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# Tolles-Parsons Senior Center

## *Transportation Study*

# FINAL REPORT

*Prepared for*

**Town of Wellesley, Massachusetts**

*Prepared by*

**Howard/Stein-Hudson Associates, Inc.**

**September 3, 2009**



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# Summary

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This report presents the traffic and parking impacts associated with the proposed Tolles-Parsons Senior Center to be located at 496 Washington Street in Wellesley. Below is a summary of major findings in this report.

- The Tolles-Parsons Center is expected to attract between 100 and 220 daily participants to programs and activities. Because some participants will stay for more than one activity, the equivalent number of daily visitors will vary between 75 and 165 persons. The current Council on Aging serves 40 to 50 visitors per day.
- On a typical day, the peak hour of traffic activity at the Center will occur between 10:45 and 11:45 a.m.
- Because the Center's hours of operation will be 9:00 to 4:00 pm., the new vehicle trips generated by the Center will not overlap with the typical morning and evening commuter peak hours.
- The new vehicle trips generated by the Center will not adversely impact study area intersections.
- The Center's driveways will operate with acceptable level of service and delays.
- At various times of the day, some of the 47 public parking spaces on Washington Street (between Wellesley Avenue and Morton Street) are used by the Police Department, St. Paul's Parish, and St. Paul's School. These public parking spaces have a 2 hour time limit.
- The center will have 34 on-site parking spaces.
- Up to 6 public parking spaces on Washington Street may be removed to accommodate a new site curb cut and improve sight distance for drivers exiting the Center driveway.
- The Center's parking demand will vary throughout the day as visitors arrive and depart.
- This report assesses 5 parking demand scenarios:
  - Scenario 1A – Weekday with 200 participants (150 visitors);
  - Scenario 1B – Weekday with 175 participants (130 visitors);
  - Scenario 2 – Typical Wednesday during the School Year;
  - Scenario 3 – Major Mid-day Event at Center; and
  - Scenario 4 – Funeral at St. Paul's Parish.

- Under each scenario, it will be necessary for some Center visitors to use public parking spaces on Washington Street at some time during the day. It is worth noting that the walking distance between many of the parking spaces on Washington Street and the Center's entrance is shorter than the typical walking distance between the parking lot and building entrance at many suburban senior centers.
- Under Scenario 1A, with 200 daily participants, the Center will have a peak parking demand for about 45 parking spaces, occurring at about 10:30 a.m. The parking demand will be met with the 34 on-site spaces and about 21 spaces on Washington Street.
- Under Scenario 1B, with 175 daily participants, the Center will have a peak parking demand for about 56 parking spaces, occurring at about 10:00 a.m. The parking demand will be met with the 34 on-site spaces and about 24 spaces on Washington Street.
- Although the number of participants under Scenario 1B is less than Scenario 1A, the peak parking demand of Scenario 1B is higher because of the differing start times and duration of activities.
- Under Scenario 2, a Wednesday during the school year, students at St. Paul's School are dismissed at noon, coinciding with peak weekday activity at the Center. To mitigate the impacts of these concurrent parking demands, Center staff will reduce the number of morning programs on Wednesdays and possibly move the start time of some programs later into the afternoon.
- Major mid-day events at the Center, assessed under Scenario 3, would occur a few times each year. Under Scenario 3, the parking demand generated by the Center would exceed the available spaces on-site and along Washington Street. The parking demand would also overlap with the St. Paul's dismissal period. To mitigate the impacts on these days, Center staff will aggressively promote carpooling for these events (with a goal of 2.1 persons per car) and schedule them to end by 1:30 p.m. to avoid parking conflicts with the St. Paul's School dismissal activity.
- As assessed under Scenario 4, weekday funerals at St. Paul's Parish can generate a large parking demand for the public spaces along Washington Street between 9:00 and 11:00 a.m. About 50 to 60 funerals occur annually, each with between 40 and 300 attendees. The study team estimates that funerals with more than 130 attendees will cause about 10 to 20 Center vehicles to be displaced from parking on Washington Street near the Center. While Center staff will work with St. Paul's Parish to minimize the parking conflicts during a funeral, funeral timing and attendance are unpredictable.
- With strategic planning and cooperation among the Center, the Police Department, and St. Paul's Parish and School, the available parking spaces on Washington Street should be sufficient to accommodate the typical needs of all facilities.
- It is recommended that the 2 hour time for the public parking spaces on Washington Street between Wellesley Avenue and Morton Street be extended to 3 hours.
- Most sidewalks in the study area are in excellent or good condition.

# Introduction

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## Background

In January 2007, the Wellesley Board of Selectmen in alliance with the Wellesley Council on Aging (COA) appointed the Senior Study Committee to evaluate the support and service needs of Wellesley's senior residents. The COA currently operates in the basement of the Wellesley Community Center (WCC) at 219 Washington Street. After studying all available options to expand the COA's operation at WCC, the Committee chose to study the feasibility of constructing a free-standing senior center at the former American Legion site at 496 Washington Street.

In Wellesley, proponents of major construction projects are required to conduct impact assessment to municipal systems such as water, sewer, drainage, electricity, and traffic. Based on Town of Wellesley guidelines, the Tolles-Parsons Center project has been deemed a "Project of Significant Impact" (PSI). For such a project to proceed into construction, the Town requires a Special Permit issued by the Planning Board to the Applicant. Howard/Stein Hudson Associates (HSH) has been retained by the Town to evaluate the traffic and parking impacts associated with the Center. For this project, "the Applicant" refers to the Senior Center Building Committee and Permanent Building Committee.

This traffic report has been prepared for the Applicant as part of the process to satisfy the Special Permit requirement; it focuses on existing traffic operations and future traffic impacts after the new Center is open. This report does not address transportation issues during the construction period.

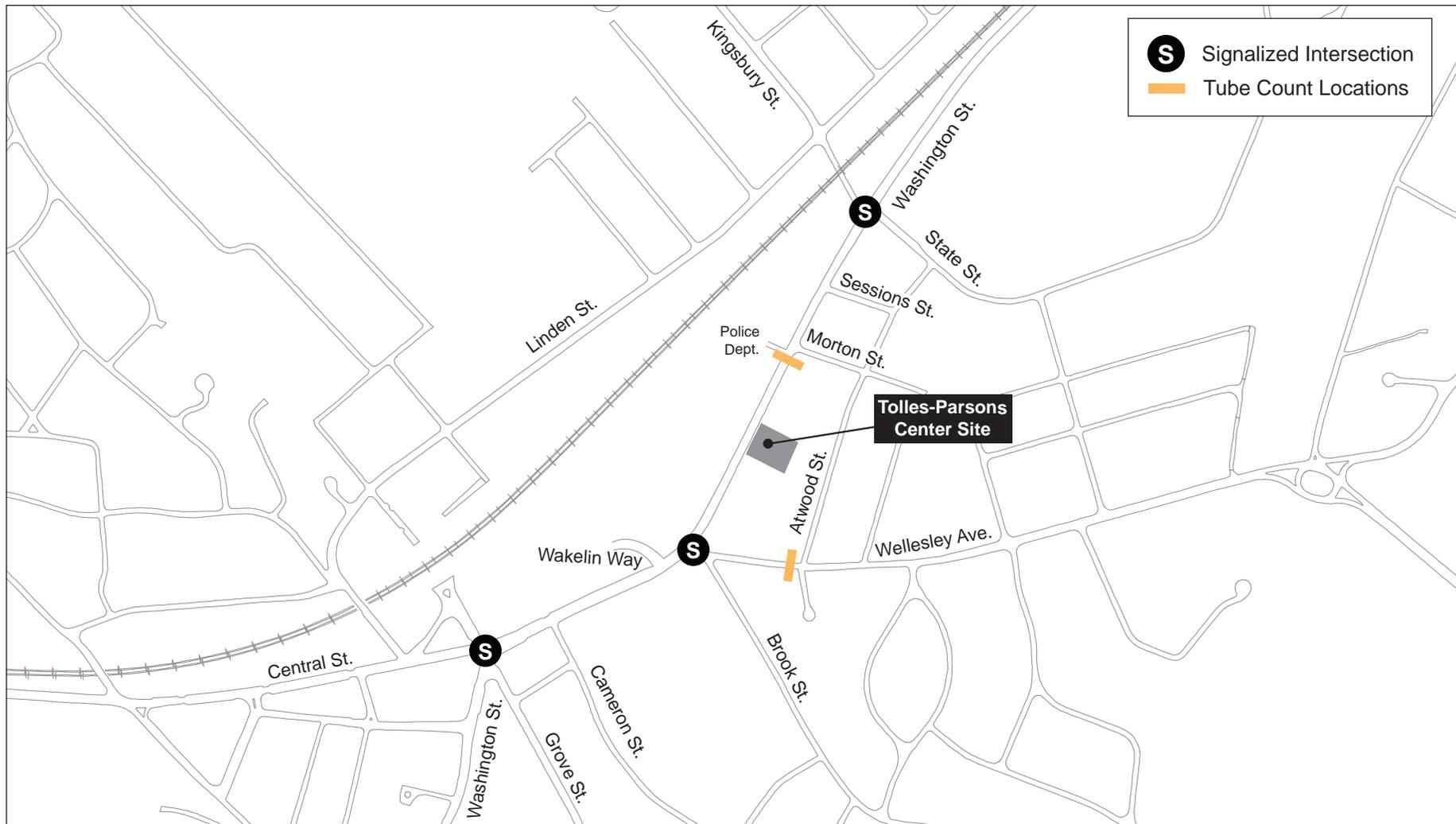
## Project Description

The Tolles-Parsons Center will be a 2-story, 12,400-square-foot facility with program and activity rooms, a main hall, a dining room, a kitchen, office space for COA administration and support staff, and 34 on-site parking spaces. Access will be provided on Washington Street via an entrance-only curb cut on the northern side of the site. Traffic will circulate 1-way through the site and leave via an exit only curb cut onto Washington Street.

## Study Area

The study area was defined collaboratively with the Town's traffic consultant, BETA Group, and includes 3 intersections, as shown in **Figure 1**:

Figure 1. Study Area



- Washington Street (Route 16)/State Street/Kingsbury Street;
- Washington Street (Route 16)/Wellesley Avenue/Brook Street; and
- Washington Street (Route 16)/Central Street (Route 135)/Grove Street.

**Figure 1** also identifies the 2 locations where automatic traffic recorders (ATR) tubes were placed for this study. Data collected at these intersections and at the ATR locations are discussed in detail in a later section.

Primary travel routes to the Center include Kingsbury Street and Washington Street from the north and northeast, Wellesley Avenue from the east, Central Street from the west, Washington Street from the southwest, and Grove Street from the south.

# Existing Conditions

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## Existing Site

Wellesley's COA currently operates in limited space at the Wellesley Community Center. The proposed Tolles-Parsons Center would relocate the COA to a new facility at 496 Washington Street, the former American Legion site. The site is adjacent to St. Paul's Parish and School. Other nearby land uses on Washington Street include medical offices and the Wellesley Police Department. The site abuts a residential neighborhood on Atwood Street.

## Existing Roadway Conditions

The study area includes the following roadways described below, categorized according to the Massachusetts Executive Office of Transportation Office of Transportation Planning classifications. Roadway geometry descriptions are based on field observations. An inventory of sidewalk conditions was also conducted and is presented in a later section.

**Washington Street (Route 16)**, an urban principal arterial, runs east–west and connects to Natick in the west and Newton in the east. Within the study area, Washington Street generally consists of 1 travel lane in each direction, widening to 2 lanes at some intersection approaches. The second lane—along the east-bound side of the roadway in some areas—functions as a travel lane from 7:30 to 8:30 a.m. and a parking lane at other times. A sidewalk lines the south side of the roadway and some portions of the north side of the roadway. Within the study area, signalized intersections are located at Kingsbury Street/State Street, Wellesley Avenue, and Central Street/Grove Street. A grade-separated railroad runs along or near the north side of Washington Street within the study area.

**State Street**, a local street, runs northwest–southeast between Washington Street (Route 16) and WHS, where the roadway continues as Rice Street. State Street consists of 1 travel lane in each direction. Sidewalks are provided on both sides of the roadway, except for the east side near Washington Street

**Kingsbury Street**, an urban minor arterial, runs north–south between Worcester Street (Route 9) and Washington Street (Route 16). The roadway consists of 1 travel lane in each direction. Kingsbury Street is right-in, right-out only at Route 9; extra turn lanes are provided at some intersections. Sidewalks are provided along both sides of Kingsbury Street.

**Wellesley Avenue** is an urban principal arterial (as Route 135) west of Great Plain Avenue/Seaver Street and an urban minor arterial east of that intersection. The road begins at Washington Street to the west and continues to Cedar Street in the east. Within the study area, Wellesley Avenue consists of 1 travel lane in each direction, with shoulders on both sides of the roadway. Sidewalks are also provided on both sides of the roadway.

**Brook Street** is a local residential street that runs east–west between Wellesley Avenue and Great Plain Avenue. The roadway consists of 1 travel lane in each direction. Sidewalks are generally provided on 1 side of the roadway, although some sections have sidewalks on both sides.

**Central Street** is an urban arterial (as Route 135) that runs east-west from the Wellesley/Natick border to the intersection with Washington Street, where it ends. In Wellesley, Central Street has 2 travel lanes in each direction and a sidewalk along the south side of the roadway. Route 135 continues as Washington Street, Wellesley Avenue, and Great Plain Avenue to the Wellesley/Needham border.

**Grove Street**, a local street, runs north–south from the Post Office cul-de-sac to the Wellesley/Needham border. The roadway has 1 travel lane in each direction. Between the Post Office and Washington Street, a parking lane and sidewalk are provided on each side of the street. South of Washington Street to Spring Street, parking is provided on both sides of the street.

## Existing Intersection Conditions

The following descriptions of the study area intersections include geometry and pedestrian accommodations. The study team made intersection observations, not including traffic counts, in May and June of 2009.

### Signalized Intersections

**Washington Street (Route 16)/State Street/Kingsbury Street** is a signalized, 4-approach intersection. The Washington Street eastbound approach consists of an exclusive left-turn lane and a shared through/right-turn lane. The Washington Street westbound approach consists of 2 shared lanes. The State Street northbound approach consists of a single shared lane. To the north of the intersection, the Kingsbury Street southbound approach crosses a bridge over a railroad; it consists of a shared left-turn/through lane and an exclusive right-turn lane. Sidewalks are provided along all roadways except for the east side of State Street south of the intersection. The brick crosswalks, which are provided across all approaches, are in good condition, although the solid white transverse lines are faded from tire wear. No turns on red are allowed from any of the approaches.

**Washington Street (Route 16)/Wellesley Avenue/Brook Street** is a signalized, 3-approach intersection. The Wellesley Avenue westbound approach consists of an exclusive left-turn lane and an exclusive right-turn lane. The Washington State northbound approach consists of an exclusive through lane and an exclusive right-turn lane. The southbound approach on Washington Street consists of 2 shared lanes. Brook Street is a minor 2-way northbound approach located east of Washington Street. Brook Street, with 1 shared lane for left and right turns onto Wellesley Avenue, is controlled by a stop sign. South of the intersection on Washington Street is a 1-way entrance driveway to Town Hall. Sidewalks are provided along all roadways sections and are in good condition. No turns on red are allowed from Washington Street northbound.

