

Transportation and Parking

This chapter presents an overview of the existing Boston College transportation system and a summary of the traffic and parking impacts of the projects proposed by Boston College over the next ten years. These include the proposed future projects on the Boston portion of the

The analysis suggests a phased approach to pr

assessment of future transportation impacts related to projected background growth on area roadways, planned transportation infrastructure improvements and growth related to other proposed projects within the study area (not including Boston College IMP Projects). The future Build condition assesses the No Build condition plus the Boston College IMP Projects.

Roadway, pedestrian and transit capacity for morning and evening peak commuter periods were studied and are summarized for the following conditions:

- 2008 Existing Condition
- 2018 No Build Condition
- 2018 Build Condition

Plan Overview

Boston College's Institutional Master Plan (IMP) proposes several building and infrastructure improvements over the span of ten years that will strengthen the University, modernize its facilities and infrastructure, and provide new tangible benefits to the community. Major transportation initiatives in the plan include improved access to campus facilities, transportation demand management, transit service, reconfigured parking, enhanced bicycle and pedestrian circulation throughout the campuses and other transportation mitigation measures.

The University has devised several alternatives to meet its overall objectives, while being sensitive to established vehicular and pedestrian circulation patterns in the neighborhood. This chapter explores several alternatives to provide improved access to the Brighton Campus and better circulation between the Chestnut Hill and Brighton campuses. Access improvements will benefit pedestrians, cyclists, transit users and drivers. Boston College's challenge is to provide efficient access to and between the Chestnut Hill Campus and the Brighton Campus without disrupting area-wide traffic conditions.

This plan analyzes five vehicular access alternatives, all of which include maintaining the existing access on Foster Street:

- Maintaining access to the Brighton Campus on Commonwealth Avenue
- Creating a median break on Commonwealth Avenue to permit left turns in and out of the Brighton Campus
- Creating a new roadway on the More Hall site connecting St. Thomas More Road to the median break on Commonwealth Avenue at its intersection with the spine road on the Brighton Campus
- Creating a new roadway on the More Hall site and restricting St. Thomas More Road traffic to one-way northbound between the new roadway and Campanella Way

- Creating a new roadway on the More Hall site and closing St. Thomas More Road between the new roadway and Campanella Way

A base case for the alternatives analysis that maintains the existing Brighton Campus access, including a Lake Street driveway, was used for the comparison of alternatives.

This chapter outlines the existing transportation conditions for traffic, transit, pedestrians, bicycles, parking, and on-campus loading operations and projects future conditions, paying careful attention to the potential impacts of Boston College's development proposals and transportation infrastructure upgrades.

Existing Transportation Conditions

This section provides an overview of existing transportation conditions at Boston College, including the following:

- Vehicular access to the campus and the surrounding area;
- Public transportation options;
- Pedestrian access and circulation;
- Bicycle facilities;
- Parking supply, utilization and management on campus, including game day and move-in/move-out operations;
- Transportation Demand Management (TDM) actions employed by Boston College;
- Loading and Service.

Roadway Access

Access and entrances to Boston College's three campuses are shown in Figure 9-1. The Chestnut Hill Campus is bounded generally by Commonwealth Avenue to the north, Beacon Street to the south, St. Thomas More Road to the east, and Tudor Road and Maally by CoB6nd Tudoe025.

Street and Greycliff Road to the east. Vehicular access to this campus is provided via curb

cuts along Commonwealth Avenue, Lake Street and Foster Street.

secondary entrances are located on Mill Street and Colby Road which border the campus on the south and north sides respectively.

Two-day (48 hour) Automatic Traffic Recorder (ATR) counts were conducted at seven locations on area roadways on March 11 and 12, 2008. The average daily traffic volumes and peak hour volumes obtained from these counts are presented in Table 9-1.

Table 9-1: 2008 Daily Traffic Volumes

Location	Average Daily Traffic Volume	A.M. Peak Hour	P.M. Peak Hour
Commonwealth Avenue at Lake Street, Eastbound	9,668	846	726
Commonwealth Avenue at Lake Street, Westbound	5,883	380	530
Commonwealth Avenue at Lake Street, Eastbound	6,673	571	569
Commonwealth Avenue at Lake Street, Westbound	11,913	1,060	1,063
Lake Street, Northbound	5,886	488	505
Foster Street, Northbound	7,408	672	661
St. Thomas More Road, Northbound	8,317	597	678
Commonwealth Avenue at Beacon Street, Northbound	19,862	1,702	1,621
Commonwealth Avenue at Beacon Street, Southbound	3,688	287	268

Source: March 2008 ATR counts.

It is important to note that Commonwealth Avenue carried more traffic on the west side of Lake Street in the eastbound direction and on the east side of Lake Street in the westbound direction. Commonwealth Avenue processed approximately 15,600 vehicles in either direction to the west of Lake Street and 18,600 vehicles in either direction to the east of Lake Street throughout the course of the day. Lake Street carries approximately 5,900 vehicles throughout the course of the day in the northbound direction. Foster Street carries 7,400 vehicles per day, while St. Thomas More Road carries 8,300 vehicles per day in both directions. Beacon Street, a more heavily traversed roadway, carries approximately 20,000 vehicles per day in both directions. College Road, adjacent to the Boston College Campus, contains approximately 3,700 vehicles per day in the northbound direction.

