Chapter 4D: Operational Transportation

A. INTRODUCTION

This chapter assesses the potential impacts of Phase II of the Project under the Extended Build-Out Scenario on transportation facilities and services. As per the 2012 *City Environmental Quality Review (CEQR) Technical Manual*, the technical areas addressed as part of the transportation analyses include traffic flow and operating conditions; subway facilities and services; bus service; pedestrian facilities (sidewalks, corner reservoir areas and crosswalks); pedestrian, bicycle and vehicular safety; and parking conditions. As per 2012 *CEQR Technical Manual* methodology, the analyses focus on the effects of new travel demand and changes to area transportation facilities and services that would result from completion of Phase II of the Project in 2035 under the Extended Build-Out Scenario.

As described in Chapter 1, "Project Description," and Chapter 2, "Analysis Framework," this SEIS will determine whether Phase II of the Project under the Extended Build-Out Scenario would result in any significant adverse impacts not previously disclosed, and whether any additional mitigation measures beyond those identified in the 2006 Final Environmental Impact Statement (FEIS) and the Amended Memorandum of Environmental Commitments (MEC) would be warranted and feasible.

PRINCIPAL CONCLUSIONS

TRAFFIC

The traffic analysis in the 2006 FEIS analyzed conditions at a total of 93 intersections along local streets proximate to the project site or that would be affected by Project-related changes to the street network, as well as along arterials that would provide access to and from the site. Intersections analyzed in the 2006 FEIS were selected for analysis in this SEIS if they were locations where development of Phase II is expected to result in the addition of 50 or more peak hour vehicle trips based on the 2006 FEIS, or they were identified in the 2006 FEIS as being significantly adversely impacted by project-generated traffic in one or more of the peak hours included for analysis in this SEIS. Based on these criteria, a total of 71 of the 93 intersections analyzed in the 2006 FEIS were selected for detailed analysis.

The peak hours selected for analysis in this SEIS include the weekday 8-9 AM and 5-6 PM commuter periods, as well as the weekday 12-1 PM midday (lunch time) period. Although the substantial amount of travel demand generated by the Arena itself is reflected in the Future Without Phase II condition, an analysis of the weekday 7-8 PM and Saturday 1-2 PM pregame peak hours is included to assess the potential effects of Phase II residential and retail demand during periods of peak Arena activity. To be conservative, the traffic analysis for the Saturday pregame peak hour assesses conditions resulting from Phase II with an afternoon Nets game at the Arena, even though other types of events with lower attendance than a Nets game are typically scheduled on a Saturday afternoon and Nets games rarely occur at that time. All of these peak hours are consistent with those analyzed in the 2006 FEIS. The weekday and

Saturday post-game peak hours for Arena demand that were analyzed in the 2006 FEIS are not included, as Project demand during these periods is primarily Arena-related and they are not typically considered peak travel periods for the residential, retail and public school uses that comprise Phase II of the Project.

Travel Demand

It is expected that the Project's commercial mixed-use variation would typically generate a higher level of travel demand during weekday peak periods than the residential mixed-use variation, while during the Saturday peak periods, the residential mixed-use variation would generate more trips as a result of its larger residential component. The traffic analysis therefore assumes the commercial mixed-use variation as the reasonable worst case development scenario (RWCDS) for the weekday analyses and the residential mixed-use variation as the RWCDS for the Saturday analyses, consistent with the 2006 FEIS.

Vehicle trips generated by Phase II development would total approximately 519, 338, 446, 281 and 689 during the analyzed weekday AM, midday, PM and pregame and Saturday pregame peak hours, respectively. Auto trips during these periods would range from 200 (in the weekday midday peak hour) to 609 (in the Saturday pregame peak hour), while taxi trips would range from 18 (in the weekday pregame peak hour) to 102 (in the weekday midday peak hour). Truck trips would range from none (in the weekday pregame PM peak hour) to 42 (in the weekday AM peak hour).

Impact Analyses

Of the 71 intersections analyzed, a total of 56 intersections would have significant adverse impacts in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. A total of 37 intersections would have significant adverse impacts in the weekday AM peak, 20 in the midday, 38 in the PM, 27 in the 7-8 PM pregame peak hour, and 47 in the Saturday 1-2 PM pregame peak hour. As discussed in detail in Chapter 5, "Mitigation," with implementation of the Project's traffic mitigation plan, unmitigated impacts would remain in one or more peak hours at a total of 29 intersections in the Future With Phase II With Mitigation. There would be 18 intersections with unmitigated significant adverse impacts in the weekday 8-9 AM peak hour, three in the midday, 17 in the 5-6 PM, five in the weekday 7-8 PM pregame peak hour, and 19 in the Saturday pregame peak hour.

Bicycles

In the Future With Phase II under the Extended Build-Out Scenario, it is anticipated that the residential, retail and public school uses that would be built on the project site would likely generate some new trips by bicycle in the weekday peak commuter periods, as well as recreational and discretionary trips during other weekday periods and on weekends. Phase II of the Project would also generate new vehicular traffic along many study area roadways, including those used by bicyclists. In addition, a bicycle path would be provided through portions of the Project's open space under Phase II to improve connections between existing and planned north-south and east-west bike lanes.

TRANSIT

Subway

The analysis of subway station conditions in this SEIS focuses on the Atlantic Avenue – Barclays Center station as well as the Bergen Street station, with conditions at these stations analyzed for the weekday 8-9 AM, 5-6 PM and 7-8 PM (pregame) peak hours, consistent with

the subway station analysis in the 2006 FEIS. The analysis assesses conditions at those station elements (stairways, escalators, ramps, and fare arrays) analyzed in the 2006 FEIS. The Fulton Street and Lafayette Avenue subway stations analyzed in the 2006 FEIS are not included in the SEIS analysis as Phase II demand at these stations is not expected to total 200 or more trips (the *CEQR Technical Manual* threshold for detailed analysis) in any analyzed peak hour. The analysis of the potential for crowding on the platforms at the Atlantic Avenue – Barclays Center subway station during the weekday 10-11 PM and Saturday 4-5 PM peak hours following a Nets game or other major event at the Arena that was provided in the 2006 FEIS is also not included as these are not considered peak periods for Phase II residential, retail and public school demand.

The findings of this SEIS analysis of Future With Phase II conditions under the Extended Build-Out Scenario are that all analyzed stairways, escalators, ramps and fare arrays at the Atlantic Avenue – Barclays Center and Bergen Street subway stations would operate at acceptable levels of service and would not be considered significantly adversely impacted by Phase II demand with the exception of escalator ES359X at the Barclays Center entrance to the Atlantic Avenue – Barclays Center subway station. This up escalator is expected to operate at a v/c ratio of 1.13 (LOS D) in the 7-8 PM pregame peak hour, compared to a v/c ratio of 0.79 (LOS C) in the Future Without Phase II, and would therefore be considered significantly impacted under *CEQR Technical Manual* criteria. This impact would be fully mitigated by operating adjoining escalator ES358X in the up direction during the pregame period when there is a Nets game or other major event at the Arena. (Escalator ES358X currently operates in the down direction in all periods.)

It should be noted that much of the pregame peak hour demand on escalator ES359X is the result of trips exiting the subway en route to a basketball game or other event at the Arena. The analysis results reflect the fact that most pedestrians would select to use the escalator for convenience (as they do now), resulting in capacity conditions on the escalator during periods of peak demand even with uncongested LOS A conditions on adjacent 24-foot-wide stair S1. It is therefore expected that, as queuing at this escalator increased, pedestrian demand would increasingly shift to uncongested stair S1. As the two escalators and stair S1 at this entrance operate as a combined system, and as stair S1 is projected to have substantial available capacity in the pregame peak hour in the Future with Phase II, the projected LOS D condition at up escalator ES359X is not necessarily considered an unacceptable condition for a special event condition such as the pregame peak hour prior to a Nets basketball game. (This was also acknowledged in the 2006 FEIS which projected LOS E conditions on this escalator during the weekday pregame peak hour.)

With respect to subway line haul conditions, all subway routes through Downtown Brooklyn are expected to continue to operate below their practical capacity in the peak direction in each peak hour in the Future With Phase II, and the Project would not generate more than an average of 3.7 new subway riders per car on any one route, less than the *CEQR Technical Manual* impact threshold of five new trips per car per hour. Development of Phase II under the Extended Build-Out Scenario is therefore not expected to result in significant adverse impacts to subway line haul conditions in Downtown Brooklyn under *CEQR Technical Manual* guidelines.

Local Bus

This SEIS analyzes conditions on the 11 MTA New York City Transit (NYCT) local bus routes operating within ¼-mile of Phase II developments sites. The analysis focuses on the weekday 8-9 AM and 5-6 PM commuter peak hours under the Project's commercial mixed-use variation, consistent with the analysis in the 2006 FEIS. Development of Phase II of the Project under the

Extended Build-Out Scenario would add up to 11 peak direction passengers to each analyzed bus route in the AM peak hour, and up to 12 additional passengers in the PM peak hour. With this added demand, all analyzed local bus routes would continue to operate with available capacity at their peak load points in both the weekday AM and PM peak hours in 2035, and therefore, development of Phase II under the Extended Build-Out Scenario is not expected to result in any significant adverse impacts to local bus conditions.

Long Island Rail Road

In the Future With Phase II under the Extended Build-Out Scenario, the proposed residential buildings located on Blocks 1120 and 1121 would be constructed on a platform that would be built over the below-grade Long Island Rail Road (LIRR) yard on these blocks. Operation of this yard would otherwise remain unchanged from conditions in the Future Without Phase II. Development associated with Phase II of the Project is expected to generate an estimated 43 new trips on the LIRR in the AM peak hour, 17 trips in the midday, 36 trips in the PM peak hour, 26 trips in the weekday pregame peak hour and 30 trips in the Saturday pregame peak hour. Most if not all of these Phase II LIRR trips are expected to utilize existing entrances to the LIRR's Atlantic Terminal located on the north side of Atlantic Avenue as there is no direct access to the LIRR platforms (without paying a subway fare) from the new on-site entrance to the Atlantic Avenue – Barclays Center subway station. The relatively small numbers of new LIRR trips that would be generated by development of Phase II are not expected to adversely affect LIRR line haul conditions.

PEDESTRIANS

Pedestrian trips generated by Phase II under the Extended Build-Out Scenario are expected to be most concentrated on those sidewalks, corner areas and crosswalks located immediately adjacent to the Phase II development sites as well as along pathways between these sites and the new entrance to the Atlantic Avenue – Barclays Center subway station. The pedestrian analysis in this SEIS therefore focuses on sidewalks, corner areas and crosswalks adjacent to Blocks 1120, 1121, 1128 and 1129, as well as those adjacent to the Arena Block that would be used by the majority of Phase II subway trips. Pedestrian facilities adjacent to Site 5 and along 6th Avenue on the Arena Block that were analyzed in the 2006 FEIS are not analyzed in this SEIS, as Phase II pedestrian trips are not expected to be as concentrated along these facilities. Sidewalks along 6th Avenue between Dean Street and Flatbush Avenue were also included in the 2006 FEIS to assess the effects of a proposed narrowing under the Project in order to better accommodate two-way traffic flow along the adjacent roadway. As NYCDOT subsequently decided not to implement this widening, these sidewalks are also not analyzed in this SEIS.

The peak hours selected for analysis include the weekday 8-9 AM and 5-6 PM commuter periods. Although the substantial amount of travel demand generated by the Arena itself is reflected in the Future Without Phase II condition, an analysis of the weekday 7-8 PM and Saturday 1-2 PM pregame peak hours is also included to assess the potential effects of Phase II residential and retail demand during periods of peak Arena activity. To be conservative, the pedestrian analysis for the Saturday pregame peak hour assesses conditions resulting from Phase II with an afternoon Nets game at the Arena, even though other types of events with lower attendance than a Nets game are typically scheduled on a Saturday afternoon, and Nets games rarely occur at that time. All of these peak hours are consistent with those analyzed in the 2006 FEIS.

The findings of this SEIS analysis are that Phase II demand under the Extended Build-Out Scenario would significantly adversely impact four crosswalks in one or more peak hours under *CEQR Technical Manual* impact criteria for a central business district (CBD) area, and that two sidewalks and one additional crosswalk would be considered impacted if non-CBD criteria were used. Impacted pedestrian facilities would include:

- The south sidewalk on Atlantic Avenue west of 6th Avenue in the weekday PM and pregame and Saturday pregame peak hours (non-CBD criteria only);
- The north sidewalk on Dean Street between 6th and Carlton Avenues in the weekday PM and Saturday pregame peak hours (non-CBD criteria only);
- The west crosswalk on Atlantic Avenue at 6th Avenue in the weekday PM and Saturday pregame peak hours (CBD and non-CBD criteria);
- The south crosswalk on 6th Avenue at Atlantic Avenue in the weekday AM and PM and Saturday pregame peak hours (CBD and non-CBD criteria), and the weekday pregame peak hour (non-CBD criteria only);
- The east crosswalk on Atlantic Avenue at 6th Avenue in the weekday PM peak hour (non-CBD criteria only);
- The north crosswalk on Carlton Avenue at Dean Street in the weekday PM peak hour (non-CBD criteria) and Saturday pregame peak hour (CBD and non-CBD criteria); and
- The north crosswalk on 6th Avenue at Dean Street in all periods (CBD and non-CBD criteria).

Given that Atlantic Avenue is a major retail and commercial corridor, and a pedestrian access route for both the Barclays Center Arena and a major intermodal transit hub, the *CEQR Technical Manual* CBD impact criteria should be considered applicable for the analyzed sidewalks and crosswalks along this corridor. Under the CBD impact criteria, neither the south sidewalk on Atlantic Avenue west of 6th Avenue nor the east crosswalk on Atlantic Avenue at 6th Avenue would be considered significantly adversely impacted. Therefore, Phase II of the Project would not result in significant adverse impacts to the south sidewalk on Atlantic Avenue west of 6th Avenue and the east crosswalk on Atlantic Avenue at 6th Avenue.

PEDESTRIAN AND VEHICULAR SAFETY

Development of Phase II under the Extended Build-Out Scenario would increase vehicular, pedestrian, and bicycle traffic in the vicinity of the project site. The combination of new pedestrian trips on crosswalks and new vehicular and bicycle traffic may increase the potential for conflicts between these modes at intersections in proximity to the project site, and thereby potentially increase vehicular and pedestrian exposure to accidents.

The Project incorporates a number of design features that enhance overall safety, many of which have already been implemented as part of Phase I. These have included the elimination of several roadway segments through the project site; a major new on-site entrance to the Atlantic Avenue – Barclays Center subway station to eliminate the need for subway riders en route to and from the south to cross Atlantic Avenue; a major restructuring of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection designed to improve traffic flow and reduce the potential for vehicle/pedestrian conflicts; a new traffic signal and crosswalk on Flatbush Avenue at Pacific Street; and new high visibility crosswalks at key intersections in the vicinity of the project site. A new off-street bike route segment through the project site would be implemented under Phase II to more safely connect existing and planned on-street bike routes. Additional measures would

likely be implemented in consultation with NYCDOT-School Safety to enhance safety in the vicinity of the public school proposed as part of Phase II, such as the installation of designated school crossings with high visibility crosswalks and additional school crossing pavement markings and signage.

PARKING

As described in Chapter 1, "Project Description," a total of approximately 2,896 parking spaces are proposed on the project site to accommodate the parking demand from the residential and commercial uses developed under Phase I, NYPD demand from the nearby 78th Precinct station house (24 spaces), the parking demand from the residential, retail and public school uses that would be developed under Phase II, and a portion of the demand generated by the Arena. This would include a 400-space parking garage beneath Site 5 and a parking garage with 50 to 100 spaces beneath Building 3 on the Arena Block (both to be provided in Phase I), along with a 450-space below-grade garage on Block 1120, a 150-space below-grade garage beneath Building 15 on Block 1128, and a 1,846-space below-grade garage on Block 1129 (to be provided in Phase II).

The findings of this SEIS analysis are that the proposed 2,896 on-site parking spaces provided with full build-out of the Project would be sufficient to accommodate all of the demand generated by the Project's residential, commercial and public school uses plus NYPD parking under both the residential mixed-use and commercial mixed-use variations in the Future With Phase II. In addition, the projected amount of parking capacity available at off-street public parking facilities within ½-mile of the Barclays Center Arena in 2035 is expected to be sufficient to accommodate all of the demand generated by a Nets game at the Arena irrespective of the amount of parking provided for Arena patrons on the project site. Therefore, no significant adverse parking impacts would occur in the Future With Phase II under the Extended Build-Out Scenario.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

Traffic

Thirty-seven of the 71 intersections analyzed for this SEIS would experience one or more significant adverse impacts in the AM peak hour with development of Phase II under the Extended Build-Out Scenario. By contrast, the 2006 FEIS disclosed a total of 46 impacted intersections in the AM peak hour with full build-out of the project in 2016 out of the 70 intersections common to both the SEIS and the 2006 FEIS analyses.[1] There would be 20 impacted intersections in the midday peak hour (27 in the FEIS), 38 in the PM peak hour (44 in the FEIS), 27 in the weekday pregame peak hour (39 in the FEIS) and 47 in the Saturday pregame peak hour (41 in the FEIS).

The results of the analysis of traffic conditions and potential significant impacts in this SEIS are not directly comparable to the findings of the 2006 FEIS as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario, with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in

[1] The intersection of Flatbush Avenue and Pacific Street was uncontrolled in 2006 and was therefore not included as an analysis location in the 2006 FEIS. This intersection was subsequently signalized as part of the Project, and is therefore included in the SEIS analysis.

residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the traffic analyses also differ with respect to travel demand factors, background conditions and growth rates, impact criteria and the Project development program. The differences between the findings of this SEIS and previous environmental reviews with respect to traffic conditions are generally related to these variables and are not directly attributable to the delay in the Project under the Extended Build-Out Scenario. It should also be noted that the amount of traffic generated by the Project (Phase I and Phase II) is not dependent upon the year of completion of the Project.

Transit

Subway

The conditions projected in this SEIS at the Atlantic Avenue – Barclays Center and Bergen Street subway stations for the Future With Phase II under the Extended Build-Out Scenario are generally consistent with those projected in the previous environmental reviews. They reflect acceptable levels of service at all analyzed elements with the exception of congestion on up escalator ES359X at the Atlantic Avenue – Barclays Center subway station during the pregame peak hour. Although identified in this SEIS as a significant adverse impact under *CEQR Technical Manual* guidelines, this impact would not be the result of any delay in constructing Phase II of the Project. This escalator was built as part of Phase I of the Project, and consequently the LOS E condition projected in the 2006 FEIS for the pregame peak hour with full build-out of the Project was not considered a significant adverse impact. This SEIS analysis actually projects a better level of service (LOS D) at escalator ES359X during the pregame period than was projected in the 2006 FEIS (LOS E). Both the SEIS and the 2006 FEIS also show adjacent stair S1 operating at an uncongested LOS B or better in the pregame peak hour, reflecting the fact that substantial additional capacity would be available on this stair to relieve any future queuing at escalator ES359X.

The SEIS analysis of subway line haul conditions shows that full build-out of the Project would not result in significant adverse impacts in the peak direction in the AM and PM peak hours on any subway route serving Downtown Brooklyn. These findings are also consistent with those disclosed in the 2006 FEIS.

The results of the analyses of subway station and line haul conditions and potential significant impacts in this SEIS are not directly comparable to the findings of previous environmental reviews as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario, with Phase I of the Project reflected in the background condition. By contrast, previous reviews assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the subway analyses also differ with respect to travel demand factors, analysis methodologies, background conditions and growth rates, and the Project development program.

Bus

The analysis of local bus conditions in the 2006 FEIS identified a significant adverse impact to westbound B38 buses in the AM peak hour. The findings of this SEIS analysis that development of Phase II under the Extended Build-Out Scenario would not result in any significant adverse local bus impacts are, however, generally consistent with those of the 2006 FEIS. The one route projected to be impacted in the 2006 FEIS as a result of full build-out of the Project – the westbound B38 – is not expected to experience appreciable numbers of new trips in either the AM or PM peak hours as a result of Phase II demand under the Extended Build-Out Scenario.

The findings of this SEIS with respect to local bus conditions and potential significant impacts are not directly comparable to those of the 2006 FEIS as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario, with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the local bus analyses also differ with respect to travel demand factors, analysis methodologies, background conditions (including changes in bus routes and service levels since 2006), background growth rates, and changes to the Project development program.

Long Island Rail Road

The findings of the 2006 FEIS with respect to the LIRR were that full build-out of the Project would not adversely affect LIRR line haul conditions, and that there would be no impact on LIRR passenger service from the planned reconfiguration and upgrading of the existing rail yard on the project site. Changes in background conditions subsequent to the 2006 FEIS include updated projections of future development in proximity to the project site; lower background growth rates; anticipated changes in LIRR service and ridership at Atlantic Terminal as a result of the completion of the East Side Access project (currently expected between 2021 and 2023); and a reduction in the number of storage tracks in the upgraded Vanderbilt Yard from nine to seven along with a partial relocation of the yard's drill track off of the Arena Block.

Under the Extended Build-Out Scenario, the relatively small numbers of new LIRR trips generated by Phase II of the Project (17 to 43 in any one peak hour) are not expected to adversely affect LIRR line haul conditions, and the development of Phase II is not expected to adversely affect operations at the upgraded Vanderbilt Yard. These findings are generally consistent with those of the 2006 FEIS.

Pedestrians

The analysis of pedestrian conditions in the 2006 FEIS identified significant adverse impacts to two crosswalks – on 6th Avenue at Dean Street and on Carlton Avenue at Dean Street – in the weekday and/or Saturday pregame peak hours with full build-out of the Project. Widening these crosswalks by one foot and four feet, respectively, was recommended in the 2006 FEIS to fully mitigate these impacts. The subsequent 2009 Technical Memorandum found that the additional pedestrian demand on these crosswalks resulting from a relocation of up to 100 parking spaces from the Arena Block to Block 1129 could be accommodated by a further one-foot widening of each crosswalk compared to the mitigated condition in the 2006 FEIS.

The findings of this SEIS analysis are that Phase II demand under the Extended Build-Out Scenario would significantly adversely impact four crosswalks in one or more peak hours under *CEQR Technical Manual* impact criteria for a central business district (CBD) area, and that two sidewalks and one additional crosswalk would be considered impacted if non-CBD criteria are used. However, these findings are not directly comparable to those of the previous environmental reviews as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the pedestrian analyses also differ with respect to analysis methodologies, impact criteria, the Project development program, travel demand factors, background conditions and annual growth rates. (These include substantially lower impact thresholds for this SEIS analysis than were required

under the *CEQR Technical Manual* guidelines used for the previous reviews). The differences between the findings of this SEIS and the previous environmental reviews with respect to pedestrian conditions are generally related to these variables and are not directly attributable to the delay in the Project under the Extended Build-Out Scenario.

Pedestrian and Vehicular Safety

In general, the findings of this SEIS with regard to pedestrian and vehicular safety are comparable to those of the 2006 FEIS, in that both assessments disclosed the potential for increased conflicts between motorists, cyclists and pedestrians at high crash locations in proximity to the project site as a result of increased travel demands associated with full build-out of the Project. The delay in Phase II of the Project under the Extended Build-Out Scenario is not expected to result in a substantially greater number of vehicle, pedestrian and bicycle trips through high crash locations. The introduction of a proposed public school would, however, generate additional vehicular and pedestrian demand (including school children) compared to the demand assessed in the 2006 FEIS. This SEIS therefore cites additional potential pedestrian safety measures (i.e., installation of designated school crossings) that were not reflected in the previous analysis.

Parking

The 2006 FEIS assessed future parking conditions with a total of 3,670 parking spaces on the project site and concluded that sufficient off-street parking capacity would be available both on-site and at existing public off-street facilities within ½-mile of the Arena to fully accommodate peak demand from full build-out of either of the Project's two variations (residential mixed-use and commercial mixed-use), and that no significant adverse impacts to off-street or on-street parking conditions would result from the Project.

Compared to the 2006 FEIS, this SEIS analysis reflects a proposed reduction (to 2,896 spaces) in the amount of on-site parking capacity that would be provided with full build-out of the Project. In addition, this SEIS analysis differs from the 2006 FEIS analysis with respect to travel demand factors, analysis methodologies, impact criteria, background conditions, background growth rates, and the Project development program. For example, the forecasts of residential parking demand in the 2006 FEIS assumed an overnight rate of 0.4 spaces per dwelling unit whereas this SEIS analysis assumes an overnight rate of 0.2 spaces per dwelling unit, consistent with recent survey data which indicate lower levels of residential parking demand in Downtown Brooklyn.

The results of the analysis in this SEIS are that the on-site parking capacity now proposed with full build-out of the Project would be sufficient to accommodate all non-Arena Project demand in the Future With Phase II, and that the projected amount of parking capacity available at off-street public parking facilities under the Extended Build-Out Scenario would be sufficient to accommodate parking demand from a Nets game at the Arena irrespective of the amount of on-site parking provided for Arena patrons. Therefore, the findings of this SEIS are that no significant adverse parking impacts would occur in the Future With Phase II under the Extended Build-Out Scenario, consistent with the findings of the 2006 FEIS.

B. SUMMARY OF FINDINGS FROM PREVIOUS ENVIRONMENTAL REVIEWS

TRAFFIC AND PARKING

The traffic analysis in the 2006 FEIS analyzed conditions at a total of 93 intersections (87 signalized and six unsignalized) along local streets proximate to the project site or that would be affected by project-related changes to the street network, as well as along arterials that would provide access to and from the site. The traffic impact analysis examined conditions during five weekday peak hours and two Saturday peak hours. These included the weekday 8-9 AM and 5-6 PM commuter periods as well as the 12-1 PM midday (lunch time) period; the weekday 7-8 PM (pregame) peak hour when residential commuter demand and peak demand en route to a basketball game or other event at the Barclays Center Arena most likely overlap; the weekday 10-11 PM peak hour coinciding with peak demand generated at the end of a basketball game or other event at the Arena; and the 1-2 PM and 4-5 PM peak hours on a Saturday coinciding with the start and end times of a weekend afternoon basketball game, respectively, as well as peak retail-based travel demand from on-site and other nearby uses in Downtown Brooklyn.

It is expected that the Project's commercial mixed-use variation would typically generate a higher level of travel demand during weekday peak periods than the residential mixed-use variation, while during the Saturday peak periods, the residential mixed-use variation would generate more trips as a result of its larger residential component. The traffic analyses in the 2006 FEIS therefore assumed the commercial mixed-use variation as the reasonable worst case development scenario (RWCDS) for the weekday analyses and the residential mixed-use variation as the RWCDS for the Saturday analyses. As the comparative levels of parking demand generated by the two project variations were found to exhibit greater fluctuation depending on the peak hour, the parking analysis in the 2006 FEIS examined conditions for both variations.

The 2006 FEIS concluded that of the 93 intersections analyzed, a total of 68 intersections would have significant adverse impacts in one or more peak hours in the 2016 future with the Project. A total of 46 intersections would have significant adverse impacts in the weekday AM peak hour in 2016, 27 in the midday, 44 in the PM, 39 in the 7-8 PM pregame peak hour, and 17 in the 10-11 PM post-game peak hour. On Saturdays, 41 intersections would have significant impacts in the 1-2 PM pregame peak hour and 49 in the 4-5 PM post-game peak hour in 2016. To address these impacts, a traffic mitigation plan was developed consisting of a range of mitigation measures including physical roadway improvements, demand management strategies to reduce traffic congestion associated with a Nets game at the Arena, recommendations for increased weekday evening and weekend subway service to the Atlantic Avenue – Barclays Center station, and traffic operational improvements. With implementation of the traffic mitigation plan, unmitigated impacts were expected to remain in one or more peak hours at a total of 35 intersections in the 2016 Build year assumed for the 2006 FEIS. On weekdays there were projected to be 11 intersections with unmitigated significant adverse impacts in the weekday 8-9 AM peak hour, none in the midday, 15 in the 5-6 PM peak hour, six in the 7-8 PM pregame peak hour, and none in the 10-11 PM post-game peak hour. On Saturdays, the numbers of intersections with unmitigated impacts were projected to total 15 during the 1-2 PM pregame peak hour and 28 during the 4-5 PM post-game peak hour.

The 2006 FEIS concluded that sufficient off-street parking capacity would be available both on-site and at existing public off-street facilities within ½-mile of the Arena to fully accommodate

peak demand from either of the Project's two variations (residential mixed-use or commercial mixed-use) in 2016. It was also expected that on-street parking in the vicinity of the project site would likely be fully utilized during major events at the Arena, such as a Nets basketball game. However, as sufficient off-street parking capacity would be available to fully accommodate all Project demand in all peak periods, it was concluded that no significant adverse impacts to parking conditions would result from the Project.

The 2009 Technical Memorandum evaluated two design development components that were identified as potentially affecting traffic and/or parking conditions compared to the FEIS: (1) the relocation of up to 100 (out of 350) off-street parking spaces from the Arena Block below Building 2 to Block 1129; and (2) a decrease in the amount of lay-by lane capacity along the east side of Flatbush Avenue adjacent to the Arena Block. The analyses concluded that neither of these design development components would result in new significant adverse impacts to traffic or parking over and above those identified in the 2006 FEIS.

In addition to these previous environmental reviews, it should be noted that a subsequent traffic study—the *Barclays Center Traffic Study*—was prepared to assess operations at selected intersections in proximity to the Barclays Center Arena.[1] The study assessed a pre-opening (2012) condition to establish baseline traffic conditions in the area without Arena events, and a post-opening (2013) condition to examine the effects of Arena-generated traffic on vehicle operations during events. A total of 56 intersections were analyzed during four peak hours—the weekday evening pre- and post-event peak hours and the Saturday evening pre- and post-event peak hours. (The scope of the study was developed in coordination with NYCDOT and reflected input from the community.) Based on the results of the analysis and input from NYCDOT, potential improvement measures were developed for a total of eight intersections.

TRANSIT AND PEDESTRIANS

SUBWAY

The subway station analysis in the 2006 FEIS analyzed conditions during the weekday 8-9 AM, 5-6 PM and 7-8 PM pregame peak hours at the three subway stations comprising the Atlantic Avenue – Barclays Center subway station where a major new on-site subway entrance and other internal circulation improvements were proposed as part of the Project (and subsequently implemented), and where the majority of Project-generated subway demand would occur. The analysis also included the Bergen Street, Fulton Street, and Lafayette Avenue subway stations as they were all also expected to attract 200 or more Project-generated trips in at least one peak hour (the *CEQR Technical Manual* threshold for detailed analysis). As the subway analysis focused on the weekday peak hours, the commercial mixed-use variation was assumed as the RWCDS.

Overall, the analyses in the 2006 FEIS determined that all existing and planned stairways, escalators, ramps and fare arrays at the Atlantic Avenue – Barclays Center subway station would be adequate to accommodate new project-generated demand at acceptable levels of service during the analyzed peak hours in the 2016 future with the Project. All analyzed stairways and fare arrays at the Bergen Street, Fulton Street, and Lafayette Avenue subway stations were also expected to operate at acceptable levels of service in the 2016 future with the Project. However, the FEIS identified the potential for platform crowding at the Atlantic Avenue-Barclays Center

[1] *Barclays Center Traffic Study*, Sam Schwartz Engineering, D.P.C., January 2014.

station to result in significant adverse impacts during the weekday 10-11 PM and Saturday 4-5 PM post-game periods under certain post-game or major event situations. Such crowding was addressed by providing additional subway service (i.e., more trains) during post-game periods or after major Arena events.

All subway routes through Downtown Brooklyn were expected to continue to operate below their practical capacity in the peak direction in the 8-9 AM and 5-6 PM commuter peak periods in the 2016 future with the Project. The Project was therefore not expected to result in significant adverse impacts to subway line haul conditions in Downtown Brooklyn.

The 2009 Technical Memorandum evaluated one design development component – a potential reconfiguration of the new subway entrance at the Atlantic Avenue – Barclay Center subway station – that was identified as potentially affecting subway conditions compared to what was analyzed in the 2006 FEIS. Overall, the total vertical circulation capacity of the revised subway entrance configuration was found to be greater than the design analyzed in the 2006 FEIS. As conditions would therefore be improved compared to those reflect in the 2006 FEIS, no further analysis of the design change was found warranted.

LOCAL BUS

The 2006 FEIS assessed conditions on the MTA New York City Transit local bus routes serving the project site in the weekday 8-9 AM and 5-6 PM commuter peak hours. (As the subway analysis focused on the weekday peak hours, the commercial mixed-use variation was assumed as the RWCDS.) The analysis determined that all of these routes would continue to operate with available capacity at their maximum load points in the peak direction in each of these peak hours in the 2016 future with the Project with the exception of westbound B38 buses, which would be significantly adversely impacted by Project-generated demand in the AM peak hour. As standard practice, NYCT routinely conducts ridership counts and adjusts bus service frequency to meet its service criteria, within fiscal and operating constraints. Therefore, no mitigation was proposed in the 2006 FEIS for this potential impact to westbound B38 service.

PEDESTRIANS

The pedestrian analysis in the 2006 FEIS focused on a total of 24 sidewalk locations, 15 corner areas and 29 crosswalks expected to be utilized by substantial numbers of new Project-generated trips, or that would be physically altered as a result of development of the Project. The locations selected were typically expected to serve as key links between the project site and the surrounding street system, and/or would be used by concentrations of Project-generated pedestrian demand linked to other modes (such as en route to subway stations, bus stops or off-site parking facilities). In addition to the weekday AM and PM commuter peak hours, the pedestrian analysis focused on the weekday 7-8 PM pregame and Saturday 1-2 PM pregame peak hours, as it is during these periods that trips en route to the Arena coincide with elevated demand on study area pedestrian facilities (from commuters and shoppers, respectively). As was the case for the traffic analyses, the pedestrian analyses assumed the commercial mixed-use variation as the RWCDS for the weekday peak hour and the residential mixed-use variation as the RWCDS for the Saturday peak hour.

Accounting for physical changes and new project-generated pedestrian demand, it was determined that the north crosswalk on Carlton Avenue at Dean Street would be significantly adversely impacted in the weekday pregame and Saturday pregame peak hours in the 2016 future with the Project, as would the north crosswalk on 6th Avenue at Dean Street in the Saturday pregame peak hour. Widening the north crosswalk on Carlton Avenue from 16 feet to

20 feet and the north crosswalk on 6th Avenue from 16 feet to 17 feet were proposed to fully mitigate these significant adverse impacts. No additional pedestrian impacts were expected to result from mitigation measures proposed as part of the Project's traffic mitigation plan.

The 2009 Technical Memorandum evaluated the potential effects on pedestrian conditions from two design development components – the relocation of up to 100 (out of 350) off-street parking spaces from the Arena Block below Building 2 to Block 1129, and a further one-foot widening of the north crosswalks on Carlton Avenue at Dean Street and on 6th Avenue at Dean Street compared to the mitigation proposed in the 2006 FEIS. (The further widening of these crosswalks was proposed to accommodate the increased pedestrian demand that would result from the relocation of parking to Block 1129.) The analysis indicated that with the proposed widening of these two crosswalks, the additional pedestrian demand generated by the relocated parking would be accommodated with no additional significant adverse pedestrian impacts. Other design development components were not expected to result in pedestrian conditions substantially different from what was analyzed in the 2006 FEIS.

C. ANALYSIS APPROACH

The traffic, transit, pedestrian and parking analyses in this SEIS have been conducted in accordance with the 2012 *CEQR Technical Manual* guidelines and the latest data and guidance from agencies such as the New York City Department of Transportation (NYCDOT), MTA New York City Transit and MTA Bus. The anticipated Phase II development on the project site forms the basis for the respective impact assessments, and a 2035 Build year has been assumed for analytical purposes. As discussed in Chapter 1, "Project Description," two reasonable worst-case development scenarios have been developed to represent development scenarios that could result from the Project—a residential mixed-use variation and a commercial mixed-use variation. These variations reflect the fact that the programs for two of the buildings to be completed in Phase I—Building 1 and Site 5—are not fixed and could be used for a mixture of residential and commercial uses. Under the residential mixed-use variation, hotel use and residential space would be developed in Building 1 on the Arena Block and on Site 5, whereas under the commercial mixed-use variation, additional commercial space would substitute for these uses. (Site plans for the two project variations are presented in Figures 1-2 and 1-3 in Chapter 1, "Project Description.")

The other buildings and uses on the project site (the completed Arena and planned Buildings 2 through 15) would remain the same under both the residential mixed-use and commercial mixed-use variations. **Table 4D-1** compares the current development programs for the Project's two variations. As shown in **Table 4D-1**, along with the 17,700-seat Arena (for basketball), the residential mixed-use variation would consist of a total of approximately 6,430 dwelling units, 336,000 gsf of commercial office space, a 180-room hotel, and 247,090 gsf of ground floor local retail space that would be distributed among Site 5, the Arena and Buildings 1 through 15. It is also proposed that a total of approximately 2,896 parking spaces be provided in on-site parking garages. (This represents a reduction in the number of parking spaces on the project site from the 3,670 spaces analyzed in the 2006 FEIS.) By contrast, the commercial mixed-use variation would include approximately 6,430 dwelling units, 1,075,512 gsf of commercial office space, and no hotel use. The Arena, local retail uses and number of parking spaces would remain the same under both variations.

Table 4D-1
Project Development Program

Component	Residential Mixed-Use Variation	Commercial Mixed-Use Variation
Phase I		
Arena	662,327 gsf (17,700 seats)	662,327 gsf (17,700 seats)
Residential	1,922 D.U.	1,498 D.U.
Office	336,000 gsf	1,075,512 gsf
Local Retail[1]	91,083 gsf	91,083 gsf
Hotel	165,000 gsf (180 rooms)	0 gsf
Parking[2,3]	1,161 to 1,211 spaces	1,161 to 1,211 spaces
Phase II		
Residential	4,508 D.U.	4,932 D.U.
Local Retail	156,007 gsf	156,007 gsf
P.S./I.S.	100,000 gsf	100,000 gsf
Parking	2,396 to 2,446 spaces	2,396 to 2,446 spaces
Project Total		
Arena	662,327 gsf (17,700 seats)	662,327 gsf (17,700 seats)
Residential	6,430 D.U.	6,430 D.U.
Office	336,000 gsf	1,075,512 gsf
Local Retail[1]	247,090 gsf	247,090 gsf
Hotel	165,000 gsf (180 rooms)	0 gsf
P.S./I.S.	100,000 gsf	100,000 gsf
Parking[3]	2,896 spaces	2,896 spaces

Notes:
[1] Includes 12,756 gsf of street-level retail at the Arena.
[2] Includes 711 temporary spaces.
[3] Parking in Building 3 on the Arena Block would total from 50 to 100 spaces. A total of 2,896 spaces would be provided under the Project.

Both the residential mixed-use and the commercial mixed-use variations are expected to include community facility uses, including a health care center and an intergenerational community center offering child care and youth and senior activities. A secure, manned facility for the storage of 400 bicycles is also proposed for the Arena Block in Phase I. Community facilities and the bicycle storage facility built as part of the Project would occupy some portion of the 247,090 gsf of space included as local retail in **Table 4D-1**. For the purposes of travel demand forecasting, all of this space is assumed to be local retail (i.e., retail establishments serving the needs of workers and residents in the neighborhood).

It is also anticipated that approximately 100,000 gsf of public school space may be developed in the base of one of the Phase II residential buildings as specified in the 2006 FEIS as mitigation for a significant adverse impact to both elementary and intermediate schools within the relevant area of the project site. It is assumed that the floor area of the 100,000 gsf public school would be additive—i.e., that it would not be counted towards the 247,090 gsf of retail and community

facility space. Although the specific location of the school has not been finalized, it is assumed for the purposes of the transportation analyses that it would be located within Building 15.[1]

For analytical purposes in this SEIS, it is assumed that the Project components associated with Phase I form part of the background condition against which the potential impacts of Phase II are assessed (i.e., the "Future Without Phase II" condition). In the Future Without Phase II condition, it is assumed that Phase I development on Site 5 and Buildings 1 through 4 will have been completed in addition to the Arena and the new on-site entrance to the Atlantic Avenue – Barclays Center subway station that opened in September 2012. (Construction of Building 2 commenced in December 2012.) A 400-space parking garage will have been constructed on Site 5 along with approximately 711 interim parking spaces on Block 1129. It is also expected that from 50 to 100 parking spaces will be provided in a garage in Building 3. As shown in **Table 4D-1**, in addition to the Arena, a total of 1,922 dwelling units, 336,000 gsf of commercial space, a 180-room hotel, 91,083 gsf of local retail space and from 1,161 to 1,211 parking spaces would be developed under the residential mixed-use variation in the Future Without Phase II. By comparison, a total of 1,498 dwelling units, 1,075,512 gsf of commercial space, 91,083 gsf of local retail space, from 1,161 to 1,211 parking spaces, and no hotel space would be developed in addition to the Arena in the Future Without Phase II under the commercial mixed-use variation. Also completed in the Future Without Phase II under both variations will be an improved Long Island Rail Road yard at the east end of the site along with a new portal for direct train access between the new yard and the LIRR's Atlantic Terminal.

In the Future With Phase II, the remainder of the Project would be developed, including construction of Buildings 5 through 15 and additional permanent parking. This would include a total of up to 4,932 dwelling units, approximately 156,007 gsf of local retail space, approximately 100,000 gsf of public school space and up to 2,446 permanent parking spaces. It is assumed that the maximum units allowed in the 2009 MGPP (6,430 dwelling units) would be constructed. Consequently, the number of dwelling units proposed to be constructed in Phase II would total 4,508 under the residential mixed-use variation and 4,932 under the commercial mixed-use variation (refer to Chapter 1, "Project Description"). However, to be conservative, the transportation analyses for this SEIS assess the potential effects of the development of 4,932 dwelling units in Phase II. Therefore, the traffic, transit and pedestrian analyses based on the residential mixed-use variation over-count the total population of the Project and reflect a conservative analysis by assuming a number of dwelling units (6,854) greater than the maximum number of dwelling units allowed by the 2009 MGPP (6,430), and therefore greater than the number that would actually be built.

It is important to note that while the 2006 FEIS assessed conditions with development of Phase I and with full build-out of the Project by 2016, the transportation impact analyses in this SEIS focus on the incremental effects of the additional travel demand generated by Phase II development assuming the completion of Phase II in 2035, with demand from Phase I reflected in the background condition. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), it

[1] Locating the school in another Phase II building would not affect the overall level of travel demand generated by the Project. Although there would likely be some localized differences in traffic and pedestrian patterns, the overall results of the analyses would not be expected to differ substantially from those discussed below.

should also be noted that the development program assumed for the transportation analyses in this SEIS differs from the program analyzed in the 2006 FEIS in several respects:

- As built, there are a total of 17,700-seats in the Arena compared to the 18,000 seats assumed in the 2006 FEIS.
- The 2006 FEIS assumed that Building 2 would contain 323 dwelling units under the residential mixed-use variation and 320,011 gsf of office space under the commercial mixed-use variation. However, Building 2 is currently being developed with a total of 363 dwelling units (and no office space). In addition, the 2006 FEIS assumed that a total of 950,726 gsf of office space would be developed in Building 1 under the commercial mixed-use variation, whereas only 740,650 gsf are now planned. The development program in this SEIS therefore reflects less office space in Phase I under the commercial mixed-use variation than was considered in the 2006 FEIS. (The amount of office space assumed for the residential mixed-use variation—336,000 gsf—is the same for both the SEIS and FEIS.)
- As described above, this SEIS conservatively assumes that the residential mixed-use variation could include up to 1,922 dwelling units in Phase I, and up to 4,932 dwelling units in Phase II (or 6,854 total dwelling units), even though the total number of dwelling units built at the completion of the Project would not exceed the 6,430 assumed for the residential mixed-use variation in the 2006 FEIS.
- The transportation analyses in this SEIS reflect demand from the proposed development of approximately 100,000 gsf of public school space in the base of one of the Phase II residential buildings.

The peak hours selected for analysis in this SEIS include the weekday 8-9 AM and 5-6 PM commuter periods, as well as the weekday 12-1 PM midday (lunch time) period which is a peak period for retail activity. Although the substantial amount of travel demand generated by the Arena itself is reflected in the Future Without Phase II condition, analyses of the weekday 7-8 PM and Saturday 1-2 PM pregame peak hours are included to assess the potential effects of Phase II residential and retail demand during periods of peak Arena activity. To be conservative, the traffic and pedestrian analyses for the Saturday pregame peak hour assess conditions resulting from Phase II with an afternoon Nets game at the Arena, even though other types of events with lower attendance than a Nets game are typically scheduled on a Saturday afternoon and Nets games rarely occur at that time. All of these peak hours are consistent with those analyzed in the 2006 FEIS. The weekday and Saturday post-game peak hours for Arena demand that were analyzed in the 2006 FEIS are not included, as Project demand during these periods is primarily Arena-related and they are not typically considered peak periods for residential, retail and public school demand which are the uses that comprise Phase II of the Project.

The SEIS traffic analysis examines conditions in all five peak hours identified above. Transit (subway and bus) analyses generally examine conditions during the weekday AM and PM peak commuter periods as it is during these times that overall transit demand (and the potential for significant adverse impacts) is typically greatest. As there would be some overlap between trips en route to the Arena and commuter demand from Phase II development during the weekday 7-8 PM pregame period, this peak hour is also analyzed to identify potential impacts at subway station processors (e.g., stairways, fare arrays, etc.). In addition to the weekday AM and PM commuter peak hours, the pedestrian analysis focuses on the weekday 7-8 PM and Saturday 1-2 PM pregame peak hours as it is during these periods that trips en route to a Nets game at the Arena could coincide with elevated demand on study area pedestrian facilities (from Phase II commuters and shoppers, respectively). The weekday and Saturday post-game peak periods for

Arena demand are not included in the pedestrian analysis, as Project demand during these periods is primarily Arena-related and they are not typically considered peak periods for residential and retail demand which are the uses that comprise Phase II of the Project. The pedestrian analysis in the 2006 FEIS also did not include these post-game peak periods.

Existing conditions for the analyses in this SEIS were developed from a data collection program conducted primarily in April and May 2013, and from data currently available from secondary sources including NYCDOT, NYCT and recent transportation studies conducted in this area of Brooklyn. Transportation conditions in the Future Without Phase II were developed by applying background growth to existing demand and adding projected demand from Phase I development and other discrete projects in the vicinity of the project site. (Development projects were selected for inclusion as discrete sites in the analyses in consultation with NYCDOT.)

As the weekday traffic and pedestrian counts for the SEIS transportation analyses were conducted on days when evening Nets games were scheduled at the Arena, the Existing conditions baseline traffic and pedestrian networks reflect game-day Arena demand in the weekday peak hours. However, as no Saturday afternoon Nets games were scheduled during the count program, the Existing conditions Saturday pregame peak hour traffic and pedestrian networks do not reflect game-day demand. Travel demand from a Saturday afternoon Nets game at the Arena was therefore forecasted for use in developing the Future Without Phase II background condition.

Transportation demand from Phase II development was forecasted and superimposed on the Future Without Phase II traffic, transit and pedestrian networks to develop the Future With Phase II condition. The forecasts of both Phase I and Phase II travel demand are described in detail below in Section D, "Level 1 and Level 2 Screening Assessments." As discussed below, for the purposes of this SEIS, intersections were selected for analysis if they were locations where development of Phase II is expected to result in the addition of 50 or more peak hour vehicle trips based on the 2006 FEIS, or that were identified in the 2006 FEIS as being significantly adversely impacted by project-generated traffic in one or more of the peak hours included for analysis in this SEIS. Based on these criteria, a total of 71 of the 93 intersections analyzed in the 2006 FEIS were selected for detailed analysis for this SEIS. Two subway stations—Atlantic Avenue – Barclays Center and Bergen Street—were selected for detailed analysis as they are locations where Phase II demand would total 200 or more trips in one or more peak hours. (The 2006 FEIS assessed conditions at a total of four subway stations where combined Phase I and Phase II demand was expected to exceed this threshold.) The analysis of local bus conditions focuses on those routes operating within ¼-mile of Phase II development sites.

Phase II pedestrian demand is expected to be most concentrated on those sidewalks, corner areas and crosswalks located immediately adjacent to the development sites as well as along pathways between these sites and the new entrance to the Atlantic Avenue – Barclays Center subway station. The pedestrian analysis in this SEIS therefore focuses on sidewalks, corner areas and crosswalks adjacent to Blocks 1120, 1121, 1128 and 1129, as well as those adjacent to the Arena Block that would be used by the majority of Phase II subway trips. Pedestrian facilities adjacent to Site 5 and along 6th Avenue on the Arena Block that were analyzed in the 2006 FEIS are not analyzed in this SEIS, as Phase II pedestrian trips are not expected to be as concentrated along these facilities. Sidewalks along 6th Avenue between Dean Street and Flatbush Avenue were also included in the 2006 FEIS to assess the effects of a proposed narrowing under the Project in order to better accommodate two-way traffic flow along the adjacent roadway. As NYCDOT

subsequently decided not to implement this widening, these sidewalks are also not analyzed in this SEIS.

Updated parking forecasts for Phase I and Phase II development have been prepared to assess whether the 2,896 spaces of on-site parking capacity now proposed would remain sufficient to accommodate all of the anticipated demand from the Project's commercial and residential components in the Extended Build-Out Scenario. As previously discussed, the Barclays Center Arena has been completed and is considered part of the Future Without Phase II background condition for the purposes of the transportation analyses. However, as fewer on-site parking spaces are now expected to be provided for Arena patrons than were assumed in the 2006 FEIS, this SEIS also examines future off-street public parking conditions within ½-mile of the Arena to assess whether there would be sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035. This analysis focuses on the weekday pregame and Saturday pregame (midday) periods, which are the peak periods for Arena demand.

D. LEVEL 1 AND LEVEL 2 SCREENING ASSESSMENTS

The 2012 *CEQR Technical Manual* describes a two-level screening procedure for the preparation of a "preliminary analysis" to determine if quantified operational analyses of transportation conditions are warranted. The preliminary analysis begins with a trip generation (Level 1) analysis to estimate the numbers of person and vehicle trips attributable to the proposed project. According to the *CEQR Technical Manual*, if the proposed project is expected to result in fewer than 50 peak hour vehicle trips and fewer than 200 peak hour transit or pedestrian trips, further quantified analyses are not warranted. When these thresholds are exceeded, detailed trip assignments (Level 2) are to be performed to estimate the incremental trips that could be incurred at specific transportation elements and to identify potential locations for further analysis. If the trip assignments show that the proposed project would generate 50 or more peak hour vehicle trips at an intersection, 200 or more peak hour subway trips at a station, 50 or more peak hour bus trips in one direction along a bus route, or 200 or more peak hour pedestrian trips traversing a sidewalk, corner reservoir area or crosswalk, then further quantified operational analyses may be warranted to assess the potential for significant adverse impacts to traffic, transit, pedestrians, parking, and vehicular and pedestrian safety.

LEVEL 1 SCREENING ASSESSMENT

A Level 1 trip generation screening assessment was conducted to estimate the numbers of person and vehicle trips by mode expected to be generated by the Phase II program during the weekday AM, midday, PM, pregame and Saturday pregame peak hours. The travel demand assumptions used for the assessment are discussed below along with a summary comparison of the travel demand that would be generated by Phase I under each of the two development program variations. (Travel demand generated by Phase II would be the same for both variations.) Detailed travel demand forecasts are then provided for both Phase I and Phase II development.

TRANSPORTATION PLANNING FACTORS

The transportation planning factors used to forecast travel demand from the Project's residential, office, hotel, local retail, public school and Arena components for both Phase I and Phase II are summarized in **Table 4D-2** and discussed below. The trip generation rates, temporal distributions and mode choice assumptions shown in **Table 4D-2** reflect those used in the 2006 FEIS, but have been updated where appropriate based on data from the 2012 *CEQR Technical Manual*, *2007-2011 American Community Survey (ACS) 5-Year Estimates*, and surveys of the

travel characteristics of Barclays Center Arena patrons attending Nets games in January and February 2013.

Residential

The forecasts of travel demand from the Project's residential components were based on trip rates from the 2012 *CEQR Technical Manual*, temporal distributions from the 2012 *CEQR Technical Manual* and the 2006 FEIS, modal splits derived from *2007-2011 American Community Survey* data, and vehicle occupancies from the 2006 FEIS and ACS data. Although residential-based trips in the midday would likely be more local in nature than in the commuter peak hours (and therefore have a higher walk share, for example), the modal split based on ACS data is conservatively assumed for all analyzed weekday peak periods. The modal split for the Saturday peak hour was adjusted to reflect anticipated higher walk and auto shares compared to the weekday peak hours, consistent with the modal splits for this period used in the 2006 FEIS. The primary differences between the residential travel demand factors used for this SEIS and the 2006 FEIS include a higher trip rate for Saturday (9.60 trips/dwelling unit versus 7.679 trips/dwelling unit in the FEIS) reflecting new factors provided in the 2012 *CEQR Technical Manual*, and a lower weekday auto mode share (10.1 percent versus 14 percent in the FEIS) along with higher bus and walk mode shares based on current ACS data.

Office

The travel demand forecasts for the Project's office components were based on trip rates from the 2012 *CEQR Technical Manual*, temporal distributions from the 2012 *CEQR Technical Manual* and the 2006 FEIS, and modal splits, vehicle occupancies and directional distributions from the 2006 FEIS. The primary differences between the office travel demand factors used for this SEIS and those used for the 2006 FEIS include a higher trip rate for Saturday (3.90 trips/1,000 gsf versus 0.90 trips/1,000 gsf in the FEIS) and a higher Saturday midday temporal distribution (17 percent of daily trips versus 15 percent in the FEIS) reflecting new factors provided in the 2012 *CEQR Technical Manual*.

Hotel

The travel demand forecast for the hotel that would be developed under the residential mixed-use variation (but not the commercial mixed-use variation) was updated from the 2006 FEIS using trip rates and temporal distributions from the 2012 *CEQR Technical Manual*. In general, the SEIS forecast for the Project's hotel use reflects higher weekday and Saturday daily trip rates (9.40 trips/room for both weekdays and Saturday versus 5.82 trips/room and 8.61 trips/room, respectively, in the 2006 FEIS) and higher peak hour temporal distributions (1.4 percent to 5.7 percent higher) for all but the Saturday pregame period reflecting new factors provided in the 2012 *CEQR Technical Manual*.

Table 4D-2
Transportation Planning Factors

Land Use:		Arena	Residential		Office		Hotel		Local Retail	
		(1)	(3)		(3)		(3)		(3)	
Trip Generation:	**Weekday**	n/a	8.075		18.00		9.40		205	
(Person-trips)	**Saturday**	2.00	9.60		3.90		9.40		240	
		(trips/spectator)	(trips/dwelling unit)		(trips/1,000 gsf)		(trips/room)		(trips/1,000 gsf)	
		(5)	(2,3)		(2,3)		(2,3)		(2,3)	
Temporal Distribution:	**AM (8-9)**	n/a	10.0%		12.0%		8.0%		3.0%	
	MD (12-1)	n/a	5.0%		15.0%		14.0%		19.0%	
	PM (5-6)	n/a	11.0%		14.0%		13.0%		10.0%	
	Pre-game (7-8 PM)	n/a	8.3%		4.0%		6.6%		3.0%	
	Saturday (1-2 PM)	27.2%	8.0%		17.0%		9.0%		10.0%	
		(5)	(9)		(2,18)		(2)		(4)	
Modal Split:		**Sat**	**Weekday**	**Sat**	**AM/PM/EVE MD**	**Sat MD**	**All Periods**		**All Periods**	
	Auto[10]	32.1%	10.1%	20.0%	12.0%	2.0%	30.1%		2.0%	
	Taxi[11]	6.4%	0.2%	0.2%	1.0%	1.0%	12.3%		3.0%	
	Subway	39.3%	72.5%	45.0%	65.0%	7.0%	18.8%		20.0%	
	LIRR	8.8%	0.8%	0.8%	12.0%	0.0%	0.0%		0.0%	
	Bus	1.7%	5.1%	4.0%	6.0%	7.0%	5.5%		5.0%	
	Charter Bus	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	
	Walk/Other	9.5%	11.3%	30.0%	4.0%	83.0%	33.3%		70.0%	
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%	
		(5,7)	(2,9)		(2)		(2)		(2)	
		Sat	**All Periods**		**All Periods**		**All Periods**		**All Periods**	
Vehicle Occupancy:	**Auto**	3.22	1.30		1.42		1.60		2.00	
	Taxi	2.82	1.40		1.42		1.40		2.00	
	Charter Bus	33	----		----		----		----	
		(6)	(2)		(2)		(2)		(2)	
Directional		**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**	**In**	**Out**
Distribution:	**AM (8-9)**	n/a	n/a	20%	80%	96%	4%	41%	59%	50%	50%
	MD (12-1)	n/a	n/a	51%	49%	39%	61%	68%	32%	50%	50%
	PM (5-6)	n/a	n/a	65%	35%	5%	95%	59%	41%	50%	50%
	Pre-game (7-8 PM)	n/a	n/a	70%	30%	20%	80%	60%	40%	50%	50%
	Saturday (1-2 PM)	99%	1%	50%	50%	60%	40%	56%	44%	55%	45%
		(8)	(3)		(3)		(2)		(3)	
Daily Truck Trip	**Weekday**	n/a	0.06		0.32		0.06		0.35	
Generation:	**Saturday**	0.15	0.02		0.01		0.01		0.04	
		(trips/1,000 gsf)	(trips/dwelling unit)		(trips/1,000 gsf)		(trips/1,000 gsf)		(trips/1,000 gsf)	
		(8)	(2,3)		(2,3)		(2)		(2,3)	
Truck Trip	**AM (8-9)**	n/a	12%		10%		12%		8%	
Temporal Distribution:	**MD (12-1)**	n/a	9%		11%		9%		11%	
	PM (5-6)	n/a	2%		2%		0%		2%	
	Pre-game (7-8 PM)	n/a	0%		2%		0%		0%	
	Saturday (1-2 PM)	8%	9%		11%		9%		11%	

Notes:

(1) An attendance of 16,900 spectators is assumed, consistent with the highest attended sold-out Nets game during the 2012-2013 season.