**Washington Street (Route 16)/Central Street(Route 135)/Grove Street** is a signalized, 5-approach intersection. The eastbound Central Street (Route 135) approach has 2 shared travel lanes for through

moves and right turns. No left turn is allowed from Central Street onto Grove Street. The westbound Washington Street approach has 1 shared through/right lane to Central Street and Grove Street and 1 left lane to Grove Street and the continuation of Washington Street. The northbound Washington Street approach has 2 right turn lanes for turns onto Grove Street and the continuation of Washington Street. The southbound Grove Street approach has 1 exclusive left lane to Washington Street and 1 shared through/right lane to Grove Street and Washington Street. Sidewalks are provided along all roadways. No turns on red are allowed from any of the approaches.

## Existing Traffic Conditions

This section presents the traffic data collected for this study and the existing intersection level of service analysis for the study intersections, and discusses the study team’s observations of pedestrian activity at WHS and key study intersections.

### Roadway Volumes and Speeds

An automatic traffic recorder (ATR) is a device that continuously records the passage and speed of vehicles on a roadway for a given period of time. The study team obtained ATR data at 2 study locations, as shown in **Figure 1**, above, on Tuesday, May 19, through Thursday, May 21, 2009, including roadway volumes and travel speeds. **Table 1** summarizes key data from these observations, including average daily traffic (ADT), K-factor, 85<sup>th</sup> percentile speed (85% of all vehicles travel at or below this speed) and average speed. **Appendix A**, bound separately and available upon request, contains the detailed data sheets.

Table 1. Study Area Roadway Data

Roadway	ADT	K-factor	85 <sup>th</sup> Percentile Speed		Average Speed	
Washington Street, west of Morton Street	15,760	0.07	Eastbound	33 mph	Eastbound	26 mph
			Westbound	32 mph	Westbound	25 mph
Wellesley Avenue, west of Atwood Street	11,050	0.07	Eastbound	32 mph	Eastbound	22 mph
			Westbound	28 mph	Westbound	17 mph

ADT = Average daily traffic (vehicles per day), May 2009.

K-factor = The proportion of daily traffic occurring during the peak analysis hour. The K-factor was estimated from daily and p.m. peak hour volume data.

### Washington Street

The average daily traffic along Washington Street is approximately 15,760 vehicles per day (vpd). Travel speed characteristics are similar in both the westbound (toward Town Hall) and eastbound (toward Star Market) directions. The 85<sup>th</sup> percentile speed on Washington Street varies between 32 and 33 mph, while the average speed is 25 to 26 mph, depending on direction. Posted signs on Washington Street alert drivers that the speed limit is 30 mph.

The average 2-way hourly traffic volumes on Washington Street are shown graphically in **Figure 2**. Between 7:00 a.m. and 7:00 p.m., traffic volumes are fairly steady—at about 1,000 vph—indicating that Washington Street is a major arterial serving Wellesley traffic throughout

the day. Data in **Figure 3**, however, show that travel in the separate directions peaks at different times. The nature of Washington Street as a major commuter route is borne out by high eastbound volumes (toward Star Market) in the morning peak hour and high westbound volumes (toward Town Hall) in the evening peak hour.

## Wellesley Avenue

The average daily traffic along Wellesley Avenue west of Atwood Street is about 11,050 vpd. Travel speeds are slower in the westbound direction (toward Town Hall) than in the eastbound direction (toward Babson College), because westbound vehicles must slow down on the approach to the traffic signal at Washington Street. The 85<sup>th</sup> percentile speed on Wellesley Avenue varies between 28 and 32 mph, while the average speed is between 17 and 22 mph, depending on direction. No speed limit signs are posted on the portion of Wellesley Avenue in the study area.

The average 2-way hourly traffic volumes on Wellesley Avenue are shown graphically in **Figure 4**. Traffic volumes on Wellesley Avenue peak at about 900 vph between 7:00 a.m. and 8:00 a.m. and continue between 700 and 800 vph throughout the day until 6:00 p.m. **Figure 5** shows that traffic volumes are higher in the eastbound direction during both the morning and evening peak hours.

## Intersection Volumes

The study team collected most intersection volume data for this study in May and June of 2009. The counts were conducted during the morning and evening peak travel periods; the peak hours of travel were determined to be 7:30 to 8:30 a.m. and 5:00 to 6:00 p.m. The only exception was at Washington Street (Route 16)/Kingsbury Street/State Street, where the morning peak count data were adopted from 2008 data collected for the Wellesley High School study.<sup>1</sup> To account for probable growth in traffic in the past year, the 2008 count data were escalated to 2009 volumes by applying a 1% annual growth rate.

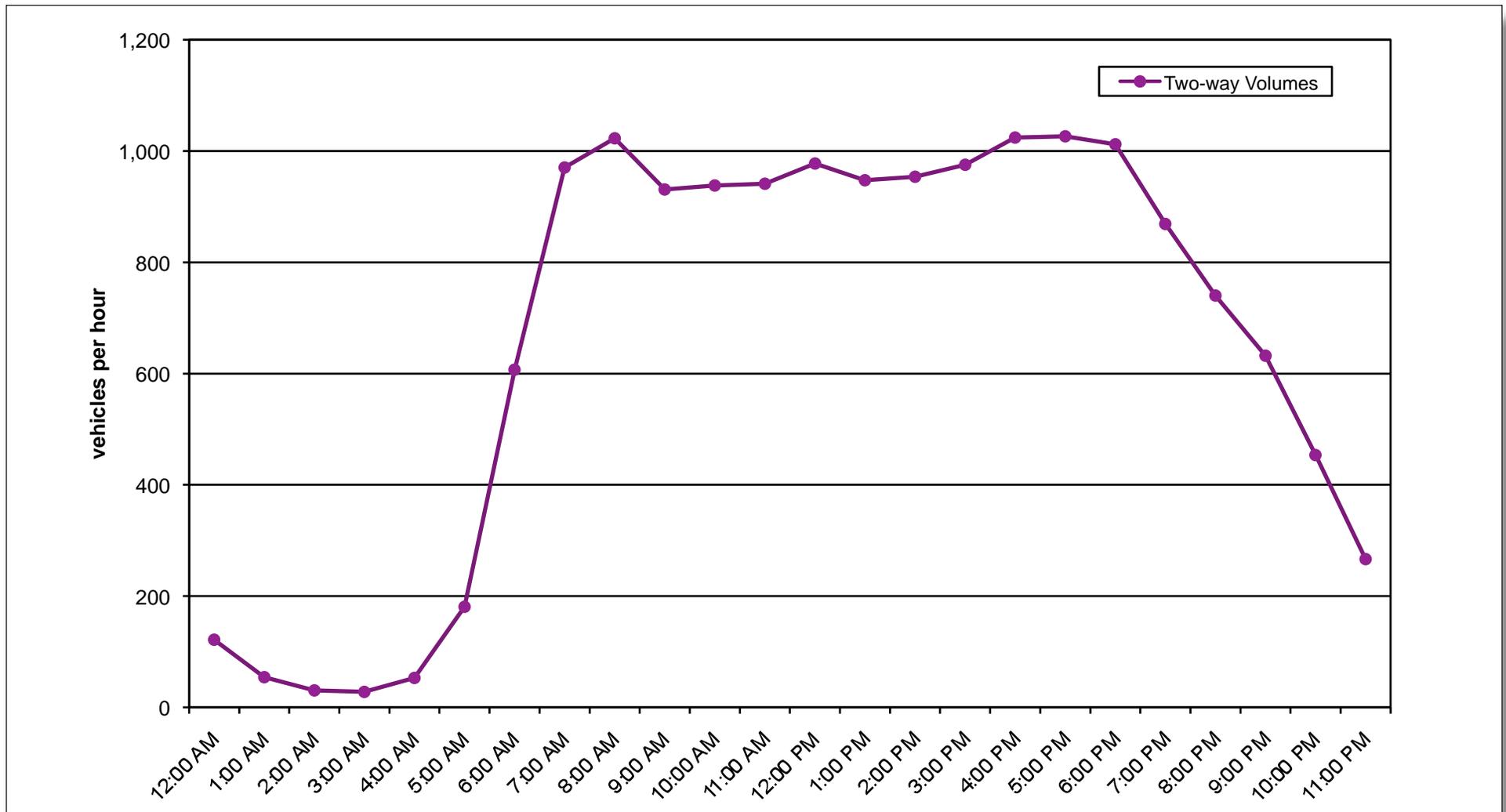
It is standard practice to multiply count data by seasonal adjustment factors to obtain average annual volumes. To account for seasonal variation in Wellesley traffic, the study team assessed the seasonal adjustment per MassHighway's May 2007 weekday seasonal adjustment factor for Group 6 (Urban Arterials, Collectors, and Rural Highways). The seasonal adjustment factors for May and June are 0.91 and 0.90, respectively. Because application of these factors would have yielded volumes 9% to 10% lower than the actual counts, the study team conservatively chose not to apply any seasonal adjustments and to use the higher count data for analysis.

**Figure 6** and **Figure 7** show existing peak-hour turning volumes for the study area intersections. Complete traffic count data appear in **Appendix A**, bound separately and available upon request.

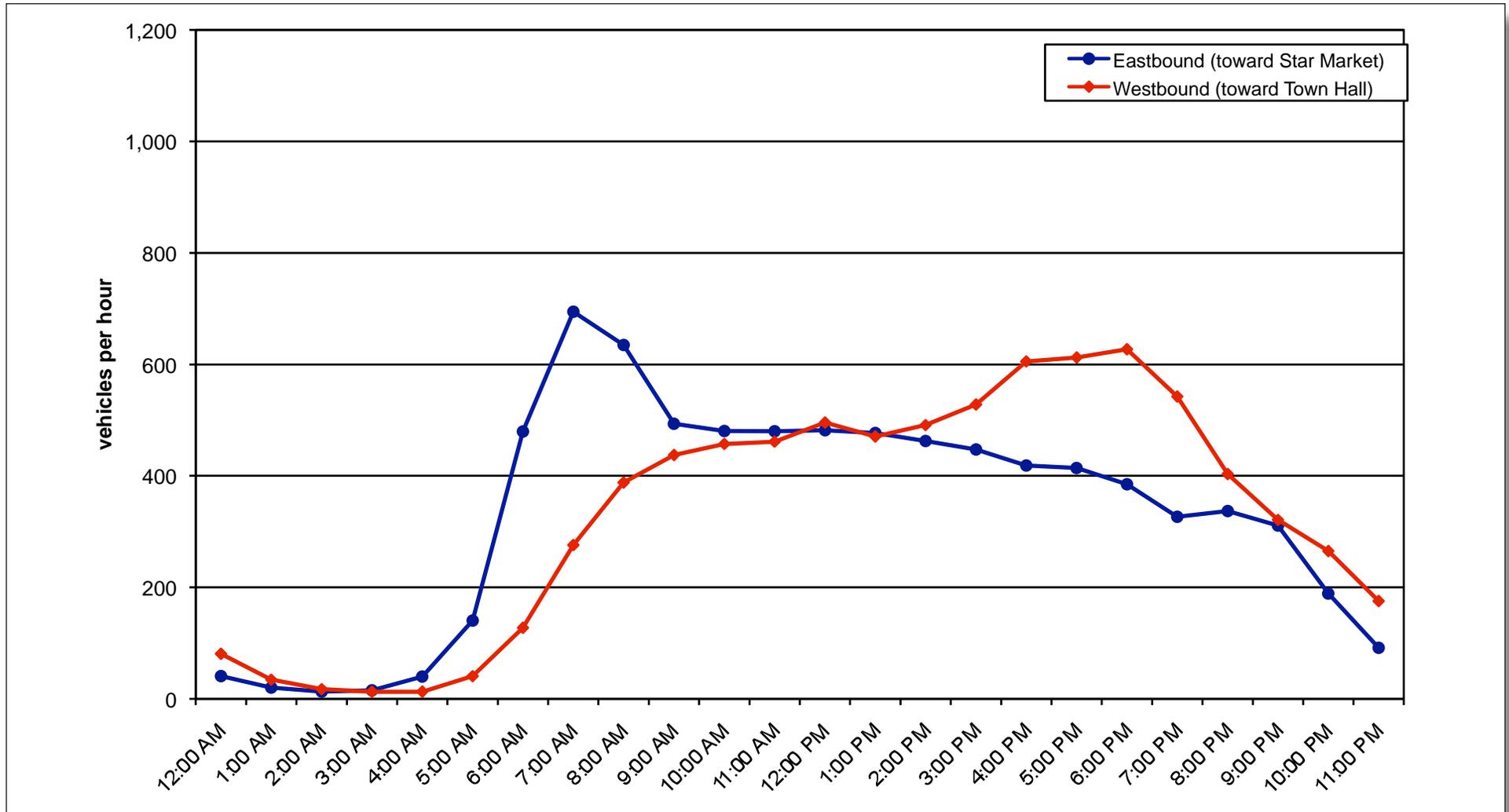
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<sup>1</sup> *Wellesley High School Transportation Study*, prepared for the Town of Wellesley by Howard/Stein-Hudson Associates, January 7, 2009.

