

Transportation

Since the issuance of the Amended Planned Unit Development-Preliminary Master Plan approval in August 2010, the Proponent has advanced the construction of the Project significantly. During this time the permitting and design of multiple individual blocks has advanced, and the comprehensive off-site traffic mitigation program was implemented with construction ending in 2011.

This section provides an updated evaluation of the Project considering recent changes in the proposed development program. The focus of this evaluation is on the overall Assembly Square Project, with the new Block 11A development and other associated changes now being incorporated into the overall development program. Specifically, this assessment considers the replacement of the formerly proposed IKEA store with office space for Partners Healthcare. This and other associated changes to the Project are summarized in the following narrative section. A detailed transportation evaluation considering the Project's potential impacts on the surrounding off-site study area roadways and intersections is provided for reference following this section. Specific transportation-related matters associated with the new Block 11A development will be evaluated in detail as part of the Block 11A Special Permit approval process.

Proposed Development Program

As described in the Project Narrative, the Project originally included the development of approximately 2,100 residential units, 1.75 million square feet (sf) of commercial uses permitted under the SZO including, but not limited to, office, research & development, laboratory, medical office, manufacturing, etc., 512,000 sf of retail space (including restaurants and a 62,000 sf/ 14-screen cinema) a 200-room hotel, and an up to 340,000 sf IKEA store.

In 2012 IKEA announced that it would no longer be constructing a store at the Project site. Since that time the Proponent purchased the land formerly proposed for IKEA, and is now planning to develop additional office space for Partners Healthcare. Other changes include the addition of a new health club and additional ancillary retail space oriented to on-site users. To accommodate this additional development the residential portion of the site has been reduced by over ten-percent. With these changes the primarily automobile-oriented IKEA store is being replaced with office space which should be more heavily-oriented to the new MBTA station. The updated

current development program is compared to the program approved under the 2010 Amended PUD in Table 1.

Table 1 Proposed Assembly Square Development Comparison

	2010 FEIR Program	May 2014 Proposal	Difference
Office	1,750,000 sf	2,801,333 sf	+1,051,333 sf
IKEA	340,000 sf	0 sf	(340,000) sf
Health Club	N/A	50,000 sf	+50,000 sf
Retail	450,000 sf	527,024 sf	+77,024 sf
Residential	2,100 units	1,843 units	(257) units
Hotel	200 rooms	170 rooms	(30) rooms
Cinema	14 screens	12 screens	(2) screens

As shown in Table 1, the primarily automobile-oriented IKEA store is being replaced with office space which should be more heavily-oriented to the new MBTA station. Specifically, approximately 1,155,000 square feet (sf) of office space is now proposed for Block 11A, along with 75,000 sf of supporting retail space (including restaurants and a daycare facility) and a 50,000 square foot health club. To accommodate this additional development the residential portion of the site has been reduced by 257 units (a twelve-percent reduction). Other minor changes to the previously reviewed building program include the number of hotel rooms and cinema screens being slightly reduced. The Project still will contain a variety of office, residential and retail uses so as to create a self-sustaining urban village designed following smart growth principles.

Through early 2014 the only portion of the Project to have been built and occupied is the 4,500 sf of restaurant space comprising Block 10 of the site. However, construction of Blocks 1 through 4 has been underway since 2012 with several tenant spaces expected to open presently and within the immediate future. This space will include a mixture of residential units, office space, and retail space (including a cinema, a Legoland Discovery Center and various retail/ restaurants uses). Development on the remainder of the site is expected to occur within the next five years.

The new Block 11A development will be constructed in two phases. The first phase, Phase A, will involve the construction of a portion of the two mixed-use buildings to include 768,375 sf of office space and the 105,922 sf of retail/ restaurant space. The proposed 7-level parking garage will be constructed along with an adjacent surface parking lot resulting in a total supply of 1,997 parking spaces. The second and final phase of Block 11A's development, Phase B, will involve the construction of the remaining 338,203 sf of office space resulting in the full build-out of 1,106,578 sf of office space within Block 11A the proposed 12,500 sf of daycare space also will be constructed as part of this phase. The daycare will be operated by Partners Healthcare and is intended to be available only to Partners Healthcare employees. Finally, the existing surface parking lot will be replaced through a 907-space

expansion to the structured parking resulting in the total 2,904 space planned parking supply. This parking supply will be utilized both by the office tenants and visitors to the retail uses within Block 11A. Of this supply, 1,617 spaces will be dedicated to the office tenants with the remaining 380 spaces being available for visitors to the retail and restaurant uses. This entire retail-oriented parking supply will be available under Phase A. Approximately 1,617 office parking spaces will be provided under the initial Phase A, with the remaining 907 structured office parking spaces being built in conjunction with the 338,203 sf of Phase B office area.

