Appendix F
Technical Memorandum: Release of 2014
CEQR Technical Manual

AKRF

Environmental and Planning Consultants

440 Park Avenue South
7th Floor
New York, NY 10016
tel: 212 696-0670
fax: 212 213-3191
www.akrf.com

Memorandum

To: File for Atlantic Yards Arena and Redevelopment Project

Date: May 2014

Re: Release of *2014 CEQR Technical Manual*

A. INTRODUCTION

On March 28, 2014, Empire State Development (ESD) issued a Draft Supplemental Environmental Impact Statement ("DSEIS") for the Atlantic Yards Arena and Redevelopment Project. The analyses presented in the DSEIS were generally conducted in accordance with the guidance outlined in the 2012 *New York City Environmental Quality Review (CEQR) Technical Manual.* Two weeks prior to the issuance of the DSEIS, an update to the 2012 *CEQR Technical Manual* was released by the New York City Mayor's Office of Environmental Coordination. By its terms, the updated *CEQR Technical Manual* (2014 Edition) "should be used as guidance for any environmental review commenced on or after March 14, 2014. In the case of impact analyses commenced prior to the release date that are not considered complete as of such date—through the issuance of a Negative Declaration, a Conditional Negative Declaration, or a Final Environmental Impact Statement—the lead agency should consider whether supplementation of the impact analyses to reflect a methodology of the updated *CEQR Technical Manual* should be conducted, taking into account as necessary the scheduled timing of completion of environmental review under the applicable regulatory approval process." The environmental review for Phase II of the Project commenced prior to the issuance of the 2014 *CEQR Technical Manual*, and the DSEIS was completed and in production at the time of its release. In some instances (e.g., Transportation), the DSEIS anticipated the possible issuance of the 2014 *CEQR Technical Manual* and already employs some of the methodologies of that document. This Technical Memorandum considers whether one or more analyses contained in the DSEIS should be revised in the FSEIS in light of the updated guidance set forth in the 2014 *CEQR Technical Manual*, evaluating the potential for those updates to affect the conclusions presented in the DSEIS.

B. ANALYSIS OF CEQR TECHNICAL MANUAL UPDATES BY TECHNICAL ANALYSIS AREA

The evaluation of Phase II of the Project under the 2014 *CEQR Technical Manual* presented below focuses on technical areas where changes in methodology have the potential to affect the analyses and/or conclusions of the DSEIS. These areas are limited to Air Quality (Operational and Construction) and Transportation. For all other analysis areas (i.e., Land Use, Zoning, and Public Policy, Socioeconomic Conditions, Open Space, Urban Design, Hazardous Materials, Greenhouse Gas Emissions, Noise, and

Public Health) the 2014 *CEQR Technical Manual* updates would not affect the analyses presented or change the conclusions presented in the DSEIS.

TRANSPORTATION

An initial review of the updates to Chapter 16, "Transportation," in the 2014 *CEQR Technical Manual* determined that in most cases the changes are either not relevant to the analyses included in the DSEIS, are unlikely to materially affect the results of the DSEIS analyses, or have already been incorporated into the DSEIS analyses based on earlier guidance from NYCDOT and NYC Transit. However, changes to the use of linked-trip factors for travel demand forecasting, the application of peaking and surging factors for subway station analyses, the width increment threshold formula for subway station stair and passageway analyses, and the metrics used for sidewalk analyses were all found to warrant further review to determine if they would potentially result in findings materially different from those of the DSEIS. These changes are therefore discussed below.

