Chapter 9

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 Chestnut Hill Campus and on the Brighton Campus, as well as planned projects on the Newton portion of the Chestnut Hill Campus and on the Newton Campus.

The first section provides an overview of the existing transportation infrastructure at Boston College. This discussion includes public transportation, area roadways and traffic operations, parking, bicycle activity, the pedestrian environment and Transportation Demand Management (TDM) actions. The second section provides a summary of the specific projects proposed within the term of the Institutional Master Plan (IMP) and an assessment of the associated transportation changes, including an overview of the planned approach to construction management.

Key Findings

As described in detail in this chapter, the analysis of future transportation conditions with the implementation of Boston College's 10-year Institutional Master Plan does not identify significant adverse impacts to the transportation system supporting the existing Chestnut Hill Campus and the new Brighton Campus.

As a result of the IMP, it is projected that approximately 115 and 150 new vehicular trips will be generated in the morning and evening peak hours, respectively, equivalent to two or three vehicles per minute. These trips will be dispersed in multiple directions, and thus the increase is limited to less than one new trip per minute at any one location, even at the most concentrated locations in the immediate vicinity of Boston College.

In addition, there will be some reassignments of existing traffic as a result of the relocation of parking spaces and the introduction of new parking on the Brighton Campus.

Even assuming no change or enhancement of vehicular access for the Brighton Campus, changes in level of service grade to deficient level of service (LOS) E or F that would not otherwise prevail under No Build conditions are projected at limited locations, specifically the Washington Street intersections at Lake Street and Foster Street in the a.m. peak hour only, and on the critical approach to two unsignalized intersections in either the a.m. or p.m. peak hour. Five new access alternatives are identified for the Brighton Campus, under several of which even these limited impacts would be eliminated or substantially reduced.

The analysis of alternatives for access to the Brighton Campus clearly indicates that some of the alternatives provide significant traffic operational benefits. Based on the analysis it is clear that, without a signalized break in the median on Commonwealth Avenue to allow direct access in and out of the Brighton Campus, the Brighton Campus driveway would not operate at a satisfactory level of service. Further, there would be significant congestion and deficient LOS would continue to prevail at the Lake Street intersection on Commonwealth Avenue.

The introduction of a new roadway between Commonwealth Avenue and St. Thomas More Road would provide improved operations at the Lake Street intersection with Commonwealth Avenue. Further, the closure of St. Thomas More Road to vehicular traffic between the new roadway and Campanella Way would yield the most balanced traffic operations at the Commonwealth Avenue intersections, resulting in good levels of service at both the Lake Street and Brighton Campus driveway intersections. It would also eliminate a difficult pedestrian crossing of St. Thomas More Road at Campanella Way.

The analysis suggests a phased approach to providing Brighton Campus access. Initially a signalized opening in the Commonwealth Avenue median at the Brighton Campus driveway would be implemented. Either concurrently with, or subsequent to the opening of the median, a new roadway between Commonwealth Avenue at the Brighton Campus driveway and St. Thomas More Road south of the More Hall site would be constructed.

The new roadway and the break in the median on Commonwealth Avenue are integral parts of the Boston College IMP to provide access to the Brighton Campus and improve traffic operations at Lake Street and Commonwealth Avenue. To improve traffic operations further at Lake Street and the pedestrian crossing of St. Thomas More Road, Boston College intends to pursue the closure of St. Thomas More Road between the new roadway and Campanella Way. This will require the approval of DCR which owns the roadway, and a vote by the State Legislature. BC will work with the Department of Conservation and Recreation (DCR), state elected officials, the City of Boston and the community to accomplish this objective.

The proposed parking plan will provide adequate parking supply to accommodate the projected increase in parking demand under the IMP. BC will continue to implement its comprehensive management plan for athletic and special events.

There is ample capacity on the public transportation system to accommodate projected new transit trips, and the projected new pedestrian activity will benefit from a much-improved pedestrian network throughout the Chestnut Hill and Brighton campuses. Finally, while bicycle activity on public roadways is limited, and only modest increases in bike trips are projected, BC will continue to promote bicycling as an alternative mode of transportation.

Study Methodology

The study was conducted in three distinct stages. The first stage (Existing Transportation Conditions) involved a survey and compilation of existing transportation conditions within the study area including:

- An inventory of the transportation infrastructure
- Transportation characteristics of Boston College, including access, parking, loading and shuttle bus activities
- Geometric and operational characteristics of roadways and intersections
- Traffic control at intersections (i.e., signalization, stop signs, one-way streets, etc.)
- Area off-street and on-street parking supply, demands, utilization and costs
- Pedestrian activity and bicycle accommodations along study roadways and at intersections
- Public transportation service, including bus, trolley and private shuttle bus options, and existing capacity by specific transit service type

The second and third stages of the study consisted of an evaluation of long-term transportation impacts within the study area. The future No Build condition includes an 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 Mayflower Road to the west. The main vehicular access points to the campus include the main gate on the Middle Campus on Commonwealth Avenue, St. Thomas More Road, the Beacon Street Garage and the entrance between McElroy Commons and Carney Hall off Beacon Street. There are two additional minor entrances to the Middle Campus on Beacon Street and an exit on St. Thomas More Road.

The Brighton Campus is located on the north side of Commonwealth Avenue across from the Chestnut Hill Campus. It is generally bounded by Commonwealth Avenue to the south, Lake Street to the west, Glenmont Road and Edison Middle School to the north, and Foster 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.

The following describe the major roadways providing access to the Chestnut Hill and Brighton campuses.

Beacon Street, owned by the cities of Boston and Newton, runs in the east/west direction south of the Chestnut Hill campus and provides one lane in either direction. Parking is only permitted on the north side of the street adjacent to the campus. Sidewalks are provided on both sides of the street.

Commonwealth Avenue, owned by the cities of Boston and Newton, runs along the north side of the Chestnut Hill Campus and the south side of the Brighton Campus while

providing two-way travel in the east/west direction. From Lake Street to the east, a median separates two lanes in either direction while providing room for the MBTA Green Line B Branch. Parking is provided along both sides of the street. From Lake Street to the west, one lane is provided in each direction adjacent to the campus with parking provided on the north side only. Sidewalks are provided on both sides of the street.

Foster Street, owned by the City of Boston, provides two-way travel with one lane each in the north/south direction. The roadway connects Commonwealth Avenue and Washington Street to the east of the Brighton Campus. Parking and sidewalks are provided along both sides of the street.

Lake Street, owned by the City of Boston, connects Commonwealth Avenue and Washington Street just west of the Brighton Campus and provides one-way travel in the northbound direction. Parking is permitted on the west side of the street while sidewalks are only provided on the west side of the street adjacent to the Brighton Campus.

St. Thomas More Road, owned by the Department of Conservation and Recreation (DCR) runs in the north/south direction to the east of the Chestnut Hill Campus and provides one lane in each direction. This roadway provides a connection between Beacon Street and Commonwealth Avenue and provides access to several driveways on the Chestnut Hill Campus. Parking is not permitted and sidewalks are provided along both sides.

Fr. Herlihy Drive, owned by the Department of Conservation and Recreation (DCR), runs one-way in the southbound direction and connects Commonwealth Avenue with Campanella Way on the Chestnut Hill Lower Campus. Approximately 230 feet in length, it provides access to the Campus from the west without having to travel through the Commonwealth Avenue/Lake Street signalized intersection. Parking is not permitted and sidewalks are provided on both sides of the street.

The Newton Campus is located almost one-half mile north of Commonwealth Avenue along the west side of Centre Street in Newton. The main entrance is on Centre Street and 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 Existing 2008 Daily Traffic Volumes

Location	Average Daily Traffic	A.M. Peak Hour	P.M. Peak Hour
Commonwealth Avenue			
West of Lake Street: Eastbound	9,668	846	726
Westbound	5,883	380	530
East of Lake Street: Eastbound	6,673	571	569
Westbound	11,913	1,060	1,063
Lake Street, north of Undine Street	5,886	488	505
Foster Street, north of Rose Garden	7,408	672	661
St. Thomas More Road, south of Commonwealth Avenue	8,317	597	678
Beacon Street, west of St. Thomas More Road	19,862	1,702	1,621
College Road, north of Beacon Street	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 Boston College T Station. Pedestrians are accommodated concurrently with traffic operations, meaning that turning vehicles must yield to crossing pedestrians when a walk light is shown.

2) **Commonwealth Avenue at Foster Street** is an unsignalized intersection with stop control on the Foster Street approach. Because Commonwealth Avenue is separated by the B Line at this location, only right turns onto Commonwealth Avenue are allowed.

3) **Commonwealth Avenue at Chestnut Hill Avenue** is a signalized intersection with four approaches. Pedestrians are accommodated in an exclusive push-button actuated pedestrian phase.

4) **Commonwealth Avenue at Old Colony/College Road** is an unsignalized intersection with five legs. However, there are only four approaches since all vehicles approaching Commonwealth Avenue from Old Colony Road must merge with traffic on College Road.

5) **Commonwealth Avenue at South Street** is a signalized T-shaped intersection with three approaches. All turns are allowed at the intersection and vehicles are allowed to cross the B Line at this location. Pedestrian crossings are allowed concurrently across the westbound Commonwealth Avenue approach. The pedestrian push-button does not work crossing the eastbound (inbound) side of Commonwealth Avenue.

6) **St. Thomas More Road at Campanella Way** is an unsignalized intersection with no posted vehicle control. Typically vehicles on Campanella Way yield to vehicles on St. Thomas More Road.

7) **Father Herlihy Drive at Campanella Way** is an unsignalized intersection with stop-control on the southbound Father Herlihy approach and the eastbound Campanella Way approach.

8) **St. Thomas More Road at Chestnut Hill Driveway** is a three approach unsignalized intersection with stop-control on the Chestnut Hill Driveway approach.

9) **Beacon Street at Hammond Street** is a signalized intersection in the City of Newton. Four approaches are provided at the intersection. Pedestrians are accommodated in a push-button actuated exclusive phase.

10) **Beacon Street at Chestnut Hill Avenue (Cleveland Circle)** is a signalized intersection that recently had changes made to the signal operations. These changes included modifying the operations so that a protected westbound left-turn movement could be made from Beacon Street to Chestnut Hill Avenue. Pedestrian crossings are provided in an exclusive pedestrian phase.

11) **Beacon Street at St. Thomas More Road/Gate House Road** is an unsignalized T-shaped intersection. The St. Thomas More Road and Gate House Road are stop controlled.

12) **Beacon Street at Reservoir Avenue** is an unsignalized T intersection. Stop-control is posted on the Reservoir Avenue approach to Beacon Street.

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.

Existing (2008) peak hour traffic volumes at the study area intersection and campus driveways are shown in Figures 9-3 thru 9-6 for the a.m. and p.m. peak hours. Detailed traffic count data sheets are provided in the Transportation Appendix.

Public Transportation

The public transportation system serving the area around Boston College is shown in Figure 9-7. Boston College is located at the terminus of the MBTA Green Line Boston College B Branch. The Boston College stop is located on the north side of Commonwealth Avenue, north of the Chestnut Hill Campus and west of the Brighton Campus. Both the MBTA Green Line Cleveland Circle C Branch and the Riverside D Branch are within one mile east and south, respectively, of both campuses. Both these stops are served by the Boston College Shuttle Service. The three branches are described below:

- **Boston College B Branch** operates between Boston College and Government Center on 5-minute headways during rush hours and on 8-minute headways throughout the day on weekdays. The Boston College stop, located on Commonwealth Avenue, serves both the Chestnut Hill and Brighton campuses. Service is provided between 5:01 a.m. and 12:10 a.m. leaving Boston College during the week, between 4:45 a.m. and 12:10 a.m. on Saturdays, and between 5:20 a.m. and 12:10 a.m. on Sundays leaving from the Boston College Station.
- **Cleveland Circle C Branch** operates between Cleveland Circle and North Station on 7-minute headways during rush hours and throughout the day on weekdays. The Cleveland Circle stop is located within one mile of both the Chestnut Hill and Brighton campuses. Service is provided between 5:01 a.m. and 12:10 a.m. during the week, between 4:50 a.m. and 12:10 a.m. on Saturdays, and between 5:30 a.m. and 12:10 a.m. on Sundays.
- **Riverside D Branch** operates between Riverside and Government Center on 5-minute headways during rush hours and on 10-minute headways through the day on the weekdays. The Reservoir stop is located within a mile of both campuses while the Chestnut Hill stop is located one-half mile south of the Chestnut Hill Campus. Service is provided between 4:56 a.m. and 12:05 a.m. during the week, between 4:55 a.m. and 12:00 a.m. on Saturdays, and between 5:25 a.m. and 12:00 a.m. on Sundays.

