

## **9.1 INTRODUCTION**

This chapter of the Supplemental EA considers the potential for construction or operation of the Modified Design to result in impacts related to air quality. The 2004 FEIS concluded that construction activities for the new subway would result in increased dust and pollutant emissions from construction equipment and increased traffic congestion near the construction zones. The Project's Construction Environmental Protection Plan (CEPP) requires an aggressive dust control program to minimize dust and use of diesel emission controls to reduce pollutant emissions. The 2004 FEIS found that once the Project is complete and operational, the new subway would result in local and regional improvements in air quality by reducing the use of motor vehicles. The Modified Design would not change the conclusions of the 2004 FEIS.

## **9.2 FEIS FINDINGS**

### **9.2.1 CONSTRUCTION IMPACTS**

The 2004 FEIS included an analysis of the Second Avenue Subway project's effects on air quality in Chapter 11, "Air Quality." As discussed in the 2004 FEIS (see FEIS page 11-9), during construction of the subway, heavy trucking activity as well as substantial diversions of and increased congestion for existing traffic can be expected when cut-and-cover excavation takes place at station locations. In addition, air quality in close proximity to construction sites would also be affected by fugitive dust, diesel emissions, and other particulate matter created at active construction sites.

The 2004 FEIS included an analysis of the localized (microscale) effects of construction activities on carbon monoxide (CO) for five representative locations along the 8.5-mile alignment of the Second Avenue Subway. The modeling effort accounted for increased congestion, lower running speeds, and increased idle emissions. The five locations were selected to represent reasonable worst-case conditions based on the results of the traffic analysis presented in the 2004 FEIS. Although a detailed analysis was only conducted for the five intersections (124th Street and Park Avenue, 96th Street and Lexington Avenue, 96th Street and Second Avenue, 34th Street and Lexington Avenue, and 34th Street and Second Avenue), these receptor sites represented the reasonable worst-case conditions that would be likely to occur throughout the entire alignment area during any construction phase.

Two construction zones were selected for construction activity modeling of particulate matter (PM), including PM of 10 micrometers or less in diameter (PM<sub>10</sub>) and fine particulate matter 2.5 micrometers or less (PM<sub>2.5</sub>): the area between 97th and 92nd Streets to be constructed in Phase 1, and a corresponding area near 36th Street to be constructed in Phase 3. These sites were selected because they could experience the most intense and longest duration construction activities along the alignment, because both locations have heavy existing traffic volumes as well as sensitive receptors nearby, and because both areas can represent activities that would occur in other places

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along the alignment. At both locations, two construction activities were modeled separately: the open-cut station excavation process and the spoils removal process for the Tunnel Boring Machine (TBM). These activities were chosen for modeling because they would each require a large number of construction vehicles and machinery over a multi-year period and because they would also occur at all locations where stations would be constructed. Further, although a variety of construction techniques could be used to build a particular project element, these two construction activities (open cut station excavation and TBM spoils removal) would result in the greatest potential effect to air quality. Consequently, the activities analyzed represent the worst-case conditions at those construction sites, and the results of the analysis for these activities can be used to make conclusions about other portions of the subway alignment where less construction activity would take place.

The 2004 FEIS's air quality analysis concluded that the Project's construction activities, including construction activities at the construction sites and truck trips, congestion, and diversions of existing traffic on the roadways, would not result in adverse impacts on carbon monoxide (CO) levels that would exceed standards or benchmarks. In addition, particulate matter of 10 micrometers or less in diameter (PM<sub>10</sub>) concentrations were not predicted to exceed standards or benchmarks.

In the areas immediately adjacent to major construction sites, the Project's construction activities were projected to result in maximum local annual increases in concentrations of finer particulate matter, PM<sub>2.5</sub>, concentrations that would exceed the interim annual threshold value of 0.3 µg/m<sup>3</sup> that was used at that time by the New York State Department of Environmental Conservation (NYSDEC) in review of projects requiring New York State air quality permits. At that time, some of the background particulate matter of 2.5 micrometers or less in diameter (PM<sub>2.5</sub>) levels exceeded the annual National Ambient Air Quality Standards (NAAQS) at monitoring stations within the study area. While maximum 24-hour average increases in PM<sub>2.5</sub> concentrations from diesel exhaust only (i.e., not including fugitive dust) was not predicted to exceed the interim guidance threshold value of 5 µg/m<sup>3</sup>, the maximum projected 24-hour increase in PM<sub>2.5</sub> concentrations including fugitive dust were predicted to exceed those values. However, total daily PM<sub>2.5</sub> concentrations, including background levels during construction, were predicted to be below the NAAQS.