Study Area

The project study area includes 17 intersections. These intersections, shown on Figure 9-2, are listed below:

- 1) **Commonwealth Avenue at Lake Street / St. Thomas More Road** is a signalized intersection with three approaches due to one-way northbound travel on Lake Street. This intersection controls trains entering and exiting between Commonwealth Avenue and the



- 13) **Washington Street at Lake Street/Brock Street** is a signalized intersection with only three approaches due to one-way northbound operations on Lake Street/Brock Street. Pedestrians are accommodated at the intersection in an exclusive push-button activated phase.
- 14) **Lake Street at Kenrick Street/Glenmont Road** is a slightly offset unsignalized intersection with stop-control on the Kenrick Street and Glenmont Road approach. Only left turns are allowed onto Lake Street to Kenrick Street due to one-way northbound operations on Lake Street. Additionally only rights are allowed onto Lake Street from Glenmont Street due to the one-way northbound traffic flow.
- 15) **Foster Street at Rogers Park Avenue** is an unsignalized intersection with stop-control on the Rogers Park Avenue approach. Due to one-way eastbound travel on Rogers Park Avenue, no turns are permitted from Foster Street.
- 16) **Foster Street at Washington Street** is a signalized intersection with four approaches. Foster Street is one-way southbound north of Washington Street and two-way adjacent to the Brighton Campus. Pedestrians are accommodated in an exclusive push-button activated phase at the signal.
- 17) **Washington Street at Chestnut Hill Avenue/Market Street** is a signalized **intersection** with four approaches in Brighton Center. Pedestrians are accommodated in an exclusive push-button activated phase.

In addition, the following major driveways to the campus were studied:

- Commonwealth Avenue and Brighton Campus Driveway
- Beacon Street and Beacon Street Garage Driveway
- Foster Street and Brighton Campus Driveway
- Lake Street and Brighton Campus Driveway South
- Lake Street and Brighton Campus Driveway North

An extensive transportation data collection program was conducted as directed by the BTD Scoping Determination. This effort included peak hour turning movement counts (TMCs) from 7:00-9:00 a.m. and 4:00-6:00 p.m. at all identified study area intersections. The turning movement counts included vehicles (passenger and heavy vehicles) and pedestrians. The turning movement counts were used to establish traffic networks for existing (2008) conditions. From the turning movement counts, the area's traffic peak hours were determined to be 7:45 to 8:45 a.m. and 5:00 to 6:00 p.m.

TMCs were conducted March 11, 12, and 25 of 2008. The TMCs were compared with counts conducted in 2005 for the BC Master Plan. The March 2008 traffic volumes were slightly lower than the 2005 counts.



Boston College Shuttle Bus Services

Boston College provides shuttle bus services for students and employees of the Chestnut Hill, Brighton and Newton campuses. These services are shown on Figure 9-8 and described below:

- The **Boston/Commonwealth Avenue Shuttle** service provides a Boston Direct Route and an All Stops route which run every 15-20 minutes. The Boston Direct Route provides service Monday through Friday 7:00 a.m. – 12:00 p.m. while the All Stops route operates Monday through Friday 12:00 p.m. – 2:00 a.m. and Saturday through Sunday 8:00 a.m. – 2:00 a.m. The Boston Direct Route stops at Conte Forum, opposite Greycliff Hall, 2000 – 2012 Commonwealth Avenue, Reservoir Green Line MBTA Stop at Cleveland Circle, Bank of America on Chestnut Hill Avenue, Chiswick Road, Corner of Commonwealth Avenue and Chestnut Hill Avenue, South Street, Greycliff Hall and Robsham Theater. The All Stops route makes all of these stops plus McElroy Commons on Beacon Street, Donaldson House on College Road and the Main Gate at the Chestnut Hill Campus.
- The **Newton Shuttle** transports students and employees between the Newton Campus and the Chestnut Hill Campus via Commonwealth Avenue. Service is provided every 30 minutes during the morning and every 15-20 minutes during the daytime. Five distinct routes are provided:
 - ∅ The Weekday Eagle Direct – this route runs Monday through Friday 7:00 a.m. to 3:00 p.m. and stops at Stuart Hall, the Newton Campus Main Gate and the Chestnut Hill Campus Main Gate.
 - ∅ Weekday Limited Stops – this route runs Monday through Friday 3:00 p.m. to 6:00 p.m. and stops at Stuart Hall, the Newton Campus Main Gate, Chestnut Hill Campus Main Gate, McElroy Commons on Beacon Street, Donaldson House on College Road and Duchesne Hall on the Newton Campus.
 - ∅ The Weekday All Stops – this route stops at all of the previously mentioned locations and operates Monday through Friday 6:00 p.m. – 2:00 a.m.
 - ∅ Weekend Limited Stops – this route makes stops at Stuart Hall on the Newton Campus and at Conte Forum every half hour Saturday through Sunday.
 - ∅ Weekend All Stops – this route makes stops at Stuart Hall, the Newton Campus Main Gate, the Chestnut Hill Campus Main Gate, the Robsham Theater, Conte Forum, McElroy Commons on Beacon Street, Donaldson House on College Road and Duchesne Hall on the Newton Campus.
- The **Employee Shuttle** provides a van service between the Brighton Campus and the Chestnut Hill Campus Monday through Friday from 8:45 a.m. – 6:40 p.m. Service is provided every 30 minutes and does not operate on weekends or University holidays. This shuttle service is also suspended during the summer but Boston College is currently evaluating possible changes to this operation.