TRAVEL DEMAND

Linked-Trip Factor for Destination Retail

Linked trips are trips that have multiple destinations, either within a proposed development site or between a development site and existing adjacent sites. For example, a proposed shopping mall in Downtown Brooklyn would be expected to generate person trips to it on the basis of its expected trip generation rate. It is likely, however, that a portion of these trips would not be newly generated into Downtown Brooklyn as they would already exist in the area given that it is a central business district and highly pedestrian in nature. This phenomenon may be reflected in the analyses by either a higher "walk " modal split percentage for the proposed project or by dividing the project's overall trip generation into "linked" and "non-linked" components and assigning them separately to the study area network. Under both the 2012 *CEQR Technical Manual* used for the DSEIS and the 2014 edition, up to 25 percent of linked-trip credit for retail developments is allowed, unless valid information based on an original survey support a higher linked-trip credit. Both editions also recommended weekday and Saturday trip generation rates of 78.2 and 92.5 trips per 1,000 gsf, respectively, for destination retail uses.[1] However, unlike the 2012 *CEQR Technical Manual*, the 2014 edition now states that the trip generation rates for destination retail land use already account for linked trips, so no linked-trip credit should be applied for this use.[2]

Neither Phase I nor Phase II of the Project include destination retail uses, and therefore, the change in *CEQR Technical Manual* methodology with respect to the linked-trip credit for destination retail use would not affect the travel demand forecast for the Project as presented in the DSEIS. However, two developments included in the Future Without Phase II background condition do include a destination retail component – the City Point development with 1,235 dwelling units, 631,000 gsf of retail space and 20,000 gsf of office space located at 1 DeKalb Avenue at the east end of the Fulton Street Mall; and a projected development site from the Downtown Brooklyn Rezoning located at Red Hook Lane and Boerum Place at the west end of the Fulton Street Mall with a projected 160,000 gsf of retail space and 640,000 gsf of office space. The DSEIS travel demand forecasts for the destination retail components of these two background developments incorporated a 25 percent linked trip credit, consistent with 2012 *CEQR Technical Manual* guidelines. The change in the linked trip credit for destination retail space in the 2014 *CEQR Technical Manual* does not warrant a new traffic analysis for the FSEIS because:

1. The change in the *CEQR Technical Manual*, as applied to the DSEIS traffic analysis, would relate to only two of numerous No Build projects in the assumed Future Without Phase II background condition and would not affect trip generation from Phase I or Phase II of the Project.

[1] See Table 16-2 in the 2012 CEQR Technical Manual and 2014 CEQR Technical Manual.

[2] See footnote to Table 16-2 in the 2014 *CEQR Technical Manual*.

2. The two No Build projects with destination retail uses will be mixed-use developments with large residential and/or commercial components, and both sites are located along the Fulton Street Mall, a major retail street and transit/pedestrian mall that is closed to private vehicular traffic and attracts a substantial number of shoppers. A portion of the retail trips occurring at the two development sites are therefore expected to be generated by the projects' on-site residential or commercial components or represent pedestrians already shopping at the Fulton Street Mall, and consequently would not be newly generated into the area.
3. The travel demand forecasts for each of the two No Build projects assume relatively high auto mode shares of 28 percent for a weekday and 37 percent for Saturday, and relatively low walk mode shares of 18 percent and 16 percent, respectively. These rates are especially conservative with respect to auto trips given the downtown and highly pedestrian nature of the area, as well as the area's extensive network of transit services. (For example, the City Point development is located immediately above the DeKalb Avenue subway station which is served by B, Q and R trains). Because the travel forecasts already incorporated a high auto mode share, the elimination of linked trip credits for the destination retail component of these two No Build projects would result in a higher number of auto trips from these projects than is warranted.

As discussed above, the DSEIS employed a linked-trip credit in combination with relatively high auto mode shares to forecast the retail travel demand from the two background development sites that include destination retail uses. If no linked-trip credit were applied (as per 2014 *CEQR Technical Manual* guidelines), it would be appropriate to use higher weekday and Saturday walk mode shares and correspondingly lower auto mode shares for the destination retail travel demand forecasts given the mixed-use nature of the two developments and their location along an existing retail corridor and heavily-trafficked pedestrian/transit mall. Therefore, updating the retail travel demand forecasts for these two background developments to reflect the 2014 *CEQR Technical Manual* guidance with respect to retail linked-trips would not be expected to result in substantially greater numbers of peak hour auto trips nor materially affect the findings of the DSEIS traffic impact analysis and is therefore not warranted.