While the Project was not required to meet the NYSDEC and New York City Department of Environmental Protection (NYCDEP) thresholds, the criteria were applied to assess the magnitude of the Project's effects and to identify mitigation measures to minimize the generation of PM<sub>2.5</sub> to the maximum extent practicable. As a result, construction for the Project was required to follow measures to reduce air pollutant emissions. These measures were set forth in the Project's CEPP and included an aggressive dust control program, including dust covers for trucks, (water) spray misting exposed areas, and using safe chemical dust suppressants to treat and control spoils at construction areas. In addition, a fence of an appropriate height was required to surround the construction sites to reduce wind-borne dust. To reduce emissions from construction equipment, the CEPP required diesel emission controls for non-road equipment. These controls required that all heavy equipment use ultra-low sulfur diesel (ULSD) fuel and diesel particle filters (DPF) or other retrofit technology, in accordance with MTA policies. In addition, idling time for all diesel equipment was limited to three consecutive minutes, except in certain limited circumstances.

## 9.2.2 PERMANENT IMPACTS

As described in the 2004 FEIS, the completion of the Second Avenue Subway will result in overall benefits to local and regional air quality by reducing vehicle trips and vehicle miles of travel. The 2004 FEIS outlined the improvements in regional air quality that would result once the Second Avenue Subway was operational. The 2004 FEIS stated that the Project would contribute to the ongoing improvement in New York City's air quality by decreasing traffic and related congestion. The Project was not projected to increase vehicular traffic at intersections within the study area, and therefore was not projected to result in localized increases in air pollutants.

## 9.3 UPDATE OF BACKGROUND CONDITIONS

Subsequent to the 2004 FEIS, certain air quality standards, regulations, and criteria have been revised, which affects how air quality analyses for proposed projects are conducted. These include the following:

- Changes in the NAAQS;
- Changes in NAAQS attainment status and relevant State Implementation Plans (SIP) in the New York City area;
- Changes in other criteria applied for determining the significance of potential impacts; and
- Changes in engine emissions standards.

Non-road engine emissions are regulated through manufacturing requirements known as tiers. The highest (cleanest) tier, Tier 4, was finalized in 2004 after the 2004 FEIS was published, and imposes stricter PM and nitrogen oxides (NO<sub>x</sub>) emission requirements that were phased in (depending on engine type and size) from 2008-2014, with some exceptions. Cleaner on-road diesel engines were phased in earlier, starting with model year 2007.

The U.S. Environmental Protection Agency (USEPA) established a new 1-hour average NO<sub>2</sub> standard of 100 parts per billion (ppb), effective April 12, 2010, in addition to the annual standard. However, at this time, EPA has not issued new regulations and guidance that would outline methods and criteria for evaluating 1-hour NO<sub>2</sub> impacts from project-level emissions. Therefore, although EPA has promulgated the 1-hour standard, it has yet to be fully implemented.

In addition, since the 2004 FEIS, background air pollutant concentrations have changed. Moreover, the models and methodologies used to perform air quality analyses have evolved.

Also since the 2004 FEIS, during construction of Phase 1, blasting activities resulted in odors and emissions that raised community concerns. To address these concerns, MTA undertook several studies in 2012 to assess the adequacy of the contractor's ongoing Community Air Monitoring Plan and to make recommendations for improving its efficacy as a warning system to take corrective action when problems occur. Additional measures were implemented to address these emissions.

## 9.4 PHASE 2 MODIFIED DESIGN—CHANGES IN IMPACTS

### 9.4.1 CONSTRUCTION IMPACTS

Some of the proposed changes in construction means and methods for the Modified Design would reduce the intensity of construction and the ensuing air pollutant emissions. Specifically, the

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reduction of cut-and-cover construction along 125th Street would reduce the associated surface disruptions and dust emissions. It would also reduce truck traffic needed to remove spoils, as the amount of excavation would be substantially reduced. In addition, on Second Avenue, the amount of cut-and-cover construction at the north end of the 116th Street Station would be substantially reduced because of the Modified Design's smaller bellmouth and shift in the terminus of the curved tunnel southward from about 122nd Street to about 120th Street. While this change would require some additional demolition of the existing 1970s tunnel between 118th and 120th Streets, the originally proposed bellmouth location north of 120th Street would have required more substantial cut-and-cover construction than is now proposed.

As described above, reasonable projections of construction-related 1-hour average NO<sub>2</sub> concentrations are not possible based on existing methods and data. However, given the magnitude of the NO<sub>x</sub> emissions associated with the Project's construction, exceedances of the 1-hour NO<sub>2</sub> standard resulting from construction activities could occur. To mitigate potential construction related NO<sub>2</sub> impacts to the extent practicable, land-based non-road diesel-powered vehicles and construction equipment rated Tier 3 or higher would be used where conforming equipment is available, and the use of such equipment is practicable.