A Boston College Shuttle Bus Survey was conducted in 2005 to determine the shuttle

Bicycles

Boston College offers many services to bicyclists to aid in their commute and in securing their equipment, and supports initiatives to create a bike-friendly campus. In addition, Boston College participates in the MassRIDES Bike to Work Week (BTWW) Challenge to promote bicycling as a viable commute option. This event provides prizes to those that log the miles they commute to work. Boston College is the winner of the 2008 Bike to Work Week Challenge for Worksite Participation. BC had 29 participants, nearly three times that of last year. Each BC participant received a prize of a Park I-Beam Mini Tool that they can use to make small bike repairs.

There are 26 locations on the Chestnut Hill Campus and 6 locations on the Newton Campus for securing bikes. Both campuses also provide locker areas with showers. Covered bike storage facilities are provided at 90 St. Thomas More Road, Walsh Hall, Commonwealth Avenue Garage, Beacon Street Garage, Fitzpa

weekends. Overnight parking is prohibited from the beginning of September through th





The areas that are closed to parking on the Main Campus are: both Edmonds Hall lots; all of the St. Ignatius lot (church parking is allowed for scheduled Masses and events), all Hillside parking spaces; the Hillside Perimeter Road wall; Commonwealth Avenue at Voute and Gabelli Halls; all Williams, Welch and Roncalli spaces; and all U

Future Transportation Conditions

To evaluate future roadway operations, traffic volumes in the study area were projected to the year 2018 (to reflect a 10-year planning horizon). The 2018 No-Build traffic volumes include all existing traffic, new traffic attributable to general background growth, and traffic generated by identified planned/approved developments in the area. Traffic volumes that are expected to be generated by the plan were added to the No-Build traffic volumes to produce projected Build traffic volumes. In addition, roadway improvements currently under construction or planned to be completed within the planning horizon are taken into account when analyzing both future No-Build and Build Conditions.

2018 No-Build Condition

The 2018 No-Build Condition reflects study area traffic conditions without changes to the Boston College campus. No Build Condition traffic volumes are shown in Figures 9-19 and 9-20. Under the 2018 No-Build Condition, modest increases in traffic volumes are expected on study area roadways.

A two-step process has been employed to estimate future traffic activity in the project study area under the 2018 No Build Condition. Under step 1 of this process, general area-wide traffic growth was estimated based on traffic growth trends along major study area roadways. The traffic volumes collected for the 2000 Boston College Master Plan were compared with 2008 traffic volumes. The comparison indicates that the 2000 volumes were on average approximately 13 percent higher than the 2008 traffic volumes. Despite the decline in traffic volumes since 2000, a growth rate of 0.5 percent was utilized to provide for a conservative analysis of future conditions.

Step 2 includes adding peak hour traffic projections for specific projects that are currently under construction or have been approved by the City of Boston or the City of Newton to the volumes produced in step 1. There are currently two approved or planned developments that are expected to influence future peak hour traffic volumes in the study area. A description of each planned project is provided below.

Caritas St. Elizabeth's Medical Center, located on Cambridge Street in Brighton, has begun construction of a new Emergency Department (ED) Project. The new project will contain 45,700 square feet of space, including 28,600 square feet of emergency department space. Additionally, two levels of parking will be added to an existing parking garage, providing 175 new spaces. It is anticipated that the project will generate approximately 27 vehicle trips during both peak hours and only 24 percent of these trips will traverse Washington Street in the study area.

Covenant Residences on Commonwealth Avenue in Newton is a condominium project currently under construction consisting of 56 units (44 net new) and 89 parking spaces (44 net new) for the project. The site is located across Commonwealth Avenue north of the



The major access to the Brighton Campus will be via a relocated driveway on Commonwealth Avenue. The new driveway will be located just to the west of Creagh Library and will align with a relocated spine road. Several alternatives for providing access to the Brighton Campus via this driveway are analyzed below.

Trip Generation

Trip generation for Boston College was estimated using the projected increases in population over the term of the IMP. While no change is proposed in the undergraduate student population, BC will be constructing 1,280 new beds to provide University housing for students now living off campus. These new beds will reduce the number of students commuting to campus. A summary of the expected population changes over the 10-year period of the plan is shown in Table 9-10.