Study Area Traffic Volumes

The transportation analysis prepared for the prior Amended PUD was based upon a highly-detailed, comprehensive Traffic Impact and Access Study which considered the Project's impacts on a phased basis. That document identified the extensive transportation infrastructure improvements which would be needed to accommodate the Project, almost all of which have since been constructed in and around Assembly Square. As part of this current evaluation, VHB has reviewed traffic conditions in the area compared to those contained in the prior traffic studies for this Project.

To help identify any area traffic growth that may have occurred since the prior studies were prepared, VHB recently conducted traffic counts at two key locations in the vicinity of Assembly Square. VHB conducted continuous 72-hour traffic counts over a three-day period (including Saturday) on both Route 28 and Mystic Avenue Northbound, which are the two primary surface arterial roadways abutting the Assembly Square District. These counts were conducted between Thursday, April 10, 2014 and Saturday April 12, 2014 on both roadways, and are summarized below in Table 2. Counts previously conducted by VHB on these roadways also have been provided in Table 2 for comparison purposes.

Table 2 Weekday Traffic Volume Comparison

Count Date	ADT ^a	Morning Peak Hour			Evening Peak Hour		
		Volume ^b	K Factor ^c	Dir. Dist. ^d	Volume	K Factor	Dir. Dist.
Route 28:							
January 26, 2006	56,610	4,170	7.4%	67%(SB)	3,880	6.9%	56%(NB)
June 25, 2009	67,990	4,355	6.4%	65%(SB)	4,280	6.3%	56%(NB)
June 17, 2010	63,875	4,380	6.9%	67%(SB)	4,450	7.0%	54%(NB)
April 10, 2014	62,751	4,478	7.1%	68%(SB)	4,197	6.7%	56%(NB)
Mystic Avenue northbound:							
June 17, 2010	21,175	1,030	4.9%	N/A	2,030	9.6%	N/A
April 10, 2014	19,489	1,076	5.5%	N/A	1,674	8.6%	N/A

Source: Automatic traffic recorder counts conducted by VHB on Route 28 south of Middlesex Avenue and on Mystic Avenue northwest of Lombardi Street.

- a. Average Daily Traffic volume expressed in vehicles per day.
- b. Vehicles per hour
- c. Represents the percent of daily traffic that occurs during the peak hour.
- d. Directional distribution of peak hour traffic.

As shown in Table 4-2, traffic on Route 28 actually has decreased by almost two-percent since the conclusion of the original MEPA review process in 2010. Likewise, volumes on Mystic Avenue also are almost eight-person lower than the levels observed in 2010. While the counts were conducted in different months the application of seasonal adjustment factors would not result in the new counts being significantly different than the volumes observed in 2010, or in the years prior to that. Regardless, the capacity analysis conducted for the off-site study area locations considered a new 2021 Build condition so that a standard seven-year horizon would be considered, instead of the 2018 Build year considered in the prior analysis. In doing so, an additional three years of traffic growth have been added onto the future Build conditions volumes even though the count data above do not substantiate that further additional growth.

Trip Generation

The trip generation analysis presented during the 2010 Amended PUD approval process was a complicated exercise largely due to the timing of the new MBTA Orange Line station relative to the phased construction of the various proposed uses. However, the new MBTA station is now expected to be open as soon as late 2014 and all the transportation improvements associated with the former IKEA proposal already have been implemented. The only remaining mitigation beyond that previously proposed phase involves the construction of new signalized at-grade u-turn connection from the northbound segment of Mystic Avenue to the departing southbound segment leading to the Route I-93 southbound on-ramp. Originally this mitigation was not planned to occur until midway through the overall site development before the opening of the new station. That work will now commence concurrent with the development of Block 11A pending permit approval by

MassDOT and/ or DCR. With this mitigation being in place now instead of on a phased basis the focus of this current analysis will be on the trip generation associated with the full build-out of the entire Project.