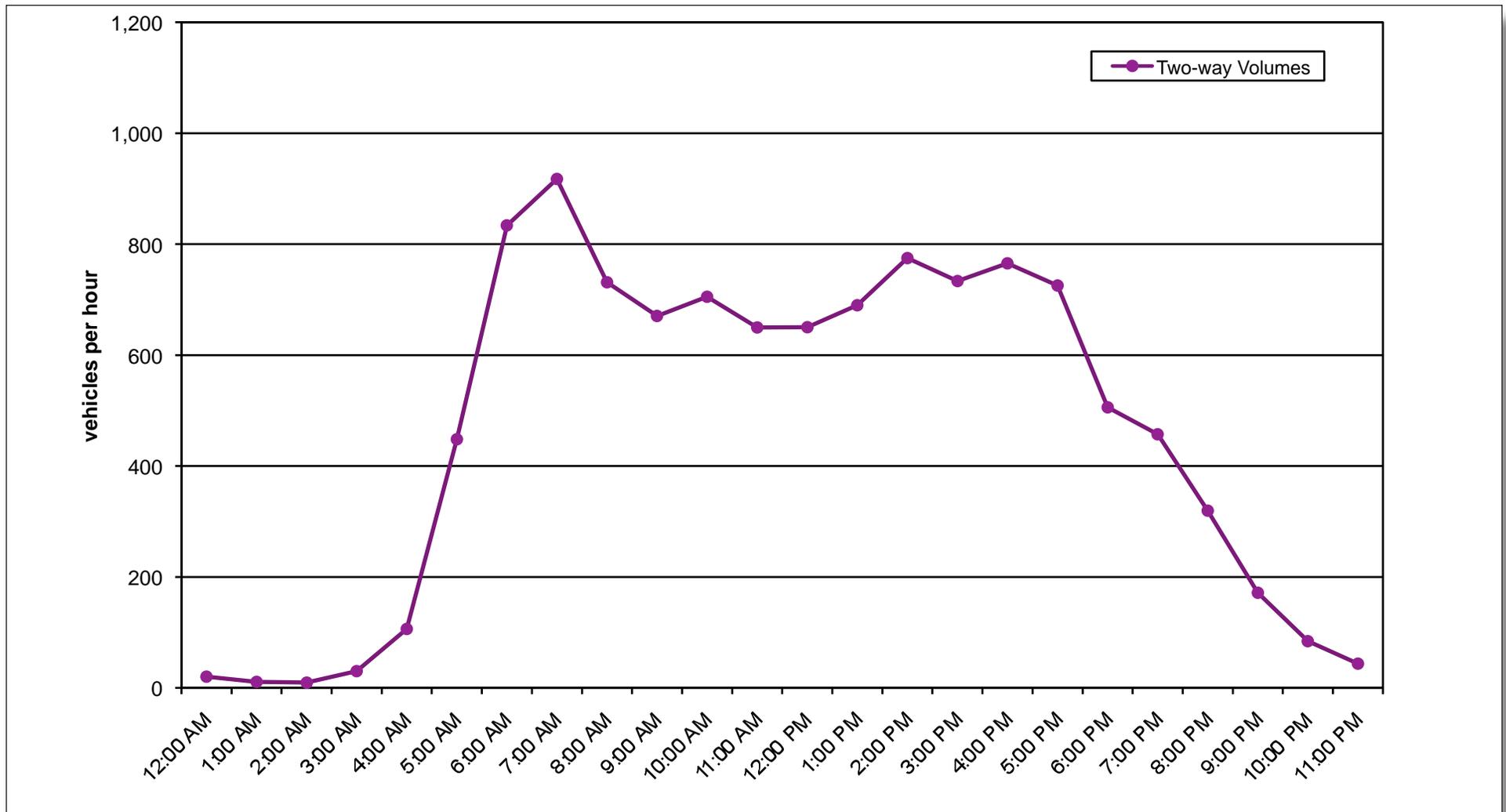
**Figure 2. Average Daily Traffic by Hour:  
Washington Street, Southwest of Morton Street**



**Figure 3. Average Daily Traffic by Hour by Direction:  
Washington Street, Southwest of Morton Street**



**Figure 4. Average Daily Traffic by Hour:  
Wellesley Avenue, west of Atwood Street**



**Figure 5. Average Daily Traffic by Hour by Direction:  
Wellesley Avenue, west of Atwood Street**

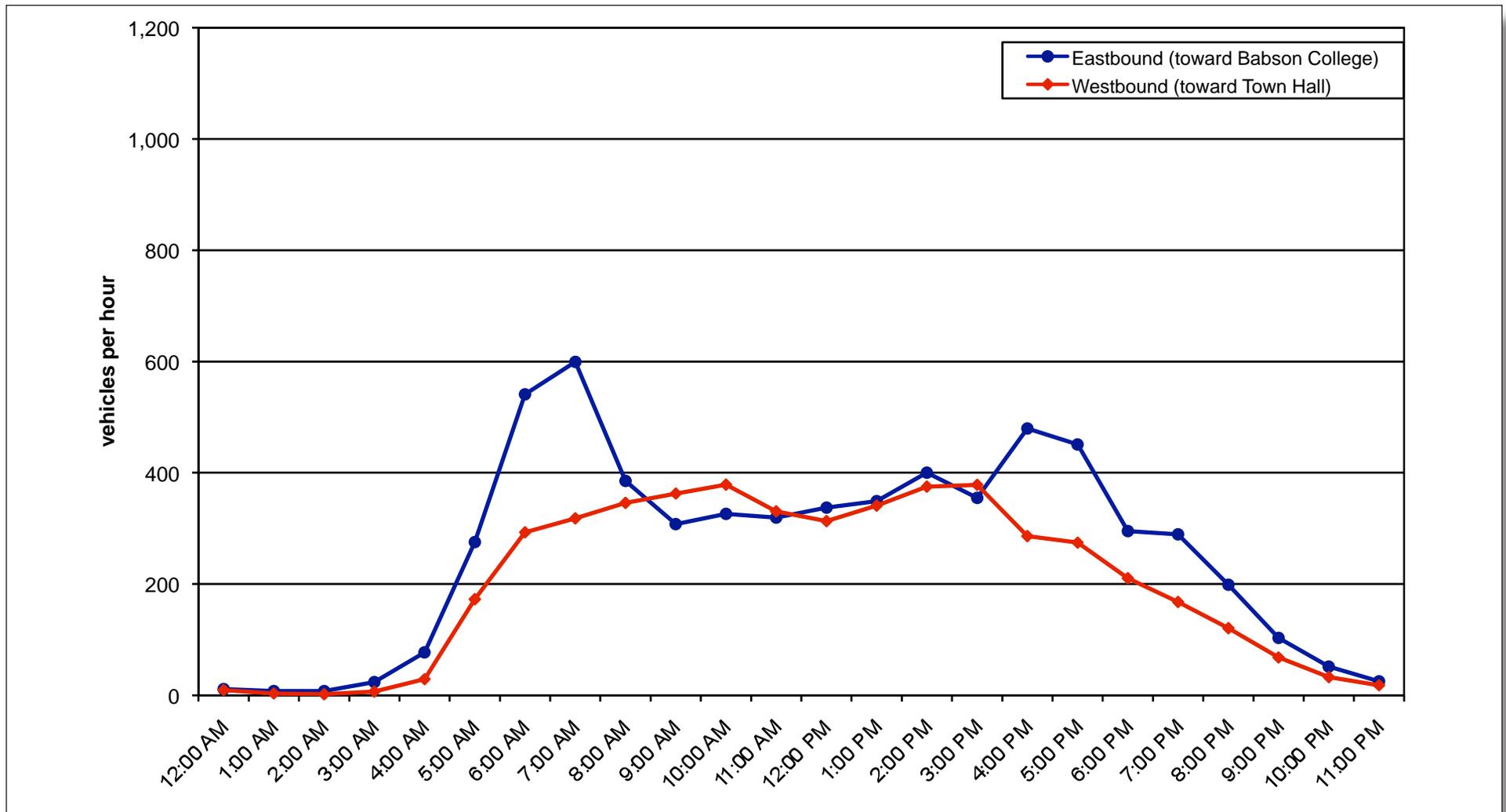


Figure 6. Existing Conditions (2009) Turning Movement Volumes, a.m. Peak Hour (7:30-8:30 a.m.)

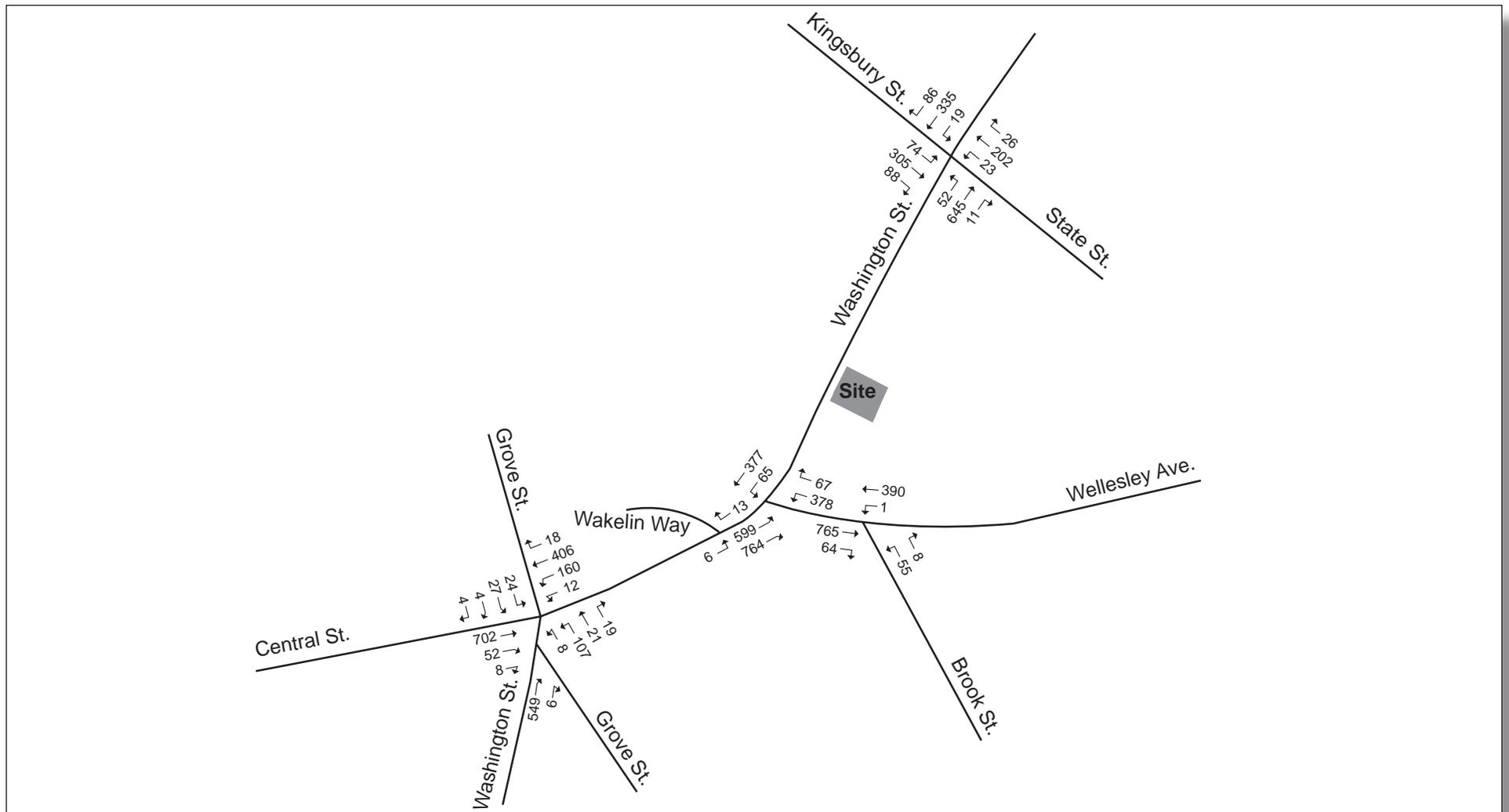
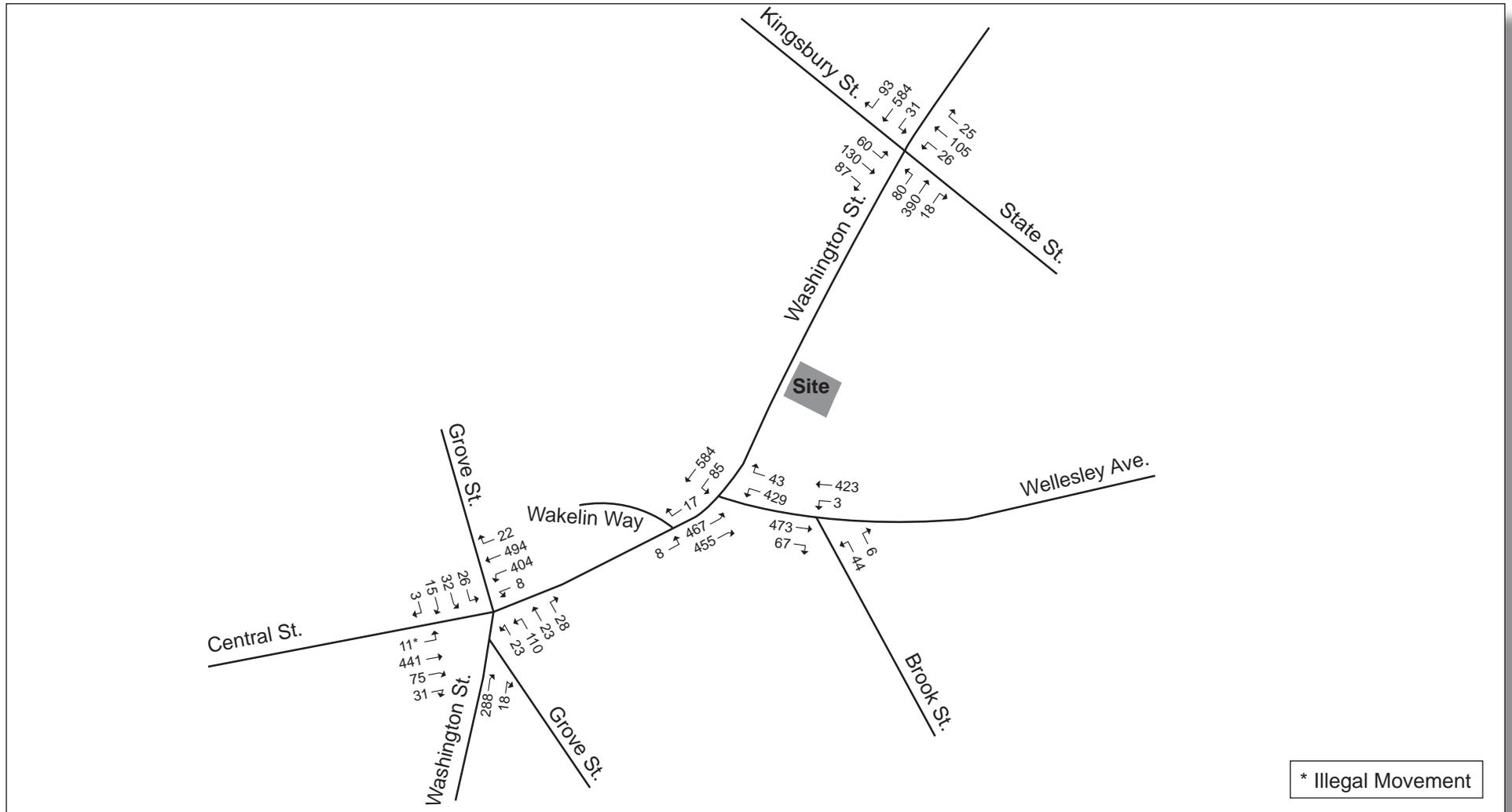


Figure 7. Existing Conditions (2009) Turning Movement Volumes, p.m. Peak Hour (5:00-6:00 p.m.)



## Intersection Operations

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. The study team calculated average delay and associated LOS at study area intersections using Trafficware’s Synchro 6 software, which also evaluates the impact on traffic operations from closely spaced intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board’s *2000 Highway Capacity Manual* (HCM).

Level of service and delay (in seconds) are determined based on intersection geometry and available traffic data for each intersection. BETA Group, the Town’s traffic consultant, provided the intersection signal timing and phasing used in this analysis. **Table 2** summarizes the delay and LOS thresholds for signalized and unsignalized intersections, as defined in the HCM. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition (unacceptable), with significant traffic delay.

**Table 2. Intersection Level of Service Criteria**

Level of Service	Average Stopped Delay (sec./veh.)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

The threshold at LOS E/LOS F indicates that the intersection, or intersection approach, is theoretically at capacity. LOS D is generally considered acceptable in an urban environment, such as the Project study area, and below theoretical operating capacity.

**Table 3** and **Table 4** show the existing a.m. and p.m. intersection LOS results for the study area intersections. Complete Synchro reports appear in **Appendix B**, bound separately and available upon request.

