

## CHAPTER 20: CUMULATIVE EFFECTS ASSESSMENT

### 20.1. INTRODUCTION

A cumulative impact may result when the incremental effect of a project, considered together with the effects of other actions—past, present or in the reasonably foreseeable future—produces an effect greater than that expected by each project individually. Cumulative impacts may occur from actions that are minor individually, but collectively significant over time. This assessment was prepared per SEQRA (6NYCRR 617.7 (c) (2) and (3) and 6NYCRR 617.9 (b), (5) (iii) (a)). The preceding DEIS analyses indicated that construction, rather than the operation, of the proposed emergency ventilation plant would result in the greatest potential for environmental impact. Thus, effects during the construction of the proposed emergency ventilation plant are the subject of the cumulative impact analysis.

For this FEIS, past and present projects/actions were taken into account in the documentation of the affected environment. Future actions potentially affecting the proposed action and project area were specifically included in the development of the Future No Action conditions. In addition to specific projects (in this case, only the St. Vincent's Hospital development), a growth factor of 0.5 percent per year was included to account for traffic growth related to other smaller development projects that could occur in the project area by the analysis year. Analysis years for construction were identified based on anticipated levels of activity for each alternative and used to estimate reasonable worst-case environmental impacts in the project area. The incremental change caused by the proposed emergency ventilation plant alternatives was then added to the Future No Action conditions, including past and future projects to determine impacts. (Air quality levels, for example, were assessed in terms of both the incremental change in air pollutants and by the level of pollutants with respect to standards—including the contribution of other projects.)

Through coordination with the New York City Department of City Planning (NYCDCP), efforts have been made to identify and factor into the future conditions all foreseeable projects whose effects would be evident in the Study Area. Only the proposed St. Vincent's Hospital development project was identified during this consultation process as demonstrating the potential to affect conditions within the proposed emergency ventilation plant Study Area and be potentially constructed in the same general time frame. The two projects would potentially begin construction at the same time (2010). Therefore, this project was included in all of the FEIS analyses presented in this document.

While eight subject areas were identified in the earlier *Final Scoping Document* and the *Alternative Analysis and Feasibility Evaluation*, the following subject areas were evaluated for cumulative effects because they have the potential to contribute to cumulative effects, based on the preceding DEIS impact analyses. They have the potential to contribute to interrelated effects, both exclusively as part of the emergency ventilation plant project and in combination with the St. Vincent's Hospital project's construction activities that are assumed to occur at the same time:

- Traffic and Transportation
- Economic Conditions and Community Character
- Urban Design and Visual Resources
- Cultural Resources
- Air Quality
- Noise and Vibration

### **20.1.1. TRAFFIC AND TRANSPORTATION**

Activities related to the construction of the proposed emergency ventilation plant would add traffic to the Study Area street network and require temporary changes to vehicular travel paths, regulations, available on-street parking supply, and reduce sidewalk space for pedestrian activity. Traffic and pedestrian volumes as well as parking usage/availability were first estimated for the Future No Action condition, incorporating the potential effects of other projects. The traffic volumes, traffic, and pedestrian related changes anticipated to occur during construction of the proposed emergency ventilation plant were then overlaid upon conditions estimated for the future No Action condition. Therefore, a cumulative condition was analyzed in the FEIS. For example, traffic volumes for the No Action condition incorporated the background growth of 0.5 percent per year plus projected traffic that would be generated during construction of the proposed St. Vincent's Hospital building, the only development identified within the construction time frame of the proposed emergency ventilation plant that would affect traffic levels in the Study Area. The traffic projected to be generated by construction of the proposed emergency ventilation plant was then added to No Action traffic volumes and the cumulative total traffic was analyzed for the Build condition during construction, thus resulting in an analysis of cumulative conditions considering the effect of multiple concurrent projects upon traffic operations.