(2) Source: *Atlantic Yards Arena and Redevelopment FEIS*, November 27, 2006

(3) Source: *City Environmental Quality Review (CEQR) Technical Manual,* Table 16-2, 2012.

(4) Source: *Downtown Brooklyn Development FEIS*, April 2004.

(5) Based on data from Barclay Center patron surveys at three weekend evening Nets games in January and February 2013 as reported in *Barclays Center TDM Effectiveness in Meeting Modal Split Objectives Technical Memorandum*, SSE, June 7, 2013.

(6) Pre-game directional distribution for arena trips assumed to be predominantly inbound.

(7) Charter bus occupancy based on data from *WTC Vehicular Security Center and Tour Bus Parking Facility EA, January 2007.*

(8) Based on FCRC data on Arena loading dock usage for a day with a high attendance Nets game.

(9) Based on data from 2007-2011 American Community Survey 5-Year Estimates. Saturday modal split adjusted to reflect anticipated higher walk and auto shares compared to a weekday.

(10) Includes rented limousines and other luxury vehicles.

(11) Includes yellow cabs and car services.

Table 4D-2 (continued)
Transportation Planning Factors

Land Use: Public School / IntermediateSchool

		Student	Staff	Parent
		(12)	(12)	(13)
Trip Generation:	**Weekday**	2.00	2.00	4.00
(Person-trips)	**Saturday**	0.00	0.00	0.00
		(trips/student)	(trips/staff)	(trips/student)
		(14)	(14)	(14)
Temporal Distribution:	**AM (8-9)**	49.5%	40.0%	23.6%
	MD (12-1)	0.0%	0.0%	0.0%
	PM (5-6)	5.0%	5.0%	5.0%
	Pre-game (7-8 PM)	0.0%	0.0%	0.0%
	Saturday (1-2 PM)	0.0%	0.0%	0.0%

		(15,16)		(18)	(13)
Modal Split:		**AM**	**PM**	**All Periods**	**All Periods**
	Auto	19.0%	17.0%	12.0%	0.0%
	Taxi[11]	0.0%	0.0%	1.0%	0.0%
	Subway	5.3%	4.6%	65.0%	0.0%
	LIRR	0.0%	0.0%	12.0%	0.0%
	Bus	2.7%	2.4%	6.0%	0.0%
	School Bus	2.0%	2.0%	0.0%	0.0%
	Walk/Other	71.0%	74.0%	4.0%	100.0%
		100.0%	100.0%	100.0%	100.0%

		(15)	(15)	(13)
		All Periods	**All Periods**	**All Periods**
Vehicle Occupancy:	**Auto**	1.75	1.10	0.00
	Taxi[11]	1.75	1.10	0.00
	School Bus	7.00	----	----

		(12)		(12)		(13)	
Directional		**In**	**Out**	**In**	**Out**	**In**	**Out**
Distribution:	**AM (8-9)**	100%	0%	100%	0%	50%	50%
	MD (12-1)	0%	0%	0%	0%	0%	0%
	PM (5-6)	0%	100%	0%	100%	50%	50%
	Pre-game (7-8 PM)	0%	0%	0%	0%	0%	0%
	Saturday (1-2 PM)	0%	0%	0%	0%	0%	0%

		(17)		
Daily Truck Trip	**Weekday**	0.03	----	----
Generation:	**Saturday**	0.00	----	----
		(trips/student)		
		(17)		
Truck Trip	**AM (8-9)**	9.6%	----	----
Temporal Distribution:	**MD (12-1)**	11.0%	----	----
	PM (5-6)	1.0%	----	----
	Pre-game (7-8 PM)	0.0%	----	----
	Saturday (1-2 PM)	0.0%	----	----

Notes:

(12) Assumes one arrival in the AM and one departure in the afternoon per day for each student and staff member.

(13) Reflects a parent making two walk trips both at the start and at the end of the school day to drop-off/pickup students.

(14) Based on trip rate and temporal distribution data for a public school provided by NYCDOT. Five percent of school trips conservatively assumed to occur in the 5-6 PM peak hour.

(15) Based on data from *Proposed PS/IS 437, Brooklyn Supplemental Environmental Studies, NYCSCA.*

(16) 2:1 subway/transit bus split based on data from the *Brownsville Ascend Charter School Transportation Assessment, 2011.*

(17) Based on data from *No. 7 Subway Extension-Hudson Yards Rezoning and Development Program FGEIS*, 2004.

(18) Source: NYCDOT Employee Commute Options Survey data for Downtown Brooklyn.

Local Retail

The retail uses developed under both the residential mixed-use variation and the commercial mixed-use variation would be local (or "neighborhood") retail, attracting trips primarily from the residential and worker populations on-site and in surrounding neighborhoods. It is therefore anticipated that the majority of these trips would be via the walk mode, and that many would be "linked" trips (e.g., a trip with multiple purposes, such as stopping at a retail store while commuting to or from work) and would therefore not represent the addition of new discrete trips to the study area transportation systems. For the purposes of the travel demand forecast, it is assumed that 25 percent of retail trips would be such "linked" trips, consistent with 2012 *CEQR Technical Manual* guidelines. The travel demand forecasts for local retail uses were updated from the 2006 FEIS using trip rates and temporal distributions from the 2012 *CEQR Technical Manual*. The primary differences between the local retail travel demand factors used for this SEIS and those used for the 2006 FEIS include a substantially higher trip rate for Saturday (240 trips/1,000 gsf versus 205 trips/1,000 gsf in the FEIS) and a lower linked-trip rate (25 percent versus 40 percent in the FEIS) reflecting new factors provided in the 2012 *CEQR Technical Manual*.

School

Although the specific program for the 100,000 gsf of proposed public school space has not yet been finalized, based on data from the School Construction Authority it is assumed for analysis purposes that it would contain approximately 757 seats. Of these, it is assumed that approximately 314 seats would be for elementary students, 373 would be for intermediate students, and 70 for special education students, consistent with the distribution assumed in the 2006 FEIS. As noted previously, although the specific location of the proposed school has also not been finalized, it is assumed for analysis purposes that it would be located within Building 15.[1]

The factors used to forecast travel demand from the public school use were based on trip rates and temporal distributions provided by NYCDOT, and data from previous studies prepared for similar school projects in Brooklyn. The forecast conservatively assumes that 100 percent of students are present on a typical school day, although actual average daily attendance is typically lower. In addition, it should be noted that based on the findings of the 2006 FEIS, development of Phase I and Phase II combined would generate more than 2,400 elementary and intermediate school students at the project site. It is therefore anticipated that the 100,000 gsf of on-site school space would be used primarily by students from the Project's residential component, and that most of the student and parent trips associated with the school are already reflected in the trips forecast for the Project's residential uses. However, to be conservative, the travel demand forecast for the public school use assumes that only 25 percent of school trips are linked to on-site residential demand.

Arena

Weekday traffic and pedestrian counts for the SEIS transportation analyses were conducted on days when evening Nets games were scheduled at the Arena, and therefore the Existing

[1] Locating the school in another Phase II building would not affect the overall level of travel demand generated by the Project. Although there would likely be some localized differences in traffic and pedestrian patterns, the overall results of the analyses would not be expected to differ substantially from those discussed below.

conditions baseline traffic and pedestrian networks reflect game-day Arena demand in the weekday peak hours. However, as no Saturday afternoon Nets games or other major events were scheduled during the count program, the Existing conditions Saturday pregame peak hour traffic and pedestrian networks do not reflect Arena demand. Travel demand from a Saturday afternoon Nets game at the Arena was therefore forecasted for use in developing the Future Without Phase II background condition.

As built, the Barclays Center Arena has a maximum capacity of 17,700 seats for a basketball game (versus the 18,000 seats assumed in the FEIS).[1] It is important to note, however, that the actual number of spectators at a Nets game is typically fewer than the number of tickets distributed. Actual attendance during the 2012-2013 season (including Playoffs) averaged approximately 14,974, and there were no games where attendance equaled the 17,700-seat capacity of the Arena. To be conservative, as well as to account for the potential for a Saturday afternoon game to attract a higher than average level of attendance, the travel demand forecast for Saturday Arena demand assumes a Nets game with 16,900 spectators. This number of spectators is consistent with the highest attended sold-out game during the 2012-2013 season.

The Saturday pregame peak hour travel demand forecast for the Arena assumes a daily trip generation rate of two trips per seat for spectators. The temporal distribution, modal splits and vehicle occupancies of Arena trips are based on data from surveys of Arena patrons attending three weekend evening Nets games in January and February 2013. More than 600 attendees, age 16 and over, were interviewed at each game to provide a statistically significant sample, and the survey results were weighted to account for the actual distribution of attendees by broad seating sections based on ticket scan data and to account for children, who were not eligible for the survey. As arena employees typically arrive before the spectators, most if not all employee trips occur outside of the analyzed Saturday pregame peak hour for spectator demand. Arena employee trips are therefore not reflected in the travel demand forecast for the Saturday pregame peak hour.[2]

Compared to the 2006 FEIS, the Arena travel demand factors for the Saturday pregame peak hour in this SEIS reflect a lower temporal distribution for the Saturday pregame peak hour (27.2 percent versus 37.5 percent), a lower auto/taxi mode share (38.5 percent versus 43 percent), a lower subway mode share (39.3 percent versus 44 percent), a substantially higher walk mode share 9.5 percent versus 3 percent), and higher auto and taxi vehicle occupancies (3.22 and 2.82, respectively, versus 2.35 for both autos and taxis in the FEIS). As discussed above, the factors used in this SEIS are based on extensive surveys of spectators attending Nets games at the Arena.

Truck Trips

Truck trip generation rates and temporal distributions for the Project's residential, office and local retail components are based on those cited in the 2012 *CEQR Technical Manual* for these uses. The truck trip rates and temporal distribution for the Project's hotel component are

[1]While there is the potential for additional seating capacity for non-game events, Americans with Disabilities Act (ADA) accessibility, production equipment, and line of sight, operational and staging requirements typically limits attendance at non-basketball events to under 17,700.

[2] Up to 1,200 workers are employed at the Arena on a Nets game day. Approximately 30 to 40 arrive in the morning (i.e., 8-9 AM), approximately 200 more arrive during the day well before game time, and all remaining workers are typically present in the building two hours before game time (i.e., 30 minutes before the doors open to the public).

consistent with those used for the 2006 FEIS. The truck trip forecast for the Arena was derived from data on typical hourly truck arrivals at the Arena's loading area on a day with a high-attendance Nets game. These truck trips include deliveries of food and supplies, general in-house deliveries (e.g., UPS, FedEx, etc.), and trucks associated with television broadcasts.

Compared to the 2006 FEIS, the Arena truck travel demand factors for Saturday used in this SEIS reflect a higher daily trip rate (0.15 trips/1,000 gsf versus 0.02 trips/1,000 gsf) and a lower temporal distribution for the pregame peak hour (8 percent versus 20 percent). For office uses, this SEIS reflects a substantially higher weekday trip rate (0.32 trips/1,000 gsf versus 0.16 trips/1,000 gsf) and higher temporal distributions (from 2 percent to 4 percent higher) in each peak hour. This SEIS also reflects a higher Saturday trip rate for local retail uses (0.04 trips/1,000 gsf versus 0.02 trips/1,000 gsf in the 2006 FEIS). Other truck travel demand factors used in this SEIS are generally consistent with those used for the 2006 FEIS.

TRIP GENERATION

Travel demand forecasts for both Phase I and Phase II development are presented below. The forecast for Phase I compares the demand that would be generated by the commercial mixed-use and residential mixed-use variations.

Phase I Development

Tables 4D-3 and 4D-4 show the trip generation in peak hour person trips that would result from Phase I development at the Atlantic Yards site under the residential mixed-use and commercial mixed-use variations, respectively. A comparison of the total peak hour person trips generated by each variation is presented in **Table 4D-5** along with the total numbers of peak hour vehicle trips (auto, taxi and truck) and person trips by transit (subway, bus and LIRR). The forecasted numbers in **Tables 4D-3 and 4D-4** reflect demand from the Arena only for Saturday since, as noted above, the Existing conditions baseline traffic and pedestrian networks already reflect Arena demand in the weekday peak hours. Saturday Arena demand is not included for the purposes of the comparison shown in **Table 4D-5**, as Arena demand would be the same under both program variations.

It should be noted that the residential mixed-use variation and the commercial mixed-use variation would both displace existing land uses, including approximately 46,913 square feet of retail (a Modell's Sporting Goods store and a P.C. Richards consumer electronics store) currently located on Site 5. However, the travel demand forecast conservatively assumes no credit for the travel demand from these existing uses that would be displaced in the Future Without Phase II condition.

As shown in **Table 4D-5**, the number of person trips generated by the residential mixed-use variation (inbound and outbound combined) in the Future Without Phase II would range from 2,057 in the 7-8 PM pregame peak hour to 4,584 in the weekday midday peak hour. Person trips generated by the commercial mixed-use variation would range from 2,194 in the 7-8 PM pregame peak hour to 6,173 in the weekday midday. As shown in **Table 4D-5**, the commercial mixed-use variation would generate from 7 to 39 percent more trips than the residential mixed-use variation in the weekday peak hours. By contrast, the numbers of person trips generated by the two variations would be roughly equivalent in the Saturday peak hour, differing by only 17 trips (less than one percent).

Table 4D-3
Travel Demand Forecast for the Phase I Residential Mixed-Use Variation (Person Trips)

		Site 5			Arena Block								
		Residential/ Office/Local Retail			Arena[1]			Residential/ Office/Hotel/Local Retail			Total Trips		
Person Trips by Mode:		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM (8-9)	**Auto**	7	23	30				129	133	262	136	156	292
	Taxi	3	3	6				18	15	33	21	18	39
	Subway	60	174	234				670	802	1,472	730	976	1,706
	LIRR	0	2	2				86	11	97	86	13	99
	Bus	8	16	24				63	64	127	71	80	151
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	82	100	182				146	216	362	228	316	544
	Total	160	318	478				1,112	1,241	2,353	1,272	1,559	2,831
MD (12-1)	**Auto**	21	20	41				101	79	180	122	99	221
	Taxi	21	21	42				44	35	79	65	56	121
	Subway	185	183	368				423	411	834	608	594	1,202
	LIRR	1	1	2				3	3	6	4	4	8
	Bus	37	37	74				83	91	174	120	128	248
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	489	488	977				836	971	1,807	1,325	1,459	2,784
	Total	754	750	1,504				1,490	1,590	3,080	2,244	2,340	4,584
PM (5-6)	**Auto**	26	17	43				144	181	325	170	198	368
	Taxi	11	11	22				28	30	58	39	41	80
	Subway	208	145	353				789	968	1,757	997	1,113	2,110
	LIRR	1	1	2				12	101	113	13	102	115
	Bus	28	23	51				74	95	169	102	118	220
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	274	264	538				386	355	741	660	619	1,279
	Total	548	461	1,009				1,433	1,730	3,163	1,981	2,191	4,172
Pre-game (7-8 PM)	**Auto**	17	9	26				104	70	174	121	79	200
	Taxi	3	3	6				12	11	23	15	14	29
	Subway	132	69	201				608	387	995	740	456	1,196
	LIRR	1	1	2				12	26	38	13	27	40
	Bus	13	8	21				50	35	85	63	43	106
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	93	83	176				180	130	310	273	213	486
	Total	259	173	432				966	659	1,625	1,225	832	2,057
Saturday (1-2 PM)	**Auto**	34	33	67	2,922	30	2,952	161	152	313	3,117	215	3,332
	Taxi	14	11	25	583	6	589	25	21	46	622	38	660
	Subway	149	132	281	3,577	36	3,613	388	366	754	4,114	534	4,648
	LIRR	1	1	2	801	8	809	5	5	10	807	14	821
	Bus	28	24	52	155	2	157	61	53	114	244	79	323
	Charter Bus	0	0	0	200	0	200	0	0	0	200	0	200
	Walk/Other	363	303	666	865	11	876	628	530	1,158	1,856	844	2,700
	Total	589	504	1,093	9,103	93	9,196	1,268	1,127	2,395	10,960	1,724	12,684

Notes:

[1]Weekday peak hour Arena travel demand is not forecasted as it is reflected in Existing condition baseline traffic and pedestrian networks.

Table 4D-4
Travel Demand Forecast for the Phase I Commercial Mixed-Use Variation (Person Trips)

		Site 5			Arena Block								
		Office/Local Retail			Arena[1]			Residential/Office/ Local Retail			Total Trips		
Person Trips by Mode:		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM (8-9)	**Auto**	85	5	90				210	108	318	295	113	408
	Taxi	10	3	13				18	6	24	28	9	37
	Subway	473	41	514				1,193	764	1,957	1,666	805	2,471
	LIRR	83	3	86				186	16	202	269	19	288
	Bus	47	7	54				109	58	167	156	65	221
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	104	77	181				159	183	342	263	260	523
	Total	802	136	938				1,875	1,135	3,010	2,677	1,271	3,948
MD (12-1)	**Auto**	21	25	46				60	67	127	81	92	173
	Taxi	25	27	52				28	32	60	53	59	112
	Subway	162	176	338				408	429	837	570	605	1,175
	LIRR	0	0	0				2	2	4	2	2	4
	Bus	59	73	132				103	132	235	162	205	367
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	774	939	1,713				1,133	1,496	2,629	1,907	2,435	4,342
	Total	1,041	1,240	2,281				1,734	2,158	3,892	2,775	3,398	6,173
PM (5-6)	**Auto**	12	103	115				105	267	372	117	370	487
	Taxi	11	19	30				13	29	42	24	48	72
	Subway	99	593	692				756	1,559	2,315	855	2,152	3,007
	LIRR	5	96	101				18	217	235	23	313	336
	Bus	21	66	87				67	147	214	88	213	301
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	255	285	540				339	361	700	594	646	1,240
	Total	403	1,162	1,565				1,298	2,580	3,878	1,701	3,742	5,443
Pre-game (7-8 PM)	**Auto**	8	25	33				86	83	169	94	108	202
	Taxi	3	5	8				5	8	13	8	13	21
	Subway	53	147	200				599	515	1,114	652	662	1,314
	LIRR	6	23	29				19	53	72	25	76	101
	Bus	8	17	25				47	46	93	55	63	118
	Charter Bus	0	0	0				0	0	0	0	0	0
	Walk/Other	78	84	162				154	122	276	232	206	438
	Total	156	301	457				910	827	1,737	1,066	1,128	2,194
Saturday (1-2 PM)	**Auto**	12	10	22	2,922	30	2,952	130	126	256	3,064	166	3,230
	Taxi	15	12	27	583	6	589	17	14	31	615	32	647
	Subway	102	82	184	3,577	36	3,613	367	344	711	4,046	462	4,508
	LIRR	0	0	0	801	8	809	5	5	10	806	13	819
	Bus	32	25	57	155	2	157	66	55	121	253	82	335
	Charter Bus	0	0	0	200	0	200	0	0	0	200	0	200
	Walk/Other	437	340	777	865	11	876	723	586	1,309	2,025	937	2,962
	Total	598	469	1,067	9,103	93	9,196	1,308	1,130	2,438	11,009	1,692	12,701

Notes:

[1]Weekday peak hour Arena travel demand is not forecasted as it is reflected in Existing condition baseline traffic and pedestrian networks.

Table 4D-5
Comparison of Phase I Peak Hour Travel
Residential Variation vs. Commercial Variation

Person Trips				
Peak Hour	**Residential Variation**	**Commercial Variation**	**Net Difference**	**% Difference**
8-9 AM	2,831	3,948	(1,117)	(39%)
12-1 PM (midday)	4,584	6,173	(1,589)	(35%)
5-6 PM	4,172	5,443	(1,271)	(30%)
7-8 PM (pregame)	2,057	2,194	(137)	(7%)
Saturday 1-2 PM	3,488	3,505	(17)	(<1%)
Vehicle Trips (Auto/Taxi/Truck)				
Peak Hour	**Residential Variation**	**Commercial Variation**	**Net Difference**	**% Difference**
8-9 AM	278	382	(104)	(37%)
12-1 PM (midday)	268	258	10	4%
5-6 PM	339	427	(88)	(26%)
7-8 PM (pregame)	177	175	2	1%
Saturday 1-2 PM	351	259	92	26%
Transit Trips (Subway/Bus/LIRR)				
Peak Hour	**Residential Variation**	**Commercial Variation**	**Net Difference**	**% Difference**
8-9 AM	1,956	2,980	(1,024)	(52%)
12-1 PM (midday)	1,458	1,546	(88)	(6%)
5-6 PM	2,445	3,644	(1,199)	(49%)
7-8 PM (pregame)	1,342	1,533	(191)	(14%)
Saturday 1-2 PM	1,213	1,083	130	11%

Note: The trip totals shown in the table include demand from Phase I residential, office, hotel and retail uses; Arena demand is not included.

The numbers of peak hour vehicle trips that would be generated by the residential mixed-use variation and the commercial mixed-use variation in the Future Without Phase II are also summarized in **Table 4D-5**, and are shown in detail in **Tables 4D-6 and 4D-7**, respectively. The commercial mixed-use variation would generate a greater number of vehicle trips in the weekday AM peak hour (37 percent more) and 5-6 PM peak hour (26 percent more); however, the residential mixed-use variation would generate four percent (10) more vehicle trips in the weekday midday peak hour and 26 percent (92) more vehicle trips in the Saturday peak hour. During the weekday 7-8 PM pregame peak hour, the numbers of vehicle trips generated by the two variations would be roughly equivalent, differing by only two trips. Lastly, as shown in **Table 4D-5,** the commercial mixed-use variation would generate a greater number of transit trips (6 to 52 percent more) in the weekday peak hours, while the residential mixed-use variation would generate 11 percent (130) more transit trips in the Saturday peak hour.

Table 4D-6
Travel Demand Forecast for the Phase I Residential Mixed-Use Variation (Vehicle Trips)

		Site 5			Arena Block								
		Residential/ Office/Local Retail			Arena[1]			Residential/ Office/Hotel/Local Retail			Total Trips		
Peak Hour Vehicle Trips		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM (8-9)	**Auto**	5	17	22				90	98	188	95	115	210
	Taxi [2]	3	3	6				16	16	32	19	19	38
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	2	2	4				13	13	26	15	15	30
	Total	**10**	**22**	**32**				**119**	**127**	**246**	**129**	**149**	**278**
MD (12-1 PM)	**Auto**	12	12	24				67	53	120	79	65	144
	Taxi [2]	15	15	30				34	34	68	49	49	98
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	2	2	4				11	11	22	13	13	26
	Total	**29**	**29**	**58**				**112**	**98**	**210**	**141**	**127**	**268**
PM (5-6 PM)	**Auto**	19	12	31				103	127	230	122	139	261
	Taxi [2]	8	8	16				29	29	58	37	37	74
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	0	0	0				2	2	4	2	2	4
	Total	**27**	**20**	**47**				**134**	**158**	**292**	**161**	**178**	**339**
Pre-Game (7-8 PM)	**Auto**	13	6	19				76	50	126	89	56	145
	Taxi [2]	3	3	6				12	12	24	15	15	30
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	0	0	0				1	1	2	1	1	2
	Total	**16**	**9**	**25**				**89**	**63**	**152**	**105**	**72**	**177**
Saturday (1-2 PM)	**Auto**	24	23	47	907	9	916	116	112	228	1,047	144	1,191
	Taxi [2]	10	10	20	196	196	392	27	27	54	233	233	466
	Charter Bus	0	0	0	6	0	6	0	0	0	6	0	6
	Truck	0	0	0	4	4	8	1	1	2	5	5	10
	Total	**34**	**33**	**67**	**1,113**	**209**	**1,322**	**144**	**140**	**284**	**1,291**	**382**	**1,673**

Notes:

[1] Weekday peak hour Arena travel demand is not forecasted as it is reflected in Existing condition baseline traffic and pedestrian networks.

[2] Balanced taxi trips shown.

Table 4D-7
Travel Demand Forecast for the Phase I Commercial Mixed-Use Variation (Vehicle Trips)

		Site 5			Arena Block								
		Office/Local Retail			Arena[1]			Residential/Office/ Local Retail			Total Trips		
Peak Hour Vehicle Trips		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
AM (8-9)	Auto	60	3	63				150	81	231	210	84	294
	Taxi [2]	7	7	14				13	13	26	20	20	40
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	6	6	12				18	18	36	24	24	48
	Total	**73**	**16**	**89**				**181**	**112**	**293**	**254**	**128**	**382**
MD (12-1 PM)	Auto	12	15	27				41	46	87	53	61	114
	Taxi [2]	20	20	40				27	27	54	47	47	94
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	7	7	14				18	18	36	25	25	50
	Total	**39**	**42**	**81**				**86**	**91**	**177**	**125**	**133**	**258**
PM (5-6 PM)	Auto	8	72	80				78	189	267	86	261	347
	Taxi [2]	14	14	28				22	22	44	36	36	72
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	1	1	2				3	3	6	4	4	8
	Total	**23**	**87**	**110**				**103**	**214**	**317**	**126**	**301**	**427**
Pre-Game (7-8 PM)	Auto	5	17	22				65	60	125	70	77	147
	Taxi [2]	4	4	8				7	7	14	11	11	22
	Charter Bus	0	0	0				0	0	0	0	0	0
	Truck	1	1	2				2	2	4	3	3	6
	Total	**10**	**22**	**32**				**74**	**69**	**143**	**84**	**91**	**175**
Saturday (1-2 PM)	Auto	7	5	12	907	9	916	96	95	191	1,010	109	1,119
	Taxi [2]	11	11	22	201	201	402	16	16	32	228	228	456
	Charter Bus	0	0	0	6	0	6	0	0	0	6	0	6
	Truck	0	0	0	4	4	8	1	1	2	5	5	10
	Total	**18**	**16**	**34**	**1,118**	**214**	**1,332**	**113**	**112**	**225**	**1,249**	**342**	**1,591**

Notes:
[1] Weekday peak hour Arena travel demand is not forecasted as it is reflected in Existing condition baseline traffic and pedestrian networks.
[2] Balanced taxi trips shown.

As demonstrated by the data in **Table 4D-5**, the commercial mixed-use variation for Phase I development would generate a higher level of total travel demand (from 7 to 39 percent higher) compared to the residential mixed-use variation during the weekday peak hours. While the numbers of person trips during the Saturday peak hour would be roughly equivalent between the two variations, the residential mixed-use variation would generate greater numbers of vehicle trips (26 percent more) and transit trips (11 percent more) than the commercial mixed-use variation during this period. Therefore, the commercial mixed-use variation is assumed for Phase I development for the weekday transportation analyses, while the residential mixed-use variation is assumed for the Saturday analyses. This approach, which is consistent with the analysis methodology in the 2006 FEIS, can be considered conservative as it results in generally higher levels of background transportation demand for the Future Without Phase II condition.

As shown in **Table 4D-4**, under the commercial mixed-use variation, new subway trips from Phase I development (excluding Arena demand which is accounted for in the Existing condition) are expected to total 2,471, 3,007 and 1,314 during the analyzed weekday 8-9 AM, 5-6 PM and 7-8 PM peak hours, respectively. New local bus trips would total 221 and 301 during the weekday 8-9 AM and 5-6 PM

peak hours analyzed for potential bus impacts, and new weekday peak hour trips on the Long Island Rail Road would range from four (in the midday peak hour) to 336 (in the 5-6 PM peak hour).

As shown in **Table 4D-7**, under the commercial mixed-use variation, Phase I (excluding the Arena) is expected to add from 114 to 347 auto trips to the study area street system in each weekday peak hour, and from 22 to 94 new taxi trips. Peak hour truck trips would increase by from 6 to 50 in each weekday peak hour. (These volumes exclude Arena demand which, as noted previously, is already reflected in the weekday existing baseline networks.) As shown in **Table 4D-6**, on Saturdays, under the residential mixed-use variation, Phase I development would add an estimated 1,191 auto, 466 taxi, six charter bus and ten truck trips to the street system in the 1-2 PM peak hour compared to Existing conditions. (As discussed above, the forecast of Phase I vehicle trips in the Saturday peak hour includes projected demand from an afternoon Nets game at the Arena.) It should be noted that the numbers of taxi trips shown in **Tables 4D-6 and 4D-7** have been balanced to reflect the fact that some taxis arriving with passengers would depart with new passengers. Given the project site's location in proximity to the Downtown Brooklyn Central Business District (CBD) and immediately adjacent to a major inter-modal facility (the LIRR's Atlantic Terminal and the Atlantic Avenue – Barclays Center subway station), it is assumed that 50 percent of taxis arriving with passengers will be available to pick up departing passengers, consistent with the analysis in the 2006 FEIS.

Phase II Development

Tables 4D-8 and 4D-9 show the trip generation in peak hour person and vehicle trips, respectively, that would result from development of Phase II of the Project. As noted previously, it is assumed that the maximum number of dwelling units allowed by the 2009 MGPP (6,430 dwelling units) would be built on the project site. Consequently, the proposed number of dwelling units that would be constructed in Phase II would total 4,508 under the residential mixed-use scenario and 4,932 under the commercial mixed-use scenario. However, to be conservative, the transportation analyses for this SEIS assess the potential effects of the development of 4,932 dwelling units in Phase II. Therefore, the transportation analyses for the residential mixed-use variation over-count the total population of the Project and reflect a conservative analysis by assuming a number of dwelling units (6,854) greater than the maximum number of dwelling units allowed by the 2009 MGPP (6,430), and therefore greater than the number that would actually be built.

As shown in **Table 4D-8**, the total number of person trips generated by Phase II development (inbound and outbound combined) would range from 4,030 in the weekday 7-8 PM peak hour to 6,873 in the weekday 5-6 PM peak hour. New subway trips are expected to total 3,119, 3,665 and 2,540 during the analyzed weekday 8-9 AM, 5-6 PM and 7-8 PM peak hours, respectively. New local bus trips would total 259 and 345 during the weekday 8-9 AM and 5-6 PM peak hours analyzed for potential bus impacts. New weekday peak hour trips by Long Island Rail Road would range from 17 (in the midday peak hour) to 43 (in the 8-9 AM peak hour). Walk-only trips would total 1,477, 3,415, 2,243, 878 and 3,103 during the weekday 8-9 AM, 5-6 PM and 7-8 PM and Saturday 1-2 PM peak hours, respectively.

Table 4D-8
Travel Demand Forecast for Phase II
(Person Trips)

Component:		Residential 4,486,084 gsf 4,932 D.U.			Local Retail [1] 156,007 gsf			P.S./I.S. [2,3] 757 students			P.S./I.S. [4] 108 staff			P.S./I.S. [2,3,5] 171 parents			Total Trips		
Peak Hour Trips:		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trips by Mode:		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM (8-9)	**Auto**	80	323	403	8	8	16	107	0	107	10	0	10	0	0	0	205	331	536
	Taxi	1	7	8	12	12	24	0	0	0	1	0	1	0	0	0	14	19	33
	Subway	578	2,311	2,889	72	72	144	30	0	30	56	0	56	0	0	0	736	2,383	3,119
	LIRR	7	26	33	0	0	0	0	0	0	10	0	10	0	0	0	17	26	43
	Bus	41	162	203	18	18	36	15	0	15	5	0	5	0	0	0	79	180	259
	School Bus	0	0	0	0	0	0	11	0	11	0	0	0	0	0	0	11	0	11
	Walk/Other	89	360	449	252	252	504	399	0	399	3	0	3	61	61	122	804	673	1,477
	Total	796	3,189	3,985	362	362	724	562	0	562	85	0	85	61	61	122	1,866	3,612	5,478
MD (12-1)	**Auto**	103	98	201	46	46	92	0	0	0	0	0	0	0	0	0	149	144	293
	Taxi	3	3	6	69	69	138	0	0	0	0	0	0	0	0	0	72	72	144
	Subway	736	707	1,443	456	456	912	0	0	0	0	0	0	0	0	0	1,192	1,163	2,355
	LIRR	9	8	17	0	0	0	0	0	0	0	0	0	0	0	0	9	8	17
	Bus	52	50	102	115	115	230	0	0	0	0	0	0	0	0	0	167	165	332
	School Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Walk/Other	115	110	225	1,595	1,595	3,190	0	0	0	0	0	0	0	0	0	1,710	1,705	3,415
	Total	1,018	976	1,994	2,281	2,281	4,562	0	0	0	0	0	0	0	0	0	3,299	3,257	6,556
PM (5-6)	**Auto**	287	154	441	24	24	48	0	10	10	0	1	1	0	0	0	311	189	500
	Taxi	6	3	9	37	37	74	0	0	0	0	0	0	0	0	0	43	40	83
	Subway	2,065	1,112	3,177	239	239	478	0	3	3	0	7	7	0	0	0	2,304	1,361	3,665
	LIRR	23	12	35	0	0	0	0	0	0	0	1	1	0	0	0	23	13	36
	Bus	146	77	223	60	60	120	0	1	1	0	1	1	0	0	0	206	139	345
	School Bus	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
	Walk/Other	323	174	497	839	839	1,678	0	42	42	0	0	0	13	13	26	1,175	1,068	2,243
	Total	2,850	1,532	4,382	1,199	1,199	2,398	0	57	57	0	10	10	13	13	26	4,062	2,811	6,873
Pregame (7-8 PM)	**Auto**	234	100	334	8	8	16	0	0	0	0	0	0	0	0	0	242	108	350
	Taxi	4	3	7	12	12	24	0	0	0	0	0	0	0	0	0	16	15	31
	Subway	1,677	719	2,396	72	72	144	0	0	0	0	0	0	0	0	0	1,749	791	2,540
	LIRR	18	8	26	0	0	0	0	0	0	0	0	0	0	0	0	18	8	26
	Bus	118	51	169	18	18	36	0	0	0	0	0	0	0	0	0	136	69	205
	School Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Walk/Other	262	112	374	252	252	504	0	0	0	0	0	0	0	0	0	514	364	878
	Total	2,313	993	3,306	362	362	724	0	0	0	0	0	0	0	0	0	2,675	1,355	4,030
Saturday (1-2 PM)	**Auto**	378	378	756	32	25	57	0	0	0	0	0	0	0	0	0	410	403	813
	Taxi	3	3	6	46	37	83	0	0	0	0	0	0	0	0	0	49	40	89
	Subway	853	853	1,706	308	252	560	0	0	0	0	0	0	0	0	0	1,161	1,105	2,266
	LIRR	15	15	30	0	0	0	0	0	0	0	0	0	0	0	0	15	15	30
	Bus	76	76	152	78	62	140	0	0	0	0	0	0	0	0	0	154	138	292
	School Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Walk/Other	568	568	1,136	1,082	885	1,967	0	0	0	0	0	0	0	0	0	1,650	1,453	3,103
	Total	1,893	1,893	3,786	1,546	1,261	2,807	0	0	0	0	0	0	0	0	0	3,439	3,154	6,593

Notes:

[1] Local retail travel demand assumes 75% of trips are not linked trips and are new to the study area.

[2] P.S./I.S. travel demand assumes 75% of trips are not linked trips and are new to the study area.

[3] P.S./I.S. travel demand assumes 100% student attendance on a typical school day.

[4] P.S./I.S. travel demand assumes one staff per seven seats based on data from *Proposed PS/IS 437, Brooklyn, Supplemental Environmental Studies, NYSCA.*

[5] P.S./I.S. travel demand assumes 344 P.S. students and a student to parent ratio of 1 to 0.7 for walk trips based on Oct. 2012 survey data from P.S. 35 in Queens.

Numbers may not sum due to rounding.

Table 4D-9
Travel Demand Forecast for Phase II
(Vehicle Trips)

Component:		Residential 4,486,084 gsf 4,932 D.U.			Local Retail [1] 156,007 gsf			P.S./I.S. [2,3] 757 students			P.S./I.S. [4,6] 108 staff			Total Trips		
Peak Hour Vehicle Trips		**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
AM (8-9)	Auto	62	248	310	3	3	6	61	61	122	9	2	11	135	314	449
	Taxi[5]	3	3	6	8	8	16	0	0	0	1	1	2	12	12	24
	School Bus[5]	0	0	0	0	0	0	2	2	4	0	0	0	2	2	4
	Truck	17	17	34	3	3	6	1	1	2	0	0	0	21	21	42
	Total	**82**	**268**	**350**	**14**	**14**	**28**	**64**	**64**	**128**	**10**	**3**	**13**	**170**	**349**	**519**
MD (12-1 PM)	Auto	78	76	154	23	23	46	0	0	0	0	0	0	101	99	200
	Taxi[5]	0	0	0	51	51	102	0	0	0	0	0	0	51	51	102
	School Bus[5]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Truck	14	14	28	3	3	6	1	1	2	0	0	0	18	18	36
	Total	**92**	**90**	**182**	**77**	**77**	**154**	**1**	**1**	**2**	**0**	**0**	**0**	**170**	**168**	**338**
PM (5-6 PM)	Auto	221	118	339	12	12	24	6	6	12	0	1	1	239	137	376
	Taxi[5]	5	5	10	27	27	54	0	0	0	0	0	0	32	32	64
	School Bus[5]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Truck	3	3	6	0	0	0	0	0	0	0	0	0	3	3	6
	Total	**229**	**126**	**355**	**39**	**39**	**78**	**6**	**6**	**12**	**0**	**1**	**1**	**274**	**172**	**446**
Pre-Game (7-8 PM)	Auto	180	77	257	3	3	6	0	0	0	0	0	0	183	80	263
	Taxi[5]	2	2	4	7	7	14	0	0	0	0	0	0	9	9	18
	School Bus[5]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Truck	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**182**	**79**	**261**	**10**	**10**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**192**	**89**	**281**
Saturday (1-2 PM)	Auto	291	291	582	15	12	27	0	0	0	0	0	0	306	303	609
	Taxi[5]	4	4	8	33	33	66	0	0	0	0	0	0	37	37	74
	School Bus[5]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Truck	3	3	6	0	0	0	0	0	0	0	0	0	3	3	6
	Total	**298**	**298**	**596**	**48**	**45**	**93**	**0**	**0**	**0**	**0**	**0**	**0**	**346**	**343**	**689**

Notes:

[1] Local retail travel demand assumes 75% of trips are not linked trips and are new to the study area.

[2] P.S./I.S. travel demand assumes 75% of trips are not linked trips and are new to the study area.

[3] P.S./I.S. travel demand assumes 100% student attendance on a typical school day.

[4] P.S./I.S. travel demand assumes one staff per seven seats based on data from *Proposed PS/IS 437, Brooklyn, Supplemental Environmental Studies, NYSC*

[5] Balanced taxi and school bus trips shown. Student auto trips balanced to reflect drop-offs.

[6] School staff auto trips assume that 25% are drop-offs based on data from *Proposed PS/IS 437, Brooklyn, Supplemental Environmental Studies, NYSCSA.*

As shown in **Table 4D-9**, vehicle trips generated by Phase II development would total 519, 338, 446, 281 and 689 during the analyzed weekday 8-9 AM, 12-1 PM, 5-6 PM and 7-8 PM and Saturday 1-2 PM peak hours, respectively. Auto trips during these periods would range from 200 (in the weekday midday peak hour) to 609 (in the Saturday peak hour), while taxi trips would range from 18 (in the weekday 7-8 PM peak hour) to 102 (in the weekday midday peak hour). Truck trips would range from none (in the weekday 7-8 PM peak hour) to 42 (in the weekday AM peak hour).

As development of Phase II would generate more than 50 peak hour vehicle trips, and more than 200 peak hour transit and pedestrian trips, further quantified analyses for each of these technical areas is warranted under *CEQR Technical Manual* criteria.

LEVEL 2 SCREENING ASSESSMENT

TRAFFIC

Under *CEQR Technical Manual* criteria, intersections that would experience a net increase of 50 or more peak hour vehicle trips as a result of a proposed action typically warrant detailed analysis. For the purposes of this supplemental EIS, intersections were selected for analysis if they were locations where development of Phase II is expected to result in the addition of 50 or more peak hour vehicle trips based on the 2006 FEIS, or they were identified in the 2006 FEIS as being significantly adversely impacted by project-generated traffic in one or more of the peak hours included for analysis in this SEIS. As shown in **Figure 4D-1**, based on these criteria, a total of 71 of the 93 intersections analyzed in the 2006 FEIS were selected for detailed analysis for this SEIS. The traffic study area encompassing these intersections extends upwards of 1.2 miles from the project site, and is bounded on the north by Tillary Street/Myrtle Avenue, on the south by Eastern Parkway/Union Street, on the east by Grand Avenue, and on the west by Hicks Street.

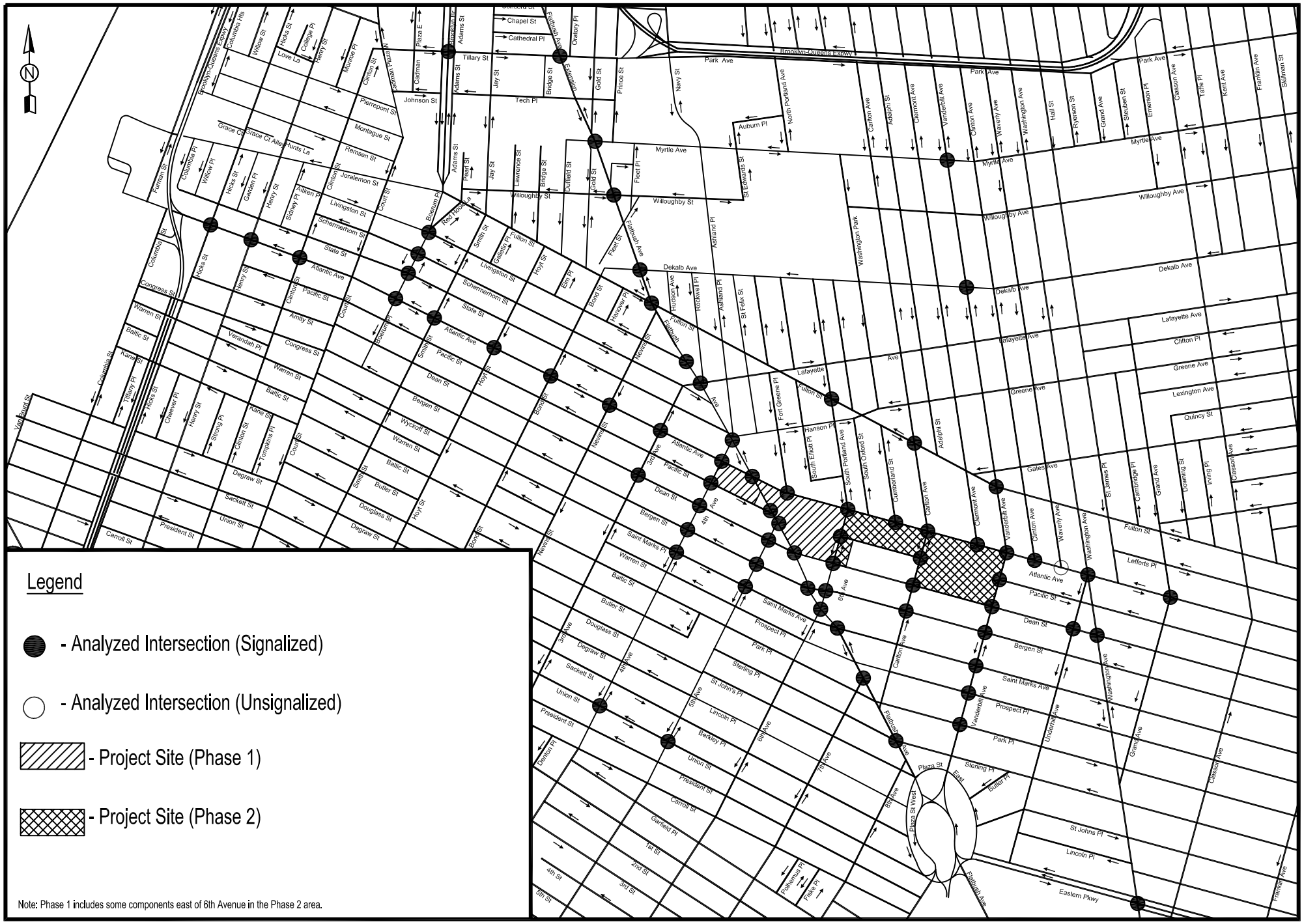
TRANSIT

Subway Stations

The subway station analysis in the 2006 FEIS examined conditions at a total of six MTA New York City Transit (NYCT) stations: the Atlantic Avenue (2,3,4,5), Atlantic Avenue (B,Q) and Pacific Street (D,N,R) stations (collectively referred to in the FEIS as the Atlantic Avenue/Pacific Street station complex); the Bergen Street (2,3) station; the Lafayette Avenue (C) station; and the Fulton Street (G) station (see **Figure 4D-2**). Subsequent to the 2006 FEIS, the project sponsors made arrangements to have the Atlantic Avenue/Pacific Street station complex renamed Atlantic Avenue – Barclays Center. Conditions at each of these stations were analyzed in the 2006 FEIS for the weekday 8-9 AM and 5-6 PM commuter peak periods, and the weekday 7-8 PM pregame peak hour for an event at the Arena.

Phase I development in the Future Without Phase II condition includes a major new on-site street-level entrance and other internal circulation improvements at the southern end of the Atlantic Avenue – Barclays Center station (all of which opened in September 2012). These improvements are expected to attract the majority of new project-generated demand from both Phase I and Phase II development, as well as some non-project demand that would otherwise use existing subway station stairways, corridors and fare arrays.

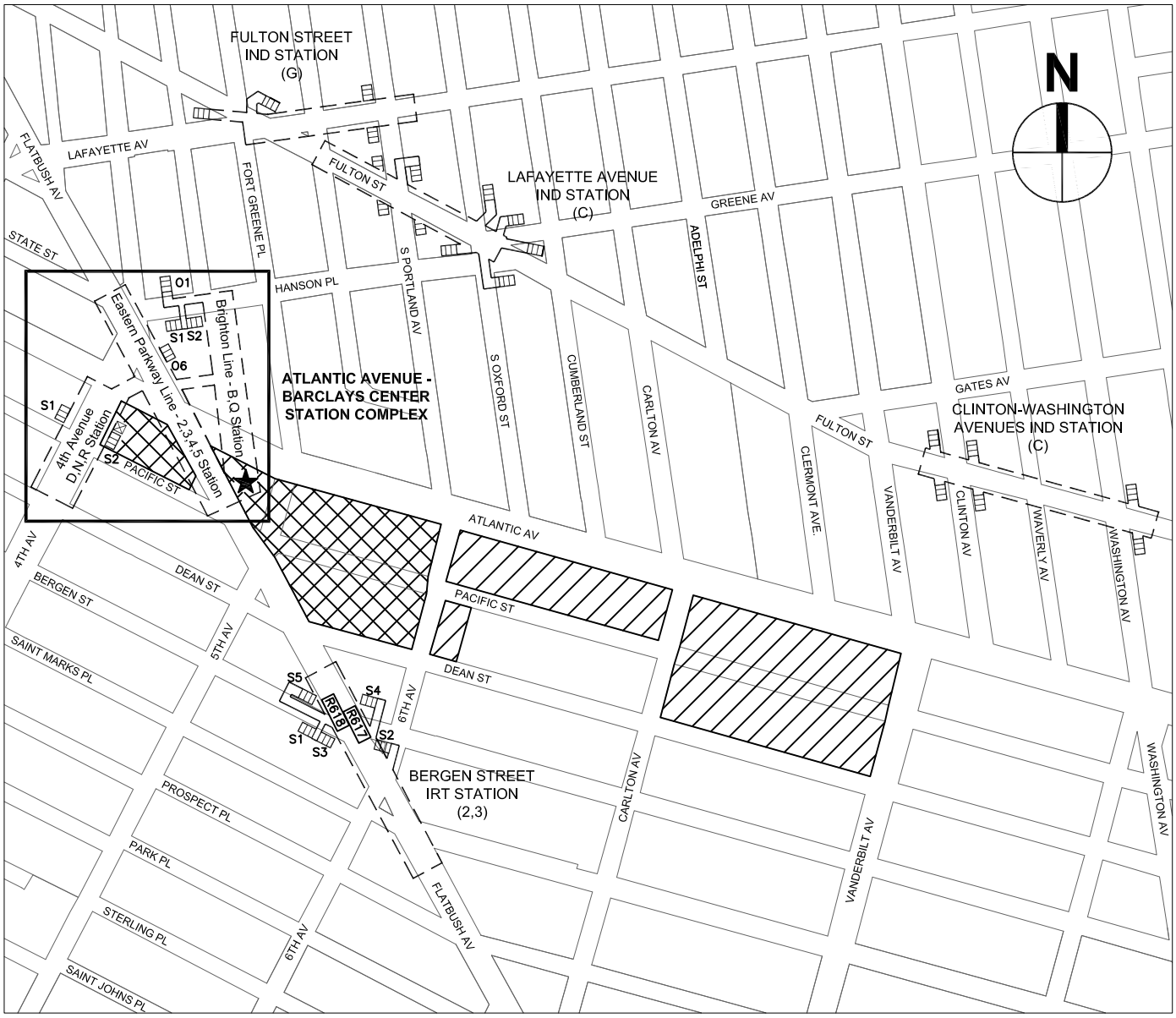
Table 4D-10 shows the numbers of new entering and exiting subway trips that would be generated by Phase II development during the three analysis peak hours for subway station impacts at each of the stations analyzed in the 2006 FEIS. (Also shown are the numbers of trips expected to occur at the Clinton-Washington Avenues subway station which was not analyzed in the 2006 FEIS.) The *CEQR Technical Manual* typically requires a detailed analysis of a subway station when the incremental increase in peak hour trips totals 200 persons per hour or more. As shown in **Table 4D-10**, new subway trips generated by Phase II development are only expected to exceed this threshold in one or more analyzed peak hours at the Atlantic Avenue – Barclays Center subway station where there would be up to 3,174 new trips in each peak hour, and at the Bergen Street subway station where there would be 201 new trips in the PM peak hour. Phase II demand at the Lafayette Avenue, Clinton – Washington Avenues, and Fulton Street subway stations would total 132 or fewer in any analyzed peak hour. Therefore, the analysis of subway station conditions in this SEIS focuses on the Atlantic Avenue – Barclays Center subway station as well as the Bergen Street station, with conditions at these two stations analyzed for the weekday 8-9 AM, 5-6 PM and 7-8 PM (pregame) peak hours, consistent with the subway station analysis in the 2006 FEIS. The



Atlantic Yards Arena & Redevelopment Project

Traffic Study Area

Figure 4D-1



Phase I Development

Phase II Development

Subway Stations

New (2012) Atlantic Avenue - Barclays Center Subway Station Entrance (see Figure 4D-6)

Subway Station Elevator

Subway Station Stair

R618 Subway Station Control Area

SEIS•ATLANTIC YARDS ARENA AND REDEVELOPMENT PROJECT

Study Area Subway Stations

Figure 4D-2

analysis assesses conditions at those station elements (stairways, escalators, ramps, and fare arrays) analyzed in the 2006 FEIS under peak 15-minute flow conditions.

Table 4D-10
Peak Hour Trips Generated by Phase II at Area Subway Stations

Subway Station	8-9 AM Peak Hour			5-6 PM Peak Hour			7-8 PM (Pregame) Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Atlantic Avenue – Barclays Center (2,3,4,5,B,D,N,Q,R)	2,096	634	2,730	1,170	2,004	3,174	689	1,534	2,223
Bergen Street (2,3)	118	39	157	78	123	201	42	88	130
Lafayette Avenue (C)	82	30	112	50	82	132	28	61	89
Clinton – Washington Avenues (C)	60	19	79	39	62	101	21	45	66
Fulton Street (G)	27	14	41	24	33	57	11	21	32
Total	2,383	736	3,119	1,361	2,304	3,665	791	1,749	2,540

It should be noted that the 2006 FEIS cited the potential for crowding on the platforms at the Atlantic Avenue – Barclays Center station during the weekday 10-11 PM and Saturday 4-5 PM peak hours due to Arena demand under certain post-game conditions or major event situations. As these are not considered peak periods for Phase II residential and retail demand, an analysis of the potential for platform crowding at the Atlantic Avenue – Barclay Center subway station is not included in this SEIS.

Subway Line Haul

The project site is served by a total of 11 NYCT subway routes, including the Nos. 2, 3, 4 and 5, and the B, C, D, G, N, Q and R. According to the general thresholds used by the MTA and specified in the *CEQR Technical Manual*, a detailed analysis of subway line haul conditions is generally not required if a proposed action is projected to result in fewer than 200 peak hour trips being assigned to a single route (in one direction), as this level of new demand is considered unlikely to result in significant adverse impacts. As shown in **Table 4D-8**, it is estimated that Phase II of the Project would generate a total of 3,119 and 3,665 new subway trips during the weekday 8-9 AM and 5-6 PM peak hours. An analysis of subway line haul conditions during the weekday AM and PM peak hours is therefore included as part of this SEIS, consistent with the line haul analysis in the 2006 FEIS. This line haul analysis focuses on the peak direction of travel in each hour—Manhattan-bound in the AM and Brooklyn-bound in the PM (Brooklyn-bound in the AM and Queens-bound in the PM for the G train). Given the predominantly residential nature of development under Phase II, the majority of project-generated subway demand during the AM and PM peak periods would be commuter trips occurring in the peak direction of travel. Project-generated demand during these periods in the non-peak direction (i.e., Brooklyn-bound in the AM and Manhattan-bound in the PM) is therefore not expected to meet or exceed the 200-trip *CEQR Technical Manual* analysis threshold on any of the 11 NYCT subway routes serving the project site, and an analysis of subway line haul conditions in the non-peak direction in each peak hour is not included.

Local Bus

Downtown Brooklyn is well served by numerous bus routes operated by NYCT and MTA Bus, and as shown in **Figure 4D-3**, a total of eleven of these routes—the B25, B26, B38, B41, B45, B52, B63, B65, B67, B69 and B103—operate within ¼-mile of the project site along Atlantic, Flatbush, Fifth, Lafayette and Vanderbilt Avenues, and Dean, Bergen and Fulton Streets.

B63 Bus Route Number

— — — 1/4-Mile Radius From Phase II Development

Phase I Development Sites

Phase II Development Sites

SEIS•ATLANTIC YARDS ARENA AND REDEVELOPMENT PROJECT

Study Area Local Bus Routes

Figure 4D - 3

Changes in study area bus service since the 2006 FEIS include the elimination of the B37 local bus route, and adjustments to bus service levels to reflect changes in demand. The B103 service is included in this analysis but not in the 2006 FEIS as the MTA assumed operation of the B103 service from a private carrier in December 2005, and maximum load point data was unavailable from MTA Bus at the time the FEIS was prepared.