Table 3. Existing Conditions (2009) Level of Service Summary,  
 a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>E</b>	<b>77.4</b>		
Washington EB left	B	16.4	0.17	56
Washington EB thru/right	C	26.8	0.77	# 705
Washington WB left/thru/right	B	18.8	0.52	198
State NB left/thru	C	30.9	0.62	168
State NB right	C	20.5	0.07	27
Kingsbury SB left/thru	F	>80.0	>1.0	# 463
Kingsbury SB right	C	22.9	0.25	71
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>C</b>	<b>29.9</b>		
Wellesley WB left	D	50.1	0.82	# 547
Wellesley WB right	C	31.9	0.23	77
Washington NB thru	D	45.3	0.92	m# 537
Washington NB right	B	17.0	0.80	m# 517
Washington SB left/thru	B	16.0	0.50	114
Brook NWB left/right (unsignalized leg)	F	53.0	0.59	79
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>E</b>	<b>61.2</b>		
Central EB thru/right	E	65.0	0.98	# 459
Washington WB left	F	>80.0	>1.0	M# 261
Washington WB thru/right	B	10.2	0.51	m 234
Grove NB hard left/left	F	>80.0	>1.0	# 161
Grove NB thru/right	D	41.4	0.32	40
Grove SB left	D	39.8	0.18	40
Grove SB thru/right	D	38.9	0.22	56
Washington NEB right/hard right	D	40.7	0.79	276

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.  
 m = Volume for 95th percentile queue is metered by upstream signal.

Table 4. Existing Conditions (2009) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>C</b>	<b>21.9</b>		
Washington EB left	C	23.8	0.48	# 120
Washington EB thru/right	B	12.1	0.41	296
Washington WB left/thru/right	B	13.0	0.52	264
State NB left/thru	C	32.6	0.42	125
State NB right	C	26.2	0.10	30
Kingsbury SB left/thru	E	61.6	0.75	174
Kingsbury SB right	C	30.1	0.27	84
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>C</b>	<b>34.0</b>		
Wellesley WB left	D	38.7	0.78	# 478
Wellesley WB right	C	22.2	0.09	46
Washington NB thru	E	68.8	0.99	# 438
Washington NB right	A	8.2	0.51	152
Washington SB left/thru	C	26.6	0.80	# 185
Brook NWB left/right (unsignalized leg)	C	24.3	0.30	31
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>F</b>	<b>&gt;80.0</b>		
Central EB thru/right	E	60.8	0.92	# 363
Washington WB left	F	>80.0	>1.0	# 593
Washington WB thru/right	C	22.7	0.68	# 409
Grove NB hard left/left	E	74.2	0.80	# 184
Grove NB thru/right	D	35.4	0.29	42
Grove SB left	C	33.5	0.17	36
Grove SB thru/right	C	33.1	0.20	68
Washington NEB right/hard right	C	28.7	0.44	138

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.  
m = Volume for 95th percentile queue is metered by upstream signal.

Although the Washington Street/State Street/Kingsbury Street intersection carries significant commuter traffic along Washington Street, it is the heavy volume on Kingsbury Street traveling toward the High School that contributes to the overall LOS E in the a.m. peak hour. The Kingsbury approach operates at LOS F, while all other approaches operate at LOS C or better. Similarly, during the p.m. peak hour, only the Kingsbury Street approach operates below LOS D, at LOS E.

During the a.m. peak hour, the intersection of Washington Street/Wellesley Avenue/Brook Street operates at LOS C, although the heavy commuter route on northbound Washington Street operates at

LOS D. During the p.m. peak hour, the overall intersection operates at LOS C, with the northbound Washington Street approach operating at LOS E.

The Washington Street/Central Street/Grove Street intersection operates at LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. During both peak hours, the Central Street east-bound approach operates at LOS E and the left turns from both Washington Street westbound and Grove Street northbound at LOS E or LOS F.

## Crash History

The study team assessed the crash history at the 3 study area intersections. The last 3 complete years of data were compiled by the Wellesley Police Department and summarized in **Table 5**.

**Table 5. Crash History at Study Area Intersections, 2006–08**

	Washington/ Kingsbury/State	Washington/ Wellesley/Brook	Washington/ Grove/Central
<i>Year</i>			
2006	4	2	4
2007	5	2	5
2008	5	5	8
<i>Manner of Collision</i>			
Single Vehicle Crash	2	1	0
Angle	6	0	5
Rear-end	5	6	5
Head-on	0	0	2
Sideswipe	1	2	5
Unknown/Other	0	0	0
<i>Crash Severity</i>			
Property Damage Only	12	14	15
Personal Injury	2	0	2
Fatality	0	0	0
Hit and Run	0	0	0
Unknown	0	0	0
<i>Weather Conditions</i>			
Clear	9	6	9
Cloudy	5	2	4
Rain	0	2	3
Snow	0	1	1
Unknown	0	0	0
<i>Road Conditions</i>			
Dry	13	7	10
Wet	1	1	4
Snow	0	1	1
Slush	0	0	1
Unknown	0	0	1
<i>Time of Day</i>			
6:00–9:00 a.m.	4	0	1
9:00 a.m.–3:00 p.m.	4	4	6
3:00–6:00 p.m.	3	3	2
6:00 p.m.–6:00 a.m.	3	2	8

	Washington/ Kingsbury/State	Washington/ Wellesley/Brook	Washington/ Grove/Central
<i>Day of Week</i>			
Monday	2	1	0
Tuesday	1	1	4
Wednesday	1	3	4
Thursday	2	2	3
Friday	7	1	3
Saturday	1	1	2
Sunday	0	0	1
<i>Summary</i>			
<b>Total Crashes</b>	<b>14</b>	<b>9</b>	<b>17</b>
<b>Crash Rate *</b>	<b>0.66</b>	<b>0.34</b>	<b>0.67</b>
<b>District Average Crash Rate *</b>	<b>0.88</b>	<b>0.88</b>	<b>0.88</b>

\* Crashes per million entering vehicles (MEV) .

Of the 14 crashes reported at Washington Street/Kingsbury Street/State Street, 6 were angle collisions and 5 were rear-end collisions.

At the Washington Street/Wellesley Avenue/Brook Street intersection, no angle collisions were reported; 6 of the 9 collisions involved a rear-end crash.

Of the 17 crashes at Washington Street/Central Street/Grove Street, 5 were rear end crashes, and 5 were angle crashes. Additionally, 2 head-on collisions were reported at this location, probably the result of the complex, 5-leg intersection geometry.

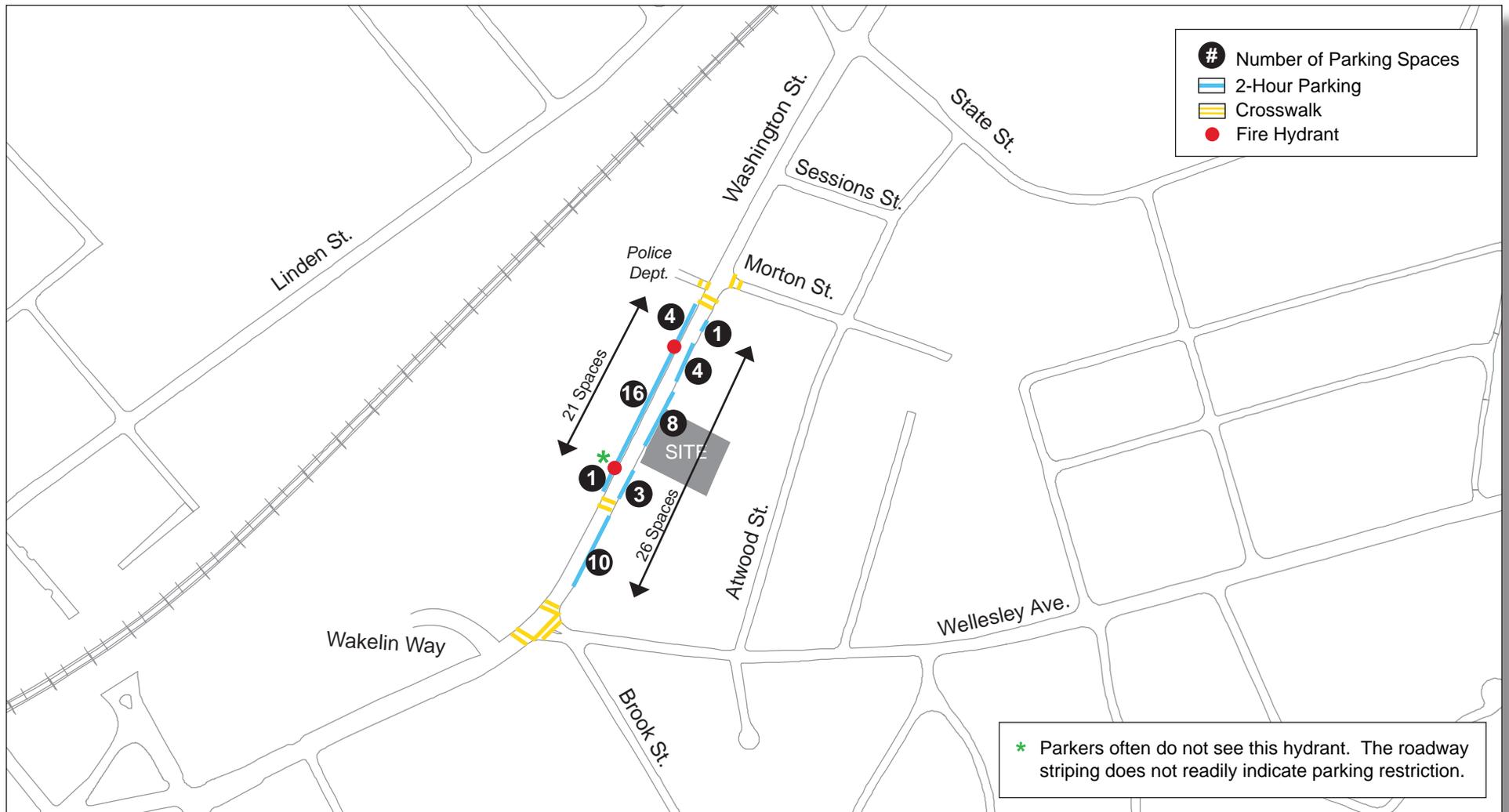
At each signalized intersection, the average crash rate is well below the MassHighway District 4 average of 0.88 crashes per million entering vehicles (MEV). While most crashes resulted in property damage only, 4 personal injuries were reported. No fatalities were reported. Based on these data, the intersections are comparatively safe, but because the number of annual crashes at each intersection is increasing over time, the Town should continue to monitor these locations.

## Existing Parking Conditions

The site at 496 Washington Street was formerly the location of an American Legion post, with parking for about 15 to 20 vehicles. Until demolition of the Legion building in August 2009, the site had been informally used for parking by visitors to the adjacent St. Paul’s Parish and school during masses, funerals, and school drop-off and pick-up periods.

On-street parking is available on Washington Street to both the north and the south of the site. A total of 47 marked on-street parking spaces (no meters) are provided between the intersections of Wellesley Avenue and Morton Street. All of these spaces are signed for 2-hour parking. **Figure 8** shows on-street parking on Washington Street within the study area.

Figure 8. Existing On-Street Parking on Washington Street



These on-street public spaces provide parking for a variety of users during particular events at the Wellesley Police Department, St. Paul's Parish, and St. Paul's School. In January 2009, the BETA Group, working for the Town, evaluated parking conditions during preliminary planning for the Center. Results from BETA's survey and information from recent conversations with representatives at St. Paul's Parish and School are summarized below.

**Wellesley Police Station** – During BETA's January 2009 survey, the Wellesley Police Department was conducting a 5-week training class, a 1-time event. About 20 attendees parked all-day on Washington Street, exceeding the 2-hour parking limit. During the survey, the average occupancy of spaces on Washington Street was about 20 vehicles, indicating that—without the class—most spaces would typically be vacant. Although not directly observed, it has been anecdotally noted that during the afternoon shift changes (4:00 p.m.), some officers park on Washington Street near the station until space becomes available in the department lot. Occasionally, visitors to the station park on Washington Street.

**St. Paul's Parish** – The parish has weekday masses at 6:45 a.m. and 9:00 a.m., attended by about 25 and 40 people, respectively. In addition to scheduled masses, about 50 to 60 funerals occur at the parish each year. Funerals typically occur at 10:00 or 11:00 a.m. and are attended by 40 to 300 people. Attendees of the masses and funerals use parking spaces in the church lot and on Washington Street. During large funerals, all parking spaces on Washington Street may be occupied. Weekend masses are held on Saturdays afternoons (2 masses) and Sunday mornings (3 masses). Marriage ceremonies at St. Paul's Parish typically occur on Saturdays and occasionally on Friday evenings.

**St. Paul's School** – The school serves about 200 students from 110 families in 14 communities. No bus service is provided. A few students walk, but most are driven to school by parents. School starts at 7:55 a.m. and is dismissed at 2:30 p.m., with early dismissal (12:00 p.m.) on Wednesdays, consistent with Wellesley public schools. Parents can drop off students on the west curb of Atwood Street via a moving queue. Vehicles must be traveling southbound on Atwood Street to drop off students on the right-hand side. No parking is allowed on Atwood Street; likewise, no drop-off is permitted on the east side of the street, because students would be required to cross the street. Parents cannot enter the school's parking lot during the drop-up or pick-up periods. Some parents park along Washington Street and escort their students into school. The drop-off period is short, about 7:45 a.m. to 8:00 a.m. During the afternoon pick-up period, parents arrive prior to the dismissal at 2:30 p.m., and some tend to linger after dismissal. About 15% of students participate in an after-school program and are picked up at about 6:00 p.m. and about 15% participate in after-school activities, such as band or chorus. The BETA survey noted that 14 parent vehicles were parked short-term at the American Legion site during the morning drop-off period (about 8:00 a.m.); about 18 vehicles were parked short-term on Washington Street during the afternoon pick-up period (about 2:30 p.m.). The school also hosts a few events (such as grandparents' day, open house, etc.) throughout the year that require parking along Washington Street. The 20 school staff members park on-site.

**Other uses** – A medical office building is located at 486 Washington Street, on the corner of Morton Street. This building has about 35 parking spaces. Two mid-day observations of this site in May and June 2009 reveal that while most of on-site parking spaces were occupied, there was no overflow of parking onto Washington Street or Morton Street. Another smaller medical office building is located

at 490 Washington Street and has parking for about 15 vehicles. During 2 observations, the parking lot was no more than half full, with no overflow onto Washington Street.

## Existing Pedestrian Conditions

Pedestrian conditions in the study area are important, because the Center will be within walking distance for able-bodied senior citizens living at Morton Circle, the Wellesley Green condominiums, and the Glen Grove apartments. Additionally, some visitors will park on-street and walk to the Center along Washington Street sidewalks.

### Sidewalk Conditions

As part of the PSI permitting process, in June 2009 the study team conducted an inventory of sidewalk conditions within 600 feet of the Center site, as shown in **Figure 9**. Sidewalk conditions were classified according to the following 4 categories:

***Excellent.*** No deterioration observed.

***Good.*** Minimal deterioration, such as cracking, heaving, sinking, and intrusion or encroachment of vegetation observed.

***Fair.*** Some deterioration observed, including more severe cracking, heaving, sinking, and intrusion or encroachment of vegetation, as well as presence of patching. No serious hazardous walking impediments observed.