SUBWAY STATIONS

Peaking and Surging Factors

Under the 2012 *CEQR Technical Manual* guidelines used for the DSEIS, analyses of subway station elements such as stairways, passageways, escalators, and fare arrays, are based on a volume-to-capacity (v/c) ratio. The analyses use the unaltered peak 15-minute passenger volumes counted at each element, while the capacity is adjusted to reflect the effects of surging and friction from counterflows, if applicable. A surging factor is applied to reduce the capacity by up to 25 percent to reflect that the passenger volume counted during the peak 15-minute interval was actually concentrated in less time due to surges of passengers disembarking from an arriving train. Under the 2012 *CEQR Technical Manual*, surging factors are therefore only applied to exiting pedestrian volumes. A counterflow factor is applied to reduce the capacity of an element by 10 percent to account for the effects of friction between opposing flows of pedestrians unless the flow is all, or almost all in one direction.

Under 2014 *CEQR Technical Manual* guidelines, the analyses of subway station elements are still based on v/c-ratios; however, the peak 15-minute volume is now calculated by multiplying the volume over the peak hour by 31.25 percent, which yields a value 25 percent above the average 15-minute volume. As noted above, the DSEIS analyses, instead of estimating the peak 15-minute volumes, use the actual peak 15-minute flows within the peak hour based on data collected during the pedestrian count program. In many cases these actual flows are greater than those estimated by applying the peaking factor to the hourly flow volumes. Therefore, updating the subway station analyses to reflect the 2014 *CEQR Technical Manual* guidance on estimating peak 15-minute flows would in many cases result in a less conservative analysis (i.e., better levels of service) than is reflected in the DSEIS, which relies on actual

peak 15-minute flows. Consequently, the use of the new peaking factor approach would not be expected to result in new significant adverse impacts, and updating the analyses to reflect the 2014 *CEQR Technical Manual*'s peaking factor approach is not warranted.

As noted above, under 2012 *CEQR Technical Manual* guidelines, a surging factor is applied to pedestrian volumes exiting a subway station when determining the capacity of a station element. However, under 2014 *CEQR Technical Manual* guidelines, a surging factor is now also applied in some cases to pedestrian flows en route to station platforms. Although passenger flows en route to a platform tend to be more uniform over a 15-minute interval than exiting flows, it is now noted that surged flow can sometimes result from such things as heavy transfer flow, heavy use of buses feeding a subway station, or even a traffic signal at street level that results in platoons of pedestrians crossing the street to enter a station.

Although stops for northbound B41 and B67 buses and eastbound B45 buses are located in proximity to the analyzed Barclays Center entrance at the Atlantic Avenue – Barclays Center subway station, field observations during weekday peak periods indicate that this entrance is not characterized by heavy pedestrian surges from buses feeding the station. This entrance also does not appear to be characterized by heavy surges of pedestrians caused by the effects of traffic signals at street level. (As there are additional entrances to this station located on the north side of Atlantic Avenue and on Fourth Avenue to the east of Barclays Center, many pedestrians en route to the station do not have to traverse crosswalks at signalized intersections in proximity to the analyzed Barclays Center entrance.) However, while much of the subway-to-subway transfer activity at the Atlantic Avenue–Barclays Center subway station takes place within the station's central corridor, field observations indicate that some transfer activity between the Eastern Parkway Line platforms (2, 3, 4 and 5 trains) and the Brighton Line platform (B and Q trains) does occur at analyzed stairs and ramps. These facilities, which were newly constructed for the 2012 opening of the Arena, are projected to operate at good levels of service (LOS C or better) in all analyzed peak hours in the Future With Phase II, except for Brighton Line platform stair P9 which would operate at a marginal LOS D in the weekday AM and PM peak hours. However, the increase in v/c ratios that would result from the application of a surging factor to platform-bound volumes at stair P9 or any other analyzed stair or ramp connecting the Brighton Line and Eastern Parkway Line platforms would not be of sufficient magnitude to trigger new significant adverse impacts in any analyzed peak hour. Updating the DSEIS analyses of elements at the Atlantic Avenue – Barclays Center subway station to reflect the 2014 *CEQR Technical Manual* guidelines with respect to surging factors is therefore not warranted.