According to the general thresholds used by the MTA and specified in the *CEQR Technical Manual*, a detailed analysis of bus conditions is generally not required if a proposed action is projected to result in fewer than 50 peak hour trips being assigned to a single bus line (in one direction), as this level of new demand is considered unlikely to result in significant adverse impacts. As shown in **Table 4D-8**, it is estimated that Phase II of the Project would generate a total of 259 and 345 new local bus trips during the weekday 8-9 AM and 5-6 PM peak hours. As these numbers of new bus trips may potentially result in the addition of 50 trips in one direction on a single local bus route, an analysis of local bus conditions during the weekday AM and PM peak hours is included in this SEIS, consistent with the local bus analysis in the 2006 FEIS.

PEDESTRIANS

According to *CEQR Technical Manual* criteria, projected pedestrian volume increases of less than 200 pedestrians per hour at any pedestrian element (sidewalk, corner area or crosswalk) would not typically be considered a significant impact, since that level of increase would not generally be noticeable and therefore would not require further analysis. As shown in **Table 4D-8**, it is estimated that Phase II of the Project would generate a total of approximately 4,898, 6,289, 3,649, and 5,691 new pedestrian trips during the weekday AM and PM commuter peak hours, the weekday 7-8 PM pregame peak hour and the Saturday 1-2 PM pregame peak hour, respectively. (These totals include walk-only trips as well as trips to and from area transit services, and the forecasts reflect the updated planning factors shown in **Table 4D-2**.) These trips are expected to be most concentrated on those sidewalks, corner areas and crosswalks located immediately adjacent to the development sites as well as along pathways between these sites and the new entrance to the Atlantic Avenue – Barclays Center subway station. The pedestrian analysis in this SEIS therefore focuses on sidewalks, corner areas and crosswalks adjacent to Blocks 1120, 1121, 1128 and 1129, as well as those adjacent to the Arena Block that would be used by the majority of Phase II subway trips. **Figure 4D-4** shows the pedestrian facilities that are analyzed in the SEIS. Pedestrian facilities adjacent to Site 5 and along 6th Avenue on the Arena Block that were analyzed in the 2006 FEIS are not analyzed in this SEIS, as Phase II pedestrian trips are not expected to be as concentrated along these facilities. Sidewalks along 6th Avenue between Dean Street and Flatbush Avenue were also included in the 2006 FEIS to assess the effects of a proposed narrowing under the Project in order to better accommodate two-way traffic flow along the adjacent roadway. As NYCDOT subsequently decided not to implement this widening, these sidewalks are also not analyzed in this SEIS.

PARKING

Under *CEQR Technical Manual* criteria, on- and off-street parking analyses may be needed if a quantified traffic analysis is necessary based on the Level 1 and Level 2 screening analyses. As discussed in detail later in this chapter, updated parking forecasts for the Project have therefore been prepared to assess whether the on-site parking capacity now proposed would remain sufficient to accommodate all of the anticipated demand from the Project's residential, commercial and public school components under the Extended Build-Out Scenario. In addition, it should be noted that fewer parking spaces are proposed to be provided on-site for Arena patrons than the 541 spaces currently provided for this purpose on Block 1129 and the 1,100

Phase I Development Sites

Phase II Development Sites

Analyzed Pedestrian Facility

C10 Corner

— S — Sidewalk

— X — Crosswalk

SEIS•ATLANTIC YARDS ARENA AND REDEVELOPMENT PROJECT

Pedestrian Analysis Locations

Figure 4D - 4

spaces that were assumed in the 2006 FEIS. Therefore, this SEIS also examines future off-street public parking supply and demand within ½-mile of the Arena (this being the maximum distance that Arena patrons would likely walk to access parking) to assess whether there would continue to be sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035. This analysis focuses on the weekday pregame and Saturday pregame (midday) periods, which are the peak periods for Arena demand.

A residential parking demand rate of 0.4 spaces per dwelling unit was used in the 2006 FEIS based on auto ownership data from the 2000 Census for 11 census tracts encompassing the project site and its vicinity. It was also consistent with the area's prevailing zoning at that time which typically included a minimum off-street accessory parking requirement of 40 percent for residential units. However, more recent data show substantially lower rates of auto ownership and residential parking demand in Downtown Brooklyn immediately to the north of the project site. For example, data from a survey of six off-street public parking facilities located in residential buildings in the vicinity of Downtown Brooklyn found average rates of overnight monthly parking by building residents of 0.15 spaces per dwelling unit for rental properties and 0.20 spaces per D.U. for owner-occupied residences. This is consistent with 2008-2012 ACS data which indicate that Downtown Brooklyn residents have relatively low rates of car ownership (approximately 0.22 autos per household). Consequently, in December 2012 the City Council adopted the Downtown Brooklyn Parking Text Amendment which reduced by half (to 20 percent) the amount of parking that new residential developments are required to provide for market-rate units in the Special Downtown Brooklyn District in order to better reflect actual parking demand in the area. According to the New York City Department of City Planning (NYCDCP), parking requirements were also removed for affordable units reflecting data indicating lower rates of auto ownership among lower income households in Brooklyn Community District 2, as a means to lower the costs of building affordable housing in Downtown Brooklyn, and as an incentive to developers who see a market for mixed-income housing in Downtown Brooklyn to provide affordable housing in the mix of units they build.[1] Given that the residential buildings planned under the Project would be similar to those developed in recent years within the Special Downtown Brooklyn District immediately to the north of the project site, the characteristics of parking demand are also expected to be similar. Parking demand generated by new Phase I and Phase II residential development in this SEIS is therefore conservatively forecast based on a rate of 0.2 spaces per dwelling unit for both market rate and affordable housing. Parking demand from new hotel space is forecast assuming a rate of 0.20 spaces per room overnight, consistent with the 2006 FEIS. Parking demand from new office and retail space is derived from the forecasts of daily auto trips for these uses. The estimates of Arena parking demand are based on data from surveys of the travel characteristics of Barclays Center Arena patrons attending Nets games in January and February 2013.

E. TRANSPORTATION ANALYSES METHODOLOGIES

TRAFFIC

ANALYSIS METHODOLOGY

To establish the Existing conditions traffic network for the study area, turning movement and vehicle classification counts (using both manual and video processes) and automatic traffic

[1] *Downtown Brooklyn Parking Text Amendment EAS*, NYCDCP, May 29, 2012.

recorder (ATR) counts, along with speed and delay surveys, were conducted during the weekday AM, midday, PM and pregame peak periods and the Saturday pregame peak period in April and May 2013. Field surveys of parking regulations, lane configurations, and other physical and operational characteristics of the street network were conducted in May and June 2013. Current signal timing plans for signalized intersections within the study area were obtained from NYCDOT.

The capacity analyses at study area intersections are based on the methodology presented in the *Highway Capacity Manual* (HCM) and utilize *HCS+ Version 5.5* software. (An earlier version of this software – *HCM Software 2000 Release 4.1f* – was used for the analyses in the 2006 FEIS.) Traffic data required for these analyses include the hourly volumes on each approach and various other physical and operational characteristics including signal timing plans for signalized intersections and the physical layout, lane markings, curbside parking regulations, and other relevant characteristics of each analyzed intersection.

The HCM methodology provides a volume-to-capacity (v/c) ratio for each signalized intersection approach. The v/c ratio represents the ratio of traffic volumes on an approach to the approach's carrying capacity. A ratio of less than 0.90 is generally considered indicative of non-congested conditions in dense urban areas; when higher than this value, the ratio reflects increasing congestion. At a v/c ratio of between 0.95 and 1.0, near-capacity conditions are reached and delays can become substantial. Ratios of greater than 1.0 indicate saturated conditions with queuing. The HCM methodology also expresses quality of flow in terms of level of service (LOS), which is based on the amount of delay that a driver typically experiences at an intersection. Levels of service range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (greater than 80 seconds per vehicle).

For unsignalized intersections, the HCM methodology generally assumes that major street traffic is not affected by minor street flows. Left turns from the major street are assumed to be affected by the opposing, or oncoming major street flow. Minor street traffic is obviously affected by all conflicting movements. Similar to signalized intersections, the HCM methodology expresses the quality of flow at unsignalized intersections in terms of LOS based on the amount of delay that a driver experiences. This relationship differs somewhat from the criteria used for signalized intersections, primarily because drivers expect different levels of performance from the two different kinds of transportation facilities. For unsignalized intersections, levels of service range from A, with minimal delay (10 seconds or less per vehicle), to F, which represents long delays (over 50 seconds per vehicle).

Table 4D-11 shows the LOS/delay relationship for signalized and unsignalized intersections using the HCM methodology. Levels of service A, B, and C generally represent highly favorable to fair levels of traffic flow. At LOS D, the influence of congestion becomes noticeable. LOS E is considered to be the limit of acceptable delay, and LOS F is considered to be unacceptable to most drivers. In this study, a signalized lane grouping operating at LOS E or F or a v/c ratio of 0.90 or above is identified as congested. For unsignalized intersections, a lane group with LOS E or F is also identified as congested.

Table 4D-11
Intersection Level of Service Criteria

Level of Service (LOS)	Average Delay per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	less than 10.1	less than 10.1
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	greater than 80.0	greater than 50.0

Source: *2000 Highway Capacity Manual.*

SIGNIFICANT IMPACT CRITERIA

The identification of significant adverse traffic impacts at analyzed intersections is based on criteria presented in the 2012 *CEQR Technical Manual*. According to *CEQR Technical Manual* criteria, if a lane group under the With-Action condition is within LOS A, B or C, or marginally acceptable LOS D (average control delay less than or equal to 45.0 seconds/vehicle for signalized intersections and 30.0 seconds/vehicle for unsignalized intersections), the impact is not considered significant. If the lane group LOS deteriorates from LOS A, B, or C in the No-Action condition to worse than mid-LOS D (i.e., delay greater than 45 seconds/vehicle at signalized intersections or 30 seconds/vehicle at unsignalized intersections) or to LOS E or F under the With-Action condition, then a significant traffic impact has occurred. For a lane group operating at LOS D under the No-Action condition, an increase of five or more seconds is considered significant if the With-Action delay exceeds mid-LOS D. For a lane group operating at LOS E under the No-Action condition, an increase in projected delay of 4.0 or more seconds is considered significant, and for a lane group operating at LOS F under the No-Action condition, an increase in projected delay of 3.0 or more seconds is considered significant.

The same criteria apply to both signalized and unsignalized intersections; however, for the minor street at an unsignalized intersection to trigger significant impacts, 90 passenger-car equivalents (PCEs) must be identified in the future With-Action condition in any peak hour.

The 2012 *CEQR Technical Manual* impact criteria for both signalized and unsignalized intersections are generally the same as the 2001 *CEQR Technical Manual* criteria used for the 2006 FEIS. However, under the 2001 criteria, a 1.0-second increase in delay was also considered significant for a No-Action LOS F condition with delays in excess of 120-seconds, provided that the proposed action would generate five or more vehicles through the intersection in the peak hour (for signalized intersections), or five or more PCEs in the peak hour along the critical approach (for unsignalized intersections). This is no longer included under 2012 *CEQR Technical Manual* impact criteria.

TRANSIT

SUBWAY STATION

Analysis Methodology

To determine existing subway station conditions, counts were conducted at the Bergen Street subway station and the Atlantic Avenue – Barclays Center subway station in April 2013 on a weekday when an evening Nets game was scheduled at the Arena. The methodology for assessing subway station pedestrian circulation elements (stairs, escalators, and ramps) and fare

control elements (regular turnstiles, high entry/exit turnstiles [HEETs], and high exit turnstiles) compares existing and projected pedestrian volumes with the element's design capacity to yield a volume-to-capacity (v/c) ratio. All analyses reflect pedestrian flow volumes over a 15-minute interval during each peak hour.

Under 2012 *CEQR Technical Manual* guidelines, the capacity of a stairway or passageway is determined based on four factors: the NYCT guideline capacity, the effective width, and surging and counter-flow factors, if applicable. NYCT guideline capacity is 10 passengers per minute per foot-width (pmf) for stairs and 15 pmf for passageways. The effective width of a stair or passageway is the actual width adjusted to reflect pedestrian avoidance of sidewalls and for center handrails, if present. A surging factor is applied to existing pedestrian volumes to reflect conditions where pedestrian flows tend to be concentrated (or surged) during shorter periods within the 15-minute analysis interval. This factor, which is based on the size of the station and the proximity of the pedestrian element to the station platforms, can reduce the calculated capacity by up to 25 percent. Lastly, a friction (or counter-flow) factor reducing calculated capacity by 10 percent is applied where opposing pedestrian flows use the same stair or passageway. (No friction factor is applied if the flow is all or predominantly in one direction.)

By contrast with stairways and passageways, under 2012 *CEQR Technical Manual* guidelines the capacity of an escalator or turnstile is determined based on only two factors: the NYCT guideline capacity for a 15-minute interval and a surging factor of up to 25 percent. **Table 4D-12** shows the *CEQR Technical Manual* level of service criteria for all subway station elements. As shown in **Table 4D-12**, six levels of service are defined with letters A through F. LOS A is representative of free flow conditions without pedestrian conflicts and LOS F depicts severe congestion and queuing.

Table 4D-12
Level of Service Criteria for
Subway Station Elements

LOS	Description	V/C Ratio
A	Free Flow	0.00 to 0.45
B	Fluid Flow	0.45 to 0.70
C	Fluid, somewhat restricted	0.70 to 1.00
D	Crowded, walking speed restricted	1.00 to 1.33
E	Congested, some shuffling and queuing	1.33 to 1.67
F	Severely congested, queued	> 1.67
Source: 2012 *CEQR Technical Manual.*		

The overall methodologies for a subway station analysis are generally similar to those used for the 2006 FEIS, although the application of a surge factor is new for this SEIS, and the 2012 *CEQR Technical Manual* reflects different level of service ratings for analyzed station elements.

Significant Impact Criteria

The 2012 *CEQR Technical Manual* identifies a significant impact for 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 v/c ratio or to a v/c ratio of 1.00 (LOS C/D), whichever is greater. Stairways that are substantially degraded in level of service or which experience the formation of extensive queues

are classified as significantly impacted. Significant adverse stairway or passageway impacts are typically considered to have occurred once the thresholds shown in **Table 4D-13** are reached or exceeded. These impact criteria have been revised since the publication of the 2006 FEIS under which the width increment threshold for a significant stair or passageway impact was based on the With-Action level of service rather than the v/c ratio.

Table 4D-13
Significant Impact Thresholds for Stairways and Passageways

With-Action V/C Ratio	WIT for Significant Impact (inches)	
	Stairway	Passageway
1.00-1.09	8	13
1.10-1.19	7	11.5
1.20-1.29	6	10
1.30-1.39	5	8.5
1.40-1.49	4	6
1.50-1.59	3	4.5
>1.6	2	3

Source: 2012 *CEQR Technical Manual*.

For turnstiles, escalators, and high-wheel exit gates, the *CEQR Technical Manual* defines a significant impact as an increase from a No-Action v/c ratio of below 1.00 to a v/c ratio of 1.00 or greater. Where a facility is already at a v/c ratio of 1.00 or greater, a 0.01 change in v/c ratio is also considered significant. These impact criteria are unchanged from those used for the 2006 FEIS.

SUBWAY LINE HAUL

Analysis Methodology

Line haul capacity is based on the capacity per subway car multiplied by the number of subway cars crossing the maximum load point in the peak hour. The volume-to-capacity (v/c) ratio is determined by dividing the number of peak hour passengers traveling through the maximum load point by the line haul capacity. Existing maximum load point subway ridership and line haul capacities were provided by NYCT for this SEIS. The analyses in the 2006 FEIS used guideline capacities established by NYCT that reflected the subway car types then in use on lines in Downtown Brooklyn.

Significant Impact Criteria

For subway line haul conditions, *CEQR Technical Manual* criteria specify that any increases in load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads at or exceeding guideline capacity. This is based on the general assumption that when subways are at or above practical capacity, the addition of even five or more riders per car is perceptible. These impact criteria are the same as those used for the analysis in the 2006 FEIS.

BUS

Analysis Methodology

The operating conditions for bus service are measured in terms of the number of passengers carried per bus at the maximum load point for each route. This is determined by dividing the peak hour passenger count by the number of buses during that hour. (Existing maximum load point bus ridership and service levels for the analysis in this SEIS were provided by NYCT.) The bus load levels are then compared with the NYCT loading guideline of 54 passengers for a 40-foot standard bus. This methodology is the same as was used for the 2006 FEIS, although NYCT loading guidelines at that time were 65 passengers per standard bus.

Significant Impact Criteria

According to the 2012 *CEQR Technical Manual* and NYCT guidelines, additional bus service along a route is recommended when load levels exceed maximum capacity at the route's maximum load point. A significant impact is considered at the route's maximum load point where an increase in bus load levels would exceed the maximum capacity (the same standard used for the 2006 FEIS). NYCT's general policy is to provide additional bus service where demand warrants increased service, taking into account fiscal and operational constraints.

PEDESTRIANS

ANALYSIS METHODOLOGY

Data on peak period pedestrian flow volumes were collected along analyzed sidewalks, corner areas and crosswalks at the project site in April 2013, and the sidewalk and crosswalk dimensions used for the analyses are based on recent field measurements and inventories of existing street furniture. The analysis of sidewalk conditions conservatively focuses on the most constrained point on each sidewalk under both Existing conditions and in the future with and without Phase II. Pedestrian flow conditions on sidewalks and crosswalks during the peak 15-minutes of each peak hour are analyzed using the *2000 Highway Capacity Manual* methodology and procedures outlined in the 2012 *CEQR Technical Manual*. Using this methodology, the congestion level of pedestrian facilities is determined by considering pedestrian volume, measuring the sidewalk or crosswalk width, determining the available pedestrian capacity and developing a ratio of volume flows to capacity conditions. The resulting ratio is then compared with LOS standards for pedestrian flow, which define a qualitative relationship at a certain pedestrian traffic concentration level. The evaluation of street crosswalks and corners is more complicated as these spaces cannot be treated as corridors due to the time incurred waiting for traffic lights. To effectively evaluate these facilities, a "time-space" analysis methodology is employed which takes into consideration the traffic light cycle at intersections.

LOS standards are based on the average area available per pedestrian during the analysis period, typically expressed as a 15-minute peak period. LOS grades from A to F are assigned, with LOS A representative of free flow conditions without pedestrian conflicts and LOS F depicting significant capacity limitations and inconvenience. **Table 4D-14** defines the LOS criteria for pedestrian crosswalk/corner area and sidewalk conditions based on the *Highway Capacity Manual* methodology.

Table 4D-14
Pedestrian Crosswalk/Corner Area and Sidewalk Levels of Service Descriptions

LOS	Description	Crosswalk/Corner Area Criteria (sf/ped)	Platoon Sidewalk Criteria (pmf)
A	Ability to move in desired path, no need to alter movements	> 60	≤ 0.5
B	Occasional need to adjust path to avoid conflicts	> 40 to 60	> 0.5 to 3
C	Frequent need to adjust path to avoid conflicts	> 24 to 40	> 3 to 6
D	Speed and ability to pass slower pedestrians restricted	> 15 to 24	> 6 to 11
E	Speed restricted, very limited ability to pass slower pedestrians	> 8 to 15	> 11 to 18
F	Speed severely restricted, frequent contact with other users	< 8	> 18

Notes: Based on average conditions for peak 15 minutes.
sf/ped – square feet of area per pedestrian.
pmf – pedestrians per minute per foot of effective sidewalk width.
Source: 2012 *CEQR Technical Manual* and 2010 *Highway Capacity Manual.*

The analysis of sidewalk conditions includes a "platoon" factor in the calculation of pedestrian flow to more accurately estimate the dynamics of walking. "Platooning" is the tendency of pedestrians to move in bunched groups or "platoons" once they cross a street where cross traffic required them to wait. Platooning generally results in a level of service one level poorer than that determined for average flow rates.

The pedestrian analysis in the 2006 FEIS reflected conditions on the project site as they were in the 2004 through 2006 period prior to any construction, and the analyses of future conditions with the Arena were based on preliminary plans that were available at that time. By contrast, the pedestrian analysis in this SEIS reflects current conditions at the project site based on recent (2013) pedestrian counts and field measurements of sidewalk dimensions and the placement of street furniture. The SEIS analysis also reflects as-built conditions on much of the Arena Block including the installation of tree pits, bollards and benches adjacent to the Arena. Some crosswalk dimensions and traffic signal timings (used for the analysis of corner areas and crosswalks) have also changed since the 2006 FEIS was prepared.

SIGNIFICANT IMPACT CRITERIA

The location of an area being assessed for pedestrian impacts is an important consideration under *CEQR Technical Manual* criteria. To reflect a local area's current pedestrian usage levels, the *CEQR Technical Manual* specifies one set of impact criteria for central business districts such as Downtown Brooklyn, and a second more stringent set of criteria for other areas of the City. Given the project site's location on the periphery of Downtown Brooklyn adjacent to a major transit terminal and entertainment/retail center, the analyses of potential pedestrian impacts are based on the 2012 *CEQR Technical Manual* criteria specified for a CBD. However, the existing pedestrian densities in the vicinity of much of the project site are relatively low. The site also borders residential neighborhoods on the south. The potential for impacts under the non-CBD 2012 *CEQR Technical Manual* criteria is therefore also considered.

Sidewalks

For central business district areas in the City such as Downtown Brooklyn, 2012 *CEQR Technical Manual* criteria define a significant adverse sidewalk impact to have occurred under platoon conditions if the average pedestrian flow rate under the No-Action condition is less than 6.4 pedestrians/minute/foot (pmf) of effective sidewalk width, and the average flow rate under the With-Action condition is greater than 8.5 pmf (worse than mid-LOS D). If the average flow rate under the With-Action condition is less than or equal to 8.5 pmf (mid-LOS D or better), the impact should not be considered significant. If the No-Action pedestrian flow rate is between 6.4 and 19 pmf, an increase in average flow rate under the With-Action condition should be considered significant based on **Table 4D-15**, which shows a sliding-scale that identifies what increase is considered a significant impact for a given flow rate. If the increase in the average pedestrian flow rate is less than the value shown in **Table 4D-15**, the impact should not be considered significant. If the average pedestrian flow rate under the No-Action condition is greater than 19 pmf, then an increase in pedestrian flow rate greater than or equal to 0.6 pmf should be considered significant.

Table 4D-15
Significant Impact Criteria for Sidewalks with Platooned Flow in a CBD Location

No-Action Condition Pedestrian Flow (pmf)			With-Action Condition Pedestrian Flow Increment to be Considered a Significant Impact (pmf)
< 6.4			With Action Condition > 8.5
6.4	to	7.0	Increment ≥ 2.2
7.1	to	7.8	Increment ≥ 2.1
7.9	to	8.6	Increment ≥ 2.0
8.7	to	9.4	Increment ≥ 1.9
9.5	to	10.2	Increment ≥ 1.8
10.3	to	11.0	Increment ≥ 1.7
11.1	to	11.8	Increment ≥ 1.6
11.9	to	12.6	Increment ≥ 1.5
12.7	to	13.4	Increment ≥ 1.4
13.5	to	14.2	Increment ≥ 1.3
14.3	to	15.0	Increment ≥ 1.2
15.1	to	15.8	Increment ≥ 1.1
15.9	to	16.6	Increment ≥ 1.0
16.7	to	17.4	Increment ≥ 0.9
17.5	to	18.2	Increment ≥ 0.8
18.3	to	19.0	Increment ≥ 0.7
> 19.0			Increment ≥ 0.6

Source: *2012 CEQR Technical Manual*

As noted above, existing pedestrian densities in the vicinity of much of the project site are relatively low and the site also borders residential neighborhoods on the south. The potential for sidewalk impacts under the non-CBD *CEQR Technical Manual* criteria is therefore also considered. These criteria define a significant adverse sidewalk impact to have occurred under platoon conditions if the average pedestrian flow rate under the No-Action condition is less than 3.5 pedestrians/minute/foot (pmf) of effective sidewalk width, and the average flow rate under the With-Action condition is greater than 6.0 pmf (LOS D or worse). If the average flow rate

under the With-Action condition is less than or equal to 6.0 pmf (LOS C or better), the impact should not be considered significant. If the No-Action pedestrian flow rate is between 3.5 and 19 pmf, an increase in average flow rate under the With-Action condition should be considered significant based on the sliding scale shown in **Table 4D-16**.

Table 4D-16
Significant Impact Criteria for Sidewalks with Platooned Flow in a Non-CBD Location

No-Action Condition Pedestrian Flow (pmf)			With-Action Condition Pedestrian Flow Increment to be Considered a Significant Impact (pmf)
< 3.5			With Action Condition > 6.0
3.5	To	3.8	Increment ≥ 2.6
3.9	To	4.6	Increment ≥ 2.5
4.7	To	5.4	Increment ≥ 2.4
5.5	To	6.2	Increment ≥ 2.3
6.3	To	7.0	Increment ≥ 2.2
7.1	To	7.8	Increment ≥ 2.1
7.9	To	8.6	Increment ≥ 2.0
8.7	To	9.4	Increment ≥ 1.9
9.5	To	10.2	Increment ≥ 1.8
10.3	To	11.0	Increment ≥ 1.7
11.1	To	11.8	Increment ≥ 1.6
11.9	To	12.6	Increment ≥ 1.5
12.7	To	13.4	Increment ≥ 1.4
13.5	To	14.2	Increment ≥ 1.3
14.3	To	15.0	Increment ≥ 1.2
15.1	To	15.8	Increment ≥ 1.1
15.9	To	16.6	Increment ≥ 1.0
16.7	To	17.4	Increment ≥ 0.9
17.5	To	18.2	Increment ≥ 0.8
18.3	To	19.0	Increment ≥ 0.7
> 19.0			Increment ≥ 0.6
Source: *2012 CEQR Technical Manual*			

The 2012 *CEQR Technical Manual* sidewalk impact thresholds used for this SEIS are substantially lower than those in the 2001 *CEQR Technical Manual* used for the 2006 FEIS. For example, 2001 *CEQR Technical Manual* guidelines defined a significant impact to a sidewalk as having occurred when the platoon flow rate increases by two or more pmf over No-Action conditions characterized by flow rates over 15 pmf (the threshold of LOS D/E) in a CBD location and 13 pmf (mid-LOS D) for a non-CBD location. By contrast, as shown in **Tables 4D-15 and 4D-16**, under 2012 *CEQR Technical Manual* guidelines, significant impacts are based on a sliding scale and can now be triggered by incremental increases of as little as 0.6 pmf, and the 15 pmf No-Action threshold for a CBD location (13 pmf for non-CBD) no longer applies.

Corner Areas and Crosswalks

For CBD areas such as Downtown Brooklyn, 2012 *CEQR Technical Manual* criteria define a significant adverse corner area or crosswalk impact to have occurred if the average pedestrian space under the No-Action condition is greater than 21.5 square feet/pedestrian (sf/ped) and, under the With-Action condition, the average pedestrian space decreases to less than 19.5 sf/ped (worse than mid-LOS D). If the pedestrian space under the With-Action condition is greater than or equal to 19.5 sf/ped (mid-LOS D or better), the impact should not be considered significant. If the average pedestrian space under the No-Action condition is between 5.1 and 21.5 sf/ped, a decrease in pedestrian space under the With-Action condition should be considered significant based on **Table 4D-17** which shows a sliding-scale that identifies what decrease in pedestrian space is considered a significant impact for a given amount of pedestrian space in the No-Action condition. If the decrease in pedestrian space is less than the value in **Table 4D-17**, the impact is not considered significant. If the average pedestrian space under the No-Action condition is less than 5.1 sf/ped, then a decrease in pedestrian space greater than or equal to 0.2 sf/ped should be considered significant.

Table 4D-17
Significant Impact Criteria for Corners and Crosswalks in a CBD Location

No-Action Condition Pedestrian Space (sf/ped)			With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 21.5			With Action Condition < 19.5
21.3	to	21.5	Reduction ≥ 2.1
20.4	to	21.2	Reduction ≥ 2.0
19.5	to	20.3	Reduction ≥ 1.9
18.6	to	19.4	Reduction ≥ 1.8
17.7	to	18.5	Reduction ≥ 1.7
16.8	to	17.6	Reduction ≥ 1.6
15.9	to	16.7	Reduction ≥ 1.5
15.0	to	15.8	Reduction ≥ 1.4
14.1	to	14.9	Reduction ≥ 1.3
13.2	to	14.0	Reduction ≥ 1.2
12.3	to	13.1	Reduction ≥ 1.1
11.4	to	12.2	Reduction ≥ 1.0
10.5	to	11.3	Reduction ≥ 0.9
9.6	to	10.4	Reduction ≥ 0.8
8.7	to	9.5	Reduction ≥ 0.7
7.8	to	8.6	Reduction ≥ 0.6
6.9	to	7.7	Reduction ≥ 0.5
6.0	to	6.8	Reduction ≥ 0.4
5.1	to	5.9	Reduction ≥ 0.3
< 5.1			Reduction ≥ 0.2

Source: *2012 CEQR Technical Manual*

As noted above, given that existing pedestrian densities in the vicinity of much of the project site are relatively low and that the site also borders residential neighborhoods on the south, the potential for corner area and crosswalk impacts under the non-CBD *CEQR Technical Manual* criteria is also considered. For non-CBD areas, 2012 *CEQR Technical Manual* criteria define a significant adverse corner area or crosswalk impact to have occurred if the average pedestrian

space under the No-Action condition is greater than 26.6 square feet/pedestrian (sf/ped) and, under the With-Action condition, the average pedestrian space decreases to 24.0 sf/ped or less (LOS D or worse). If the pedestrian space under the With-Action condition is greater than or equal to 24.0 sf/ped (LOS C or better), the impact should not be considered significant. If the average pedestrian space under the No-Action condition is between 5.1 and 26.6 sf/ped, a decrease in pedestrian space under the With-Action condition should be considered significant based on the sliding scale shown in **Table 4D-18.**

Table 4D-18
Significant Impact Criteria for Corners and Crosswalks in a Non-CBD Location

No-Action Condition Pedestrian Space (sf/ped)	With-Action Condition Pedestrian Space Reduction to be Considered a Significant Impact (sf/ped)
> 26.6	With Action Condition ≤ 24.0
25.8 To 26.6	Reduction ≥ 2.6
24.9 to 25.7	Reduction ≥ 2.5
24.0 to 24.8	Reduction ≥ 2.4
23.1 to 23.9	Reduction ≥ 2.3
22.2 to 23.0	Reduction ≥ 2.2
21.3 to 22.1	Reduction ≥ 2.1
20.4 to 21.2	Reduction ≥ 2.0
19.5 to 20.3	Reduction ≥ 1.9
18.6 to 19.4	Reduction ≥ 1.8
17.7 to 18.5	Reduction ≥ 1.7
16.8 to 17.6	Reduction ≥ 1.6
15.9 to 16.7	Reduction ≥ 1.5
15.0 to 15.8	Reduction ≥ 1.4
14.1 to 14.9	Reduction ≥ 1.3
13.2 to 14.0	Reduction ≥ 1.2
12.3 to 13.1	Reduction ≥ 1.1
11.4 to 12.2	Reduction ≥ 1.0
10.5 to 11.3	Reduction ≥ 0.9
9.6 to 10.4	Reduction ≥ 0.8
8.7 to 9.5	Reduction ≥ 0.7
7.8 to 8.6	Reduction ≥ 0.6
6.9 to 7.7	Reduction ≥ 0.5
6.0 to 6.8	Reduction ≥ 0.4
5.1 to 5.9	Reduction ≥ 0.3
< 5.1	Reduction ≥ 0.2

Source: *2012 CEQR Technical Manual*

The 2012 *CEQR Technical Manual* corner and crosswalk impact thresholds used for this SEIS are substantially lower than those in the 2001 *CEQR Technical Manual* used for the 2006 FEIS. 2001 *CEQR Technical Manual* guidelines defined a significant impact to a crosswalk or corner area as a decrease in pedestrian space of one or more square feet per pedestrian when the No-Action condition has an average occupancy of 15 sf/ped (the LOS D/E threshold) or less for a CBD location and 20 sf/ped (mid-LOS SD) or less for a non-CBD location. A deterioration from LOS C or better to LOS E or F was also considered a significant impact. As shown in **Tables 4D-17 and 4D-18**, based on the sliding scales specified under 2012 *CEQR Technical Manual* guidelines, significant corner and crosswalk impacts can now be triggered by incremental

decreases in pedestrian space of as little as 0.2 sf/ped, and the 15 sf/ped No-Action threshold for a CBD location (20 sf/ped for non-CBD) no longer applies.

PEDESTRIAN AND VEHICULAR SAFETY EVALUATION

Under *CEQR Technical Manual* guidelines, an evaluation of vehicular and pedestrian safety is needed for locations within the traffic and pedestrian study areas that have been identified as high accident locations. These are defined as locations where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes have occurred in any consecutive 12 months of the most recent three-year period for which data are available. For these locations, accident trends would be identified to determine whether projected vehicular and pedestrian traffic would further impact safety, or whether existing unsafe conditions could adversely impact the flow of the projected new trips. The determination of potential significant safety impacts depends on the type of area where the project site is located, traffic volumes, accident types and severity, and other contributing factors. Where appropriate, measures to improve traffic and pedestrian safety should be identified and coordinated with NYCDOT.

PARKING

As discussed in more detail later in this chapter, updated parking forecasts for the Project have been prepared to assess whether on-site parking capacity would remain sufficient to accommodate all of the anticipated demand from the Project's commercial and residential components. In addition, as a smaller number of on-site parking spaces are now proposed to be provided for Arena patrons than was assumed in the 2006 FEIS, this SEIS also examines future off-street public parking conditions within ½-mile of the Arena to assess whether there would continue to be sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035.

Under 2012 *CEQR Technical Manual* guidelines, should a proposed project generate the need for more parking than it provides, this shortfall of spaces may be considered significant. However, for projects located in Downtown Brooklyn and surrounding neighborhoods identified in the *CEQR Technical Manual* as being within Parking Zones 1 and 2, the inability of a proposed project or the surrounding area to accommodate a project's future parking demands is considered a parking shortfall, but is generally not considered significant due to the magnitude of available alternative modes of transportation (the subway and bus modes, for example). As defined in the 2012 *CEQR Technical Manual*, Downtown Brooklyn Parking Zone 1 generally encompasses the Special Downtown Brooklyn District while Parking Zone 2 encompasses a broader area including all or portions of the surrounding neighborhoods of Boerum Hill, Brooklyn Heights, Carroll Gardens, Clinton Hill, Cobble Hill, DUMBO, Fort Greene, Gowanus, Park Slope and Prospect Heights.[1] It should be noted that the project site itself is located within Parking Zone 2 while the ½-mile parking study area falls within both Zone 1 and Zone 2. Further, the 2012 *CEQR Technical Manual* impact criteria for parking within these zones is especially applicable to the project site given its excellent access to transit, including numerous bus routes and an on-site entrance to a major intermodal (subway and commuter rail) transit hub. By contrast, the 2001 *CEQR Technical Manual* guidelines used for the 2006 FEIS did not define any parking zones, and a parking shortfall in the area of the Downtown Brooklyn CBD exceeding more than half the available on-street and off-street parking spaces within a parking study area was considered significant.

[1] See *CEQR Technical Manual* Map 16-2, "Parking Zones (Downtown Brooklyn)."

F. TRAFFIC

EXISTING CONDITIONS

STUDY AREA STREET NETWORK

The street system within the Project's traffic study area serves the dual function of providing through-access to and from the Brooklyn and Manhattan Bridges while also accommodating the local traffic demands of the Downtown Brooklyn CBD and surrounding neighborhoods. There are a number of principal arterials carrying heavy volumes of through traffic, as well as minor roadways serving local downtown traffic in the study area (refer to **Figure 4D-1**). The major arterials and streets in Downtown Brooklyn are under computerized signal control. A discussion of the street network within the study area is provided below. Figures showing the 2013 Existing conditions peak hour traffic volumes at analyzed intersections are provided in **Appendix C**.

In general, the heaviest traffic volumes along the principal streets within the study area occur during the weekday AM and PM peak commuter periods. Volumes during the weekday 7-8 PM (pregame) period are typically lower than during the 5-6 PM peak commuter hour. Traffic volumes during the Saturday 1-2 PM pregame peak hour tend to be slightly higher than during the weekday midday.

During the weekday AM peak hour, traffic along the principal arterials serving the project site—Flatbush Avenue, Atlantic Avenue, and 4th Avenue—tends to be heavily peaked in the northbound and westbound directions, reflecting heavy commuter demand towards the Brooklyn and Manhattan Bridges and the Brooklyn – Queens Expressway (BQE) entrance ramps at the west end of Atlantic Avenue. In the PM, the peak directions along these corridors become southbound and eastbound, although flows are typically not as heavily biased in the peak direction as in the AM.

Regional Access Routes

The primary regional access route for Downtown Brooklyn is the Brooklyn – Queens Expressway (I-278), a 10.4-mile-long limited-access highway connecting the Gowanus Expressway and Verrazano Narrows Bridge in Brooklyn to the Long Island Expressway (I-495), Grand Central Parkway and RFK Triborough Bridge in Queens. Although designated an east-west highway, the BQE traverses in a north-south direction through Brooklyn. It typically operates with three lanes in each direction, and borders the study area on the north and west. Exits providing access to the study area arterial system are located at Flushing Avenue (Exit 30), Tillary Street/Manhattan Bridge (Exit 29), Cadman Plaza/Brooklyn Bridge (Exit 28), and Atlantic Avenue (Exit 27).

Downtown Brooklyn is connected to Manhattan by the Brooklyn and Manhattan Bridges which are both toll-free facilities. The Brooklyn Bridge, which is restricted to passenger cars, can be reached from Adams Street, Sands Street, and directly from the eastbound BQE, and connects Downtown Brooklyn to the Franklin Delano Roosevelt (FDR) Drive and the City Hall area in Manhattan. The Manhattan Bridge serves as a direct extension of Flatbush Avenue, with access also available from Nassau Street and directly from the BQE. In Manhattan, the bridge provides access to the Bowery and Canal Street.

Primary Arterials

The principal arterials providing access to the project site are Atlantic, Flatbush, and 4th Avenues. **Atlantic Avenue**, which borders the project site on the north, is an east-west arterial

that provides access to the BQE at its western end. West of 4th Avenue, it is typically 60 feet in width and operates with two travel lanes plus a parking lane in each direction. Curbside parking is restricted at several locations during peak periods. Atlantic Avenue widens to approximately 70 feet in width between 4th and Flatbush Avenues, and to approximately 75 feet in width between Flatbush Avenue and Ft. Greene Place where it is striped for four westbound lanes (including a right-turn-only lane) and three eastbound moving lanes plus a left-turn bay and a lay-by lane along the south curb adjacent to the Arena. Between Ft. Greene Place and 6th Avenue/S. Portland Avenue, the roadway widens to approximately 88 feet in width and operates with three moving lanes plus parking in each direction (including the lay-by lane along the south curb) and an approximately eight-foot-wide median. East of 6th Avenue/S. Portland Avenue, Atlantic Avenue further widens to approximately 95 feet in width and is typically striped for three travel lanes in each direction with exclusive left-turn bays and parking along both curbs. The eastbound and westbound travel lanes are separated by a raised median that includes vents for the LIRR's Atlantic Avenue Branch which is located in a tunnel beneath the roadway. Two-way peak hour traffic volumes along Atlantic Avenue approaching Flatbush Avenue typically range from 1,700 to 2,200 vehicles per hour (vph) on weekdays, and total approximately 2,200 vph during the Saturday midday peak hour. NYCT local bus routes operating along portions of Atlantic Avenue within the study area include the B45, B61, B63 and eastbound B65.

Flatbush Avenue (referred to as **Flatbush Avenue Extension** north of Fulton Street), which borders the Arena Block on the west, operates in a generally northwest-southeast direction from the Manhattan Bridge through Brooklyn to the Rockaways. It also serves as a secondary route to the Brooklyn Bridge. North of Atlantic Avenue, it is 60 to 70 feet wide and typically operates with three northbound and three southbound through lanes, plus left-turn lanes at key intersections. Curbside regulations typically prohibit parking along both sides of Flatbush Avenue, primarily during the peak periods, and left turns are prohibited at some critical intersections in order to maximize roadway capacity. Between Atlantic Avenue and Dean Street the roadway is approximately 70 feet wide and typically operates with three moving lanes plus a lay-by lane adjacent to the Arena. South of Dean Street, Flatbush Avenue typically operates with two moving lanes in each direction plus parking except during the weekday AM and PM peak periods when restrictions on curbside parking provide for a third moving lane in each direction. Left-turns are typically banned along Flatbush Avenue south of Atlantic Avenue except for buses. Within the study area, Flatbush Avenue traverses several complex intersections where one or more intersecting streets cross at oblique angles, a pattern characteristic of much of the downtown area. The intersection of Flatbush Avenue with Atlantic Avenue is one such example. At the south end of the study area, Flatbush Avenue traverses Grand Army Plaza, a large traffic circle encompassing a park and memorial arch. Traffic flows around Grand Army Plaza are highly channelized with up to six travel lanes in each direction. All analyzed intersections along the Flatbush Avenue corridor within the study area are signalized. Two-way peak hour traffic volumes along Flatbush Avenue approaching Atlantic Avenue typically range from 1,800 to 2,200 vph on weekdays, and total approximately 2,200 vph during the Saturday midday peak hour. Bus routes utilizing Flatbush Avenue in the vicinity of the project site include the B41, B45, B63, and B67.

Bordering the project site on the west is **4th Avenue**, a north-south arterial which traverses from Flatbush Avenue south to Bay Ridge. On the short block between Flatbush and Atlantic Avenues, the roadway was narrowed to approximately 33 feet in width and converted to one-way southbound operation with three moving lanes in conjunction with development of the Arena. South of this block the roadway widens to approximately 86 feet in width and typically

operates with two to three moving lanes plus turn bays and parking in each direction. (The northbound approach to Atlantic Avenue is striped for two left-turn turns and a single right-turn lane.) South of Dean Street, a raised median with vents for the 4th Avenue subway line (located in a tunnel beneath the roadway) separates the northbound and southbound travel lanes. Left-turn bays are provided. Two-way peak hour traffic volumes along 4th Avenue approaching Pacific Street typically range from 1,150 to 1,550 vph on weekdays, and total approximately to 1,300 vph during the Saturday midday peak hour. MTA Bus B103 buses traverse 4th Avenue in the southbound direction.

Other principal arterials within the study area include the Adams Street/Boerum Place combination, Tillary Street, and Eastern Parkway. **Adams Street** and **Boerum Place** form a north-south arterial that connects Atlantic Avenue to the Brooklyn Bridge and Tillary Street. Between Atlantic Avenue and Fulton Street, Boerum Place operates as an approximately 108-foot-wide arterial with four moving lanes in each direction separated by a raised median. South of Atlantic Avenue, Boerum Place continues as a 32-foot-wide one-way southbound street as far as Bergen Street. North of Fulton Street, the roadway becomes Adams Street, a limited access arterial with three northbound and three southbound lanes, and adjacent service roads (each with a single travel lane plus a bicycle lane and parking) providing access to local streets. Two-way peak hour traffic volumes on Adams Street/Boerum Place at Livingston Street typically range from 1,700 to 2,400 vph on weekdays, and total approximately 1,900 vph during the Saturday midday peak hour. The Adams Street/Boerum Place combination functions as a major corridor for bus circulation within Downtown Brooklyn. Eight local bus routes can be found operating along all or portions of the corridor, including the B25, B38, B41, B45, B52, B61, B65, and B103.

Tillary Street, an east-west arterial traversing between Cadman Plaza West and the BQE on- and off-ramps, collects and distributes traffic between north-south arterials and the BQE. It typically has four lanes in each direction, including left-turn lanes. Approaching Flatbush Avenue Extension, Tillary Street carries two-way peak hour volumes ranging from 2,300 to 2,700 vph on weekdays and totaling approximately 2,200 vph during the Saturday midday peak hour. Eight bus routes operate along portions of Tillary Street including the B25, B26, B38, B41, B52, B57, B62 and B103.

At the south end of the study area is **Eastern Parkway**, a bi-directional arterial running eastward from Grand Army Plaza to East New York. East of Washington Avenue, it is characterized by park-like medians separating 36-foot-wide service roads from a 55-foot-wide mainline with two travel lanes plus left-turn bays in each direction. (The eastbound service road begins at Washington Avenue.) Two-way peak hour volumes at Washington Avenue typically range from 2,000 to 2,600 vph on weekdays, and total approximately 1,800 vph during the Saturday peak hours

Through and Local Access Streets

A network of through and local streets provide access to and within the project site. North-south streets include **3rd Avenue**, an approximately 40-foot-wide two-way street located to the west of the project site which operates one-way northbound north of Atlantic Avenue and terminates at the complex intersection of Flatbush Avenue with Schermerhorn and Lafayette Streets. At its northern end, 3rd Avenue experiences two-way peak hour volumes ranging from 500 to 650 vph approaching Pacific Street on weekdays, and totaling approximately 650 vph during the Saturday midday peak hour. The B65 and B103 bus routes operate along 3rd Avenue in the vicinity of the project site.

5th Avenue, also approximately 40 feet wide and bi-directional, terminates at Flatbush Avenue. (Prior to construction of the Arena, it continued through the Arena Block to Atlantic Avenue.) North of Atlantic Avenue, the street continues as Ft. Greene Place, with the block between Atlantic Avenue and Hanson Place operated as a private street providing access to the Atlantic Center and Atlantic Terminal shopping malls. Two-way peak hour volumes on the block between Dean Street and Flatbush Avenue typically range from 300 to 450 vph on weekdays, and total approximately 450 vph during the Saturday midday peak hour. The B63 bus route operates along 5th Avenue in both directions.

To the east is **6th Avenue**, which operates two-way and is typically 34 feet in width and flanked by 18-foot-wide sidewalks. Between Atlantic Avenue and Pacific Street, a newly reconstructed bridge with a 40-foot-wide roadway flanked by 15-foot-wide sidewalks carries 6th Avenue over the LIRR rail yard at the project site. Between Dean and Bergen Streets traffic flow is often constrained by police vehicles parked perpendicular to the east curb adjacent to the New York City Police Department (NYPD) 78th Precinct station house. North of Atlantic Avenue, the street continues as **S. Portland Avenue**, an approximately 52-foot-wide roadway that operates two-way except between Fulton Street and Lafayette Avenue where it operates one-way southbound. Two-way volumes between Atlantic Avenue and Pacific Street range from approximately 450 to 650 vph during the weekday peak hours, and total approximately 600 vph during the Saturday midday peak hour.

Traversing the project site is **Carlton Avenue**, which is typically 34 feet wide and operates one-way northbound from Flatbush Avenue (where it originates) to Pacific Street. Between Pacific Street and Atlantic Avenue it operates two-way along a newly reconstructed bridge over the LIRR rail yard with a 38-foot-wide roadway flanked by 15-foot-wide sidewalks. Carlton Avenue continues northward to Park Avenue (located beneath the elevated BQE) and Flushing Avenue. Two-way peak hour volumes on Carlton Avenue between Atlantic Avenue and Pacific Street typically range from 200 to 550 vph on weekdays, and total approximately 250 vph during the Saturday peak hour.

Bordering the project site on the east is **Vanderbilt Avenue**, a two-way street that traverses from Eastern Parkway to Flushing Avenue. North of Atlantic Avenue, the street is typically 42 feet wide, while to the south it is typically 60 feet wide. Two-way peak hour volumes on Vanderbilt Avenue approaching Atlantic Avenue typically range from 900 to 1,500 vph on weekdays, and total approximately 1,100 vph during the Saturday midday peak hour. B69 buses operate along the length of Vanderbilt Avenue.

To the east of the project site lie Underhill and Washington Avenues. **Underhill Avenue** traverses from Eastern Parkway to an intersection with Atlantic and Washington Avenues. It is typically 34 feet wide and bi-directional, with the exception of the block between Atlantic Avenue and Pacific Street which operates one-way southbound. Two-way peak hour volumes approaching Dean Street typically range from 150 to 400 vph on weekdays, and total approximately 200 vph during the Saturday peak hour. **Washington Avenue** is bi-directional, and traverses the study area southward from a terminus at Flushing Avenue. It is approximately 52 feet wide in the vicinity of the project site. Two-way peak hour volumes approaching Atlantic Avenue typically range from 700 to 1,000 vph on weekdays, and total approximately 800 vph during the Saturday peak hour. The B45 bus route traverses Washington Avenue between Atlantic Avenue and St. John's Place.

Key east-west local streets include **Pacific Street**, an approximately 34-foot-wide discontinuous street that traverses the project site. Pacific Street operates one-way westbound except in the

vicinity of the project site where it operates one-way eastbound from 4th Avenue to Flatbush Avenue. (The segment from 6th Avenue to Carlton Avenue operated one-way westbound during the Spring 2013 count program but was subsequently converted to two-way operation.) The segments from Flatbush/5th Avenues to 6th Avenue and from Carlton Avenue to Vanderbilt Avenue were permanently closed to traffic in conjunction with development of the Barclays Center Arena as part of Phase I. Given the discontinuity of the street, Pacific Street primarily serves as a local access street for adjacent land uses in the vicinity of the project site. Existing two-way peak hour volumes on Pacific Street between 6th and Carlton Avenues are relatively low, typically ranging from 50 to 200 vph on weekdays, and totaling approximately 70 vph during the Saturday peak hour.

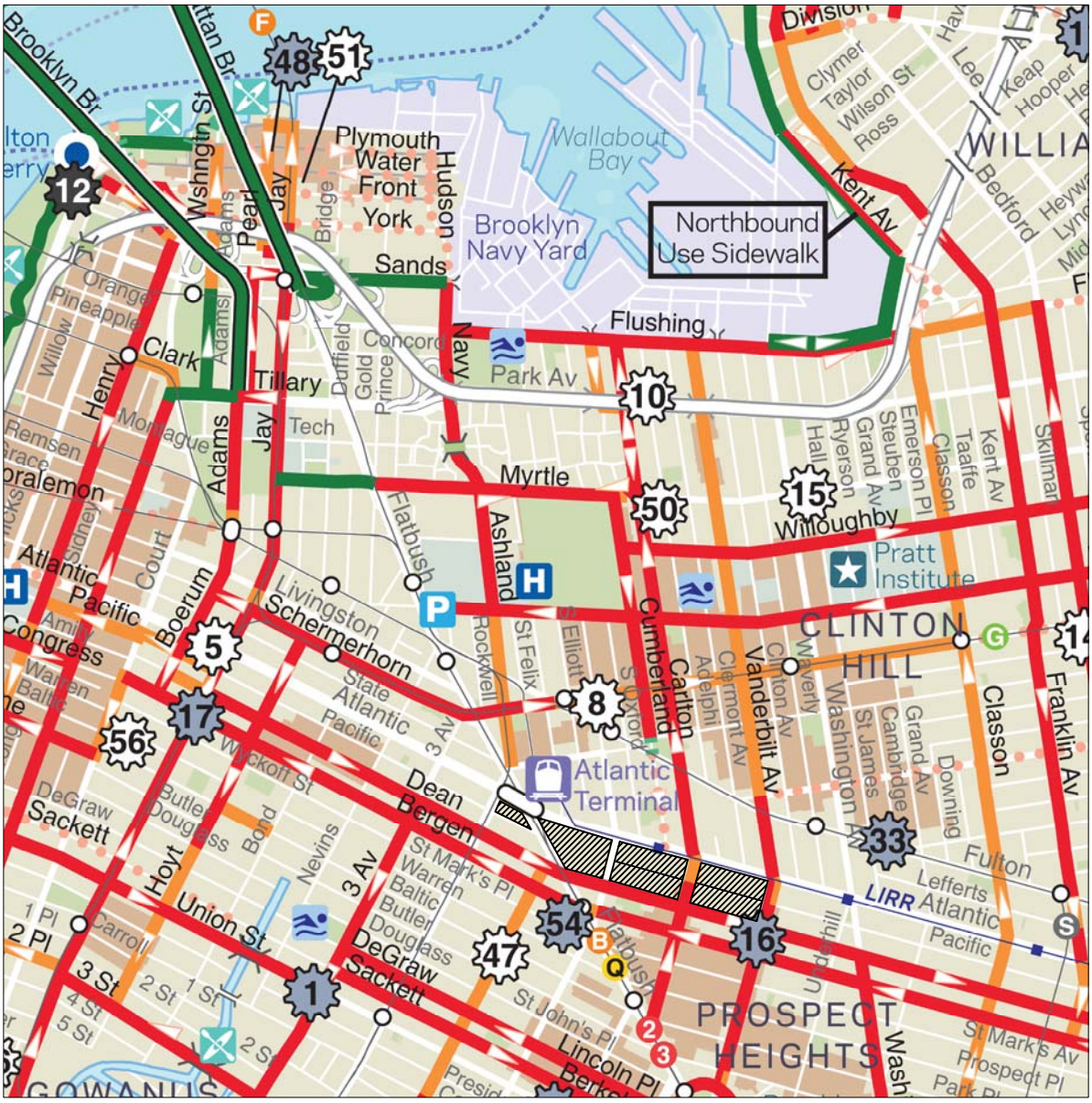
Dean and Bergen Streets function as a one-way east-west couplet on the southern boundary of the project site. Eastbound **Dean Street**, which borders the project site on the south, is approximately 34 feet wide east of Flatbush Avenue and narrower (24 to 30 feet wide) to the west of Flatbush Avenue. Within the study area, Dean Street includes an eastbound on-street bike lane located between the north curb lane and the travelway. The entrance to the Arena's loading dock is also located on Dean Street west of 6th Avenue. Peak hour volumes on Dean Street approaching 6th Avenue typically range from 250 to 400 vph on weekdays, and total approximately 400 vph during the Saturday peak hour. Westbound **Bergen Street**, one block to the south, ranges in width from 30 to 40 feet and hosts the corresponding westbound bike lane to the one on Dean Street between the south curb lane and the travelway. Peak hour volumes on Bergen Street approaching 6th Avenue typically range from 200 to 400 vph on weekdays, and total approximately 300 vph during the Saturday peak hour. The B65 bus route traverses Dean Street eastbound and Bergen Street westbound in the vicinity of the project site.

Other notable east-west streets in the study area are Union Street and Fulton Street. **Union Street**, at the southern end of the traffic study area, is a bi-directional street with an approximately 34-foot-wide roadway that traverses between Carroll Gardens and Grand Army Plaza. Two-way peak hour volumes on Union Street typically range from 500 to 700 vph approaching 5th Avenue on weekdays and total approximately 600 vph during the Saturday peak hour. **Fulton Street**, parallel and to the north of Atlantic Avenue, is a bi-directional through street that ranges in width from 44 to 54 feet within the study area and carries two-way peak hour volumes ranging from 700 to 900 vph approaching S. Portland Avenue on weekdays, and totaling approximately 800 vph during the Saturday peak hour. During the weekday AM peak period, the westbound parking lane operates as an exclusive bus lane west of Ft. Greene Place.

The segment of Fulton Street between Adams Street and Flatbush Avenue is flanked by numerous retail uses, and was reconstructed in 1985 as a transit and pedestrian mall and renamed the Fulton Street Mall. The roadway was narrowed to a single 12-foot-wide travel lane in each direction to allow for expanded sidewalks on which bus shelter canopies and decorative street furniture have been installed. Through traffic is restricted to transit buses, with seven routes traversing all or part of the mall, including the B25, B26, B38, B52, B54, B61 and B65. Some access by service and delivery vehicles is also permitted. As most streets intersecting Fulton Street do not directly intersect, north-south traffic must negotiate off-set intersections when crossing the Fulton Street Mall.