***Poor.*** Severe deterioration observed, making walking conditions hazardous or prohibitive.

The overall condition of sidewalks is generally excellent or good, although a section on Wellesley Avenue and some sidewalks in Morton Park are categorized as fair. The sidewalk conditions are shown in **Figure 10**. A detailed description of sidewalk conditions is contained in **Appendix C**.

**Figure 9. Sidewalk Inventory Area**

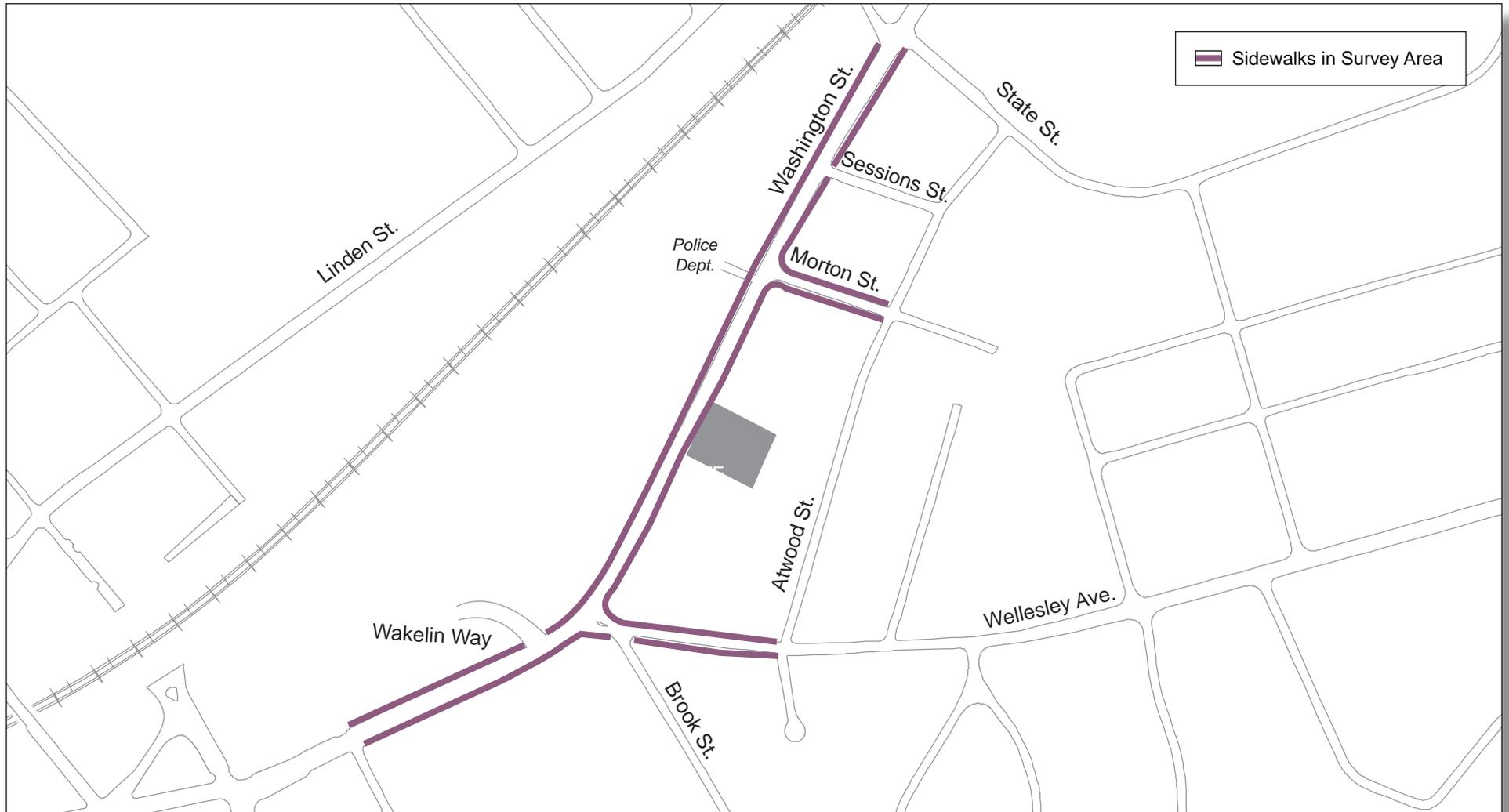
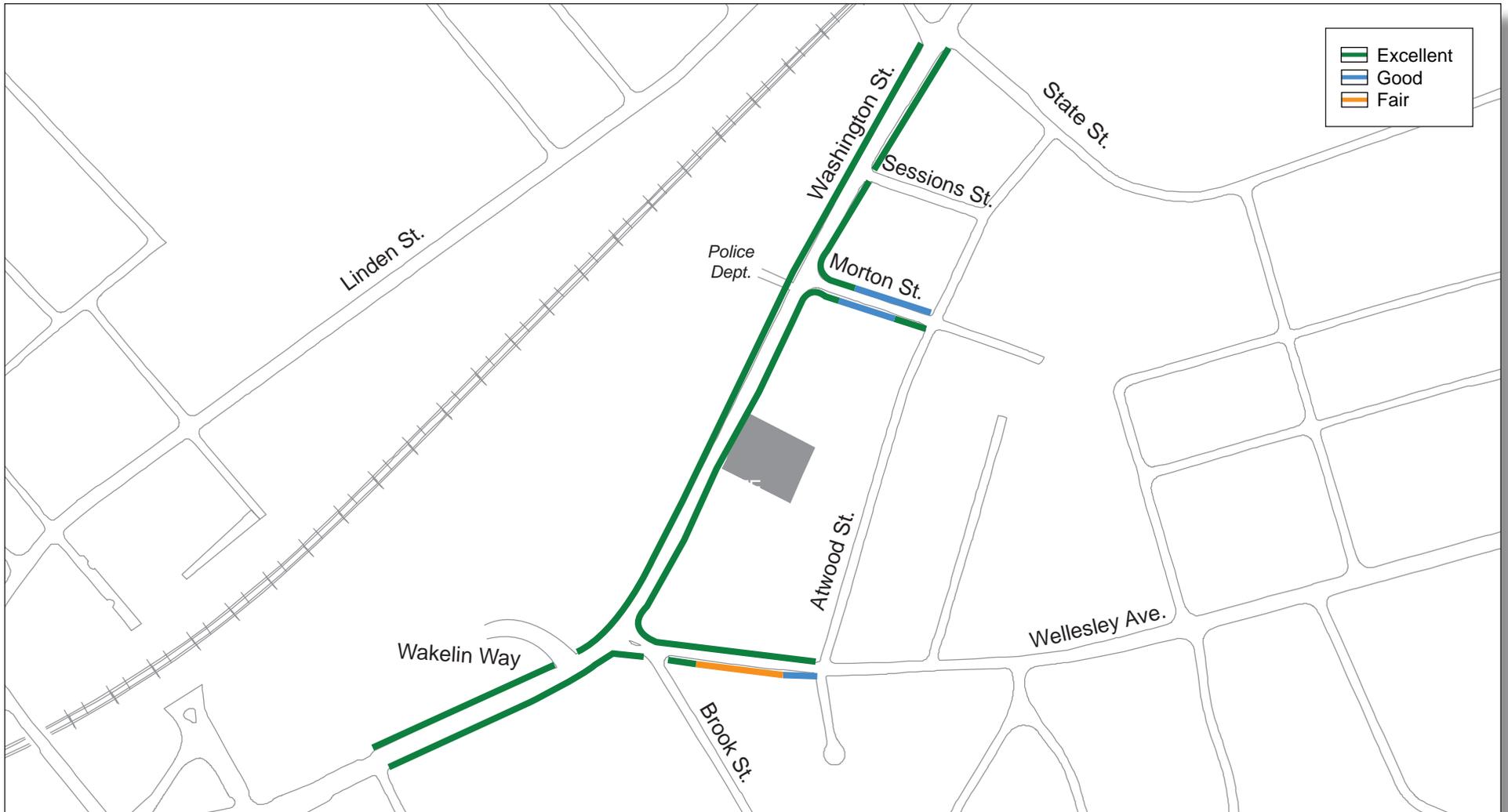


Figure 10. Sidewalk Conditions



## Pedestrian Signal on Washington Street

A pedestrian signal with crosswalk currently operates on Washington Street at the entrance to St. Paul’s Church. The crosswalk provides direct access to the main entrance at St. Paul’s. When the pushbutton is pressed, traffic on Washington Street is controlled to a stop by flashing yellow lights. Based on the evaluation of signal characteristics listed in **Table 6**, the signal provides adequate time for pedestrians—even those who walk slower than average—to safely cross the street.

**Table 6. Washington Street Pedestrian Signal Characteristics**

<b>Characteristic</b>	<b>Measurement</b>
Width of Washington Street crosswalk	38 feet 2 inches
Length of pedestrian signal	17 seconds
Required walking speed to cross Washington Street	2.2 feet per second or faster
Average walking speed of general population <sup>1</sup>	4.0 feet per second
Recommended design walking speed where elderly/young children constitute 20% of population <sup>2</sup>	3.0 feet per second
Recommended design walking speed where elderly/young children constitute 100% of population <sup>2</sup>	2.9 feet per second

Sources:

1) *Manual of Uniform Traffic Control Devices (MUTCD)*, Federal Highway Administration, 2003.

2) *Highway Capacity Manual (HCM)*, Transportation Research Board, 2000.

# Future Conditions

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For transportation impact analyses, it is standard practice to evaluate 2 future conditions: a No-Build Condition (without the proposed project) and a Build Condition (if the project is built). Typically, these conditions are projected to a future date 5 years from the Existing Conditions year. For this evaluation of the Center, Year 2014 was designated as the future year.

## 2014 No-Build Conditions

No-Build traffic conditions are independent of the proposed new Center and include existing traffic and new traffic resulting from general background growth and identified new projects in the area.

The general background growth rate, which the Town established as 1% per year, accounts for changes in demographics, auto usage, and auto ownership. A 1% annual growth rate was applied to the existing intersection volumes to account for background growth. The intersection volumes attributable to the background growth are shown in **Appendix C**.

The study team also incorporated future traffic increases anticipated from the following projects:

- **Wellesley High School (WHS)** – The traffic study<sup>2</sup> performed as part of the Town’s permitting process for the new WHS quantified the new vehicle trips generated by increased student and staff activity. Enrollment is forecasted to increase from 1,300 current students to a peak of about 1,600 students by 2017. The net increase in WHS peak-hour vehicle trips expected in 2017 was incorporated in the 2014 No-Build volumes. The intersection volumes attributable to the WHS are shown in **Appendix C**.
- **Condominiums at 494 Washington Street** – The property owner of 494 Washington Street, adjacent to the Center site, has proposed replacing the existing structure with 8 new condominium units. While this project is only in the planning stage and no permitting approvals have been granted, the estimated new vehicles trips have been incorporated into the 2014 No-Build volumes. The new peak-hour trips were estimated based on information in the ITE manual *Trip Generation*, 8<sup>th</sup> Edition, for Land Use Code 230, Residential Condominiums/Townhouse. The intersection volumes attributable to the condominiums are shown in **Appendix C**.

Another pending project in the study area, the redevelopment of the Star Market site at the corner of Washington Street and State Street, is not included in the No-Build analysis, because no development program or associated transportation impacts have yet been published.

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<sup>2</sup> *Wellesley High School Transportation Study*, prepared for the Town of Wellesley by Howard/Stein-Hudson Associates, January 7, 2009.

Because the proposed Center site at 496 Washington Street is currently vacant, no associated trip activity was included under the Year 2014 No-Build volumes.

## 2014 No-Build Traffic Operations

The 2014 Future Conditions analysis for both the No-Build and the Build scenarios uses the methodology described in the Existing Conditions analysis. Future No-Build traffic volumes appear in **Figure 11** and **Figure 12** for the morning and evening peak hours, respectively. The resulting intersection operations results are shown in **Table 7** and **Table 8**. Complete Synchro reports are provided in **Appendix B**, bound separately and available upon request.

Figure 11. No-Build Conditions (2014) Turning Movement Volumes, a.m. Peak Hour (7:30-8:30 a.m.)