A significant traffic impact was identified during Construction Stages 1 and 2 for all emergency ventilation plant alternatives, specifically the traffic impact associated with the projected increase in average delay per vehicle on the southbound Greenwich Avenue approach to Seventh Avenue as a result of the construction related detour, requiring all vehicles to turn right. In addition, it was noted that traffic volumes on Seventh Avenue remain high after the weekday PM peak period and are also high on weekends, based upon a review of traffic data collected for this study and other previously collected traffic along the Seventh Avenue corridor. Because the traffic detour described above for Construction Stages 1 and 2 of each alternative will remain in place 24 hours a day, seven days a week, the possibility exists that a significant adverse traffic impact could occur due to this detour to Seventh Avenue traffic operations during evenings and weekends outside of the anticipated construction activity hours of emergency ventilation plant, especially during months of higher traffic levels. The duration of Construction Stages 1 and 2 would be 12 months for Alternatives P1 and SB5 and 24 months for Alternative SB1. Measures to mitigate this condition, if it should occur, could include: the use of variable message signs to advise motorists of the construction activity in the area and encourage the use of alternate routes to Seventh Avenue; potential changes in the means and methods used in construction; and other public information methods. These mitigation measures would be further developed during MPT planning with NYCDOT during planning, design, and construction of the proposed project. The likelihood of the occurrence of a significant traffic impact on Seventh Avenue will be further evaluated during the development of detailed maintenance and protection of traffic plans during final design through the review of additional traffic data reflecting a broader range of potential weekly and seasonal variation. These efforts and the development and review of mitigation measures, if needed, will be undertaken in consultation with the NYCDOT whose representatives have agreed to participate in this effort.

No other cumulative impacts were identified since it was assumed that the additional construction truck trips generated by the hospital would affect only the peak hours that coincide with construction activity and not the late evening and weekend periods. Lane closures associated with hospital construction would not affect traffic operations associated with the emergency ventilation plant construction.

### **20.1.2. ECONOMIC CONDITIONS/COMMUNITY CHARACTER**

While no long-term permanent cumulative impacts are expected, there are several conditions that could potentially interact during construction of the emergency ventilation plant and the nearby proposed St.

Vincent's Hospital project. Traffic and pedestrian access would be maintained and potential air quality would be mitigated and potential significant adverse noise and vibration impacts would be minimized (specified in MTA NYCT's contract documents and the CEPP), however, there is the potential for cumulative effects to local businesses and community character from the combination of dust and noise during construction, potentially disturbing shopping or dining activity in the immediate area. To minimize these negative construction-related conditions, MTA NYCT will work with the neighboring businesses in developing a schedule that would cause the least disruption to their businesses. Given that the St. Vincent's Hospital development site is approximately 300 feet away from the proposed emergency ventilation plant sites, there could be cumulative adverse noise and vibration impacts during construction, as described below. Measures developed in conjunction with the Hospital will be defined in the Construction Environmental Protection Plan (CEPP) and implemented to minimize adverse impact to the community. Service delivery, particularly access to the Hospital and other neighborhood institutions will be maintained to avoid adverse effects during construction of the emergency ventilation project. MTA NYCT will work together with the Hospital to develop mutually agreeable construction schedules that have the least adverse effect on the community and institutional operations at all times.

### **20.1.3. URBAN DESIGN AND VISUAL RESOURCES**

The emergency ventilation plant's permanent contribution to cumulative urban design and visual quality effects with the St. Vincent's Hospital project would differ under the Preferred Alternative and Alternatives SB1 and SB5, though temporary construction effects would be similar. The below-ground in-streetbed emergency ventilation plant alternatives (SB1 and SB5) would have no significant contribution to the cumulative visual quality and urban design impacts in the long term. Street trees would be replaced and additional sidewalk gratings would have minimal effect on the area's overall visual quality with the exception of Alternative SB5 where additional mitigation measures would need to be identified in coordination with New York City Department of Parks and Recreation (NYCDPR) to replace the mature trees removed during construction. Under the Preferred Alternative, a three- to four-story building would be constructed on the undeveloped site, approximately 300 feet south of the proposed 21-story St. Vincent's Hospital building. Together, the two projects would intensify the bulk in the area, though not interact to adversely affect the area's visual quality or urban design, given the low scale of the proposed emergency ventilation structure.