Bicycle Facilities

As noted above and shown in **Figure 4D-5**, in the vicinity of the project site, on-street bicycle lanes are provided along eastbound Dean Street and westbound Bergen Street. These bicycle lanes connect to on-street bicycle lanes and/or signed bicycle routes along Boerum Place/Adams



Source NYC Cycling Map 2013

Project Site

LEGEND

- Bicycle Path, Class 1 (bridge, park or separated on-street path)
- Bicycle Lane, Class 2 (two-way unless shown) (on-street striped route)
- Bicycle Route, Class 3 (on-street signed route)
- Travel Direction on Bicycle Lane/Route
- Direction of Bicycle Lane on Two-way Street
- Planned/Proposed Bicycle Path (for future construction)
- Planned/Proposed Route
- Bike Shop
- With Bike Rental
- Sheltered Bike Parking
- Subway Lines and Stations
- Commuter Rail and Stations
- AirTrain Rail
- Ferry Lines and Terminals
- Expressways
- Principal Streets
- Historic District
- Parks
- Open Space and Cemeteries
- Airports and Industrial Uses
- Pool
- Sites of Interest
- Landmarks and Museums
- Schools and Universities
- Theaters
- Government
- Bus Station
- Train
- Hospital

N

Study Area Bicycle Facilities

Figure 4D-5

Street and Smith and Jay Streets which, in turn, connect to the Brooklyn Bridge entrance at Tillary Street. A dedicated shared bicycle/pedestrian promenade along the center of the bridge provides access to and from Manhattan. A bicycle path is also provided on the north side of the Manhattan Bridge with access via Jay and Sands Streets. In the vicinity of the project site, on-street bicycle lanes can also be found along Carlton Avenue and along Vanderbilt Avenue south of Fulton Street, and signed on-street bicycle routes are present on Vanderbilt Avenue north of Fulton Street and on 5th Avenue south of Dean Street. Other study area roadways with on-street bicycle lanes or signed routes include 3rd, Myrtle, and DeKalb Avenues, Navy Street/Ashland Place, and South Oxford, Schermerhorn, Hoyt, Smith, Clinton and Henry Streets.

Up to 400 free, secured bicycle parking spots for event ticket holders are currently provided at Barclays Center on Dean Street between Flatbush and 6th Avenues to encourage bicycling as a means of travel to and from the Arena. The nearest Citi Bike bike share stations to the project site are located at Atlantic Avenue and Ft. Greene Place, 4th Avenue and Dean Street, Hanson Place at Ashland Place and at S. Portland Avenue, and Fulton Street at Clermont Avenue and at Waverly Avenue.

Barclays Center Event Transportation Plan

An Event Transportation Plan has been developed to help manage traffic, pedestrian and transit conditions at the Barclays Center Arena on days when a Nets game or other major event is scheduled. This plan is coordinated by a full-time Traffic Manager who serves as the point of contact for communication with the various transportation stakeholders, including NYCDOT, NYPD (78th Precinct), NYCT, LIRR, Click and Park (an on-line parking reservation system), individual parking facility operators and the Taxi and Limousine Commission (TLC). The Traffic Manager disseminates advance information on event times and the projected number of attendees, and real-time information on event attendance and expected end times. The Traffic Manager also manages the communication of transportation information to event attendees via monitors within the Arena to inform them of relevant traffic and transit conditions in the area (e.g., subway and LIRR service status and departure times) before they depart the venue. Other components of the Event Transportation Plan include:

- Adjustments to subway operations and service by NYCT to accommodate expected event-related ridership; This can include changes to station access and staffing at the Atlantic Avenue – Barclays Center subway station and the provision of additional train service;
- Increased LIRR departures from Atlantic Terminal to Jamaica during the post-event period based on a designated event schedule;
- A transit marketing program that includes providing transit information on event ads, on event tickets and on the venue website;
- On-line parking reservation systems for event-goers to reduce the circulation of traffic by those who chose to drive;
- The deployment of Traffic Enforcement Agents (TEAs) at area intersections to facilitate traffic flow (the number and placement of TEAs is determined based on event size and expected transportation logistics); and
- The deployment of Pedestrian Traffic Managers (PTMs) to facilitate pedestrian crossings and Arena lay-by lane operations (like the TEAs, the number and placement of PTMs is based on event size and expected transportation logistics).

INTERSECTION CAPACITY ANALYSIS

Table 4D-19 provides an overview of the levels of service that characterize existing "overall" intersection conditions during the weekday AM, midday, PM and pregame and Saturday pregame peak hours. The overall level of service of an intersection represents a weighted average of the individual lane groups' levels of service. "Overall" LOS E or F indicates that serious congestion exists—either one specific lane group at the intersection has severe delays or two or more lane groups at the intersection are at LOS E or F with substantial delays. As shown in **Table 4D-19**, one analyzed intersection currently operates at LOS E in each of the weekday AM and pregame peak hours, two in the midday and Saturday pregame peak hours, and three in the weekday PM peak hour. Intersections operating at a marginally acceptable LOS D total 25 in the weekday AM peak hour, 3 in the midday, 13 in the weekday pregame peak hour and 12 in each of the weekday PM and Saturday pregame peak hours. No analyzed intersection was found to currently operate at LOS F in any peak hour. A total of 49 individual lane groups out of the approximately 305 such lane groups analyzed for the weekday peak hours are at LOS E or F in the AM, 17 in the midday, 51 in the PM and 34 in the pregame peak hour, and 26 in the Saturday pregame peak hour.

Table 4D-19
Existing Intersection Levels of Service Summary

	Weekday AM Peak Hour	Weekday Midday Peak Hour	Weekday PM Peak Hour	Weekday Pregame Peak Hour	Saturday Pregame Peak Hour[1]
Overall LOS A/B/C	45	66	56	57	57
Overall LOS D	25	3	12	13	12
Overall LOS E	1	2	3	1	2
Overall LOS F	0	0	0	0	0
No. of lane groups at LOS E or F of the approximately 305 analyzed	49	17	51	34	26

Notes:
[1] Saturday pregame peak hour traffic conditions do not reflect Arena demand as no Saturday afternoon events were scheduled at the Arena at the time of the traffic data collection program in April and May 2013.

The volume-to-capacity ratios, delays and levels of service for those individual lane groups experiencing congestion in one or more peak hours under Existing conditions are shown in **Table 4D-20**. A lane group is considered congested and is included in **Table 4D-20** if it operates at LOS E or F and/or with a v/c ratio of 0.90 or above. A v/c ratio of 1.00 or above reflects capacity conditions. As shown in **Table 4D-20,** a total of 35 intersections currently have one or more lane groups operating at capacity in the weekday AM peak hour, 8 in the midday, 30 in the PM and 27 in the weekday pregame peak hour. During the Saturday pregame peak hour there are a total of 18 intersections with one or more lane groups operating at capacity. Overall, the data in **Tables 4D-19 and 4D-20** indicate that congestion at analyzed intersections is most evident during the weekday AM and PM commuter peak periods, and least evident during the weekday midday period. V/c ratios, delays and levels of service for all lane groups at all analyzed intersections in all peak periods under Existing conditions are provided in **Table C-2** in **Appendix C**.

FUTURE WITHOUT PHASE II

TRAVEL DEMAND

Through 2035, it is expected that vehicle trips in the study area will increase due to (a) the completion of the new residential, commercial and retail uses on Site 5 and the Arena Block associated with Phase I of the Project; (b) the development of new office/commercial, residential, cultural, community facility and retail space in Downtown Brooklyn and other neighborhoods in proximity to the project site; and (c) long-term background growth. The additional traffic demand generated by this new development and by background growth was added to the Existing condition traffic networks for each analyzed peak hour in order to forecast the Future Without Phase II condition.

As shown in **Table 4D-7**, under the commercial mixed-use variation (the RWCDS for the weekday transportation analyses), Phase I is expected to add from 114 to 347 auto trips to the study area street system in each weekday peak hour, and from 22 to 94 new taxi trips. Peak hour truck trips would increase by from 6 to 50 in each weekday peak hour. (These volumes exclude Arena demand which, as noted previously, is already reflected in the weekday existing baseline networks.) As shown in **Table 4D-6**, on Saturdays, under the residential mixed-use variation (the RWCDS for the Saturday Transportation analyses), Phase I development would add an estimated 1,191 auto, 466 taxi, six charter bus and ten truck trips to the street system in the 1-2 PM pregame peak hour compared to Existing conditions. As discussed previously, the forecast of Phase I vehicle trips in the Saturday pregame peak hour includes projected demand from an afternoon Nets game at the Arena.

Table 4D-20
Congested Lane Groups at Analyzed Intersections Under Existing Conditions

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Tillary Street (E-W) @	EB - L	1.05	84.7	F												
Flatbush Avenue Extension (N-S)	EB - TR	1.05	66.7	E	1.05	68.5	E	1.04	66.9	E	0.94	48.7	D			
	WB - L	1.05	80.6	F	1.05	93.0	F	1.05	79.8	E	1.05	86.6	F	1.03	85.1	F
	WB - TR	0.98	49.0	D				1.05	70.9	E	0.93	48.6	D			
	WB - R	1.05	74.6	E												
	SB - T							1.01	68.7	E	0.94	55.1	E			
2. Myrtle Avenue (E-W) @	NB - T	1.00	42.3	D												
Gold St-Flatbush Ave Extension (N-S)	SB - L	1.05	105.7	F	1.05	96.9	F	0.97	73.2	E	1.05	88.3	F	1.05	103.5	F
4. Dekalb Avenue(E-W) @	WB - LTR	1.05	67.0	E												
Flatbush Avenue Extension (N-S)																
5. Fulton Street (E-W) @	EB - LTR							0.95	58.8	E						
Flatbush Ave-Flatbush Ave Ext (N-S)	WB - LT	1.05	89.2	F				0.96	91.4	F				1.05	109.1	F
	NB - T													0.99	55.4	E
	SB - L	1.01	102.0	F	0.88	72.5	E	0.99	80.9	F	1.05	91.7	F	0.94	75.6	E
6. Livingston Street (EB) @	EB - R										1.03	59.9	E			
Flatbush Avenue (N-S)																
	NB - TR	0.96	32.1	C										0.90	32.6	C
7. Lafayette Ave-Schermerhorn St (EB) @	SB - L													0.85	64.4	E
Flatbush Avenue (N-S)																
8. 4th Avenue (WB) @	NB - T	1.02	50.2	D												
Flatbush Avenue (N-S)	SB - T							0.96	34.9	C	0.92	33.9	C			
	SB - R							1.05	60.5	E	0.94	39.6	D			
9. Atlantic Avenue (E-W) @	EB - R													0.88	57.9	E
Flatbush Avenue (N-S)	NB - LT	1.01	53.0	D												
12. Dean Street (EB) @	NB - TR							0.95	41.1	D				0.92	35.0	D
Flatbush Avenue (N-S)																
13. Bergen Street (WB) @	SB - TR	0.91	41.3	D							1.04	62.5	E			
Flatbush Avenue (N-S)																
14. 6th Avenue (E-W) @	SB - TR										0.99	35.9	D			
Flatbush Avenue (N-S)																
15. Saint Marks Avenue (E-W) @	NB - TR				0.91	31.1	C							0.95	33.2	C
Flatbush Avenue (N-S)																
16. 7th Avenue (EB) @	SB - TR										1.05	55.8	E	1.05	54.1	D
Flatbush Avenue (N-S)																
17. Sterling Place (WB) @	SB - TR										0.93	31.9	C			
Flatbush Avenue (N-S)																
18. Tillary Street (E-W) @	WB - L	1.05	109.6	F	1.05	103.7	F	1.05	85.0	F	1.05	98.6	F	1.05	100.3	F
Adams St -Brooklyn Br (N-S)	WB - R	0.95	55.9	E	0.97	58.5	E	1.05	72.4	E	1.00	62.0	E	1.05	77.1	E
	NB - T (ML)	0.96	47.5	D				0.95	47.4	D						
	NB - TR (SR)	1.05	69.5	E	1.05	73.8	E	1.05	70.9	E	0.90	52.1	D			
	SB - L (ML)	1.05	96.1	F	1.05	100.1	F	1.05	97.3	F	1.05	97.5	F	1.05	100.1	F
19. Myrtle Avenue (E-W) @	NB - LTR	1.05	63.9	E				1.05	66.7	E	1.05	67.0	E	1.05	66.1	E
Vanderbilt Avenue (N-S)	SB - LTR							1.05	62.8	E						
20. Dekalb Avenue (WB) @	WB - LTR							1.05	39.6	D	1.05	39.7	D	1.05	42.3	D
Vanderbilt Avenue (N-S)	NB - LT	1.05	46.5	D	0.90	30.9	C	1.05	48.3	D	1.05	52.5	D	1.05	48.7	D
	SB - TR							0.96	29.6	C						
21. Fulton Street (E-W) @	WB - LT	1.05	45.7	D				1.00	35.3	D	1.05	51.2	D	0.92	28.0	C
South Portland Avenue (N-S)	NB - LR	0.94	42.4	D												
22. Fulton Street (E-W) @	EB - LT										1.01	34.6	C			
Carlton Avenue (NB)	WB - TR	0.94	27.4	C												
	NB - LTR	1.05	61.4	E												
23. Fulton Street (E-W) @	EB - LTR							0.99	30.7	C						
Vanderbilt Avenue (N-S)	NB - L	1.05	62.2	E				1.05	120.9	F	1.05	106.5	F			
	NB - TR	1.05	57.3	E												
	SB - TR							1.05	56.9	E	1.01	43.5	D			
24. Livingston Street (E-W) @	EB - LTR	1.05	78.6	E	1.05	77.3	E	1.05	75.9	E	1.05	78.5	E			
Boerum Place (N-S)	WB - R	1.05	99.3	F	0.97	87.4	F	0.87	66.7	E	0.75	57.8	E	1.04	99.8	F
25. Schermerhorn Street (WB) @	WB - LTR				0.97	55.1	E									
Boerum Place (N-S)	NB - L							1.05	119.3	F						
26. State Street (EB) @	SB - LT							0.91	26.0	C	0.91	26.0	C			
Boerum Place (N-S)																
28. Atlantic Avenue (E-W) @	WB - LT				0.95	31.9	C									
Henry Street (SB)	SB - LTR							0.90	43.4	D						
29. Atlantic Avenue (E-W) @	EB - LT				0.90	36.3	D									
Clinton Street (NB)	NB - LTR	0.96	43.6	D										1.05	69.6	E
30. Atlantic Avenue (E-W) @	EB - TR	1.05	77.0	E	1.05	76.0	E	1.05	78.3	E	1.05	78.2	E	1.05	73.6	E
Boerum Place (SB)	WB - LT				1.05	72.3	E							0.95	56.1	E
	WB - R	1.05	46.4	D				0.93	25.8	C				1.05	54.8	D
	SB - L										0.91	39.0	D			
31. Atlantic Avenue (E-W) @	EB - LT	1.05	64.5	E										1.05	61.8	E
Smith Street (NB)	WB - TR	0.95	32.4	C												
	NB - TR	0.93	55.9	E	0.91	43.9	D	1.05	81.3	F						
33. Atlantic Avenue (E-W) @	EB - T										0.90	26.9	C			
Bond Street (NB)	WB - TR	0.98	29.6	C												

Table 4D-20 (continued)
Congested Lane Groups at Analyzed Intersections Under Existing Conditions

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
34. Atlantic Avenue (E-W) @	WB - LT	1.05	60.4	E				1.05	59.4	E	1.03	56.4	E	1.05	60.0	E
Nevins Street (SB)	SB - TR							0.98	68.1	E						
	SB - LTR	0.98	50.9	D	1.05	63.4	E				1.05	70.3	E	1.05	69.3	E
35. Atlantic Avenue (E-W) @	WB - R	1.05	81.6	F												
3rd Avenue (NB)																
36. Atlantic Avenue (E-W) @	EB - T							1.05	73.6	E	0.93	47.5	D			
4th Avenue(N-S)	NB - L	1.05	83.4	F												
	NB - R	0.87	58.6	E	0.73	55.7	E	1.05	102.5	F	0.99	83.2	F			
38. Atlantic Avenue (E-W) @	NB - TR	1.04	90.8	F												
6th Ave-South Portland Ave (N-S)	SB - L	1.05	143.2	F				1.05	94.9	F	0.93	68.5	E			
40. Atlantic Avenue (E-W) @	EB - L	1.05	127.6	F												
Carlton Avenue (NB)	NB - LTR	1.05	85.6	F												
41. Atlantic Avenue (E-W) @	EB - L	1.05	130.0	F												
Clermont Avenue (SB)	SB - LR							1.05	69.0	E						
42. Atlantic Avenue (E-W) @	EB - T							0.92	39.5	D						
Vanderbilt Avenue (N-S)	WB - L							0.85	60.7	E						
	WB - TR	1.05	56.7	E	0.97	44.1	D									
	NB - L	1.05	95.0	F				0.90	68.8	E						
	NB - T	1.04	76.4	E												
	SB - TR							1.05	70.7	E						
43. Atlantic Avenue (E-W) @	WB - TR	0.91	26.1	C												
Clinton Avenue (SB)	SB - LR							1.05	69.9	E						
45. Atlantic Avenue (E-W) @	EB - TR							1.05	60.2	E						
Washington Ave-Underhill Ave (N-S)	NB - L	1.05	97.5	F				1.05	94.4	F	1.05	113.2	F	1.05	111.5	F
	SB - L							1.05	100.6	F						
	SB - TR							0.92	48.8	D						
46. Atlantic Avenue (E-W) @	WB - L							0.89	96.2	F						
Grand Avenue (SB)	SB - LTR	0.96	52.1	D				1.05	66.5	E	1.01	55.5	E			
47. Pacific Street (E-W) @	NB - L	1.01	89.8	F				0.67	59.5	E				0.72	59.7	E
4th Avenue (N-S)																
50. Pacific Street (WB) @	WB - LR	1.05	64.7	E												
Vanderbilt Avenue (N-S)	SB - LT							0.95	21.0	C						
51. Dean Street (EB) @	NB - TR							1.05	63.0	E				0.93	41.5	D
3rd Avenue Avenue (N-S)																
52. Dean Street (EB) @	EB - LTR										1.05	84.6	F			
4th Avenue (N-S)	NB - TR	0.90	42.9	D												
53. Dean Street (EB) @	EB - LTR	1.04	105.4	F	1.05	115.0	F	1.05	108.4	F	1.05	95.9	F	1.05	111.7	F
5th Avenue (N-S)	NB - TR	1.05	100.4	F				0.95	76.3	E	1.05	101.6	F	1.05	97.1	F
56. Dean Street (EB) @	EB - TR	1.01	80.1	F				1.05	81.7	F	0.88	55.6	E			
Vanderbilt Avenue (N-S)	NB - TR	1.05	42.3	D												
58. Dean Street (EB) @	NB - TR	0.96	24.2	C												
Washington Avenue (N-S)	SB - LT							1.05	44.1	D						
59. Bergen Street (WB) @	WB - LTR							1.05	84.4	F	1.05	81.3	F			
4th Avenue (N-S)																
60. Bergen Street (WB) @	WB - L							0.77	56.8	E	0.80	62.5	E			
5th Avenue (N-S)	WB - TR	1.05	89.8	F				0.98	77.0	E	1.00	82.2	F	1.05	96.0	F
61. Bergen Street (WB) @	WB - TR	1.05	55.6	E				0.94	39.1	D	1.05	68.6	E			
Carlton Avenue (NB)																
62. Bergen Street (WB) @	WB - TR	1.01	67.4	E												
Vanderbilt Avenue (N-S)	NB - T	1.05	43.6	D												
	SB - TR	1.05	58.9	E				1.05	51.5	D	1.05	54.9	D	1.05	56.9	E
63. Saint Marks Place (EB) @	NB - TR	0.94	39.5	D												
4th Avenue (N-S)																
65. Saint Marks Avenue (EB) @	EB - LTR	1.04	59.0	E												
Vanderbilt Avenue (N-S)	NB - TR	1.05	43.4	D												
	SB - T	0.91	19.1	B				1.04	41.3	D	0.95	21.3	C			
66. Prospect Place (WB) @	WB - LTR	1.05	62.2	E												
Vanderbilt Avenue (N-S)	NB - T	1.05	43.5	D												
	SB - TR	1.05	48.5	D				1.05	43.3	D	1.05	49.5	D	1.05	55.3	E
67. Park Place (EB) @	EB - LTR	1.05	61.1	E	0.97	46.2	D	1.05	61.5	E	0.90	43.1	D			
Vanderbilt Avenue (N-S)	NB - TR	1.04	37.7	D												
	SB - T							0.91	16.5	B	0.94	18.1	B			
68. Union Street (E-W) @	NB - LTR	1.05	52.3	D				0.90	30.8	C						
5th Avenue (N-S)	SB - LTR													0.91	32.1	C
69. Eastern Parkway (E-W) @	EB - T							0.91	32.8	C						
Washington Avenue (N-S)	WB - L (ML)	1.05	98.5	F				1.05	139.6	F	0.83	75.7	E			
	NB - LTR	1.05	72.6	E	1.05	59.2	E	1.05	74.5	E	1.05	74.2	E	1.05	62.3	E
	SB - TR							1.05	63.7	E	1.05	68.3	E			
69. Eastern Parkway (E-W) @	EB - T										0.92	28.7	C			
Washington Avenue (N-S)	WB - L (ML)										0.89	83.7	F			
(90s Weekday Pregame Cycle)	NB - LTR										1.05	65.0	E			
	SB - TR										1.05	60.4	E			
71. Union Street (E-W) @	EB - LTR							1.05	70.3	E	0.97	55.2	E			
4th Avenue (N-S)	WB - LTR	1.05	91.7	F				1.05	104.5	F	1.05	109.7	F			

Notes: This table has been revised for the FSEIS.

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

Lane groups shown are those operating at LOS E or F, or have a V/C ratio greater than or equal to 0.9

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

In addition to Phase I developments, other development projects in proximity to the project site expected to be completed by the 2035 Build year were considered. Discrete travel demand forecasts and trip assignments were prepared for larger development projects selected in consultation with NYCDOT. Projects for which discrete travel demand forecasts and trip assignments were prepared are shown in **Table C-1** in **Appendix C**. As shown in **Table C-1,** these projects account for a total of approximately 8,393 dwelling units, 1,203 new hotel rooms, 2.47 million square feet of commercial space, 1.34 million square feet of retail space, 17,000 square feet of manufacturing space, and 803,108 square feet of other uses including community facility, educational and performing arts space.

In addition to demand from larger development projects, annual background growth rates of 0.25 percent per year for the 2013 through 2018 period and 0.125 percent for the 2018 through 2035 period were applied to existing traffic demand. This background growth rate, recommended in the 2012 *CEQR Technical Manual* for projects in Downtown Brooklyn, is applied to account for smaller projects and as-of-right developments not reflected in **Table C-1**, and general increases in travel demand not attributable to specific development projects.

CHANGES TO THE STUDY AREA STREET NETWORK

The 2013 through 2035 period will likely see the implementation of a number of physical and operational changes to the study area street system associated with completion of Phase I of the Project and implementation of its traffic and pedestrian mitigation plan, and initiatives by City agencies such as NYCDOT. Planned physical and operational changes that are reflected in the 2035 Future Without Phase II traffic network are discussed below.

Street Improvements Associated with Development of Phase I

The 2006 FEIS proposed a range of street network changes and improvements associated with the development of Phase I of the Project. (These do not include changes associated with the Project's Phase I traffic mitigation plan which are discussed separately below.) Many of these street network changes and improvements were implemented in conjunction with development of the Barclays Center Arena, such as the closure of segments of 5th Avenue and Pacific Street on the project site, the conversion of 6th Avenue to two-way operation between Atlantic and Flatbush Avenues,[1] the conversion of Carlton Avenue to two-way operation between Atlantic Avenue and Pacific Street, the provision of lay-by lanes adjacent to the Arena Block and the conversion of Pacific Street from one-way westbound to two-way operation between 6th and Carlton Avenues. Additional street network changes that were reflected in the 2006 FEIS and that are expected to be implemented with full build-out of Phase I include:

- The installation of a seven-foot-wide lay-by lane along the north side of Pacific Street between Flatbush and 4th Avenues (in conjunction with the development of Site 5); and
- The installation of a lay-by lane along the west side of 6th Avenue between Pacific Street and Dean Street.

[1] A widening of the 6th Avenue roadway was also proposed in conjunction with its conversion to two-way operation between Atlantic and Flatbush Avenues. However, NYCDOT subsequently decided not to implement this widening from Dean Street to Flatbush Avenue, and it is therefore not reflected in the analyses of Future Without Phase II and Future with Phase II traffic conditions.

Phase I Traffic Mitigation

The 2006 FEIS recommended the implementation of a range of traffic mitigation measures to address significant adverse impacts expected to result from development of Phase I of the Project. These included operational measures such as changes to signal timings, lane striping and curbside parking regulations, and physical changes such as a major reconfiguration of the Flatbush Avenue/Atlantic Avenue/4th Avenue intersection, including the elimination of northbound 4th Avenue north of Atlantic Avenue. Many of these changes to the study area street system (including the reconfiguration of the Flatbush Avenue/Atlantic Avenue/4th Avenue intersection) were implemented in conjunction with the opening of the Barclays Center Arena in September 2012 and are therefore already reflected in the Existing conditions traffic networks. Other mitigation measures recommended in the 2006 FEIS are either planned for implementation with full build-out of Site 5 and Buildings 1 through 4, or are no longer being considered based on observed traffic conditions. Some additional measures not included in the 2006 FEIS have also now been proposed based on observed conditions. Traffic mitigation measures that are expected to be implemented with full build-out of Phase I and are therefore reflected in the Future Without Phase II traffic networks include:

Flatbush Avenue and 4th Avenue

- Restriping southbound Flatbush Avenue to one through lane, one through-right lane, and one right-turn lane;

Flatbush Avenue and Pacific Street

- Restriping eastbound Pacific Street as one left-right shared lane, and restoration of on-street parking along the north curb lane;

Atlantic Avenue and Nevins Street

- Restriping the southbound approach as one through-right and one left-turn lane;

Carlton Avenue and Dean Street

- Removal of the eastbound left-turn lane and restriping eastbound Dean Street as one travel lane and one Class II bicycle lane, restoration of on-street parking along the north curb lane, and signal timing changes to provide additional eastbound capacity; and

Vanderbilt Avenue and Dean Street

- Signal timing changes to provide additional eastbound capacity.

Other Agency Initiatives

It is anticipated that in the 2035 Future Without Phase II, NYCDOT and other agencies will have implemented a number of improvements to the study area street system unrelated to specific development projects. These are expected to include:

- Reconfiguration of 4th Avenue south of Atlantic Avenue by NYCDOT to provide a wider median with two southbound and three northbound travel lanes plus curbside parking, and the elimination of selected southbound left-turns. (These improvements were implemented in Summer 2013, subsequent to the traffic data collection program.)
- Improvements to intersections along the Tillary Street corridor at the northern end of the traffic study area including a reconfiguration of the eastbound approach at Flatbush Avenue, the elimination of the through-movement on the southbound Adams Street service road approach at Tillary Street, and the elimination of the northbound and southbound Adams Street service roads between Tillary Street and Johnson Street.

TRIP ASSIGNMENT

The assignments of vehicle trips generated by Phase I residential, office and hotel development in the Future Without Phase II are based on data from the 2006–2010 five-year *American Community Survey* (ACS). The assignments assume a unique trip pattern for each project component based on the differences in their travel demand characteristics. For example, a majority of the auto trips generated by the residential and hotel components are expected to have endpoints in Manhattan and Brooklyn, while office trips are expected to be more widely dispersed among all five boroughs, as well as suburban locations such as Long Island. As the Project's retail component is expected to consist primarily of local retail uses serving the surrounding worker and residential populations, all of its trips are expected to be Brooklyn-based. The origin points of spectators attending a Saturday afternoon Nets game at the Arena were based on data from surveys of the travel characteristics of Barclays Center Arena patrons attending weekend Nets games in January and February 2013.

Auto and taxi trips from Phase I development were then assigned to the primary corridors providing access to and from the project site based on their origin or destination as well as the most direct routes to major access points such as the BQE and the Brooklyn and Manhattan bridges. Truck trips en route to and from the site were assigned to designated local and through truck routes in Downtown Brooklyn. These include Atlantic, Flatbush, 3rd and 4th Avenues, and portions of 5th Avenue and Bergen Street. The assignments of auto, taxi, and truck trips within Downtown Brooklyn take into account changes to the study area traffic network that are expected to occur by 2035 as a result of discrete developments and initiatives by NYCDOT and other agencies.

Auto trips destined to or from Phase I residential and commercial components were assigned to the on-site parking facilities expected to be provided under Phase I of the Project. As discussed later in this chapter, it is anticipated that sufficient capacity would be provided in on-site facilities to accommodate all non-arena demand from both Phase I and Phase II. For traffic assignment purposes, it was assumed that approximately 300 parking spaces would also be available on-site to accommodate the parking needs of the Arena. Arena demand would also be accommodated at other off-street public parking facilities located in the vicinity. The assignment of Saturday pregame Arena auto trips was based on data from surveys of spectators at Nets games at the Arena and reflects this distribution of trips to both on-site parking facilities and directly to off-site parking facilities.[1]

The assignments of incremental Phase I weekday peak hour vehicle trips reflect trips generated by the commercial mixed-use variation (the RWCDS for the weekday peak hours), while the assignments for the Saturday peak hour reflect the trips generated by the residential mixed-use variation (the RWCDS for Saturday). Trip assignments were also prepared for the discrete developments listed in **Table C-1** in **Appendix C** using the methodology outlined above. Trips from these development sites, from Phase I development, and from general background growth were then applied to the Existing conditions traffic networks to develop the traffic networks for the 2035 Future

[1] In the Future Without Phase II, planned development at 470 Vanderbilt Avenue is expected to displace an existing 162-space public parking lot currently used by Arena patrons. It is assumed that the 302-space parking garage planned as part of the development of this site would also be available for parking by Arena patrons. If spaces in this garage were not available, there would likely be some localized redistribution of Arena auto trips to other off-street parking facilities in the vicinity.

Without Phase II condition. Figures showing the total traffic volumes at study area intersections in each analyzed peak hour in the Future Without Phase II are provided in **Appendix C**.

INTERSECTION CAPACITY ANALYSIS

Table 4D-21 shows a summary comparison of intersection levels of service for Existing conditions and the Future Without Phase II condition with the increased traffic demands and street network changes discussed above. As shown in **Table 4D-21**, in the weekday AM peak hour, it is expected that 30 analyzed intersections would operate at LOS E or F and 11 would operate at a marginally acceptable LOS D in the Future Without Phase II. This compares to one intersection operating at LOS E or F and 25 at LOS D under Existing conditions. Eighty-three individual lane groups out of the approximately 305 such lane groups analyzed would operate at

Table 4D-21
Intersection Level of Service Summary Comparison
Future Without Phase II vs. Existing Conditions

	Existing					Future Without Phase II				
	AM	MD	PM	Pregame	Sat Pregame	AM	MD	PM	Pregame	Sat Pregame
Overall LOS A/B/C	45	66	56	57	57	30	44	33	36	27
Overall LOS D	25	3	12	13	12	11	13	11	20	10
Overall LOS E	1	2	3	1	2	19	10	14	11	16
Overall LOS F	0	0	0	0	0	11	4	13	4	18
No. of lane groups at LOS E or F of the approximately 305 analyzed	49	17	51	34	26	83	53	98	59	95

LOS E or F in the AM peak hour in the Future Without Phase II compared to 49 under Existing conditions.

In the weekday midday peak hour, 13 analyzed intersections would operate at LOS D, and 14 at LOS E or F in the Future Without Phase II compared to three intersections operating at LOS D and two at LOS E or F under Existing conditions. Fifty-three of the approximately 305 individual lane groups analyzed are expected to operate at LOS E or F in the midday peak hour in the Future Without Phase II, compared to 17 under Existing conditions.

In the weekday PM peak hour, 27 analyzed intersections would operate at LOS E or LOS F and 11 at a marginally acceptable LOS D in the Future Without Phase II. This compares to three operating at LOS E or F and 12 at LOS D in the PM under Existing conditions. Ninety-eight of the approximately 305 individual lane groups analyzed would operate at LOS E or F in the PM peak hour in the Future Without Phase II compared to 51 under Existing conditions.

In the weekday pregame peak hour, 15 analyzed intersections would operate at LOS E or LOS F and 20 at a marginally acceptable LOS D in the Future Without Phase II. This compares to one operating at LOS E or F and 13 at LOS D in the pregame peak hour under Existing conditions. Fifty-nine of the approximately 305 individual lane groups analyzed would operate at LOS E or F in the weekday pregame peak hour in the Future Without Phase II compared to 34 under Existing conditions.

Lastly, in the Saturday pregame peak hour, 10 analyzed intersections would operate at LOS D, and 34 at LOS E or F in the Future Without Phase II, compared to 12 operating at LOS D and two at LOS E or F under Existing conditions. Ninety-five of the approximately 305 individual

lane groups analyzed would operate at LOS E or F in the Saturday pregame peak hour in the Future Without Phase II compared to 26 under Existing conditions.

Table 4D-22 shows the volume-to-capacity ratios, delays and levels of service for those individual lane groups experiencing congestion in one or more peak hours in the Future Without Phase II. As shown in **Table 4D-22**, with planned changes to the study area street system, and with continued growth in general travel demand and new demand from full build-out of Phase I and other development projects in the area, some intersections that were congested under Existing conditions are expected to worsen, and additional locations are expected to become congested in one or more peak hours by 2035. In addition, conditions are expected to improve at several intersections as a result of planned improvements to the street system and mitigation measures implemented in conjunction with development of Phase I. Of the 71 intersections analyzed, 47 would have one or more lane groups operating at capacity in the weekday AM peak hour (compared to 35 under Existing conditions), 27 in the midday (eight under Existing conditions), 47 in the PM peak hour (30 under Existing conditions), 36 in the weekday pregame peak hour (27 under Existing conditions), and 46 in the Saturday pregame peak hour (18 under Existing conditions). V/c ratios, delays and levels of service for all lane groups at all analyzed intersections in all periods in the Future Without Phase II are provided in **Table C-3** in **Appendix C**.

It should be noted that queuing can occur when a movement operates substantially over capacity, and such queuing may potentially affect both upstream and downstream intersections along a corridor. For example, extensive queues may spill back through upstream intersections, while at downstream intersections, forecasted volumes may not occur, as traffic will be effectively metered at the first queued location along the corridor. Queuing at an intersection on the periphery of a study area may therefore effectively reduce the volumes that actually traverse the study area during the peak period. However, the analysis of future traffic conditions conservatively assumes that traffic volumes within the study area are not metered at congested locations on the periphery, and that all future traffic volumes occur at analyzed intersections. This is consistent with the methodology used for the 2006 FEIS. The 2006 FEIS also acknowledged the potential for queuing and spillback at locations operating substantially over capacity. As there would be similar potential in the future with and without Phase II under the Extended Build-Out Scenario, the SEIS also examines this issue.

As noted above and in **Table 4D-22**, in the Future Without Phase II a number of intersections are expected to have movements operating over capacity in one or more peak periods. Approaches operating substantially over capacity are likely to experience queuing that may potentially spill back to upstream intersections. In the Future Without Phase II, through movements along the major corridors serving the project site that would potentially experience queuing and spill-back in one or more peak hours are expected to include northbound and/or southbound Flatbush Avenue at Fulton Street and Lafayette, 4th, Atlantic and 7th Avenues; eastbound and/or westbound Atlantic Avenue at Boerum Place, Vanderbilt Avenue, and Henry, Smith and Nevins Streets; and Vanderbilt Avenue at Myrtle and DeKalb Avenues.

Table 4D-22
Congested Lane Groups at Analyzed Intersections in the Future Without Phase II

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Tillary Street (E-W) @	EB - L	1.27	175.6	F	0.95	61.2	E							0.68	55.4	E
Flatbush Avenue Extension (N-S)	EB - T	1.25	156.7	F	1.20	134.0	F	1.39	218.7	F	1.13	109.4	F	1.00	65.5	E
	EB - R	1.29	175.0	F	1.51	276.1	F	1.05	76.5	E	0.95	62.6	E	1.64	339.6	F
	WB - L	1.35	207.6	F	1.32	200.4	F	1.29	183.7	F	1.22	154.5	F	1.36	220.0	F
	WB - TR	1.10	89.6	F				1.14	109.4	F	1.00	59.5	E			
	WB - R	1.30	181.8	F	1.05	95.7	F							1.07	93.9	F
	NB - R							0.87	35.0	E						
	SB - T							1.12	105.7	F	1.02	72.6	E	0.92	52.5	D
	SB - R				0.86	64.3	E									
2. Myrtle Avenue (E-W) @	NB - TR	1.18	111.2	F	1.03	58.5	E	1.00	48.2	D				1.18	115.6	F
Gold St-Flatbush Ave Extension (N-S)	SB - TR				0.90	34.7	C	0.98	42.5	D	0.92	33.7	C	0.93	35.5	D
3. Willoughby Street (E-W) @	EB - L	1.01	101.8	F	1.04	110.6	F	1.57	312.8	F				2.03	517.4	F
Flatbush Avenue Extension (N-S)	EB - R													0.93	57.6	E
	WB - LTR	0.91	52.2	D	0.95	60.4	E	0.90	50.5	D				1.47	254.9	F
	NB - T	0.99	36.9	D												
	SB - TR	0.93	34.6	C	0.99	43.7	D	1.10	79.5	E	0.96	35.5	D	1.09	78.4	E
4. Dekalb Avenue(E-W) @	WB - LTR	1.24	149.9	F	0.90	48.3	D	0.92	52.5	D				0.92	49.5	D
Flatbush Avenue Extension (N-S)	NB - T	1.02	52.3	D										1.11	80.9	F
	SB - TR							1.13	92.7	F	1.03	52.1	D	1.08	73.9	E
5. Fulton Street (E-W) @	EB - LTR							1.03	77.2	E	0.78	53.4	D			
Flatbush Ave-Flatbush Ave Ext (N-S)	WB - LT	1.13	119.2	F	0.77	59.3	E	1.07	120.7	F				1.04	105.1	F
	NB - T	1.05	68.6	E	1.00	60.0	E	1.05	76.8	E				1.40	222.7	F
	SB - L	1.41	250.2	F	1.46	269.7	F	1.68	360.3	F	1.34	207.3	F	1.87	446.5	F
6. Livingston Street (EB) @	EB - R				1.00	70.2	E	0.94	62.0	E	1.13	101.1	F	0.98	68.8	E
Flatbush Avenue (N-S)	NB - L	0.94	33.8	C												
	NB - T													0.97	36.7	D
7. Lafayette Avenue-Schermerhorn Street	EB - L	0.83	56.7	E	0.86	63.2	E	0.82	58.0	E						
(EB) @	EB - LT							0.92	55.6	E						
Flatbush Avenue Ext (N-S)	NB - TR	1.18	111.5	F	1.19	119.5	F	1.17	114.1	F	1.01	52.8	D	1.28	158.1	F
	SB - L	0.78	62.2	E	0.82	66.2	E	0.83	58.1	E				1.22	168.2	F
8. 4th Avenue (WB) @	NB - T	1.26	152.2	F	1.00	52.8	D	1.05	64.6	E	0.96	43.2	D	1.22	134.4	F
Flatbush Avenue (N-S)	SB-TR				0.93	39.2	D	1.23	138.5	F	1.03	54.3	D	1.12	90.5	F
	SB - R	0.97	55.4	E	1.06	79.2	E	1.24	141.3	F	1.09	79.6	E	1.07	77.9	E
9. Atlantic Avenue (E-W) @	EB - R													0.93	65.4	E
Flatbush Avenue (N-S)	WB - TR													1.05	72.8	E
	WB - R				1.15	134.2	F	1.20	154.9	F	0.97	78.3	E	1.39	225.3	F
	NB - LT	1.21	128.7	F				1.00	52.8	D				1.03	60.4	E
	SB - LT							0.95	33.9	C						
10. Pacific Street (EB) @	SB - TR							0.90	47.2	D						
Flatbush Avenue (N-S)																
11. 5th Avenue (EB) @	SB - TR							1.08	75.3	E	0.90	33.1	C	1.02	51.1	D
Flatbush Avenue (N-S)																
12. Dean Street (EB) @	EB - T													1.00	55.2	D
Flatbush Avenue (N-S)	NB - TR				0.97	43.7	D	1.10	82.2	F	0.93	38.9	D	1.10	82.5	F
13. Bergen Street (WB) @	WB - LT	0.95	48.5	D										0.92	48.5	D
Flatbush Avenue (N-S)	NB - T													0.96	37.4	D
	SB - TR	1.01	60.7	E	0.96	44.2	D				1.12	91.7	F	1.04	64.4	E
14. 6th Avenue (E-W) @	NB - TR	0.94	34.2	C	0.95	35.6	D	0.91	33.2	C	0.90	32.6	C	1.04	55.9	E
Flatbush Avenue (N-S)	SB - TR	0.95	35.6	D	1.00	47.9	D				1.08	66.2	E	1.04	58.2	E
15. Saint Marks Avenue (E-W) @	NB - TR	0.90	30.7	C	1.05	57.7	E	0.93	35.4	D	0.91	33.3	C	1.10	78.6	E
Flatbush Avenue (N-S)	SB - T										0.95	32.0	C	1.02	51.6	D
16. 7th Avenue (EB) @	NB - LT							0.92	38.6	D	0.93	35.3	D	1.08	71.0	E
Flatbush Avenue (N-S)	SB - TR	0.90	33.1	C							1.13	90.7	F	1.21	126.0	F
17. Sterling Place (WB) @	NB - T	0.92	31.5	C										1.04	56.3	E
Flatbush Avenue (N-S)	SB - TR				0.94	36.3	D				1.00	42.7	D	1.00	46.5	D
18. Tillary Street (E-W) @	EB - TR							0.93	60.3	E	0.92	59.5	E			
Adams St -Brooklyn Br (N-S)	WB - L	1.12	131.6	F	1.20	155.9	F	1.56	302.5	F	1.64	343.6	F	1.21	157.9	F
	WB - R	1.12	106.7	F	1.13	109.9	F	1.27	168.1	F	1.12	106.2	F	1.28	173.7	F
	NB - T (ML)	1.10	90.1	F				1.07	79.7	E	0.90	47.5	D	0.99	60.4	E
	NB - TR (SR)	1.29	172.9	F	1.38	213.4	F	1.31	184.3	F	1.06	89.3	F	0.99	79.1	E
19. Myrtle Avenue (E-W) @	NB - LTR	1.31	175.6	F	1.14	114.7	F	1.51	264.5	F	1.50	260.2	F	1.91	445.6	F
Vanderbilt Avenue (N-S)	SB - LTR	1.34	197.6	F	0.99	73.5	E	1.48	251.5	F	1.12	109.0	F	1.80	400.8	F
20. Dekalb Avenue (WB) @	WB - LTR				0.93	26.0	C	1.14	81.5	F	1.14	80.0	F	1.16	88.9	F
Vanderbilt Avenue (N-S)	NB - LT	1.37	187.4	F	1.29	160.7	F	1.52	253.0	F	1.45	225.2	F	1.77	367.4	F
	SB - TR							1.14	89.0	F	0.96	43.6	D	1.06	73.4	E
21. Fulton Street (E-W) @	EB - TR				0.99	47.6	D	1.18	111.0	F	0.99	42.9	D	1.05	63.4	E
South Portland Avenue (N-S)	WB - LT	1.24	128.8	F	1.20	119.0	F	1.41	208.1	F	1.27	146.6	F	1.28	150.5	F
	NB - LR	0.99	53.3	D												
22. Fulton Street (E-W) @	EB - LT							1.18	110.1	F	1.22	123.2	F	0.92	34.3	C
Carlton Avenue (NB)	WB - TR	1.02	41.9	D												
	NB - LTR	1.10	78.6	E												
23. Fulton Street (E-W) @	EB - LTR							1.37	187.9	F	0.91	30.2	C	1.18	108.8	F
Vanderbilt Avenue (N-S)	WB - LTR	0.98	37.3	D										0.90	34.2	C
	NB - L	1.25	145.8	F				1.40	255.8	F	1.26	183.3	F	1.58	319.2	F
	NB - TR	1.10	77.9	E												
	SB - TR							1.12	84.8	F	1.07	64.2	E	1.12	97.0	F
24. Livingston Street (E-W) @	EB - LTR	1.28	172.5	F	1.51	274.6	F	1.58	305.9	F	1.35	206.1	F	0.92	83.5	F
Boerum Place (N-S)	WB - LT	0.88	61.6	E	1.10	121.1	F	1.47	268.3	F	0.89	70.4	E	1.41	242.2	F
	WB - R	1.28	184.5	F	1.17	151.6	F	1.07	110.7	F	0.90	76.3	E	1.36	224.9	F
	NB - TR	0.93	45.1	D												
	SB - L													1.01	87.9	F
25. Schermerhorn Street (WB) @	WB - LTR	0.96	69.5	E	1.14	112.4	F	0.92	60.7	E						
Boerum Place (N-S)	NB - L							1.58	335.7	F	0.71	60.9	E			
26. State Street (EB) @	SB - LT							1.22	124.4	F	1.10	73.2	E			
Boerum Place (N-S)																
27. Atlantic Avenue (E-W) @	EB - LT				0.94	41.4	D							1.17	123.0	F
Hicks Street (NB)	WB - TR				0.90	29.1	C									
28. Atlantic Avenue (E-W) @	WB - LT				1.21	122.6	F	0.93	35.7	D				0.96	42.6	D
Henry Street (SB)	SB - LTR							0.94	47.6	D						
29. Atlantic Avenue (E-W) @	EB - LT	1.11	98.7	F	1.19	120.1	F	1.06	83.4	F				1.13	97.9	F
Clinton Street (NB)	WB - TR				0.98	36.2	D	0.90	39.4	D						
	NB - LTR	1.00	52.8	D	0.92	33.5	C	0.90	42.8	D				1.09	88.0	F

Table 4D-22 (continued)
Congested Lane Groups at Analyzed Intersections in the Future Without Phase II

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
30. Atlantic Avenue (E-W) @	EB - L	1.01	45.4	D										1.23	137.6	F
Boerum Place (SB)	EB - TR	1.33	192.0	F	1.28	168.5	F	1.23	148.8	F	1.22	145.2	F	1.52	274.4	F
	WB - LT	1.12	102.5	F	1.37	206.3	F	1.17	129.2	F	1.01	74.8	E	1.33	198.2	F
	WB - R	1.11	70.6	E	0.91	23.8	C	0.99	37.2	D				1.19	109.7	F
	SB - L										0.96	43.8	D			
	SB - R							1.04	75.3	E						
31. Atlantic Avenue (E-W) @	EB - LT	1.58	290.6	F	1.26	144.3	F				0.91	21.4	C	1.73	357.5	F
Smith Street (NB)	WB - TR	1.15	99.3	F	1.12	83.0	F							0.95	32.8	C
	NB - TR	1.08	94.2	F	1.08	84.2	F	1.19	137.8	F	0.93	62.9	E	1.04	83.3	F
32. Atlantic Avenue (E-W) @	WB - T	0.96	29.7	C	0.91	28.4	C									
Hoyt Street (SB)	SB - LTR							0.92	56.3	E						
33. Atlantic Avenue (E-W) @	EB - T							0.96	32.9	C	0.99	38.6	D	0.92	30.7	C
Bond Street (NB)	WB - TR	1.13	87.4	F										0.99	29.3	C
	NB - LTR	0.90	46.6	D												
34. Atlantic Avenue (E-W) @	WB - LT	1.29	160.2	F	1.08	65.8	E	1.26	147.3	F	1.20	121.4	F	1.46	232.8	F
Nevins Street (SB)	SB - TR	0.90	42.2	D				1.11	110.1	F				0.90	43.4	D
35. Atlantic Avenue (E-W) @	EB - T							0.91	35.7	D						
3rd Avenue (NB)	WB - T	0.91	35.1	D												
	WB - R	1.16	119.3	F												
	NB - LTR													0.90	51.2	D
36. Atlantic Avenue (E-W) @	EB - T							1.18	127.4	F	1.01	62.6	E	1.08	87.1	F
4th Avenue(N-S)	EB - R				0.81	57.8	E				0.88	61.4	E	0.85	62.4	E
	WB - T															
	NB - L	1.18	134.2	F				1.01	78.0	E						
	NB - R	0.92	64.8	E	0.79	60.4	E	1.13	129.0	F	1.06	102.7	F	0.85	59.8	E
	SB - LT	0.96	70.5	E	0.89	55.6	E	0.97	60.2	E				0.97	66.6	E
37. Atlantic Avenue (E-W) @	WB - TR				0.93	41.7	D							1.14	103.2	F
Fort Greene Place (SB)																
38. Atlantic Avenue (E-W) @	NB - TR	1.08	104.0	F												
6th Ave-South Portland Ave (N-S)	SB - L	1.25	215.2	F				1.13	123.1	F	1.00	85.6	F			
40. Atlantic Avenue (E-W) @	EB - L	1.64	367.7	F										1.24	203.5	F
Carlton Avenue (NB)	WB - L							0.81	62.4	E						
	NB - LTR	1.35	204.4	F				0.92	65.5	E	0.85	55.4	E			
41. Atlantic Avenue (E-W) @	EB - L	1.48	303.2	F	0.80	62.5	E				0.82	66.0	E	1.06	138.0	F
Clermont Avenue (SB)	SB - LR	0.90	52.5	D				1.09	87.2	F						
42. Atlantic Avenue (E-W) @	EB - T				1.03	66.4	E	1.02	57.9	E						
Vanderbilt Avenue (N-S)	WB - L							0.98	87.5	F	1.02	86.3	F			
	WB - TR	1.21	127.7	F	1.25	146.7	F	0.93	35.7	D	0.98	42.0	D	1.17	109.4	F
	NB - L	1.02	86.5	F				0.93	76.6	E						
	NB - T	1.09	92.4	F												
	SB - TR							1.09	85.1	F	0.94	50.4	E			
43. Atlantic Avenue (E-W) @	WB - TR	1.06	55.3	E												
Clinton Avenue (SB)	SB - LR							1.09	84.2	F						
45. Atlantic Avenue (E-W) @	EB - TR				0.91	33.5	C	1.18	111.7	F	0.94	36.6	D			
Washington Ave-Underhill Ave (N-S)	WB - TR	0.99	33.4	C												
	NB - L	1.24	171.4	F	0.86	56.7	E	2.13	561.4	F	1.33	219.6	F	1.81	427.1	F
	NB - T							1.06	81.4	F						
	SB - L							3.23	1056.0	F	0.78	58.2	E	1.25	184.6	F
	SB - TR							1.06	78.6	E				1.00	76.0	E
46. Atlantic Avenue (E-W) @	EB - TR							0.91	24.4	C						
Grand Avenue (SB)	WB - L							0.93	109.7	F						
	WB - T	0.96	29.5	C												
	SB - LTR	1.00	60.1	E				1.08	81.1	F	1.04	66.1	E			
47. Pacific Street (E-W) @	NB - L	1.10	118.7	F	0.67	57.6	E	0.79	76.6	E				0.84	76.9	E
4th Avenue (N-S)	NB - TR	1.17	121.7	F				1.02	74.3	E	1.00	70.6	E	1.12	108.4	F
50. Pacific Street (WB) @	WB - LR	1.09	78.4	E												
Vanderbilt Avenue (N-S)	NB - TR															
	SB - LT							1.06	47.9	D						
51. Dean Street (EB) @	NB - TR							1.18	116.9	F	0.98	52.6	D	1.11	89.5	F
3rd Avenue Avenue (N-S)																
52. Dean Street (EB) @	EB - LTR										1.10	102.0	F			
4th Avenue (N-S)	NB - TR	1.06	76.5	E												
53. Dean Street (EB) @	EB - LTR	1.09	121.7	F	1.12	135.5	F	1.09	121.0	F	1.07	102.7	F	1.60	331.1	F
5th Avenue (N-S)	NB - TR	1.19	148.5	F	0.97	80.5	F	1.11	120.9	F	1.16	136.4	F	1.40	235.0	F
54. Dean Street (EB) @	EB - L													0.95	58.3	E
6th Avenue (N-S)	EB - TR													1.28	162.2	F
55. Dean Street (EB) @	EB - LT							1.03	58.5	E				1.31	167.1	F
Carlton Avenue (NB)	NB - LT	0.91	26.3	C												
56. Dean Street (EB) @	EB - TR	0.98	68.8	E				1.02	67.6	E				0.91	55.3	E
Vanderbilt Avenue (N-S)	NB - TR	1.15	86.6	F												
	SB - T							0.90	19.5	B						
58. Dean Street (EB) @	EB - LTR							0.90	36.1	D						
Washington Avenue (N-S)	NB - TR	1.04	41.3	D	0.97	32.0	C	1.01	39.5	D						
	SB - LT							1.25	129.5	F	0.93	25.3	C	0.99	42.6	D
59. Bergen Street (WB) @	WB - LTR	1.02	50.6	D				1.51	274.2	F	1.26	162.1	F	1.18	116.8	F
4th Avenue (N-S)	NB - L	1.11	114.7	F										0.77	60.2	E
	NB-T	0.90	39.3	D												
60. Bergen Street (WB) @	WB - L							0.88	71.4	E	0.89	75.8	E			
5th Avenue (N-S)	WB - TR	1.33	197.8	F	1.09	112.3	F	1.25	170.6	F	1.21	152.8	F	1.50	275.7	F
61. Bergen Street (WB) @	WB - TR	1.25	139.3	F	0.96	47.7	D	1.14	96.3	F	1.22	132.8	F	1.15	97.9	F
Carlton Avenue (NB)																
62. Bergen Street (WB) @	WB - TR	1.22	142.0	F	1.01	75.5	E	0.97	64.7	E				1.18	128.6	F
Vanderbilt Avenue (N-S)	NB - T	1.09	58.9	E												
	SB - TR	1.14	91.6	F				1.12	79.2	E	1.10	74.2	E	1.14	92.7	F
63. Saint Marks Place (EB) @	NB - TR	1.09	78.6	E												
4th Avenue (N-S)																

Table 4D-22 (continued)
Congested Lane Groups at Analyzed Intersections in the Future Without Phase II

	LANE GROUP	WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
		V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
65. Saint Marks Avenue (EB) @	EB - LTR	1.13	93.3	F				0.94	38.3	D						
Vanderbilt Avenue (N-S)	NB - TR	1.09	57.6	E												
	SB - T	0.96	23.5	C				1.10	64.6	E	0.99	27.7	C			
66. Prospect Place (WB) @	WB - LTR	1.09	77.7	E												
Vanderbilt Avenue (N-S)	NB - T	1.09	60.4	E												
	SB - TR	1.10	69.3	E				1.11	68.3	E	1.10	67.8	E	1.12	80.6	F
67. Park Place (EB) @	EB - LTR	1.11	82.7	F	1.02	58.2	E	1.09	77.5	E	0.94	47.6	D	0.93	48.1	D
Vanderbilt Avenue (N-S)	NB - TR	1.00	25.6	C												
	SB - T							0.96	19.8	B	0.98	22.3	C			
68. Union Street (E-W) @	NB - LTR	1.16	99.1	F				1.04	59.2	E				1.09	76.3	E
5th Avenue (N-S)	SB - LTR							0.93	39.0	D				1.10	78.1	E
69. Eastern Parkway (E-W) @	EB - T							0.94	36.2	D						
Washington Avenue (N-S)	WB - L (ML)	1.18	144.2	F	0.79	57.3	E	1.13	169.0	F	0.97	115.4	F			
	NB - LTR	1.19	130.6	F	1.24	142.4	F	1.45	245.3	F	1.30	180.1	F	1.55	282.1	F
	SB - TR							1.20	123.8	F	1.13	98.7	F			
69. Eastern Parkway (E-W) @	EB - T										0.95	31.4	C			
Washington Avenue (N-S)	WB - L (ML)										0.94	95.4	F			
(90s Weekday Pregame Cycle)	NB - LTR										1.27	157.3	F			
	SB - TR										1.13	90.7	F			
70. Bergen Street (WB) @	WB - LTR	0.99	28.3	C				0.90	26.3	C				1.00	50.0	D
6th Avenue (N-S)																
71. Union Street (E-W) @	EB - LTR							1.11	92.9	F	1.02	66.5	E			
4th Avenue (N-S)	WB - LTR	1.13	117.6	F				1.17	146.2	F	1.16	145.0	F			
	NB - TR													1.05	65.9	E
	SB - L													0.70	65.3	E
	SB - TR													0.95	46.8	D

Notes: This table has been revised for the FSEIS.
EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound
L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach
V/C Ratio - Volume to Capacity Ratio, sec. - Seconds
LOS - Level of Service
Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)
Lane groups shown are those operating at LOS E or F, or have a V/C ratio greater than or equal to 0.9

BICYCLE FACILITIES

In the Future Without Phase II, new commercial development associated with Phase I of the project and other projects in the area will likely generate some new commuter trips by bicycle along bicycle lanes in the vicinity of the project site, primarily during the weekday 8-9 AM and 5-6 PM peak periods. New residential development will also likely generate some new commuter trips by bicycle in the weekday commuter peak periods, as well as recreational and discretionary trips during other weekday periods and on weekends.