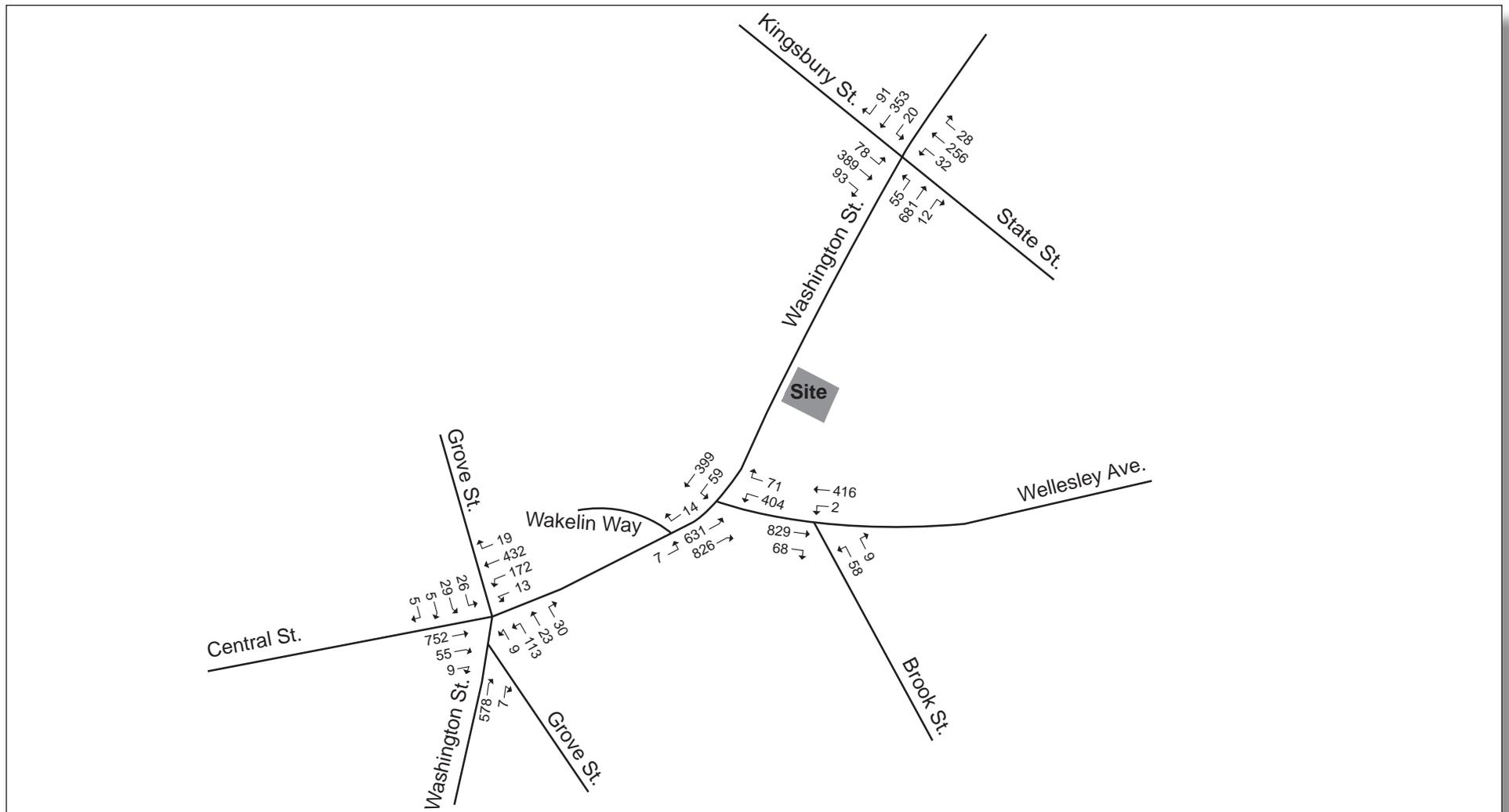
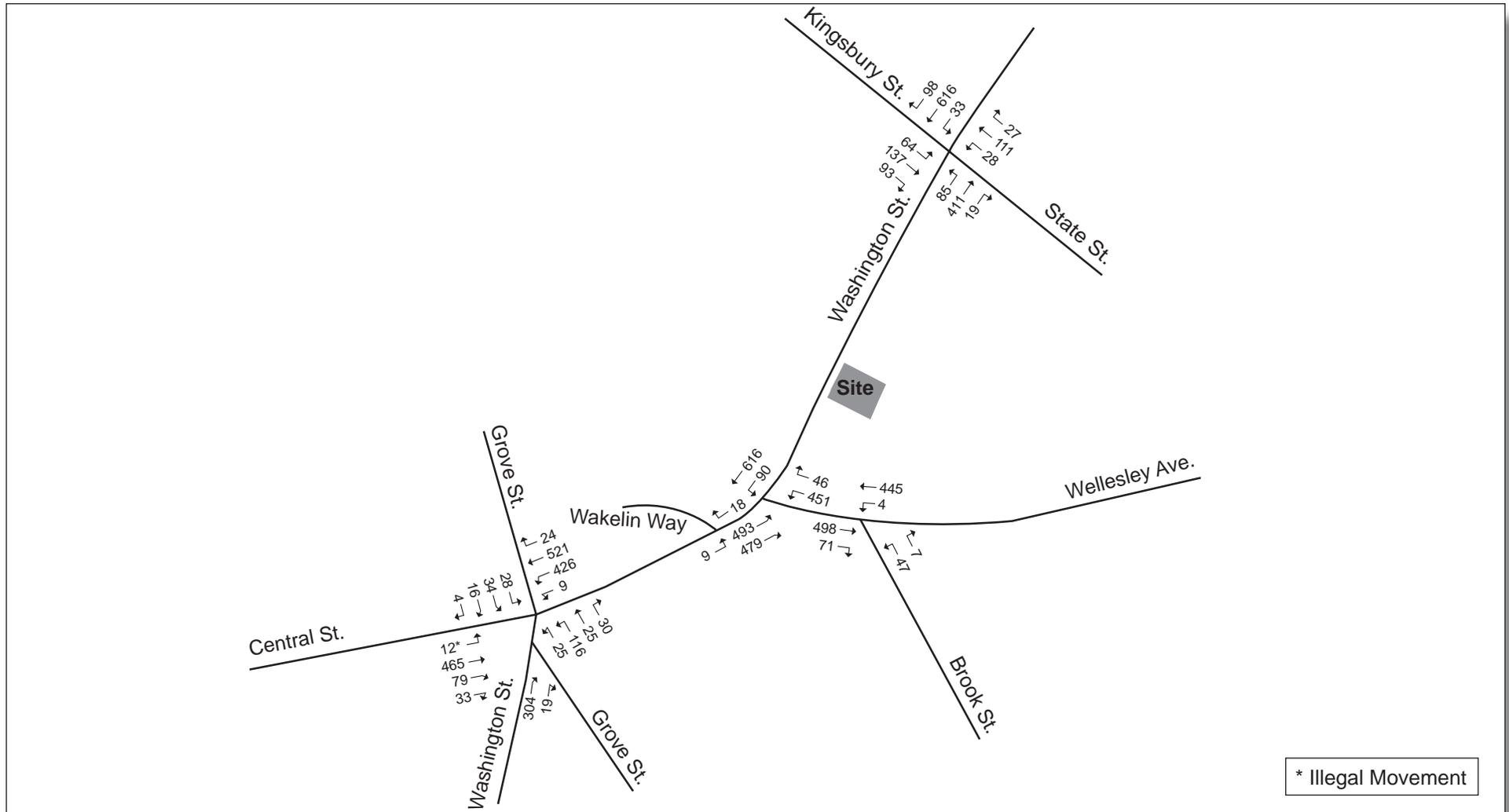


Figure 12. No-Build Conditions (2014) Turning Movement Volumes, p.m. Peak Hour (5:00-6:00 p.m.)



\* Illegal Movement

Table 7. No-Build Conditions (2014) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>F</b>	<b>&gt; 80.0</b>		
Washington EB left	B	19.8	0.23	65
Washington EB thru/right	D	35.2	0.87	# 792
Washington WB left/thru/right	C	22.8	0.60	# 254
State NB left/thru	E	70.3	0.98	# 263
State NB right	B	18.5	0.07	26
Kingsbury SB left/thru	F	> 80.0	>1.0	# 615
Kingsbury SB right	C	20.7	0.24	70
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>C</b>	<b>33.0</b>		
Wellesley WB left	E	61.7	0.91	# 591
Wellesley WB right	C	32.4	0.25	80
Washington NB thru	D	46.7	0.97	m# 560
Washington NB right	B	19.9	0.86	m# 574
Washington SB left/thru	B	16.1	0.54	123
Brook NWB left/right (unsignalized leg)	F	53.0	0.54	79
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>E</b>	<b>75.5</b>		
Central EB thru/right	F	> 80.0	> 1.00	# 502
Washington WB left	F	> 80.0	> 1.00	m# 274
Washington WB thru/right	B	10.3	0.54	m 233
Grove NB hard left/left	F	> 80.0	> 1.00	# 174
Grove NB thru/right	D	43.9	0.41	49
Grove SB left	D	40.7	0.21	42
Grove SB thru/right	D	39.4	0.25	62
Washington NEB right/hard right	D	43.6	0.83	# 315

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.  
 m = Volume for 95th percentile queue is metered by upstream signal.  
 Gray shading indicates a change in level of service from the previous condition.

Table 8. No-Build Conditions (2014) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>C</b>	<b>24.2</b>		
Washington EB left	C	27.1	0.52	# 121
Washington EB thru/right	B	12.8	0.44	317
Washington WB left/thru/right	B	14.6	0.58	291
State NB left/thru	C	32.3	0.44	132
State NB right	C	26.0	0.10	31
Kingsbury SB left/thru	E	71.9	0.84	# 206
Kingsbury SB right	C	29.8	0.29	89
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>D</b>	<b>40.4</b>		
Wellesley WB left	D	41.3	0.82	# 507
Wellesley WB right	C	22.2	0.10	48
Washington NB thru	F	> 80.0	> 1.00	# 468
Washington NB right	A	8.7	0.53	164
Washington SB left/thru	D	35.0	0.90	# 236
Brook NWB left/right (unsignalized leg)	D	27.0	0.35	37
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>F</b>	<b>&gt; 80.0</b>		
Central EB thru/right	E	76.0	0.99	# 388
Washington WB left	F	> 80.0	> 1.00	# 632
Washington WB thru/right	C	24.8	0.73	449
Grove NB hard left/left	F	> 80.0	0.86	# 200
Grove NB thru/right	D	35.6	0.32	45
Grove SB left	C	33.8	0.19	38
Grove SB thru/right	C	33.1	0.22	72
Washington NEB right/hard right	C	29.1	0.46	146

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for 95th percentile queue is metered by upstream signal.

Gray shading indicates a change in level of service from the previous condition.

Under 2014 No-Build Conditions, level of service will worsen at several locations:

During the a.m. peak hour, the Washington Street/State Street/Kingsbury Street intersection will worsen from LOS E to LOS F; the eastbound Washington Street through/right approach will worsen from LOS C to LOS D; the westbound Washington Street approach will worsen from LOS B to LOS C; and the northbound State Street left/through lane will worsen from LOS D to LOS E. During the p.m. peak hour, level of service will not change.

At the Washington Street/Wellesley Avenue/Brook Street intersection, the Wellesley Avenue westbound left turn will deteriorate from LOS D to LOS E during the a.m. peak hour. During the

p.m. peak hour, the overall operation will worsen from LOS C to LOS D, with the northbound Washington Street operating at LOS F. Both the southbound Washington Street approach and the Brook Street approach will worsen from LOS C from LOS D.

During the a.m. peak hour, overall operation at Washington Street/Central Street/Grove Street will remain at LOS E, although the Central Street eastbound approach will deteriorate from LOS E to LOS F. The intersection will continue operating at LOS F during the p.m. peak hour, while the left turns from Grove Street will deteriorate from LOS E to LOS F.

## 2014 Build Conditions

For Build Conditions, the traffic activity associated with the new Tolles-Parsons Senior Center is added to that under No-Build Conditions. The site plan for the Center is shown in **Figure 13**. The Center will include approximately 12,000 square feet and have 34 on-site parking spaces.

### Activity at the Center

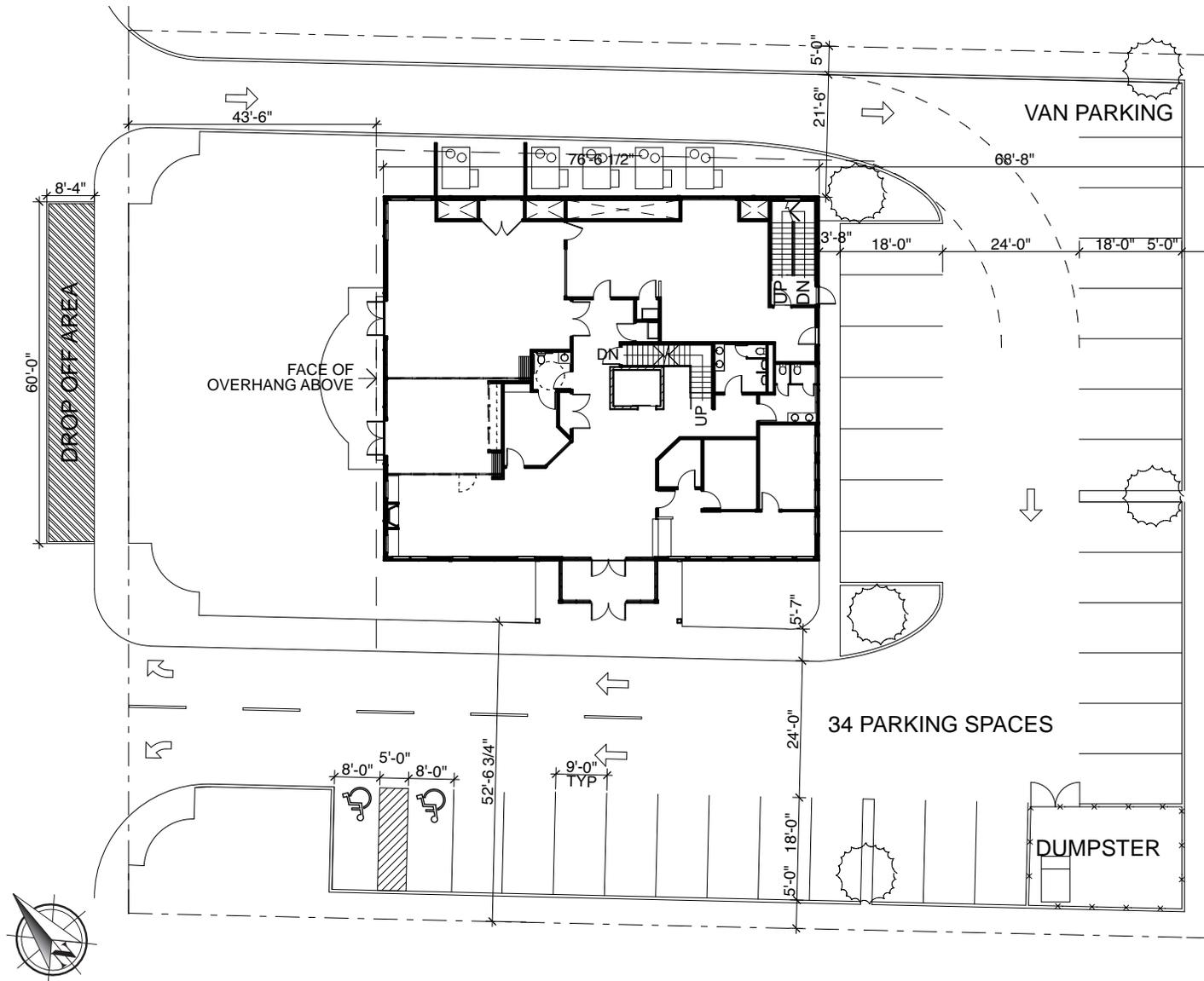
For traffic impact studies, it is standard practice to estimate the number of new trips from a project based on trip generation rates found in the Institute of Transportation Engineers *Trip Generation* manual. While data for many common land uses are included in this manual, senior center data are not available; the most comparable land use is a recreational center.

Because the types of programs and visitor characteristics of a recreational center are quite different from the proposed Center, however, the trip generation rates for the recreational center were not adopted for this study. Instead, a detailed assessment of the Center, along with evaluation of other local senior centers, was conducted to develop a trip activity profile specific to the Center. This information was used to estimate peak-hour vehicle trips for intersection analysis and to estimate parking demand throughout the day, presented in a later section.

A profile of trip activity at the Center was developed based on knowledge of the current Wellesley COA, the projected schedule of activity at the new Tolles-Parsons Center, and interviews with administrators at 3 other senior centers that have operations comparable to the proposed Center and are located in communities with characteristics similar to Wellesley.

**Table 9** shows a daily schedule taken from recent calendars at the existing Wellesley Center and the other 3 centers.

Figure 13. Tolles-Parson Center Site Plan



**Table 9. Typical Weekday Schedule Activities**

<b>Wellesley COA at current location</b>	
10:00 a.m.	Creative Writing
11:00 a.m.	Better Balance
11:45 a.m.	Lunch
12:30 p.m.	Bridge
<b>Franklin Senior Center/COA</b>	
9:00 a.m.	Sew What Quilting Bee
	Walking Club
10:00 a.m.	Yoga
	Scrabble Club
	Knitting Class
10:30 a.m.	Chair Massage
11:00 a.m.	Zumba Dance Aerobics
1:00 p.m.	Advanced Line Dancing
<b>Marshfield Center/COA</b>	
9:00 a.m.	Floor Yoga
9:30 a.m.	Breakfast Club
10:00 a.m.	T'ai Chi Class
	Craft Class
12:00 p.m.	Lunch
1:00 p.m.	Pinochle
<b>Winchester Jenks Center</b>	
9:30 a.m.	Exercise Class
	Art Group
10:30 a.m.	Men's Discussion Group
11:30 a.m.	Weight Watchers
11:30 a.m.	Eating Together
1:00 p.m.	Texas Hold'em Poker
	Ballroom Dancing
	Bingo

Key information on the Wellesley COA and facilities in Franklin, Marshfield, and Winchester is presented below:

**Wellesley COA** – Wellesley has a population of about 24,900 residents. The Council on Aging currently operates in the Wellesley Community Center and has 1 room dedicated to senior programs. On a typical day, the COA has about 40 to 50 visitors. Based on a June 2009 survey of users, 66% of visitors drive alone, 22% carpool, 6% take the bus, 4% take a taxi or get dropped off, and 2% walk.