Table 9-10 Projected Population Changes

Population Category	Estimated Change, 10-Yr Period
Undergraduate Students	Net Change
Graduate Students	+342
Faculty	+100
Staff	+250

To estimate the peak hour trip generation associated with these population changes, a combination of parking garage data and the Institute of Transportation Engineers' (ITE) land use codes were used. All new faculty, staff and graduate commuter trips were estimated using existing employee transponder data from the parking garages on the Chestnut Hill Campus. From this data a morning peak hour rate of 29 percent entering and an evening rate of 27 percent exiting were estimated. Graduate student residents and undergraduate resident trips were estimated using the ITE land use code for "apartments."

No new trips were estimated during the peak hours for the new accessory retail or auditorium space. These places will have a 100 percent internal capture rate during the typical weekdays by those already at BC.

The current mode share and average vehicle occupancy rate for commuter students, faculty and staff based on survey data are shown in Table 9-11. Eighty percent of faculty and staff drive to work while approximately one-quarter of students use a TD0 or percent000E) la

Table 9-11: Morning and Evening Vehicle Trip Rates by Mode

Mode	Morning Peak (A.M. Peak)	Evening Peak (P.M. Peak)
Driving	80%	24%
Taxi	6%	26%
Walking/Bicycling	13%	48%
Bicycling	1%	2%
Vehicle Trip Rate	1.05	1.25

Source: 2007 Rideshare Report, Boston College

Vehicle trip rates were based on existing vehicle transponder data from the Beacon Street and Commonwealth Avenue garages. It is anticipated that the new population will assume similar arrival and departure schedules from the campus with 29 percent of the population arriving during the a.m. peak hour and 28 percent leaving during the p.m. peak hour. It is assumed that new student residents, both undergraduate and graduate, will not be generating peak-hour vehicle trips. However, these populations are assumed to make some daily vehicle trips. The projected numbers of entering and exiting vehicle trips for the morning peak hour (a.m. peak), evening peak hour (p.m. peak) and daily conditions are presented in Table 9-12.

Table 9-12: Vehicle Trip Rates by Mode

Mode	Entering (A.M. Peak)	Entering (P.M. Peak)	Total
A.M. Peak (A.M. Peak)			
Driving	18	4	22
Walking/Bicycling	77	16	93
Taxi	95	20	115
P.M. Peak (P.M. Peak)			

Brighton Campus and the remainder will be generated by the growth at the Chestnut Hill Campus.

In addition to the new trips associated with the IMP program, it should be noted that, a significant number of existing trips will be diverted because of the reallocation of parking facilities and the integration of the Brighton Campus. Existing peak hour trip rates for the parking facilities were established and applied to all of the proposed parking changes on the Chestnut Hill and Brighton campuses. In addition, it was assumed that there would be some traffic (60 vehicles per hour) generated between the campuses by service vehicles, security and possibly shuttles. Overall, the traffic at the Chestnut Hill Campus will increase by 70 vehicles during the a.m. peak hour and 129 vehicles during the p.m. peak hour as shown in Table 9-13.

Table 9-13 Net New Vehicle Trips to Brighton Campus, Chestnut Hill Campus

Trips	Brighton Campus	Chestnut Hill Campus		Brighton Campus	BC Vehicles/Security/Shuttles	Total Net
		Existing	Proposed			
A.M. Peak Hour						
Existing	70	-170		95	30	25
Proposed	15	0		0	30	45
Total	85	-170		95	60	70
P.M. Peak Hour						
Existing	41	0		0	30	71
Proposed	68	-117		77	30	58
Total	109	-117		77	60	129

Trips to the Brighton Campus include trips to be generated by the new population, 897 total parking spaces, and BC vehicles/security/shuttles less the existing trips to the campus today excluding the St. John’s Seminary building. The results of the new Brighton Campus trips are shown in Table 9-14.

As shown in Table 9-14, the reallocation of parking at Boston College will cause a shift in existing commuting patterns to each campus. The new parking-related trips to the Brighton Campus will increase as the parking supply increases. In total, there will be 266 vehicle trips to the Brighton Campus during the morning peak hour and 364 vehicle trips during the evening peak hour.

Table 9-14 New Employee and Off-Campus Graduate Vehicle Trip Distribution by Commuter Route

Time Period	Tram	897 Transit	BCV Shuttle	Local Buses	Road
A.M. Period					
Initial	25	260	30	-102	213
Other	5	54	30	-36	53
Total	30	314	60	-138	266
P.M. Period					
Initial	14	152	30	-35	161
Other	24	251	30	-102	203
Total	38	403	60	-137	364

1 Based on 2008 driveway counts. Does not include St. John's Seminary driveway.

Table 9-15

Vehicle trip distribution for the new employee and off-campus graduate populations were estimated using existing zip code data for the two populations. The distribution was pro-rated based on the total populations of graduate students and employees. Each zip code was assigned a commuter route to the campus. These routes are summarized in Table 9-15 below.