The DSEIS also includes analyses of elements at the Bergen Street (2, 3) subway station. This station is not a transfer station, but field observations indicate some surging at the stairs and fare array for the northbound platform in the AM peak period due to the effects of nearby traffic lights and a stop for westbound B65 buses located immediately adjacent to stair S4. As noted in the DSEIS, all analyzed stairs and fare arrays at the Bergen Street subway station are projected to operate at an uncongested LOS A in all peak hours in the Future With Phase II. The increase in v/c ratios that would result from the application of a surging factor to platform-bound volumes at these stairs and fare arrays would not be of sufficient magnitude to trigger new significant adverse impacts in any analyzed peak hour. Updating the DSEIS analyses of elements at the Bergen Street subway station to reflect the 2014 *CEQR Technical Manual* guidelines with respect to surging factors is therefore not warranted.

Width Increment Threshold

The 2012 *CEQR Technical Manual* identifies a significant impact for subway stairways and passageways in terms of the minimum width increment threshold (WIT) based on the minimum amount of additional capacity that would be required to restore conditions to either their No-Action volume-to-capacity ratio or to a v/c ratio of 1.00, whichever is greater. The 2014 *CEQR Technical Manual* corrects an error in the equation used to determine the WIT and clarifies that the effective width of stairways should be specified in feet. While this correction to the WIT equation would not result in any new significant adverse subway stairway or passageway impacts, the analyses presented in the FSEIS will be updated to reflect the correction.

PEDESTRIANS

Sidewalk Analysis Methodology

Under 2012 *CEQR Technical Manual* guidelines, the primary performance measure for sidewalks is pedestrian unit flow rate, expressed as pedestrians per minute per foot of sidewalk width (PMF). Sidewalk levels of service are defined based on PMF as are the thresholds for determining significant adverse sidewalk impacts. Under 2014 *CEQR Technical Manual* guidelines, the methodologies presented in the *Highway Capacity Manual (HCM) 2010* are identified as the basic analytical tools used to analyze pedestrian conditions, and the metric used in calculating sidewalk impacts was changed from flow rate to average pedestrian space measured in square feet per pedestrian (ft^2/p). The New York City Department of Transportation (NYCDOT) pedestrian level of service (LOS) worksheet used for pedestrian analyses was updated to reflect this new metric, and to include average free-flow walking speed as part of the input data. Under the *HCM 2010* methodology, PMF is used to adjust the average free-flow walking speed, and this adjusted walking speed is then, in turn, used to compute the average pedestrian space. The *HCM 2010* methodology recommends the use of an average free-flow walking speed of 4.4 feet per second unless more than 20 percent of pedestrians are elderly, in which case a slower 3.3 feet per second walking speed is used.[3] The 2014 *CEQR Technical Manual* also makes note of slower average walking speeds at crosswalks where school children make up 20 percent or more of pedestrians. In general, the use of a 4.4 ft/sec average free-flow walking speed in conjunction with the updated methodology results in sidewalk levels of service comparable to those based on the 2012 *CEQR Technical Manual* methodology.

It should be noted that the project site is not located within an NYCDOT-designated Seniors Pedestrian Focus Area and field observations did not indicate high concentrations of seniors on area sidewalks. In addition, with the possible exception of the east sidewalk on 6th Avenue between Dean and Pacific Streets, the numbers of pedestrian trips associated with school children is not expected to exceed 20 percent of total pedestrian volumes on any sidewalk in any peak hour. Therefore, a 4.4 ft/sec average free-flow walking speed is generally appropriate for the sidewalk analyses as per *HCM 2010* methodology. As the east sidewalk on 6th Avenue between Dean and Pacific Streets is the expected location of the entrance to the proposed public school on Block 1128, pedestrian trips by school children may potentially exceed 20 percent of total pedestrian volumes on this sidewalk during the analyzed AM peak hour, and the use of a slower average free-flow walking speed may be appropriate for this one location. However, this sidewalk is projected to operate at an uncongested LOS B in the AM peak hour under the 2012 *CEQR Technical Manual* methodology, and the use of a slower average free-flow walking speed for this sidewalk in conjunction with the 2014 *CEQR Technical Manual* methodology would not result in a new significant adverse impact.