**Franklin Senior Center/COA** – Franklin, a town of about 30,200 residents, has a 16,000-sf senior center. On a typical day, between 100 and 150 people visit the center. The center has 90 parking spaces, although the original plan for the building included 120 spaces. Of the 90 spaces, 25 are designated for handicapped parkers. About 85% of visitors drive or carpool, 10% to 15% use a bus service, and a few visitors walk in good weather. Visitors often complain about the lack of parking. Although additional parking spaces are available at an adjacent elementary school, visitors do not often use them because of the distance and steep terrain.

**Marshfield COA** – Marshfield, a town of about 24,300 residents, has a 12,400-sf senior center in a suburban setting. On a typical day, this center has between 100 and 150 visitors. The center has about 105 parking spaces, 9 of which are designated for handicapped drivers. Visitors complain that not enough handicapped-accessible spaces are provided in the lot. Most visitors drive or carpool, about 10% ride the senior bus, and no visitors walk. When multiple major activities occur, visitors complain about having to park too far away from the building, but parking capacity seems adequate. The parking lot is shared with youth baseball fields, but game times do not typically overlap with the center's activities.

**Winchester COA** – Winchester has a population of about 20,800 residents. The Jenks Senior Center is centrally located near Town Hall and the high school. While an adjacent Town-owned parking lot has about 155 spaces, only 27 are designated for the Jenks Center. Use of the other lot spaces requires a resident or employee parking permit, which must be purchased through the Town. The permit parking spaces are mostly occupied with local employees during weekdays and are not available to center visitors. Some on-street parking is available to center visitors, but the spaces are also used by the nearby church and high school. On a typical day, this center has about 150 visitors, most of whom drive; many carpool because of the limited parking. A small percentage walks to the center.

While about 40 to 50 people visit the existing Wellesley COA on a typical weekday, the Applicant expects that the Tolles-Parsons Center will generate more trips because of its expanded selection of programs. While participation at the new Center will depend on a variety of factors, the Applicant estimates it could generate up to 150 visitors per day—a rate consistent with observations at the centers discussed above. Visitor arrival and departure times will depend on the daily schedule of events at the center.

While several scenarios for *parking* impacts have been developed for the Tolles-Parsons Center and discussed in later sections, only 1 scenario was chosen for *traffic* analysis purposes. For this scenario, it has been assumed that 150 visitors per day will use the Center (**Scenario 1A**). The visitor arrival and departure pattern assumes participation rates and lengths of stay consistent with that number of visitors. Scenario 1A assumes that the 150 daily visitors represent 200 daily participants, with half of visitors participating in 1 activity and half staying for 2 activities.

In addition to the 150 daily visitors, it has been assumed that 5 employees and volunteers will be on-site at the Center each day. **Table 10** lists the typical programs and number of participants anticipated at the Center.

**Table 10. Scenario 1A—Program Duration and Participation at Tolles-Parsons Center**

Program Times	Program	Participants
9:30–11:00 a.m.	Community Service Bears	15
9:45–10:45 a.m.	Zumba	25
10:00 a.m.–12:00 p.m.	Spanish	15
11:00 a.m.–12:00 p.m.	Better Balance	25
11:45 a.m.–1:00 p.m.	Lunch	25
12:45–1:45 p.m.	Chi Gong	25
1:00–4:00 p.m.	SHINE	5
1:00–3:00 p.m.	Woodworking	15
2:00–3:00 p.m.	Board Games	20
2:00–3:30 p.m.	Drama Club	15
3:00–4:00 p.m.	Poetry	15
Total		200

Note that the 200 program participants reflect 150 daily visitors. It is assumed that half of the participants stay for 1 activity and half stay for 2 activities.

**Table 11** shows by time of day the number of visitors arriving at and departing from the Center.

**Table 11. Scenario 1A—Visitor Trips by Time of Day**

Time Period	Visitors Entering	Visitors Exiting	Visitors at Center (at end of time period)
8:45–9:15 a.m.	0	0	0
9:15–9:45 a.m.	20	0	20
9:45–10:15 a.m.	35	0	55
10:15–10:45 a.m.	0	0	55
10:45–11:15 a.m.	25	20	60
11:15–11:45 a.m.	12	15	57
11:45 a.m.–12:15 p.m.	0	15	42
12:15–12:45 p.m.	12	0	54
12:45–1:15 p.m.	12	15	51
1:15–1:45 p.m.	0	15	36
1:45–2:15 p.m.	20	0	56
2:15–2:45 p.m.	0	0	56
2:45–3:15 p.m.	14	15	55
3:15–3:45 p.m.	0	35	20
3:45–4:15 p.m.	0	20	0
<b>Totals</b>	<b>150</b>	<b>150</b>	

## Mode Share

Mode share is the distribution of person trips among the available travel modes such as automobile, transit, and walking. Based on a survey of existing Wellesley COA visitors in June 2009, the study team developed mode shares for the Center. Because the new Center will be located closer to senior housing at Morton Circle, Wellesley Green, and Glen Grove than the existing center, the walk share was increased from 2% to 4%. The rate of carpooling activity was assumed to increase from 22% to 25% on a typical day, because the wider variety of programs is likely to attract more couples and mutual friends to visit the Center together. The existing and future mode shares and auto occupancies are shown in **Table 12**. Transit service is the COA shuttle bus available to seniors to make trips within Wellesley, as well as to nearby medical facilities.

**Table 12. Mode Shares and Vehicle Occupancy Rates**

	Vehicle Share			Transit Share	Walk Share	Average Vehicle Occupancy (AVO) <sup>1)</sup>
	Drive Alone	Carpool	Drop Off			
Existing Center	66%	22%	4%	6%	2%	1.14
Tolles-Parsons Center	61%	25%	4%	6%	4%	1.17

<sup>1)</sup> AVO is based on vehicle occupancy of 1.0 for drive alone and 2.0 persons for carpools.

Based on the number of visitors by time of day (**Table 11**) and the mode shares (**Table 12**), the number of vehicle trips by time of day was estimated and summarized in **Table 13**. The peak hour of trip generation for the Center (the hour that has the highest number of vehicle trips) is between 10:45 and 11:45 a.m. These vehicle trips were used to estimate the traffic impacts associated with the Center. Detailed trip activity by individual mode is presented in **Appendix C**.

Table 13. Vehicle Trips by Time of Day

Time Period	Vehicles Entering	Vehicles Exiting
8:45–9:15 a.m.	5	0
9:15–9:45 a.m.	17	2
9:45–10:15 a.m.	29	3
10:15–10:45 a.m.	0	0
10:45–11:15 a.m.	24	20
11:15–11:45 a.m.	12	15
11:45 a.m.–12:15 p.m.	2	16
12:15–12:45 p.m.	12	1
12:45–1:15 p.m.	12	15
1:15–1:45 p.m.	2	14
1:45–2:15 p.m.	17	2
2:15–2:45 p.m.	0	0
2:45–3:15 p.m.	15	16
3:15–3:45 p.m.	3	29
3:45–4:15 p.m.	2	20
<b>Totals</b>	<b>153</b>	<b>153</b>

Vehicle trips include auto trips for drive alone and carpool, bus trips, and drop-off trips. The gray shading indicates the peak 1 hour of traffic activity, with 36 entering vehicles and 35 exiting vehicles. Volumes also include employee trips.

The Center’s hours of operation will be weekdays between 9:00 a.m. to 4:00 p.m. Because these operating hours are outside the peak hours of traffic activity in the study area,<sup>3</sup> *the Center will not generate new trips during the a.m. and p.m. peak hours in the study area.* While in reality the Center will not generate new trips during peak hours, the study team adopted a conservative (highest impact) methodology for this analysis. The peak hour of Center traffic, forecasted to occur between 10:45 and 11:45 a.m., was added to both the a.m. and p.m. peak hours to simulate a “highest impact” condition for Year 2014 traffic operations.

Because Washington Street and Wellesley Avenue are both primary roadway arterials that are heavily used throughout the day, mid-day traffic volumes are only about 10% lower than peak-hour volumes (see data in **Figure 2** through **Figure 5**, above). Therefore, the methodology of adding the peak hour of Center traffic to the peak hour of intersection traffic should result in a reasonably accurate forecast of mid-day intersection operations.

## Vehicle Trip Distribution

A trip distribution pattern identifies the various travel paths for vehicles arriving at a destination and the corresponding departure travel paths. The Center is generally located near the geographic center

<sup>3</sup> 7:30 to 8:30 a.m. and 5:00 to 6:00 p.m.

of the Town of Wellesley. The distribution pattern for trips to the Center was developed based on a review of population data for the 6 census tracts in Wellesley. **Table 14** shows that the distribution of the overall population; the “age 55 and over” population is quite similar, indicating that the older population is fairly evenly dispersed throughout the Town.

**Table 14. Population by Census Tract (Year 2000)**

Census Tract	Overall Population		Age 55 and Over Population		Travel Routes
	Number	Percent	Number	Percent	
4041.00 Southeast	3,761	14%	824	13%	100% via Washington St. from the northeast
4042.01 Northeast	3,645	14%	789	13%	100% via Kingsbury St. from the north
4042.02 South	4,312	16%	959	16%	50% via Washington St. from the northeast 50% via Wellesley Ave. from the east
4043.01 Northwest	5,399	20%	1,264	20%	100% via Central St. from the west
4043.02 West	3,231	12%	1,007	16%	100% via Central St. from the west
4044.00 Southwest	6,355	24%	1,374	22%	50% via Wellesley Ave. from the east 25% via Grove St. from the south 25% via Washington St. from the southwest
<b>Totals</b>	<b>26,613</b>	<b>100%</b>	<b>6,247</b>	<b>100%</b>	

The study team identified the likely travel routes between each census tract and the Center; the resulting trip distribution pattern is shown in **Figure 14**.

Although some vehicles arriving to the Center will park on Washington Street and not use the Center’s driveways, for traffic impact analysis purposes it was assumed that all vehicles enter and exit the driveways. This allows evaluation of the highest traffic impacts at the site Center driveways. This analysis also incorporates the activity generated by a driver entering the site driveway, circulating to look for an open parking space, and, if none is found, exiting to park on Washington Street.

The distribution pattern in **Figure 14** was used to assign the new Center trips to the study area roadways, as shown in **Figure 15** and **Figure 16**.

## 2014 Build Traffic Operations

Future 2014 Build Conditions traffic volumes are shown in **Figure 17** and **Figure 18** for the morning and evening peak hours, respectively. The resulting intersection operations results are shown in **Table 15** and **Table 16**. Complete Synchro reports are provided in **Appendix B**, bound separately and available upon request.