Trip Generation Methodology

The following section provides a general summary of how the Project trip generation was calculated, along with discussion of the underlying trip-sharing, transit, and pass-by assumptions used. The resulting the updated trip generation was developed in the following same manner used for the previously reviewed 2010 Amended PUD transportation analysis:

Step 1: Base Rates

The Institute of Transportation Engineers *Trip Generation Manual*¹ publishes trip generation data for a variety of land uses. These rates and equations for the individual uses making up this overall Project site are developed for single-use projects typically located in the suburbs. Thus, these rates do not account for any benefits arising from the transit-oriented, mixed-use nature of the Project. Therefore, these rates and associated trips represent the “base” trip generation numbers prior to any credit resulting from the unique characteristics of the Project.

Step 2: Internal Trips

Shared-trips between the residential, hotel, office and retail components of the Project were calculated using guidelines recommended by the Institute of Transportation Engineers (ITE) *Trip Generation Handbook*². While these shared trips represent new traffic to the individual uses, they do not show up as new vehicle trips on the surrounding roadway network aside from the internal site driveways. Table 3 depicts the internal capture rate for the different time periods of the Project.

Table 3 Internal Capture Rates

Time Period	2010 Amended PUD – Full Build Condition	2014 Amended PUD – Full Build Condition
<i>Weekday</i>		
Daily	15.4%	15.1%
Morning Peak Hour	NA	0.7%
Evening Peak Hour	12.7%	11.2%
<i>Saturday</i>		
Daily	16.3%	16.6%
Mdday Peak Hour	12.1%	12.5%



1 Trip Generation Manual; Ninth Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.
 2 Trip Generation Handbook; Institute of Transportation Engineers; Washington, D.C.; 2012.

As shown through Table 3, during the critical weekday conditions the updated trip sharing assumptions are slightly lower, and more conservative, than those calculated in the 2010 Project FEIR.

Step 3: Non-Vehicle Trips

The probable modes splits for the Project were estimated considering empirical data from the U.S. Census Transportation Planning Package, research on transit-oriented development, and sample mode shares from similar large projects. The resulting percentages assumed in the trip generation analysis in both the prior and current Amended PUD transportation analysis are summarized in Table 4.

Table 4 Mode Split Percentages

Time Period	2010 Amended PUD – Full Build Condition	2014 Amended PUD – Full Build Condition
<i>Transit</i>		
IKEA	0%	N/A
Retail	5%	5%
Residential	47%	47%
Office	25%	25%
<i>Bicycle/Walk</i>		
IKEA	0%	N/A
Retail	5%	5%
Residential	5%	5%
Office	5%	5%

N/ A IKEA no longer proposed as part of Project.

Step 4: Pass-by / Diverted-link / New Trips

Retail uses typically attract a significant percentage of their traffic from traffic streams passing the site. Thus, a 25 percent pass-by rate was used to determine the pass-by trip credit for the retail trips in accordance with EEA/ EOTA guidelines. The new vehicular trips for the Project result from subtracting the internal trips, non-vehicle trips and pass-by/ diverted-link trips as appropriate from the “base” trips.



Project Trip Generation Summary

As noted above, the first step of the trip generation process involves estimating trip generation for each major project component using standard Institute of Transportation Engineers (ITE) data³. Table 5 compares the resulting unadjusted trip generation estimates to those previously evaluated during the 2010 Amended PUD

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3 Trip Generation Manual; Ninth Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

process. A detailed summary of the trip generation calculations is provided in the appendix of the attached Traffic Impact and Access Study.

Table 5 Assembly Square Full Build-out Trip Generation Comparison – Total Unadjusted Trips

Time Period	2010 Amended PUD Approved ¹	2014 Amended PUD Proposal ²	Difference
Weekday Daily (vpd)	45,450	45,055	-395
Weekday Morning Peak (vph)			
Enter	2,095	2,795	700
Exit	<u>1,050</u>	<u>1,060</u>	<u>10</u>
Total	3,145	3,855	710
Weekday Evening Peak (vph)			
Enter	1,985	1,979	-6
Exit	<u>2,955</u>	<u>3,807</u>	<u>852</u>
Total	4,940	5,786	846
Saturday Daily (vpd)	44,470	36,755	-7,715
Saturday Midday Peak (vph)			
Enter	2,195	2,147	-48
Exit	<u>1,840</u>	<u>1,845</u>	<u>5</u>
Total	4,035	3,992	-43

vpd Vehicles per day
vph Vehicles per hour

Source: Assembly Square Mixed-Use Redevelopment – Draft Environmental Impact Report: VHB, Inc., Watertown, MA (June 2, 2008).
Source: Trip Generation Manual; Ninth Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

As shown in Table 5, the overall unadjusted weekday daily volumes decrease as a result of the proposed changes. With the primary change of IKEA being replaced with new office space Saturday volumes decrease on both a daily level and during peak-hour conditions. Likewise, the weekday daily trip generation associated with the Project also will be reduced with these changes. However, with the change in development the weekday peak hour volumes are expected to increase.