The MBTA also operates several bus routes along Washington Street, which is within a quarter mile of the northern edge of the Brighton Campus, and along Chestnut Hill Avenue, which is within a quarter mile of the eastern edge of the Brighton Campus. These lines are approximately one mile from the Chestnut Hill Campus.

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 ridership and demand for the service. Major findings of this study include:

- Average weekday ridership was approximately 3,000 passengers on the Newton route and 4,800 passengers on the Boston route.
- Weekend ridership on the Newton route was approximately 2,000 passengers on Saturday and 1,700 passengers on Sunday.

- Weekend ridership on the Boston route was approximately 5,000 passengers on Saturday and 2,800 passengers on Sunday.
- Shuttle ridership was heaviest on Fridays with approximately 3,700 passengers on the Newton route and 6,300 passengers on the Boston route.
- Only one percent or fewer of the shuttle riders on both lines were observed waiting for a second bus due to overcrowding.

Pedestrians

Boston College provides pedestrian paths throughout its Chestnut Hill Campus. Due to the topography in this area, stairs provide access between the Lower and Middle campuses. Handicap access between the Lower and Middle campuses is available via elevators in the Commonwealth Avenue Garage and 21 Campanella Way. Many students, faculty and staff use these elevators. There are also stairs between the Middle and Upper campuses. Since most undergraduate students live on-campus, walking to class is the dominant mode of travel.

Boston College supports the Walking Escort Service to provide safe night-time pedestrian travel on the Chestnut Hill Campus to members of the Boston College community. The service provides added safety for pedestrians traveling from one on-campus location to another on-campus location, while encouraging increased usage of campus facilities at night. Five walking escorts are available between 7:00 p.m. and 2:00 a.m. There are blue light emergency call facilities located throughout the campus.

The Newton Campus has a series of accessible paths that connect the buildings to each other and to adjacent parking areas. On the Brighton Campus, there are a limited number of pedestrian pathways. Because of the low volume of traffic, most pedestrian travel between buildings or through the campus is on the campus roadways. Pedestrian paths are illustrated in Figure 9-9.

Pedestrian counts were conducted simultaneously with traffic counts at all the study area intersections. Peak hour pedestrian crossing movements are illustrated in Figures 9-10 and 9-11.

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, Fitzpatrick, Cheverus, Fenwick, Roncalli, Welch, Williams and Loyola Halls on the Chestnut Hill Campus. An inventory of bike racks is presented in Table 9-2 and shown in Figure 9-12. Boston College plans to install bicycle racks on the Brighton Campus.

Bicycle counts were performed on May 1, 2008. Bicycle turning movement counts were conducted at key intersections along the following roadways: Commonwealth Avenue, St. Thomas More Road and Beacon Street. The results of the counts are presented in Figures 9-13 and 9-14.

Bicycle volumes in and around the Boston College Campus are relatively low during the morning and evening peak hours. During the morning peak hour, turning movement counts indicate that approximately seven bicycles traveled on Beacon Street in the eastbound direction while 10 bicycles were observed in the westbound direction. This is the most heavily utilized roadway in the study area by bicyclists. St. Thomas More Road and Commonwealth Avenue were observed to carry three or fewer bicycles in each direction during the morning peak hour. Bicycle volumes were slightly higher during the evening peak hour with approximately 12 bicycles traveling in the eastbound direction and 19 bicycles in the westbound direction on Beacon Street. Commonwealth Avenue experienced slightly higher volumes in the evening peak hour, with approximately 15 bicycles in the eastbound direction.

Table 9-2 2008 Boston College Bicycle Parking Inventory

Location	Capacity
Chestnut Hill Campus	
90 St. Thomas More Road	20
Vanderslice Main Entrance	12
Vanderslice Commons	20
Edmonds	20
Walsh	20
Commonwealth Avenue Garage	24
Conte Forum North	20
Conte Forum South	12
Flynn Recreation Complex	20
Merkert Center	20
Beacon Garage Level 1	10
Fitzpatrick	7
Cheverus	4
Fenwick	5
Loyola	10
Roncalli	12
Welch	12
Williams	8
Bapst Library	12
Carney Hall	10
Cushing Hall	12
Lyons Hall - North	12
Lyons Hall - South	8
McElroy Commons	9
McGuinn Hall	24
O'Neill Library	20
Chestnut Hill Campus Subtotal	363
Newton Campus	
Duchesne	32
Keyes	6
Hardey/Cushing – Front	6
Trinity Chapel	8
Stuart House – Front	20
Stuart House -- Rear	10
Newton Campus Subtotal	82
Total	**445**

Source: Boston College

Campus Parking

The Transportation and Parking Office at Boston College manages and operates parking for employees, undergraduate students, graduate students, visitors, vendors, contractors and special events. The University meets the parking needs of these different user groups through the provision of a total of approximately 4,500 parking spaces on the Chestnut Hill, Newton and Brighton campuses. The existing parking areas are shown in Table 9-3, and the capacities of individual parking lots and garages are included in the Transportation Appendix, furnished upon request.

Table 9-3 2008 Existing Parking Space Inventory[1]

Campus/Parking Facility	Number of Parking Spaces
Chestnut Hill Campus	
Commonwealth Garage	958
Beacon Street Garage	825
Upper[2]	92
Middle	287
Hammond Triangle	140
Lower	709
Chestnut Hill Campus Total	3,011
Newton Campus	675
Brighton Campus	819
Total for Three Campuses	**4,505**

Source: Boston College Transportation and Parking Office.
1 Spring 2008 space count includes 26 spaces at Gasson Hall that were off-line during the renovation of Gasson Hall.
2 Includes parking at properties on College Road, Quincy Road and Mayflower Road.

Figure 9-15 illustrates the existing parking facilities at Boston College in detail. A detailed breakdown of each parking area is provided in the Appendix C, Transportation.

The following sections describe the parking programs for each user group, including employees, students, visitors, vendors and contractors.

Parking Management

Faculty and Staff Parking

Faculty and staff who drive to work are required to register their vehicles and obtain a parking permit to park on campus. Employees are restricted from parking in spaces designated for visitors, Boston College service vans, or carpools. Transponders are provided to faculty and staff who park in the garages on the Chestnut Hill Campus. The University has implemented an Eligibility and Parking Access System which defines criteria for employees to park on campus and provides the locations where they are permitted to park. Parking fees

for employees range from $11 to $46 per month. A carpool parking pass costs $100 annually and is split among the participants.

Parking privileges for Boston College's employees are broken down into the categories shown in Table 9-4. Figure 9-16 shows where various on-campus parking permits are valid. Various types of Employee parking permits are allowed to park in specifically designated lots on the Brighton Campus. These include the following types: A, M, G, SJB, and GVC. It is important to note that Boston College strives to create a balance within the parking fee structure that discourages driving while at the same time encourages people to park on the campus and not on the neighboring streets.

Table 9-4 On-campus Parking Permits

Permit Type	Eligibility	Parking Areas	Pre-tax Deduction
A	Senior Administrators, Academic Chairs, Long-time Employees	All areas, except for J permit location	$46.00/month
R	All permanent employees	All G permit areas as well as specific areas of: Beacon Street Garage, Commonwealth Garage, Merkert Lot, Newton Campus in yellow lined spaces, Designated Brighton Campus lots	$36.00/month
M	Employees who have worked for 10 years at specific sites, including: More Hall, Hammond Triangle, St. Clement's, and Hillside	All R and G permit areas as well as: More Hall, Triangle/Beacon St., College Road/Upper Campus, St. Clements, Hillside Buildings, Designated Brighton Campus lots	$36.00/month
G	Permanent and temporary employees	Lower Campus (portions), Brighton Campus, Newton Campus, Commonwealth Avenue Garage (levels 3-7), 1280 Boylston, St. Ignatius Church	$11.42/month
J	Residents of St. Mary's	St. Mary's Garage, Commonwealth Avenue Garage roof	$11.42/month
Pool	Carpools, graduate and law students	Assigned carpool spaces (All R and M permit areas)	$100.00/year
S-GS	Graduate and law students	Beacon and Commonwealth Garages (portions), Lower Campus, Brighton Campus, Newton Campus, St. Ignatius Church	$230.00/year
S-E	Evening or graduate students	Beacon and Commonwealth Garages (portions), Lower Campus, Brighton Campus, Newton Campus, St. Ignatius Church	$110.00/year
S-C	Commuter undergraduate students	Beacon and Commonwealth Garages (portions), Lower Campus, Brighton Campus, Newton Campus, St. Ignatius Church	$650.00/year
S-RF/RS	Resident undergraduate students	Edmonds, Mods, and Shea Lots, Newton Campus, Designated Brighton Campus lots	$475.00/semester
S-S	Summer students	Commonwealth Garage (portions), Brighton Campus lots (portions), Newton Campus, Lower Campus	$210.00/summer or $16.00/week

Source: Boston College

Permit Qualifications for On-Campus Student Parking

As a general policy, the University does not provide on-campus parking for its residential undergraduate students because of the limited parking supply and readily available public transportation. Boston College limits its issuance of parking permits to students by imposing strict eligibility requirements aimed at reducing the number of unnecessary vehicles on campus.

The following are the types of student permits issued and the qualifications needed to obtain a permit:

- *Graduate and Law Students* - Graduate student permits are available to full- or part-time students currently enrolled in any of Boston College's graduate programs or the Boston College Law School.
- *Evening Students* - Evening student permits are available to students currently enrolled in the Woods College of Advancing Studies or in any of Boston College's graduate programs.
- *Commuter Undergraduate Students* - Commuter undergraduate student permits are available to matriculated undergraduate students who, during the academic year, live off campus greater than one mile from public transportation lines. Students living in Allston, Brighton, the remainder of Boston, Chestnut Hill, and Brookline do not meet this commuter distance requirement and will not qualify for a commuter parking permit. Students are expected to use their personal academic year address, not the address of a family or friend, when applying for a parking permit.
- *Resident Undergraduate Students* - Resident undergraduate student permits are available to matriculated Boston College undergraduate students who are:
  - A junior- or senior-year student; and
  - Enrolled in a Boston College-sponsored field practicum or three-credit internship at a site not accessible by public transportation.
- Both criteria must be met by resident undergraduate students in order to obtain a permit. Exceptions are made for students with disabilities.

Graduate Student Off-Campus Parking

Boston College provides the opportunity for a small number of graduate students to rent off-campus parking spaces on Embassy Road and at Strathmore/Orkney Properties in Brighton east of the campus. The cost is $150.00 per month. Graduate and Law School students have the option of utilizing a carpool permit if they have at minimum two passengers per vehicles and commute as a carpool at least three days per week.

Visitor Parking

Boston College provides visitor parking in both the Beacon Street Garage and the Commonwealth Avenue Garage. Any visitors to the campus must pay between the hours of 2:00 a.m. and 5:00 p.m. Monday through Friday, but there is no fee for parking on

weekends. Overnight parking is prohibited from the beginning of September through the end of May. Parking gates to the garages remain open throughout major events such as athletic events, orientation, and move-in day. Visitors are required to present a validated ticket upon exiting the garage. Tickets may be validated through payment at a pay station in the garage, a University Validated Guest Pass from an event, or through the Admission office in Devlin Hall for Admission visits. Visitor parking rates provide the first two hours free and $2.00 per hour thereafter with a maximum daily rate of $10.00.

Vendor and Contractor Parking

Approximately 25 parking garage passes per semester are provided upon request to be used for special guests and visitors. Vendors that frequently visit the campus, including consultants such as engineers, architects, service/maintenance providers and sales representatives, are issued a Vendor/Contractor permit. The permits cost $50.00/month, $250.00/six-month period and $500.00/year. Drop-off and delivery vehicles are accommodated via designated service/delivery areas.

Special Event Parking

To manage traffic impact on the surrounding community and students living on campus, the University has developed an extensive transportation management plan for traffic operations on game days, including football, basketball and hockey, and for other events. Traffic is directed by the Boston College Police Department and signs are posted to identify event parking areas. Below is an outline of the current management practices at Boston College.

Commencement Day Parking

On Commencement Day, guests of the graduates can use all parking areas on Lower Campus, except for the reserved parking area at the north end of Conte Forum and Alumni Stadium. This includes both garages and, weather permitting, Shea Field. In addition, satellite parking is provided at the Brighton Campus and the Mall at Chestnut Hill where attendees are provided shuttle service to the Chestnut Hill Campus.

Basketball and Hockey

For evening basketball and hockey games, the Beacon Street Garage is closed to the general public between 3:00 p.m. and 15 minutes after the start of game when the garage is reopened to the general public. During this period, parking in the garage is reserved for permit holders only. Starting at 3:00 p.m., visitors are directed to the Commonwealth Avenue Garage via the St. Ignatius Gate. At 5:00 p.m., the More Hall Lot is reserved for permit holders. Other campus parking lots are opened 1.5 hours prior to the start of an event to the general public attending the event. They are directed to enter the campus through the St. Ignatius Gate.

