

## 2.9 Air Quality

Chicago is the third largest metropolitan area in the nation, with a large number of both industrial and vehicle air emission sources. The USEPA National Ambient Air Quality Standards (NAAQS) set maximum allowable concentration limits for six criteria air pollutants. Table 2-23 lists the NAAQS. The primary standards are established at levels that are intended to protect the public health. Secondary standards are required to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Exceedances of the 24-hour and annual arithmetic mean standards for PM<sub>2.5</sub><sup>31</sup> were recorded in the study area, while no exceedances or violations within the study area were recorded for carbon monoxide, lead, nitrogen dioxide, and PM<sub>10</sub>.<sup>32</sup> Ozone and sulfur dioxide were not monitored in the study area.

TABLE 2-23  
National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon monoxide	9 ppm (10 mg/m <sup>3</sup> )	8-hour <sup>a</sup>	None	
	35 ppm (40 mg/m <sup>3</sup> )	1-hour <sup>a</sup>		
Lead	0.15 µg/m <sup>3</sup> <sup>b</sup>	Rolling 3-month average	Same as primary	
	1.5 µg/m <sup>3</sup>	Quarterly average	Same as primary	
Nitrogen dioxide	0.053 ppm (100 µg/m <sup>3</sup> )	Annual (arithmetic mean)	Same as primary	
Particulate matter (PM <sub>10</sub> )	150 µg/m <sup>3</sup>	24-hour <sup>c</sup>	Same as primary	
Particulate matter (PM <sub>2.5</sub> )	15.0 µg/m <sup>3</sup>	Annual <sup>d</sup> (arithmetic mean)	Same as primary	
	35 µg/m <sup>3</sup>	24-hour <sup>e</sup>	Same as primary	
Ozone	0.075 ppm (2008 std)	8-hour <sup>f</sup>	Same as primary	
Sulfur dioxide	0.03 ppm	Annual (arithmetic mean)	0.5 ppm (1300 µg/m <sup>3</sup> )	3-hour <sup>a</sup>
	0.14 ppm	24-hour <sup>a</sup>		

Source: USEPA, 2009a.

<sup>a</sup> Not to be exceeded more than once per year.

<sup>b</sup> Final rule signed October 15, 2008.

<sup>c</sup> Not to be exceeded more than once per year on average over three years.

<sup>d</sup> To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.

<sup>e</sup> To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup> (effective December 17, 2006).

<sup>f</sup> To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).

<sup>31</sup> PM<sub>2.5</sub> is particulate matter 2.5 micrometers or smaller.

<sup>32</sup> PM<sub>10</sub> is particulate matter 10 micrometers or smaller.

Areas in which air pollution levels persistently exceed the NAAQS may be designated “nonattainment” areas. The study area is located within Cook and DuPage counties, which are included in the moderate nonattainment area for the 8-hour ozone standard. Due to the nonattainment status of the area, the State of Illinois has developed a State Implementation Plan identifying programs intended to reduce emission of ozone precursors.

In addition, USEPA has designated Cook and DuPage counties as not attaining the PM<sub>2.5</sub> standard (70 Code of Federal Regulations [CFR] 944, 968). The designations became effective April 5, 2005.

Illinois EPA publishes air quality information for the state in its *Annual Air Quality Report*. Table 2-24 summarizes the 2007 status (the latest Air Quality Report available) for each air quality pollutant sampled in the study area.

TABLE 2-24  
2007 Status on Air Quality Pollutants

Pollutant Name	Status (2007)
Carbon monoxide	No exceedances of the 1-hour standard of 35 ppm or the 8-hour standard of 9 ppm.
Lead	No violations of the 3-month maximum mean standard of 0.15 µg/m <sup>3</sup> .
Nitrogen dioxide	No violations of the annual arithmetic mean standard of 0.053 ppm.
PM <sub>10</sub>	No exceedances of the 24-hour standard of 150 µg/m <sup>3</sup> .
PM <sub>2.5</sub>	Exceedances of the 24-hour standard of 35 µg/m <sup>3</sup> and annual arithmetic mean of 15.0 µg/m <sup>3</sup> .
Ozone	Not evaluated in the study area. However, no exceedances of the former 1-hour standard were recorded statewide, but exceedances of the current and former 8-hour standards were recorded at other monitoring stations in the Metropolitan Chicago Area.
Sulfur dioxide	Not evaluated in the study area. However, no exceedances of the annual arithmetic mean standard of 0.03 ppm, the 24-hour standard of 0.14 ppm, or the 3-hour standard of 0.5 ppm were recorded in the Metropolitan Chicago Area.

Source: IEPA, 2008a.

Metropolitan planning organizations (MPOs) are required under regulations promulgated in the Clean Air Act of 1990 to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. The purpose of the analysis is to develop transportation plans that conform to state or federal air implementation plans with the object being to preserve the public health. An update of the 2030 Regional Transportation Plan (RTP) was approved and found to conform to the State Implementation Plan by the MPO Policy Committee on October 9, 2008. The 2030 RTP includes a proposed extension of the Elgin O'Hare Expressway east from I-290 to a new western O'Hare access point. In the RTP, the West Bypass is envisioned to extend south from the extended Elgin O'Hare Expressway to I-294 as an access-controlled highway and north from the extended expressway to I-90 as an arterial type highway.

The Tier One analysis is exempt from conformity because it is a planning level study that would not directly involve construction or physical impacts and there would be no generation of pollutants that would substantially impact air quality. The federal regulations

pertaining to this issue are contained in 40 CFR 93.126, which lists projects that are exempt from air quality conformity. These include specific activities that do not involve or lead directly to construction, such as planning and technical studies. During the Tier Two environmental studies, transportation conformity would be addressed including (1) confirmation of the date and status of the RTP conformity; (2) results of a PM<sub>2.5</sub> hotspot analysis to estimate the future localized PM concentrations and assess potential standard violations; and (3) a discussion of whether the project implements a Transportation Control Measure (TCM) in the applicable air quality plan, and if not, a determination as to whether the project would interfere with implementing TCMs. Because conformity is a Tier Two issue, it is not discussed further in this Tier One document.

Carbon monoxide levels are not permitted to exceed the 8-hour NAAQS of nine parts per million and the one-hour NAAQS of 35 parts per million. IDOT uses the computer screening model *Illinois Carbon Monoxide Screen for Intersection Modeling* (COSIM) to estimate worst-case carbon monoxide concentrations for proposed roadway projects affecting signalized intersections with a sensitive receptor within 1,000 feet of the intersection. A COSIM analysis will be performed during Tier Two to determine whether the proposed improvements have the potential to violate the 8-hour standard, and so is not discussed further in this Tier One document.

In addition to criteria air pollutants for which there are NAAQS, USEPA regulates air toxics. Mobile source air toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics result from engine wear or from impurities in oil or gasoline. FHWA's Interim Guidance on Air Toxics Analysis in NEPA Documents suggests a tiered approach for addressing MSATs in NEPA documents. In this approach, projects with no potential for meaningful MSAT effects do not need an analysis, including those exempt under the Clean Air Act Conformity Rule section 93.126. Therefore, no MSAT analysis will be completed at this time. Rather, it will be undertaken during Tier Two and is not discussed further in this Tier One document.