Mitigation will be implemented consistent with what was described in the 2004 FEIS. As described in Section 9.2.1, the 2004 FEIS required an aggressive dust control program, including dust covers for trucks, (water) spray misting exposed areas, and using safe chemical dust suppressants, and the use of the maximum practicable emission reduction technologies for off-road and non-road engines to the maximum extent practicable.

The mitigation program for Phase 2 will be enhanced to meet current standards for best practices aimed at achieving maximum practicable dust and PM<sub>2.5</sub> emissions reductions, and adding NO<sub>x</sub> emissions reductions by requiring cleaner engine selection, thus meeting the mitigation requirement. The Phase 2 mitigation program will include the following measures:

1. The dust mitigation plan will be aimed at reducing dust emissions to the extent practicable, using measures for all activities that may result in dust emissions. The plan will be specific to construction sites and jobs and will include a no-visible-dust policy.
2. The contractor will be required to establish a program for controlling emissions from blasting, where blasting is used, including measures to monitor the efficacy of the controls and address issues as they arise.
3. All diesel engines with a power rating of 50 horsepower (hp) or greater will be required to meet at least the Tier 3 EPA emissions rating (other than engines where there is no Tier 3) and to be retrofit with a diesel particle filter (DPF) (other than engines already equipped with DPF).<sup>1</sup> Minor exceptions would be considered on a case-by-case basis if tier or retrofit requirements are not practicable, with next-best mitigation options considered instead, including but not limited to, flow-through wire mesh filters and diesel oxidation catalysts.

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<sup>1</sup> The first federal regulations for new non-road diesel engines were adopted in 1994, and signed by EPA into regulation in a 1998 Final Rulemaking. The 1998 regulation introduces emissions standards for all equipment 50 hp and greater, referred to as Tier 1, and phases in the increasingly stringent Tier 2 and Tier 3 standards for equipment manufactured in 2000 through 2008. In 2004, the EPA introduced Tier 4 emissions standards with a phased-in period of 2008 to 2015. The Tier 1 through 4 standards regulate the EPA criteria pollutants, including PM, hydrocarbons (HC), NO<sub>x</sub> and CO.

4. Truck fleets working on site and substantial heavy-duty fleets serving the sites such as dump trucks and concrete mixing trucks and pumps will be required to be model year 2007 or newer (the newer trucks are equipped with emissions controls) or retrofit with DPFs.
5. Vehicles making deliveries to and removing materials from the construction zone will not be permitted to idle for more than three minutes, consistent with New York City law. In addition, engines for equipment on the construction sites will not be permitted to idle for more than three minutes unless it is necessary for the construction work.
6. Temporary power will be obtained at construction sites, where practicable, and power will be distributed throughout the site as necessary and used in lieu of generators to the extent practicable. Where electric grid power is available, electric engines will be used in lieu of diesel or gasoline engines where practicable. Solar powered equipment such as variable message signs will also be used wherever practicable.
7. Verifiable enforcement and record-keeping will ensure compliance with the above requirements.

#### **9.4.2 PERMANENT IMPACTS**

Consistent with the design presented in the 2004 FEIS, the Modified Design includes a new subway service along Second Avenue with stations and related elements (entrances and ancillary facilities) in the same general locations as previously contemplated. With the Modified Design, the Project would continue to increase transit options and enhance accessibility to transit services, thereby decreasing reliance on automobiles and affording benefits to air quality. Some advancement in vehicle engine emissions regulations and technology may reduce the air quality benefits of the Project relative to those presented in the 2004 FEIS (avoided emissions from on-road vehicles would be lower). Nonetheless, the Project would still result in air quality improvements within the local urban setting and emissions reductions within the non-attainment and maintenance areas.

#### **9.5 CONCLUSIONS**

The Modified Design includes revised construction means and methods aimed at reducing surface level impacts, such as conducting mining operations instead of cut-and-cover construction along 125th Street. While new air quality standards have been implemented for 1-hour NO<sub>2</sub> impacts since the 2004 FEIS, methodology for evaluating has not yet been implemented. Nevertheless, the robust air quality mitigation program established in the 2004 FEIS to reduce dust and emissions would continue to be implemented, and updated technologies (such as Tier 3-rated equipment) would be incorporated to the extent practicable. Once Phase 2 is operational, the new subway with either the 2004 FEIS Design or the Modified Design would provide similar air quality benefits by expanding accessibility to transit and reducing reliance on automobiles. The Phase 2 Modified Design would not result in any new or different significant adverse impacts related to air quality not previously identified in the 2004 FEIS and ROD. \*