As noted above, the sidewalk analysis methodology in the 2014 *CEQR Technical Manual* results in pedestrian levels of service generally comparable to those resulting from the methodology used for the DSEIS. However, given the change in the metrics used to identify significant adverse impacts, a screening analysis was undertaken to determine if there would be any substantive change in analysis results under the new methodology at locations that were identified in the DSEIS as either significantly adversely impacted or operating at LOS D or worse in the Future with Phase II condition. Based on this screening analysis, all of these locations would continue to operate at the same levels of service as disclosed in the DSEIS. All significant adverse impacts under both CBD and non-CBD criteria would also be the same under the new methodology with the exception of the south sidewalk on Atlantic Avenue west of 6th Avenue (identified as location S2 in the DSEIS). This sidewalk was projected in the DSEIS to operate at

[3] It should be noted that slower pedestrian walking speeds of 3.0 to 3.5 feet per second are typically used by NYCDOT as a design speed to determine an appropriate pedestrian clearance interval (the time needed for pedestrians to cross a street) when developing a traffic signal timing plan. These conservative design speeds are used to ensure that sufficient time is provided for slower pedestrians to safely cross a street.

LOS D and be impacted under the non-CBD criteria during the weekday PM and pregame and Saturday pregame peak hours. As the CBD impact criteria are considered applicable for pedestrian elements along the Atlantic Avenue corridor, the non-CBD impacts to this sidewalk were not considered significant in the DSEIS. However, under the 2014 *CEQR Technical Manual* methodology there would be a slight exceedance of the CBD impact threshold in the weekday PM peak hour at a location adjacent to Building 4 where a row of security bollards for the Arena is expected to be installed perpendicular to the sidewalk in the Future Without Phase II. This sidewalk would operate with a total of approximately 31.2 square feet/pedestrian at this location, slightly less than the 31.5 square feet/pedestrian CBD impact threshold below which this sidewalk is considered impacted based on the impact guidance presented in Table 16-7 in the 2014 *CEQR Technical Manual*.

The analysis in the DSEIS assumed that the sidewalk at this location would total 20 feet in width between the curb and Building B4, that a line of up to four one-foot-wide bollards would be installed between the curb and the building line with the end bollard offset from the curb by a distance of 1.5 feet, and that a maximum of four feet of clear space would be provided between bollards. The analysis also assumed a 0.5-foot shy distance[4] to either side of each bollard, 1.5 feet of shy distance from the wall of Building B4, and that pedestrians would not utilize the 1.5 feet of space between the end bollard and the curb. These assumptions result in a total effective width (the width assumed to be available to accommodate pedestrian flow) of approximately 9.5 feet at this bollard line. Based on the results of the screening analysis, only two additional inches of effective sidewalk width would be needed at this location to eliminate the slight exceedance of the CBD impact threshold in the weekday PM peak hour under the 2014 *CEQR Technical Manual* impact guidance.

Overall, an analysis employing the new 2014 *CEQR Technical Manual* methodology would not result in any new significant adverse sidewalk impacts compared to the DSEIS analysis with the exception of the slight exceedance of the CBD impact threshold in the weekday PM peak hour at the location of the line of security bollards across Atlantic Avenue sidewalk S2 adjacent to Building B4. This impact under the 2014 guidelines would not occur with a relatively small two-inch increase in effective sidewalk width. In addition, it should be noted that the design of the bollard installation on this sidewalk is subject to review and approval by NYCDOT and the New York City Police Department to ensure that it provides adequate pedestrian circulation space as well as a sufficient level of security for the Arena. Therefore, updating the DSEIS pedestrian analysis to reflect the 2014 *CEQR Technical Manual* guidelines is not warranted.

AIR QUALITY

The *2014 CEQR Technical Manual* includes a number of revisions to Chapter 17—Air Quality as well as Chapter 22—Construction. In most cases, the changes are either not relevant to Phase II of the Project, or otherwise have no effect on the operational and construction air quality analyses presented in the DSEIS.