The trip generation was further refined to reflect internal shared trips, mode-splits, and pass-by traffic based on ITE data⁴ using the same assumptions from the original analysis as discussed earlier. For consistency the same mode splits used in the original analysis will be utilized for this current analysis (with the exception of the IKEA which is no longer planned). The revisions to the project should help promote a more transit-oriented environment. The previously proposed IKEA use was not expected to have significant transit ridership, while the new office workers using this space should find the MBTA station to be a highly convenient and attractive option.

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4 ibid.

With the new MBTA station planned to be in operation as soon as late 2014, the NPC analysis used the same full build-out mode split assumptions from the original study as shown earlier.

Table 6 compares the originally evaluated trip generation to that associated with the revised development considering internal shared trips, mode splits and retail pass-by traffic. A detailed summary of the associated trip generation calculations is provided in in the appendix of the attached Traffic Impact and Access Study.

Table 6 Assembly Square Full Build-out Trip Generation Comparison – Net New Vehicle Trips

Time Period	2010 Amended PUD Approved ¹	2014 Amended PUD Proposal ²	Difference
Weekday Daily (vpd)	24,810	23,259	-1,551
Weekday Morning Peak (vph)			
Enter	1,450	1,905	455
Exit	<u>590</u>	<u>599</u>	<u>9</u>
Total	2,040	2,504	464
Weekday Evening Peak (vph)			
Enter	1,065	1,000	-65
Exit	<u>1,770</u>	<u>2,328</u>	<u>558</u>
Total	2,835	3,328	493
Saturday Daily (vpd)	24,720	17,218	-7,502
Saturday Midday Peak (vph)			
Enter	1,350	1,159	-191
Exit	<u>1,040</u>	<u>956</u>	<u>-84</u>
Total	2,390	2,115	-275

vpd Vehicles per day

vph Vehicles per hour

1. Source: *Assembly Square Mixed-Use Redevelopment – Draft Environmental Impact Report*; VHB, Inc., Watertown, MA (June 2, 2008).

2. Source: *Trip Generation Manual*; Ninth Edition; Institute of Transportation Engineers; Washington, D.C.; 2012..



Trip Distribution and Assignment

In the transportation analysis conducted to date different trip distribution patterns that were used for the residential, office, retail, and IKEA site components. While the IKEA will no longer be constructed the other general uses are still planned, though at different overall levels than those previously considered. VHB recently obtained employee home zip code data for Partners Boston-based employees that now will be working in Somerville. Table 7 summarizes the previously reviewed trip distribution patterns for the Project. The IKEA trip distribution is shown in the table and graphics

for reference only. As the IKEA is no longer proposed for the Project site the IKEA trip distribution is not used in determining where the new Partners office traffic will be traveling to and from.

**Table 7 Assembly Square Redevelopment
Vehicle Trip Distribution Summary**

Route	Direction	2010 Amended PUD Approved				May 2014 Amended PUD Proposal ¹
		Residential	Retail	IKEA	Office	Partners Healthcare Office
I-93	north	11%	3%	50%	25%	24%
I-93	south	28%	1%	28%	21%	49%
Route 28	northwest	3%	6%	1%	6%	3%
Route 28	southeast	14%	15%	4%	14%	8%
Route 16	west	1%	5%	1%	1%	0%
Route 16	east	1%	3%	4%	7%	6%
Broadway	northwest	11%	18%	2%	8%	3%
Medford Street	northwest	22%	17%	6%	6%	4%
Mystic Avenue	north	3%	12%	2%	4%	1%
Mystic Avenue	south	3%	4%	2%	5%	2%
<u>Local Roadways</u>	=	<u>3%</u>	<u>16%</u>	<u>--</u>	<u>3%</u>	<u>0%</u>
Total	--	100%	100%	100%	100%	100%