As previously discussed, up to 400 free, secured bicycle parking spots for event ticket holders are currently provided at Barclays Center on Dean Street between Flatbush and 6th Avenues to encourage bicycling as a means of travel to and from the Arena. In the Future Without Phase II, it is anticipated that a new bicycle station with secured, staffed storage for a similar number of bicycle parking spaces will be provided on the Arena Block in new ground floor space along the 6th Avenue corridor. At this location it will be conveniently situated next to the Arena and easily accessible from the bicycle lanes on Dean and Bergen Streets as is the current bicycle parking. This facility is expected to occupy approximately 4,000 square feet of space including 3,000 square feet of storage space for bicycles and 300 square feet for amenities such as lockers, restrooms and a security desk. In addition, it is expected that an approximately 700-square-foot bicycle repair and accessory retail shop will be incorporated into the facility to provide services to both users of the bicycle station and the surrounding community.

In the Future Without Phase II, it is also anticipated that the existing southbound on-street bicycle lane on Cumberland Street will be extended to Atlantic Avenue from its current terminus near Fulton Street north of the project site (see **Figure 4D-5)**.

PROBABLE IMPACTS OF PHASE II

TRAVEL DEMAND

As shown in **Table 4D-9**, vehicle trips generated by Phase II development would total 519, 338, 446, 281 and 689 during the analyzed weekday AM, midday, PM and pregame and Saturday pregame peak hours, respectively. Auto trips during these periods would range from 200 (in the weekday midday peak hour) to 609 (in the Saturday pregame peak hour), while taxi trips would range from 18 (in the weekday pregame peak hour) to 102 (in the weekday midday peak hour). Truck trips would range from none (in the weekday pregame PM peak hour) to 42 (in the weekday AM peak hour).

CHANGES TO THE STUDY AREA STREET NETWORK

As discussed previously, the 2006 FEIS proposed a range of street network changes and improvements associated with the development of Phase I of the Project, many of which have already been implemented in conjunction with development of the Barclays Center Arena. An additional street network change that is reflected in the 2006 FEIS and that is expected to be implemented with full build-out of Phase II under the Extended Build-Out Scenario is the widening of the north side of Pacific Street by three feet between 6th and Carlton Avenues.

TRIP ASSIGNMENT

Vehicle trips generated by Phase II residential and retail development were assigned based on the same methodology as discussed above for Phase I development. Residential assignment patterns were based on data from the 2006–2010 five-year American Community Survey (ACS), while all retail trips associated with Phase II were assumed to be Brooklyn-based, as the Project's retail component is expected to consist primarily of local retail uses serving the surrounding worker and residential populations. Auto and taxi trips from Phase II development were then assigned to the primary corridors providing access to and from the project site based on their origin or destination as well as the most direct routes to major access points such as the BQE and the Brooklyn and Manhattan bridges. Truck trips en route to and from the site were assigned to designated local and through truck routes in Downtown Brooklyn. These include Atlantic, Flatbush, 3rd and 4th Avenues, and portions of 5th Avenue and Bergen Street. The assignments of auto, taxi, and truck trips within Downtown Brooklyn take into account changes to the study area traffic network that are expected to occur in the Future Without Phase II. Auto trips destined to or from Phase II residential and retail uses were assigned to the on-site parking garages that would be provided as part of the Project. As discussed later in this chapter, it is anticipated that sufficient capacity would be provided in these facilities to accommodate all non-Arena demand from both Phase I and Phase II.

Figures showing the assignment of Phase II project increment vehicle trips to the study area street system in each peak hour are provided in **Appendix C**. Trips from Phase II development were applied to the Future Without Phase II traffic networks to develop the traffic networks for the 2035 Future With Phase II condition. Figures showing the total traffic volumes at study area intersections in each analyzed peak hour in the Future With Phase II are also provided in **Appendix C**.

INTERSECTION CAPACITY ANALYSIS

Table 4D-23 shows a summary comparison of intersection levels of service for the Future Without Phase II condition and the Future With Phase II condition, and an overview of the

number of significant adverse traffic impacts that would be generated in the Future with Phase II based on the 2012 *CEQR Technical Manual* criteria discussed previously in Section E, "Transportation Analyses Methodologies." As shown in **Table 4D-23**, in the weekday AM peak hour, the number of intersections that are projected to operate at overall LOS E or F would total 35, versus 30 in the Future Without Phase II. A total of 37 of the 71 analyzed intersections would have significant adverse impacts in the AM peak hour. The number of lane groups projected to operate at LOS E or F in the AM would total 89 versus 83 in the Future Without Phase II.

Table 4D-23
Intersection Level of Service Summary Comparison
Future With Phase II vs. Future Without Phase II

	Future Without Phase II					Future With Phase II				
	AM	MD	PM	Pregame	Sat Pregame	AM	MD	PM	Pregame	Sat Pregame
Overall LOS A/B/C	30	44	33	36	27	26	42	27	34	21
Overall LOS D	11	13	11	20	10	10	13	13	18	12
Overall LOS E	19	10	14	11	16	19	10	12	13	15
Overall LOS F	11	4	13	4	18	16	6	19	6	23
Total number of intersections with significant impacts	----	----	----	----	----	37	20	38	27	47
No. of lane groups at LOS E or F of the approximately 305 analyzed	83	53	98	59	95	89	58	103	63	106

In the weekday midday peak hour, 16 intersections are projected to operate at overall LOS E or F in the Future With Phase II versus 14 in the Future Without Phase II. A total of 20 of the 71 analyzed intersections would have significant adverse impacts in the weekday midday. The number of lane groups projected to operate at LOS E or F in the midday would total 58 in the Future With Phase II, compared to 53 in the Future Without Phase II.

In the weekday PM peak hour, 31 intersections are projected to operate at overall LOS E or F in the Future With Phase II versus 27 in the Future Without Phase II. A total of 38 of the 71 analyzed intersections would have significant adverse impacts in the weekday PM. The number of lane groups projected to operate at LOS E or F in the PM would total 103 in the Future With Phase II, compared to 98 in the Future Without Phase II.

In the weekday pregame peak hour, 19 intersections are projected to operate at overall LOS E or F in the Future With Phase II versus 15 in the Future Without Phase II. A total of 27 of the 71 analyzed intersections would have significant adverse impacts in the weekday pregame peak hour. The number of lane groups projected to operate at LOS E or F in the weekday pregame peak hour would total 63 in the Future With Phase II, compared to 59 in the Future Without Phase II.

Lastly, in the Saturday pregame peak hour, 38 intersections are projected to operate at overall LOS E or F with the Proposed Action compared to 34 in the Future Without Phase II. A total of 47 intersections would have significant adverse impacts. The number of lane groups projected to operate at LOS E or F would total 106, compared to 95 in the Future Without Phase II.

V/c ratios, delays and levels of service for those individual lane groups that would be significantly adversely impacted in each peak hour in the Future With Phase II are shown in **Table 4D-24**. As shown in **Table 4D-24,** there would be a total of 52 significant adverse

impacts at 37 intersections in the weekday AM peak hour, 25 at 20 intersections in the midday, 52 at 38 intersections in the PM peak hour, 38 at 28 intersections in the weekday pregame peak hour and 69 at 47 intersections in the Saturday pregame peak hour.

Intersections with one or more lane groups operating over capacity (i.e., a v/c ratio of 1.0 or greater) would total 50, 28, 48 and 38 in the weekday AM, midday, PM and pregame peak hours, respectively compared to 47, 27, 47 and 36 during these periods, respectively in the Future Without Phase II. In the Saturday pregame peak hour there would be a total of 47 intersections with one or more movements operating over capacity compared to 45 in the Future Without Phase II.

The following provides a summary of impacted locations by corridor. The potential for queuing and spill-back at impacted locations along the principal arterials serving the project site (Flatbush, Atlantic, 4th and Vanderbilt Avenues) is also discussed. Potential measures to mitigate significant adverse traffic impacts resulting from Phase II under the Extended Build-Out Scenario are discussed in Chapter 5, "Mitigation." V/c ratios, delays and levels of service for all lane groups at all analyzed intersections in all periods in the Future With Phase II condition are provided in **Table C-4** in **Appendix C**.

Flatbush Avenue

As shown in **Table 4D-24**, a total of 12 intersections out of the 17 analyzed along the Flatbush Avenue corridor would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. Impacts would occur on northbound and/or southbound Flatbush Avenue in all peak hours, and at all of these locations with the exception of Atlantic Avenue and Dean and Bergen Streets. Cross-streets with impacted movements at Flatbush Avenue in one or more peak hours would include westbound Tillary Street, westbound DeKalb Avenue, westbound Atlantic Avenue, eastbound Dean Street, and westbound Bergen Street.

Atlantic Avenue

A total of 17 intersections out of 21 analyzed along the Atlantic Avenue corridor would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on eastbound and/or westbound Atlantic Avenue at all of these locations and in all peak hours. Cross-streets with impacted movements at Atlantic Avenue in one or more peak hours would include southbound Boerum Place, northbound 6th Avenue, southbound S. Portland Avenue, northbound Carlton Avenue and northbound and southbound Vanderbilt Avenue.

Table 4D-24
Lane Groups With Significant Adverse Impacts in the Future With Phase II

		WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
	LANE GROUP	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
1. Tillary Street (E-W) @	WB - L	1.37	217.3	F	1.34	209.3	F	1.32	196.4	F	1.24	163.2	F	1.40	237.4	F
Flatbush Avenue Extension (N-S)	SB - T							1.13	112.9	F						
2. Myrtle Avenue (E-W) @	NB - TR	1.20	122.9	F	1.04	62.5	E							1.21	126.0	F
Gold St-Flatbush Ave Extension (N-S)																
3. Willoughby Street (E-W) @	NB - T															
Flatbush Avenue Extension (N-S)	SB - TR							1.12	86.6	F				1.12	87.4	F
4. Dekalb Avenue(E-W) @	WB - LTR	1.26	158.0	F												
Flatbush Avenue Extension (N-S)	NB - T	1.04	59.5	E										1.12	87.7	F
	SB - TR							1.14	100.1	F				1.11	83.2	F
5. Fulton Street (E-W) @	NB - T	1.07	77.9	E										1.42	232.2	F
Flatbush Ave-Flatbush Ave Ext (N-S)																
7. Lafayette Ave-Schermerhorn Street (EB) @	NB - TR	1.20	121.1	F	1.20	124.4	F	1.18	117.4	F				1.29	165.3	F
Flatbush Avenue Ext (N-S)																
8. 4th Avenue (WB) @	NB - T	1.29	162.9	F										1.23	141.5	F
Flatbush Avenue (N-S)	SB-TR							1.26	151.2	F	1.05	61.8	E	1.15	106.4	F
9. Atlantic Avenue (E-W) @	WB - TR													1.13	103.1	F
Flatbush Avenue (N-S)	WB - R	0.87	58.0	E	1.20	150.8	F	1.24	168.9	F	0.99	82.6	F	1.46	253.4	F
11. 5th Avenue (EB) @	SB - TR							1.12	89.1	F				1.06	65.1	E
Flatbush Avenue (N-S)																
12. Dean Street (EB) @	EB - T							0.97	49.5	D				1.21	134.2	F
Flatbush Avenue (N-S)																
13. Bergen Street (WB) @	WB - LT	1.05	73.7	E				0.95	52.2	D				1.01	67.5	E
Flatbush Avenue (N-S)																
17. Sterling Place (WB) @	NB - T													1.05	61.1	E
Flatbush Avenue (N-S)																
18. Tillary Street (E-W) @	WB - L							1.58	308.6	F				1.22	161.3	F
Adams St -Brooklyn Br (N-S)	NB - T (ML)	1.16	114.9	F				1.10	91.0	F				1.05	78.7	E
19. Myrtle Avenue (E-W) @	NB - LTR	1.38	208.4	F	1.18	131.1	F	1.54	280.3	F	1.59	304.4	F	1.99	480.8	F
Vanderbilt Avenue (N-S)	SB - LTR	1.40	225.4	F	1.02	81.6	F	1.55	282.6	F	1.18	133.6	F	1.91	451.6	F
20. Dekalb Avenue (WB) @	NB - LT	1.45	223.1	F	1.36	187.4	F	1.63	305.4	F	1.56	274.4	F	1.96	450.5	F
Vanderbilt Avenue (N-S)	SB - TR							1.19	109.2	F	1.01	53.0	D	1.11	89.3	F
22. Fulton Street (E-W) @	NB - LTR	1.14	98.1	F												
Carlton Avenue (NB)																
23. Fulton Street (E-W) @	NB - L	1.33	181.9	F							1.53	299.4	F	1.81	424.6	F
Vanderbilt Avenue (N-S)	NB - TR	1.16	101.8	F										0.93	46.8	D
	SB - TR							1.20	121.4	F	1.14	94.5	F	1.24	148.3	F
24. Livingston Street (E-W) @	SB - L													1.02	93.9	F
Boerum Place (N-S)																
25. Schermerhorn Street (WB) @	NB - L							1.72	397.9	F	0.76	73.6	E			
Boerum Place (N-S)																
26. State Street (EB) @	SB - LT							1.25	139.9	F	1.12	83.6	F			
Boerum Place (N-S)																
27. Atlantic Avenue (E-W) @	EB - LT													1.21	138.2	F
Hicks Street (NB)																
28. Atlantic Avenue (E-W) @	WB - LT				1.23	132.0	F							0.99	48.7	D
Henry Street (SB)																
29. Atlantic Avenue (E-W) @	EB - LT	1.14	111.9	F	1.21	130.5	F	1.09	91.7	F				1.16	110.8	F
Clinton Street (NB)																
30. Atlantic Avenue (E-W) @	EB - L	1.03	51.9	D										1.25	145.2	F
Boerum Place (SB)	EB - TR	1.36	207.6	F	1.32	183.4	F	1.26	162.1	F	1.24	155.6	F	1.56	293.1	F
	WB - LT	1.18	129.8	F	1.42	228.7	F	1.21	148.0	F	1.07	95.1	F	1.37	214.2	F
	WB - R	1.17	94.9	F										1.28	147.0	F
	SB - L										0.99	50.0	D			
31. Atlantic Avenue (E-W) @	EB - LT	1.65	322.7	F	1.30	165.5	F							1.88	422.0	F
Smith Street (NB)	WB - TR	1.21	122.2	F	1.14	91.5	F									
33. Atlantic Avenue (E-W) @	EB - T										1.02	46.5	D			
Bond Street (NB)	WB - TR	1.19	111.3	F										1.04	46.8	D
34. Atlantic Avenue (E-W) @	WB - LT	1.36	193.5	F	1.12	79.6	E	1.32	173.1	F	1.24	139.5	F	1.58	287.5	F
Nevins Street (SB)																
36. Atlantic Avenue (E-W) @	EB - T							1.25	155.0	F	1.06	76.5	E	1.16	116.3	F
4th Avenue(N-S)																
37. Atlantic Avenue (E-W) @	WB - TR													1.20	131.1	F
Fort Greene Place (SB)																
38. Atlantic Avenue (E-W) @	EB - TR				0.97	46.9	D	1.00	51.6	D						
6th Ave-South Portland Ave (N-S)	NB - TR	1.14	124.3	F												
	SB - L	1.32	246.8	F				1.27	181.1	F	1.07	107.5	F	0.79	62.2	E
40. Atlantic Avenue (E-W) @	EB - L	1.67	379.9	F										1.28	217.6	F
Carlton Avenue (NB)	WB - L							1.35	235.1	F				0.84	62.1	E
	NB - LTR	1.72	370.4	F				1.19	147.4	F	0.98	78.1	E	1.23	156.5	F
41. Atlantic Avenue (E-W) @	EB - L				0.84	73.6	E	0.81	53.9	D	0.87	78.2	E	1.17	177.4	F
Clermont Avenue (SB)																

Table 4D-24 (continued)
Lane Groups With Significant Adverse Impacts in the Future With Phase II

		WEEKDAY AM PEAK HOUR			WEEKDAY MD PEAK HOUR			WEEKDAY PM PEAK HOUR			WEEKDAY PREGAME PEAK HOUR			SATURDAY PREGAME PEAK HOUR		
	LANE GROUP	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS	V/C RATIO	Delay (sec.)	LOS
42. Atlantic Avenue (E-W) @	EB - R				0.74	49.6	D	1.04	83.6	F				0.82	50.2	D
Vanderbilt Avenue (N-S)	WB - L							1.14	135.7	F	1.12	118.0	F	0.98	76.2	E
	WB - TR	1.23	134.3	F	1.27	151.9	F							1.18	115.8	F
	NB - L	1.14	129.1	F				1.00	94.5	F	0.82	52.7	D	0.87	56.2	E
	NB - T	1.14	112.0	F												
	SB - TR							1.18	126.9	F	0.99	59.0	E	0.90	49.4	D
43. Atlantic Avenue (E-W) @	WB - TR	1.07	61.7	E												
Clinton Avenue (SB)																
45. Atlantic Avenue (E-W) @	EB - TR							1.19	118.5	F						
Washington Ave-Underhill Ave (N-S)																
46. Atlantic Avenue (E-W) @	WB - L	0.87	48.4	D										0.82	65.8	E
Grand Avenue (SB)																
50. Pacific Street (WB) @	SB - LT							1.15	87.1	F						
Vanderbilt Avenue (N-S)																
51. Dean Street (EB) @	NB - TR							1.19	122.0	F				1.12	93.6	F
3rd Avenue Avenue (N-S)																
52. Dean Street (EB) @	EB - LTR										1.13	110.1	F			
4th Avenue (N-S)	NB - TR	1.10	89.5	F												
53. Dean Street (EB) @	EB - LTR	1.21	166.9	F	1.24	182.7	F	1.26	184.6	F	1.15	131.3	F	1.80	418.8	F
5th Avenue (N-S)	NB - TR	1.20	151.9	F	0.99	85.0	F	1.13	128.7	F	1.17	141.5	F	1.43	246.7	F
54. Dean Street (EB) @	EB - L	1.53	279.3	F	1.22	154.8	F	0.97	64.6	E	0.82	47.1	D	1.34	196.5	F
6th Avenue (N-S)	EB - TR							1.07	75.7	E				1.52	262.8	F
55. Dean Street (EB) @	EB-LT							1.25	142.6	F	1.03	64.2	E	1.56	276.5	F
Carlton Avenue (NB)																
56. Dean Street (EB) @	EB - TR	1.45	248.8	F				1.17	120.5	F	0.89	53.8	D	1.28	176.2	F
Vanderbilt Avenue (N-S)	NB - TR	1.16	90.8	F												
58. Dean Street (EB) @	EB - LTR	0.95	48.9	D										0.96	50.5	D
Washington Avenue (N-S)																
59. Bergen Street (WB) @	WB - LTR	1.11	85.2	F				1.60	311.2	F	1.28	174.3	F	1.27	159.3	F
4th Avenue (N-S)																
60. Bergen Street (WB) @	WB - TR	1.48	265.5	F	1.18	147.0	F	1.34	205.9	F	1.24	167.2	F	1.63	334.7	F
5th Avenue (N-S)																
61. Bergen Street (WB) @	WB - TR	1.40	203.0	F	1.04	65.9	E	1.21	126.2	F	1.26	147.0	F	1.26	145.8	F
Carlton Avenue (NB)																
62. Bergen Street (WB) @	WB - TR	1.25	154.4	F	1.06	90.2	F	1.03	81.4	F				1.26	162.5	F
Vanderbilt Avenue (N-S)	SB - TR	1.28	149.1	F				1.18	103.3	F	1.13	84.3	F	1.29	155.0	F
63. Saint Marks Place (EB) @	NB - TR	1.10	85.4	F												
4th Avenue (N-S)	SB - L							0.73	51.8	D				0.66	55.9	E
65. Saint Marks Avenue (EB) @	NB - TR	1.10	65.0	E												
Vanderbilt Avenue (N-S)	SB - T							1.11	72.2	E						
66. Prospect Place (WB) @	NB - T	1.10	66.0	E												
Vanderbilt Avenue (N-S)	SB - TR	1.15	90.8	F				1.13	75.1	E	1.11	71.9	E	1.16	98.1	F
68. Union Street (E-W) @	NB - LTR													1.10	80.4	F
5th Avenue (N-S)	SB - LTR													1.11	82.7	F
69. Eastern Parkway (E-W) @	NB - LTR	1.22	141.7	F	1.27	154.6	F	1.51	272.0	F	1.35	201.1	F	1.62	311.4	F
Washington Avenue (N-S)	SB - TR							1.21	130.8	F	1.14	103.2	F			
69. Eastern Parkway (E-W) @	NB - LTR										1.32	179.0	F			
Washington Avenue (N-S)	SB - TR										1.14	95.2	F			
(90s Weekday Pregame Cycle)																
70. Bergen Street (WB) @	WB - LTR	1.13	79.5	E										1.12	87.8	F
6th Avenue (N-S)																
71. Union Street (E-W) @	NB - TR													1.07	75.7	E
4th Avenue (N-S)	SB - TR													0.98	52.7	E

Notes: This table has been revised for the FSEIS.

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DefL-Analysis considers a defacto left lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

Lane groups shown are those considered significantly adversely impacted under *CEQR Technical Manual* guidelines.

4th Avenue

A total of six intersections out of the seven analyzed along the 4th Avenue corridor would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound 4th Avenue in one or more peak hours at Dean Street, St. Mark's Place and Union Street. Cross-streets with impacted movements at 4th Avenue in one or more peak hours would include northbound and southbound Flatbush Avenue, eastbound Atlantic Avenue, eastbound Dean Street and westbound Bergen Street.

5th Avenue

All five of the analyzed intersections along the 5th Avenue/Ft. Green Place corridor would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound 5th Avenue at Dean Street in all periods and Union Street in the Saturday pregame peak hour. Cross-streets with impacted movements at 5th Avenue in one or more peak hours would include southbound Flatbush Avenue, westbound Atlantic Avenue, eastbound Dean Street and westbound Bergen Street.

6th Avenue/S. Portland Avenue

A total of three intersections out of the six analyzed along the 6th Avenue/S. Portland Avenue corridor would be significantly adversely impacted in one or more peak hours in Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound 6th Avenue/S. Portland Avenue at Atlantic Avenue in all but the weekday midday peak hour. Cross-streets with impacted movements at 6th Avenue in one or more peak hours would include eastbound Atlantic Avenue, eastbound Dean Street and westbound Bergen Street.

Carlton Avenue

A total of four of the five analyzed intersections along the Carlton Avenue corridor would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound Carlton Avenue at Fulton Street in the AM peak hour and at Atlantic Avenue in all but the weekday midday peak hour. Cross-streets with impacted movements at Carlton Avenue in one or more peak hours would include eastbound and westbound Atlantic Avenue, eastbound Dean Street and westbound Bergen Street.

Vanderbilt Avenue

Significant adverse impacts are expected in one or more peak hours at nine of the ten analyzed intersections along the Vanderbilt Avenue corridor in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound Vanderbilt Avenue at all of these locations and in all peak hours. Cross-streets with impacted movements at Vanderbilt Avenue in one or more peak hours would include eastbound and westbound Atlantic Avenue, eastbound Dean Street and westbound Bergen Street.

Washington Avenue/Underhill Avenue

Significant adverse impacts are expected in one or more peak hours at all three of the analyzed intersections along the Washington Avenue/Underhill Avenue corridors in the Future With

Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound Washington Avenue at Eastern Parkway in all peak hours. Cross-streets with impacted movements in one or more peak hours include eastbound Atlantic Avenue (at Washington Avenue/Underhill Avenue) and eastbound Dean Street (at Washington Avenue).

Dean Street/Bergen Street

As discussed previously, eastbound Dean Street and westbound Bergen Street function as an east-west couplet along the southern boundary of the project site. As shown in **Table 4D-24**, a total of eight of the nine analyzed intersections along eastbound Dean Street would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. Impacts would occur on eastbound Dean Street at all but one of these locations (3rd Avenue) and in all peak hours. Cross-streets with impacted movements in one or more peak hours would include northbound 3rd, 4th, 5th and Vanderbilt Avenues.

All six of the analyzed intersections along westbound Bergen Street would be significantly adversely impacted in one or more peak hours in the Future With Phase II under the Extended Build-Out Scenario. Impacts would occur on westbound Bergen Street at all of these locations and in all peak hours. The only cross-street with an impacted movement would be southbound Vanderbilt Avenue (in all but the weekday midday peak hour).

Boerum Place

Significant adverse impacts are expected in one or more peak hours at all four of the analyzed intersections along the Boerum Place corridor in the Future With Phase II under the Extended Build-Out Scenario. As shown in **Table 4D-24**, impacts would occur on northbound and/or southbound Boerum Place at all of these locations and in all but the weekday AM and midday peak hours. The only cross-street with impacted movements at Boerum Place would be eastbound and westbound Atlantic Avenue (in all periods).

Other Corridors

As shown in **Table 4D-24**, significant adverse impacts are expected to the northbound mainline through movement on Adams Street at Tillary Street in the weekday AM and PM and Saturday pregame peak hours, and on westbound Tillary Street in the PM and Saturday pregame peak hours.

Potential Queuing and Spillback

As discussed previously, the 2006 FEIS acknowledged the potential for queuing and spillback at locations operating substantially over capacity. As there would be similar potential in the Future with Phase II under the Extended Build-Out Scenario, this SEIS also examines this issue with respect to the principal arterials serving the project site (Flatbush, Atlantic, 4th and Vanderbilt Avenues).

The northbound and/or southbound through movements along Flatbush Avenue are expected to operate substantially over capacity at a number of intersections in one or more peak hours in the Future With Phase II, and therefore may experience queuing that could potentially spill back to upstream intersections. These locations include Fulton Street and Myrtle, Lafayette, 4th, Atlantic and 7th Avenues. All but one of these intersections (Myrtle Avenue) were also identified as potentially experiencing queuing and spillback along Flatbush Avenue in the Future Without Phase II condition.

As discussed previously, in the Future Without Phase II there would be a total of five intersections where the through movements on eastbound and/or westbound Atlantic Avenue are expected to operate substantially over capacity in one or more peak hours and therefore potentially experience queuing and spill back. In the Future With Phase II there would be a total of nine such intersections. These would include the intersections at Boerum Place, Ft. Greene Place, Vanderbilt and 4th Avenues, and Hicks, Henry, Clinton, Smith and Nevins Streets.

There would be no intersections where the through movements on northbound and/or southbound 4th Avenue are expected to operate substantially over capacity in one or more peak hours and therefore potentially experience queuing and spill back. This would be unchanged from conditions in the Future Without Phase II.

Lastly, as discussed above, in the Future Without Phase II there would be a total of two intersections where the through movements on northbound and/or southbound Vanderbilt Avenue are expected to operate substantially over capacity in one or more peak hours and therefore potentially experience queuing and spill back (Myrtle Avenue and DeKalb Avenue). In the Future With Phase II there would be a total of four such intersections. These would include the intersections at Myrtle and DeKalb Avenues and at Fulton and Bergen Streets.

BICYCLE FACILITIES

In the Future With Phase II, it is anticipated that the residential, retail and public school uses that would be built on the Project Site would likely generate some new trips by bicycle in the weekday peak commuter periods, as well as recreational and discretionary trips during other weekday periods and on weekends. The Project would also generate new vehicular traffic along many study area roadways, including those used by bicyclists. As part of Phase II, bike paths would be provided through portions of the Project's open space to improve connections between existing and planned north-south and east-west bike lanes. As shown in Figure 1-4 in Chapter 1, "Project Description," a southbound off-street bicycle path would be provided from the Atlantic Avenue/Cumberland Street intersection to Pacific Street. Southbound bicyclists would then head east on Pacific Street to its intersection with Carlton Avenue where a new off-street bike path would continue east through the Project's open space before turning south midblock to connect with the eastbound bike lane along Dean Street. These new off-street bike path segments would be implemented in conjunction with the Phase II development on Blocks 1120, 1121, and 1129.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The traffic analysis in the 2006 FEIS included a total of 93 intersections of which 70 are also analyzed in this SEIS. **Table 4D-25** compares the findings of this SEIS traffic analysis with those of the 2006 FEIS. As shown in **Table 4D-25**, 37 of the 71 intersections analyzed for this SEIS would be significantly adversely impacted in the AM peak hour by development of Phase II under the Extended Build-Out Scenario compared to 46 impacted intersections out of the 70 analyzed in the 2006 FEIS.[1] There would be 20 impacted intersections in the midday peak hour (27 in the FEIS), 38 in the PM peak hour (44 in the FEIS), 27 in the weekday pregame peak hour (39 in the FEIS) and 47 in the Saturday pregame peak hour (41 in the FEIS). This SEIS analysis shows a greater number of intersections operating at LOS E or F under the Extended Build-Out

[1] The intersection of Flatbush Avenue and Pacific Street was uncontrolled in 2006 and was therefore not included as an analysis location in the 2006 FEIS. This intersection was subsequently signalized as part of the Project, and is therefore included in the SEIS analysis.

Scenario than forecast in the 2006 FEIS, with a total of 35, 16, 31, 19 and 38 such intersections (out of 71) during the weekday AM, midday, PM and pregame and Saturday pregame peak hours, respectively, compared to the FEIS forecast of 30, 5, 26, 19 and 23 (out of 70), respectively, with full build-out of the Project in 2016. The SEIS also shows a greater number lane groups operating at LOS E or F in each peak hour under the Extended Build-Out Scenario than forecast in the 2006 FEIS with a total of 89, 58, 103, 63 and 106 (out of approximately 305) such lane groups during the weekday AM, midday, PM and pregame and Saturday pregame peak hours, respectively, compared to the FEIS forecast of 79, 38, 78, 55 and 74, respectively, with full build-out of the Project in 2016.

Table 4D-25
Intersection Level of Service Summary Comparison
FEIS Full Build-Out vs. SEIS Future With Phase II

	FEIS 2016 Full Build-Out					SEIS 2035 Future With Phase II				
	AM	MD	PM	Pregame	SAT Pregame	AM	MD	PM	Pregame	Sat Pregame
Overall LOS A/B/C	27	49	30	38	34	26	42	27	34	21
Overall LOS D	12	15	13	12	12	10	13	13	18	12
Overall LOS E	14	2	16	9	7	19	10	12	13	15
Overall LOS F	16	3	10	10	16	16	6	19	6	23
Total number of intersections with significant impacts	46	27	44	39	41	37	20	38	27	47
No. of lane groups at LOS E or F of the approximately 305 analyzed	79	38	78	55	74	89	58	103	63	106

The results of the analysis of traffic conditions and potential impacts in this SEIS are not directly comparable to the findings of the 2006 FEIS as the analysis in this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), and as discussed in **Section D, "Level I and Level II Screening Assessments"** and **Section E, "Transportation Analyses Methodologies,"** the analyses also differ in the following respects:

1. Travel demand factors have been updated for this SEIS to reflect 2012 *CEQR Technical Manual* guidelines, current ACS data, and recent guidance from NYCDOT.
2. Background conditions for the traffic analysis in this SEIS are based on recent (2013) traffic counts, physical inventories and field observations. They therefore reflect updated traffic volumes, and geometric, operational and regulatory changes unrelated to the Project that were implemented subsequent to 2006, including some that were not known at the time the FEIS was prepared. These changes include street closures, installation of bicycle lanes, and changes in street direction, lane striping, signal timing, and curbside parking regulations. The background conditions for this SEIS traffic analysis also reflect the implementation of some of the traffic mitigation measures associated with development of Phase I of the Project, including a major reconfiguration of the Atlantic Avenue/Flatbush Avenue/4th Avenue intersection.

3. The SEIS traffic analysis reflects updated projections of future development in proximity to the project site, and lower background growth rates assumed for future years (i.e., rates of 0.25 percent/year for years 1-5 and 0.125 percent/year for subsequent years compared to the rate of 0.5 percent/year for all years that was used for the 2006 FEIS).
4. 2012 *CEQR Technical Manual* traffic impact guidelines used for this SEIS analysis include a different impact threshold for lane groups operating at LOS F than were specified in the 2001 *CEQR Technical Manual* used for the 2006 FEIS.
5. Peak hour Arena traffic (reflected in the background condition in this SEIS) is lower than projected in the 2006 FEIS as data from surveys of Nets spectators at the Arena indicate a smaller auto mode share, a more dispersed temporal distribution and a higher vehicle occupancy than was assumed for the FEIS, and as the as-built capacity of the Arena is also somewhat smaller (17,700 seats versus 18,000 seats).
6. The development program for the Project in this SEIS differs from the one reflected in the 2006 FEIS, with less office space (in the commercial mixed-use variation), a greater number of dwelling units, and a proposed public school in Building 15 that was not previously included.

The differences between the findings of this SEIS and the 2006 FEIS with respect to traffic conditions can be attributed to differences in the Project development program, background conditions, travel demand factors and impact criteria, and the fact that this SEIS examines only the incremental effects of Phase II of the Project with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the effects of Phase I and Phase II combined. For example, the smaller numbers of intersections with significant adverse traffic impacts identified in this SEIS for the weekday peak hours compared to the 2006 FEIS are likely due in part to the fact that the SEIS assesses the effects of the incremental trips from only Phase II. The greater number of impacted intersections in the Saturday peak hour in this SEIS is likely due in part to the greater number of Phase II residential units assumed for this SEIS as well as substantially higher Saturday trip rates for office and residential uses specified under 2012 *CEQR Technical Manual* guidelines compared to those used for the 2006 FEIS. The differences between the findings of this SEIS and the 2006 FEIS with respect to traffic conditions are generally related to these variables and are not directly attributable to the delay in the Project under the Extended Build-Out Scenario.

G. TRANSIT

SUBWAY SERVICE

EXISTING CONDITIONS

The area of the project site is served by one of the densest concentrations of subway lines in New York City. Trips en route to and from Phase II development are expected to use a total of seven subway stations served by 11 subway routes—the Nos. 2, 3, 4, 5 and the B, C, D, G, N, Q, and R. As a major new on-site street-level entrance and other internal circulation improvements were completed at the Atlantic Avenue – Barclays Center subway station in 2012 as part of Phase I of the Project, the large majority of project-generated subway trips are expected to utilize the three subway stations comprising this complex. These include the stations formerly referred to as the Atlantic Avenue IRT (2, 3, 4, 5) station, the Atlantic Avenue BMT (B, Q) station and the Pacific Street BMT (D, M, N, R) station. Long Island Rail Road commuter rail

service to Queens and Long Island is also available at this complex, but is not directly accessible via the new on-site entrance without paying a subway fare.

As shown in **Table 4D-10**, some Phase II subway trips are also expected to occur at other subway stations that are either served by trains not accessible at the Atlantic Avenue – Barclays Center station or that would also provide reasonably convenient access to the project site. For example, some trips by Nos. 2 and 3 trains would likely use the Bergen Street subway station, given its proximity to the proposed buildings along 6th Avenue and on blocks to the east. The Fulton Street (G), the Lafayette Avenue (C), and the Clinton-Washington Avenues (C) subway stations are also expected to be used by Phase II trips as neither C train or G train service is available at Atlantic Avenue – Barclays Center. **Figure 4D-2** shows the location of these subway stations in relation to the project site.

As discussed previously in Section D, "Level 1 and Level 2 Screening Assessments," the analysis of subway station conditions in this SEIS focuses on the Atlantic Avenue – Barclays Center station and the Bergen Street station as new subway trips generated by Phase II development are expected to exceed the 200-trip *CEQR Technical Manual* analysis threshold in one or more peak hours at these stations. The physical characteristics and the services provided at each station are described below, along with the results of the analysis of 2013 Existing conditions at each analyzed station element (stairs, ramps, escalators and fare arrays) during the weekday 8-9 AM, 5-6 PM, and 7-8 PM peak hours. Also provided is an analysis of line haul conditions on each of the subway routes serving the project site.

Table 4D-26 shows the average weekday entering turnstile counts at the Atlantic Avenue – Barclays Center subway station and the Bergen Street subway station for the years 2010 through 2012, as well as the 2012 ranking of each facility based on average weekday ridership relative to all 421 subway stations/station complexes system-wide that were open in 2012.

Table 4D-26
Average Weekday Entering Turnstile Counts

Subway Station	Rank	2010	2011	2012	Percent Change 2010-2012
Atlantic Avenue – Barclays Center (2,3,4,5,B,D,N,Q,R)	30	32,497	33,160	35,670	+9.8%
Bergen Street (2,3)	309	4,127	4,344	4,472	+8.4%

Notes: Ranking out of 421 subway stations system-wide by 2012 average weekday ridership.
Source: www.mta.info.

Atlantic Avenue – Barclays Center Subway Station

The Atlantic Avenue – Barclays Center subway station functions as a major interchange point for transfers between the LIRR and subway and bus services, as well as for transfers between subway lines. As shown in **Figure 4D-2**, it is located immediately adjacent to the project site at the intersection of Flatbush, Atlantic, and 4th Avenues. The complex is comprised of three separate stations—one on the Eastern Parkway Line (formerly known as the Atlantic Avenue IRT station) served by Nos. 2, 3, 4 and 5 trains, one on the Brighton Line (formerly the Atlantic Avenue BMT station) served by B and Q trains, and one on the 4th Avenue Line (formerly the Pacific Street BMT station) served by D, N and R trains. It also includes the LIRR's Atlantic Terminal.

The Eastern Parkway Line station is located beneath Flatbush Avenue and is comprised of two side platforms served by Nos. 2 and 3 trains, and a single island platform served by Nos. 4 and 5 trains. Stairs in the middle of each platform lead down to a central internal distribution corridor that traverses the length of the complex, connecting the mezzanine level of the 4th Avenue Line station to the mezzanine level of the Brighton Line station. It also passes under the platforms for the LIRR. Direct transfer is available between the platform for Manhattan-bound Nos. 2 and 3 trains and the adjacent LIRR concourse, which are at the same level. Access from the LIRR concourse to the subway platform is controlled by a 24-hour agent booth and fare array.

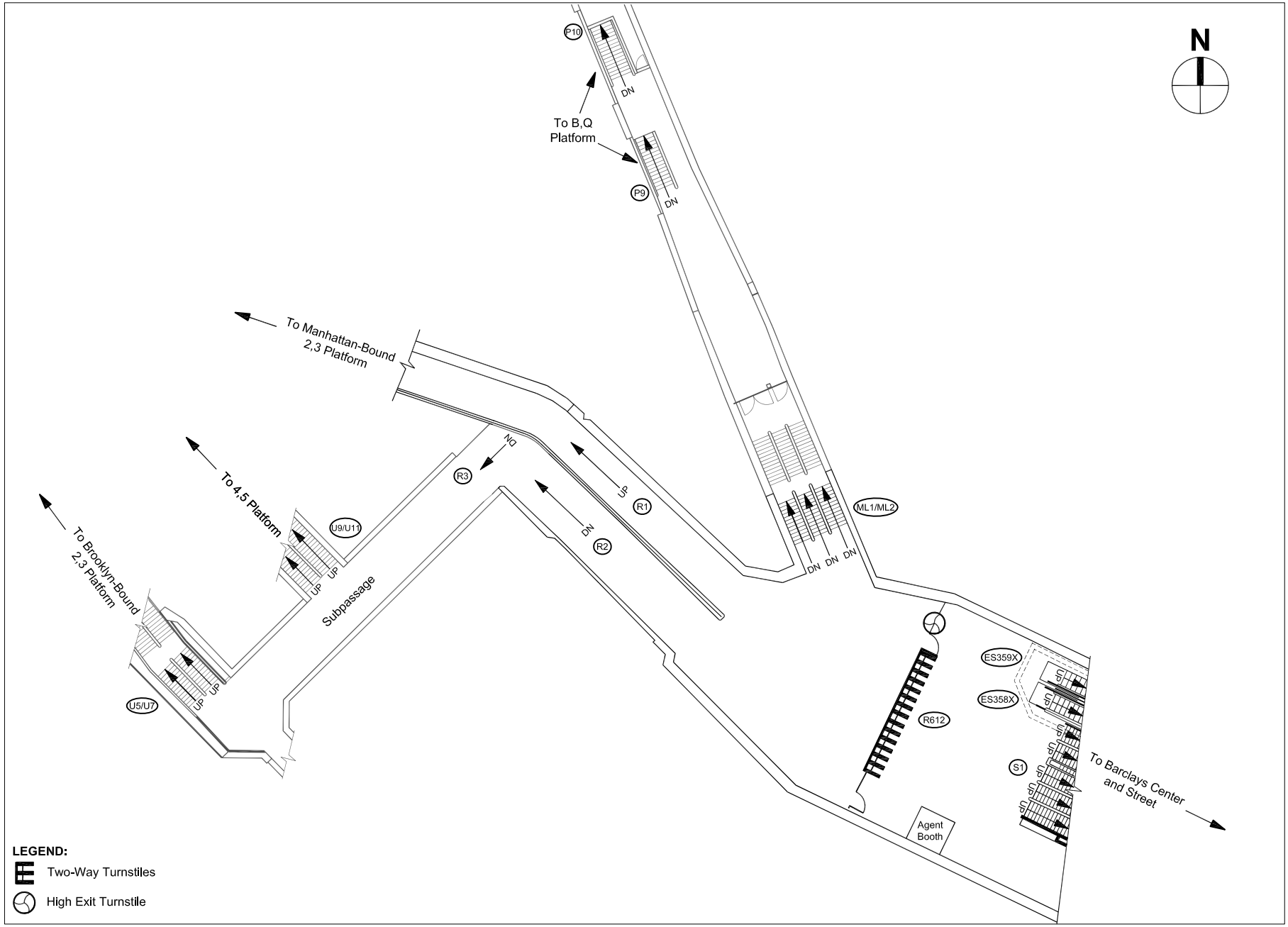
The Brighton Line station is located east of the Eastern Parkway Line station and consists of a single island platform served by B and Q trains. A discontinuous mezzanine level is located above the platform level. Access to the north end of the mezzanine is available from the LIRR concourse, a street-level entrance on Hanson Place, and an entrance within the Williamsburgh Savings Bank Building (also on Hanson Place). The center portion of the mezzanine provides a connection to the platform level from the east end of the central corridor, while two stairs at the south end of the mezzanine provide access to a new entrance at Barclays Center (described below).

At the western end of the central corridor is the mezzanine for the 4th Avenue Line station. This mezzanine, located beneath 4th Avenue south of Atlantic Avenue, includes a 24-hour agent booth and fare array. A set of three stairs provides access down to each of the station's two island platforms which are served by D, N and R trains. Access from street level is provided by a stair located at the northwest corner of 4th Avenue and Pacific Street, and a second stair and an elevator located near the northeast corner of 4th Avenue and Pacific Street. This street-level access is also used by subway riders en route to and from Nos. 2, 3, 4, and 5 and B and Q trains via the central corridor.

LIRR trains utilize a three-platform, six-track facility located immediately to the east of the Eastern Parkway Line station. A concourse at the north end of the LIRR platforms provides direct access to the platform for Manhattan-bound Nos. 2 and 3 subway trains, a street-level entrance at the southeast corner of Hanson Place and Flatbush Avenue, and the north end of the Brighton Line station mezzanine. There are also stairs on the LIRR platforms that provide direct access (via turnstiles) down to the central corridor.

In September 2012, a major new on-site subway entrance and other internal circulation improvements were opened at the southern end of the Atlantic Avenue – Barclays Center subway station in conjunction with the development of the Arena under Phase I of the Project. These improvements (shown in **Figure 4D-6**) included a new station entrance and control area at the western end of the Arena Block at the intersection of Flatbush and Atlantic Avenues, immediately adjacent to the Building 1 site and the Arena. At this entrance, an approximately 24-foot-wide stair (S1), two 36-inch escalators (E358X and E359X) and an elevator (for ADA access) lead down from street level to a control area (R612) with 14 two-way turnstiles, one high revolving exit and two service gates. (In the Future Without Phase II, it is anticipated that this entrance will be incorporated into a proposed Urban Room, a large publicly accessible, glass-enclosed atrium that will be located at the southeast corner of Flatbush and Atlantic Avenues beneath Building 1.) A part-time agent booth—staffed during events at the Arena—and four MetroCard vending machines (MVM) service this control area.

From the control area, a 10-foot-wide ramp (R1) provides access up to the platform for Manhattan-bound Nos. 2 and 3 trains. A second 14-foot-wide ramp (R2) provides access down to a 13-foot-wide subpassage (R3) beneath the south end of the Eastern Parkway Line platforms.



Analyzed Entrance and Internal Circulation Elements at the Atlantic Avenue-Barclays Center Subway Station

Figure 4D-6

An 11'-3"-wide stair (U9/U11) and a 10'-3"-wide stair (U5/U7) provide access up to the platform for Nos. 4 and 5 trains and the platform for Brooklyn-bound Nos. 2 and 3 trains, respectively. Subway riders using the new entrance en route to or from the 4th Avenue Line mezzanine utilize the subpassage and the platform for Brooklyn-bound Nos. 2 and 3 trains as a connecting walkway.

Access from control area R612 to the south end of the Brighton Line mezzanine is provided by a 13'-10"-wide stair (ML1/ML2). A five-foot-wide stair (P9) and a six-foot-wide stair (P10) connect this mezzanine to the platform level.

With an average weekday ridership of approximately 35,670 entering passengers in 2012, the Atlantic Avenue – Barclays Center subway station was ranked 30th in weekday ridership among the subway system's 421 stations. It should be noted, however, that as many users of this complex transfer between subway lines and do not pass through turnstiles, the ranking based on turnstile counts does not fully reflect the total usage within the complex.

As discussed previously, an Event Transportation Plan has been developed to help manage traffic, pedestrian and transit conditions at the Barclays Center Arena on days when a Nets game or other major event is scheduled. This plan, which is coordinated by a full-time Traffic Manager, includes adjustments to subway operations and service by NYCT to accommodate expected event-related ridership, including changes to station access and staffing at the Atlantic Avenue – Barclays Center subway station and the provision of additional subway train service.

The analysis of the Atlantic Avenue – Barclays Center subway station focuses on the pedestrian elements (stairs, escalators, ramps and fare arrays) comprising the new entrance and internal circulation improvements constructed in conjunction with development of the Arena and opened in September 2012, as these elements are expected to be used by the majority of Phase II demand. Some Phase II demand is also expected to utilize an entrance stair and fare array at the south end of the 4th Avenue Line station; however, these elements are not analyzed as the numbers of such Phase II trips in any one peak hour are expected to be less than the 200-trip *CEQR Technical Manual* threshold for detailed analysis. An analysis of the potential for crowding on the platforms at the Atlantic Avenue – Barclays Center subway station during the weekday 10-11 PM and Saturday 4-5 PM post-game peak hours (which was included in the 2006 FEIS) is also not included as these are not considered peak periods for Phase II residential, retail and public school demand.

Analyzed station elements at the Atlantic Avenue – Barclays Center subway station and their existing levels of service in the weekday 8-9 AM, 5-6 PM and 7-8 PM (pregame) peak hours are shown in **Tables 4D-27 through 4D-29**. As shown in **Tables 4D-27 through 4D-29**, all analyzed stairways, ramps, escalators and fare arrays currently operate at an acceptable LOS A or B in all three peak hours.

Bergen Street Subway Station

The Bergen Street subway station on the Eastern Parkway Line is located at the intersection of Flatbush Avenue and Bergen Street approximately 400 feet south of the project site. This subway station, served by Nos. 2 and 3 trains, consists of two side platforms each with an adjoining entrance/control area located on opposite sides of Flatbush Avenue. As shown in **Figure 4D-2**, the Manhattan-bound platform is reached via street stairs S2 and S4 located at the southeast and northeast corners of Flatbush Avenue and Bergen Street, respectively. The fare array for this platform (R-617) consists of a 24-hour agent booth and three turnstiles. Three stairs on the west side of Flatbush Avenue provide access to the Brooklyn-bound platform; S1

and S3 on the south side of Bergen Street and stair S5 on the north side of Bergen Street. The fare array serving the Brooklyn-bound platform (R-618) consists of three turnstiles, two HEETs, and two high revolving exit gates. Project-generated demand is expected to be concentrated at stair S4 (Manhattan-bound) and stair S5 (Brooklyn-bound), and the analysis of conditions at this subway station therefore focuses on these stairs as well as the adjoining fare arrays.

As shown in **Table 4D-26**, with an average weekday ridership of approximately 4,472 entering passengers in 2012, the Bergen Street subway station is ranked 309th in weekday ridership among the subway system's 421 subway stations. As shown in **Tables 4D-30 and 4D-31**, under Existing conditions, analyzed stairs S4 and S5 and both fare arrays currently operate at an acceptable LOS A in the weekday AM, PM and pregame peak periods.

Table 4D-27
Existing Stairway and Passageway Conditions at the Atlantic Avenue-Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Surging Factor	Friction Factor	V/C	LOS
S1	Entrance Stairway	8-9 AM	24.67	20.42	85	13	0.90	0.90	0.04	A
	@ Atlantic & Flatbush Aves	5-6 PM	24.67	20.42	32	44	0.90	0.90	0.03	A
		7-8 PM	24.67	20.42	32	325	0.90	0.90	0.14	A
ML1/ML2	Stairway to Brighton Line	8-9 AM	13.83	11.33	158	227	0.80	0.90	0.29	A
	Mezzanine	5-6 PM	13.83	11.33	151	137	0.80	0.90	0.21	A
		7-8 PM	13.83	11.33	63	266	0.80	0.90	0.26	A
P9	Brighton Line Platform Stair	8-9 AM	5.00	4.00	148	131	0.75	0.90	0.60	B
	(South)	5-6 PM	5.00	4.00	142	79	0.75	0.90	0.46	B
		7-8 PM	5.00	4.00	60	157	0.75	0.90	0.50	B
P10	Brighton Line Platform Stair	8-9 AM	6.00	5.00	10	96	0.75	0.90	0.20	A
	(North)	5-6 PM	6.00	5.00	9	58	0.75	0.90	0.13	A
		7-8 PM	6.00	5.00	3	109	0.75	1.00	0.20	A
U5/U7	Subpassage Stair to	8-9 AM	10.50	8.75	22	21	0.75	0.90	0.04	A
	Brooklyn-bound 2,3 Platform	5-6 PM	10.50	8.75	83	70	0.75	0.90	0.15	A
		7-8 PM	10.50	8.75	232	51	0.75	0.90	0.31	A
U9/U11	Subpassage Stair to 4,5	8-9 AM	11.25	7.50	99	169	0.75	0.90	0.30	A
	Platform	5-6 PM	11.25	7.50	137	96	0.75	0.90	0.28	A
		7-8 PM	11.25	7.50	358	70	0.75	0.90	0.54	B
R1	Ramp up to Manhattan-bound	8-9 AM	9.00	5.00	25	117	0.75	0.90	0.15	A
	2,3 Platform	5-6 PM	9.00	5.00	35	38	0.75	0.90	0.08	A
		7-8 PM	9.00	5.00	191	20	0.75	0.90	0.27	A
R2	Ramp Down to Subpassage	8-9 AM	14.00	12.00	190	121	0.80	0.90	0.14	A
		5-6 PM	14.00	12.00	166	220	0.80	0.90	0.18	A
		7-8 PM	14.00	12.00	121	590	0.80	0.90	0.35	A
R3	Subpassage Ramp to 4,5 &	8-9 AM	13.00	11.00	190	121	0.80	0.90	0.15	A
	Brooklyn-bound 2,3 Platforms	5-6 PM	13.00	11.00	166	220	0.80	0.90	0.20	A
		7-8 PM	13.00	11.00	121	590	0.80	0.90	0.39	A

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-28
Existing Escalator Conditions
at the Atlantic Avenue-Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Width (inches)	Feet Per Minute	Guideline 15-Minute Capacity	15-Minute Volumes	Surging Factor	V/C	LOS
ES358X	Down Escalator	8-9 AM	40	90	945	63	1.00	0.07	A
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	96	1.00	0.10	A
		7-8 PM	40	90	945	88	1.00	0.09	A
ES359X	Up Escalator	8-9 AM	40	90	945	69	0.90	0.08	A
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	127	0.90	0.15	A
		7-8 PM	40	90	945	547	0.90	0.64	B

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-29
Existing Fare Array Conditions
at the Atlantic Avenue-Barclays Center Subway Station

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C	LOS
			Enter	Exit				
	Barclays Center Fare Array	8-9 AM	148	82	0.90	0.90	0.04	A
R612	14 Two-way Turnstiles	5-6 PM	128	171	0.90	0.90	0.05	A
	1 High Exit Turnstile	7-8 PM	120	872	0.90	0.90	0.13	A

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
Volumes shown are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-30
Existing Stairway and Passageway Conditions
at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Surging Factor	Friction Factor	V/C	LOS
S4	Stairway @ NE Corner	8-9 AM	5.00	4.00	83	21	0.75	0.90	0.21	A
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	18	21	0.75	0.90	0.09	A
	(Manhattan-bound)	7-8 PM	5.00	4.00	23	11	0.75	0.90	0.07	A
S5	Stairway @ NW Corner	8-9 AM	5.00	4.00	18	8	0.75	0.90	0.05	A
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	15	27	0.75	0.90	0.09	A
	(Brooklyn-bound)	7-8 PM	5.00	4.00	3	17	0.75	0.90	0.05	A

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-31
Existing Fare Array Conditions
at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	Surging Factor	Friction Factor	V/C	LOS
	Manhattan-Bound Fare Array	8-9 AM	307	66	0.75	0.90	0.32	A
R617	3 entry/exit turnstiles	5-6 PM	73	40	0.75	0.90	0.09	A
		7-8 PM	39	17	0.75	0.90	0.05	A
	Brooklyn-Bound Fare Array	8-9 AM	29	39	0.75	0.90	0.03	A
R618	3 entry/exit turnstiles	5-6 PM	34	170	0.75	0.90	0.08	A
	2 high entry/exit turnstiles	7-8 PM	25	115	0.75	0.90	0.06	A
	2 high revolving exit gates							

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
Volumes shown are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Subway Line Haul

Line haul is the volume of transit riders passing a defined point on a given transit route. For subway routes in New York City to and from Brooklyn, line haul is typically measured either at East River bridge and tunnel crossings, or at the actual maximum load point on each subway route (the point where the trains carry the greatest number of passengers during the peak hour).

The analysis of existing subway line haul conditions is based on maximum load point capacity and ridership data from 2011 and 2012 provided by NYCT.

All of the subway routes serving Downtown Brooklyn and project area subway stations cross the East River with the exception of the G train which travels between Brooklyn and Queens and does not enter Manhattan. Crossings between Manhattan and Downtown Brooklyn include (from south to north) the Joralemon Street Tunnel (4,5), Montague Street Tunnel (R), Clark Street Tunnel (2,3), Cranberry Street Tunnel (A,C), the Manhattan Bridge (B,D,N,Q), and the Rutgers Tunnel (F). The peak direction of travel through these crossings is typically Manhattan-bound in the AM peak period and Brooklyn-bound in the PM. For the G train, which travels between Queens and Brooklyn, the peak direction of travel in Brooklyn is typically Brooklyn-bound during the AM peak hour and Queens-bound during the PM peak hour.

Table 4D-32 shows existing line haul conditions at the maximum load points in the peak direction on each subway line through Downtown Brooklyn during the 8-9 AM and 5-6 PM peak hours. As shown in **Table 4D-32**, with more riders boarding than disembarking Manhattan-bound 2, 3, 4, and 5 trains in the AM at Atlantic Avenue – Barclays Center (due mainly to transfers from the Brighton and 4th Avenue Lines and the LIRR), the maximum load points on these routes are typically north of this station complex. (The maximum load point for the Nos. 4 and 5 trains is actually north of Fulton Center in lower Manhattan.) Conversely, with substantial numbers of riders transferring from R trains to other subway lines at Atlantic Avenue – Barclays Center in the AM, the maximum load points for this route is typically south of this subway station complex in the AM.

Existing conditions for each subway route are reported in terms of a volume-to-capacity (v/c) ratio which is determined by dividing the number of peak hour passengers traveling through the maximum load point by the line haul capacity provided. (As noted previously, capacities and ridership through the maximum load point on each route were based upon data provided by NYCT.) As shown in **Table 4D-32**, no subway route is currently operating at or above capacity—a v/c ratio equal to or greater than 1.00—in either peak hour. V/c ratios are generally higher in the AM peak hour than in the PM as peak demand is typically more concentrated in the AM. As shown in **Table 4D-32**, the A line typically carries the highest number of passengers with 16,514 Manhattan-bound riders in the AM peak hour and 15,402 Brooklyn-bound riders in the PM. The highest v/c ratios occur on the N train and the No. 4 train in the AM peak hour (0.90 and 0.86, respectively), and on No. 5 and No. 3 trains in the PM peak hour (0.84 and 0.80, respectively).