Parking Facilities

The DSEIS evaluated mobile source impacts from Phase II of the Project at intersection locations where Build traffic volumes for one or more peak periods were predicted to be greater than the volumes predicted for the 2006 FEIS, or where the predicted number of vehicle trips from Phase II of the Project is predicted to be greater than the 2006 FEIS. The mobile source analysis was performed to predict maximum concentrations of carbon monoxide (CO) and particulate matter (PM). The mobile source analyses determined that Phase II of the Project would not result in any exceedance of the National Ambient Air Quality Standards (NAAQS) for CO and fine particulate matter less than 10 microns in diameter (PM_{10}), or the City's *de minimis* criteria for CO and fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

[4] Shy distances reflect the tendency of pedestrians to avoid obstructions such as walls, curbs and street furniture.

In addition, as the Phase II Project would include below-grade parking garages, an analysis was conducted to evaluate potential future pollutant concentrations in the vicinity of the ventilation outlets for the proposed parking garages. The largest of these facilities, an underground parking facility on Block 1129 with a maximum capacity of 1,846 spaces, was analyzed for operational air quality, while the construction air quality analysis examined a temporary surface parking lot at the same location. The analyses were performed using the methodology delineated in the 2012 *CEQR Technical Manual* to calculate pollutant levels of CO. The analyses of these parking facilities determined that they would not result in any exceedance of the NAAQS for CO or the City's *de minimis* criteria for CO.

For analysis of mobile sources of emissions from parking facilities, Section 312.1 of the *CEQR Technical Manual* has been revised to include particulate matter (PM) emissions as a pollutant of concern, in addition to CO. This revision clarifies that an analysis of PM is recommended for all such facilities, including automobile parking facilities such as those examined in the DSEIS.

Although based on the results of the mobile source intersection analysis performed for the DSEIS the additional PM contributions from the Phase II Project's parking facilities are not anticipated to result in any significant adverse impacts, as a result of the changes to the *CEQR Technical Manual*, an analysis of PM from parking facilities associated with Phase II of the Project will be presented in the FSEIS. The underground parking facility on Block 1129 will be analyzed with Phase II of the Project for operational air quality, and the temporary surface parking lot at the same location will be analyzed for construction air quality. Concentrations of PM_{10} and $PM_{2.5}$ will be estimated, consistent with the mobile source intersection analysis. Maximum future pollutant levels with and without the proposed project will be compared with the PM_{10} NAAQS and the City's $PM_{2.5}$ *de minimis* criteria to determine the impacts of the proposed parking facilities.

Analysis of 1-Hour NO_2 Concentrations Due to Mobile Sources

The analysis presented in the DSEIS for Phase II of the Project included a comprehensive analysis of stationary sources emissions of NO_2 to determine whether the Project would cause or contribute to a violation of the 1-hour NO_2 NAAQS. With respect to mobile sources, the DSEIS presents a quantitative analysis of CO and PM impacts, and a discussion of the issues associated with the analysis of 1-hour NO_2 concentrations from mobile sources of emissions (see Pages 4E-4 to 4E-5 of the DSEIS). These issues include uncertainties in background concentrations near roadways and issues in predicting 1-hour average NO_2 concentrations using USEPA mobile source models. Furthermore, the DSEIS states that the Extended Build-Out Scenario would not increase the Project's induced traffic and the Project's resulting mobile source emissions; rather, a delay in Project completion would be expected to result in lower NO_x emissions (and consequently, lower NO_2 concentrations) from mobile sources due to additional fleet turnover and the application of more stringent emissions and fuel economy standards for motor vehicles. Finally, for sources of emissions associated with construction activities, a quantitative analysis of PM and annual average NO_2 impacts was presented. In addition, commitments with respect to the use of Tier 3 equipment and the phase-in of Tier 4 equipment would be required for Phase II construction through amendments to the MEC, as discussed in Chapter 3I of the DSEIS. Other measures would minimize NO_x emissions due to construction activities, such as early electrification. These commitments are anticipated to provide a substantial reduction in NO_x emissions (and resulting NO_2 concentrations).