In 2010, both projects would begin construction and as a result, the area's general visual quality would be temporarily diminished, as construction equipment, safety barricades, and removal of street furniture would be required during the construction period. These effects would be temporary, with equipment and barricades removed at the completion of the facility, and street furniture replaced. During construction, these elements would be chosen, to the extent practicable, to minimize the project's potential contribution to a cumulative adverse visual quality impact. Alternatives SB1 and SB5 which have longer durations than the Preferred Alternative would affect the neighborhood for a longer time.

### **20.1.4. CULTURAL RESOURCES**

The three alternative sites are located in the Greenwich Village Historic District, recognized at the City, State, and Federal levels. None of the sites contain any contributing elements of the historic district, nor do they have archaeological sensitivity given previous subsurface disturbance. It is therefore not anticipated that the project would contribute to cumulative construction impacts on archaeological resources. Construction vibration would be controlled as described above and structural stabilization measures will be implemented, as appropriate to protect nearby historic structures in the district. Under the Preferred Alternative, the aboveground structure would conform to the historic character of the area, designed in consultation with NYCLPC and NYSHPO, as would likely be the case with the proposed St.

Vincent's Hospital building. Should a Memorandum of Agreement (MOA) or a Memorandum of Understanding (MOU) result between OPRHP and MTA NYCT pursuant to the Section 14.09 process, then that MOA or MOU would establish the necessary approach for identifying and implementing necessary mitigation for the Preferred Alternative. Therefore, no cumulative impact to cultural resources is expected.

### **20.1.5. AIR QUALITY**

The FEIS air quality impact analysis included a cumulative impact evaluation which determined no significant adverse impacts with the incorporation of mitigation measures in the CEPP. Cumulative emissions from mobile sources (e.g., construction vehicles) related to construction of the proposed St. Vincent's Hospital were analyzed together with those of the emergency ventilation plant, and cumulative effects of stationary source and mobile source emissions from construction of the emergency ventilation project alone were also analyzed. Total cumulative concentrations estimated near the analysis site were found to be below the NAAQS for CO, NO<sub>2</sub>, or PM<sub>10</sub>, but were found to exacerbate an exceedance of the annual PM<sub>2.5</sub> standard without the incorporation of mitigation measures. With CEPP measures in place, which are part of the standard MTA NYCT construction specifications, these levels would be reduced to within the defined NYSDEC significant threshold levels. Since the potential staging area for the St. Vincent's Hospital project is outside the emergency ventilation plant's area of influence, one project's stationary source emissions (from construction equipment at each site) would not contribute to the other's impact, therefore only cumulative mobile source emissions (construction truck traffic) were considered in this analysis.

### **20.1.6. NOISE AND VIBRATION**

There would be some potential for cumulative effects of multiple major construction projects occurring simultaneously in the vicinity of the St. Vincent's Hospital. However, the larger of the two construction project would be the new St. Vincent's Hospital itself and the actual overlapping construction event locations are at least one block apart (i.e., the distance from the O'Toole building and St. Vincent's Hospital and the vicinity of the MTA NYCT project). Of course, it would be the responsibility of the hospital and MTA NYCT to evaluate and manage their own impacts and work cooperatively to minimize cumulative impacts. Therefore, the potential cumulative effects of noise and vibration associated with the construction of the emergency ventilation plant are described below in a qualitative manner only.

Construction noise from typical heavy machinery and non-impact activities are not much of a concern beyond 250 to 300 feet away in an urban environment. Impact equipment (such as hoe ramming or pile driving) can be a concern as far away as 500 to 1,000 feet. It should be noted that NYCT MTA has committed to using alternate, lower impact pile installation methods instead of pile driving during construction of this project. Within these distances, multiple construction projects could exacerbate the noise levels and durations of time that any particular receptor may be exposed. However, noise, as measured in decibels, does not add linearly. Separate noise sources add on a logarithmic basis such that two sources of equal loudness, when added together, will increase the overall noise level at a receptor by only about 3 decibels. Conversely, if the two noise sources differ by more than 10 decibels to begin with, then the additive overall noise level will simply be dominated by the louder source (i.e., no overall increase). Thus, it depends on when separate pieces of construction equipment are operating and the noise levels that each piece emits. As stated in Chapter 13: Noise and Vibration, potential significant adverse noise impacts would occur during construction for any of the three alternatives, but MTA NYCT would incorporate mitigation measures in the CEPP that would minimize potential noise impacts.