FUTURE WITHOUT PHASE II

Through 2035, it is expected that subway trips at stations and on routes serving the project site will increase due to (a) the completion of the new residential, commercial and retail uses on Site 5 and the Arena Block associated with Phase I of the Project; (b) the development of new office/commercial, residential, cultural, community facility and retail space in Downtown Brooklyn and other neighborhoods in proximity to the project site; and (c) long-term background growth. The additional subway demand generated by this new development and by background growth was added to existing peak hour volumes at analyzed pedestrian elements at the Atlantic Avenue – Barclays Center and Bergen Street subway stations, and to line haul demand at the maximum load points on each subway route, in order to forecast the Future Without Phase II condition.

Table 4D-32
Existing Subway Line Haul Conditions

Peak Hour	Route	Peak Direction	Maximum Load Point (Leaving Station)	Trains Per Hour (1)	Cars Per Hour (1)	Passengers per Hour (1)	Peak Hour Capacity (1)	V/C Ratio (2)
AM	2	Manhattan-bound	Clark Street	9	90	6,967	9,900	0.70
	3	Manhattan-bound	Clark Street	9	90	7,609	9,900	0.77
	4	Manhattan-bound	Fulton Street	13.2	132	12,505	14,520	0.86
	5	Manhattan-bound	Fulton Street	13.2	132	11,657	14,520	0.80
	A	Manhattan-bound	High Street	17	136	16,514	23,800	0.69
	C	Manhattan-bound	High Street	8	64	5,882	7,360	0.80
	B	Manhattan-bound	DeKalb Avenue	10	80	8,088	14,000	0.58
	D	Manhattan-bound	Pacific Street	10	80	10,266	12,400	0.83
	F	Manhattan-bound	Bergen Street	14.2	142	14,262	19,170	0.74
	N	Manhattan-bound	Pacific Street	9	90	10,110	11,250	0.90
	Q	Manhattan-bound	DeKalb Avenue	10	100	9,191	14,500	0.63
	R	Manhattan-bound	Union Street	10	80	8,438	12,400	0.68
	G	Brooklyn-bound	Clinton-Washington Avs	9.1	36	4,089	5,278	0.77
PM	2	Brooklyn-bound	Wall Street	10	100	5,919	11,000	0.54
	3	Brooklyn-bound	Wall Street	8	80	7,015	8,800	0.80
	4	Brooklyn-bound	Bowling Green	13	130	10,715	14,300	0.75
	5	Brooklyn-bound	Bowling Green	8	80	7,427	8,800	0.84
	A	Brooklyn-bound	Jay Street-MetroTech	17.7	142	15,402	24,780	0.62
	C	Brooklyn-bound	Jay Street-MetroTech	7	56	4,261	6,440	0.66
	B	Brooklyn-bound	Grand Street	9.9	79	8,300	13,860	0.60
	D	Brooklyn-bound	Grand Street	9.9	79	9,058	12,276	0.74
	F	Brooklyn-bound	Jay Street-MetroTech	13	130	10,216	17,550	0.58
	N	Brooklyn-bound	Canal Street	10	100	8,965	12,500	0.72
	Q	Brooklyn-bound	Canal Street	9.8	98	10,012	14,210	0.70
	R	Brooklyn-bound	Jay Street-MetroTech	10	80	6,685	12,400	0.54
	G	Queens-bound	Fulton Street	7	28	2,759	3,920	0.70

Notes:
(1) Based on 2011 and 2012 capacity and ridership data provided by NYC Transit.
(2) Volume-to-capacity ratio.

As shown in **Table 4D-4**, under the commercial mixed-use variation (the RWCDS for the weekday transit analyses), new subway trips from Phase I development (excluding Arena demand) are expected to total 2,471, 3,007 and 1,314 during the analyzed weekday AM, PM and pregame peak hours, respectively. (These volumes reflect the updated planning factors shown in **Table 4D-2,** and exclude Arena demand which, as discussed previously, is already reflected in the weekday existing baseline volumes.) **Table 4D-33** shows the number of new entering and exiting subway trips that would be generated by full build-out of Phase I at the Atlantic Avenue – Barclays Center and Bergen Street subway stations in each analyzed peak (excluding Arena trips which are already reflected in the existing baseline count data). The distribution of Phase I subway trips by route and station are based on the assignment patterns assumed for the 2006 FEIS. As shown in **Table 4D-33**, the majority of subway trips generated by Phase I development are expected to utilize the Atlantic Avenue-Barclays Center subway station, which would experience an estimated 2,118, 2,565 and 1,135 new subway trips (entering and exiting combined) during the weekday AM, PM and pregame peak hours, respectively. Most of these trips are expected to utilize this station's new on-site entrance at the intersection of Atlantic and Flatbush Avenues. By contrast, Phase I trips at the Bergen Street subway station are expected to total 72, 92 and 47 during the weekday AM, PM and pregame peak hours, respectively. Remaining Phase I subway demand (approximately 281, 350 and 132 trips, in each peak hour, respectively), is expected to utilize other more outlying subway stations in the vicinity of the project site.

Table 4D-33
Peak Hour Trips Generated by Phase I Non-Arena Uses at Analyzed Subway Stations

Subway Station	8-9 AM Peak Hour			5-6 PM Peak Hour			7-8 PM (Pregame) Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Atlantic Avenue – Barclays Center (2,3,4,5,B,D,N,Q,R)	705	1,413	2,118	1,825	740	2,565	566	569	1,135
Bergen Street (2,3)	36	36	72	53	39	92	19	28	47
Total	741	1,449	2,190	1,876	777	2,657	585	597	1,182

The Future Without Phase II subway analyses also reflect demand from projects treated as discrete developments for the purposes of the transportation analyses and shown in **Table C-1** in **Appendix C**. In addition, the Future Without Phase II subway volumes reflect annual background growth rates of 0.25 percent per year for the 2013 through 2018 period and 0.125 percent for the 2018 through 2035 period. These background growth rates, recommended in the 2012 *CEQR Technical Manual* for projects in Downtown Brooklyn, are applied to account for smaller projects and as-of-right developments not reflected in **Table C-1**, and general increases in travel demand not attributable to specific development projects.

Subway Stations

Tables 4D-34 through 4D-38 show the expected peak 15-minute volumes as well as v/c ratios and levels of service at analyzed subway station stairs, escalators, ramps and fare arrays at the Atlantic Avenue – Barclays Center and Bergen Street subway stations in the Future Without Phase II. As shown in **Tables 4D-34 through 4D-38**, in the Future Without Phase II, all analyzed elements at the Atlantic Avenue – Barclays Center and Bergen Street subway stations are expected to operate at an acceptable LOS C or better in the weekday AM, PM, and pregame peak hours.

Subway Line Haul

Table 4D-39 shows the anticipated line haul conditions at the maximum load points on subway routes serving Downtown Brooklyn and the project site in the 2035 Future Without Phase II. The data in **Table 4D-39** reflect both background growth for the 2013 through 2035 period and the addition of demand from Phase I and other discrete projects. As shown in **Table 4D-39**, the A line will continue to carry the highest numbers of passengers with 17,352 Manhattan-bound riders in the AM peak hour and 16,236 Brooklyn-bound riders in the PM. The highest v/c ratios will occur on the No. 4 train and the D train in the AM peak hour (0.93 and 0.89, respectively, compared with 0.86 and 0.83, respectively, under Existing conditions), and on No. 5 and No. 3 trains in the PM peak hour (0.95 and 0.90, respectively, compared with 0.84 and 0.80, respectively, under Existing conditions). No subway routes are expected to be operating over capacity in either analyzed peak hour in the Future Without Phase II.

Table 4D-34
Future Without Phase II Stairway and Passageway Conditions at the Atlantic Avenue – Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C	LOS
					Down	Up				
S1	Entrance Stairway	8-9 AM	24.67	20.42	214	59	0.90	0.90	0.10	A
	@ Atlantic & Flatbush Aves	5-6 PM	24.67	20.42	131	103	0.90	0.90	0.09	A
		7-8 PM	24.67	20.42	69	399	0.90	0.90	0.19	A
ML1/ML2	Stairway to Brighton Line	8-9 AM	13.83	11.33	215	306	0.80	0.90	0.39	A
	Mezzanine	5-6 PM	13.83	11.33	251	194	0.80	0.90	0.32	A
		7-8 PM	13.83	11.33	98	317	0.80	0.90	0.32	A
P9	Brighton Line Platform Stair	8-9 AM	5.00	4.00	202	176	0.75	0.90	0.81	C
	(South)	5-6 PM	5.00	4.00	236	113	0.75	0.90	0.72	C
		7-8 PM	5.00	4.00	94	186	0.75	0.90	0.63	B
P10	Brighton Line Platform Stair	8-9 AM	6.00	5.00	13	129	0.75	0.90	0.27	A
	(North)	5-6 PM	6.00	5.00	14	82	0.75	0.90	0.18	A
		7-8 PM	6.00	5.00	5	130	0.75	1.00	0.24	A
U5/U7	Subpassage Stair to	8-9 AM	10.50	8.75	127	51	0.75	0.90	0.19	A
	Brooklyn-bound 2,3 Platform	5-6 PM	10.50	8.75	165	201	0.75	0.90	0.36	A
		7-8 PM	10.50	8.75	304	90	0.75	0.90	0.42	A
U9/U11	Subpassage Stair to 4,5	8-9 AM	11.25	7.50	183	250	0.75	0.90	0.49	B
	Platform	5-6 PM	11.25	7.50	213	209	0.75	0.90	0.49	B
		7-8 PM	11.25	7.50	427	113	0.75	0.90	0.67	B
R1	Ramp up to Manhattan-bound	8-9 AM	9.00	5.00	60	181	0.75	0.90	0.26	A
	2,3 Platform	5-6 PM	9.00	5.00	46	91	0.75	0.90	0.15	A
		7-8 PM	9.00	5.00	205	45	0.75	0.90	0.31	A
R2	Ramp Down to Subpassage	8-9 AM	14.00	12.00	301	310	0.80	0.90	0.28	A
		5-6 PM	14.00	12.00	411	378	0.80	0.90	0.36	A
		7-8 PM	14.00	12.00	202	731	0.80	0.90	0.46	B
R3	Subpassage Ramp to 4,5 &	8-9 AM	13.00	11.00	301	310	0.80	0.90	0.31	A
	Brooklyn-bound 2,3 Platforms	5-6 PM	13.00	11.00	411	378	0.80	0.90	0.40	A
		7-8 PM	13.00	11.00	202	731	0.80	0.90	0.50	B

Notes:

Based on 2012 *CEQR Technical Manual* methodology.

V/C - volume to capacity ratio.

LOS - level of service.

Table 4D-35
Future Without Phase II Escalator Conditions at the Atlantic Avenue – Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Width (inches)	Feet Per Minute	Guideline 15-Minute Capacity	15-Minute Volumes	Surging Factor	V/C	LOS
ES358X	Down Escalator	8-9 AM	40	90	945	159	1.00	0.17	A
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	392	1.00	0.41	A
		7-8 PM	40	90	945	190	1.00	0.20	A
ES359X	Up Escalator	8-9 AM	40	90	945	316	0.90	0.37	A
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	292	0.90	0.34	A
		7-8 PM	40	90	945	674	0.90	0.79	C

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-36
Future Without Phase II Fare Array Conditions at the Atlantic Avenue – Barclays Center Subway Station

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes		Surging Factor	Friction Factor	V/C	LOS
			Enter	Exit				
	Barclays Center Fare Array	8-9 AM	372	376	0.90	0.90	0.12	A
R612	14 Two-way Turnstiles	5-6 PM	524	396	0.90	0.90	0.15	A
	1 High Exit Turnstile	7-8 PM	259	1,072	0.90	0.90	0.19	A

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
Volumes shown are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-37
Future Without Phase II Stairway Conditions at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	15-Minute Pedestrian Volumes Down	15-Minute Pedestrian Volumes Up	Surging Factor	Friction Factor	V/C	LOS
S4	Stairway @ NE Corner	8-9 AM	5.00	4.00	96	31	0.75	0.90	0.25	A
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	24	28	0.75	0.90	0.11	A
		7-8 PM	5.00	4.00	27	15	0.75	0.90	0.09	A
S5	Stairway @ NW Corner	8-9 AM	5.00	4.00	26	12	0.75	0.90	0.08	A
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	36	44	0.75	0.90	0.18	A
		7-8 PM	5.00	4.00	9	27	0.75	0.90	0.08	A

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-38
Future Without Phase II Fare Array Conditions at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	15-Minute Pedestrian Volumes Enter	15-Minute Pedestrian Volumes Exit	Surging Factor	Friction Factor	V/C	LOS
	Manhattan-Bound Fare Array	8-9 AM	328	77	0.75	0.90	0.35	A
R617	3 entry/exit turnstiles	5-6 PM	81	47	0.75	0.90	0.11	A
		7-8 PM	43	22	0.75	0.90	0.05	A
	Brooklyn-Bound Fare Array	8-9 AM	37	44	0.75	0.90	0.04	A
R618	3 entry/exit turnstiles	5-6 PM	55	192	0.75	0.90	0.10	A
	2 high entry/exit turnstiles	7-8 PM	32	128	0.75	0.90	0.07	A
	2 high revolving exit gates							

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
Volumes show n are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.

Table 4D-39
Future Without Phase II Subway Line Haul Conditions

Peak Hour	Route	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Passengers per Hour (2)	Peak Hour Capacity (1)	V/C Ratio (4)
AM	2	Manhattan-bound	9	90	7,792	9,900	0.79
	3	Manhattan-bound	9	90	8,444	9,900	0.85
	4	Manhattan-bound	13	132	13,502	14,520	0.93
	5	Manhattan-bound	13	132	12,625	14,520	0.87
	A	Manhattan-bound	17	136	17,352	23,800	0.73
	C	Manhattan-bound	8	64	6,191	7,360	0.84
	B	Manhattan-bound	10	80	8,721	14,000	0.62
	D	Manhattan-bound	10	80	11,091	12,400	0.89
	F	Manhattan-bound	14	142	14,938	19,170	0.78
	N	Manhattan-bound	10	100	10,716	12,500	0.86
	Q	Manhattan-bound	10	100	9,848	14,500	0.68
	R	Manhattan-bound	10	80	8,901	12,400	0.72
	G	Brooklyn-bound	9	36	4,532	5,278	0.86
PM	2	Brooklyn-bound	10	100	6,778	11,000	0.62
	3	Brooklyn-bound	8	80	7,878	8,800	0.90
	4	Brooklyn-bound	13	130	11,728	14,300	0.82
	5	Brooklyn-bound	8	80	8,327	8,800	0.95
	A	Brooklyn-bound	18	142	16,236	24,780	0.66
	C	Brooklyn-bound	7	56	4,542	6,440	0.71
	B	Brooklyn-bound	10	79	8,951	13,860	0.65
	D	Brooklyn-bound	10	79	9,629	12,276	0.78
	F	Brooklyn-bound	13	130	10,914	17,550	0.62
	N	Brooklyn-bound	10	100	9,381	12,500	0.75
	Q	Brooklyn-bound	10	98	10,708	14,210	0.75
	R	Brooklyn-bound	10	80	7,236	12,400	0.58
	G	Queens-bound	7	28	3,211	3,920	0.82

Notes:
(1) Based on 2011 and 2012 capacity and ridership data provided by NYC Transit.
(2) Reflects background growth for the 2013 through 2035 period plus demand from Phase I and other discrete development sites.
(3) Volume-to-capacity ratio.

FUTURE WITH PHASE II

As shown in **Table 4D-10**, development of Phase II of the Project is expected to add a total of approximately 3,119, 3,665 and 2,540 new subway trips (entering and exiting combined) to area subway stations during the weekday AM, PM and pregame peak hours, respectively. The Atlantic Avenue – Barclays Center subway station would experience the majority of this new demand, with an estimated 2,730, 3,174 and 2,223 trips using this station during the weekday AM, PM and pregame peak hours, respectively. (The distribution of Phase II subway trips by route and station were based on the assignment patterns assumed for the 2006 FEIS.) Most of these trips are expected to utilize the station's new Barclays Center entrance at the intersection of Atlantic and Flatbush Avenues. By contrast, Phase II trips at the Bergen Street subway station are expected to total 157, 201 and 130 during the weekday AM, PM and pregame peak hours, respectively. Remaining Phase II subway demand (approximately 232, 290 and 187 trips, in each peak hour, respectively), is expected to utilize other more outlying subway stations in the vicinity of the project site.

Atlantic Avenue – Barclays Center Subway Station

The results of the analysis of Future With Phase II conditions at the Atlantic Avenue – Barclays Center subway station are shown in **Tables 4D-40 through 4D-42**. As shown in **Tables 4D-40 through 4D-42**, in the Future With Phase II, fare array R612 and all analyzed stairs, escalators and ramps are expected to operate at an acceptable LOS C or better in all three analyzed peak hours with the exception of Brighton Line platform stair P9 and escalator ES359X at the Barclays Center entrance to the subway station. As shown in **Table 4D-40,** stair P9 would operate at LOS D in both the 5-6 PM and 7-8 PM pregame peak hours with v/c ratios of 1.13 and 1.07 during these periods, respectively. However, as the width increment thresholds required to restore conditions to a v/c ratio of 1.00 (6.2 inches and 3.2 inches in the PM and pregame peak hours, respectively) would be less than the 2012 *CEQR Technical Manual* thresholds for significant adverse impacts (7 inches and 8 inches, respectively), this stair would not be considered significantly adversely impacted in either period under *CEQR Technical Manual* criteria.

As shown in **Table 4D-41,** up escalator ES359X would operate at a v/c ratio of 1.13 (LOS D) in the 7-8 PM pregame peak hour, compared to a v/c ratio of 0.79 (LOS C) in the Future Without Phase II. This would be considered a significant adverse impact under 2012 *CEQR Technical Manual* criteria. As discussed in more detail in Chapter 5, "Mitigation," this impact could be fully mitigated by operating adjoining escalator ES358X in the up direction during the pregame period when there is a Nets game or other major event at the Arena. (Escalator ES358X currently operates in the down direction in all periods.)

It should be noted that much of the pregame peak hour demand on escalator ES359X is the result of trips exiting the subway en route to a basketball game or other event at the Arena, and that the immediately adjacent stair S1 is projected to operate at an uncongested LOS A (0.27 v/c ratio) during this period in the Future with Phase II. The v/c ratio of 1.13 and LOS D condition on escalator ES359X reflects the fact that most pedestrians would select to use the escalator for convenience (as they do now), resulting in capacity conditions on the escalator during periods of peak demand even with uncongested conditions on the adjacent 24-foot-wide stair S1. It is therefore expected that, as queuing at escalator ES359X increased, pedestrian demand would increasingly shift to uncongested stair S1. As the two escalators at this entrance operate as a combined system with the adjacent stair, and as this stair is projected to have substantial available capacity in the pregame peak hour in the Future with Phase II, the projected LOS D condition at escalator ES359X is not considered an unacceptable condition for a special event condition such as the pregame peak hour prior to a Nets basketball game. (This was also acknowledged in the 2006 FEIS which projected LOS E conditions on this escalator during the weekday pregame peak hour.)

Bergen Street Subway Station

The results of the analysis of Future With Phase II conditions at the Bergen Street subway station are shown in **Tables 4D-43 and 4D-44**. As shown in **Table 4D-43,** both analyzed stairs would operate at an uncongested LOS A or better in all three analyzed peak hours in the Future with Phase II. As shown in **Table 4D-44**, both Manhattan-bound fare array R617 and Brooklyn-bound fare array R618 are also expected to operate at an uncongested LOS A in all analyzed peak hours in the Future with Phase II. Therefore, development of Phase II of the Project is not expected to result in any significant adverse impacts at the Bergen Street subway station.

Table 4D-40
Future With Phase II Stairway and Passageway Conditions at the Atlantic Avenue-Barclays Center Subway Station

					Future Without Phase II						Project Increment		Future With Phase II							
			Total	Effective	15-Minute Pedestrian Volumes		Surging	Friction			15-Minute Pedestrian Volumes		15-Minute Pedestrian Volumes		Surging	Friction			WIT	WIT for Impact
No.	Station Element/Location	Peak Period	Width (feet)	Width (feet)	Down	Up	Factor	Factor	V/C	LOS	Down	Up	Down	Up	Factor	Factor	V/C	LOS	(inches)	(inches)
S1	Entrance Stairway	8-9 AM	24.67	20.42	214	59	0.90	0.90	0.10	A	358	29	572	88	0.90	0.90	0.24	A	----	----
	@ Atlantic & Flatbush Aves	5-6 PM	24.67	20.42	131	103	0.90	0.90	0.09	A	87	155	218	258	0.90	0.90	0.18	A	----	----
		7-8 PM	24.67	20.42	69	399	0.90	0.90	0.19	A	55	170	124	569	0.90	0.90	0.27	A	----	----
ML1/ML2	Stairway to Brighton Line	8-9 AM	13.83	11.33	215	306	0.80	0.90	0.39	A	147	45	362	351	0.80	0.90	0.52	B	----	----
	Mezzanine	5-6 PM	13.83	11.33	251	194	0.80	0.90	0.32	A	84	142	335	336	0.80	0.90	0.49	B	----	----
		7-8 PM	13.83	11.33	98	317	0.80	0.90	0.32	A	49	108	147	425	0.80	0.90	0.44	A	----	----
P9	Brighton Line Platform Stair	8-9 AM	5.00	4.00	202	176	0.75	0.90	0.81	C	138	26	340	202	0.75	0.90	1.13	D	6.2	7.0
	(South)	5-6 PM	5.00	4.00	236	113	0.75	0.90	0.72	C	79	83	315	196	0.75	0.90	1.07	D	3.2	8.0
		7-8 PM	5.00	4.00	94	186	0.75	0.90	0.63	B	46	63	140	249	0.75	0.90	0.87	C		
P10	Brighton Line Platform Stair	8-9 AM	6.00	5.00	13	129	0.75	0.90	0.27	A	9	19	22	148	0.75	0.90	0.32	A	----	----
	(North)	5-6 PM	6.00	5.00	14	82	0.75	0.90	0.18	A	5	60	19	142	0.75	0.90	0.31	A	----	----
		7-8 PM	6.00	5.00	5	130	0.75	1.00	0.24	A	3	45	8	175	0.75	1.00	0.32	A	----	----
U5/U7	Subpassage Stair to	8-9 AM	10.50	8.75	127	51	0.75	0.90	0.19	A	73	83	200	134	0.75	0.90	0.32	A	----	----
	Brooklyn-bound 2,3 Platform	5-6 PM	10.50	8.75	165	201	0.75	0.90	0.36	A	233	62	398	263	0.75	0.90	0.63	B	----	----
		7-8 PM	10.50	8.75	304	90	0.75	0.90	0.42	A	181	31	485	121	0.75	0.90	0.55	B	----	----
U9/U11	Subpassage Stair to 4,5	8-9 AM	11.25	7.50	183	250	0.75	0.90	0.49	B	60	215	243	465	0.75	0.90	0.85	C	----	----
	Platform	5-6 PM	11.25	7.50	213	209	0.75	0.90	0.49	B	199	112	412	321	0.75	0.90	0.83	C	----	----
		7-8 PM	11.25	7.50	427	113	0.75	0.90	0.67	B	157	69	584	182	0.75	0.90	0.82	C	----	----
R1	Ramp up to Manhattan-bound	8-9 AM	9.00	5.00	60	181	0.75	0.90	0.26	A	9	182	69	363	0.75	0.90	0.55	B	----	----
	2,3 Platform	5-6 PM	9.00	5.00	46	91	0.75	0.90	0.15	A	21	88	67	179	0.75	0.90	0.30	A	----	----
		7-8 PM	9.00	5.00	205	45	0.75	0.90	0.31	A	13	57	218	102	0.75	0.90	0.35	A	----	----
R2	Ramp Down to Subpassage	8-9 AM	14.00	12.00	301	310	0.80	0.90	0.28	A	298	133	599	443	0.80	0.90	0.47	B	----	----
		5-6 PM	14.00	12.00	411	378	0.80	0.90	0.36	A	174	432	585	810	0.80	0.90	0.66	B	----	----
		7-8 PM	14.00	12.00	202	731	0.80	0.90	0.46	B	100	338	302	1,069	0.80	0.90	0.67	B	----	----
R3	Subpassage Ramp to 4,5 &	8-9 AM	13.00	11.00	301	310	0.80	0.90	0.31	A	298	133	599	443	0.80	0.90	0.52	B	----	----
	Brooklyn-bound 2,3 Platforms	5-6 PM	13.00	11.00	411	378	0.80	0.90	0.40	A	174	432	585	810	0.80	0.90	0.72	C	----	----
		7-8 PM	13.00	11.00	202	731	0.80	0.90	0.50	B	100	338	302	1,069	0.80	0.90	0.74	C	----	----

This table has been revised for the FSEIS.

Notes:

Based on 2012 *CEQR Technical Manual* methodology.

V/C - volume to capacity ratio.

LOS - level of service.

WIT - width increment threshold.

* - denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

Table 4D-41
Future With Phase II Escalator Conditions at the Atlantic Avenue-Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Width (inches)	Feet Per Minute	Guideline 15-Minute Capacity	Future Without Phase II 15-Minute Volumes	Future Without Phase II Surging Factor	Future Without Phase II V/C	Future Without Phase II LOS	Project Increment 15-Minute Volumes	Future With Phase II 15-Minute Volumes	Future With Phase II Surging Factor	Future With Phase II V/C	Future With Phase II LOS	Δ V/C	
ES358X	Down Escalator	8-9 AM	40	90	945	159	1.00	0.17	A	268	427	1.00	0.45	B	0.284	
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	392	1.00	0.41	A	259	651	1.00	0.69	B	0.274	
		7-8 PM	40	90	945	190	1.00	0.20	A	150	340	1.00	0.36	A	0.159	
ES359X	Up Escalator	8-9 AM	40	90	945	316	0.90	0.37	A	157	473	0.90	0.56	B	0.185	
	@ Atlantic & Flatbush Aves	5-6 PM	40	90	945	292	0.90	0.34	A	440	732	0.90	0.86	C	0.517	
		7-8 PM	40	90	945	674	0.90	0.79	C	289	963	0.90	1.13	D	0.340	*

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
V/C - volume to capacity ratio.
LOS - level of service.
* - denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

Table 4D-42
Future With Phase II Fare Array Conditions at the Atlantic Avenue-Barclays Center Subway Station

No.	Station Element/Location	Peak Period	Future Without Phase II 15-Minute Pedestrian Volumes Enter	Future Without Phase II 15-Minute Pedestrian Volumes Exit	Future Without Phase II Surging Factor	Future Without Phase II Friction Factor	Future Without Phase II V/C	Future Without Phase II LOS	Project Increment 15-Minute Pedestrian Volumes Enter	Project Increment 15-Minute Pedestrian Volumes Exit	Future With Phase II 15-Minute Pedestrian Volumes Enter	Future With Phase II 15-Minute Pedestrian Volumes Exit	Future With Phase II Surging Factor	Future With Phase II Friction Factor	Future With Phase II V/C	Future With Phase II LOS	Δ V/C
	Barclays Center Fare Array	8-9 AM	372	376	0.90	0.90	0.12	A	627	187	999	563	0.90	0.90	0.26	A	0.143
R612	14 Two-way Turnstiles	5-6 PM	524	396	0.90	0.90	0.15	A	345	595	869	991	0.90	0.90	0.29	A	0.142
	1 High Exit Turnstile	7-8 PM	259	1,072	0.90	0.90	0.19	A	205	459	464	1,531	0.90	0.90	0.28	A	0.098

Notes:
Based on 2012 *CEQR Technical Manual* methodology.
Volumes shown are entering and exiting the station.
V/C - volume to capacity ratio.
LOS - level of service.
* - denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

Table 4D-43
Future With Phase II Stairway Conditions at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	Total Width (feet)	Effective Width (feet)	Future Without Phase II 15-Minute Pedestrian Volumes Down	Up	Surging Factor	Friction Factor	V/C	LOS	Project Increment 15-Minute Pedestrian Volumes Down	Up	Future With Phase II 15-Minute Pedestrian Volumes Down	Up	Surging Factor	Friction Factor	V/C	LOS	WIT (inches)	WIT for Impact (inches)
S4	Stairway @ NE Corner	8-9 AM	5.00	4.00	96	31	0.75	0.90	0.25	A	25	6	121	37	0.75	0.90	0.32	A	----	----
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	24	28	0.75	0.90	0.11	A	12	16	36	44	0.75	0.90	0.18	A	----	----
		7-8 PM	5.00	4.00	27	15	0.75	0.90	0.09	A	8	9	35	24	0.75	0.90	0.12	A	----	----
S5	Stairway @ NW Corner	8-9 AM	5.00	4.00	26	12	0.75	0.90	0.08	A	12	6	38	18	0.75	0.90	0.11	A	----	----
	Flatbush Ave/Bergen Street	5-6 PM	5.00	4.00	36	44	0.75	0.90	0.18	A	12	22	48	66	0.75	0.90	0.25	A	----	----
		7-8 PM	5.00	4.00	9	27	0.75	0.90	0.08	A	5	18	14	45	0.75	0.90	0.14	A	----	----

Notes:

Based on 2012 *CEQR Technical Manual* methodology.

V/C - volume to capacity ratio.

LOS - level of service.

WIT - width increment threshold.

* - denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

Table 4D-44
Future With Phase II Fare Array Conditions at the Bergen Street Subway Station

No.	Station Element/Location	Peak Period	Future Without Phase II 15-Minute Pedestrian Volumes Enter	Exit	Surging Factor	Friction Factor	V/C	LOS	Project Increment 15-Minute Pedestrian Volumes Enter	Exit	Future With Phase II 15-Minute Pedestrian Volumes Enter	Exit	Surging Factor	Friction Factor	V/C	LOS	Δ V/C
	Manhattan-Bound Fare Array	8-9 AM	328	77	0.75	0.90	0.35	A	25	6	353	83	0.75	0.90	0.37	A	0.027
R617	3 entry/exit turnstiles	5-6 PM	81	47	0.75	0.90	0.11	A	12	16	93	63	0.75	0.90	0.13	A	0.023
		7-8 PM	43	22	0.75	0.90	0.05	A	8	9	51	31	0.75	0.90	0.07	A	0.014
	Brooklyn-Bound Fare Array	8-9 AM	37	44	0.75	0.90	0.04	A	12	6	49	50	0.75	0.90	0.05	A	0.010
R618	3 entry/exit turnstiles	5-6 PM	55	192	0.75	0.90	0.10	A	12	22	67	214	0.75	0.90	0.12	A	0.015
	2 high entry/exit turnstiles	7-8 PM	32	128	0.75	0.90	0.07	A	5	18	37	146	0.75	0.90	0.08	A	0.010
	2 high revolving exit gates																

Notes:

Based on 2012 *CEQR Technical Manual* methodology.

Volumes shown are entering and exiting the station.

V/C - volume to capacity ratio.

LOS - level of service.

* - denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

Subway Line Haul

As shown in **Table 4D-10**, development of Phase II of the Project would generate a net total of 736 subway trips inbound to the project site and 2,383 trips outbound from the site in the AM peak hour, and 2,304 inbound and 1,361 outbound trips by subway in the PM peak hour. These trips would be distributed among the 13 subway routes serving Downtown Brooklyn and the project site both to and from Brooklyn and Queens, and to and from Manhattan. Given the project site's location outside of the Manhattan CBD and the anticipated directions of travel for Project-generated trips in each peak period, it is anticipated that some of this new demand would not occur at the maximum load points in the peak direction of travel. For example, AM peak hour trips traveling on the Nos. 2, 3, 4, and 5 trains en route to the project site from outlying areas of Brooklyn would exit the subway system at the Bergen Street and Atlantic Avenue – Barclays Center subway stations before reaching the maximum load points on these routes which are located west of the Clark Street subway station on the Nos. 2 and 3, and north of the Fulton Center subway station (in lower Manhattan) on the Nos. 4 and 5. AM peak hour trips traveling on A and C trains en route to the project site from outlying areas of Brooklyn and southeastern Queens would similarly exit the subway system (at the Lafayette Avenue and Clinton – Washington Avenues stations) before reaching the maximum load point on these routes (located west of the High Street station). By contrast, AM peak hour trips en route to Manhattan and the Bronx via the Nos. 2, 3, 4, and 5 trains would pass through the maximum load point on these routes as the trains headed north from the Bergen Street and Atlantic Avenue – Barclays Center stations. Overall, it is estimated that approximately 63 percent of subway trips generated by Phase II would pass through the maximum load points in the peak direction on routes serving the project site in the AM peak period, and 41 percent in the PM peak period.

Table 4D-45 shows the results of the analysis of subway line haul conditions at the maximum load point in the peak direction on each route in the Future With Phase II. As shown in **Table 4D-45,** all routes would continue to operate below capacity in the peak direction in the AM and PM at their maximum load points in the Future With Phase II. The highest v/c ratios in the AM peak hour would occur on Manhattan-bound No. 4 trains (0.95 v/c ratio) and Manhattan-bound D trains (0.90 v/c ratio). The highest v/c ratios in the PM peak hour would occur on Brooklyn-bound No. 5 trains which would be operating close to capacity (0.98 v/c ratio) and No. 3 trains (0.93 v/c ratio). Development of Phase II would add an average of 3.7 or fewer passengers per subway car to peak direction trains serving the project site in each peak hour in 2035.

For subway line haul conditions, 2012 *CEQR Technical Manual* criteria specify that any increases in load levels that remain within practical capacity limits are generally not considered significant. However, significant adverse subway line haul impacts can occur if a proposed action is expected to generate an incremental increase averaging five or more riders per subway car on lines projected to carry loads at or exceeding guideline capacity. As demonstrated by the analysis shown in **Table 4D-45**, all subway routes through Downtown Brooklyn are expected to continue to operate below their practical capacity in the peak direction in each peak hour in the Future With Phase II, and the Project would not generate more than an 3.7 new subway riders per car on any one route. Development of Phase II is therefore not expected to result in significant adverse impacts to subway line haul conditions in Downtown Brooklyn under *CEQR Technical Manual* criteria.

Table 4D-45
Future With Phase II Subway Line Haul Conditions

Peak Hour	Route	Peak Direction	Trains per Hour (1)	Cars per Hour (1)	Peak Hour Capacity (1)	Future Without Phase II		Future With Phase II		
						Passengers per Hour (2)	V/C Ratio (3)	Passengers per Hour	V/C Ratio (3)	Avg. Added Passengers per Car
AM	2	Manhattan-bound	9	90	9,900	7,792	0.79	8,125	0.82	3.7
	3	Manhattan-bound	9	90	9,900	8,444	0.85	8,773	0.89	3.7
	4	Manhattan-bound	13	132	14,520	13,502	0.93	13,825	0.95	2.4
	5	Manhattan-bound	13	132	14,520	12,625	0.87	12,943	0.89	2.4
	A	Manhattan-bound	17	136	23,800	17,352	0.73	17,393	0.73	0.3
	C	Manhattan-bound	8	64	7,360	6,191	0.84	6,206	0.84	0.2
	B	Manhattan-bound	10	80	14,000	8,721	0.62	8,923	0.64	2.5
	D	Manhattan-bound	10	80	12,400	11,091	0.89	11,197	0.90	1.3
	F	Manhattan-bound	14	142	19,170	14,938	0.78	14,974	0.78	0.3
	N	Manhattan-bound	10	100	12,500	10,716	0.86	10,756	0.86	0.4
	Q	Manhattan-bound	10	100	14,500	9,848	0.68	10,043	0.69	2.0
	R	Manhattan-bound	10	80	12,400	8,901	0.72	8,912	0.72	0.1
	G	Brooklyn-bound	9	36	5,278	4,532	0.86	4,545	0.86	0.4
PM	2	Brooklyn-bound	10	100	11,000	6,778	0.62	7,075	0.64	3.0
	3	Brooklyn-bound	8	80	8,800	7,878	0.90	8,171	0.93	3.7
	4	Brooklyn-bound	13	130	14,300	11,728	0.82	12,017	0.84	2.2
	5	Brooklyn-bound	8	80	8,800	8,327	0.95	8,611	0.98	3.6
	A	Brooklyn-bound	18	142	24,780	16,236	0.66	16,278	0.66	0.3
	C	Brooklyn-bound	7	56	6,440	4,542	0.71	4,554	0.71	0.2
	B	Brooklyn-bound	10	79	13,860	8,951	0.65	8,991	0.65	0.5
	D	Brooklyn-bound	10	79	12,276	9,629	0.78	9,724	0.79	1.2
	F	Brooklyn-bound	13	130	17,550	10,914	0.62	10,942	0.62	0.2
	N	Brooklyn-bound	10	100	12,500	9,381	0.75	9,417	0.75	0.4
	Q	Brooklyn-bound	10	98	14,210	10,708	0.75	10,748	0.76	0.4
	R	Brooklyn-bound	10	80	12,400	7,236	0.58	7,273	0.59	0.5
	G	Queens-bound	7	28	3,920	3,211	0.82	3,233	0.82	0.8

Notes:

(1) Based on 2011 and 2012 schedule and capacity data provided by NYC Transit.

(2) Reflects background growth for the 2013-2035 period plus demand from Phase I and other discrete development sites.

(3) Volume-to-capacity ratio.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The analysis of the Atlantic Avenue – Barclays Center and Bergen Street subway stations in the 2006 FEIS forecasted generally acceptable levels of service at all analyzed elements with full build-out of the Project in 2016 with the exception of congested LOS E conditions in the weekday pregame peak hour at the two new escalators at the Barclays Center entrance to the Atlantic Avenue – Barclays Center subway station. (Both of these escalators were assumed in the FEIS to operate in the up direction during the pregame period.) This was, however, not considered an unacceptable condition for the pregame peak hour prior to a Nets game, especially given the uncongested conditions projected for adjacent stair S1. No significant adverse impacts were identified for these escalators as they were to be constructed as part of the Project. The 2009 Technical Memorandum evaluated a revised configuration for this entrance—essentially the as-built condition—and found that it would provide greater capacity (and therefore better levels of service) than what was assessed in the 2006 FEIS.

The results of the analyses of subway station and line haul conditions and potential significant impacts in this SEIS are not directly comparable to the findings of previous environmental reviews as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario with Phase I of the Project reflected in the background condition. By contrast, previous reviews assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the subway analyses also differ with respect to travel demand factors, analysis methodologies, background conditions, background growth rates, and the Project development program. However, the conditions projected in this SEIS at the Atlantic Avenue – Barclays Center and Bergen Street subway stations for the Future With Phase II under the Extended Build-Out Scenario are generally consistent with those projected in the previous analyses. They reflect acceptable levels of service at all analyzed elements with the exception of congestion on up escalator ES359X at the Atlantic Avenue – Barclays Center subway station during the pregame peak hour. Although identified in this SEIS as a significant adverse impact under 2012 *CEQR Technical Manual* guidelines, this impact would not be the result of any delay in constructing Phase II of the Project. As noted above, this escalator was built as part of Phase I of the Project, and consequently the LOS E condition projected in the 2006 FEIS for the pregame peak hour was not considered a significant adverse impact. This SEIS analysis actually projects a better level of service (LOS D) at escalator ES359X during the pregame period than was projected in the 2006 FEIS (LOS E). Both this SEIS and the 2006 FEIS also show adjacent stair S1 operating at an uncongested LOS B or better in the pregame peak hour, reflecting the fact that substantial additional capacity would be available on this stair to relieve any future queuing at escalator ES359X.

The SEIS analysis of subway line haul conditions shows that full build-out of the Project would not result in significant adverse impacts in the peak direction in the AM and PM peak hours on any subway route serving Downtown Brooklyn. These findings are also consistent with those disclosed in the 2006 FEIS.

BUS SERVICE

EXISTING CONDITIONS

The project site is well served by bus routes operated by NYCT and MTA Bus, with a total of eleven local routes—the B25, B26, B38, B41, B45, B52, B63, B65, B67, B69 and B103—operating within ¼ mile of the project site, connecting the site to the Downtown core, other parts

of Brooklyn, and Queens. As shown in **Figure 4D-3**, bus corridors in the vicinity of the Phase II development sites include Flatbush Avenue (which is traversed by the B41, B63 and B67 routes), Atlantic Avenue (B45 and B63), Bergen/Dean Streets (B65), Vanderbilt Avenue (B69), 4th Avenue (B103), 5th Avenue (B63), and Fulton Street (B25, B26 and B52). Although it operates along Lafayette and DeKalb Avenues which are more than ¼-mile from the Phase II development sites, the B38 route is also reflected in the analysis as it would be utilized by Phase I demand and was included in the analysis in the 2006 FEIS. Intermodal connections between local buses and other transit modes are an important aspect of the transit system serving the Downtown Brooklyn area. Key intermodal connections include transfers between the bus, subway and commuter rail modes at the Atlantic Avenue – Barclays Center subway station.

The results of the analysis of Existing conditions on the eleven local bus routes serving the Phase II development sites are shown in **Table 4D-46**. The analysis examines conditions at the maximum load points in the peak direction in the weekday 8-9 AM and 5-6 PM peak hours. (The maximum load point is the point where the buses carry the greatest number of passengers during the peak hour.) The analysis shows the average passengers per bus, and the available peak hour capacity on each route based on a maximum of 54 passengers per standard bus. (All analyzed bus routes are operated with standard buses as opposed to larger articulated buses.) As shown in **Table 4D-46**, the routes with the greatest demand are the B38 and the B41 which carry 1,072 and 983 peak direction passengers, respectively, at their maximum load points during the AM peak hour, and 572 and 1,050 peak direction passengers respectively, in the PM peak hour. The B103 has the highest utilization rate compared to capacity with an average of 53 passengers per bus in the peak eastbound direction in the PM peak hour. No routes were found to be operating at or over capacity in either peak hour under Existing conditions.

The following provides a brief description of each of the eleven routes operating within ¼-mile of the project site.

B25

The B25 operates between East New York and Downtown Brooklyn via Fulton Street and Cadman Plaza West to Fulton Landing. This grid route, which operates primarily on Fulton Street, serves the business and shopping districts of Downtown Brooklyn, Fort Greene, and Bedford – Stuyvesant. During the AM peak hour, the maximum load point in the peak westbound direction occurs at Fulton Street/Nostrand Avenue, with an average of 52 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction also occurs at Fulton Street/Nostrand Avenue, with an average of 48 passengers per bus.

B26

The B26 provides local service in Brooklyn from Cadman Plaza West and Tillary Street in Downtown Brooklyn to Wyckoff Avenue/Palmetto Street in Bushwick, traveling via Fulton and Halsey Streets in both directions. This grid route serves the business districts of Downtown Brooklyn, Fort Greene, and Bedford – Stuyvesant. During the AM peak hour, the maximum load point in the peak westbound direction occurs at Halsey Street/Broadway, with an average of 52 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Halsey Street/Nostrand Avenue, with an average of 44 passengers per bus.

Table 4D-46
Existing Local Bus Conditions

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	Peak Hour Buses (2)	Peak Hour Passengers (2)	Average Passangers Per Bus	Available Capacity (3)	Notes
AM	B25	EB	Fulton Street/Ralph Ave	7	158	23	220	
		WB	Fulton Street/Nostrand Ave	8	419	52	13	
	B26	EB	Halsey Street/Malcom X Blvd	6	131	22	193	
		WB	Halsey Street/Broadway	10	521	52	19	
	B38	EB	Lafayette Ave/Nostrand Ave	18	200	11	772	(4)
		WB	DeKalb Ave/Vanderbilt Ave	25	1,072	43	278	(4)
	B41	NB	Flatbush Ave/Nostrand Ave	19	983	52	43	(4)
		SB	Flatbush Ave/Nostrand Ave	20	417	21	663	(4)
	B45	EB	St. Johns Place/Kingston Ave	5	111	22	159	
		WB	St. Johns Place/Nostrand Ave	6	246	41	78	
	B52	EB	Gates Ave/Broadway	10	250	25	290	
		WB	Gates Ave/Nostrand Ave	11	499	45	95	
	B63	NB	Atlantic Ave/Third Ave	4	144	36	72	
		SB	Fifth Ave/39th Street	4	158	40	58	
	B65	EB	Dean Street/Washington Ave	6	85	14	239	
		WB	Bergen Street/Franklin Ave	7	278	40	100	
	B67/B69	NB	Seventh Ave/9th Street	8	401	50	31	(5)
		SB	Seventh Ave/Union Street	8	385	48	47	(5)
	B103	EB	Avenue H/East 56th Street	7	198	28	180	
		WB	Avenue H/East 56th Street	21	862	41	272	
PM	B25	EB	Fulton Street/Nostrand Ave	8	387	48	45	
		WB	Fulton Street/Greene Ave	6	148	25	176	
	B26	EB	Halsey Street/Nostrand Ave	9	397	44	89	
		WB	Halsey Street/Nostrand Ave	8	136	17	296	
	B38	EB	Lafayette Ave/Nostrand Ave	13	572	44	130	(4)
		WB	DeKalb Ave/Nostrand Ave	12	239	20	409	(4)
	B41	NB	Flatbush Ave/Avenue P	16	508	32	356	(4)
		SB	Flatbush Ave/Nostrand Ave	22	1,050	48	138	(4)
	B45	EB	Flatbush Ave/Atlantic Ave	6	277	46	47	
		WB	St. Johns Place/Kingston Ave	6	131	22	193	
	B52	EB	Greene Ave/Fulton Street	9	462	51	24	
		WB	Gates Ave/Broadway	9	275	31	211	
	B63	NB	Fifth Ave/69th Street	6	202	34	122	
		SB	Fifth Ave/39th Street	6	235	39	89	
	B65	EB	Dean Street/Washington Ave	5	187	37	83	
		WB	Bergen Street/Franklin Ave	4	56	14	160	
	B67/B69	NB	Seventh Ave/9th Street	6	281	47	43	(5)
		SB	Seventh Ave/Union Street	7	302	43	76	(5)
	B103	EB	Avenue H/Utica Ave	13	683	53	19	
		WB	Avenue H/East 38th Street	5	165	33	105	

Notes:
(1) Peak hours: weekday 8-9 AM and 5-6 PM.
(2) Based on most currently available data from NYC Transit.
(3) Available capacity based on a maximum of 54 passengers per standard bus.
(4) Combined local and limited service.
(5) NYC Transit data reports combined B67 and B69 ridership.

B38

The B38 travels between Cadman Plaza West/Tillary Street in Downtown Brooklyn and Catalpa/Seneca Avenues in Ridgewood, Queens, traveling mainly along DeKalb Avenue in the westbound direction and via Fulton Street and Lafayette Avenue in the eastbound direction. At all times except midnight hours, a branch operates to Starr Street and Metropolitan Avenue in Ridgewood, diverging from the main route at Stanhope Street and Seneca Avenue and operating via Stanhope Street and Grandview Avenue, using Starr and Woodward Streets to return. Limited-stop service is provided to Catalpa/Seneca Avenues on weekdays. (When Limited-stop service is provided, all local buses operate to/from Starr Street/Metropolitan Avenue.) The B38 functions as a grid route in northern Brooklyn and western Queens, serving Downtown Brooklyn, Ft. Greene, Clinton Hill and Bushwick. During the AM peak hour, the maximum load point in the peak westbound direction occurs at DeKalb/Vanderbilt Avenues, with an average of 43 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Lafayette/Nostrand Avenues with an average of 44 passengers per bus.

B41

The B41, which provides local and limited-stop service in Brooklyn, operates to Downtown Brooklyn from two southern terminals, Kings Plaza in Mill Basin, and Veterans Avenue and East 71st Street in Bergen Beach. The B41 travels along Veterans Avenue, Avenue N, Flatbush Avenue, Livingston Street, Joralemon Street and Cadman Plaza West. It serves as a major grid service and as feeder service to the Flatbush Avenue/Nostrand Avenue subway station, as well as Atlantic Avenue – Barclays Center. During the AM peak hour, the maximum load point in the peak northbound direction occurs at Flatbush Avenue/Nostrand Avenue, with an average of 52 passengers per bus. During the PM peak hour, the maximum load point in the peak southbound direction also occurs at Flatbush Avenue/Nostrand Avenue, with an average of 48 passengers per bus.

B45

The B45 operates between Ralph Avenue/St. John's Place in Ocean Hill and Court/Livingston Streets in Downtown Brooklyn, via Livingston Street, Atlantic Avenue, Flatbush Avenue, Washington Avenue and St. John's Place. The B45 functions as a grid route, and serves Downtown Brooklyn, Prospect Heights, Crown Height and Ocean Hill. During the AM peak hour, the maximum load point in the peak westbound direction occurs at St. John's Place/Nostrand Avenue, with an average of 41 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Flatbush and Atlantic Avenues, with an average of 46 passengers per bus.

B52

The B52 is a grid route which operates from Ridgewood, Queens to Cadman Plaza West in Downtown Brooklyn. The B52 travels via Cadman Plaza West, Tillary Street, Adams Street (Court Street northbound), Fulton Street and Gates Avenue, and serves Downtown Brooklyn, Bedford-Stuyvesant and Bushwick. During the AM peak hour, the maximum load point in the peak westbound direction occurs at Gates and Nostrand Avenues, with an average of 45 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Green Avenue/Fulton Street, with an average of 51 passengers per bus.

B63

The B63 operates between a southern terminus at Shore Road/4th Avenue in Bay Ridge and a northern terminus at Atlantic Avenue/Columbia Street in Cobble Hill, traveling primarily via 5th, Flatbush and Atlantic Avenues. This major grid route serves the business districts of Bay Ridge, Sunset Park, Park Slope and Downtown Brooklyn. During the AM peak hour, the maximum load point in the peak southbound direction occurs at 5th Avenue/39th Street, with an average of 40 passengers per bus. During the PM peak hour, the maximum load point in the peak southbound direction also occurs at 5th Avenue/39th Street, with an average of 39 passengers per bus.

B65

The B65 operates between a western terminus at Smith/Fulton Streets in Downtown Brooklyn and an eastern terminus at Ralph Avenue/St. John's Place in Crown Heights. This grid route operates primarily via Atlantic Avenue and Dean Street eastbound, and Bergen and Smith Streets westbound. During the AM peak hour, the maximum load point in the peak westbound direction occurs at Bergen Street/Franklin Avenue, with an average of 40 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Dean Street/Washington Avenue, with an average of 37 passengers per bus.

B67/B69

The B67 operates between a southern terminus at Cortelyou Road/MacDonald Avenue in Kensington and two northern termini—Wythe Avenue/Division Street in Williamsburg on weekdays, and Sands/Jay Streets (High Street subway station) in Downtown Brooklyn on weekends. This grid route operates primarily via McDonald, 7th, and Flatbush Avenues, and Livingston and Jay Streets, and serves the Downtown Brooklyn and Park Slope shopping districts. The B69 provides service along McDonald and 7th Avenues between Cortelyou Road/MacDonald Avenue and Sands/Jay Streets on weekdays utilizing Vanderbilt and Flushing Avenues (rather than Flatbush Avenue and Livingston Street) to reach Sands Street. During the AM peak hour, the maximum load point for the combined B67/B69 service in the peak northbound direction occurs at 7th Avenue/Union Street, with an average of 50 passengers per bus. During the PM peak hour, the maximum load point in the peak southbound direction also occurs at 7th Avenue/Union Street, with an average of 43 passengers per bus.

B103

The B103 is a limited service that operates between Williams and Flatlands Avenues in Canarsie and Tillary and Adams Streets in Downtown Brooklyn, with additional service operating between Williams/Flatlands Avenues and the Brooklyn College subway station. From Tillary Street, B103 buses operate primarily along Adams and Livingston Streets, 4th Avenue, the Prospect Expressway, Cortelyou Road, Flatbush Avenue, Avenue H, East 80th Street, Avenue M, and East 105th Street. During the AM peak hour, the maximum load point in the peak westbound direction occurs at Avenue H/East 56th Street, with an average of 41 passengers per bus. During the PM peak hour, the maximum load point in the peak eastbound direction occurs at Avenue H/Utica Avenue, with an average of 53 passengers per bus.

FUTURE WITHOUT PHASE II

Through 2035, it is expected that demand on the local bus routes serving the project site will increase due to (a) the completion of the new residential, commercial and retail uses on Site 5 and the Arena Block associated with Phase I of the Project; (b) the development of new

office/commercial, residential, cultural, community facility and retail space in Downtown Brooklyn and other neighborhoods in proximity to the project site; and (c) long-term background growth. The additional local bus demands generated by this new development and by background growth were added to existing line haul demand at the maximum load point on each bus route in order to forecast the Future Without Phase II condition.

As shown in **Table 4D-4**, under the commercial mixed-use variation (the RWCDS for the weekday transit analyses), new local bus trips from Phase I development (excluding Barclays Center Arena demand) are expected to total 221 and 301 during the analyzed weekday AM and PM peak hours, respectively. In addition, it should be noted that data on Existing conditions bus line haul volumes provided by NYCT pre-date the opening of the Arena, and therefore, Arena bus demand is not reflected in the Existing conditions analysis. While most spectators attending a weekday evening Nets game at the Arena do not typically travel during the weekday 8-9 AM and 5-6 PM peak hours analyzed for bus line haul conditions (the pregame peak hour for spectator trips being 7-8 PM), appreciable numbers of Arena employee trips do occur during these periods on a Nets game day. It is estimated that Arena employees account for a total of approximately three and 90 trips by local bus during the weekday 8-9 AM and 5-6 PM peak hours, respectively, and these trips have therefore also been incorporated into the Future Without Phase II bus line haul analysis.

Along with demand from Phase I development and from Arena employees not reflected in the existing baseline volumes, the analysis of bus line haul conditions in the Future Without Phase II also incorporates demand from projects treated as discrete developments for the purposes of the transportation analyses and shown in **Table C-1** in **Appendix C**. In addition, the Future Without Phase II bus line haul volumes reflect annual background growth rates of 0.25 percent per year for the 2013 through 2018 period and 0.125 percent for the 2018 through 2035 period. These background growth rates, recommended in the 2012 *CEQR Technical Manual* for projects in Downtown Brooklyn, are applied to account for smaller projects and as-of-right developments not reflected in **Table C-1**, and general increases in travel demand not attributable to specific development projects.

Bus trips from major new development and from Arena employee trips not reflected in the existing baseline volumes were assigned to the maximum load points on each of the eleven NYCT and MTA Bus local bus routes serving the project site based on existing demand patterns and the proximity of individual routes to development sites. **Table 4D-47** shows the estimated peak hour, peak direction ridership at the maximum load point of each of the local bus routes serving the project site in the 2035 Future Without Phase II. As shown in **Table 4D-47**, several analyzed local bus routes are expected to experience capacity shortfalls at their maximum load points in one or both peak periods in the Future Without Phase II. B25 buses would experience a shortfall of 32 spaces westbound in the AM peak hour and 14 spaces eastbound in the PM. Westbound B26 buses would experience a shortfall of 22 spaces in the AM peak hour, while northbound B41 buses would experience a shortfall of 24 spaces in the AM. Eastbound B45 buses would experience a shortfall of three spaces in the PM peak hour while eastbound B52 buses would experience a shortfall of 61 spaces in the PM. Northbound B67/B69 buses would experience a shortfall of 16 spaces in the AM peak hour and three spaces in the PM. Lastly, eastbound B103 buses would experience a shortfall of 31 spaces in the PM peak hour.