The *CEQR Technical Manual* revisions to Chapter 17—Air Quality include the removal of text which previously had indicated that an analysis of 1-hour average nitrogen dioxide (NO_2) concentrations was "premature" given the lack of regulatory guidance, among other things. However, the 2014 *CEQR Technical Manual* does state, consistent with the federal regulations, that additional monitoring is necessary to characterize 1-hour NO_2 concentrations near major roadways, and therefore, sufficient data will not be available to determine compliance with 1-hour NAAQS until after 2015, at the earliest. In addition, in the *CEQR Technical Manual*, CO and PM are listed as the only pollutants of concern due to induced traffic associated with proposed actions (which were analyzed in the DSEIS); furthermore, NO_2 is not mentioned in the mobile source analysis discussion in the *CEQR Technical Manual* (for analysis of operational or construction mobile sources). Therefore, the revisions to the *CEQR Technical Manual* with

respect to analysis of 1-hour NO_2 concentrations do not necessitate a quantitative analysis for mobile source of emissions (for both the operational and construction analysis). Since the DSEIS includes an analysis of 1-hour NO_2 concentrations from stationary sources, this change does not affect the analysis presented in the DSEIS for stationary sources of NO_2 emissions, and therefore, no further analysis is warranted.

Analysis of 1-Hour NO_2 Concentrations Due to Construction Activities

A quantitative analysis was performed to evaluate concentrations of PM_{10}, $PM_{2.5}$, annual average NO_2 and CO from on-site construction activities. The analysis was performed incorporating measures that would be taken to reduce pollutant emissions during construction in accordance with all applicable laws, regulations, and building codes. These include dust suppression measures and the idling restriction for on-road vehicles. In addition to the required laws and regulations, the project sponsors have committed to a robust emissions reduction program, including early electrification, the use of ultra-low sulfur diesel (ULSD) fuel, best available tailpipe reduction technologies, and utilization of equipment meeting emission standards for newer equipment. With the implementation of these emission reduction measures, the analysis of construction-related air emissions determined that pollutant concentrations would be below their corresponding *de minimis* thresholds or NAAQS. Therefore, the construction of Phase II of the Project under the Extended Build-Out Scenario would not result in significant adverse air quality impacts due to construction sources.

With respect to air quality during construction, the revisions to Chapter 22—Construction of the *CEQR Technical Manual*, include the addition of NO_2 as a pollutant typically evaluated for stationary source construction air quality impacts. However, the addition of this pollutant does not necessarily indicate a requirement to perform a quantitative analysis due to construction activities. The *CEQR Technical Manual* provides the following factors to be considered in determining whether such an analysis is required:

- the location of the project site in relation to existing residential uses or other sensitive receptors;
- the intensity of the construction activity; and
- the extent to which the project incorporates commitments to appropriate emission control measures.

As discussed in the DSEIS, in addition to the measures outlined in the 2006 FEIS and incorporated into the Project's MEC, Phase II of the Project would require the use of Tier 3 or newer equipment with diesel particulate filters (DPFs) during construction on all nonroad construction engines with an engine output rating of 50 hp or greater, and the use of Tier 4 equipment beginning in 2022. These measures, along with the other measures identified in the FEIS including early electrification, would reduce the intensity of construction activities, and would substantially reduce the concentrations of NO_2 from construction activities during Phase II of the Project. Concentrations of NO_2 would be much lower than projects without these measures, in particular Projects that have large stationary sources of diesel emissions or on-site batching plants, which are cited in the *CEQR Technical Manual* as the types of stationary sources that may warrant a quantified analysis. Furthermore, the same issue identified in the Air Quality Chapter of the *CEQR Technical Manual* with respect to the uncertainty of background concentrations of 1-hour NO_2 due to additional monitoring necessary to characterize 1-hour NO_2 concentrations near major roadways is applicable to the construction activities for Phase II of the Project, due to its immediate proximity to major traffic corridors.

For these reasons, the changes to the *CEQR Technical Manual* do not warrant further analysis of NO_2 concentrations from the construction of the Project.