Baseball and Softball

As noted in Chapter 7 *Athletic Facilities*, Boston College's baseball and softball facilities currently located on Shea Field are inadequate and fall well below the standards of other ACC

institutions. Due to these constraints, a number of games are held off-campus each year. For spectators attending on-campus baseball and softball games, Boston College has been able to provide sufficient parking in the Beacon Street and Commonwealth Avenue garages. With the construction of dedicated facilities for baseball and softball on the Brighton Campus, the University anticipates an increase in attendance and will develop and implement an event management plan for athletic and special events that addresses traffic, parking and communication with the neighborhood.

Football

Boston College has worked extremely hard over the last 12 years to develop an effective and responsive transportation plan for football game days. The plan has evolved to the point where it has been recognized by our host communities of Boston and Newton as a model for transportation and parking operations for large athletic events.

On home football game days, the Boston College parking and traffic plan commences four hours prior to game time. The services of a private tow truck firm are engaged at that time and throughout the games to assist the Boston Transportation Department with the removal of illegally parked vehicles. A detail of Boston Police Officers works to assist with traffic flow at the intersections of Commonwealth Avenue and Lake Street, and also at Beacon Street and Chestnut Hill Avenue until parked vehicles are cleared from Lower Campus. In addition to the Boston Police Department, the University hires details from the State Police, MBTA and Newton, Brookline and Needham Police Departments, as well as fire safety details from Boston and Newton.

During the football season home games, all resident student permit vehicles must be moved off the Chestnut Hill Campus by 11:00 p.m. the evening prior to scheduled home football games. Resident students may move their vehicles to the Newton Campus. Vehicles remaining on campus after midnight are towed as are vehicles parked in neighborhoods surrounding Boston College. Parking on the Boston College Campus is by special permit only. All ticketholders are encouraged to use the MBTA. Boston College works closely with the MBTA to promote and strongly encourage the use of public transportation to games. Approximately 12,000 to 15,000 spectators per game utilize the Green Line/Boston College stop to commute to Alumni Stadium. Off-site satellite parking is available in Brighton, Newton and Needham and served by shuttle routes connecting these lots to Alumni Stadium.

Access to on-campus parking garages is permitted only to season ticket holders who purchase a minimum of four tickets in their name and commit to bringing at least four people in their car to the game. Carpooling to games has been well received by season ticket holders. With pre-assigned parking and established shuttle routes, strict control of the area surrounding Alumni Stadium is made possible.

Table 9-5 shows the average number of vehicles parked for home football games in 2006. As shown, Boston College currently utilizes both the Chestnut Hill Campus and Brighton Campus on game days for parking and allows use of areas that are not part of the typical parking inventory such as Shea Field during special events. Boston College has implemented a proactive management plan to reduce the impacts of game day parking on the abutting residential streets.

This management plan includes restricted parking four hours before and one hour after Boston College football games except for Allston-Brighton Resident Permits on designated streets.

Table 9-5 2006 Football Game Day Parking

Location	Average Number of Vehicles
Shea Field	366
Beacon Street Garage	514
Edmonds Hall	65
AA Parking	24
Patio	35
Flynn Student Recreation Complex	47
Service Building	12
Conte Forum Loop	2
Merkert	34
Robsham Theater	147
Commonwealth Avenue Garage	649
Hillside Residence Halls	22
Vanderslice Hall	25
More Hall	194
Middle Campus Lots	177
Campion Hall	53
Upper Campus	121
Brighton Campus	277
Hammond Pond Parkway	249
St. Clement's Hall	55
Lawrence Avenue	76
Walsh Hall	21
Total Vehicles	3,165

On-campus Parking Utilization

Parking counts were taken on April 30, 2008 to determine utilization of the existing parking supply on a typical weekday. As shown in Table 9-6, there was ample parking available in the Beacon Street and Commonwealth Avenue garages during the parking occupancy study. Surface spaces on the Chestnut Hill Campus were 90 percent occupied. The spaces on the Brighton Campus were about 50 percent occupied on the day of the survey. Some of the spaces were occupied by employees of the Roman Catholic Archdiocese of Boston, which still occupied the chancery at the time of the count.

Boston College provided entering and exiting vehicle counts for the Commonwealth Avenue and Beacon Street garages for the week of March 10, 2008. The data show that parking activity in the garages is highest on Tuesday, Wednesday and Thursday. The highest volumes entering and exiting the garages were recorded on Wednesday and are summarized in

Table 9-7. Based on this information, the utilization counts were conducted on a Wednesday. As would be expected, the peak hours for vehicles entering the garages are between 8:00 a.m. and 10:00 a.m. Exits are highest between 4:00 p.m. and 6:00 p.m.

Table 9-6 2008 Existing Parking Utilization

Campus/Parking Facility	Observed Utilization[1]
Chestnut Hill Campus	
Commonwealth Garage	64%
Beacon Street Garage	70%
Surface Spaces	90%
Entire Chestnut Hill Campus	***77%***
Brighton Campus	
Surface Spaces	50%

1 Based on April 2008 field observations by VHB.

Table 9-7 Total Parking Garage Entries and Exits[1]

	Commonwealth Ave Garage		Beacon Street Garage		Total Garage Activity	
Time of Day	Entries	Exits	Entries	Exits	Entries	Exits
6:00 – 7 :00 a.m.	20	5	39	10	59	15
7:00 – 8:00 a.m.	74	11	89	12	163	23
8:00 – 9:00 a.m.	248	11	189	20	437	31
9:00 -10:00 a.m.	268	13	210	25	478	38
10:00 – 11:00 a.m.	154	17	137	22	291	39
11:00 - 12:00 p.m.	109	26	79	45	188	71
12:00 – 1:00 p.m.	105	97	85	79	190	176
1:00 – 2:00 p.m.	102	76	75	77	177	153
2:00 – 3:00 p.m.	88	105	73	89	161	194
3:00 – 4:00 p.m.	72	109	70	100	142	209
4:00 – 5:00 p.m.	104	242	125	149	229	391
5:00 – 6:00 p.m.	76	229	41	150	117	379
6:00 -7:00 p.m.	99	155	67	135	166	290
7:00 – 8:00 p.m.	28	140	27	151	55	291

1 Counts include faculty, staff, students and visitors.

Off-campus Parking

On-street parking for the general public is limited and it is difficult to find available spaces at times. Although the City of Boston provides some on-street parking near the campus, most areas require Brighton Resident Permit stickers. In order to obtain Resident Permit parking stickers, vehicles must be registered in the City of Boston and owners must present evidence of their residential address. Parking is provided adjacent to the campus on Commonwealth Avenue in

both Boston and Newton and Beacon Street in Newton. On-street parking is generally prohibited in nearby residential areas in Newton. A summary of on-street parking is shown in Figure 9-17.

A daytime on-street parking occupancy study was conducted on April 30, 2008 between 10:00 a.m. – 12:00 p.m. on the streets surrounding the campus. Since spaces on the streets surveyed are not formally marked, a rounded estimate of utilization is provided. Results are summarized in Table 9-8.

Table 9-8 2008 Existing Daytime On-street Parking Occupancy

Street	Observed Approximate Utilization[1]
Foster Street (Washington Street to Commonwealth Avenue)	30%
Lake Street (Washington Street to Commonwealth Avenue)	15%
Commonwealth Avenue (non-resident spaces)	95%
Beacon Street (non-resident spaces)	95%

1 Based on April 30, 2008 field observations by VHB.

Overall, there were a limited number of public on-street parking spaces that were available on Beacon Street and Commonwealth Avenue adjacent to the Chestnut Hill Campus. In total there were only 17 vehicles parked on Lake Street and 66 vehicles parked on Foster Street between Washington Street and Commonwealth Avenue.

Any Boston College students who wish to apply for a City of Boston Resident Parking Permit are also subject to the rules and regulations for permit applicants. These students must provide a Massachusetts registration under their name from a current Boston address. Additionally any applicant must provide proof of residency including his or her own name and Boston address. This proof must be in the form of the following, postmarked or signed within the past 30 days:

- A signed lease, or notarized rental agreement,
- Gas, electric or telephone bill,
- Cable television bill,
- Monthly bank statement or
- Credit card bill.

Student Move-in and Move-out Operations

Parking is restricted on the Chestnut Hill and Newton campuses typically during the last weekend in August or first weekend in September to allow an orderly move-in for new and returning students and to mitigate transportation impacts on campus green space and local neighborhoods. Vehicles are permitted to park temporarily in campus areas for 20 minutes to unload, but then must be moved. A towing policy is in effect. Parking restrictions are implemented to free the maximum available paved areas around the residence halls to allow safe moving of belongings.

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 Hillsides parking spaces; the Hillsides Perimeter Road wall; Commonwealth Avenue at Voute and Gabelli Halls; all Williams, Welch and Roncalli spaces; and all Upper Campus spaces. Unloading is allowed on Tudor Road along Claver, Loyola and Xavier Halls for first floor new residents. Outside of these areas, all regular parking restrictions remain in effect, with the exception of the normally restricted More Hall circle and lot, which are open to general parking over the move-in weekend.

Transportation Demand Management

Boston College's Chestnut Hill Campus location at the end of the MBTA Green Line B Branch and the provision of shuttle bus service to the C and D Branches of the Green line provide the University with transit access for commuters, students and visitors. The University actively supports efforts to reduce automobile use by faculty, staff, students and visitors traveling to the campus. Many actions to support this goal are actively employed by Boston College, including:

- **Information Dissemination**. Boston College promotes all forms of alternative transportation through the Office of Transportation and Parking and provides a comprehensive website for the members of the institution and the public. This website provides detailed transportation and parking policies.
- **Transit.** Boston College is served by the MBTA Green Line B Branch and provides shuttle bus service to the Cleveland Circle and Reservoir MBTA stops on the C and D Branches of the Green Line. Students can purchase a Semester Pass through the University and receive an 11 percent discount on MBTA passes.
- **Ride matching.** In conjunction with MassRIDES, Boston College assists in the creation of carpools and vanpools, providing employees with a cost-effective and ecologically friendly alternative to drive-alone commutes. A 55 percent discount off regular parking permit rates for graduate and law students is provided for carpools. Carpoolers are guaranteed a prime parking location on campus. Additionally, as of fall 2007 the carpool permit rate was cut to $100 (previously $200), making it cheaper for each person in the carpool.
- **Shuttle Bus System.** Boston College operates and promotes a free 12-bus shuttle system to link the campus with the Green Line at the Cleveland Circle and Reservoir stops.
- **Guaranteed Ride Home.** Pre-registered employees who utilize alternative transportation can take advantage of a guaranteed ride home when a personal or family illness or unplanned overtime interrupts their regular commute.
- **Bicycling Incentives.** As described earlier, Boston College has numerous safe, clean and conveniently placed bicycle racks throughout its campus. Approximately 350 bicycle spaces are available in 15 locations on the Chestnut Hill Campus and another approximately 80 spaces are provided on the Newton Campus. Boston College participates in the MassRIDES Bike to Work Week (BTWW) Challenge to promote bicycling as a viable commute option. Shower facilities are available near many of these

locations. Boston College promotes biking as an alternative to driving, as identified in the Parking Brochure, and distributes promotional material and incentives for Bike Week to encourage employees to bike to work.

- **Car Sharing.** Boston College partners with Zipcar, providing employees and students a significant discount on the membership rates and convenient access to 17 cars at the following locations:
  - Lower Campus Parking Lot – 1 car
  - Lake Street at Commonwealth Avenue – 2 cars
  - Commonwealth Avenue at Strathmore Road – 4 cars
  - Cleveland Circle at Sutherland Road – 2 cars
  - Sutherland Road at Selkirk Road – 6 cars
  - Cleveland Circle T stop – 2 cars

Loading and Service

Table 9-9 outlines loading and service activity at loading docks on the Chestnut Hill and Brighton campuses and Figure 9-18 illustrates the locations of loading facilities.