1. Source: Employee residence zip-code data for Boston-based employees relocating to Somerville Project site.

As shown in Table 7, the Partner’s based data reflects a significantly higher proportion of office employees arriving from the south of the Project site on Route I-93 as compared to the previous census-based projections. However, this reflects the current Partners Boston workforce including a higher proportion of employees that live to the south of the Project site. Due to its location, a smaller percentage of office workers in Somerville live to the south of Boston likely due to the distance and time associated with having to travel through Boston as part of their commute. Most of the employees relocating to the Somerville location likely will continue to live at their current residence. However, over the time the Partners Somerville workforce may gradually shift with the resulting trip distribution being similar to that shown by the Somerville census data. In conducting this analysis an important distinction must be made between where employees live geographically and what route they use to travel to and from work. The Partners zip code data provided indicate that over 40-percent of its employees will live in communities to the north of Boston. However, while these employees physically may live north of the Project site, their travel route may involve them approaching the site from the south as reflected by Table 7. For instance, some commuters along the north shore may use Route 1 South to travel to the site. Because Route 1 intersects I-93 to the south of the site, those employees actually would end up traveling northbound on I-93 to make their final leg of their trip to the site. Similar patterns may occur for workers located to the northwest of the Project site.



For the purpose of this current analysis it is assumed that the Partners employees will follow the same distribution patterns as the other Assembly Square office workers as estimated in the prior traffic studies for the Project. In doing so, this maximizes the amount of office workers exiting the site directly onto Route 28 via either Grand Union Boulevard or Middlesex Avenue. In fact, if Partners employees follow the trip distribution shown in the right-hand column of Table 7, there would be a reduced impact to Route 28, the Route 28/ Mystic Avenue interchange, and nearby local roadways. Under that scenario, 49-percent of the Partner’s employees would be exiting the site onto Mystic Avenue northbound and utilizing the planned signalized at-grade u-turn connection to Mystic Avenue southbound leading to the Route I-93 South on-ramp. By not assigning traffic in that manner the analysis in this assessment is overly conservative in that it overestimates the amount of Project traffic being added to the critical Route 28 access points.

A detailed traffic evaluation including capacity analysis of key off-site study area intersections is provided in attached to this section of the Amended PUD application for reference. The operation of Grand Union Boulevard and the Block 11A access points will be evaluated separately as part of the Block 11A Special Permit approval process.



Traffic Mitigation Overview

The prior Amended PUD Transportation analysis identified several transportation-related improvements both within the Assembly Square District and in the surrounding area. The design of these improvements has since been completed, though only a minor portion of the overall site development is currently in place and occupied. The following section summarizes the substantial roadway improvements which were implemented both within the Assembly Square District and on the surrounding study area roadways and intersections.



Assembly Square Drive Construction

As traffic mitigation for the planned Assembly Square Redevelopment project substantial roadway improvements were completed. Funding for these improvements (known as the Assembly Square Access Improvements “ASAI” Project) was obtained through the American Recovery and Reinvestment Act (ARRA) with construction having been completed in 2011. As part of these improvements, a new Assembly Square Drive (now named Grand Union Boulevard) was constructed from Route 28 extending south to Mystic Avenue. This new roadway now serves as the primary north-south access the various intersecting side streets within the overall Assembly Square Mixed-Use Redevelopment. The road is a landscaped two-lane roadway (with additional turn lanes at prominent intersections and on-street parking) accommodating bicycle lanes and pedestrian sidewalks as

well as vehicular traffic. Immediately to the northwest of Block 1 a new roundabout was constructed at Grand Union Boulevard's intersection with A Street (now known as Great River Road). This gateway location provides access to Great River Road, which will serve Block 1 as well as future additional waterfront development further to the east in Block 2, while also providing an improved connection to the existing Draw 7 Park to the east of the Project site. In addition to these improvements, the following other significant off-site transportation-related enhancements have been implemented as noted below.



Assembly Square Off-Site Transportation Mitigation

In addition to the new Grand Union Boulevard, a comprehensive off-site traffic mitigation program was implemented as part of the ARRA-funded ASAI project. Specifically, the following off-site improvements previously identified during the Project's previous local approval process have been implemented:

