (NAAQS) for the most pervasive air pollutants. MassDEP must insure that air quality in Massachusetts meets the NAAQS.

The NAAQS for CO are 9.0 parts per million (ppm) averaged over eight-hours, and 35.0 ppm averaged over one-hour. In the 1970s and early 1980s, measurements at the CO monitor in Lowell showed violations of the 8-hour CO standard. No violations of the 1-hour CO standard have been recorded in Lowell. The last violation of the 8-hour standard in Lowell was in 1984. Since then, monitored CO levels at the Lowell site have continued to decline to well below the NAAQS.² MassDEP operates three additional CO monitors located in Boston (Kenmore Square), Worcester, and Springfield. CO levels at these monitors are also well below both NAAQS for CO.

CO is the only pollutant measured at the Lowell monitor, unlike the other CO monitoring locations where MassDEP measures multiple pollutants. Maintaining this single-pollutant monitor at a location where there have been no violations of the health-based NAAQS for over 25 years does not provide meaningful public health protection.³ MassDEP expends substantial resources to operate and maintain the Lowell CO monitor. In a time of budget constraints, MassDEP must focus its monitoring resources on pollutants and locations where there is a greater likelihood of elevated pollutant concentrations and associated public health impacts.

² Compliance with the NAAQS is based on the 2nd maximum 8-hour concentration. In 2007, the 2nd maximum in Lowell was 1.6 ppm; in 2008, it was 2.1 ppm, which is approximately 20% of the 8-hour 9.0 ppm standard. The maximum 8-hour concentration in 2007 was 2.1; in 2008 it was 2.6 ppm. See Figures 2 and 3 on page 6.

³ The U.S. EPA has explicitly recognized that where measured levels of pollutants are low, shutting down monitors may be allowed. On October 17, 2006, EPA published a final monitoring rule revising the minimum monitoring requirements for CO. (See 71 *Federal Register* 61250 and 71 *Federal Register* 61301.)

There are three air quality monitoring sites in the Merrimack Valley where MassDEP measures multiple air pollutants. These sites and the pollutants measured are: Lawrence (ozone, sulfur dioxide and fine particulate matter (PM 2.5)); Haverhill (PM 2.5); and Newbury (ozone, nitrogen oxides and PAMS⁴). These other monitors will continue to provide a comprehensive indicator of overall air quality in the Lowell and Merrimack Valley.

MassDEP reviews its state-wide air quality monitoring network annually. During its next review, MassDEP expects to examine the existing statewide PM2.5 network to assess the potential for additional PM 2.5 monitors in various locations including Merrimack Valley. However, the deployment of any new monitors will be dependent on the resources available to support the overall monitoring program.

B. Sources of CO Emissions

Commenters are concerned about the potential public health impacts of additional CO emissions from existing and proposed new power plants, nearby highways (Routes 3, 495 and 93) and industrial, commercial, and residential development in the densely populated Lowell area. The Montgomery L'Energia Lowell Power Plant installation and the proposed Billerica Energy Center peaking power plant in Billerica are of particular concern to the commenters.

Response:

CO is largely a mobile source based pollutant. (See Figure 1 below.) The highest on-road motor vehicle CO emissions occur when vehicles idle during congested traffic, generally around city centers. CO monitors must be located close to areas of congested traffic in order to measure the highest CO concentrations, as CO disperses quickly. All of the CO monitors in Massachusetts are located in congested urban locations where the highest CO concentrations are anticipated. Highway traffic generally creates far less CO emissions than slower traffic conditions.

As discussed in the Proposed Lowell SIP Revision, the significant decrease in CO concentrations at each of the monitors in Massachusetts over the years is largely the result of reductions in CO emissions from motor vehicles. Despite steady increases in population, economic development, and vehicle miles travelled, emissions of CO (and other pollutants) from motor vehicles have been significantly reduced due to the adoption of state and federal mobile source control requirements.⁵ These reductions have taken place in all counties in Massachusetts. As cleaner, newer vehicles replace older cars and trucks, CO emissions from on-road vehicles will continue to decrease.

⁴ PAMS is a special designation for enhanced monitoring stations that are designed to gather information on the ozone formation process. For additional information see the MassDEP Annual Air Quality Reports at: www.mass.gov/dep/air/priorities/aqreports.htm#aqrept

⁵ See the Proposed SIP revision, Footnote 1, (www.mass.gov/dep/air/priorities/sip.htm#co) for a list of these on-road mobile source control programs.