Table 4D-47
Future Without Phase II Local Bus Conditions

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	2035 Peak Hour Passengers (2)	Conditions with Current Service Levels: Peak Hour Buses (3)	Average Passengers/Bus	Available Capacity (4)	Conditions with Potential Service Adjustments: Peak Hour Buses (5)	Average Passengers/Bus	Available Capacity (4)	Notes
	B25	EB	Fulton Street/Ralph Ave	168	7	24	210	7	24	210	
		WB	Fulton Street/Nostrand Ave	464	8	58	-32	9	52	22	
	B26	EB	Halsey Street/Malcom X Blvd	140	6	23	184	6	23	184	
		WB	Halsey Street/Broadway	562	10	56	-22	11	51	32	
	B38	EB	Lafayette Ave/Nostrand Ave	217	18	12	755	18	12	755	(6)
		WB	DeKalb Ave/Vanderbilt Ave	1,207	25	48	143	25	48	143	(6)
	B41	NB	Flatbush Ave/Nostrand Ave	1,050	19	55	-24	20	53	30	(6)
		SB	Flatbush Ave/Nostrand Ave	439	20	22	641	20	22	641	(6)
	B45	EB	St. Johns Place/Kingston Ave	119	5	24	151	5	24	151	
		WB	St. Johns Place/Nostrand Ave	271	6	45	53	6	45	53	
AM	B52	EB	Gates Ave/Broadway	267	10	27	273	10	27	273	
		WB	Gates Ave/Nostrand Ave	552	11	50	42	11	50	42	
	B63	NB	Atlantic Ave/Third Ave	161	4	40	55	4	40	55	
		SB	Fifth Ave/39th Street	169	4	42	47	4	42	47	
	B65	EB	Dean Street/Washington Ave	92	6	15	232	6	15	232	
		WB	Bergen Street/Franklin Ave	308	7	44	70	7	44	70	
	B67/B69	NB	Seventh Ave/9th Street	448	8	56	-16	9	50	38	(7)
		SB	Seventh Ave/Union Street	417	8	52	15	8	52	15	(7)
	B103	EB	Avenue H/East 56th Street	208	7	30	170	7	30	170	
		WB	Avenue H/East 56th Street	912	21	43	222	21	43	222	
	B25	EB	Fulton Street/Nostrand Ave	446	8	56	-14	9	50	40	
		WB	Fulton Street/Greene Ave	175	6	29	149	6	29	149	
	B26	EB	Halsey Street/Nostrand Ave	459	9	51	27	9	51	27	
		WB	Halsey Street/Nostrand Ave	156	8	20	276	8	20	276	
	B38	EB	Lafayette Ave/Nostrand Ave	668	13	51	34	13	51	34	(6)
		WB	DeKalb Ave/Nostrand Ave	274	12	23	374	12	23	374	(6)
	B41	NB	Flatbush Ave/Avenue P	536	16	34	328	16	34	328	(6)
		SB	Flatbush Ave/Nostrand Ave	1,144	22	52	44	22	52	44	(6)
	B45	EB	Flatbush Ave/Atlantic Ave	327	6	55	-3	7	47	51	
		WB	St. Johns Place/Kingston Ave	148	6	25	176	6	25	176	
PM	B52	EB	Greene Ave/Fulton Street	547	9	61	-61	11	50	47	
		WB	Gates Ave/Broadway	307	9	34	179	9	34	179	
	B63	NB	Fifth Ave/69th Street	228	6	38	96	6	38	96	
		SB	Fifth Ave/39th Street	266	6	44	58	6	44	58	
	B65	EB	Dean Street/Washington Ave	218	5	44	52	5	44	52	
		WB	Bergen Street/Franklin Ave	64	4	16	152	4	16	152	
	B67/B69	NB	Seventh Ave/9th Street	327	6	55	-3	7	47	51	(7)
		SB	Seventh Ave/Union Street	353	7	50	25	7	50	25	(7)
	B103	EB	Avenue H/Utica Ave	733	13	56	-31	14	52	23	
		WB	Avenue H/East 38th Street	179	5	36	91	5	36	91	

Notes:
(1) Peak hours: weekday 8-9 AM and 5-6 PM.
(2) Assumes 0.025% per year background growth for years 1-5 and 0.0125% per year for subsequent years during the 2013-2035 period, plus demand from Phase I and No Build sites.
(3) Based on most currently available NYC Transit ridership summaries, unless otherwide noted.
(4) Available capacity based on a maximum of 54 passengers for a standard bus as per *CEQR Technical Manual* criteria.
(5) Assumes service levels adjusted to address capacity shortfalls during the 2013 through 2035 period.
(6) Combined local and limited service.
(7) NYC Transit data reports combined B67 and B69 ridership.

As standard practice, NYCT and MTA Bus routinely conduct periodic ridership counts and increase service where operationally warranted and fiscally feasible. It is therefore anticipated that in the 2035 Future Without Phase II, NYCT and MTA Bus would increase frequency on these routes to address their capacity shortfalls. As shown in **Table 4D-47,** in the AM peak hour the addition of one bus each to the westbound B25 and B26 routes and the northbound B41 and B67/69 routes would fully address the capacity shortfalls on these routes in the AM. In the PM peak hour, the addition of one eastbound bus each to the B25, B45 and B103 routes, one northbound bus to the B67/B69 route and two eastbound buses to the B52 route would fully address the capacity shortfalls on these routes in the PM in the Future Without Phase II.

FUTURE WITH PHASE II

As shown in **Table 4D-8,** full build-out of Phase II of the Project would generate an estimated 79 inbound and 180 outbound local bus trips in the AM peak hour, and 206 inbound and 139 outbound in the PM peak hour. These trips were assigned to the maximum load points on each of the analyzed NYCT and MTA Bus local bus routes based on existing demand patterns and the proximity of Phase II development sites to each of the maximum load points. **Table 4D-48** shows resulting conditions on these local bus routes at the maximum load points with full build-out of Phase II in 2016. As shown in **Table 4D-48**, the proposed project would add up to 11 peak direction passengers to each analyzed bus route in the AM peak hour, and up to 12 additional passengers in the PM peak hour. With this added demand, all analyzed local bus routes would continue to operate with available capacity at their peak load points in both the weekday AM and PM peak hours in the 2035 Future With Phase II. Therefore, development of Phase II under the Extended Build-Out Scenario is not expected to result in any significant adverse impacts to local bus conditions.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The analysis of local bus conditions in the 2006 FEIS identified a significant adverse impact to westbound B38 buses in the AM peak hour that could be addressed by the addition of one westbound bus during this period. The findings of this SEIS with respect to local bus conditions and potential significant impacts are not directly comparable to those of the 2006 FEIS as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario, with Phase I of the Project reflected in the background condition. By contrast, the 2006 FEIS assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), the local bus analyses also differ with respect to travel demand factors, analysis methodologies, background conditions (including changes in bus routes and service levels since 2006), background growth rates, and the development program for the Project. The local bus conditions projected in this SEIS for the Future With Phase II under the Extended Build-Out Scenario are, however, generally consistent with those projected in the 2006 FEIS. The findings of this SEIS analysis are that development of Phase II under the Extended Build-Out Scenario would not result in any significant adverse impacts in the weekday AM and PM peak hours to the eleven local bus routes currently operating within ¼-mile of the project site. The one route projected to be impacted in the 2006 FEIS as a result of full build-out of the Project—the westbound B38—is not expected to experience appreciable numbers of new trips in either the AM or PM peak hours as a result of Phase II demand under the Extended Build-Out Scenario.

Table 4D-48
Future With Phase II Local Bus Conditions

Peak Hour (1)	Route	Peak Direction	Maximum Load Point	Peak Hour Buses (2)	Future w/o Phase II Available Capacity (3)	Phase II Increment	Available Capacity w/Phase II (3)	Notes
	B25	EB	Fulton Street/Ralph Ave	7	210	3	207	
		WB	Fulton Street/Nostrand Ave	9	22	5	17	
	B26	EB	Halsey Street/Malcom X Blvd	6	184	3	181	
		WB	Halsey Street/Broadway	11	32	4	28	
	B38	EB	Lafayette Ave/Nostrand Ave	18	755	0	755	(4)
		WB	DeKalb Ave/Vanderbilt Ave	25	143	0	143	(4)
	B41	NB	Flatbush Ave/Nostrand Ave	20	30	6	24	(4)
		SB	Flatbush Ave/Nostrand Ave	20	641	6	635	(4)
AM	B45	EB	St. Johns Place/Kingston Ave	5	151	3	148	
		WB	St. Johns Place/Nostrand Ave	6	53	2	51	
	B52	EB	Gates Ave/Broadway	10	273	5	268	
		WB	Gates Ave/Nostrand Ave	11	42	6	36	
	B63	NB	Atlantic Ave/Third Ave	4	55	4	51	
		SB	Fifth Ave/39th Street	4	47	3	44	
	B65	EB	Dean Street/Washington Ave	6	232	2	230	
		WB	Bergen Street/Franklin Ave	7	70	3	67	
	B67/B69	NB	Seventh Ave/9th Street	9	38	5	33	(5)
		SB	Seventh Ave/Union Street	8	15	11	4	(5)
	B103	EB	Avenue H/East 56th Street	7	170	2	168	
		WB	Avenue H/East 56th Street	21	222	4	218	
	B25	EB	Fulton Street/Nostrand Ave	9	40	8	32	
		WB	Fulton Street/Greene Ave	6	149	3	146	
	B26	EB	Halsey Street/Nostrand Ave	9	27	8	19	
		WB	Halsey Street/Nostrand Ave	8	276	4	272	
	B38	EB	Lafayette Ave/Nostrand Ave	13	34	0	34	(4)
		WB	DeKalb Ave/Nostrand Ave	12	374	0	374	(4)
	B41	NB	Flatbush Ave/Avenue P	16	328	5	323	(4)
		SB	Flatbush Ave/Nostrand Ave	22	44	12	32	(4)
PM	B45	EB	Flatbush Ave/Atlantic Ave	7	51	10	41	
		WB	St. Johns Place/Kingston Ave	6	176	4	172	
	B52	EB	Greene Ave/Fulton Street	11	47	11	36	
		WB	Gates Ave/Broadway	9	179	7	172	
	B63	NB	Fifth Ave/69th Street	6	96	4	92	
		SB	Fifth Ave/39th Street	6	58	3	55	
	B65	EB	Dean Street/Washington Ave	5	52	4	48	
		WB	Bergen Street/Franklin Ave	4	152	2	150	
	B67/B69	NB	Seventh Ave/9th Street	7	51	9	42	(5)
		SB	Seventh Ave/Union Street	7	25	7	18	(5)
	B103	EB	Avenue H/Utica Ave	14	23	6	17	
		WB	Avenue H/East 38th Street	5	91	3	88	

Notes:
(1) Peak hours: weekday 8-9 AM and 5-6 PM.
(2) Assumes service levels adjusted to address capacity shortfalls in the No Build condition.
(3) Available capacity based on a maximum of 54 passengers per standard bus.
(4) Combined limited and local service.
(5) NYC Transit data reports combined B67 and B69 ridership.
* Denotes a significant adverse impact based on *CEQR Technical Manual* criteria.

LONG ISLAND RAIL ROAD SERVICE

EXISTING CONDITIONS

In addition to subway and bus transit, Downtown Brooklyn and the project site are served by commuter rail, with the Long Island Rail Road operating out of Atlantic Terminal at Flatbush and Atlantic Avenues. The railroad's Atlantic Terminal consists of three below-grade platforms serving six stub-end tracks, and a street-level concourse that provides access to the Atlantic Terminal office and retail development located immediately above.

Direct connections to subway lines are available at the Atlantic Avenue – Barclays Center subway station complex which incorporates the LIRR terminal. Stairs connect each LIRR platform to a central connecting corridor that provides access to all of the subway lines serving the station complex. Direct access is also available to the platform for Manhattan-bound Nos. 2 and 3 trains, which is at the same level and adjacent to the LIRR platforms.

From Atlantic Terminal, LIRR trains operate to Jamaica, Queens and points east, with connections available to all LIRR branches with the exception of the Port Washington Branch. Based on fall 2013 schedules, the number of LIRR trains arriving at Atlantic Terminal during the weekday AM commuter period peaks at ten between 7:30 and 8:30 AM. During the weekday evening commuter peak period, upwards of nine LIRR trains are scheduled to depart Downtown Brooklyn in a one hour period. During the weekday midday off-peak periods, trains typically arrive and depart Atlantic Terminal twice per hour.

As discussed previously, an Event Transportation Plan has been developed to help manage traffic, pedestrian and transit conditions at the Barclays Center Arena on days when a Nets game or other major event is scheduled. This plan, which is coordinated by a full-time Traffic Manager, includes the operation of late-night LIRR shuttle trains from Atlantic Terminal to Jamaica on evenings when a Nets game or a major concert or special event is scheduled at Barclays Center. This service typically consists of four additional departures over a 90-minute to two-hour period timed to coincide with the end of a Nets game or other event at the Arena. Connections to regularly-scheduled trains serving other LIRR branches are available at Jamaica.

Overall, the LIRR carries approximately 285,082 passengers each weekday (approximately 81.7 million passengers per year) on 10 branches serving 124 stations. An estimated 12 percent of Downtown Brooklyn office commuters use the LIRR for their commute. In addition to serving Downtown Brooklyn, Atlantic Terminal is also a major transfer point between the LIRR and the subway, especially for trips en route to and from Lower Manhattan. Total weekday LIRR trips through Atlantic Terminal (arrivals and departures combined) totaled approximately 25,590 in 2012.

The below-grade Vanderbilt Yard to the south and east of the terminal (on the project site) is used as a daytime storage and cleaning facility for the LIRR trains serving Atlantic Terminal. The yard was originally located on the Arena Block, and these functions were relocated to a temporary facility on Blocks 1120 and 1121 to accommodate construction of the Arena. This temporary yard has nine tracks of varying lengths and is accessed via a lead track from the main line just west of Vanderbilt Avenue. After storage and cleaning, the trains return to service to accommodate PM ridership to Jamaica and points east. The yard is empty overnight and on weekends. As discussed below, a permanent below-grade yard will be constructed on Blocks 1120 and 1121 in the Future Without Phase II.

FUTURE WITHOUT PHASE II

It is anticipated that in the Future Without Phase II, the LIRR's East Side Access (ESA) project will have been completed (by 2023), allowing LIRR trains to serve a new terminal beneath Metro-North's Grand Central Terminal. This will provide LIRR passengers with direct access to the East Midtown area of Manhattan without the need for a bus or subway transfer or a walk to or from Penn Station on the west side of Manhattan. Data from the *MTA/LIRR East Side Access FEIS* indicate that LIRR ridership at Atlantic Terminal will decrease compared to conditions without ESA. Some of this projected decline in LIRR ridership will likely be offset by increased demand resulting from the development of Phase I of the Project, other new development in Downtown Brooklyn, and general background growth during the 2013 through 2035 period. It is also anticipated that service patterns to Atlantic Terminal will be adjusted to accommodate operational needs at the LIRR's Jamaica hub resulting from ESA.

As shown in **Table 4D-4**, during weekday peak hours, residential, retail and office development associated with Phase I under the commercial mixed-use variation is expected to generate 288 trips on the LIRR in the AM peak hour, 4 trips in the midday, 336 trips in the PM peak hour and 101 trips in the pregame peak hour. As shown in **Table 4D-3**, on Saturdays, residential, retail, office and hotel development associated with Phase I under the residential mixed-use variation will generate an estimated 12 LIRR trips in the Saturday pregame peak hour. (An additional 809 trips associated with a Nets game at the Arena are also forecast for this peak hour.) Most if not all of these trips are expected to utilize existing entrances to Atlantic Terminal located on the north side of Atlantic Avenue as there is no direct access to the LIRR platforms (without paying a subway fare) from the new on-site entrance to the Atlantic Avenue – Barclays Center subway station.

In the Future Without Phase II, it is also anticipated that by 2016 the current temporary LIRR yard on Blocks 1120 and 1121 will be replaced by a permanent, seven-track storage yard at the same location that will provide wider areas between tracks for servicing trains and more modern switching, signal, and toilet servicing equipment. The west end of the improved rail yard will include a new portal (West Portal) which will provide a direct route to and from the LIRR Atlantic Terminal and the storage yard. The West Portal will also provide an emergency detour route for passenger train egress from the LIRR Atlantic Terminal. Lastly, the new rail yard will be designed to accommodate support for substantial portions of the Phase II development that would be built on a platform covering the new rail yard in the Future With Phase II.

FUTURE WITH PHASE II

In the Future With Phase II, the proposed residential buildings located on Blocks 1120 and 1121 would be constructed on a platform that would be built over the below-grade LIRR yard on these blocks. Operation of this yard would otherwise remain unchanged from conditions in the Future Without Phase II.

As shown in **Table 4D-8**, development associated with Phase II of the Project is expected to generate an estimated 43 new trips on the LIRR in the AM peak hour, 17 trips in the midday, 36 trips in the PM peak hour, 26 trips in the weekday pregame peak hour and 30 trips in the Saturday pregame peak hour. As was the case for demand from Phase I, most if not all of these Phase II LIRR trips are expected to utilize existing entrances to Atlantic Terminal located on the north side of Atlantic Avenue as there is no direct access to the LIRR platforms (without paying a subway fare) from the new on-site entrance to the Atlantic Avenue – Barclays Center subway

station. The relatively small numbers of new LIRR trips that would be generated by development of Phase II are not expected to adversely affect LIRR line haul conditions.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The findings of the 2006 FEIS with respect to the LIRR were that full build-out of the Project would not adversely affect LIRR line haul conditions, and that there would be no impact on LIRR passenger service from the planned reconfiguration and upgrading of the existing rail yard on the project site. Changes in background conditions subsequent to the 2006 FEIS include updated projections of future development in proximity to the project site; lower background growth rates assumed for future years (i.e., rates of 0.25 percent/year for years 1-5 and 0.125 percent/year for subsequent years compared to the rate of 0.5 percent/year for all years that was used in the 2006 FEIS); anticipated changes in LIRR service and ridership at Atlantic Terminal as a result of the completion of the East Side Access project by 2023; and a reduction in the number of storage tracks in the upgraded Vanderbilt Yard from nine to seven along with a partial relocation of the yard's drill track off of the Arena Block (both of which were discussed in the 2009 Technical Memorandum).

Under the Extended Build-Out Scenario, the relatively small numbers of new LIRR trips generated by Phase II of the Project (17 to 43 in any one peak hour) are not expected to adversely affect LIRR line haul conditions, and the development of Phase II is not expected to adversely affect operations at the upgraded Vanderbilt Yard. These findings are generally consistent with those of the 2006 FEIS and the 2009 Technical Memorandum.

H. PEDESTRIANS

EXISTING CONDITIONS

The analysis of pedestrian conditions focuses on those pedestrian elements—sidewalks, corner areas, and crosswalks—analyzed in the 2006 FEIS where Phase II pedestrian trips are expected to be most concentrated. As shown in **Figure 4D-4**, these include elements located immediately adjacent to Phase II development sites on Blocks 1120, 1121, 1128 and 1129 as well as along pathways between these development sites and the new entrance to the Atlantic Avenue – Barclays Center subway station located on the Arena Block. Pedestrian facilities adjacent to Site 5 and along 6th Avenue on the Arena Block that were analyzed in the 2006 FEIS are not analyzed in this SEIS, as much of the Project-related demand on these sidewalks is from Phase I, and Phase II pedestrian trips are not expected to be as concentrated at these locations. Sidewalks along the 6th Avenue corridor between Dean Street and Flatbush Avenue were also included in the 2006 FEIS to assess the effects of a proposed narrowing under the Project in order to better accommodate two-way traffic flow along the adjacent roadway. As NYCDOT subsequently decided not to implement this widening, these sidewalks are also not analyzed in this SEIS.

As noted previously, the Existing conditions baseline pedestrian networks reflect game-day Barclays Center Arena demand in the weekday peak hours. However, as no Saturday afternoon Nets games were scheduled during the 2013 pedestrian count program, the Existing conditions Saturday pregame peak hour pedestrian networks do not reflect game-day demand. Travel demand from a Saturday afternoon Nets game at the Arena is therefore forecasted for use in developing the Future Without Phase II background condition.

SIDEWALKS

The Arena Block is characterized by relatively wide 18 to 20-foot sidewalks as well as substantial amounts of pedestrian plaza space, especially at the west end of the block in proximity to the main Arena entrance and the new entrance to the Atlantic Avenue – Barclays Center subway station. However, pedestrian flow is constrained at some locations by security bollards that have been installed around the perimeter of the Arena as well as tree pits, benches, light poles and other street furniture. For example, the 20-foot-wide sidewalk along the east side of Flatbush Avenue between Atlantic Avenue and Dean Street (location S1 in **Figure 4D-4**) has an effective width—the width actually available to accommodate pedestrian flow—of approximately 12 feet north of Dean Street due to the presence of a tree pit near the building line and bollards at curbside. On-going construction activity is also temporarily affecting pedestrian flow on the Arena Block. For example, the south sidewalk on Atlantic Avenue between Ft. Greene Place and 6th Avenue (S2) narrows to approximately 9.5 feet (three feet of effective width) at its eastern end due to the presence of a temporary construction wall adjacent to the future site of Building 4.

In addition to accounting for the space occupied by obstructions, the effective widths also include allowances for shy distances which reflect the tendency of pedestrians to avoid obstructions such as walls, curbs and street furniture. The actual and effective sidewalk widths used for the analyses were based on recent field measurements and inventories of existing street furniture. Plans showing future sidewalks dimensions and street furniture were used where measurements of existing sidewalks were not possible due to construction activity. The analysis of sidewalk conditions conservatively focuses on the most constrained point on each sidewalk under both Existing conditions and in the future with and without Phase II.

Adjacent to Phase II development sites, sidewalks along Atlantic Avenue (S4 and S7) are currently 10 to 12 feet in width, while those along the north side of Dean Street (S9 and S12) are approximately 18 feet in width. (It should be noted, however, that sidewalk S12 has an effective width of only four feet between 6th and Carlton Avenues due to the presence of building stoops and tree pits.) The north and south sidewalks along the block of Pacific Street between 6th and Carlton Avenues (S10 and S11, respectively) are 14 feet and 18 feet in width, respectively. An 18-foot-wide sidewalk is also provided along the east side of 6th Avenue between Dean and Pacific Streets (S14), while the east sidewalk between Pacific Street and Atlantic Avenue (S3) is currently only 10 feet in width due to the presence of a construction fence. Both sidewalks along the new bridge carrying Carlton Avenue over the LIRR rail yard (S5 and S6) are 15 feet in width. Lastly, the west sidewalk along Vanderbilt Avenue south of Atlantic Avenue (S8) is approximately 12 feet in width.

As shown in **Table 4D-49**, the highest pedestrian volumes along analyzed sidewalks are typically found along Arena Block sidewalks during the weekday PM and pregame and Saturday pregame periods. Peak 15-minute pedestrian volumes along the east sidewalk on Flatbush Avenue between Atlantic Avenue and Pacific Streets (S1) total 124 in the weekday pregame peak hour and 258 in the Saturday peak hour, while peak 15-minute volumes along the south sidewalk on Atlantic Avenue total approximately 103 in the PM peak hour and 247 in the weekday pregame peak hour between Ft. Greene Place and 6th Avenue (S2). Existing pedestrian volumes along other analyzed sidewalks are relatively low, with peak 15-minute volumes totaling 55 or fewer (or an average of less than four persons per minute) in any analyzed peak hour.

Table 4D-49
Existing Sidewalk Conditions

No.	Location	Effective Width (feet)	Peak 15-Min Volumes AM	PM	PRE	SAT	Flow Rate (PMF) AM	PM	PRE	SAT	Platoon Adjusted LOS AM	PM	PRE	SAT
S1	Flatbush Ave between Atlantic Ave and Dean Street - East	11.0	44	69	124	258	0.3	0.4	0.8	1.6	A	A	B	B
S2	Atlantic Ave between Fort Greene Pl and 6th Ave - South	3.0	52	103	247	33	1.2	2.3	5.5	0.7	B	B	C	B
S3	6th Ave between Atlantic Ave and Pacific Street - East	5.0	36	40	50	45	0.5	0.5	0.7	0.6	B	B	B	B
S4	Atlantic Ave between 6th and Carlton Aves - South	2.0	15	34	40	16	0.5	1.1	1.3	0.5	B	B	B	B
S5	Carlton Ave between Atlantic Ave and Pacific Street - West	8.0	3	6	9	11	0.0	0.0	0.1	0.1	A	A	A	A
S6	Carlton Ave between Atlantic Ave and Pacific Street - East	7.5	13	11	7	14	0.1	0.1	0.1	0.1	A	A	A	A
S7	Atlantic Ave between Carlton and Vanderbilt Aves - South	0.5	11	24	33	15	1.5	3.2	4.3	2.0	B	C	C	B
S8	Vanderbilt Ave between Atlantic Ave and Pacific Street - West	7.0	19	18	24	38	0.2	0.2	0.2	0.4	A	A	A	A
S9	Dean Street between Carlton and Vanderbilt Aves - North	11.0	13	44	35	20	0.1	0.3	0.2	0.1	A	A	A	A
S10	Pacific Street between 6th and Carlton Aves - North	n/a	Sidewalk Affected by Construction in Existing Condition											
S11	Pacific Street between 6th and Carlton Aves - South	10.0	8	10	37	18	0.1	0.1	0.2	0.1	A	A	A	A
S12	Dean Street between 6th and Carlton Aves - North	4.0	26	28	55	23	0.4	0.5	0.9	0.4	A	B	B	A
S13	Dean Street between Flatbush and 6th Aves - North	n/a	Sidewalk Affected by Construction in Existing Condition											
S14	6th Ave between Dean and Pacific Streets - East	11.5	27	35	44	7	0.2	0.2	0.3	0.0	A	A	A	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
PMF - persons per foot of effective width per minute.
LOS - level of service.

In addition, it should be noted that the north sidewalk on Pacific Street east of 6th Avenue (S10) was closed for construction activity during the Spring 2013 data collection program, as was much of the north sidewalk on Dean Street east of Flatbush Avenue (S13). (Subsequently, sidewalk S10 was partially reopened with an eight-foot-wide pathway provided for pedestrians.)

Table 4D-49 also shows the existing effective widths and levels of service at the most constrained point along all analyzed sidewalks in the weekday AM, PM and pregame and Saturday pregame peak hours. The effective widths shown in **Table 4D-49** reflect the presence of building stoops, fences, bollards, tree pits and other street furniture, as well as the tendency of pedestrians to shy away from walls and curbs. As shown in **Table 4D-49**, all analyzed sidewalks currently operate at an uncongested LOS C or better under platoon conditions in all peak hours.

CORNER AREAS AND CROSSWALKS

As shown in **Table 4D-50**, analyzed crosswalks at the project site range from 8.5 to 22 feet in width, with wider crosswalks typically provided on major avenue crossings and locations with higher pedestrian traffic. For example, 17-foot-wide crosswalks have been provided on both 6th Avenue and Carlton Avenue along the north side of Dean Street (locations X15 and X12, respectively, in **Figure 4D-4**). By contrast, the crosswalks on Dean Street itself at these two locations range from 8.5 to 13.5 feet in width. High visibility crosswalks have also been installed at all intersections along Flatbush Avenue adjacent to the Arena.

Tables 4D-50 and 4D-51 show the existing levels of service at analyzed crosswalks and corner areas during the weekday AM, PM and pregame and Saturday pregame peak hours. As shown in **Tables 4D-50 and 4D-51**, during these peak hours all analyzed crosswalks and corner areas currently operate at an uncongested LOS C or better with the exception of the west crosswalk on Atlantic Avenue at 6th Avenue which operates at LOS D (19.5 square-feet per pedestrian) in the weekday pregame peak hour. In addition, it should be noted that during the Spring 2013 data collection program, the northeast corner at Flatbush Avenue and Dean Street (C11) was affected by construction activity associated with development of Building 2. However, a minimum five-foot-wide pathway was maintained for pedestrian flow at this location.

FUTURE WITHOUT PHASE II

Development of Site 5 and Buildings 1 through 4 on the project site as part of Phase I will result in physical changes to pedestrian facilities in the Future Without Phase II. With the completion of Building 1, the plaza in front of the Barclays Center Arena at the Atlantic Avenue/Flatbush Avenue intersection will become an enclosed space (the Urban Room). Sidewalk S1 on the east side of Flatbush Avenue adjacent to the Urban Room will have an effective width of approximately 9 feet where bollards transition from near the building line to near the curb adjacent to a bus stop. With the completion of Building 4, it is anticipated that the temporary construction wall along the south sidewalk on Atlantic Avenue west of 6th Avenue (S2) will be removed, and that the width of this sidewalk will increase from 9.5 feet to 20 feet at this location. As a result, the effective width of sidewalk S2 is expected to increase from 3 feet to 9.5 feet after accounting for the potential installation of additional bollards. The effective width of sidewalk S8 along the west side of Vanderbilt Avenue south of Atlantic Avenue is expected to increase from 7 feet to 10 feet as a result of the removal of a temporary construction fence. In addition, it is anticipated that sidewalk S10 along the north side of Pacific Street between 6th and Carlton Avenues, sidewalk S13 along the north side of Dean Street east of Flatbush Avenue, and the northeast corner area at Flatbush Avenue and Dean Street (C11) will all be reopened to pedestrian traffic. (These facilities were temporarily closed for construction activity in the Existing condition.)

In addition to physical changes to pedestrian facilities, analyzed sidewalks, corner areas and crosswalks are also expected to experience increased pedestrian demand in the Future Without Phase II. This additional demand would result from the new residential and commercial uses associated with Phase I, along with demand from other developments in the vicinity of the project site and general background growth.

Tables 4D-52 through 4D-54 show total peak 15-minute volumes and conditions at analyzed sidewalks, crosswalks and corner areas in the Future Without Phase II under the Extended Build-Out Scenario.

Table 4D-50
Existing Crosswalk Conditions

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Peak 15-Min Volumes AM	PM	EVE	SAT	Avg. Conditions (w/Conflicting Vehicles) AM SF/Ped	LOS	PM SF/Ped	LOS	PRE SF/Ped	LOS	SAT SF/Ped	LOS
X1	Atlantic Av @ 6th Av - west	111.0	12.0	31	66	144	63	110.6	A	45.7	B	19.5	D	45.1	B
X2	Atlantic Av @ 6th Av - south	42.5	11.5	46	38	73	30	216.2	A	265.4	A	133.0	A	345.3	A
X3	Atlantic Av @ 6th Av - east	109.0	12.0	28	39	43	39	106.0	A	56.8	B	58.9	B	68.5	A
X4	Atlantic Av @ Carlton Av - west	117.0	16.0	12	9	9	15	459.9	A	656.6	A	659.2	A	585.2	A
X5	Atlantic Av @ Carlton Av - south	38.5	11.0	17	34	37	19	857.4	A	434.5	A	391.8	A	694.2	A
X6	Atlantic Av @ Carlton Av - east	113.0	13.0	12	17	10	14	385.4	A	265.9	A	435.8	A	462.8	A
X7	Atlantic Av @ Vanderbilt Av - west	113.0	17.0	27	24	26	57	126.9	A	147.8	A	141.5	A	73.8	A
X8	Atlantic Av @ Vanderbilt Av - south	62.0	13.0	23	32	33	18	426.5	A	289.0	A	304.0	A	553.8	A
X9	Dean St @ Vanderbilt Av - north	62.0	16.5	10	10	26	73	566.9	A	604.5	A	234.5	A	92.9	A
X10	Dean St @ Vanderbilt Av - west	34.0	14.0	28	30	33	48	736.4	A	684.3	A	611.9	A	405.0	A
X11	Dean St @ Carlton Av - east	34.0	12.0	19	17	15	20	592.8	A	661.3	A	759.7	A	565.8	A
X12	Dean St @ Carlton Av - north	34.0	17.0	20	24	53	27	434.9	A	353.9	A	151.0	A	304.3	A
X13	Dean St @ Carlton Av - west	34.0	8.5	12	12	16	23	700.3	A	719.6	A	501.2	A	366.5	A
X14	Dean St @ 6th Av - east	34.0	13.0	21	58	49	56	553.9	A	207.1	A	240.6	A	210.0	A
X15	Dean St @ 6th Av - north	34.0	17.0	20	40	88	26	407.9	A	171.8	A	79.3	A	315.3	A
X16	Dean St @ 6th Av - west	34.0	13.5	25	41	98	60	548.0	A	346.6	A	140.9	A	215.5	A
X17	Flatbush Av @ Dean St - east	51.0	16.0	82	169	218	123	149.1	A	71.0	A	52.9	B	97.1	A
X18	Flatbush Av @ Dean St - north	86.0	22.0	12	37	72	34	833.8	A	271.3	A	138.6	A	301.3	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

Table 4D-51
Existing Corner Conditions

No.	Intersection	Corner	Average Conditions							
			AM		PM		PRE		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Atlantic Av @ 6th Av	southwest	204.6	A	128.8	A	62.0	A	154.4	A
C2	Atlantic Av @ 6th Av	southeast	214.9	A	211.1	A	131.7	A	221.3	A
C3	Atlantic Av @ Carlton Av	southwest	792.2	A	508.7	A	439.8	A	626.5	A
C4	Atlantic Av @ Carlton Av	southeast	884.9	A	530.5	A	571.7	A	790.4	A
C5	Atlantic Av @ Vanderbilt Av	southwest	307.1	A	272.2	A	251.6	A	200.8	A
C6	Dean St @ Vanderbilt Av	northwest	1,168.2	A	937.6	A	703.4	A	459.1	A
C7	Dean St @ Carlton Av	northeast	1,407.9	A	1,335.6	A	772.3	A	1,159.8	A
C8	Dean St @ Carlton Av	northwest	1,066.6	A	999.2	A	507.7	A	654.4	A
C9	Dean St @ 6th Av	northeast	1,358.5	A	581.9	A	418.4	A	703.0	A
C10	Dean St @ 6th Av	northwest	1,208.4	A	522.6	A	232.0	A	659.1	A
C11	Flatbush Av @ Dean St	northeast	Corner Area Affected by Construction in Existing Condition							

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

Table 4D-52
Future Without Phase II Sidewalk Conditions

No.	Location	Effective Width (feet)	Peak 15-Min Volumes AM	PM	PRE	SAT	Flow Rate (PMF) AM	PM	PRE	SAT	Platoon Adjusted LOS AM	PM	PRE	SAT
S1	Flatbush Ave between Atlantic Ave and Dean Street - East	9.0	206	261	260	524	1.5	1.9	1.9	3.9	B	B	B	C
S2	Atlantic Ave between Fort Greene Pl and 6th Ave - South	9.5	229	351	407	374	1.6	2.5	2.9	2.6	B	B	B	B
S3	6th Ave between Atlantic Ave and Pacific Street - East	5.0	38	43	51	49	0.5	0.6	0.7	0.7	B	B	B	B
S4	Atlantic Ave between 6th and Carlton Aves - South	2.0	34	80	58	138	1.1	2.7	1.9	4.6	B	B	B	C
S5	Carlton Ave between Atlantic Ave and Pacific Street - West	8.0	3	6	9	11	0.0	0.0	0.1	0.1	A	A	A	A
S6	Carlton Ave between Atlantic Ave and Pacific Street - East	7.5	13	12	8	15	0.1	0.1	0.1	0.1	A	A	A	A
S7	Atlantic Ave between Carlton and Vanderbilt Aves - South	0.5	24	57	45	100	3.2	7.6	6.0	13.3	C	D	C	E
S8	Vanderbilt Ave between Atlantic Ave and Pacific Street - West	10.0	22	24	27	46	0.1	0.2	0.2	0.3	A	A	A	A
S9	Dean Street between Carlton and Vanderbilt Aves - North	11.0	22	55	44	153	0.1	0.3	0.3	0.9	A	A	A	B
S10	Pacific Street between 6th and Carlton Aves - North	6.5	19	22	38	38	0.2	0.2	0.4	0.4	A	A	A	A
S11	Pacific Street between 6th and Carlton Aves - South	10.0	13	17	43	131	0.1	0.1	0.3	0.9	A	A	A	B
S12	Dean Street between 6th and Carlton Aves - North	4.0	36	39	65	152	0.6	0.6	1.1	2.5	B	B	B	B
S13	Dean Street between Flatbush and 6th Aves - North	11.5	105	185	278	122	0.6	1.1	1.6	0.7	B	B	B	B
S14	6th Ave between Dean and Pacific Streets - East	11.5	29	39	56	61	0.2	0.2	0.3	0.4	A	A	A	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
PMF - persons per foot of effective width per minute.
LOS - level of service.

Table 4D-53
Future Without Phase II Crosswalk Conditions

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Peak 15-Min Volumes				Avg. Conditions (w/Conflicting Vehicles)							
								AM		PM		PRE		SAT	
				AM	PM	EVE	SAT	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
X1	Atlantic Av @ 6th Av - west	111.0	12.0	74	124	183	165	44.9	B	23.3	D	14.9	E	16.1	D
X2	Atlantic Av @ 6th Av - south	42.5	11.5	64	86	93	160	143.9	A	104.7	A	95.8	A	54.0	B
X3	Atlantic Av @ 6th Av - east	109.0	12.0	31	45	47	44	94.5	A	48.6	B	53.9	B	59.9	B
X4	Atlantic Av @ Carlton Av - west	117.0	16.0	15	12	11	17	377.0	A	465.4	A	538.7	A	477.9	A
X5	Atlantic Av @ Carlton Av - south	38.5	11.0	32	69	50	119	452.9	A	209.8	A	288.6	A	105.7	A
X6	Atlantic Av @ Carlton Av - east	113.0	13.0	14	20	13	17	293.3	A	198.7	A	341.9	A	368.1	A
X7	Atlantic Av @ Vanderbilt Av - west	113.0	17.0	30	31	29	66	111.3	A	113.0	A	124.9	A	62.1	A
X8	Atlantic Av @ Vanderbilt Av - south	62.0	13.0	36	62	45	84	268.0	A	149.1	A	221.2	A	108.3	A
X9	Dean St @ Vanderbilt Av - north	62.0	16.5	14	18	29	95	513.4	A	427.7	A	248.0	A	84.7	A
X10	Dean St @ Vanderbilt Av - west	34.0	14.0	31	37	36	58	619.2	A	513.8	A	525.8	A	320.5	A
X11	Dean St @ Carlton Av - east	34.0	12.0	19	17	18	20	528.9	A	589.8	A	558.3	A	506.9	A
X12	Dean St @ Carlton Av - north	34.0	17.0	29	38	60	160	340.9	A	260.5	A	157.5	A	55.6	B
X13	Dean St @ Carlton Av - west	34.0	8.5	12	12	18	23	633.3	A	633.6	A	448.2	A	331.0	A
X14	Dean St @ 6th Av - east	34.0	13.0	23	62	51	60	520.9	A	194.0	A	229.9	A	195.3	A
X15	Dean St @ 6th Av - north	34.0	17.0	31	56	100	222	243.2	A	116.0	A	65.6	A	30.7	C
X16	Dean St @ 6th Av - west	34.0	13.5	51	81	124	172	255.5	A	173.7	A	111.0	A	73.9	A
X17	Flatbush Av @ Dean St - east	51.0	16.0	114	232	251	225	105.2	A	50.5	B	45.4	B	50.9	B
X18	Flatbush Av @ Dean St - north	86.0	22.0	26	53	86	64	397.4	A	191.9	A	117.5	A	158.6	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

Table 4D-54
Future Without Phase II Corner Conditions

No.	Intersection	Corner	Average Conditions							
			AM		PM		PRE		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Atlantic Av @ 6th Av	southwest	172.4	A	121.4	A	112.7	A	104.2	A
C2	Atlantic Av @ 6th Av	southeast	579.6	A	429.8	A	397.3	A	260.3	A
C3	Atlantic Av @ Carlton Av	southwest	493.2	A	271.7	A	337.2	A	161.8	A
C4	Atlantic Av @ Carlton Av	southeast	566.9	A	300.7	A	431.4	A	192.0	A
C5	Atlantic Av @ Vanderbilt Av	southwest	234.6	A	166.0	A	204.2	A	97.6	A
C6	Dean St @ Vanderbilt Av	northwest	1,014.5	A	749.0	A	639.4	A	365.1	A
C7	Dean St @ Carlton Av	northeast	1,123.8	A	994.3	A	672.9	A	301.0	A
C8	Dean St @ Carlton Av	northwest	826.6	A	716.2	A	461.0	A	193.7	A
C9	Dean St @ 6th Av	northeast	1,065.7	A	490.8	A	378.6	A	202.3	A
C10	Dean St @ 6th Av	northwest	375.7	A	237.4	A	174.3	A	119.8	A
C11	Flatbush Av @ Dean St	northeast	374.9	A	209.4	A	160.1	A	251.9	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

SIDEWALKS

As shown in **Table 4D-52**, in the Future Without Phase II all analyzed sidewalks are expected to operate at an acceptable LOS C or better under platoon conditions in all peak hours with the exception of sidewalk S7 on the south side of Atlantic Avenue between Carlton and Vanderbilt Avenues. This 10-foot-wide sidewalk is expected to operate at a congested LOS E in the Saturday pregame peak hour and LOS D in the weekday PM peak hour at a point where the effective width is reduced to only 0.5 feet due to the presence of a traffic signal pole opposite a planted strip along the building line. As noted later in this chapter, this sidewalk would be widened to 20 feet with development of Block 1121 in the Future With Phase II.

CORNERS AND CROSSWALKS

As shown in **Table 4D-53**, in the Future Without Phase II all analyzed crosswalks are expected to operate at an acceptable LOS C or better in all peak hours with the exception of the west crosswalk on Atlantic Avenue at 6th Avenue (location X1) which is expected to operate at LOS D in the PM and Saturday pregame peak hours and LOS E in the weekday pregame peak hour.

As shown in **Table 4D-54**, all analyzed corner areas are expected to operate at an uncongested LOS A in all peak hours in the Future Without Phase II.

FUTURE WITH PHASE II

Development of Phase II of the Project under the Extended Build-Out Scenario would result in physical changes to pedestrian facilities at the project site. The buildings that would be constructed under Phase II would be set back to provide for 20-foot-wide sidewalks along Atlantic Avenue, 18.5-foot-wide sidewalks along Vanderbilt Avenue and Dean Street, 16- to 16.5-foot-wide sidewalks along Carlton Avenue and 18-foot-wide sidewalks along the east side of 6th Avenue. A 15-foot-wide sidewalk would be provided along the north side of Pacific Street (this sidewalk was assumed to be 14 feet in width in the 2006 FEIS). In addition, it is anticipated that the south crosswalks on 6th Avenue and on Carlton Avenue at Atlantic Avenue would be widened to 18 feet in width, consistent with the widening of the connecting sidewalks along Atlantic Avenue to 20 feet with development of Phase II. (Eighteen-foot-wide crosswalks were also assumed for these locations in the 2006 FEIS.)

The proposed development of residential, retail and public school uses under Phase II would also result in increases in pedestrian activity on analyzed sidewalks, corner areas and crosswalks. This new demand would primarily include walk-only trips and pedestrian trips en route to and from subway stations, bus stops, and the LIRR. Much of this new demand would be concentrated on sidewalks and crosswalks along Atlantic Avenue and Dean Street which would be the main access corridors for the buildings developed under Phase II. The greatest increases in pedestrian demand as a result of Phase II are expected to occur along the south sidewalk on Atlantic Avenue between 6th and Carlton Avenues (S4) which would experience from 1,874 to 2,957 additional trips in each peak hour. Sidewalk S2 on the south side of Atlantic Avenue between Ft. Greene Place and 6th Avenue would experience from 1,665 to 2,545 additional trips per hour. The north sidewalk on Dean Street between 6th and Carlton Avenues (S12) is expected to experience from 712 to 1,130 additional trips per hour, while the north sidewalk on Dean Street between Carlton and Vanderbilt Avenues (S9) would experience from 892 to 1,504 new trips per hour.

The greatest increases in pedestrian demand on analyzed crosswalks as a result of Phase II are expected to occur along the south crosswalk on 6th Avenue at Atlantic Avenue (X2) which would experience from 1,689 to 2,598 new trips per peak hour, the south crosswalk on Carlton Avenue at Atlantic Avenue (X5) which would experience from 898 to 1,389 new trips, the north crosswalk on 6th Avenue at Dean Street (X15) which would experience from 940 to 1,522 new trips per peak hour and the north crosswalk on Carlton Avenue at Dean Street (X12) which would experience from 764 to 1,215 new trips per peak hour.

Tables 4D-55 through 4D-57 show total peak 15-minute volumes and conditions at analyzed sidewalks, crosswalks and corner areas in the Future With Phase II under the Extended Build-Out Scenario.

Table 4D-55
Future With Phase II Sidewalk Conditions

No.	Location	Effective Width (feet)	Peak 15-Min Volumes AM	PM	PRE	SAT	Flow Rate (PMF) AM	PM	PRE	SAT	Platoon Adjusted LOS AM	PM	PRE	SAT
S1	Flatbush Ave between Atlantic Ave and Dean Street - East	9.0	567	625	525	761	4.2	4.6	3.9	5.6	C	C	C	C
S2	Atlantic Ave between Fort Greene Pl and 6th Ave - South	9.5	830	1,147	927	968	5.8	8.0 *	6.5 *	6.8 *	C	D	D	D
S3	6th Ave between Atlantic Ave and Pacific Street - East	11.0	116	124	87	132	0.7	0.8	0.5	0.8	B	B	B	B
S4	Atlantic Ave between 6th and Carlton Aves - South	13.0	663	1,004	644	876	3.4	5.1	3.3	4.5	C	C	C	C
S5	Carlton Ave between Atlantic Ave and Pacific Street - West	9.0	41	76	42	85	0.3	0.6	0.3	0.6	A	B	A	B
S6	Carlton Ave between Atlantic Ave and Pacific Street - East	9.5	78	110	65	153	0.5	0.8	0.5	1.1	B	B	B	B
S7	Atlantic Ave between Carlton and Vanderbilt Aves - South	13.0	379	580	373	527	1.9	3.0	1.9	2.7	B	B	B	B
S8	Vanderbilt Ave between Atlantic Ave and Pacific Street - West	4.5	77	123	77	167	1.1	1.8	1.1	2.5	B	B	B	B
S9	Dean Street between Carlton and Vanderbilt Aves - North	11.5	365	493	300	556	2.1	2.9	1.7	3.2	B	B	B	C
S10	Pacific Street between 6th and Carlton Aves - North	8.0	22	24	39	40	0.2	0.2	0.3	0.3	A	A	A	A
S11	Pacific Street between 6th and Carlton Aves - South	10.0	13	17	43	131	0.1	0.1	0.3	0.9	A	A	A	B
S12	Dean Street between 6th and Carlton Aves - North	4.0	314	392	288	417	5.2	6.5 *	4.8	6.9 *	C	D	C	D
S13	Dean Street between Flatbush and 6th Aves - North	11.5	514	640	564	447	3.0	3.7	3.3	2.6	B	C	C	B
S14	6th Ave between Dean and Pacific Streets - East	11.0	263	191	148	189	1.6	1.2	0.9	1.1	B	B	B	B

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
PMF - persons per foot of effective width per minute.
LOS - level of service.
* - denotes a significant adverse impact under *CEQR Technical Manual* Non-CBD criteria.
** - denotes a significant adverse impact under *CEQR Technical Manual* CBD and Non-CBD criteria.

Table 4D-56
Future With Phase II Crosswalk Conditions

No.	Location	Street Width (feet)	Crosswalk Width (feet)	Peak 15-Min Volumes				Avg. Conditions (w/Conflicting Vehicles)									
								AM			PM			PRE			SAT		
				AM	PM	EVE	SAT	SF/Ped		LOS	SF/Ped		LOS	SF/Ped		LOS	SF/Ped		LOS
X1	Atlantic Av @ 6th Av - west	111.0	12.0	104	153	197	198	31.3		C	18.6	**	D	13.8		E	13.2	**	E
X2	Atlantic Av @ 6th Av - south	42.5	18.0	651	882	600	777	17.2	**	D	12.4	**	E	20.1	*	D	15.0	**	E
X3	Atlantic Av @ 6th Av - east	109.0	12.0	83	102	77	100	35.1		C	20.9	*	D	32.2		C	25.9		C
X4	Atlantic Av @ Carlton Av - west	117.0	16.0	38	56	31	45	132.3		A	95.2		A	175.4		A	172.6		A
X5	Atlantic Av @ Carlton Av - south	38.5	18.0	331	502	315	466	64.6		A	41.1		B	69.8		A	39.7		C
X6	Atlantic Av @ Carlton Av - east	113.0	13.0	39	67	34	97	102.8		A	57.7		B	120.8		A	62.9		A
X7	Atlantic Av @ Vanderbilt Av - west	113.0	17.0	61	87	58	127	51.5		B	38.2		C	60.4		A	30.6		C
X8	Atlantic Av @ Vanderbilt Av - south	62.0	13.0	78	139	77	193	118.5		A	61.3		A	122.4		A	42.5		B
X9	Dean St @ Vanderbilt Av - north	62.0	16.5	39	38	38	119	179.7		A	194.6		A	195.8		A	66.9		A
X10	Dean St @ Vanderbilt Av - west	34.0	14.0	58	97	58	141	328.3		A	193.2		A	321.7		A	128.0		A
X11	Dean St @ Carlton Av - east	34.0	12.0	69	107	61	128	147.4		A	95.8		A	166.7		A	78.7		A
X12	Dean St @ Carlton Av - north	34.0	17.0	324	416	297	454	28.1		C	21.7	*	D	30.0		C	18.5	**	D
X13	Dean St @ Carlton Av - west	34.0	8.5	47	76	50	91	164.6		A	100.7		A	152.2		A	83.0		A
X14	Dean St @ 6th Av - east	34.0	13.0	67	97	66	102	169.4		A	121.0		A	175.3		A	113.2		A
X15	Dean St @ 6th Av - north	34.0	17.0	474	532	394	564	13.8	**	E	10.5	**	E	15.4	**	D	11.1	**	E
X16	Dean St @ 6th Av - west	34.0	13.5	102	130	146	222	127.4		A	106.4		A	94.2		A	56.6		B
X17	Flatbush Av @ Dean St - east	51.0	16.0	116	232	251	225	103.9		A	50.5		B	45.4		B	50.9		B
X18	Flatbush Av @ Dean St - north	86.0	22.0	73	105	107	129	137.5		A	95.7		A	93.2		A	77.3		A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.
* - denotes a significant adverse impact under *CEQR Technical Manual* Non-CBD criteria.
** - denotes a significant adverse impact under *CEQR Technical Manual* CBD and Non-CBD criteria.

Table 4D-57
Future With Phase II Corner Conditions

No.	Intersection	Corner	Average Conditions							
			AM		PM		PRE		SAT	
			SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS	SF/Ped	LOS
C1	Atlantic Av @ 6th Av	southwest	50.9	B	30.3	C	44.3	B	36.5	C
C2	Atlantic Av @ 6th Av	southeast	56.0	B	46.0	B	73.1	A	48.0	B
C3	Atlantic Av @ Carlton Av	southwest	152.1	A	93.5	A	156.7	A	100.2	A
C4	Atlantic Av @ Carlton Av	southeast	153.8	A	99.6	A	169.2	A	95.0	A
C5	Atlantic Av @ Vanderbilt Av	southwest	406.2	A	250.3	A	429.3	A	171.5	A
C6	Dean St @ Vanderbilt Av	northwest	505.6	A	313.6	A	447.7	A	193.2	A
C7	Dean St @ Carlton Av	northeast	129.2	A	96.8	A	146.7	A	83.7	A
C8	Dean St @ Carlton Av	northwest	95.4	A	66.4	A	97.7	A	61.3	A
C9	Dean St @ 6th Av	northeast	99.6	A	88.6	A	123.6	A	80.8	A
C10	Dean St @ 6th Av	northwest	89.6	A	71.2	A	86.0	A	63.8	A
C11	Flatbush Av @ Dean St	northeast	154.2	A	109.8	A	111.0	A	132.9	A

Notes:
AM - weekday 8-9 AM peak hour
PM - weekday 5-6 PM peak hour
PRE - weekday 7-8 PM (pregame) peak hour
SAT - Saturday 1-2 PM (pregame) peak hour
SF/Ped - average square feet per pedestrian.
LOS - level of service.

SIDEWALKS

As shown in **Table 4D-55**, conditions at two analyzed sidewalks are expected to deteriorate from LOS B to LOS D under platoon conditions in one or more peak hours. These would include:

- The south sidewalk on Atlantic Avenue between Ft. Greene Place and 6th Avenue (S2) in all but the AM peak hour; and
- The north sidewalk on Dean Street between 6th and Carlton Avenues (S12) in the PM and Saturday pregame peak hours.

By contrast, conditions during the weekday AM, PM and pregame and Saturday pregame peak hours on sidewalk S7 on the south side of Atlantic Avenue between Carlton and Vanderbilt Avenues are expected to improve from levels of service C, D, D and E, respectively, to level of service B in all periods in the Future With Phase II as a result of the widening of this sidewalk from 10 feet to 20 feet with the redevelopment of Block 1121.

Based on the 2012 *CEQR Technical Manual* significant impact criteria for platooned flow in a CBD location shown in **Table 4D-15** in Section E, "Transportation Analyses Methodologies," no sidewalks would be considered significantly adversely impacted in any peak hour. Based on the 2012 *CEQR Technical Manual* significant impact criteria for platooned flow in a non-CBD location shown in **Table 4D-16**, sidewalk S2 would be considered significantly adversely impacted in the weekday PM and pregame and Saturday pregame peak hours, and sidewalk S12 would be considered significantly impacted in the weekday PM and Saturday pregame peak hours.

CORNERS AND CROSSWALKS

As shown in **Table 4D-56**, in the Future With Phase II under an Extended Build-Out Scenario, a total of four crosswalks would be considered significantly adversely impacted in one or more peak hours under 2012 *CEQR Technical Manual* guidelines for a CBD location, and five crosswalks under impact guidelines for a non-CBD location. These would include:

- The west crosswalk on Atlantic Avenue at 6th Avenue (X1) in the weekday PM and Saturday pregame peak hours (CBD and non-CBD);
- The south crosswalk on 6th Avenue at Atlantic Avenue (X2) in the weekday AM and , PM and Saturday pregame peak hours (CBD and non-CBD) and the weekday pregame peak hour (non-CBD only)
- The east crosswalk on Atlantic Avenue at 6th Avenue (X3) in the weekday PM peak hour (non-CBD only);
- The north crosswalk on Carlton Avenue at Dean Street (X12) in the weekday PM peak hour (non-CBD) and Saturday pregame peak hour (CBD and non-CBD); and
- The north crosswalk on 6th Avenue at Dean Street (X15) in all periods (CBD and non-CBD).

As shown in **Table 4D-57,** there would be no significant adverse impacts to any analyzed corner area in the Future With Phase II under the Extended Build-Out Scenario.

Given that Atlantic Avenue is a major retail and commercial corridor, and a pedestrian access route for both the Barclays Center Arena and a major intermodal transit hub, the 2012 *CEQR Technical Manual* CBD impact criteria should be considered applicable for the analyzed sidewalks and crosswalks along this corridor. Under the CBD impact criteria, neither the south sidewalk west of 6th Avenue nor the east crosswalk on Atlantic Avenue at 6th Avenue would be considered significantly adversely impacted. Therefore, Phase II of the Project would not result in significant adverse impacts to the south sidewalk on Atlantic Avenue west of 6th Avenue and the east crosswalk on Atlantic Avenue at 6th Avenue.

Potential measures to mitigate significant adverse impacts resulting from Phase II under the Extended Build-Out Scenario at other sidewalk and crosswalk locations are discussed in Chapter 5, "Mitigation."

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The 2006 FEIS analysis of pedestrian conditions with full build-out of the Project in 2016 identified a total of two crosswalks as being significantly adversely impacted in one or more peak hours under both CBD and non-CBD criteria—the north crosswalk on Carlton Avenue at Dean Street (X12) and the north crosswalk on 6th Avenue at Dean Street (X15). No significant

impacts were identified at any analyzed sidewalks or corner areas in any peak hour under either CBD or non-CBD criteria in the 2006 FEIS.

The 2009 Technical Memorandum assessed the potential effects of the relocation of up to 100 of the 350 parking spaces originally planned for the Arena Block garage to the garage on Block 1129 which was expected to result in additional pedestrian demand on sidewalks and crosswalks along the north side of Dean Street between Flatbush and Vanderbilt Avenues (primarily during the weekday and Saturday pregame periods). While no additional significant sidewalk and corner area impacts were forecast to occur, an additional one-foot widening of the north crosswalks along Dean Street at 6th Avenue and at Carlton Avenue (compared to mitigated conditions) were proposed to accommodate the additional pedestrian demand from this parking relocation.

The findings of this SEIS analysis are that Phase II demand under the Extended Build-Out Scenario would significantly adversely impact four crosswalks in one or more peak hours under 2012 *CEQR Technical Manual* impact criteria for a CBD area, and that two sidewalks and one additional crosswalk would be considered impacted if non-CBD criteria were used. These include the south sidewalk on Atlantic Avenue west of 6th Avenue and the north sidewalk on Dean Street between 6th and Carlton Avenues, both under non-CBD criteria only. Impacted crosswalks include the west and south crosswalks at the Atlantic Avenue/6th Avenue intersection, and the east crosswalk at this intersection under non-CBD criteria only; the north crosswalk on Carlton Avenue at Dean Street; and the north crosswalk on 6th Avenue at Dean Street.