Table 9-15 Employee and Off-Campus Graduate Vehicle Trip Distribution by Commuter Route

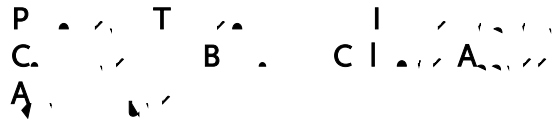
Commuter Route	Percentage
Boston South End	6%
Boston Proper	9%
Brighton	19%
Chelsea South End (Arlington)	3%
Chelsea North	9%
Chelsea Heights	2%
Chelsea North End	5%
Chelsea North West	14%
Hillside Park	8%
I-90 North End	3%
I-90 North West	11%
Mattapan	2%
South Dorch	9%

1 Based on 2008 driveway counts. Does not include St. John's Seminary driveway.

The majority (approximately 39 percent) of the commuting population resides in Boston. Of this population, approximately 19 percent lives in Brighton, 9 percent in Boston proper, and 3

the proposed access options that create a break in the Commonwealth Avenue median, the traffic impacts to Washington Street will be reduced by allowing traffic coming from the Newton Interchange to directly access the campus.

Trip distribution is illustrated in Figure 9-21. Net-new trips distributed through the study area intersections are illustrated in Figures 9-22 and 9-23. Build traffic volumes are shown in Figures 9-24 thru 9-27.



In addition to the new buildings described in Chapter 5,



The majority of new pedestrian trips will be generated by the undergraduate student dorms. Since this population will be leaving the residence halls in the a.m. and arriving in the p.m. these trips will be reversed from the typical commuter trips.

C / P / O / S / I /

Long-term planning for the campus includes a series of linked quadrangles that provide a continuous pedestrian corridor through the Chestnut Hill Campus that connects with the Brighton Campus. The result is a pedestrian environment that is largely free of vehicular conflicts. Another major feature of the pedestrian corridor is that a number of landscaped areas will provide places for passive recreation and contemplation for members of the Boston College community, as well as provide the framework for an attractive pedestrian environment.

The 10-year plan initiates development of the linked quadrangles and the pedestrian environment. In particular, parking and vehicular access will be eliminated from the center of Lower Campus and replaced with a broad pedestrian plaza in front of Conte Forum and the Yawkey Center. Open space that will form a portion of the major Lower Campus quadrangle will be provided between the proposed University Center and the Recreation Center. Improved pedestrian access to the Brighton Campus will be provided via the reconfiguration of the More Hall site, a reconstructed crossing at the Lake Street/Commonwealth Avenue intersection, and the new crossing of Commonwealth Avenue if St. Thomas More Road is relocated.

B

Boston College encourages bicycling to and from the University. Bicycle storage will be provided on the Brighton Campus at the parking garage and at the new undergraduate housing. Currently two percent of the student population and one percent of the employee population commutes via bicycle.

Net-new bicycle trips associated with the growth in population at BC are shown in Table 9-17.

T 9-17 E I B T

T I P	E	E	T
A.M. P H	4	7	11
P.M. P H	8	6	14

Overall, there are minimal increases expected in bicycle commuters to the campus. To promote bicycling, BC will install bike racks on the Brighton Campus at the new residence halls and at the parking garage. The University will continue to monitor bicycle storage and add new racks as the demands on campus increase.

P

F

The parking changes proposed during the term of the IMP will not result in a significant change in the total parking supply on the three campuses. Many of the proposed future projects will be built on existing surface parking areas, resulting in a reduction in the supply of parking on all three campuses. To replace these spaces, the plan includes the addition of parking in key locations on all three campuses for a net increase of 204 spaces.

B

The existing 825-space Beacon Street Garage is slated for a 350-space expansion. The expanded garage parking will replace surface parking areas eliminated on the Lower and Middle campuses by several of the proposed projects. One bay of parking in an approximately 122,500 sf addition will be added at the east end of the current garage next to Shea Field. Adding to the Beacon Street Garage will provide additional parking in a central location with limited impact on other uses on campus.

Existing 825-space Beacon Street Garage will provide parking in a central location with limited impact on other uses on campus.

Chestnut Hill Campus and approximately 510 spaces will be displaced on the Brighton Campus. No spaces will be displaced on the Newton Campus.

- New or expanded parking facilities will be constructed on all three campuses to replace existing spaces displaced by the proposed institutional projects.
- A 500-space parking garage on the Brighton Campus near the Brighton Athletics Center that will serve the entire Brighton Campus and users on the Chestnut Hill Campus through expanded shuttle service.
- A 350-space addition to the Beacon Street garage in a new bay on the eastern side of the existing 830-space garage.
- Up to 90 parking spaces underneath the proposed academic building on Beacon Street on the Middle Campus.
- Up to 100 spaces underneath the proposed residence hall on the More Hall site.
- Approximately 200 spaces in the newly acquired 2000 Commonwealth Avenue.
-

Boston College believes, and current Master Plan transportation analyses demonstrate, that a 500-space parking facility on the Brighton Campus will be needed to meet the projected parking demand. There will be an incremental loss of existing surface parking on the Brighton Campus due to building projects, and it is anticipated that no fewer than 750-800 people will work on this campus as existing facilities are converted to academic and administrative office use. Boston College understands that the Article 80 Large Project Review of this project will include a comprehensive review of the University's overall transportation demand management programs and a detailed study of alternative parking strategies for the Brighton Campus. The scope of this study will include, at the minimum, updating the parking demand analysis, programs to improve alternate modes of transportation to reduce parking demand and additional site analyses which may result in distributing the parking spaces in multiple sites or an adjustment of the size and location of the garage.