Construction vibration levels tend not to behave in a cumulative manner, especially because they usually occur at uncorrelated moments in time. Most vibration criteria for human annoyance and potential building damage are based on single high vibration events, not a cumulative effect. On occasion, FTA's annoyance criteria are expected to be exceeded by the MTA NYCT project. Thus, multiple construction projects occurring simultaneously could increase the general background vibration levels and durations of time that people might feel vibration, however it is not believed that it would result in worsening potential damage to buildings. In fact, construction activities under any of the three alternatives for the proposed emergency ventilation plant would not cause any structural damage to buildings.

However, it is very important to have a well designed compliance monitoring program that is capable of measuring, and more importantly, distinguishing between, noise and vibration levels from separate sources and separate projects. Such a program would be established by MTA NYCT.

## **20.2. COMMITMENTS TO MITIGATING ADVERSE EFFECTS**

As noted in each respective section, recommended mitigation measures would be fully implemented to reduce the occurrence of discrete impacts in all cases. With regard to the potential additive or interactive cumulative adverse effects on local businesses resulting from the combination air quality, noise and vibration, and pedestrian conditions, MTA NYCT will maintain routine interface with the St. Vincent's Hospital construction program representatives and diligent open communications with local businesses and work with all appropriate parties to develop mitigation strategies as necessary. Provided business owners are fully informed as to project schedule and the scope of activities that would occur at all phases of the schedule, they may be able to prepare their business strategies accordingly (e.g., change seating arrangements, schedules, and reallocate staff). Similarly, MTA NYCT may be better able to manage nuances of the schedule as construction progresses in order to preclude or reduce impacts. For example, cumulative effects that would be most noticeable to outdoor café patrons, may be scheduled for cold weather (e.g., late Fall through early Spring) when al fresco dining is typically not available or less preferred.

MTA NYCT will implement a public outreach process that includes communication with Community Board 2. MTA NYCT will also initiate communication with local business owners to learn about any specific cumulative impacts that business owners experience, so that MTA NYCT may be able to make specific changes to prevent or reduce such impacts as construction is underway. While communication may not prevent cumulative impacts, its goal would be to lessen such impacts wherever possible. MTA NYCT would continue to work cooperatively with NYCDOT beyond the EIS process to best assure minimized impact to traffic and transportation throughout the construction process.

When the Preferred Alternative is selected, MTA NYCT will develop the CEPP with specific measures for minimizing noise and vibration. A draft outline of the CEPP is included in Chapter 4 of this FEIS for illustrative purposes. These requirements would be finalized as the design process continues and codified in construction specifications.

MTA NYCT is committed to an ongoing effort to minimize adverse effects and maximize construction efficiencies. MTA NYCT's commitment is evidenced by the success of its past and ongoing efforts in Lower Manhattan and elsewhere, including:

- Implementing design and construction practices consistent with MTA NYCT ISO 14000 certification;
- Developing an effective CEPP;

- Routinely interfacing and cooperating with nearby construction program representatives to minimize potential for any form of cumulative effects/impacts;
- Being proactive with adjacent property owners; and,
- Responding to complaints in a managed manner.

MTA NYCT will continue to develop, document, broadcast, and implement practicable methods, practices, and procedures to manage the environmental effects of its actions, individually and cooperatively with St. Vincent's Hospital. This process will be managed through regular monitoring and routine interface with the hospital construction program representatives. MTA NYCT will also assure routine interface with NYCDOT and any other construction efforts in the MTA NYCT project vicinity.