- **Mt. Vernon Street/Lombardi Street at Broadway/ Mystic Avenue Southbound/ Grand Union Boulevard (4 locations):** Mitigation to this interchange consisted of improvements to the existing signalized intersections of Mystic Avenue northbound/ Lombardi Street/ Grand Union Boulevard and at Broadway/ Lombardi Street/ Mount Vernon Street. The Route I-93/ Mystic Avenue southbound off-ramp intersection with Lombardi Street also was signalized along with the Mystic Avenue southbound U-turn underpass to Mystic Avenue northbound with all of these signals constructed to operate as part of an interconnected closed-loop system.
- **Mystic Avenue Northbound at New Road:** Improvements at this location involved installing new signal equipment to return this location to its original fully-operative signalized condition.
- **Middlesex Avenue at Foley Street:** The previously inoperative traffic signal at this location was replaced with new equipment to make the intersection fully functional.
- **Route 28 at Grand Union Boulevard and Middlesex Avenue:** The former Assembly Square Drive intersection with Route 28 was reconfigured to allow exiting left turns from the newly named Grand Union Boulevard. In conjunction with this work, new signal equipment and geometric improvements also were implemented at Route 28/ Middlesex Avenue. Due to the proximity of both intersections, both locations operate under a single traffic signal controller.
- **Route 28 at Mystic Avenue Northbound Traffic Signal:** New signal equipment was installed at this location to improve the visibility of traffic on both Route 28 and Mystic Avenue at this location.
- **Kensington Avenue:** Safety and accessibility improvements were implemented at an existing pedestrian crossing connecting the northbound and southbound segments of Mystic Avenue under Route I-93.



The design of the locations listed above also featured extensive pedestrian and/ or bicycle related improvements to address existing deficiencies. Those included new signalized crosswalks, bicycle detection at traffic signals, dedicated bicycles lanes, and other measures to promote multi-modal travel within Assembly Square. The resulting benefits associated with these features are described in greater detail in the following sections.



Route 28 at Mystic Avenue Northbound – U-turn Slot

In addition to allowing exiting left turns from Assembly Square Drive onto Route 28, additional measures were identified to improve egress from the Assembly Square District. Specifically, mitigation was identified to address the anticipated increase in the exiting left-turn demand from Assembly Square onto Route 28. As currently configured, traffic exiting the Assembly Square District and wishing to return to Route I-93 southbound must exit from Middlesex Avenue onto Route 28. Even with the introduction of exiting left-turns at the Grand Union Boulevard intersection with Route 28, there is a need for another point of egress for this route. Accordingly, the following mitigation which was presented in the prior PUD approval processes still is planned. However, instead of being proposed for midway through the overall site development timeline the Proponent now plans to construct the following improvements concurrent with the development of Block 11A pending permit approval by MassDOT and/ or DCR.

There is space available at-grade underneath the Route I-93 overpass to provide a U-turn slot to the east of the Route 28/ Mystic Avenue intersection. This would allow for traffic traveling north on Mystic Avenue to reverse direction and access the I-93 southbound on-ramp without having to pass through the signal. The benefit to this measure is that traffic exiting the Assembly Square District wishing to return to Route I-93 would have this option as opposed to having to exit onto Route 28, travel south to the signal at Mystic Avenue, and then access the Mystic Avenue on-ramp leading to Route I-93 south. By using this route motorists will be able to bypass two Route 28 signals, which will help alleviate traffic congestion and delays on Route 28 at two locations. From Assembly Square, this route could be accessed by exiting from either Grand Union Boulevard at Mystic Avenue/ Lombardi Street, New Road at Mystic Avenue, or by turning left from Foley Street onto Middlesex Avenue. With these multiple access options, this alternate exit route from the site has the potential for significant use. Furthermore, with the Partners employee distribution identified earlier, this new u-turn may provide an even greater benefit than originally anticipated with the former IKEA proposal. Accordingly, the following specific measures still are planned to be implemented:

- Construct the at-grade U-turn slot underneath the Route I-93 overpass to the east of the Route 28/ Mystic Avenue intersection. The entry point for this turn slot would be just east of the point where the Route I-93 off-ramp intersects with

Mystic Avenue. [By locating the U-turn slot at this location potential weaving conflicts will be avoided.]

- Install a new actuated traffic signal at the point where the U-turn slot intersects the Route 28 southbound to I-93 southbound on-ramp. While it was found that there will be sufficient gaps in the opposing Route 28 southbound to I-93 southbound on-ramp traffic flow to allow for the U-turn slot to operate under a Yield condition, deficiencies in sight distances require that this location operate under signal control. The necessary signal warrants are satisfied to allow for this configuration. The signal will operate in a dependent manner to the Route 28/ Mystic Avenue northbound intersection under the same existing signal controller. This measure will result in traffic turning onto Mystic Avenue from the new U-turn slot only running during the signal phase where Route 28 southbound traffic is stopped at the Route 28/ Mystic Avenue intersection.

These plans were previously discussed at a conceptual level with both the City of Somerville and the Department of Conservation and Recreation (DCR). The Proponent will work with both parties to advance these plans which will be constructed by the Proponent immediately following the issuance of the required permits.