On the Chestnut Hill Campus, the construction of Stokes Commons and the More Hall site undergraduate housing will eliminate approximately 200 spaces but the supply will still exceed the existing demand. The acquisition of 2000 Commonwealth Avenue will result in an increase in the parking supply of 200 spaces, returning the supply to approximately its current level. The completion of Stokes Commons and the More Hall site housing will add another approximately 200 spaces. Throughout the development of the remaining projects on the Chestnut Hill Campus, the parking supply will remain above its current level, reaching a final total approximately 27 spaces higher than the existing supply.

F. . . . P D /

Over the term of the IMP, Boston College will increase its total parking supply by 54 spaces for a total of 3,884 parking spaces on the Brighton and Chestnut Hill campuses. These spaces will serve employees, visitors, and a limited number of graduate students who commute. Parking spaces will distributed so that all parts of the campus are served by parking sufficiently convenient that pe



Transportation Demand Management

Boston College will continue to improve and expand its existing TDM programs mentioned in the “Existing Conditions” section to provide additional travel options for employees and students that will reduce the demand for parking and ease traffic impacts to the roadways and neighborhood streets in Brighton. In addition, the University’s plans to house more undergraduate students on campus may also serve to reduce automobile travel to the campus by reducing the number of commuting students. Specific measures that will be committed to as part of the IMP, in addition to all current TDM initiatives, include:

- Provision of pre-tax MBTA pass sales for full time employees
- Provision of a 25 percent MBTA pass subsidy for full-time employees who forgo a campus parking permit
- Investigation of car-sharing opportunities on the Brighton Campus. BC will offer spaces to Zipcar or a similar service as needed.
- Provision of bicycle storage at the new residence halls and parking garage on the Brighton Campus.
- Regular review of the shuttle services offered by BC.
- Purchase or lease of alternative fuel vehicles.

Transportation Operations Analysis

This section presents the analysis of traffic operations at study area intersections, including access alternatives for the Brighton Campus, in terms of capacity, level of service, delay and queuing.

Vehicle Level of Service

Vehicle level of service (LOS) analysis is a qualitative measure of control delay at an intersection, providing an index to the operational qualities of an intersection. LOS designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A through D is typically considered acceptable while LOS E indicates vehicles endure significant delay and LOS F suggests unacceptable delay for the average vehicle.

Level of service thresholds differ for signalized and un-signalized intersections, with longer delays at signalized intersections perceived as acceptable. For signalized intersections, average control delay for all vehicles in the



Brighton Campus. One benefit of this would be that the spine road on the Brighton Campus could not be used by cut-through traffic which could increase traffic on Foster Street.

The alternatives, illustrated previously in **Figures 9-29**, include the following:

Alternative 1: Primary Brighton Campus Access on Commonwealth Avenue with Right-In/Right-Out - This alternative is similar to the baseline condition, but there would be no access to the Brighton Campus on Lake Street (with the exception of the access for St. John's Hall, which will be maintained separately). Brighton Campus traffic from Commonwealth Avenue eastbound would have to perform a U-turn to the east of the driveway, most likely at the current median break between Greycliff Road and Gerald Road. Under this alternative, the existing driveway will be relocated to align with a new section of the spine road on the Brighton Campus. Egress from the Brighton Campus to Commonwealth Avenue would remain the same as today. Vehicles heading east on Commonwealth Avenue would need to perform a U-turn at the Lake Street intersection.

Alternative 2: Median Break at Commonwealth Avenue/Brighton Campus Driveway – This alternative would create a break in the Commonwealth Avenue median to facilitate left turns into and out of the Brighton Campus driveway. The Commonwealth Avenue eastbound approach would contain a left-turn storage lane to allow for the left-turn into the Brighton Campus. In order to allow for southbound exiting traffic from the Brighton Campus to make left-turns, the intersection phasing would be signalized with four phases including an eastbound lead phase and pedestrian phasing.

Alternative 3: New Roadway between Commonwealth Avenue and St. Thomas More Road – Similar to Alternative 2, this alternative would include a break in the median of Commonwealth Avenue and would also introduce a new roadway between St. Thomas More Road south of More Hall and Commonwealth Avenue at the Brighton Campus driveway. The new intersection at Commonwealth Avenue would be signalized, with three phases and pedestrian phasing. Left-turn storage lanes would be provided on the Commonwealth Avenue approaches. St. Thomas More Road would remain a two-way roadway north of the new roadway.