Table 9-9 Existing Loading and Service

Location	Number of Docks	Typical Delivery Hours	Types of Deliveries
Bishop Peterson Hall	1	8 a.m. – 11 a.m.	Books and merchandise
School of Theology and Ministry Library	1	8 a.m. – 5 p.m.	Books
St. Clement's Hall	1	8 a.m. – 5 p.m.	IT equipment and office supplies
St. Mary's Hall	1	8 a.m. – 1 p.m.	Food and linens
Walsh Hall	1	6 a.m. – 1 p.m.	Various
Robsham Theater Arts Center	1	8 a.m. – 5 p.m.	Theater and performance items
John M. Corcoran Commons	3	6 a.m. – 4 p.m.	Food
21 Campanella Way	1	n/a	Books, merchandise and office supplies
Alumni Stadium	5	n/a	Stadium goods are received at Gate doors. Goods include: food, equipment, vehicles, communications equipment
Silvio O. Conte Forum	1	7 a.m. – 1 p.m.	Food, merchandise and sports equipment
Eugene F. Merkert Chemistry Center	1	6 a.m. – 5 p.m.	Scientific equipment and laboratory supplies
Service Building (Newton)	1	n/a	Various
Flynn Recreation Complex	1	n/a	Pool supplies and sports equipment
Higgins Hall (Newton)	1	6 .m. – 5 p.m.	Scientific equipment and laboratory supplies
McElroy Commons (Newton)	2	6 a.m. – 5 p.m.	Food, books and merchandise
O'Neill Library (Newton)	1	8 a.m.- 5 p.m.	Books, mail and IT equipment
Lyons Hall (Newton)	1	6 a.m. – 3 p.m.	Food and office supplies

Source: Boston College
n/a not available

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

Chestnut Hill Campus. The project is expected to generate approximately 27 new vehicles trips during the morning commuter peak hour and 33 vehicle trips during the afternoon peak commuter hour which will travel along Commonwealth Avenue within the project study area.

Additionally, there is a timing/coordination improvement project that has been identified within the project study area. This improvement project influences the 2018 No-Build Condition and is summarized below:

Boston Transportation Department Traffic Signal Improvements include signal timings changes at the intersections of Washington Street/Foster Street and Washington Street/Lake Street/Brock Street. These timing changes will provide additional green time to the side streets to reduce vehicle queuing. These improvements will also coordinate the signals on Washington Street to improve thru traffic progression.

2018 Build Condition

The proposed future projects within the 10-year horizon of the IMP will not significantly influence the demand for travel on a day-to-day basis. Rather, changes in trip generation will be driven largely by changes in the number of faculty, staff and graduate students. In addition, an increase in the proportion of students housed on-campus will serve to reduce the number of commuter trips to campus. There could be some limited trip generation associated with the retail portions of the projects located on Commonwealth Avenue, although this retail space will be focused on the Boston College community and local residents.

Over the 10-year period of the IMP, it is expected that undergraduate enrollment will remain steady at its current level, but that there will be an increase of approximately 342 graduate students. Some of these graduate students will be housed in the planned Jesuit Graduate and Faculty Housing on Foster Street.

To enhance academic excellence, to enable a reduction in classroom sizes and to accommodate additional graduate students, Boston College expects that an additional 100 faculty will be added over this period. Up to 250 new staff are expected to support the University's growth.

Access and Circulation

The IMP will make modifications to the existing circulation on the Chestnut Hill Campus. To eliminate the pedestrian/vehicle conflict at Higgins stairs, the portion of the roadway in front of 21 Campanella Way, Alumni Stadium and Conte Forum will be converted to a major pedestrian plaza. Vehicular travel through this area will be limited to service vehicles and the BC Shuttle Service. Campanella Way will continue to provide access to the Commonwealth Avenue Garage and local campus traffic. All vehicles exiting the garage via Campanella Way will exit the campus by St. Ignatius Church and will not be able to exit by Edmonds Hall.

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 Campus Population Changes

Population	Expected Change Over 10-Year Period
Undergraduate Students	No 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 drive to the campus. According to the data, approximately 50 percent of students walk, bike or use other modes such as the BC shuttle to the campus, while 26 percent utilize the MBTA's transit system.

Table 9-11 Mode Shares and Vehicle Occupancy Rates for Faculty, Staff and Students

Mode	Faculty/Staff	Commuter Students
Drive	80%	24%
Transit	6%	26%
Walk/Other	13%	48%
Bicycle	1%	2%
Vehicle Occupancy 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 Generation

Time Period	Entering	Exiting	Total
A.M. Peak Hour			
Graduate Students	18	4	22
Staff/Faculty	77	16	93
Total A.M. Peak	95	20	115
P.M. Peak Hour			
Graduate Students	10	17	27
Staff/Faculty	45	75	120
Total P.M. Peak	55	92	147
Daily			
Graduate Students	61	61	122
Staff/Faculty	267	267	534
Total Daily	328	328	656

The expected increase in vehicle trips with the projected graduate student and faculty/staff increases is approximately 115 and 147 trips, respectively, in the morning and evening peak hours. Approximately, up to 656 new vehicle trips are estimated on a daily basis assuming that everyone travels to/from the campus on a daily basis. These totals include both entering and exiting trips for both the Brighton and Chestnut Hill campuses. Based on the allocation of the future parking supply, approximately 26 percent of new vehicle trips will go to the

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 for the Chestnut Hill Campus

Time Period	Trip Generation	Less Trips for 628 Lost Surface Spaces	Plus 350 new spaces at Beacon Street Garage	BC Vehicles/ Shuttles	Total Net-new Trips
A.M. Peak Hour					
In	70	-170	95	30	25
Out	15	0	0	30	45
Total	85	-170	95	60	70
P.M. Peak Hour					
In	41	0	0	30	71
Out	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 Net-New Vehicle Trips for the Brighton Campus

Time Period	Trip Generation	Trips for 897 Total Parking Spaces	BC Vehicles/ Shuttles	Less Existing Trips[1]	Total Redistributed Trips
A.M. Peak Hour					
In	25	260	30	-102	213
Out	5	54	30	-36	53
Total	30	314	60	-138	266
P.M. Peak Hour					
In	14	152	30	-35	161
Out	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.

Trip Distribution

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 Estimated Vehicle Trip Distribution

Route To Campus	Percentage of Combined Populations
Beacon Street from East	6%
Boston Proper	9%
Brighton	19%
Cambridge St. from East (Allston)	3%
Centre St. from North	9%
Chestnut Hill Ave.	2%
Commonwealth Ave. from East	5%
Commonwealth Ave. from West	14%
Hammond Pond Pkwy	8%
I-90 from East	3%
I-90 from West	11%
Market Street	2%
Storrow Drive	9%

1 Based on existing zip code data for graduates and employees.

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 percent in Allston.

Under the Baseline Build Condition, assuming no changes to access at the Brighton Campus, traffic coming from the Mass Pike will likely use Washington Street. However, with

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.

Proposed Transportation Infrastructure Changes and Brighton Campus Access Alternatives

In addition to the new buildings described in Chapter 5, *Proposed Future Projects*, there are several transportation infrastructure changes that are proposed or under consideration. These include improving vehicular access, for the Brighton Campus in particular, as well as enhancing and expanding the pedestrian network. The proposed pedestrian network and circulation is shown in Figure 9-28.

The baseline Build Condition analysis for the project assumes that, in principle, there would be no changes to the way in which the Brighton Campus is accessed by vehicular traffic today. This includes vehicular access on Commonwealth Avenue (right-in/right-out only), Lake Street (right-in/right-out only), and Foster Street. That is not to say that this would be a workable or acceptable access solution for the new Brighton Campus. Rather, it provides a baseline against which other options can be evaluated, as required by the BTD.

Five alternatives have been identified and are evaluated in this study, all of which retain the current access on Foster Street to avoid unnecessary circulation of trips from the north on neighborhood streets. The alternatives, illustrated in Figures 9-29 through 9-35, 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 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 intersection at Commonwealth Avenue/Brighton Campus driveway would operate with five-phase signalization including leading left-turn phases on all approaches and pedestrian phasing. Left-turn storage lanes would be provided on all approaches.

It should be noted that all alternatives will require the approval of the Boston Transportation Department. In addition, Alternatives 2 - 5 will require approval by the MBTA and Alternatives 3-5 will require the approval of the Department of Conservation and Recreation.

Pedestrians

The project population increase at BC over the 10-year IMP term will contribute to an increase of 262 walks, or other trips during the a.m. peak hour and 323 trips during the p.m. peak hour. Results are summarized in Table 9-16.

Table 9-16 Estimated Pedestrian and Other Mode Trips

Time Period	Entering	Exiting	Total
A.M. Peak Hour	91	171	262
P.M. Peak Hour	189	134	323

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.

Campus Pedestrian and Open Space Improvements

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.

Bicycles

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.

Table 9-17 Estimated Bicycle Trips

Time Period	Entering	Exiting	Total
A.M. Peak Hour	4	7	11
P.M. Peak Hour	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.

Parking

Future Parking Supply

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.

Beacon Street Garage Expansion

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.

Parking Garage on the Brighton Campus

A new parking garage will be constructed on the Brighton Campus along the spine road near the entrance to the Brighton Athletics Center. It will contain approximately 500 spaces on five levels with one level expected to be below grade. It will serve Brighton Campus visitors, faculty and staff. The garage will be centrally located on the campus where it can serve all users of the campus and where it will be easily accessible from Commonwealth Avenue.

Below-grade Parking on More Hall site

Replacement parking for spaces lost on the More Hall site will be provided in the proposed residence hall. Up to 100 spaces will be provided in below-grade parking.

Below-grade Parking in the Humanities Building

Replacement parking for spaces lost in the Campus Green area will be provided in the proposed Humanities building. Up to 90 spaces will be provided in below-grade parking.

2000 Commonwealth Avenue

The acquisition of 2000 Commonwealth Avenue as an undergraduate residence hall will provide Boston College with an additional 200 parking spaces. The 200 parking spaces will be available to supplement the parking supply on the Lower Campus.

The parking changes expected in the 10-year plan are summarized in Table 9-18 and include:

- Approximately 1,220 existing parking spaces will be displaced on all three campuses to accommodate proposed new projects. Approximately 710 spaces will be displaced on the

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.
- The addition of a 150-space surface lot on the Newton Campus.
- A total gain of approximately 200 spaces in the parking supply on all three campuses. The Chestnut Hill and Brighton campuses will each gain approximately 27 spaces and the Newton Campus will gain 150 spaces.

Table 9-18 10-Year Plan Parking Changes

	Chestnut Hill Campus	Brighton Campus	Newton Campus	Total
Existing Parking Spaces	3,011	819	675	4,505
Displaced Spaces	-713	-507	0	-1,220
New Parking Spaces	+740	+534	+150	+1,424
Total Future Parking	**3,038**	**846**	**825**	**4,709**
Net Change in Parking	*+27*	*+27*	*+150*	*204*

Parking Supply Phasing

Based on the project sequencing presented in Chapter 5, *Proposed Future Projects*, the changes in the parking supply on the Brighton and Chestnut Hill campuses during the life of the IMP have been projected and are shown in Tables 9-19a and 9-19b. The Jesuit Graduate and Faculty housing on Foster Street and the Brighton Athletics Center, which are expected to be the first two projects on the Brighton Campus, will result in the loss of some parking. This will not result in a shortage of parking since the current utilization rate for parking on the Brighton Campus is 50 percent (400 vehicles).

This number in not expected to change significantly before the garage is built because it includes employees of the Boston Archdiocese who will be relocating off campus and will be replaced by Boston College employees. With the opening of the 500-space garage, the Brighton Campus supply will be increased well above the existing supply. The Commonwealth Avenue housing, the Fine Arts District and the internal undergraduate housing will eliminate additional surface parking and bring the supply at the end of the IMP to just above the existing supply.

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.

Future Parking Demand

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 people will not park on the streets.

Parking demand is driven by the commuter population and visitor demand on the campus. Because employee schedules can vary with the time of day and the day of the week the parking demand for a college campus is much different than the parking demand for an office building where all employees can be assumed to be present at one time. For this reason, the parking demand for Boston College is based on existing trends at the campus.

Currently, typical weekday utilization for the Brighton and Chestnut Hill campuses is 2,520 vehicles parked for a full-time commuter population (staff, faculty, and graduate students) of 4,650 persons. This current parking situation includes visitors and equals a rate of 0.54 vehicles per commuting person.