Assembly Row Parking Demand and Supply Overview

To evaluate the parking needs associated with the Project Partners Healthcare retained Cambridge Systematics to conduct the following parking supply and demand analysis. Partners Consolidation at Assembly Row consists of two phases. Phase A consists of an approximately 700,000 net square foot building and a 1,997 space parking garage and is scheduled for completion in 2016. Phase B consists of an additional 325,000 net square feet and 907 parking spaces to be built in a subsequent phase. Detailed below are the parking demand and supply projections for each of these phases.

With the consolidation of 14 different Partners administrative offices, 4,750 employees will be relocated as part of Phase A to an approximately 700,000 net square foot building at Assembly Row. Seventy-five percent of these employees (approximately 3,563) are assumed to be on-site during peak work hours, as a result of sick days, vacations, off-site meetings, flex-time scheduling and telecommuting. As part of the transportation planning exercise, representative mode share data was collected from existing employees and adjusted for the new location. Using current commuting behavior, 50% of employees will drive alone, 19% will drive with someone else, 26% will take some form of mass transit and an additional 5% will walk or ride a bicycle to Assembly Row. Based on this projected mode share, an estimated 2,135 parking spaces are required as part of the initial Phase A build out.

**Table 8 Partners Assembly Row Consolidation
Mode Split and Parking Demand – Phase A**

	Projected Mode Share	Employees
Total Employees		4750
Employees on Site	75%	3563
Employees Who Drive	50%	1797
Employees Who Drive Together	19%	677
Employees Who Use Transit	26%	922
Employees Who Walk/Bike	5%	167
Total	100%	3563
Parking Demand for Drive Alone		1797
Parking Demand for Shared Drive		338
TOTAL PARKING DEMAND		2135
Parking Demand/1000 SF		3.05

The Phase A parking garage will have a total of 1,997 spaces with up to 380 spaces earmarked for retail customers leaving 1,617 parking spaces for Partners. Based on the mode share assumptions, a parking space deficit of 518 is anticipated. Therefore, transportation demand management practices, including financial incentives, transit-oriented programs and parking management programs will be employed to reduce the parking demand.

Phase B assumes an additional build out of approximately 325,000 net square feet of space for Partners, although is not known at this time specifically how Partners will use this space. Using existing employee travel behavior adjusted for the Assembly Square location, the potential future parking demand is estimated at an additional 991 spaces as part of the Phase B build out. However, since the build out of Phase B is five or more years away, it is anticipated that employee transportation preferences will evolve such that:

- there will be less reliance on the private automobile among new hires; and
- some existing employees will have relocated to live closer to work or transit and, as a result, will not commute by car.

It is estimated that an additional 907 parking spaces can be built in Phase B for a total structured parking capacity of 2,904 spaces. Allowing the continued use of 380 spaces for retail customers, 2,524 parking spaces will be available for Partners. While this capacity presents a combined deficit of approximately 603 spaces across both phases, the combination of changes in employee travel preferences over time and transportation demand management techniques will reduce the parking demand

such that it is consistent with the supply provided.

**Table 9
Partners Assembly Row Consolidation
Total Partners Parking Demand Phase A + Phase B**

	Parking Demand Based on Currently Projected Mode Share	# Partners Parking Spaces
Phase A SF (net)	700,000	700,000
Parking Demand/1000 SF	3.05	2.31
TOTAL Parking Spaces Phase A	2135	1,617
Phase B SF (net)	325,000	325,000
Parking Demand/1000 SF	3.05	2.79
Total Parking Spaces Phase B	991	907
Total Parking Spaces Phase A + Phase B	3,127	2,524
Parking Demand/1000 SF	3.05	2.46

Partners Healthcare Transportation Demand Management (TDM) Plan

The prior transportation assessments for the Project had provided a summary of the Transportation Demand Management (TDM) measures associated with the various site components. The new Partner’s Healthcare office space is entirely consistent with the goals of the originally proposed TDM program, and should be compatible with the previously established TDM measures. Specifically, the office use will be more oriented towards public destination than the previously considered IKEA store on this portion of the site. The parking supply proposed for the Partner’s use also will limit the number of office workers that will be able to drive to the site. Partners Healthcare is pursuing appropriate TDM measures for the Assembly Square development. The following TDM measures are currently being considered:

- As part of the consolidation, Partners will be exploring rerouting of its existing shuttle service system to include a stop at Assembly Row.
- Preferential carpool and vanpool parking within the parking garages and spaces near entrances as a convenience to commuters and to promote ridesharing.
- Ride matching assistance managed by Project transportation coordinator or by MassRIDES so that employees find appropriate carpool and vanpool partners