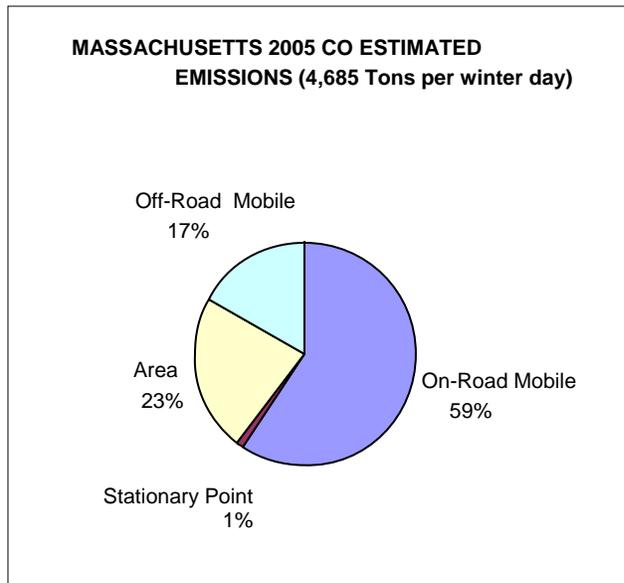
In Massachusetts, CO emissions from large stationary industrial sources (“stationary point sources”), including power plants, comprise less than 1% of the estimated 2005 statewide CO winter day emissions inventory.⁶ Furthermore, MassDEP does not issue an approval for the construction and operation of a new or modified facility if emissions from the facility will cause or contribute to a violation of a NAAQS. Anticipated emissions from a proposed facility, along with background pollutant estimates, are analyzed as part of a NAAQS compliance demonstration.

In 2008, MassDEP issued to Montgomery L’Energia Power Partners LP a Conditional Approval for an 85 megawatt (MW) combined cycle peaking electric generating facility in Lowell. The facility submitted a NAAQS compliance demonstration as part of the approval process. MassDEP determined that CO emissions from the facility will not cause or contribute to a violation of the CO NAAQS. A requirement of the Conditional Approval is that stack emissions of CO, ammonia and nitrogen oxides from the facility be monitored and recorded by continuous emissions monitoring systems (CEMS) to determine compliance status with the emission limits for these pollutants.⁷ This monitoring requirement provides assurance that CO emissions from this facility will not exceed allowable limits. Furthermore, it is highly unlikely that CO emissions from elevated stacks would impact ground levels of CO because of dispersion. Billerica Energy Center, a 348-megawatt peaking plant, has been proposed for North Billerica but the project is on hold as of late 2009. If the project goes forward, MassDEP will require a demonstration that the facility will not cause or contribute to the violation of a NAAQS.

⁶ Because CO emissions and concentrations generally are highest in colder temperatures, estimates are for a typical winter day.

⁷ The CO emission limits for the facility include a CO limit of 38.6 tons per 12-month rolling period. By comparison, the annual CO emissions for 2005 in Middlesex County from on-road motor vehicles are estimated to be more than 175,000 tons. See Massachusetts 2005 Periodic Emissions Inventory: <http://www.mass.gov/dep/air/priorities/aqdata.htm>

Figure 1



Estimates are from the Massachusetts 2005 Periodic Emissions Inventory.
<http://www.mass.gov/dep/air/priorities/aqdata.htm>

C. The Worcester CO monitor as a surrogate for Lowell

Commenters questioned the suitability of using data from the Worcester monitor as a surrogate for Lowell, noting that Worcester is 40 miles away and that the Worcester area has a lower population density than Lowell and the Merrimack Valley. One commenter (#17) noted that the maximum CO concentrations in Lowell for both the 1-hour and 8-hour average have increased over the past 2 years at a higher rate than in Worcester.

Response:

For purposes of monitoring CO concentrations, a high traffic location in Worcester is an appropriate surrogate for a high traffic location in Lowell. Worcester is a larger city (pop.175,454) with significantly higher economic activity and vehicular traffic than Lowell (pop. 103,229), and the Worcester monitor is located at a high-traffic site.

CO monitoring data from 1983 to 2008 for both Lowell and Worcester show that CO concentrations have compared very closely. The 2nd high 8-hour CO levels for Lowell and Worcester for this time period have a correlation coefficient of 0.86. The average 2nd high 8-hour CO level for this period for Lowell is 4.9 ppm; for Worcester it is 4.8 ppm. The strong correlation of monitored CO levels in the two cities demonstrates that the Worcester monitor is an adequate surrogate for Lowell

Furthermore, as demonstrated in Figures 2 and 3 below, the concentrations at both monitors are so significantly below the 1-hour and 8-hour CO standards, that a higher rate of increase in the 1-hour and 8-hour maximums in Lowell in 2007 and 2008 is not a meaningful metric.

