

### **3.11 AIR QUALITY**

The *CEQR Technical Manual* requires a detailed assessment of air quality for actions that would generate increased traffic volumes or emit noxious fumes, especially where they affect residential or other sensitive uses. In this area of the City, a detailed analysis is required if 50 or more project-generated vehicles pass through a signalized intersection in any given peak period which may result in significant mobile air quality impacts. In addition, the NYCDEP has established the screening threshold limit of 23 for the project-generated diesel-powered trucks or buses.

Stationary air quality studies are required if major industrial facilities are located within 400 feet of the new school, if emission sources (stacks) of major heating plants of nearby buildings are lower than the proposed school and if the school's heating plant stack is lower than surrounding buildings.

#### **3.11.1 Introduction**

Under the proposed action, an approximately 121,240 SF, L-shaped school building would be developed on the project site and the existing school building removed. The new school building would stand approximately 70 to 75 feet tall, the bulk of which would be massed on Fourth Avenue and extend around the site on Baltic Street.

Air quality issues associated with this alternative relate to:

- Potential for changes in vehicular travel associated with increased school activities to result in significant mobile source (vehicular related) air quality impacts; and
- Potential for the emissions from the heating system of the proposed school building to significantly impact nearby existing sensitive land uses.

An air quality analysis was conducted, following the procedures outlined in the New York *CEQR Technical Manual*, to determine whether the proposed action will result in violations of ambient air quality standards.

#### **3.11.2 Pollutants of Concern**

##### *3.11.2.1 Criteria Pollutants*

The following air pollutants have been identified by the U.S. Environmental Protection Agency (EPA) as being of concern nationwide: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone, particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur oxides, and lead. National ambient air quality standards (NAAQS) have been established for these pollutants, which are known as criteria pollutants, to protect human health and welfare. Pollutants considered in this analysis were those primarily associated with mobile sources (CO) and the combustion of fuel oil (SO<sub>2</sub>, NO<sub>2</sub>, and particulate matter).

##### *3.11.2.2 Air Quality Standards and Guidelines*

NAAQS are pollutant concentrations for each of the criteria pollutants specified by the EPA that have been developed primarily to protect human health. The secondary goal is to protect the nation's welfare and account for the effect of air pollution on soil, water, vegetation, and other aspects of general welfare. Time frames, based on how these pollutants adversely affect health, have also been established for these pollutants. Applicable standards, with the corresponding averaging time periods, are presented in Table 13. Estimated concentrations of each of the applicable criteria pollutants were compared to the appropriate NAAQS to determine whether emissions associated with the proposed school facility will have the potential to cause a significant air quality impact at the existing surrounding sensitive land uses.

**TABLE 13:  
APPLICABLE NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Period	National and NY State Standards	
		Primary	Secondary
Carbon Monoxide (CO)	8-Hour	9 ppm	Same as Primary Standard
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary Standard
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	80 µg/m <sup>3</sup> (0.03 ppm)	-
	24 Hour	365 µg/m <sup>3</sup> (0.14 ppm)	-
	3 Hour	-	1,300 µg/m <sup>3</sup> (0.5 ppm)
Particulate Matter (PM <sub>10</sub> )	24 Hour	150 µg/m <sup>3</sup>	Same as Primary Standard
Particulate Matter (PM <sub>2.5</sub> )	24 Hour	35 µg/m <sup>3</sup>	Same as Primary Standard
	Annual	15 µg/m <sup>3</sup>	

Source: US Environmental Protection Agency, "National Primary and Secondary Ambient Air Quality Standards." (49 CFR 50). New York Department of Environmental Conservation.

Notes: µg/m<sup>3</sup>: micrograms per cubic meter  
ppm: parts per million

### 3.11.3 Mobile Sources

Localized increases in CO and particulate matter levels may result from increased vehicular traffic volumes and changed traffic patterns in the study area as a consequence of the proposed school facility. According to the *CEQR Technical Manual* CO screening threshold criteria for downtown Brooklyn, if 50 or more project-generated vehicles pass through a signalized intersection in any given peak traffic period, there is a potential for mobile air quality impacts and a detailed analysis is required. In determining the potential for significant PM<sub>2.5</sub> impacts, following NYCDEP procedures, a detailed analysis is not required if the number of project-generated heavy-duty diesel vehicles through an intersection is less than 23. However, if these trips are a combination of diesel-powered and gasoline-powered vehicles, no analysis is required if it can be demonstrated that the PM<sub>2.5</sub> emissions generated are less than emissions from 23 heavy-duty vehicles.

Based on the traffic analysis conducted for this project, the number of diesel-powered (i.e., school buses) and gasoline-powered vehicles generated are above the threshold values. As such, a detailed CO microscale analysis and a PM<sub>2.5</sub> emission equivalency analysis were conducted for the intersection with the highest project-generated vehicles, which is the intersection of Fourth Avenue and Butler Street.

The CO analysis, which was conducted for both the AM and PM peak periods, found that the additional vehicles associated with the larger new school building would not cause an exceedance of the NAAQS and will not exceed *CEQR Technical Manual* de minimis threshold values. The result of the PM<sub>2.5</sub> analysis is that the additional vehicles would be less than the emission equivalent threshold established by the NYCDEP for heavy-duty diesel vehicles.

Therefore, the proposed school would not result in any significant adverse mobile source air quality impacts.

### **3.11.4 Stationary Sources**

Emissions from the HVAC systems of the proposed new school building may affect air quality levels at nearby existing land uses. The impact of HVAC emissions would be a function of fuel type, stack height, building size (gross floor area), and location of emission source relative to a sensitive land use.

The size (gross floor area and height) and location (block and lot number) for the proposed school building and nearby existing buildings were obtained from the planning study and field observations. Two 120-foot-tall residential buildings were identified in the vicinity of the project site—one on Block 407, Lot 26, closest to the project site, and the other on Block 401, Lot 38.

An analysis was conducted, using *CEQR Technical Manual* screening procedures, to determine whether the HVAC emissions of the proposed school building would have the potential to significantly impact air quality levels at nearby receptors.

The *CEQR Technical Manual* provides a nomographic procedure, based on the square footages and heights of nearby buildings (provided that buildings are at least 30 feet apart), to determine whether the HVAC emissions of a shorter building would have the potential to significantly impact air quality levels at sensitive receptor locations (e.g., windows, terraces, etc.) on the taller building. If a shorter building is located near a taller building, the potential impacts from the HVAC emissions of the shorter building on the taller building need to be considered. It is anticipated, according to the *CEQR Technical Manual*, that emissions from the heating systems of taller buildings would not significantly affect shorter buildings.

As the proposed school building will be shorter than the two nearby apartment buildings, the potential impacts of the proposed school heating plant on these buildings were considered in the following analysis:

- Figure 3Q-5 of the *CEQR Technical Appendix* was used to determine potential for significant SO<sub>2</sub> (i.e., the critical pollutant for fuel oil) impacts.
- The estimated maximum size of each building was plotted on the nomograph against the distance to a potentially affected nearby taller building.
- The threshold distance at which a potentially significant impact is likely to occur was estimated and compared to the actual distance between the shorter building and the nearest taller building.

Since the distance from school site to the nearest taller building (100 feet) is greater than the threshold distance indicated on the *CEQR Technical Appendix* nomograph (76 feet), it is projected that the project would result in no significant stationary source air quality impact.