Table 9-19a Phasing of Brighton Campus Parking Supply

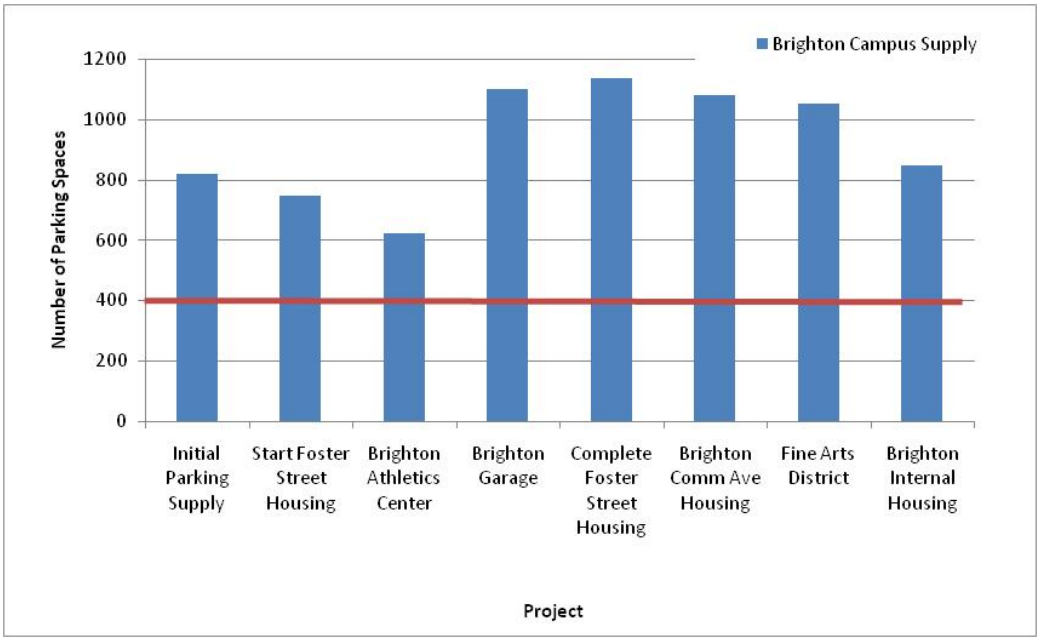
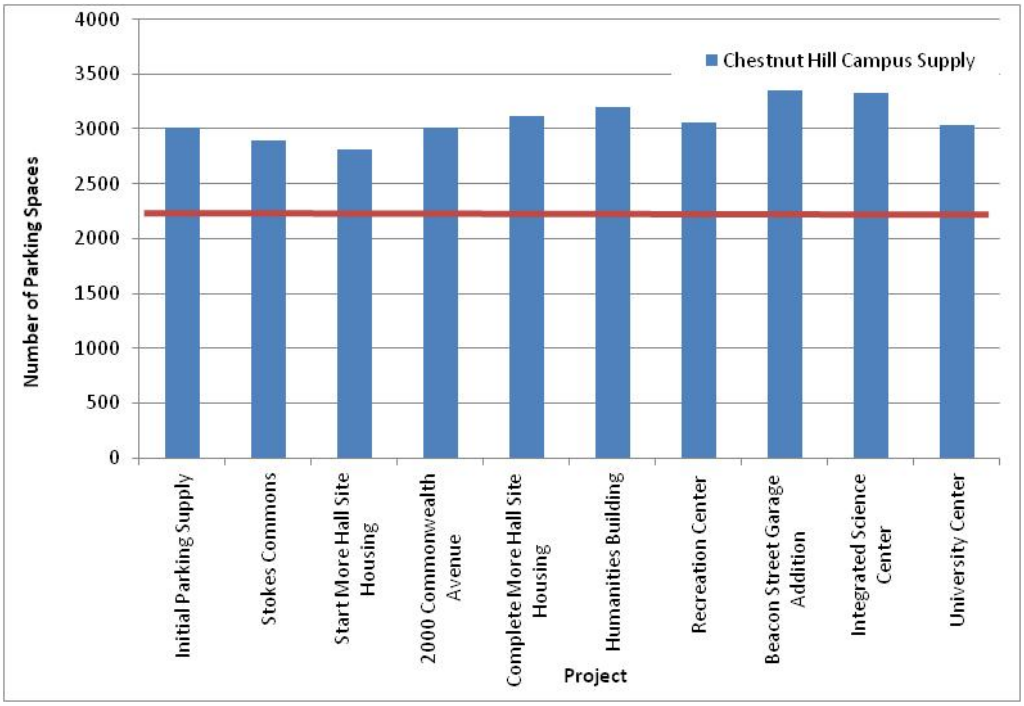


Table 9-19b Phasing of Chestnut Hill Campus Parking Supply



In the future, the commuter population will increase by 617 persons so the parking demand is expected to increase by 333 vehicles. When this new demand is added to the existing parking demand there will be a total demand of 2,853 spaces on a typical weekday. Typically an additional 10 percent of spaces are needed to allow for turnover and adequate circulation. Accounting for this circulation, there is a future parking demand of 3,138 spaces on the Chestnut Hill and Brighton campuses during the term of the IMP. These demand projections were increased by 34 to account for the parking associated with the Jesuit graduate and faculty housing on Foster Street. The total demand will be well accommodated within the proposed 3,884 parking spaces. A summary of existing and future parking demand is shown in Table 9-20.

Table 9-20 Typical Weekday Parking Demand Summary

Scenario	Parking Demand (Number of Vehicles Parking)	Parking Supply Needed (to satisfy demand)[1]
Existing	2,520	2,772
Future with 10-year Plan	2,887[2]	3,172[2]

1 Includes an additional 10 percent of demand for circulation/operational needs.
2 Includes additional demand of 34 spaces for Jesuit graduate and faculty housing on Foster Street

Loading and Service Operations

The following table outlines loading and service operations for new construction on the campuses in Chestnut Hill and Brighton. Future loading and service areas are illustrated in Figure 9-36 and Table 9-21.

Table 9-21 Future Loading and Service Facilities (new buildings)

Location	Number of Docks	Types of Deliveries
Undergraduate Housing (More Hall site)	1+	Merchandise
Recreation Center	1	Sports equipment
University Center	2+	Food, office supplies and merchandise
Stokes Commons (Newton)	2	Food, books and merchandise
Academic Building (McElroy Commons site, Newton)	1	Books and office supplies
Fine Arts District	2	Art supplies

Brighton Campus Move-in and Move-out

Students' move-in and move-out activity on the Brighton Campus will be controlled entirely within the campus boundaries. Similar to the Chestnut Hill Campus, student moving activities will be staggered in such a way that there will be no significant traffic increases on city streets.

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:

- 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.
- Implementation of a program to provide pre-tax sales of MBTA passes to employees.
- 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 intersections is used to establish LOS. For unsignalized intersections, the control delay for the critical movement is used to determine LOS. At unsignalized intersections, the main street through traffic has the right-of-way and side street traffic and main street left-turning traffic must wait for a gap or opening in through traffic. LOS reflects the greatest average delay for any of the movements. Table 9-22 presents the level of service delay threshold as defined in the 2000 Highway Capacity Manual (HCM).

Consistent with BTD's guidelines, Synchro 6 software was used to model LOS operations at the signalized and unsignalized study area intersections. Refinements were made to the Synchro model to include characteristics of each intersection approach such as percent heavy vehicles, bus operations, parking activity and pedestrian crossings.

Table 9-22 Level-of-Service (LOS) Criteria

Level of Service (LOS)	Unsignalized Intersection Control Delay (sec/veh)	Signalized Intersection Control Delay (sec/veh)
A	≥ 10	≥10
B	> 10 - 15	> 10 - 20
C	> 15 - 25	> 20 - 35
D	> 25 - 35	> 35 - 55
E	> 35 - 50	> 55 - 80
F	> 50	> 80

Source: 2000 Highway Capacity Manual

Analysis was performed at two levels. First, the operations on Commonwealth Avenue were examined under baseline Build conditions and for all of the Brighton Campus Access Alternatives described previously. Second, traffic operations on the wider network of study intersections were analyzed to identify any changes between Existing, No-Build and Build conditions.

Brighton Campus Access Alternatives

As discussed previously under infrastructure changes, the baseline Build analysis for the project assumes that there would be no change in the way the Brighton Campus is accessed by vehicular traffic. This includes vehicular access on Commonwealth Avenue (right-in/right-out only), Lake Street (right-in/right-out only) and Foster Street. That is not to say that this would be a workable or acceptable access solution for the Brighton Campus. Rather, it provides a baseline against which other access alternatives can be evaluated. The BTD scope for the IMP calls for the evaluation of a range of such access alternatives.

Five alternatives have been identified and are evaluated in this study. All five alternatives include closure of the driveway on Lake Street near Commonwealth Avenue and retention of the current access on Foster Street to avoid unnecessary circulation of trips from the north on neighborhood streets. All five would also include access controls similar to those on the Chestnut Hill Campus. Access would be restricted to vehicles having business on 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 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 intersection at Commonwealth Avenue/Brighton Campus driveway would operate with five-phase signalization including leading left-turn phases on all approaches and pedestrian phasing. Left-turn storage lanes would be provided on all approaches.

Access Alternatives Operational Analysis

Level of service and operational analysis was performed for each Brighton Campus access alternative, focusing on the Commonwealth Avenue intersections with Lake Street and the Brighton Campus driveway for the following conditions:

- **Build Baseline:** Assumes all changes proposed within the 10-year IMP and no changes to the transportation network or adjustments to signal timings;
- **Build Optimized:** Assumes no changes to the existing transportation infrastructure or campus access but does optimize signal timing operations at the Commonwealth Avenue/Lake Street intersection;
- **Alternative 1:** Primary Brighton Campus Access on Commonwealth Avenue with Right-In/Right-Out
- **Alternative 2:** Median Break at Commonwealth Avenue/Brighton Campus Driveway
- **Alternative 3:** New Roadway between Commonwealth Avenue and St. Thomas More Road
- **Alternative 4:** New Roadway with St. Thomas More Road One-way Northbound only to Lake Street
- **Alternative 5:** New Roadway with no Connection of St. Thomas More Road to Lake Street

All of the alternative analyses (Alternatives 1 thru 5) assume the following changes to the campus roadways:

- Closure of the Lake Street driveway to the Brighton Campus;
- Relocation of the Commonwealth Avenue driveway slightly to the west;
- Limited access of Fr. Herlihy Drive; and
- Changes to Campanella Way internal to the Chestnut Hill Campus that eliminate the one-way circulation on the campus.

To facilitate this analysis, project trips and other traffic volumes were re-assigned on the local roadway network to reflect the effects of each access option on circulation and turning movements at both intersections. Signal timings at the Commonwealth Avenue/Lake Street intersection were adjusted to reduce vehicle delay while maintain MBTA and pedestrian operations at the intersection.

Results of Brighton Campus Access Alternatives Evaluation

The results of the access alternatives analysis are summarized in Table 9-23. Under the **Baseline Build** scenario, with no changes to the way in which the Brighton Campus is

accessed, the Lake Street/Commonwealth Avenue intersection is expected to continue to fail (LOS F) during both the a.m. and p.m. peak hours, as in the Existing and No-Build conditions. With optimization of the signal timings it would be possible to improve the level of service to LOS E in the a.m. peak. While the Brighton Campus driveway would continue to operate at a satisfactory level of service (LOS C) in the a.m. peak hour, the critical exit movement from the campus is projected to decline to LOS E during the p.m. peak hour.

Table 9-23 2018 Build Alternative Access Analysis Level of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS[1]	Delay[2]	LOS	Delay
Commonwealth Avenue at Lake Street / St. Thomas More Road (Signalized)				
Build Baseline – No Changes	F	>80	F	>80
w/Optimized Timings	E	74	F	>80
Alternative 1	E	71	F	>80
Alternative 2	E	70	F	>80
Alternative 3	E	56	E	75
Alternative 4	E	57	E	75
Alternative 5	C	29	D	42
Commonwealth Avenue/Brighton Campus Driveway (Critical Move – SB Brighton Campus Driveway)				
Build Baseline (Unsignalized)	C	19	E	38
Alternative 1 (Unsignalized)	C	23	F	>50
Alternative 2 (Unsignalized)	D	29	F	>50
(Signalized)	B	13	B	12
Alternative 3 (Signalized) – Preferred Alternative	A	7	B	10
Alternative 4 (Signalized)	A	10	B	11
Alternative 5 (Signalized)	B	16	B	19

1. Level of service
2. Average delay in seconds per vehicle.

For **Alternative 1**, with no access to the Brighton Campus on Lake Street, there is only limited improvement at the Lake Street intersection in the a.m. peak hour, and the intersection would continue to fail during the p.m. peak hour. The Brighton Campus driveway exit movement experiences a small increase in the a.m. peak because of the shift in traffic from the Lake Street driveway, but remains at LOS C. The driveway declines to LOS F in the p.m. peak hour. Another impact of Alternative 2 would be the introduction of U-turns 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 intersections, with LOS C and LOS B at each location, respectively, during both a.m. and p.m. peak hours. These results reflect the fact that northbound traffic on St. Thomas More Road would be diverted to the new roadway, thereby spreading the traffic loading more evenly at the two Commonwealth Avenue intersections. It is noted, however, that northbound trips seeking access to Lake Street would be required to pass through two signalized intersections, albeit with coordinated traffic signals to minimize trip times.