Figure 2

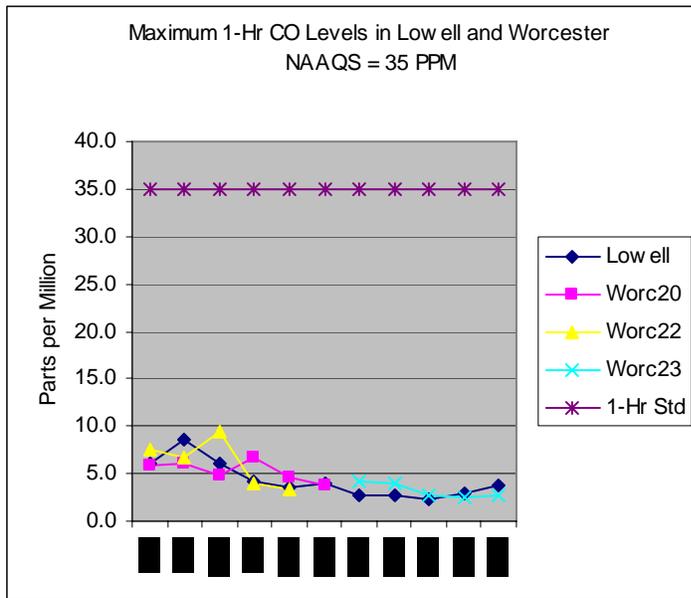
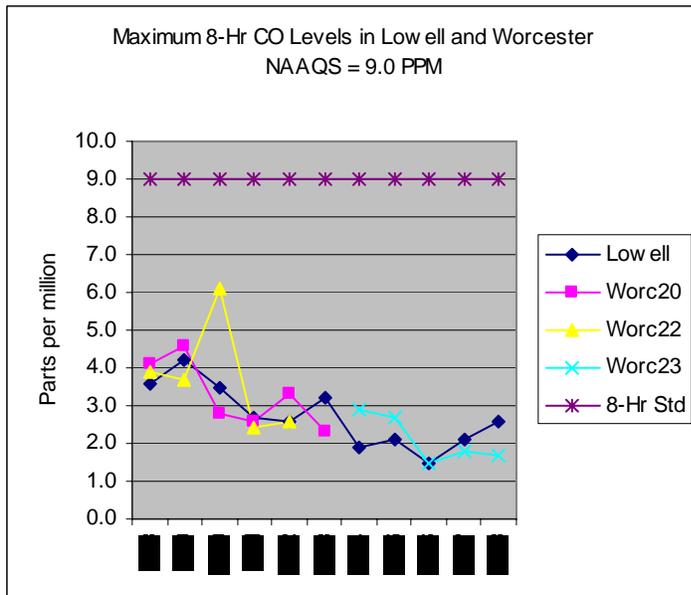


Figure 3



D. Estimates of CO Emissions

The EPA submitted comments agreeing with MassDEP's proposal. EPA also commented that MassDEP should provide additional information on the source of its emission estimates and projections for Lowell and Worcester (page 5 of the Proposed Lowell SIP Revision), noting that the estimates differ significantly from emission levels included in the 2001 Maintenance Plan for these cities.

Response:

MassDEP appreciates EPA's comments agreeing with the proposal to shut down the Lowell monitor and to use Worcester monitor data as a surrogate.

EPA notes correctly that the CO emissions estimates in the 2001 Maintenance Plan differ from those in the Proposed Lowell SIP Revision. The 2001 Maintenance Plan estimates of CO emissions for 1996 and 2012 were developed using the methods and models that were current at the time the 2001 Maintenance Plan was developed and were based on the Massachusetts 1996 Periodic Emissions Inventory.

Subsequent to preparation of the 2001 Maintenance Plan, MassDEP developed the Massachusetts 2002 Base Year Emission Inventory and the 2005 Periodic Emissions Inventory.⁸ In the 2002 and 2005 emissions inventories, MassDEP used the latest EPA mobile models to estimate mobile source emissions and adopted revised methodologies for estimating emissions from other source categories. Methods of projecting emissions to future years have also been revised since MassDEP developed the 2001 Maintenance Plan. MassDEP used these updated emission estimates and methods to illustrate trends in CO emissions from mobile and other sources in the Proposed Lowell SIP Revision

MassDEP is required to submit to EPA a second maintenance plan for Lowell eight years after EPA's 2002 redesignation of Lowell to attainment. The second maintenance plan will need to provide for maintenance of the CO NAAQS for an additional ten years after the ten-year 2001 Maintenance Plan expires in 2011. In that second maintenance plan, MassDEP will provide revised estimates of CO emissions as of the plan submission date and projected emissions for a future maintenance year.

⁸ The Massachusetts emissions inventories are at: <http://mass.gov/dep/air/priorities/aqdata.htm>