- Ability by employees to use pre-tax dollars for the purchase of MBTA passes. The pre-tax purchase is free up to an established maximum from both federal and state income and payroll taxes.
- Subsidies to employees who purchase monthly or multiple trip transit passes.
- Provide a guaranteed ride home program, in conjunction with MassRIDES to eliminate an often-cited deterrent to carpool and vanpool participation.
- Telecommuting options for employees in appropriate jobs.
- Flexible work hours in certain jobs, as appropriate.
- Incentives for bicycle and pedestrian commuters, like covered bicycle storage, changing rooms, and shower facilities.
- Promotional events for transit-riders, cyclists, and pedestrians.
- Direct deposit to employees.



Traffic Mitigation Funding Commitments

In addition to the physical off-site roadway improvements noted in the previous section, Federal Realty Investment Trust funded additional transportation-related improvements through an Amended and Restated Development Covenant with the City. These included a significant contribution toward the design and construction of the new MBTA Orange Line station, traffic calming measures, bicycle/ pedestrian services, and studies of additional transportation matters. Specifically, the following mitigation funding has been provided as summarized in Table 10.

Table 10 Transportation Mitigation Funding Summary*

Amount	Purpose
\$15,000,000	To be used towards the construction of new MBTA Orange Line Station
\$250,000	To be used towards the study, design and implementation of circulation improvements within and/or affecting the Assembly Square Area
\$30,000	Funding to City of Somerville for repair of the traffic signal at the intersection of Foley Street and Middlesex Avenue
\$100,000	To be used towards the construction of pedestrian walkways to mitigate traffic
\$50,000	East Somerville neighborhood improvements; including but not limited to transportation improvements
\$50,000	Somerville Ward 5 neighborhood improvements; including but not limited to transportation improvements
\$100,000	For feasibility studies for a new Orange Line station to be located in the Assembly Square Area
\$100,000	For traffic mitigation and improvement measures on and near lower Broadway in Somerville
\$100,000	For a feasibility study regarding pedestrian crossing of Route 28
\$150,000	Towards the design and/or construction of infrastructure to service water transportation access.

* Source: Mitigation funding as noted in Amended and Restated Assembly Square Development Covenant by and between Federal Realty Investment Trust, IKEA Property, Inc., City of Somerville and Somerville Redevelopment Authority (the "Development Covenant") and the Master Land Disposition Agreement by and between the Somerville Redevelopment Authority and Federal Realty Investment Trust (the "Master Land Disposition Agreement") both dated as of December 14, 2006.



Traffic Monitoring

The Proponent will regularly provide the City of Somerville, and other interested agencies, traffic monitoring data collected from built-in detection systems that have been installed at the following locations:

- Route 28 at Grand Union Boulevard
- Route 28 at Middlesex Avenue
- Foley Street at Middlesex Avenue
- New Road at Mystic Avenue Northbound
- Lombardi Street at Broadway
- Lombardi Street at Mystic Avenue Southbound
- Lombardi Street at Mystic Avenue Northbound/ Grand Union Boulevard
- Revolution Drive at Grand Union Boulevard

Conclusion

Based on the preceding analysis, the addition of Partners Healthcare to the Assembly Square Mixed-Use Redevelopment project should represent a positive change. As

noted earlier, replacing the formerly proposed IKEA use with this new office space will significantly reduce traffic volumes during weekend conditions. Likewise, there should also be an overall reduction in weekday daily traffic, though there will be increased volumes during the weekday morning and evening peak commuter periods.

The analysis conducted as part of this NPC assessment indicates that volumes will only result in minor increases to the surrounding study area intersection volumes under peak conditions which should not be perceptible. Regardless, updated capacity analyses were conducted at several key intersections, with accompanying updates to the crash analyses. This analysis indicates that the transportation infrastructure already implemented as mitigation for the originally proposed Project is still more than adequate for accommodating traffic associated with the revised development program.

The parking analysis conducted by Cambridge Systematics for Project change indicates that there will be an overall parking deficit for Block 11 with the new Partners office use and associated supporting retail/ commercial space. To address this projected parking deficit Partners will be implementing a variety of transportation demand management measures to reduce the parking demand. Over time it is expected that these measures, combined with the limited parking and availability of the new MBTA Orange Line station immediately adjacent to the site will reduce the parking demand so that it is consistent with the supply provided.