Conclusions of Brighton Campus Access Alternatives Evaluation

The results of the analysis of alternatives for access to the Brighton Campus clearly indicate that some of the alternatives provide significant traffic operational benefits. Based on the analysis it is clear that, without a signalized break in the median on Commonwealth Avenue to allow direct access in and out of the Brighton Campus to and from all directions (Alternative 2), the Brighton Campus driveway would not operate at a satisfactory level of service. Further, there would be significant congestion and deficient LOS would continue to prevail at the Lake Street intersection on Commonwealth Avenue.

The introduction of a new roadway between Commonwealth Avenue and St. Thomas More Road (Alternative 3) would provide improved operations at the Lake Street intersection with

Commonwealth Avenue. Further, the closure of St. Thomas More Road to vehicular traffic between the new roadway and Campanella Way (Alternative 5) would yield the most balanced traffic operations at the Commonwealth Avenue intersections, resulting in good levels of service at both the Lake Street and Brighton Campus driveway intersections. It would also eliminate a difficult pedestrian crossing of St. Thomas More Road at Campanella Way.

The analysis suggests a phased approach to providing Brighton Campus access. Initially a signalized opening in the Commonwealth Avenue median at the Brighton Campus driveway would be implemented (Alternative 2). Either concurrently with, or subsequent to, the opening of the median, a new roadway between Commonwealth Avenue at the Brighton Campus driveway and St. Thomas More Road south of the More Hall site would be constructed (Alternative 3).

The new roadway and the break in the median on Commonwealth Avenue are integral parts of the Boston College master plan to provide access to the Brighton Campus and improve traffic operations at Lake Street and Commonwealth Avenue. To improve traffic operations further at Lake Street and enhance the pedestrian crossing of St. Thomas More Road, Boston College intends to pursue the closure of St. Thomas More Road between the new roadway and Campanella Way (Alternative 5). This will require the approval of DCR which owns the roadway, and a vote by the State Legislature. BC will work with DCR, state elected officials, the City of Boston and the community to accomplish this objective.

Study Area Vehicle Operations Analysis

Vehicle operational analysis was performed at all study area intersections for Existing, No-Build and Build conditions. For the Commonwealth Avenue intersections at Lake Street and the Brighton Campus Driveway, the Baseline Build scenario is assumed.

The results for signalized intersections are summarized in Tables 9-24 and 9-25 for the a.m. and p.m. peak, respectively. The results for unsignalized intersections are summarized in Tables 9-26 and 9-27 for the a.m. and p.m. peak, respectively. Full summaries of signalized intersection operations by individual approach, including volume/capacity ratios and average queue lengths, are presented in Tables 9-37 and 9-38 at the end of this chapter.

Table 9-24 Morning Peak Hour Level of Service Summary – Signalized Intersections

	2008 Existing Condition		2018 No-Build				2018 Build Condition			
					Change in Traffic from Existing Condition				Change in Traffic from No-Build Condition	
Location	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	Vehicles	Percent	LOS	Average Delay (sec/veh)	Vehicles	Percent
Commonwealth Avenue at Lake Street/ St. Thomas More Road	E	68.0	F	>80.0	122	6%	F	>80.0	121	6%
Commonwealth Avenue at Chestnut Hill Avenue	F	>80.0	F	>80.0	143	6%	F	>80.0	32	1%
Commonwealth Avenue at South Street	B	13.3	B	13.5	85	6%	B	13.6	39	3%
Beacon Street at Hammond Street	F	>80.0	F	>80.0	114	5%	F	>80.0	23	1%
Beacon Street at Chestnut Hill Avenue (Cleveland Circle)	F	>80.0	F	>80.0	155	5%	F	>80.0	17	1%
Washington Street at Lake Street/Brock Street	C	25.5	D	49.8	78	6%	F	>80.0	55	4%
Foster Street at Washington Street	B	19.2	C	28.7	76	5%	E	61.4	109	7%
Washington St/ Chestnut Hill Avenue/ Market St	F	>80.0	F	>80.0	107	5%	F	>80.0	59	3%

Table 9-25 Evening Peak Hour Level of Service Summary – Signalized Intersections

	2008 Existing Condition		2018 No-Build				2018 Build Condition			
					Change in Trips from Existing Condition				Change in Trips from No-Build Condition	
Location	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	Vehicles	Percent	LOS	Average Delay (sec/veh)	Vehicles	Percent
Commonwealth Avenue at Lake Street / St. Thomas More Road	E	77.3	F	>80.0	121	6%	F	>80.0	181	8%
Commonwealth Avenue at Chestnut Hill Avenue	F	>80.0	F	>80.0	160	6%	F	>80.0	42	2%
Commonwealth Avenue at South Street	B	13.5	B	14.2	95	7%	B	14.4	69	5%
Beacon Street at Hammond Street	F	>80.0	F	>80.0	101	5%	F	>80.0	21	1%
Beacon Street at Chestnut Hill Avenue (Cleveland Circle)	F	>80.0	F	>80.0	156	5%	F	>80.0	29	1%
Washington Street at Lake Street/Brock Street	D	40.7	F	>80.0	81	5%	F	>80.0	82	5%
Foster Street at Washington Street	C	26.0	E	69.9	86	5%	F	>80.0	136	8%
Washington St/Chestnut Hill Avenue /Market St	F	>80.0	F	>80.0	118	5%	F	>80.0	98	4%

Table 9-26 Morning Peak Hour Level of Service Summary – Critical Movements at Unsignalized Intersections

Location	2008 Existing Condition		2018 No-Build				2018 Build Condition			
					Change in Traffic from Existing Condition				Change in Traffic from No-Build Condition	
	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	Vehicles	Percent	LOS	Average Delay (sec/veh)	Vehicles	Percent
Commonwealth Avenue at Foster Street	-	-	-	-	100	6%	-	-	37	2%
SB Foster St	D	30.2	E	35.4	-	-	E	36.9	-	-
Commonwealth Avenue at Old Colony/College Road	-	-	-	-	107	6%	-	-	48	3%
NB College Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
SB Old Colony	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
Beacon Street at St. Thomas More Road/Gate House Road	-	-	-	-	107	5%	-	-	90	4%
NB St. Thomas More Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
SB St. Thomas More Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
Beacon Street at Reservoir Avenue	-	-	-	-	90	5%	-	-	-5	0%
NB Reservoir Ave	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
St. Thomas More Road at Campanella Way	-	-	-	-	23	3%	-	-	80	11%
EB Campanella Way	C	16.3	C	17.2	-	-	C	17.7	-	-
Fr. Herlihy Drive at Campanella Way	-	-	-	-	4	1%	-	-	-44	-9%
EB Campanella Way	A	8.2	A	8.2	-	-	A	7.9	-	-
WB Campanella Way	B	11.0	B	11.0	-	-	A	9.9	-	-
SB Fr. Herlihy Dr	A	8.4	A	8.4	-	-	A	8.1	-	-
St. Thomas More Road at Chestnut Hill Driveway	-	-	-	-	43	6%	-	-	83	11%
WB Chestnut Hill Driveway	D	29.2	D	34.4	-	-	E	44.2	-	-
Lake Street at Kenrick Street/Glenmont Road	-	-	-	-	38	5%	-	-	9	1%
EB Kenrick St	D	32.4	E	38.3	-	-	E	39.3	-	-
Foster Street at Rogers Park Avenue	-	-	-	-	40	5%	-	-	106	13%
EB Rogers Park Ave	C	20.5	C	23.0	-	-	D	33.5	-	-
Beacon Street/Beacon Garage	-	-	-	-	85	5%	-	-	103	5%
SB Driveway	D	32.7	F	>50.0	-	-	F	>50.0	-	-
Commonwealth Avenue/ Brighton Campus Driveway	-	-	-	-	90	6%	-	-	77	5%
SB Brighton Driveway	C	15.9	C	16.4	-	-	C	19.1	-	-

Table 9-27 Evening Peak Hour Level of Service Summary – Critical Movements at Unsignalized Intersections

Location	2008 Existing Condition		2018 No-Build				2018 Build Condition			
					Change in Trips from Existing Condition				Change in Trips from No-Build Condition	
	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	Vehicles	Percent	LOS	Average Delay (sec/veh)	Vehicles	Percent
Commonwealth Avenue at Foster Street	-	-	-	-	114	7%	-	-	79	4%
SB Foster St	C	22.2	D	25.1	-	-	D	27.6	-	-
Commonwealth Avenue at Old Colony/College Road	-	-	-	-	101	6%	-	-	66	4%
NB College Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
SB Old Colony	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
Beacon Street at St. Thomas More Road/ Gate House Road	-	-	-	-	100	5%	-	-	90	5%
NB St. Thomas More Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
SB St. Thomas More Rd	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
Beacon Street at Reservoir Avenue	-	-	-	-	85	5%	-	-	44	2%
NB Reservoir Ave	D	33.4	E	37.5	-	-	E	39.8	-	-
St. Thomas More Road at Campanella Way	-	-	-	-	33	4%	-	-	117	14%
EB Campanella Way	B	14.3	B	15.0	-	-	C	17.2	-	-
Fr. Herlihy Drive at Campanella Way	-	-	-	-	5	2%	-	-	57	19%
EB Campanella Way	A	7.7	A	8.9	-	-	A	9.7	-	-
St. Thomas More Road at Chestnut Hill Driveway	-	-	-	-	39	5%	-	-	62	8%
WB Chestnut Hill Driveway	E	36.6	E	44.5	-	-	F	>50.0	-	-
Lake Street at Kenrick Street/Glenmont Road	-	-	-	-	36	5%	-	-	47	6%
EB Kenrick St	E	43.6	F	>50.0	-	-	F	>50.0	-	-
Foster Street at Rogers Park Avenue	-	-	-	-	37	5%	-	-	140	17%
EB Rogers Park Ave	C	19.7	C	22.7	-	-	D	33.1	-	-
Beacon Street/ Beacon Garage	-	-	-	-	82	5%	-	-	110	6%
SB Driveway	F	>50.0	F	>50.0	-	-	F	>50.0	-	-
Commonwealth Avenue/ Brighton Campus Driveway	-	-	-	-	102	6%	-	-	178	11%
SB Brighton Driveway	C	19.3	C	20.2	-	-	E	37.6	-	-

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

assigned to the Lake Street intersection on Washington Street in the a.m. and p.m. peak hours, respectively. At the Foster Street intersection on Washington Street, approximately 34 and 35 new project trips are assigned to the intersection in the a.m. and p.m. peak hours, respectively. Accordingly, the maximum number of new project trips assigned to Washington Street during the either peak hours is equivalent to approximately one vehicle every two minutes.

When combining the new project trips and diverted existing trips, the total change in traffic volumes at the two Washington Street intersections under Build conditions during the critical morning peak hour (as shown in Figure 9-22) is approximately 55 and 109 vehicles at Lake Street and Foster Street, respectively. These changes are equivalent to approximately one vehicle per minute at Lake Street and up to two vehicles per minute at Foster Street.

It should be noted, however, that the Baseline Build analysis does not reflect any changes associated with the Brighton Campus access alternatives. Under the Baseline Build analysis, with no break in the Commonwealth Avenue median at the Brighton campus driveway, all diverted existing trips and new project trips from Newton Corner are assigned to Washington Street. With a break in the Commonwealth Avenue median, a substantial portion of those trips are expected to use Centre Street and Commonwealth Avenue, as existing trips do today, to access the Chestnut Hill campus and to gain access to the Brighton Campus at the new driveway via the median break.

Accordingly, under any of the Brighton Campus access alternatives 2 thru 5, with the relevant traffic assigned equally between Washington Street and Commonwealth Avenue, the increases in trips on Washington Street as described above for the Baseline Build analysis would be significantly reduced. Table 9-28 presents a summary of changes in traffic volumes at the Washington Street intersections under access alternatives which include a median break on Commonwealth Avenue (Alternatives 2, 3, 4 & 5) compared to those without the median break (Baseline Build and Alternative 1).

Table 9-28 Morning Peak Hour Washington Street Traffic Volumes

Intersection	Existing (vph[1])	No Build (vph)	Build Baseline (vph)	Change No Build to Build	Build with Median Break (vph)	Change over No Build
Lake Street/Brock Street at Washington Street						
A.M. Peak Hour	1,337	1,415	1,470	4%	1,443	2%
P.M. Peak Hour	1,850	1,950	2,040	5%	1,995	2%
Foster Street at Washington Street						
A.M. Peak Hour	1,439	1,515	1,624	7%	1,570	4%
P.M. Peak Hour	1,604	1,690	1,826	8%	1,758	4%

1. Vehicles per hour

As discussed previously, there is a strong need for the median break on Commonwealth Avenue, and it has been identified as a critical component of any new access alternative for the Brighton Campus. Accordingly, as shown by the analysis presented in Table 9-28, the actual increase in traffic volumes on Washington Street will in reality be limited to approximately 2 percent in the critical a.m. peak and 4 percent in the p.m. peak, assuming that the median break is provided, as recommended. The maximum peak hour traffic volume increase as a result of the project at the Washington Street intersections is one vehicle every minute or two.