Alternative 4: New Roadway with St. Thomas More Road One-way Northbound only to Lake Street – This alternative includes the new roadway connection between St. Thomas More Road and Commonwealth Avenue/Brighton Campus driveway as proposed under Alternative 3. However, the section of St. Thomas More Road between the new roadway and Campanella Way would be one-way in the northbound direction. The new intersection at Commonwealth Avenue/Brighton Campus driveway would operate as with Alternative 3.

Alternative 5: New Roadway with no Connection of St. Thomas More Road to Lake Street – This alternative includes the new roadway connection between St. Thomas More Road and Commonwealth Avenue/Brighton Campus Driveway as proposed under Alternatives 3 and 4. However, the section of St. Thomas More Road between the new roadway and Campanella Way would be closed to vehicular traffic. The new inter4(Way w)-.2295 TD0.02

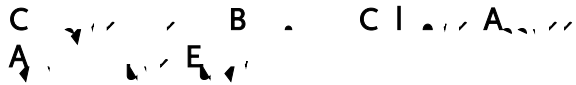
to the east of the campus driveway on Commonwealth Avenue, which would be necessary for eastbound traffic to enter the campus.

For **Alternative 2**, operations at Lake Street would be very similar to Alternative 1, but the Brighton Campus driveway exit movement would decline to LOS D in the a.m. peak hour and LOS F in the p.m. peak hour. This is the result of the left turns that would be possible into and out of the Brighton Campus because of the median break on Commonwealth Avenue. These deficiencies could be addressed by signalizing the driveway intersection, yielding a good LOS B during both peak hours.

For **Alternative 3**, the new roadway connection between St. Thomas More Road and Commonwealth Avenue at the Brighton Campus driveway would allow certain traffic movements to avoid the Lake Street intersection, specifically Brighton Campus and Commonwealth Avenue east traffic to and from St. Thomas More Road. As a result, the Lake Street intersection would improve to LOS E in the a.m. and p.m. peak hours, yielding significantly improved conditions compared to the Baseline Build condition, and somewhat better operations than Existing conditions. At the Brighton Campus driveway, the change in some left turns to through movements would result in a further improvement to LOS A in the a.m. peak hour, while maintaining the LOS B in the p.m. peak hour.

For **Alternative 4**, with only a northbound one-way connection to Lake Street from St. Thomas More Road, operations at the Lake Street/Commonwealth Avenue intersection would remain the same as under Alternative 3, with LOS E in both the a.m. and p.m. peak hours. At the Brighton Campus driveway, there would be slight changes in delay due to the use of the new roadway by traffic which could no longer travel southbound on St. Thomas More Road from Commonwealth Avenue. However, the operations would be at LOS A or B during the peak hours.

Finally, for **Alternative 5**, the analysis indicates more balanced operations between the Lake Street and Brighton Campus driveway intersecti



The results of the analysis of alternatives for access to the Brighton Campus led Boston College to conclude that the best way to improve access to the Brighton Campus as part of this IMP was to implement Brighton Campus Access Alternative 3 as shown in Figure 9-29. The access improvements would include:

- Relocating the existing driveway to the Brighton Campus to the west.
- Providing a break in the median to allow full access to the Brighton Campus driveway from Commonwealth Avenue
- Building a new roadway along the east side of the More Hall site aligned with 10.98 site al-5.4(0.98 site al-5.4)



Location	2008 E		2018 N -B				2018 B -C			
	LOS	A	LOS	A	C	T	LOS	A	C	T
		D		D	E	C		D	N -B	C
C III L S / S.T. I / M R	E	68.0	F	>80.0	122	6%	F	>80.0	121	6%
C III C H A	F	>80.0	F	>80.0	143	6%	F	>80.0	32	1%
C III S S	B	13.3	B	13.5	85	6%	B	13.6	39	3%
B S H I I S	F	>80.0	F	>80.0	114	5%	F	>80.0	23	1%
B S C H A (G C)	F	>80.0	F	>80.0	155	5%	F	>80.0	17	1%
W S L S / B S	C	25.5	D	49.8	78	6%	F	>80.0	55	4%
F S W S	B	19.2	C	28.7	76	5%	E	61.4	109	7%
W S/ C H A / M S	F	>80.0	F	>80.0	107	5%	F	>80.0	59	3%

5 Signalized Intersections

Under **Existing Conditions**, several signalized intersections operate at deficient LOS (E or F) during both peak periods, as follows:

- Commonwealth Avenue at Lake Street (LOS E)
- Commonwealth Avenue at Chestnut Hill Avenue (LOS F)
- Beacon Street at Hammond Street (LOS F)
- Beacon Street at Chestnut Hill Avenue (LOS F)
- Washington Street at Chestnut Hill Avenue (LOS F)

These results reflect the current congestion that prevails in the study at these locations during the peak hours.