The findings of this SEIS with respect to potential pedestrian impacts are not directly comparable to those of the previous environmental reviews as this SEIS examines only the incremental effects of Phase II of the Project under the Extended Build-Out Scenario with Phase I of the Project reflected in the background condition. By contrast, previous reviews assessed the incremental effects of Phase I and Phase II combined. In addition to the proposed shift in residential floor area and proposed reduction in parking spaces (as described in Chapter 1, "Project Description"), as discussed in **Section D, "Level I and Level II Screening Assessments"** and **Section E, "Transportation Analyses Methodologies,"** the pedestrian analyses in this SEIS and previous reviews also differ in the following respects:

1. 2012 *CEQR Technical Manual* guidelines used for this SEIS analysis include substantially lower impact thresholds than were specified in the 2001 *CEQR Technical Manual* used for the previous environmental reviews.
2. As described previously, this SEIS conservatively assumes that the residential mixed-use variation could include up to 1,922 dwelling units in Phase I, and up to 4,932 dwelling units in Phase II (or 6,854 total dwelling units), even though the total number of dwelling units built at the completion of the Project would not exceed the 6,430 assumed for the residential mixed-use variation in the 2006 FEIS. The 4,932 dwelling units assumed for Phase II in the SEIS is greater than what was assumed for Phase II in the 2006 FEIS (4,320 DU). The SEIS therefore reflects a greater number of residential pedestrian trips on those sidewalks, corner areas and crosswalks where Phase II demand would be most concentrated. At the same time, this SEIS reflects fewer numbers of Arena patrons walking between the Arena and Block 1129 (primarily during the pregame peak hours) in the Future Without Phase II condition, as fewer parking spaces for Arena patrons are now proposed for Block 1129 than were assumed in the 2006 FEIS or the 2009 Technical Memorandum.

3. The SEIS analysis includes pedestrian trips from a proposed public school in Building 15 that was not reflected in the previous analyses.

4. Travel demand factors have been updated for this SEIS to reflect updated 2012 *CEQR Technical Manual* guidelines, current ACS data, and recent guidance from NYCDOT. For example, the Saturday residential trip rate used for the SEIS travel demand forecast is approximately 25 percent greater than the one used for the 2006 FEIS reflecting updated factors cited in the 2012 *CEQR Technical Manual*.

5. The pedestrian analyses in previous environmental reviews reflect sidewalk conditions on the project site as they were in 2006 prior to the start of construction, and the analyses of future conditions with the Arena were based on the preliminary plans that were available at that time. By contrast, the pedestrian analysis in this SEIS reflects current conditions at the project site based on recent (2013) pedestrian counts and field measurements of sidewalk dimensions and the placement street furniture. This SEIS analysis also reflects actual as-built conditions on much of the Arena Block.

6. At some locations, crosswalk dimensions and traffic signal timings (used for the analysis of corner areas and crosswalks) have changed since the previous analyses were prepared. For example, the east and west crosswalks on Atlantic Avenue at 6th Avenue (both identified as impacted in this SEIS) were measured at 13.5 feet and 16 feet in width, respectively, for the 2006 FEIS, whereas current field surveys show that both of these crosswalks are now only 12 feet in width. Two further examples are the south crosswalk on 6th Avenue at Atlantic Avenue and the north crosswalk on 6th Avenue at Dean Street, both of which are identified as impacted in this SEIS. The 2006 FEIS analysis assumed that these two crosswalks would be lengthened from 34 to 40 feet as part of a planned widening of the 6th Avenue roadway (thereby providing additional circulation space for crossing pedestrians). As this roadway widening is no longer planned, this SEIS analysis assumes that they would remain at 34 feet in length under future conditions. At the same time, both of these crosswalks are now 17 feet in width as opposed to the 16 feet in width measured for the 2006 FEIS analysis.

7. This SEIS analysis reflects updated projections of future development in proximity to the project site and lower background growth rates assumed for future years (i.e., rates of 0.25 percent/year for years 1-5 and 0.125 percent/year for subsequent years compared to the rate of 0.5 percent/year for all years that was used in the previous analyses).

The differences between the findings of this SEIS and the previous environmental reviews with respect to pedestrian conditions are generally related to these variables and are not directly attributable to the delay in the Project under the Extended Build-Out Scenario.

I. PEDESTRIAN AND VEHICULAR SAFETY EVALUATION

EXISTING CONDITIONS

Under *CEQR Technical Manual* guidelines, an evaluation of vehicular and pedestrian safety is needed for locations that have been identified as high crash locations. These are defined as locations where 48 or more total reportable and non-reportable crashes or five or more pedestrian/bicyclist injury crashes have occurred in any consecutive 12 months of the most recent three-year period for which data are available. (Reportable crashes are defined as those involving injuries, fatalities, and/or $1,000 or more in property damage.)

Table 4D-58 shows summary crash data from NYCDOT for the years 2010 through 2012 (the most recent three year period for which data are available). The table shows the total number of reportable and non-reportable crashes each year and the numbers of crashes each year involving pedestrians and cyclists at 22 intersections in the vicinity of the project site where new vehicular, pedestrian, and bicycle trips generated by Phase II are expected to be most concentrated. As shown in **Table 4D-58**, no intersections were found to have experienced a total of 48 or more crashes in any one year. However, three intersections experienced five or more pedestrian and/or bicyclist injury crashes in one or more years and are therefore considered high crash locations. These locations include:

- Flatbush Avenue and Atlantic Avenue (six pedestrian/bicyclist injury crashes in 2010);
- Atlantic Avenue and 4th Avenue (five pedestrian injury crashes in 2010);
- Atlantic Avenue and Vanderbilt Avenue (five pedestrian/bicyclist injury crashes in 2011).

None of the three intersections identified as high crash locations—nor any within the traffic and pedestrian study areas—are located within a designated Seniors Pedestrian Focus Area (SPFA) which were identified by NYCDOT based on the density of senior pedestrian (age 65+) crashes resulting in fatalities or severe injuries in a five-year period, as well as variables such as senior trip generators, concentrations of senior centers, and senior housing locations.

As the crash data in **Table 4D-58** are from January 2010 through December 2012, for the most part they do not reflect conditions with the September 2012 opening of the Barclays Center Arena (including the deployment of police and traffic control officers when a Nets game or other major event is scheduled), nor the September 2012 opening of the new on-site entrance to the Atlantic Avenue – Barclays Center subway station.

As discussed previously, an Event Transportation Plan has been developed to help manage traffic, pedestrian and transit conditions at the Barclays Center Arena on days when a Nets game or other major event is scheduled. This plan incorporates a number of measures that enhance safety and reduce the potential for vehicle/pedestrian conflicts during the pre- and post-event periods. These measures include the deployment of Traffic Enforcement Agents and Pedestrian Traffic Managers to facilitate traffic flow, pedestrian crossings and Arena lay-by lane operations. The number and placement of TEAs and PTMs is based on event size and expected transportation logistics. The Event Transportation Plan is coordinated by a full-time Traffic Manager who disseminates advance information on event times and the projected number of attendees, and real-time information on event attendance and expected end times to the NYCDOT, NYPD and other stakeholders.

Table 4D-58
Summary Motor Vehicle Accident Data 2010 – 2012

Intersection		Pedestrian Injury Accidents			Bicycle Injury Accidents			Total Pedestrian/Bicyclist Injury Accidents			Total Accidents (Reportable + Non-Reportable)		
		2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Flatbush Av @	4th Av	2	1	0	1	1	0	3	2	0	11	8	7
	Atlantic Av	5	3	1	1	0	1	**6***	3	2	21	24	16
	Pacific St	1	1	0	0	0	1	1	1	1	3	2	3
	5th Av	0	0	0	0	0	0	0	0	0	5	2	1
	Dean St	0	1	0	0	2	1	0	3	1	4	8	2
	Bergen St	0	1	3	0	0	0	0	1	3	3	5	6
	6th Av	0	0	1	0	1	0	0	1	1	2	2	2
Atlantic Av @	4th Av	5	2	3	0	2	0	**5***	4	3	21	18	8
	Fort Greene Pl	0	0	2	1	0	1	1	0	3	5	4	4
	6th Av/ S. Portland Av	1	2	0	0	0	0	1	2	0	4	5	5
	S Oxford St	0	0	0	0	1	0	0	1	0	2	2	1
	Cumberland St	0	1	0	0	0	0	0	1	0	1	2	4
	Carlton Av	0	0	0	0	0	0	0	0	0	2	0	2
	Clermont Av	0	0	0	0	0	0	0	0	0	4	2	2
	Vanderbilt Av	2	4	2	1	1	2	3	**5***	4	22	20	18
Pacific St @	4th Av	1	0	0	0	0	0	1	0	0	2	3	0
	6th Av	0	1	0	0	0	0	0	1	0	2	2	1
	Carlton Av	0	0	0	0	0	1	0	0	1	0	0	1
	Vanderbilt Av	0	0	0	0	2	2	0	2	2	5	3	4
Dean St @	6th Av	1	1	1	0	1	0	1	2	1	2	2	3
	Carlton Av	0	0	0	0	0	0	0	0	0	3	1	0
	Vanderbilt Av	1	0	0	0	1	1	1	1	1	3	3	2

Note: * - denotes a high crash location.

FUTURE WITHOUT PHASE II

In the Future Without Phase II, the completion of Phase I of the Project, other discrete developments in the vicinity of the project site, and general background growth will all result in increased vehicular, pedestrian and bicycle traffic at intersections in proximity to the project site. Much of this new demand will be concentrated at intersections adjacent to Site 5 and the Arena Block (i.e., the locations of Phase I development and the new Atlantic Avenue – Barclays Center subway station entrance). Consequently, there will be increased potential for conflicts and crashes at these locations, which include two of the three intersections identified as high crash locations based on the 2010 to 2012 data—Flatbush Avenue/Atlantic Avenue and Atlantic Avenue/4th Avenue.

The Project incorporates a number of design features that enhance overall safety, many of which have already been implemented as part of Phase I. These have included the elimination of several roadway segments through the project site; a major new on-site entrance to the Atlantic Avenue – Barclays Center subway station to eliminate the need for subway riders en route to and from the south to cross Atlantic Avenue; a major restructuring of the Atlantic Avenue/4th Avenue intersection designed to improve traffic flow and reduce the potential for vehicle/pedestrian conflicts; revising the signal phasing plans at the Atlantic Avenue/Flatbush Avenue and Atlantic Avenue/4th Avenue intersections to include leading pedestrian phases (on

Flatbush and 4th Avenues) and lagging right-turn phases (on Atlantic Avenue) to reduce the potential for conflicts between turning vehicles and pedestrians; a new traffic signal and crosswalk on Flatbush Avenue at Pacific Street; and new high visibility crosswalks at key intersections in the vicinity of the project site.

FUTURE WITH PHASE II

In the Future With Phase II under the Extended Build-Out Scenario, development on Blocks 1120, 1121, 1128 and 1129 would result in increased vehicular, pedestrian and bicycle travel demand at intersections in the immediate vicinity of the project site, including intersections identified as high crash locations based on 2010 – 2012 crash data. Much of this new demand would be concentrated along the Dean Street and Atlantic Avenue corridors which would connect the proposed residential and retail development and on-site parking facilities to the surrounding street system. They would also be the principal corridors used by Phase II pedestrian demand en route to and from area transit services such as the new Atlantic Avenue – Barclays Center subway station entrance on the Arena Block, and the bus routes operating along Atlantic and Flatbush Avenues and Dean and Bergen Streets. Phase II would also include development of a new public school potentially located in Building 15 on Block 1128. This is expected to add new pedestrian trips by school children and accompanying adults through nearby intersections at the start and the end of the school day, as well as introduce pickup and drop-off activity by autos and school buses adjacent to the proposed school during these periods. Much of this new school-related vehicular and pedestrian activity is likely to traverse the intersections of 6th Avenue with Dean Street and with Pacific Street which are located immediately adjacent to the site of Building 15. Implementation of Phase II would also see the development of a new off-street bike route segment through the project site that would more safely connect existing and planned on-street bike routes.

The following discusses anticipated conditions in the Future With Phase II at the three intersections identified as high crash locations and at the intersections of 6th Avenue with Dean and Pacific Streets adjacent to the potential location of the proposed public school in Building 15.

FLATBUSH AVENUE AND ATLANTIC AVENUE

As shown in **Table 4D-58**, the intersection of Flatbush and Atlantic Avenues experienced six pedestrian/bicyclist injury accidents in 2010, three in 2011 and two in 2012. The total number of accidents at this intersection (reportable and non-reportable) was 21 in 2010, 24 in 2011 and 16 in 2012. Factors likely contributing to accidents at this intersection are its skewed geometry, long pedestrian crossing distances, and the amount of pedestrian activity generated by the proximity of the subway/LIRR terminal, the Atlantic Center shopping mall, and numerous bus stops. (As discussed previously, for the most part these data predate the September 2012 opening of the Barclays Center Arena and the new Atlantic Avenue – Barclays Center subway entrance on the Arena Block.) It should be noted that the total number of accidents each year at this intersection during the 2010 – 2012 period is substantially lower than during the 2002 through 2004 period (the period assessed in the 2006 FEIS) when there were from 52 to 71 accidents at this intersection annually.

With development of Phase II, it is estimated that there would be a two to four percent increase in vehicular traffic through this intersection during the weekday AM, midday, PM and pregame and Saturday pregame peak hours. However, the development of Phase II is not expected to add appreciable numbers of new pedestrian trips through this intersection. The majority of Phase II

pedestrian trips en route to and from the subway is expected to use the new Atlantic Avenue – Barclays Center subway station entrance on the Arena Block and would therefore not have to cross either Atlantic Avenue or Flatbush Avenue. Phase II subway trips en route to or from other more outlying subway stations (Bergen Street or Lafayette Avenue, for example) are expected to cross these avenues at locations to the east or south in closer proximity to the Phase II development sites, as are most walk-only trips and trips crossing these avenues en route to and from local bus stops. There would also be few if any pedestrian trips passing through the Flatbush Avenue/Atlantic Avenue intersection en route to or from off-site parking facilities as sufficient parking capacity would be provided on-site to accommodate all Phase II demand.

ATLANTIC AVENUE AND 4TH AVENUE

As shown in **Table 4D-58**, the intersection of Flatbush and 4th Avenues experienced five pedestrian/bicyclist injury accidents in 2010, four in 2011 and three in 2012. The total number of accidents at this intersection (reportable and non-reportable) was 21 in 2010, 18 in 2011 and 8 in 2012. By comparison, the number of accidents during the period assessed in the 2006 FEIS totaled 9 in 2002, 14 in 2003 and 23 in 2004. It should be noted that this intersection was substantially reconfigured as part of the Project's traffic mitigation plan, including the elimination of northbound traffic flow on 4th Avenue from Atlantic Avenue to Flatbush Avenue and the expansion of pedestrian space at Times Plaza on the north side of the intersection.

With development of Phase II, it is estimated that there would be a one to five percent increase in vehicular traffic through this intersection during the weekday AM, midday, PM and pregame and Saturday pregame peak hours. Development of Phase II is not expected to add appreciable numbers of new pedestrian trips through this intersection as it is not in close proximity to Phase II development sites nor along a principal pathway for Phase II trips en route to or from area subway and bus services.

ATLANTIC AVENUE AND VANDERBILT AVENUE

As shown in **Table 4D-58**, the intersection of Atlantic and Vanderbilt Avenues experienced three pedestrian/bicyclist injury accidents in 2010, five in 2011 and four in 2012. The total number of accidents at this intersection (reportable and non-reportable) was 22 in 2010, 20 in 2011 and 18 in 2012. During the 2002 through 2004 period assessed in the 2006 FEIS there were a total of 48 accidents in 2002, 44 in 2003 and 37 in 2004, roughly double the number of accidents per year compared to the more recent data.

With development of Phase II, it is estimated that there would be a two to five percent increase in vehicular traffic through the Atlantic Avenue/Vanderbilt Avenue intersection during the analyzed weekday and Saturday peak hours. Development of Phase II is also expected to add up to 548 new pedestrian trips in each peak hour, primarily concentrated on the west crosswalk on Atlantic Avenue and the south crosswalk on Vanderbilt Avenue. The combination of new vehicular traffic and new pedestrian trips on the crosswalks may increase the potential for vehicle/vehicle and vehicle/pedestrian conflicts at this intersection, and thereby potentially increase vehicular and pedestrian exposure to accidents. This intersection is currently signalized and equipped with pedestrian signals and crosswalks. In addition, a new median was recently constructed on Atlantic Avenue on the west side of the intersection providing a 10-foot-wide pedestrian refuge along the west crosswalk. Further measures to enhance pedestrian safety at this intersection could potentially include the installation of high visibility crosswalks and the implementation of a leading pedestrian interval as part of the signal timing plan. The installation of a neckdown (a sidewalk extension to decrease pedestrian crossing distance) on the westbound

Atlantic Avenue approach may also be feasible; however, the installation of further neckdowns at this intersection would likely prove problematic due to the presence of turn lanes, bus stops and bicycle lanes at curbside. The need for further measures such as neckdowns to enhance pedestrian safety at this location would be evaluated based on data to be collected in connection with the traffic monitoring studies discussed in Chapter 5, "Mitigation."

6TH AVENUE AND DEAN/PACIFIC STREETS

As discussed previously, under Phase II a proposed 757-seat public school may be constructed in Building 15 located along the east side of 6th Avenue between Dean and Pacific Streets (Block 1128). Therefore, in addition to vehicle and pedestrian travel demand from the residential and retail uses that would be developed on this site, there would also be appreciable numbers of new pedestrian trips by school children and accompanying adults at the start and end of the school day. These trips would be most concentrated at the intersections of 6th Avenue with Dean and Pacific Streets located immediately adjacent to the Building 15 site.

As shown in **Table 4D-58**, neither of these intersections is considered a high crash location based on recent accident data. The intersection of Dean Street with 6th Avenue experienced one pedestrian/bicyclist injury accident in 2010, two in 2011 and one in 2012. The total number of accidents at this intersection (reportable and non-reportable) two in 2010, two in 2011 and three in 2012. During the 2002 through 2004 period assessed in the 2006 FEIS there were a total of 7 accidents in 2002, 13 in 2003 and 7 in 2004. The intersection of Pacific Street with 6th Avenue experienced no pedestrian/bicyclist injury accidents in either 2010 or 2012 and one in 2011. The number of accidents at this intersection (reportable and non-reportable) totaled two in 2010, two in 2011 and one in 2012. There were no accidents at this intersection during the 2002 through 2004 period assessed in the 2006 FEIS.

With development of Phase II, it is estimated that there would be a 6 to 11 percent increase in vehicular traffic through the 6th Avenue/Dean Street intersection and a 2 to 7 percent increase through the 6th Avenue/Pacific Street intersection during the analyzed weekday and Saturday peak hours. During the analyzed AM peak hour, some of this additional traffic would be generated by the proposed public school use on Block 1128, and would likely include new pickup and drop-off activity by autos and school buses along curbs adjacent to Building 15. Development of Phase II would also add up to 1,800 new pedestrian trips in each peak hour on analyzed crosswalks at the 6th Avenue/Dean Street intersection (primarily concentrated on the north crosswalk on 6th Avenue), with fewer numbers of Phase II trips using the crosswalks at the 6th Avenue/Pacific Street intersection (as it is on a less direct path between Phase II development sites and area transit services). Development of Phase II is also likely to generate additional numbers of cyclists using the on-street bicycle lane along Dean Street. The combination of new vehicular and bicycle traffic and new pedestrian trips on the crosswalks may increase the potential for conflicts between these modes at these two intersections, and thereby potentially increase vehicular and pedestrian exposure to accidents.

Both of these intersections are currently signalized and equipped with pedestrian signals and crosswalks. Given the potential development of a public school at this location under Phase II, additional measures would likely be employed to enhance safety, such as the installation of designated school crossings with high visibility crosswalks and additional school crossing pavement markings and signage. Typically, as the design is advanced on a school project, NYCDOT-School Safety is consulted in developing appropriate street striping/signage plans.

In summary, development of Phase II under the Extended Build-Out Scenario would increase vehicular, pedestrian, and bicycle traffic in the vicinity of the project site. The combination of new pedestrian trips on crosswalks and new vehicular and bicycle traffic may increase the potential for conflicts between these modes at intersections in proximity to the project site, and thereby potentially increase vehicular and pedestrian exposure to accidents.

The Project incorporates a number of design features that enhance overall safety, most of which have already been implemented as part of Phase I. These have included the elimination of several roadway segments through the project site; a major new on-site entrance to the Atlantic Avenue – Barclays Center subway station to eliminate the need for subway riders en route to and from the south to cross Atlantic Avenue; a major restructuring of the Atlantic Avenue/4th Avenue intersection designed to improve traffic flow and reduce the potential for vehicle/pedestrian conflicts; a new traffic signal and crosswalk on Flatbush Avenue at Pacific Street; and new high visibility crosswalks at key intersections in the vicinity of the project site. A new off-street bike route segment through the project site would be implemented under Phase II to more safely connect existing and planned on-street bike routes. Additional measures would likely be implemented in consultation with NYCDOT-School Safety to enhance safety in the vicinity of the proposed public school, such as the installation of designated school crossings with high visibility crosswalks and additional school crossing pavement markings and signage. The potential implementation of additional measures to enhance overall safety at the Atlantic Avenue/Vanderbilt Avenue intersection (including the installation of high visibility crosswalks and a neckdown on the westbound Atlantic Avenue approach, and implementation of a leading pedestrian interval as part of the signal timing plan) may also be evaluated based on data to be collected in connection with the traffic monitoring studies discussed in Chapter 5, "Mitigation.",

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

In general, the findings of this SEIS with regard to pedestrian and vehicular safety are comparable to those of the 2006 FEIS, in that both assessments disclosed the potential for increased conflicts between motorists, cyclists and pedestrians at high crash locations in proximity to the project site as a result of increased travel demands associated with full build-out of the Project. The delay in Phase II of the Project under the Extended Build-Out Scenario is not expected to result in a substantially greater number of vehicle, pedestrian and bicycle trips through high crash locations. The introduction of a proposed public school would, however, generate additional vehicular and pedestrian demand (including school children) than was assessed in the 2006 FEIS. This SEIS therefore cites additional potential pedestrian safety measures (i.e., installation of designated school crossings) that were not reflected in the 2006 FEIS.

J. PARKING

The parking analysis in this SEIS assesses whether on-site parking capacity would remain sufficient to accommodate all of the anticipated demand from the Project's commercial, residential and public school components under the Extended Build-Out Scenario. Included are updated parking demand forecasts for both Phase I and Phase II of the Project. In addition, as previously discussed, the Barclays Center Arena has been completed and is considered part of the Future Without Phase II background condition for the purposes of the transportation analyses. However, as fewer on-site parking spaces are now expected to be provided for Arena patrons than were assumed in the 2006 FEIS, this SEIS also examines future off-street public parking supply and demand within ½-mile of the Arena to assess whether there would be

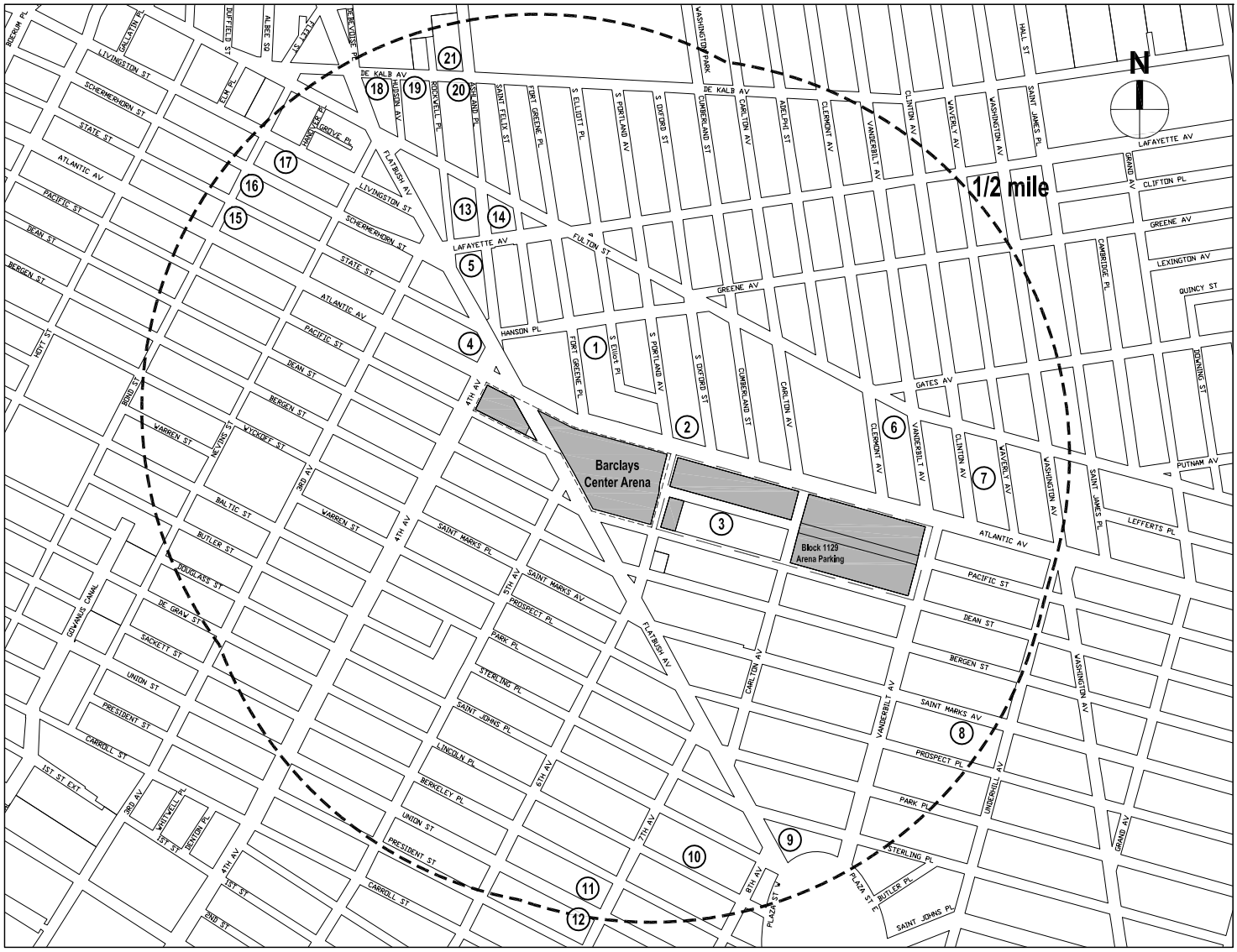
sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035. This analysis focuses on the weekday evening pregame and Saturday midday pregame periods, which are the peak periods for Arena demand.

EXISTING CONDITIONS

The predominant generator of parking demand at the project site is currently the Barclays Center Arena which opened in September 2012. Existing parking on the project site currently consists of a 565-space surface parking lot on Block 1129 (752 Pacific Street) that is only open during Arena events. Discounted high-occupancy vehicle (HOV) parking is offered at this facility for vehicles with three or more occupants holding event tickets. Twenty-four spaces in this lot are also allocated for NYPD parking associated with the nearby 78th Precinct station house.

The Barclays Center website currently provides a link for Arena patrons to pre-purchase parking at a total of 12 off-street public parking facilities within a 10-minute walk of the Arena (including the on-site Arena parking lot). HOV discounts are also available at these facilities. In addition, it should be noted that approximately 600 reserved parking spaces were established in five public parking facilities in the vicinity of Atlantic Avenue and Court Street concurrent with the September 2012 opening of Barclays Center. A free shuttle bus service connecting these facilities to the Arena was provided continuously from approximately two hours prior to an event to approximately two hours after the end of an event. This remote parking and associated shuttle bus service were minimally used, averaging only two to three autos parking at one of the remote facilities during a Nets game or other event at the Arena during the September 2012 through May 2013 period. Consequently, the remote parking and shuttle bus service were discontinued in mid-2013.

Data from surveys of Arena patrons indicate that on weekdays approximately 25.7 percent of Nets spectators arrive by auto, and of these, approximately 46 percent use off-street parking facilities and 54 percent are parking on-street. A higher percentage of Nets spectators arrive by auto on weekends (32.1 percent) but a smaller percentage use off-street facilities on weekends (approximately 43 percent) with more parking on-street (57 percent). Peak parking accumulation during a Nets game at the Arena parking lot on Block 1129 typically totals fewer than 300 autos (less than 53 percent of its current capacity) and averages approximately 150 vehicles, and the survey data indicate that the majority of Nets spectators using off-street parking are selecting other public parking facilities in the vicinity of the Arena. Not including the Arena parking lot on Block 1129, there are a total of approximately 21 off-street public parking facilities currently located within ½-mile of Barclays Center (this being the maximum distance that Arena patrons would likely walk to access parking). The locations of these facilities are shown in **Figure 4D-7,** and their capacities and estimated utilization during the weekday evening and Saturday midday periods are shown in **Table 4D-59**. (The utilization data in **Table 4D-59** reflect conditions when there are no events scheduled at the Arena.) Based on the survey data, the two facilities most heavily used by Nets spectators are the 650-space parking garage at 625 Atlantic Avenue (Atlantic Center) and the 170-space parking garage at 700 Pacific Street. As shown in **Table 4D-59**, the parking garage at 625 Atlantic Avenue currently operates at approximately 22 percent of capacity in the weekday evening peak period and 51 percent of capacity in the Saturday midday when no Arena events are scheduled. The garage at 700 Pacific Street is approximately 31 percent and 41 percent utilized during these same periods, respectively.



1 Off-Street Parking Facility

Project Site

1/2-Mile Radius From Barclays Center Arena

Phase I Development Boundary

Phase II Development Boundary

Off-Street Public Parking Facilities
Within 1/2-Mile of Barclays Center Arena
Figure 4D-7

SEIS · ATLANTIC YARDS ARENA AND REDEVELOPMENT PROJECT

Table 4D-59
Existing Off-Street Public Parking Facilities
Within ½-Mile of the Barclays Center Arena

No.	Facility Operator	Address	License Number	Licensed Capacity	Weekday Evening Estimated Utilization	Weekday Evening Available Capacity	Saturday Midday Estimated Utilization	Saturday Midday Available Capacity
1	Ochre Car Park	625 Atlantic Ave	1242325	650	22%	498	51%	311
2	Imperial Parking U.S., Inc.	669 S. Portland Avenue	1383522	45	25%	33	32%	30
3	Pacific Parking LLC	700 Pacific Street	1244293	170	31%	116	41%	99
4	Flashpark	556 State Street	1328826	25	72%	7	80%	5
5	Amber Car Park, BAM East	10 Lafayette Ave	1019610	124	83%	21	61%	48
6	Exel Parking	470 Vanderbilt Ave	1449148	162	23%	123	31%	110
7	Brooklyn Clinton Corp	525 Clinton Ave	1472099	55	69%	17	30%	38
8	Country Wide Car Park Inc.	288 St. Mark's Ave	1004164	112	66%	37	51%	54
9	Plaza Car Park, LLC	405 Flatbush Avenue	1030813	69	97%	2	21%	54
10	N/A	211-215 Lincoln Place	368580	14	100%	0	29%	10
11	Garage Assoc. LTC	841 Union Street	363740	165	92%	13	61%	63
12	SS Central	800 Union Street	963093	165	92%	13	92%	13
13	Amber Car Park LLC	258 Ashland Place / 9 Lafayette Ave	1021922/1021919	60	51%	29	81%	11
14	GGMC Parking Inc, Fulton Car Park	622 Fulton Street	1026759	95	31%	64	82%	17
15	Teddy's Parking Systems	71 Bond Street	365142	40	62%	15	62%	15
16	J-L Inc	252 Schermerhorn	1119974	100	20%	78	61%	38
17	Central Parking Systems	300 Livingston Street	1164348	623	41%	361	61%	236
18	Manhattan Parking	395 Flatbush Avenue Extension	1187231	140	51%	67	61%	53
19	Central Parking Systems	74 Dekalb Ave	1346796	126	41%	73	72%	35
20	Discount Parking Inc.	180 Ashland Place	1009614	316	41%	184	51%	152
21	GGMC Dekalb Car Park	97 Dekalb Ave	1019609	155	51%	74	28%	109
			Total	**3,411**	**45%**	**1,825**	**55%**	**1,501**

Notes:
Assumes parking facility is full at 98% of licensed capacity as per CEQR Technical Manual guidelines.
Saturday midday utilization data not available for sites 6, 7, 14, 15 and 16. Saturday midday utilization estimated based on demand at nearby facilities.
Data reflect conditions with no event at the Arena.
Does not include Arena event parking at 752 Pacific Street (Block 1129).
N/A - not available.

Sources:
September 2013 and October 2013 data from the operator of the Atlantic Center garage.
PHA field surveys conducted in November 2011, May 2012, November 2012 and April 2013.
SEE field surveys conducted in October 2011.

The following sections provide updated parking forecasts for the Project and assess whether the on-site parking capacity that would be provided in the Future With Phase II under the Extended Build-Out Scenario would be sufficient to accommodate all of the anticipated demand from the Project's residential, commercial and public school components under the Extended Build-Out Scenario. The parking forecasts assume the development of a total of 6,430 dwelling units on the project site with full build-out of the Project in 2035, as this is the maximum number of dwelling units allowed by the 2009 MGPP. In addition, fewer on-site parking spaces are now expected to be provided for Arena patrons (on Block 1129) than the 541 spaces currently provided for this purpose and the 1,100 spaces that were assumed in the 2006 FEIS. Therefore, future off-street public parking conditions in within ½-mile of the Arena are assessed as to whether there would be sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035. This analysis focuses on the weekday evening and Saturday afternoon Nets game-time periods, which are the peak periods for Arena demand.

FUTURE WITHOUT PHASE II

In the Future Without Phase II, Site 5 and Buildings 1 through 4 are expected to be completed in addition to the Arena. A total of approximately 1,161 parking spaces would be provided on the project site to accommodate the parking demand from the Phase I residential and commercial

uses in these buildings, as well as a portion of the demand generated by the Arena. The on-site parking would include approximately 50 to 100 spaces in a below-grade parking garage on the Arena Block beneath Building 3 with access from Dean Street, approximately 400 spaces in a parking garage on Site 5 with two below-grade levels and an entrance midblock on Pacific Street, and approximately 711 spaces in a surface parking lot on Block 1129 with access from Dean Street and Carlton and Vanderbilt Avenues.

Tables 4D-60 through 4D-63 show the total estimated hourly parking demand by use expected to be generated by the Project's residential mixed-use and commercial mixed-use variations on weekdays and on Saturdays. As shown in **Tables 4D-60 and 4D-61**, in the Future Without Phase II, parking demand from Phase I residential and commercial uses under the residential mixed-use variation is expected to peak at 421 spaces during the overnight period on both weekdays and Saturdays. Parking demand from a Nets game at the Arena is estimated to total approximately 1,531 spaces for a weekday evening game, and 1,589 spaces for a Saturday afternoon game. During game times, residential and commercial parking demand is expected to total approximately 374 and 137 spaces on weekdays and Saturdays, respectively. The 1,161 on-site parking spaces provided in Phase I will therefore be sufficient to accommodate all of the residential and commercial parking demand generated by Phase I under the residential mixed-use variation (which would peak at 421 spaces), plus the 24 spaces allocated to NYPD parking.

As shown in **Tables 4D-62 and 4D-63**, in the Future Without Phase II, parking demand from Phase I residential and commercial uses under the commercial mixed-use variation is expected to peak at 514 spaces during the 9-10 AM hour on weekdays and at 300 spaces during the overnight period on Saturdays. (The higher level of weekday daytime parking demand projected under the commercial mixed-use variation reflects commuter/visitor demand from this variation's larger office component.) Peak residential and commercial parking demand during a Nets game at the Arena is expected to total 275 and 160 spaces during weekday and Saturday game times, respectively. The 1,161 on-site parking spaces provided in Phase I will therefore be sufficient to accommodate all of the residential and commercial parking demand generated by Phase I under the commercial mixed-use variation (which would peak at 514 spaces), plus the 24 spaces allocated to NYPD parking.

FUTURE WITH PHASE II

In the Future With Phase II, Buildings 5 through 15 are expected to be completed, and a total of approximately 2,896 parking spaces would be provided on the project site to accommodate the parking demand from the residential, retail and public school uses in these buildings, demand from the residential and commercial uses developed under Phase I, NYPD demand from the nearby 78th Precinct station house (24 spaces) and a portion of the demand generated by the Arena. In addition to the 400 parking spaces beneath Site 5 and 50 to 100 spaces on the Arena Block beneath Building 3 provided in Phase I, on-site parking with full build-out of the Project would include 450 spaces in a below-grade garage on Block 1120 with an entrance on Carlton Avenue, 150 spaces in a below-grade garage beneath Building 15 on Block 1128 with an entrance on Pacific Street, and 1,846 spaces in a permanent below-grade garage on Block 1129 with entrances on Dean Street and Carlton and Vanderbilt Avenues (see Figure 1-5 in Chapter 1, "Project Description").

Table 4D-60
Weekday Hourly Parking Accumulation for the Project
Residential Mixed-Use Variation

	Phase I							Phase II					
	Arena	Residential	Office	Local Retail	Hotel	Total	Total Without Arena	Residential	School Staff	Local Retail	Total	**Total Project Parking**	**Total Non-Arena Project Parking**
12-1 AM	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
1-2	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
2-3	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
3-4	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
4-5	0	382	0	0	36	418	418	898	0	0	898	**1,316**	**1,316**
5-6	0	368	1	0	35	404	404	864	0	0	864	**1,268**	**1,268**
6-7	2	344	8	0	34	388	386	801	1	0	802	**1,190**	**1,188**
7-8	10	304	28	1	30	373	363	709	2	1	712	**1,085**	**1,075**
8-9	39	232	85	1	25	382	343	540	9	1	550	**932**	**893**
9-10	56	208	110	1	19	394	338	483	9	3	495	**889**	**833**
10-11	58	177	112	5	18	370	312	412	9	7	428	**798**	**740**
11-12	53	153	107	6	16	335	282	358	9	8	375	**710**	**657**
12-1 PM	45	154	104	6	32	341	296	361	9	8	378	**719**	**674**
1-2	50	146	108	5	29	338	288	346	9	7	362	**700**	**650**
2-3	54	142	111	5	16	328	274	338	2	8	348	**676**	**622**
3-4	54	158	111	5	16	344	290	375	1	9	385	**729**	**675**
4-5	50	171	92	5	16	334	284	406	1	10	417	**751**	**701**
5-6	160	211	28	5	23	427	267	499	0	10	509	**936**	**776**
6-7	616	247	16	2	21	902	286	584	0	5	589	**1,491**	**875**
7-8	1,481	288	4	2	26	1,801	320	678	0	5	683	**2,484**	**1,003**
8-9	1,531	312	2	1	28	1,874	343	733	0	1	734	**2,608**	**1,077**
9-10	1,459	344	1	0	29	1,833	374	809	0	0	809	**2,642**	**1,183**
10-11	63	379	0	0	35	477	414	891	0	0	891	**1,368**	**1,305**
11-12	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**

Table 4D-61
Saturday Hourly Parking Accumulation for the Project
Residential Mixed-Use Variation

	Phase I							Phase II					
	Arena	Residential	Office	Local Retail	Hotel	Total	Total Without Arena	Residential	School Staff	Local Retail	Total	**Project Total**	**Total Non-Arena Project Parking**
12-1 AM	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
1-2	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
2-3	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
3-4	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
4-5	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**
5-6	0	365	0	0	35	400	400	855	0	0	855	**1,255**	**1,255**
6-7	2	346	2	0	34	384	382	812	0	1	813	**1,197**	**1,195**
7-8	10	290	8	0	31	339	329	679	0	1	680	**1,019**	**1,009**
8-9	40	209	18	0	28	295	255	486	0	2	488	**783**	**743**
9-10	99	164	23	1	22	309	210	383	0	2	385	**694**	**595**
10-11	163	119	24	3	21	330	167	280	0	4	284	**614**	**451**
11-12	396	95	23	3	12	529	133	224	0	3	227	**756**	**360**
12-1 PM	667	42	23	3	25	760	93	94	0	4	98	**858**	**191**
1-2	1,565	42	24	4	28	1,663	98	94	0	7	101	**1,764**	**199**
2-3	1,589	42	25	4	26	1,686	97	94	0	9	103	**1,789**	**200**
3-4	1,525	95	25	4	13	1,662	137	219	0	10	229	**1,891**	**366**
4-5	140	95	12	4	16	267	127	219	0	7	226	**493**	**353**
5-6	61	180	2	5	18	266	205	419	0	8	427	**693**	**632**
6-7	19	253	1	4	21	298	279	592	0	6	598	**896**	**877**
7-8	0	317	2	4	22	345	345	742	0	5	747	**1,092**	**1,092**
8-9	0	367	1	2	26	396	396	858	0	5	863	**1,259**	**1,259**
9-10	0	380	0	2	30	412	412	888	0	3	891	**1,303**	**1,303**
10-11	0	381	0	0	35	416	416	891	0	1	892	**1,308**	**1,308**
11-12	0	385	0	0	36	421	421	901	0	0	901	**1,322**	**1,322**

Table 4D-62
Weekday Hourly Parking Accumulation for the Project
Commercial Mixed-Use Variation

	Phase I							Phase II				Total Project Parking	Total Non-Arena Project Parking
	Arena	Residential	Office	Local Retail	Hotel	Total	Total Without Arena	Residential	School Staff	Local Retail	Total		
12-1 AM	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
1-2	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
2-3	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
3-4	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
4-5	0	298	0	0	0	298	298	981	0	0	981	**1,279**	**1,279**
5-6	0	287	2	0	0	289	289	944	0	0	944	**1,233**	**1,233**
6-7	2	267	25	0	0	294	292	876	1	0	877	**1,171**	**1,169**
7-8	10	236	92	1	0	339	329	775	2	1	778	**1,117**	**1,107**
8-9	39	180	274	1	0	494	455	589	9	1	599	**1,093**	**1,054**
9-10	56	161	352	1	0	570	514	528	9	3	540	**1,110**	**1,054**
10-11	58	137	358	5	0	558	500	450	9	7	466	**1,024**	**966**
11-12	53	120	343	6	0	522	469	392	9	8	409	**931**	**878**
12-1 PM	45	121	334	6	0	506	461	394	9	8	411	**917**	**872**
1-2	50	117	346	5	0	518	468	377	9	7	393	**911**	**861**
2-3	54	115	357	5	0	531	477	367	2	8	377	**908**	**854**
3-4	54	127	357	5	0	543	489	408	1	9	418	**961**	**907**
4-5	50	137	299	5	0	491	441	442	1	10	453	**944**	**894**
5-6	160	168	93	5	0	426	266	547	0	10	557	**983**	**823**
6-7	616	196	53	2	0	867	251	638	0	5	643	**1,510**	**894**
7-8	1,481	228	14	2	0	1,725	244	741	0	5	746	**2,471**	**990**
8-9	1,531	244	9	1	0	1,785	254	801	0	1	802	**2,587**	**1,056**
9-10	1,459	270	5	0	0	1,734	275	884	0	0	884	**2,618**	**1,159**
10-11	63	297	0	0	0	360	297	975	0	0	975	**1,335**	**1,272**
11-12	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**

Table 4D-63
Saturday Hourly Parking Accumulation for the Project
Commercial Mixed-Use Variation

	Phase I							Phase II					
	Arena	Residential	Office	Local Retail	Hotel	Total	Total Without Arena	Residential	School Staff	Local Retail	Total	**Project Total**	**Total Non-Arena Project Parking**
12-1 AM	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
1-2	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
2-3	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
3-4	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
4-5	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**
5-6	0	285	0	0	0	285	285	934	0	0	934	**1,219**	**1,219**
6-7	2	271	6	0	0	279	277	886	0	1	887	**1,166**	**1,164**
7-8	10	225	24	0	0	259	249	741	0	1	742	**1,001**	**991**
8-9	40	159	59	0	0	258	218	530	0	2	532	**790**	**750**
9-10	99	125	78	1	0	303	204	417	0	2	419	**722**	**623**
10-11	163	91	81	3	0	338	175	304	0	4	308	**646**	**483**
11-12	396	73	78	3	0	550	154	242	0	3	245	**795**	**399**
12-1 PM	667	29	78	3	0	777	110	100	0	4	104	**881**	**214**
1-2	1,565	29	80	4	0	1,678	113	100	0	7	107	**1,785**	**220**
2-3	1,589	29	83	5	0	1,706	117	100	0	9	109	**1,815**	**226**
3-4	1,525	72	83	5	0	1,685	160	238	0	10	248	**1,933**	**408**
4-5	140	72	41	4	0	257	117	238	0	7	245	**502**	**362**
5-6	61	138	8	5	0	212	151	456	0	8	464	**676**	**615**
6-7	19	195	4	4	0	222	203	647	0	6	653	**875**	**856**
7-8	0	245	5	4	0	254	254	810	0	5	815	**1,069**	**1,069**
8-9	0	284	3	2	0	289	289	938	0	5	943	**1,232**	**1,232**
9-10	0	294	1	2	0	297	297	971	0	3	974	**1,271**	**1,271**
10-11	0	296	0	0	0	296	296	975	0	1	976	**1,272**	**1,272**
11-12	0	300	0	0	0	300	300	986	0	0	986	**1,286**	**1,286**

As shown in **Tables 4D-60 through 4D-63**, in the Future With Phase II, parking demand from Phase II residential, commercial and public school uses is expected to peak at 901 spaces during the overnight period on both weekdays and Saturdays under the residential mixed-use variation and 986 spaces under the commercial mixed-use variation. (As noted previously, the parking forecasts assume the development of a total of 6,430 dwelling units on the project site with full build-out of the Project in 2035, as this is the maximum number of dwelling units allowed by the 2009 MGPP, and therefore the maximum number that would be built.) Under the residential mixed-use variation, total parking demand from the Project's residential, commercial and public school uses (Phase I and Phase II combined) is expected to peak at approximately 1,322 spaces during the overnight period on both a weekday and a Saturday. Parking demand from these uses would peak at approximately 1,183 spaces during a weekday evening Nets game and 366 spaces during a Saturday afternoon Nets game. The proposed 2,896 on-site parking spaces provided with full build-out of the Project would therefore be sufficient to accommodate all of the demand generated by the Project's residential, commercial and public school uses (plus 300 spaces of Arena parking and 24 spaces of NYPD parking) under the residential mixed-use variation in the Future With Phase II, with a surplus of approximately 1,250 spaces during the peak overnight period (not including the 324 Arena and NYPD parking spaces).

Under the commercial mixed-use variation, total parking demand from the Project's residential, commercial and public school uses (Phase I and Phase II combined) is expected to peak at approximately 1,286 spaces during the overnight period on both a weekday and a Saturday. Parking demand from these uses would peak at approximately 1,159 spaces during a weekday

evening Nets game and 408 spaces during a Saturday afternoon nets game. The proposed 2,896 on-site parking spaces provided with full build-out of the Project would therefore be sufficient to accommodate all of the demand generated by the Project's residential, commercial and public school uses (plus Arena and NYPD parking) under the commercial mixed-use variation in the Future With Phase II, with a surplus of approximately 1,286 spaces during the peak overnight period (not including the 324 Arena and NYPD parking spaces).

As noted above, fewer on-site parking spaces are now expected to be provided for Arena patrons than the 541 spaces currently provided for this purpose and the 1,100 spaces that were assumed in the 2006 FEIS. Therefore, future off-street public parking conditions within ½-mile of the Arena are assessed as to whether there would be sufficient parking capacity in off-site public parking facilities to accommodate Arena demand in 2035. The analysis focuses on the weekday evening and Saturday afternoon Nets game-time periods, which are the peak periods for Arena demand.

As shown in **Table 4D-59** and described above, at present there are a total of approximately 21 off-street public parking facilities located within ½-mile of Barclays Center (this being the maximum distance that Arena patrons would likely walk to access parking). These facilities currently operate at 45 percent of capacity (1,825 spaces available) during the weekday evening pregame period and at 55 percent of capacity (1,501 spaces available) during Saturday midday pregame period on days when no Nets games or other events are scheduled at the Arena

Based on projects currently planned for the study area during the 2013 to 2035 period, it is anticipated that three existing public parking facilities with a combined capacity of 346 spaces will be displaced by new development by 2035 (facilities 5, 6 and 13 in **Table 4D-59**), and that a total of 527 new spaces of off-street public parking capacity will be created. As shown in **Table 4D-64**, by 2035, public parking facilities within ½-mile of the Arena are projected to have a total capacity of 3,592 parking spaces, a net increase of 181 spaces over Existing conditions. It should be noted that this total does not include any of the public parking spaces that would be provided on the project site.

During the 2013 to 2035 period, demand at public parking facilities within ½-mile of the Arena is expected to increase as a result of new development and background growth. **Table 4D-64** shows the estimated future off-site parking demand in 2035. As many of the new developments in proximity to the Arena are expected to be predominantly residential in nature, it assumed that much of their parking demand will be accommodated in accessory parking facilities consistent with current zoning requirements for residential developments in this area of Brooklyn. Under current zoning, 0.2 spaces of accessory parking per dwelling unit are typically required for most market-rate units. Accessory parking for affordable units is generally not required by zoning in this area. To be conservative, the parking demand forecast shown in **Table 4D-64** assumes that residential development will consist of 80 percent market rate units and 20 percent affordable units where specific data on the mix of dwelling units is not currently available. The forecast also conservatively assumes an overnight residential parking demand of 0.2 spaces per dwelling unit irrespective of the mix of dwelling units. (While an overnight demand of 0.2 parking spaces is typical for owner-occupied units in this area of Brooklyn, demand from rental units is generally lower.)

As shown in **Table 4D-64**, accounting for background growth, demand from planned developments, and anticipated accessory parking, public parking demand within ½-mile of the

Table 4D-64
2035 Future Parking Supply and Demand at Public Parking Facilities Within ½-Mile of the Barclays Center Arena

Period	2013 Existing Conditions w/o Arena Event			2035 Future Off-Site Parking Capacity			2035 Future Off-Site Parking Demand w/o Arena Event[7]				
	Total Capacity[1]	Total Demand[1]	Net Spaces Available[3]	Existing Public Spaces Displaced	New Public Spaces Provided[8]	Total Public Parking Spaces[2]	Existing Demand Plus Background Growth[4]	Demand from Discrete Development Sites[5]	Accessory Spaces Provided at Discrete Development Sites[6]	Total Public Parking Demand[7]	Net Parking Surplus or (Deficit)[3]
Weekday Evening	3,411	1,521	1,825	346	527	3,592	1,573	906	726	1,753	1,767
Saturday Midday	3,411	1,845	1,501	346	527	3,592	1,908	290	726	1,472	2,048

Notes:

[1] Based on PHA survey data from Nov. 2011, May 2012, Nov. 2012 and April 2013; SSE Oct. 2011 survey data; and Sept. 2013 and Oct. 2013 data from the operator of the Atlantic Center parking garage.

[2] Does not include public parking spaces provided on the Project site.

[3] Assumes parking facility is full at 98% of licensed capacity as per *CEQR Technical Manual* guidelines.

[4] Reflects annual background growth rates of 0.25% per year for 2013-2018 and 0.125% per year for 2018-2035 as per *CEQR Technical Manual* guidelines.

[5] Assumes an overnight demand of 0.2 parking spaces/D.U. for residential development.

[6] Assumes an 80%/20% market rate/affordable split for residential development where the number of affordable units is not known, and that 0.2 spaces/D.U. of accessory parking would be provided for market rate units as per zoning.

[7] Does not include demand from Phase I or Phase II of the the Project.

[8] Assumes parking garage planned for 470 Vanderbilt Avenue would be available for use by Arena patrons, as is the existing surface parking lot at this location.

Barclays Center Arena (excluding demand from Phase I and Phase II of the Project) is expected to total approximately 1,753 spaces during the weekday evening period and 1,472 spaces during the Saturday midday period. As the supply of off-street public parking is expected to total 3,592 spaces in 2035, there would be a net surplus of 1,767 spaces and 2,048 spaces during these periods, respectively. As noted previously, parking demand from a Nets game at the Arena is estimated to total approximately 1,531 spaces for a weekday evening game, and 1,589 spaces for a Saturday afternoon game. The projected amount of parking capacity available at off-street public parking facilities during these periods in 2035 would therefore be sufficient to accommodate all of the demand generated by a Nets game at the Barclays Center Arena. In addition, as also noted previously, more than one-half of the parking demand from a Nets game at the Arena is currently accommodated on-street, and it is anticipated that in the future, much of the on-street parking capacity available in the immediate vicinity of the Arena would continue to be utilized by Arena patrons during a Nets game or other event. Shortfalls in the supply of off-street public parking capacity are therefore not expected to occur in 2035 irrespective of the amount of parking provided for Arena patrons on the project site in the Future With Phase II condition.

In summary, the proposed 2,896 on-site parking spaces provided with full build-out of the Project would be sufficient to accommodate all of the demand generated by the Project's residential, commercial and public school uses (plus 24 spaces of NYPD parking) under both the residential mixed-use and commercial mixed-use variations in the Future With Phase II. In

addition, the projected amount of parking capacity available in 2035 at off-street public parking facilities within ½-mile of the Barclays Center Arena is also expected to be sufficient to accommodate all of the demand generated by a Nets game at the Arena irrespective of the amount of parking provided for Arena patrons on the project site. Therefore, no significant adverse parking impacts would occur in the Future With Phase II under the Extended Build-Out Scenario.

COMPARISON OF SEIS FINDINGS AND PREVIOUS FINDINGS

The 2006 FEIS assessed future parking conditions with a total of 3,670 parking spaces on the project site and concluded that sufficient off-street parking capacity would be available both on-site and at existing public off-street facilities within ½-mile of the Arena to fully accommodate peak demand from full build-out of either of the Project's two variations (residential mixed-use or commercial mixed-use) in 2016. It was also expected that on-street parking in the vicinity of the project site would likely be fully utilized during major events at the Arena, such as a Nets basketball game. However, as sufficient off-street parking capacity would be available to fully accommodate all Project demand in all periods, it was concluded that no significant adverse impacts to parking conditions would result from the Project.

Compared to the 2006 FEIS, this SEIS analysis reflects a proposed reduction from 3,670 to 2,896 spaces in the amount of on-site parking capacity that would be provided with full build-out of the Project. In addition, this SEIS analysis differs from the 2006 FEIS with respect to travel demand factors, analysis methodologies, impact criteria, background conditions, background growth rates, and the Project development program. For example, the forecasts of residential parking demand in the 2006 FEIS assumed an overnight rate of 0.4 spaces per dwelling unit whereas this SEIS analysis assumes an overnight rate of 0.2 spaces per dwelling unit, consistent with recent survey data which indicate lower levels of residential parking demand in Downtown Brooklyn. In addition, as per 2012 *CEQR Technical Manual* guidelines, the SEIS analysis assumes lower background growth rates (0.25 percent/year for years 1-5 and 0.125 percent/year for subsequent years) than were assumed for the 2006 FEIS (0.5 percent/year for all years).

Under the *CEQR Technical Manual* guidelines used for the 2006 FEIS, a parking shortfall in the area of Downtown Brooklyn exceeding more than half the available on-street and off-street parking spaces within ¼-mile of the site was considered significant. By contrast, under 2012 *CEQR Technical Manual* guidelines for this area of Brooklyn, the inability of a proposed project or the surrounding area to accommodate a project's future parking demands is considered a parking shortfall, but is generally not considered significant due to the magnitude of available alternative modes of transportation.

This SEIS analysis finds that the 2,896 on-site parking spaces now proposed with full build-out of the Project would be sufficient to accommodate all of the Project's non-Arena parking demand, with a surplus of approximately 1,250 spaces under the residential mixed-use variation and 1,286 spaces under the commercial mixed-use variation (not including 324 parking spaces for Arena and NYPD use). In addition, the projected amount of parking capacity available at off-street public parking facilities within ½-mile of the Arena under the Extended Build-Out Scenario is expected to be sufficient to accommodate all of the demand generated by a Nets game irrespective of the amount of parking provided for Arena patrons on the project site. Therefore, the findings of this SEIS are that no significant adverse parking impacts would occur in the Future With Phase II under the Extended Build-Out Scenario, consistent with the findings of the 2006 FEIS. ✷