Unsignalized Intersections

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

- Commonwealth Avenue at College Road, northbound College Road approach (LOS F both peaks) and southbound Old Colony approach (LOS F both peaks)
- Beacon Street at St. Thomas More Road, northbound and southbound St. Thomas More Road approaches (LOS F both peaks)
- Beacon Street at Reservoir Avenue, northbound Reservoir Avenue approach (LOS F, a.m. peak)
- Beacon Street at Beacon Garage Driveway, southbound driveway approach (LOS F, p.m. peak)

Again, these results reflect the current congestion that prevails for certain unsignalized intersection approaches during the peak hours.

Under **No-Build Conditions**, increases in intersection traffic volumes at unsignalized intersections range from 1 – 7 percent due to background traffic growth and other planned projects. Accordingly, some increase in delay on all critical intersection approaches would be expected. This results in degradation to deficient LOS (E or F) *that does not prevail under Existing Conditions* on individual approaches to unsignalized intersections at the following locations:

- Commonwealth Avenue at Foster Street, southbound Foster Street approach (LOS E, a.m. peak)
- Lake Street at Kenrick Street, eastbound Kenrick Street approach (LOS E, a.m. peak)
- Beacon Street at Beacon Garage Driveway, southbound driveway approach (LOS F, a.m. peak)

Under **Build Conditions**, changes in LOS grade from No-Build Conditions to deficient LOS (E or F) *that would otherwise not prevail under No-Build conditions* are projected on the following approaches to unsignalized intersections:

- 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)

Summary

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 Baseline Build scenario are Washington Street at Lake Street and at Foster Street in the a.m. peak, albeit that the number of new project trips assigned to these locations is less than one vehicle every two minutes. However, under any of the Brighton Campus access alternatives which include a median break on Commonwealth Avenue, these impacts are substantially reduced. In any event, Boston College will work with the BTD to identify potential changes to signal timing, phasing, lane configuration or parking restrictions that might improve traffic operations at these locations.

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 LOS Criteria at Signalized Intersections

Level of Service	Signalized Intersection Pedestrian Delay (sec/pedestrian)
LOS A	<10
LOS B	10-20
LOS C	21-30
LOS D	31-40
LOS E	41-60
LOS F	<60

Source: 2000 HCM

Table 9-30 provides a summary of findings for the morning and evening peak hours. Since this analysis does not reflect the volume of crossing pedestrians, the LOS remains constant under all analysis conditions because the signal phasing remains unchanged. As shown, pedestrians can encounter long delays at the majority of the study area intersections. At many of the locations, this delay is caused by pedestrians having to wait for an exclusive pedestrian walk phase. It is always a challenge to balance the pedestrian needs while continuing to process the volume of vehicles experienced. According to the HCM, "when pedestrians experience more than a 30-second delay, they become impatient, and engage in risk-taking behavior." Field observations noted that pedestrians often cross concurrently at intersections because they chose not to wait for the exclusive walk phase. This behavior often has a

negative effect on vehicle operations as vehicles must slow or stop to wait for the pedestrians to cross.

Table 9-30 Pedestrian Delay LOS Summary

Intersection	Crosswalk	A.M. Peak Hour	P.M. Peak Hour
Commonwealth Ave/Lake St/St. Thomas More Rd.	North	B	C
	South	B	C
	East	E	E
Washington St/Brock St/Lake St	North	C	D
	South	C	D
	West	D	E
Washington St/Foster St	North	E	D
	South	E	D
	East	E	D
	West	E	D
Washington St/Chestnut Hill Ave	North	D	E
	South	D	E
	East	D	E
	West	D	E
Commonwealth Ave/Chestnut Hill Ave	North	E	E
	South	E	E
	East	F	F
	West	F	F
Beacon St/Chestnut Hill Ave	North	F	F
	South	F	F
	East	E	F
	West	E	F
Beacon St/Hammond St./College Rd	North	E	E
	South	E	E
	East	E	E
	West	D	E

Source: Results shown are based on 2000 HCM methodology.

Transit System Analysis

New transit trips from the 10-year plan were projected using the mode share data presented previously. As shown in Table 9-31, Boston College will generate approximately 44 new transit trips during the a.m. peak hour and approximately 55 new transit trips during the p.m. peak hour.

Table 9-31 New Transit Trips

	Total Transit Trips
A.M. Peak Hour	
In	29
Out	15
	44
P.M. Peak Hour	
In	25
Out	30
	55

Using BTD transit distribution data, it was determined that approximately 75 percent of the transit riders would use the Green Line. Of the Green Line riders, approximately 9 percent of the population would use the B Line exclusively and 22 percent would use the D Line exclusively. Approximately 44 percent of the transit riders could use any of the Green Line services since their commute connects to other transit services (e.g. the Red Line). In addition, approximately 25 percent of the commuting population uses the local bus services. A summary of the transit distribution is presented in Table 9-32.

Table 9-32 Transit Distribution

	Percentage
B Line Only	9%
D Line Only	22%
Any Green Line	44%
Bus 51	3%
Bus 86	22%

Existing conditions were assessed based on the most recent MBTA Green Line ridership data. For surface stops, this data was last collected in 1995. Line volumes used for the Green Line are for the project peak hours, 7:45 to 8:45 a.m. and 5:00 to 6:00 p.m. During the peak hours the MBTA's B Line and D Line, the lines most utilized by BC, have an hourly capacity of 2,496 persons as shown in Table 9-33.

Table 9-33 Existing Train Capacity

	Peak Headways	No. Trains Per Hour	Train Capacity[1]	Hourly Capacity
B Line	5 minutes	12 trains	208 persons	2,496 persons
D Line	5 minutes	12 trains	208 persons	2,496 persons

1 Assumes two-car trains during peak hours.

New trips were assigned to the Green Line assuming the worst case scenario for all services. Therefore, riders that have a choice between the B Line and the D Line were assigned to both services to represent a conservative analysis, as shown in Table 9-34. This results in the total increase in Green Line ridership being greater than the number of new transit trips, because riders with a choice are counted twice. However, this is the most conservative way of analyzing impacts to capacity, and ensures that the impacts will be captured no matter how the new riders distribute themselves.

Table 9-34 Worst Case Green Line Trip Assignment

	Percentage
B Line	53%
D Line Only	66%

For the D Line, trips were assigned both inbound and outbound since the Reservoir Stop is not a line terminus. This means that trips coming in to BC were assigned in both directions on the line for a highly conservative analysis. Resulting transit trips used in the analysis are presented in Table 9-35. These trips are higher than the actual trip generation since trips were assigned multiple times.

Table 9-35 Transit Trips for Analysis

	B Line	D Line
A.M. Peak Hour		
In	8	30
Out	16	30
P.M. Hour Peak		
In	16	37
Out	14	37

As shown in Table 9-36, even with the added BC riders, the transit analysis shows that there is ample hourly capacity in the study area. An important factor in the assessment of impacts to transit service is that Boston College is located at a terminus for two Green Line branches. Accordingly, the peak in arriving trips in the morning is in the opposite direction of the Inbound peak direction for the line itself. Similarly, the peak in departing trips in the evening is in the opposite direction of the Outbound peak direction for the line itself.

Table 9-36 Peak Hour Transit Ridership

	Existing Ridership	New BC Trips	Total Trips	Existing Capacity
A.M. Peak Hour				
Boston College Station				
Inbound	67	8	75	2,496
Outbound	114	114	228	2,496
Reservoir Station				
Inbound	1,372	30	1,402	2,496
Outbound	394	30	424	2,496
P.M. Peak Hour				
Boston College Station				
Inbound	130	16	146	2,496
Outbound	133	14	147	2,496
Reservoir Station				
Inbound	602	37	639	2,496
Outbound	1,079	37	1,116	2,496

Note: Assumes worst case analysis.

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 make key stations fully accessible. This will include providing accessibility to the platforms and low-floor cars. In addition, the station will be improved to accommodate three car trains. Based on a preliminary feasibility analysis, it appears that making the station fully accessible cannot be accomplished at the existing station location on the north side of Commonwealth Avenue. As a result, the MBTA proposes to relocate the station to the median of Commonwealth Avenue east of Lake Street.

Several alternatives for a station configuration in the median of Commonwealth Avenue have been considered. Boston College favors providing a center platform between the inbound and outbound tracks that would serve both boarding and arriving passengers. This will provide the best conditions for neighborhood residents and the Boston College community, including handling major events such as football games.

Boston College has committed to help the MBTA by paying some of the cost for design of the center platform alternative. Further, to facilitate the development of a center platform, Boston College has committed to providing additional right-of-way from its property along both sides of Commonwealth Avenue. Currently, the roadway right-of-way in this location is not wide enough to accommodate the existing traffic lanes and the widened median required for a center platform.

Short-term Construction Operations/ Construction Management Plan

Boston College will develop a detailed evaluation of potential short-term construction-related transportation impacts during the course of planning for each project. This will include consideration of construction vehicle traffic routing, construction worker parking, and pedestrian access around construction sites. A detailed Construction Management Plan will be developed and submitted to the Boston Transportation Department (BTD) for approval.

Construction vehicles will be necessary to move construction materials to and from the project site. Boston College recognizes that construction traffic is a concern to area residents, businesses, and to Boston College itself. Every effort will be made to reduce the noise, control fugitive dust, and minimize other disturbances associated with construction traffic. It is anticipated that Commonwealth Avenue will serve as the principal construction traffic route to the Brighton Campus, and that trucks will be routed to avoid nearby residential areas. Truck staging and lay-down areas for the project will be carefully planned. The need for street occupancy along roadways adjacent to the project site is not known at this time.

Construction workers will be encouraged to use public transportation to access the project site because no new parking will be provided for them. Contractors also will be encouraged to devise access plans for their personnel that de-emphasize auto use (such as seeking off-site parking, providing transit subsidies, etc.) Boston College will work with BTD and the Boston Police Department to ensure that parking regulations in the area and in designated residential parking areas are enforced. It is expected, as has been the case in past construction projects, that this will be a considerable disincentive.

As the project progresses, Boston College will work with representatives of the cities of Boston and Newton to develop and ensure the effectiveness of the program of measures to minimize short-term, construction-related transportation impacts.

Table 9-37 Morning Peak Hour LOS Summary

Location	Existing A.M. Peak Hour				No Build A.M. Peak Hour				Build A.M. Peak Hour			
	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Signalized Intersections												
Commonwealth Ave at Lake St/ St. Thomas More Rd	E	68.0	0.83		F	>80.0			F	>80.0	0.94	
EB Commonwealth Ave	C	22.6	0.67	248	C	23.2	0.71	#271	C	25.7	0.80	#340
WB Commonwealth Ave	F	>80.0	>1.0	#316	F	>80.0	>1.0	#339	F	>80.0	>1.0	#387
NB St. T More Rd	F	>80.0	>1.0	#162	F	>80.0	>1.0	#176	F	>80.0	>1.0	#213
Commonwealth Ave at Chestnut Hill Ave	F	>80.0	>1.0		F	>80.0			F	>80.0	>1.0	
EB Commonwealth Ave	E	60.8	0.94	#346	F	>80.0	>1.0	#395	F	>80.0	>1.0	#401
WB Commonwealth Ave	D	47.0	0.85	#211	D	48.6	0.86	#227	D	48.9	0.86	#227
NB Chestnut Hill Ave	F	>80.0	>1.0	m478	F	>80.0	>1.0	m472	F	>80.0	>1.0	m498
SB Chestnut Hill Ave	F	>80.0	>1.0	#409	F	>80.0	>1.0	#433	F	>80.0	>1.0	#433
Commonwealth Ave at South St	B	13.3	0.35		B	13.5			B	13.6	0.38	
EB Commonwealth Ave	B	12.7	0.45	197	B	13.1	0.49	215	B	13.1	0.49	216
WB Commonwealth Ave	B	11.6	0.34	140	B	11.8	0.36	149	B	11.9	0.38	157
SB South Street	B	19.3	0.20	36	B	19.3	0.20	35	B	19.5	0.21	36
Beacon St at College Rd / Hammond St	F	>80.0	0.99		F	>80.0			F	>80.0	>1.0	
EB Beacon St	E	59.8	>1.0	#831	E	75.1	>1.0	#888	E	75.0	>1.0	#888
WB Beacon St	D	41.8	>1.0	310	D	46.8	>1.0	337	D	49.0	>1.0	341
NB Hammond St	F	>80.0	>1.0	#386	F	>80.0	>1.0	#407	F	>80.0	>1.0	#435
SB Hammond St	C	31.9	0.63	137	C	32.4	0.66	143	C	32.4	0.66	143
Beacon St at Chestnut Hill Ave (Cleveland Circle)	F	>80.0	>1.0		F				F	>80.0	>1.0	
EB Beacon St	F	>80.0	>1.0	#570	F	>80.0	>1.0	#606	F	>80.0	>1.0	#610
WB Beacon St	D	38.9	0.94	#225	D	41.8	0.98	#243	D	41.8	0.98	#243
NB Chestnut Hill	F	>80.0	>1.0	#667	F	>80.0	>1.0	#706	F	>80.0	>1.0	#712
SB Chestnut Hill	E	56.3	>1.0	m154	E	65.8	>1.0	m#255	E	65.7	>1.0	m#232
Washington St at Lake St/Brock St	C	25.5	0.84		D	49.8			F	>80.0	0.94	
EB Washington St	C	22.3	0.79	#337	E	74.9	>1.02	#506	F	>80.0	>1.0	#571
WB Washington St	C	24.9	0.82	#377	D	53.1	0.92	#504	E	77.2	0.97	#504
NB Lake St	C	29.1	0.86	#516	C	22.9	0.72	#531	C	21.3	0.71	#546