Under **No-Build Conditions**, increases in intersection traffic volumes at signalized intersections range from 5 – 7 percent due to background traffic growth and other planned projects. Accordingly, some increase in delays at all locations would be expected. This results in degradation to a deficient level of service (E or F) at the following locations:

- Washington Street at Lake Street (LOS D to LOS F, p.m. peak only)
- Washington Street at Foster Street (LOS C to LOS E, p.m. peak only)

Under **Build Baseline Conditions**, increases in intersection traffic volumes at signalized intersections as a result of the Build condition range from 1 – 8 percent. Changes in level of service from No-Build Conditions to a deficient level of service (E or F) are projected at two signalized locations in the morning peak hour:

- Washington Street at Lake Street (LOS D to LOS F, a.m. peak only). This change is reflected in the eastbound and westbound Washington Street approaches, where some increase in average queue lengths is projected in the a.m. peak.
- Washington Street at Foster Street (LOS C to LOS E, a.m. peak only). This change is reflected in the eastbound Washington Street approach, where some increase in average queue lengths is projected in the a.m. peak.

At both of these locations, the projected degradation to LOS E or F reflects deficient level of service on the Washington Street eastbound and westbound approaches to Lake Street in the a.m. peak hour, and the Washington Street eastbound approach in the a.m. peak hour. Accordingly, some increase in average delay and queue lengths would be expected as a result of project trips.

While there will be diversions of existing Boston College trips at study intersections as a result of the new parking on the Brighton Campus, the number of newly generated project trips as a result of the Master Plan at these Washington Street intersections is relatively limited. As shown in Figures 9-22 and 9-23, approximately 14 and 25 new project trips are



- St. Thomas More Road at Chestnut Hill Driveway, westbound Driveway approach (LOS D to LOS E, a.m. peak only). This change impacts traffic exiting Chestnut Hill Driveway, where some limited increase in average delay and queue lengths is projected in the a.m. peak.
- Commonwealth Avenue at Brighton Campus Driveway, southbound Driveway approach (LOS C to LOS E, p.m. peak only). This change impacts traffic exiting the Driveway, where some increase in average delay and queue lengths is projected in the p.m. peak. As discussed previously, this deficiency can be addressed by several of the Brighton Campus access alternatives.

The increases in intersection traffic volumes at unsignalized intersections as a result of the Build condition range from 1 – 19 percent. Increases due to project traffic in excess of 10 percent, *where deficient LOS (E or F) is projected that would otherwise not prevail under No-Build conditions*, include the following locations:

- St. Thomas More Road at Chestnut Hill Driveway, 11 percent traffic increase (a.m. peak only)
- Commonwealth Avenue at Brighton Campus Driveway, 11 percent (p.m. peak only)

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Deficient traffic operations (LOS E or F) prevail under **Existing Conditions** at **five signalized** study intersections during both peak hours, and on **critical approaches to four unsignalized** study intersections during at least one peak hour.

Under **No-Build Conditions**, deficient traffic operations (LOS E or F) are expected at **two additional signalized study intersections** during one peak hour, and on **three additional critical approaches to unsignalized intersections** during one peak hour.

Under **Build Conditions**, deficient traffic operations (LOS E or F) are projected at **two additional signalized study intersections** during one peak hour, and on **two additional critical approaches to unsignalized intersections** during one peak hour.

The two signalized study intersections adversely impacted by project traffic under the

The two critical approaches to unsignalized study intersections adversely impacted by project traffic are the Chestnut Hill Driveway approach to St. Thomas More Road in the a.m. peak and the Brighton Campus Driveway approach to Commonwealth Avenue in the p.m. peak. Both of these changes impact Boston College traffic only. As previously discussed, satisfactory conditions can be accomplished at the Brighton Campus Driveway under several of the Brighton Campus Access Alternatives.

Pedestrian Level-of-Service Analysis

A quantitative assessment of pedestrian level of service was conducted for crosswalks at all study signalized area intersections. The LOS for pedestrians measures the delay experienced by the pedestrian while waiting to cross.

Table 9-29 outlines the delay criteria for pedestrian level of service at crosswalk based on the 2000 Highway Capacity Manual (HCM). Delay analyses were conducted for each signalized crosswalk within the project study area. The HCM does not apply to zebra striped crosswalks at unsignalized intersections since Massachusetts' law requires vehicles to yield to pedestrians in a crosswalk. The HCM methodology takes into account the total walk time pedestrians endure during each signal cycle and the crossing distances. The volume of pedestrians is not considered in the LOS criteria for signalized intersections.

Table 9-29	Pedestrian Level of Service	LOS Criteria	Signalized Intersections	Signalized Intersections	Pedestrian Delay



TABLE 9-36 PEDESTRIAN TRAFFIC

	ENTERING STATION	NON-BCT STATION	TRANSIT STATION	EXITING STATION
A.M. PEDESTRIAN TRAFFIC				
Boston College Station	67	8	75	2,496
Other Stations	114	114	228	2,496
Ramp Station				
Intermodal	1,372	30	1,402	2,496
Other	394	30	424	2,496
P.M. PEDESTRIAN TRAFFIC				
Boston College Station	130	16	146	2,496
Other Stations	133	14	147	2,496
Ramp Station				
Intermodal	602	37	639	2,496
Other	1,079	37	1,116	2,496

Note: All values are in thousands.

Boston College Green Line Station

The MBTA is currently developing plans to upgrade accessibility at the Boston College Green Line station as part of a system-wide program to