Table 9-37 Morning Peak Hour LOS Summary (Continued)

Location	Existing A.M. Peak Hour				No Build A.M. Peak Hour				Build A.M. Peak Hour			
	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Signalized Intersections												
Foster St at Washington St	B	19.2	0.68		C	28.7			E	61.4	0.85	
EB Washington St	B	15.5	0.70	370	C	24.8	0.91	#473	F	>80.0	>1.0	#452
WB Washington St	A	9.8	0.52	206	B	19.5	0.59	m157	C	25.6	0.71	m161
NB Foster Street	D	37.2	0.71	#125	D	48.3	0.77	#123	D	48.5	0.77	#126
SB Foster St	C	29.4	0.58	141	D	36.1	0.58	129	D	36.2	0.59	132
Washington St/Chestnut Hill Avenue /Market St	F	>80.0	>1.0		F	>80.0			F	>80.0	>1.0	
EB Washington St	F	>80.0	>1.0	#740	F	>80.0	>1.0	#682	F	>80.0	>1.0	#580
WB Washington St	F	>80.0	>1.0	#526	F	>80.0	>1.0	#564	F	>80.0	>1.0	#588
NB Chestnut Hill Ave	B	15.3	0.44	#341	B	15.5	0.46	#367	B	15.5	0.47	#370
SB Market St	B	15.6	0.48	#327	B	15.9	0.50	#348	B	15.9	0.50	#347
Unsignalized Intersections												
Commonwealth Ave at Foster St												
SB Foster St	D	30.2	0.75	163	E	35.4	0.81	193	E	36.9	0.82	198
Commonwealth Ave at Old Colony/College Rd												
NB College Rd	F	>50.0	>1.0	365	F	>50.0	>1.0	687	F	>50.0	>1.0	774
SB Old Colony	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a	F	>50.0	>1.0	
Beacon St at St. Thomas More Rd/Gate House Rd												
NB Gate House Rd	F	>50.0	n/a	n/a	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a
SB St. Thomas More Rd	F	>50.0	n/a	n/a	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a
Beacon St at Reservoir Ave												
NB Reservoir Ave	F	>50.0	0.99	269	F	>50.0	>1.0	352	F	>50.0	>1.0	354
St. Thomas More Rd at Campanella Way												
EB Fr. Herlihy Dr	C	16.3	0.28	28	C	17.2	0.31	32	C	17.7	0.36	41

Table 9-37 Morning Peak Hour LOS Summary (Continued)

Location	Existing A.M. Peak Hour				No Build A.M. Peak Hour				Build A.M. Peak Hour			
	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Unsignalized Intersections												
Fr Herilihy Dr at Campanella Way												
EB Campanella Way	A	8.2	0.03	n/a	A	8.2	0.03	n/a	A	7.9	0.00	n/a
WB Campanella Way	B	11.0	0.42	n/a	B	11.0	0.42	n/a	A	9.9	0.33	n/a
SB Fr Herilihy Dr	A	8.4	0.27	n/a	A	8.4	0.27	n/a	A	8.1	0.21	n/a
St. Thomas More Rd at Chestnut Hill Driveway												
WB Chestnut Hill Driveway	D	29.2	0.38	43	D	34.4	0.46	55	E	44.2	0.54	69
Lake St at Kenrick St												
EB Kenrick St	D	32.4	0.54	75	E	38.3	0.61	90	E	39.3	0.62	92
Lake St at Glenmont Rd												
WB Glenmont Rd	B	14.2	0.24	23	B	14.9	0.26	26	C	15.1	0.26	26
Foster St at Rogers Park Ave												
EB Rogers Park Ave	C	20.5	0.49	67	C	23.0	0.55	80	D	33.5	0.67	114
Beacon St/Beacon Garage												
SB Driveway	D	32.7	0.11	8	F	>50.0	0.32	25	F	>50.0	0.36	28
Commonwealth Ave/Brighton Campus Driveway												
SB Brighton Driveway	C	15.9	0.07	5	C	16.4	0.07	5	C	19.1	0.21	20

* Max v/c and Max 95 percentile queue represents the worst lane group for each approach.
\# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.

Table 9-38 Evening Peak Hour LOS Summary

Location	Existing P.M. Peak Hour				No Build P.M. Peak Hour				Build P.M. Peak Hour			
	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Signalized Intersections												
Commonwealth Ave at Lake St/St. Thomas More Rd	E	77.3	0.91		F	>80.0			F	>80.0	>1.0	
EB Commonwealth Ave	C	31.5	0.60	202	C	32.8	0.63	213	D	36.0	0.73	#255
WB Commonwealth Ave	D	36.1	0.82	312	D	38.1	0.85	#374	D	42.7	0.90	#408
NB St. T More Rd	F	>80.0	>1.0	#354	F	>80.0	>1.0	#384	F	>80.0	>1.0	#413
Commonwealth Ave at Chestnut Hill Ave	F	>80.0	>1.0		F	>80.0			F	>80.0	>1.0	
EB Commonwealth Ave	D	46.8	0.76	#321	D	53.4	0.86	#358	E	56.8	0.89	#382
WB Commonwealth Ave	D	47.9	0.84	217	D	52.3	0.88	#253	D	53.2	0.88	#270
NB Chestnut Hill Ave	E	76.2	>1.0	#734	F	>80.0	>1.0	#797	F	>80.0	>1.0	#797
SB Chestnut Hill Ave	F	>80.0	>1.0	#429	F	>80.0	>1.0	#460	F	>80.0	>1.0	#460
Commonwealth Ave at South St	B	13.5	0.38		B	14.2			B	14.4	0.45	
EB Commonwealth Ave	B	13.0	0.47	187	B	14.1	0.55	#371	B	14.5	0.58	#394
WB Commonwealth Ave	B	12.1	0.40	164	B	12.5	0.43	178	B	12.6	0.45	185
SB South Street	B	19.5	0.22	43	B	19.7	0.23	45	B	19.9	0.24	45
Beacon St at College Rd/ Hammond St	F	n/a	0.82		F	>80.0			F	>80.0	0.94	
EB Beacon St	C	23.4	0.70	386	C	28.0	0.78	413	C	27.7	0.77	414
WB Beacon St	C	31.1	0.97	#731	D	46.7	>1.0	#787	D	53.3	>1.0	#768
NB Hammond St	F	>80.0	>1.00	#454	F	>80.0	>1.0	#470	F	>80.0	>1.0	#493
SB Hammond St	C	27.0	0.35	100	C	26.6	0.35	103	C	26.6	0.35	103
Beacon St at Chestnut Hill Ave (Cleveland Circle)	F	>80.0	>1.0		F	>80.0			F	>80.0	>1.0	
EB Beacon St	F	>80.0	>1.00	#494	D	53.4	0.86	#358	F	>80.0	>1.0	#543
WB Beacon St	E	75.8	>1.00	#255	D	52.3	0.88	#253	F	>80.0	>1.0	#280
NB Chestnut Hill	D	39.6	0.92	#427	F	>80.0	>1.0	#460	D	53.8	0.99	#477
SB Chestnut Hill	C	26.3	0.59	229	F	>80.0	>1.0	#797	C	27.0	0.62	244

Table 9-38 Evening Peak Hour LOS Summary (Continued)

	Existing P.M. Peak Hour				No Build P.M. Peak Hour				Build P.M. Peak Hour			
Location	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Signalized Intersections												
Washington St at Lake St/ Brock St	D	40.7	0.92		F	>80.0			F	>80.0	>1.0	
EB Washington St	C	27.3	0.85	#681	F	>80.0	>1.0	#837	F	>80.0	>1.0	#889
WB Washington St	B	15.6	0.62	389	D	53.8	0.89	m#435	E	61.9	0.92	m#402
NB Lake St	F	>80.0	>1.00	#590	C	25.4	0.72	#569	C	27.2	0.78	#659
Foster St at Washington St	C	26.0	0.89		E	69.9			F	>80.0	0.93	
EB Washington St	B	19.7	0.83	#419	F	>80.0	>1.0	m144	F	>80.0	>1.0	m137
WB Washington St	C	32.7	>1.00	212	C	28.6	0.80	m214	D	36.6	0.83	m220
NB Foster Street	C	26.3	0.39	#97	D	39.2	0.56	#119	D	47.1	0.55	#136
SB Foster St	C	24.5	0.67	140	D	50.0	0.79	220	D	47.9	0.79	222
Washington St/Chestnut Hill Avenue /Market St	F	>80.0	>1.0		F	>80.00			F	>80.0	>1.0	
EB Washington St	F	>80.0	>1.0	#1094	F	>80.0	>1.0	#827	F	>80.0	>1.0	#875
WB Washington St	F	>80.0	>1.0	#817	F	>80.0	>1.0	#873	F	>80.0	>1.0	#898
NB Chestnut Hill Ave	C	27.5	0.59	244	C	25.4	0.56	255	C	24.5	0.55	251
SB Market St	D	38.1	0.84	#419	C	34.8	0.70	#453	C	32.8	0.82	#460
Unsignalized Intersections												
Commonwealth Aveat Foster St												
SB Foster St	C	22.2	0.67	125	D	25.1	0.72	148	D	27.6	0.75	165
Commonwealth Ave at Old Colony/College Rd												
NB College Rd	F	>50.0	>1.0	696	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a
SB Old Colony	F	>50.0	>1.0	175	F	>50.0	>1.0	188	F	>50.0	>1.0	n/a
Beacon St at St. Thomas More Rd/Gate House Rd												
NB Gate House Rd	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a
SB St. Thomas More Rd	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a	F	>50.0	>1.0	n/a
Beacon St at Reservoir Ave												
NB Reservoir Ave	D	33.4	0.67	115	E	37.5	0.71	130	E	39.8	0.73	138

Table 9-38 Evening Peak Hour LOS Summary (Continued)

Location	Existing P.M. Peak Hour				No Build P.M. Peak Hour				Build P.M. Peak Hour			
	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*	LOS	Delay (sec/veh)	Max V/C Ratio*	Max 95th% Queue (ft)*
Unsignalized Intersections												
St. Thomas More Rd at Campanella Way												
EB Fr. Herlihy Dr	B	14.3	0.24	23	B	15.0	0.26	26	C	17.2	0.30	32
Fr Herilihy Dr at Campanella Way												
SB Fr Herilihy Dr	A	7.7	0.13	n/a	A	8.9	0.24	n/a	A	9.7	0.32	n/a
St. Thomas More Rd at Chestnut Hill Driveway												
WB Chestnut Hill Driveway	E	36.6	0.45	53	E	44.6	0.54	70	F	>50.0	0.58	78
Lake St at Kenrick St												
EB Kenrick St	E	43.6	0.62	91	F	>50.0	0.70	112	F	>50.0	0.75	125
Lake St at Glenmont Rd												
WB Glenmont Rd	C	18.7	0.34	37	C	19.8	0.37	41	C	21.5	0.40	46
Foster St at Rogers Park Ave												
EB Rogers Park Ave	C	19.7	0.42	51	C	22.7	0.48	62	D	33.1	0.60	91
Beacon St/Beacon Garage												
SB Driveway	F	>50.0	>1.0	604	F	>50.0	>1.0	692	F	>50.0	>1.0	1078
Commonwealth Ave/ Brighton Campus Driveway												
SB Brighton Driveway	C	19.3	0.20	19	C	20.2	0.21	19	E	37.6	0.63	99

* Max v/c and Max 95 percentile queue represents the worst lane group for each approach.
\# 95th percentile volume exceeds capacity, queue may be longer.
m Volume for 95th percentile queue is metered by upstream signal.