Figure 14. Vehicle Trip Distribution

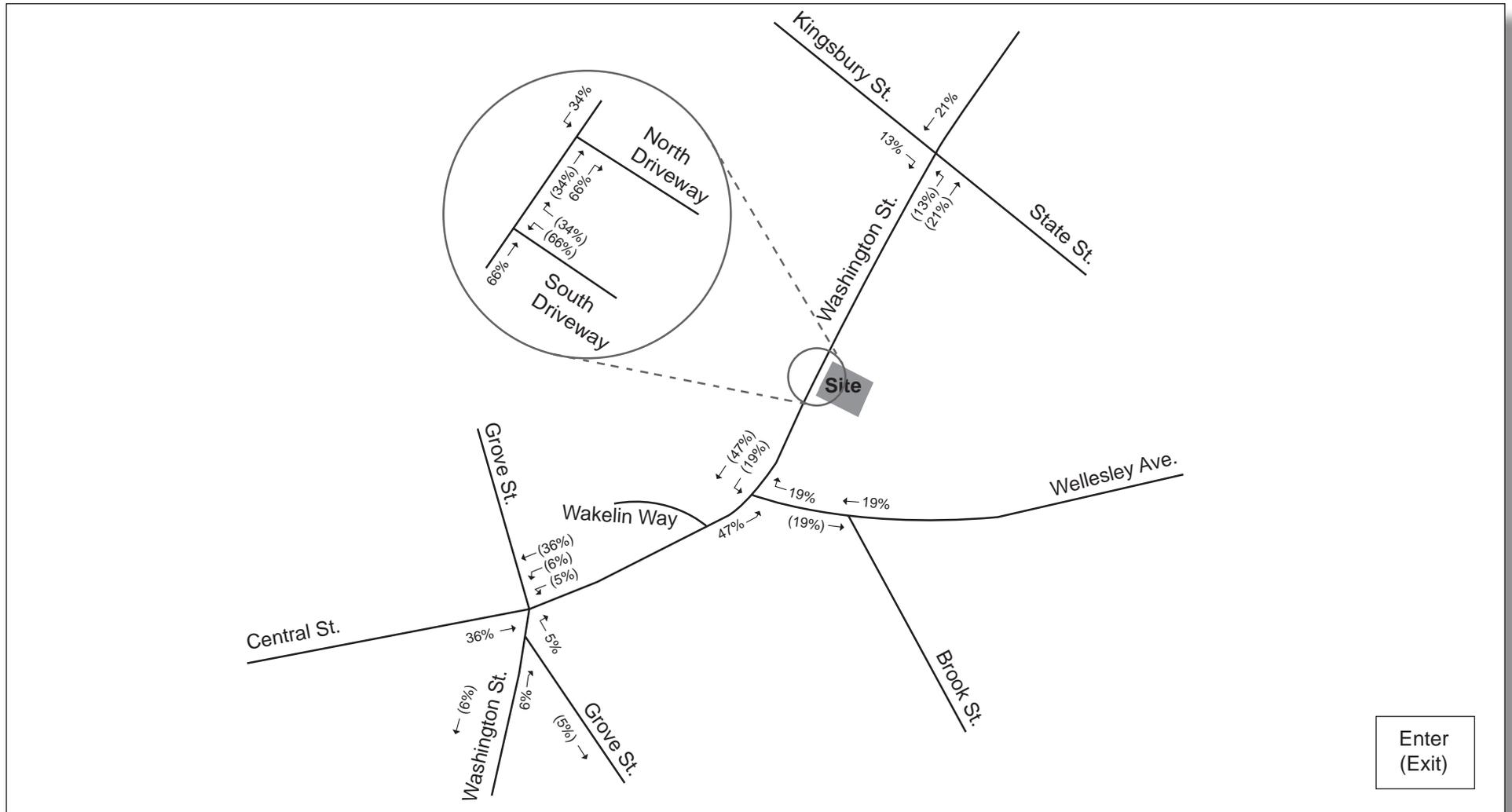


Figure 15. Project Generated Vehicle Trips, a.m. Peak Hour

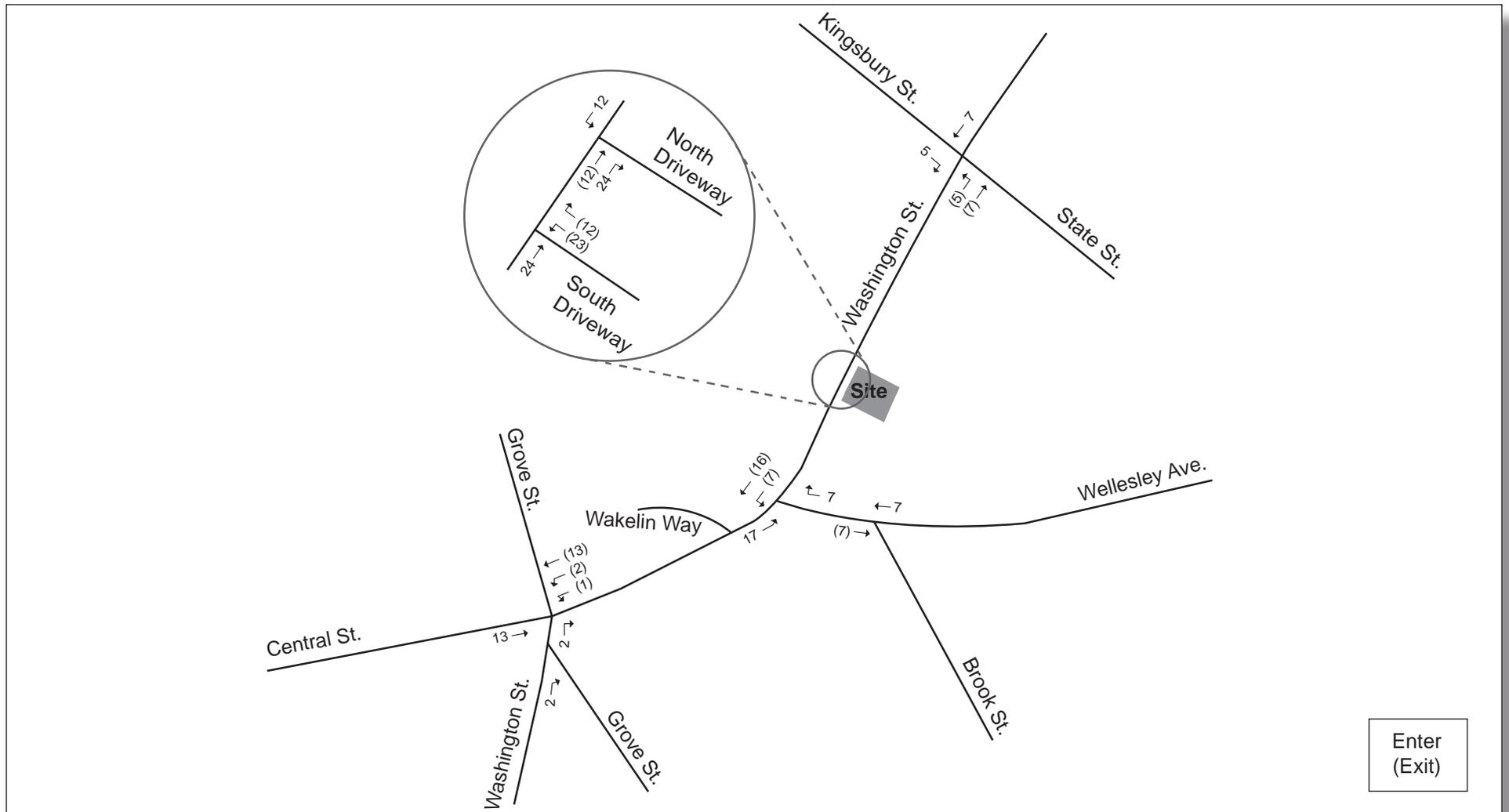




Figure 17. Build Conditions (2014) Turning Movement Volumes, a.m. Peak Hour

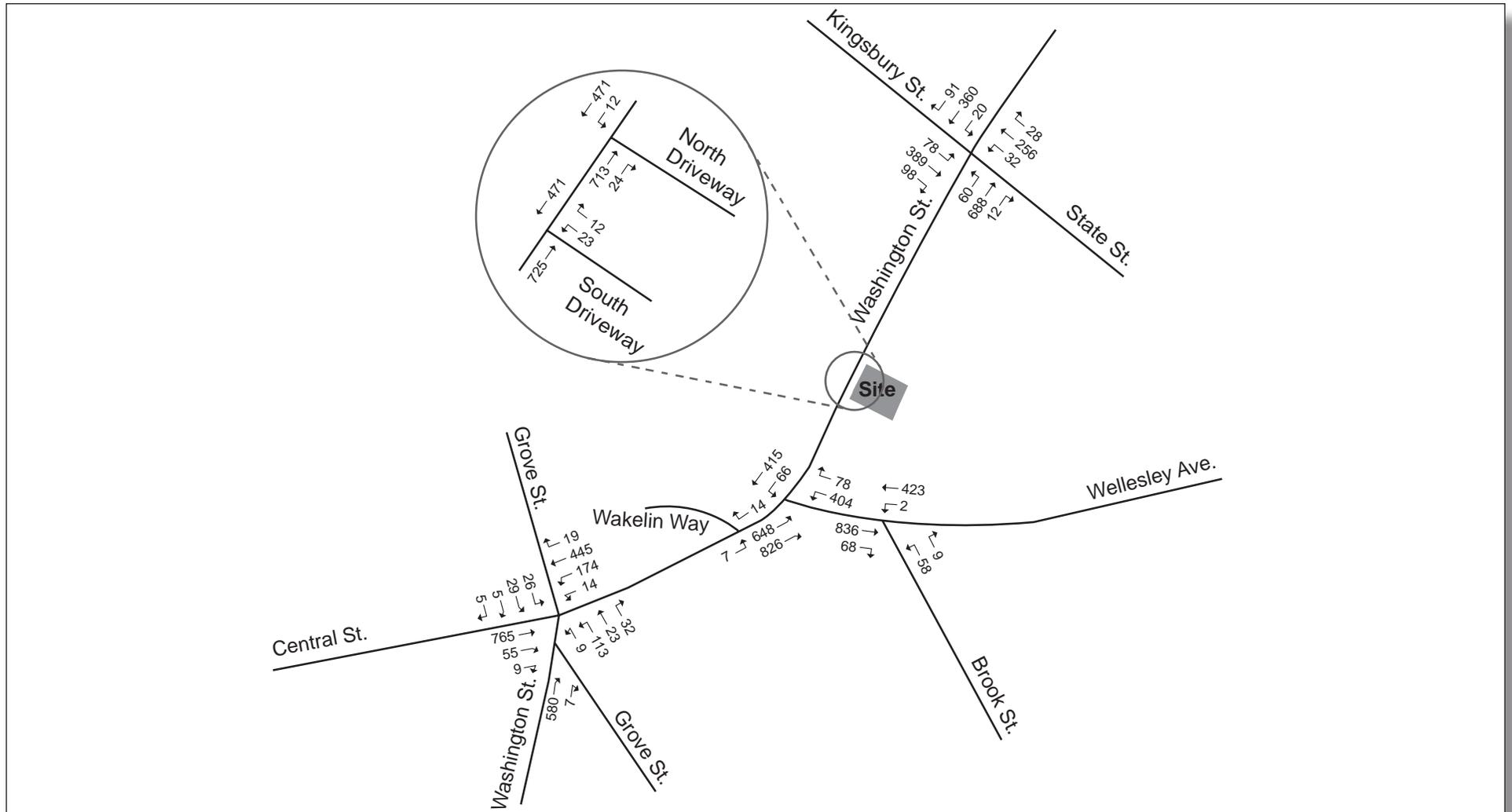


Figure 18. Build Conditions (2014) Turning Movement Volumes, p.m. Peak Hour

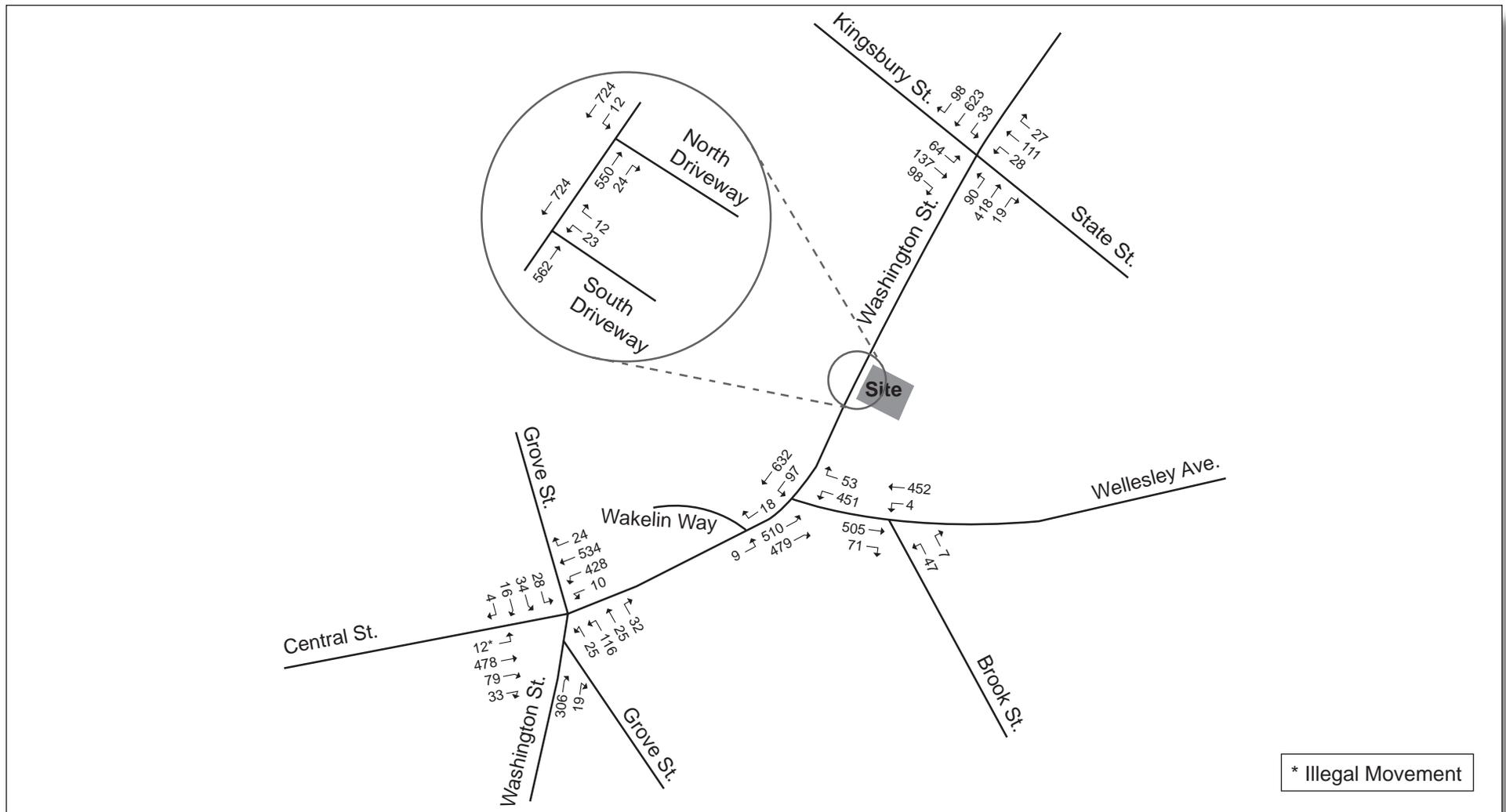


Table 15. Build Conditions (2014) Level of Service Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>F</b>	<b>&gt; 80.0</b>		
Washington EB left	C	20.5	0.25	71
Washington EB thru/right	D	36.1	0.88	# 802
Washington WB left/thru/right	C	23.0	0.61	# 260
State NB left/thru	E	70.3	0.98	# 263
State NB right	B	18.5	0.07	26
Kingsbury SB left/thru	F	>80.0	>1.0	# 615
Kingsbury SB right	C	20.9	0.26	73
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>C</b>	<b>34.4</b>		
Wellesley WB left	E	63.3	0.92	# 591
Wellesley WB right	C	32.8	0.28	87
Washington NB thru	D	50.7	0.99	m# 579
Washington NB right	B	19.8	0.86	m# 563
Washington SB left/thru	B	16.9	0.58	130
Brook NWB left/right (unsignalized leg)	F	83.2	0.75	112
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>E</b>	<b>78.5</b>		
Central EB thru/right	F	>80.0	> 1.0	# 513
Washington WB left	F	>80.0	> 1.0	m# 286
Washington WB thru/right	B	10.3	0.55	235
Grove NB hard left/left	F	>80.0	> 1.0	# 174
Grove NB thru/right	D	44.3	0.43	50
Grove SB left	D	40.8	0.21	42
Grove SB thru/right	D	39.4	0.25	62
Washington NEB right/hard right	D	43.8	0.83	# 317
<b>Unsignalized Intersections</b>				
<b>Washington Street (Route 16)/ North Site Driveway (Enter only)</b>				
Washington NB thru/right	A	0.0	0.47	0
Washington SB left/thru	A	0.6	0.02	2
<b>Washington Street (Route 16)/ South Site Driveway (Exit only)</b>				
Driveway WB left	E	41.3	0.20	18
Driveway WB right	C	18.0	0.04	4

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for 95th percentile queue is metered by upstream signal.

Gray shading indicates a change in level of service from the previous condition.

Table 16. Build Conditions (2014) Level of Service Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	95 <sup>th</sup> Percentile Queue (feet)
<b>Signalized Intersections</b>				
<b>Washington Street (Route 16)/ State Street/Kingsbury Street</b>	<b>C</b>	<b>24.4</b>		
Washington EB left	C	29.6	0.56	# 132
Washington EB thru/right	B	12.9	0.44	323
Washington WB left/thru/right	B	14.8	0.59	296
State NB left/thru	C	32.3	0.44	132
State NB right	C	26.0	0.10	31
Kingsbury SB left/thru	E	71.9	0.84	# 206
Kingsbury SB right	C	30.1	0.30	93
<b>Washington Street (Route 16)/ Wellesley Avenue/Brook Street</b>	<b>D</b>	<b>45.3</b>		
Wellesley WB left	D	41.3	0.82	# 507
Wellesley WB right	C	22.2	0.12	54
Washington NB thru	F	> 80.0	> 1.00	# 491
Washington NB right	A	8.7	0.53	164
Washington SB left/thru	D	41.6	0.94	# 260
Brook NWB left/right (unsignalized leg)	D	27.7	0.35	38
<b>Washington Street (Route 16)/ Central Street/Grove Street</b>	<b>F</b>	<b>&gt; 80.0</b>		
Central EB thru/right	F	> 80.0	> 1.0	# 398
Washington WB left	F	> 80.0	> 1.0	# 638
Washington WB thru/right	C	25.6	0.74	# 479
Grove NB hard left/left	F	> 80.0	0.86	# 200
Grove NB thru/right	D	35.8	0.33	46
Grove SB left	C	33.9	0.19	38
Grove SB thru/right	C	33.1	0.22	72
Washington NEB right/hard right	C	29.2	0.47	126
<b>Unsignalized Intersections</b>				
<b>Washington Street (Route 16)/ North Site Driveway (Enter only)</b>				
Washington NB thru/right	A	0.0	0.38	0
Washington SB left/thru	A	0.4	0.02	1
<b>Washington Street (Route 16)/ South Site Driveway (Exit only)</b>				
Driveway WB left	C	24.6	0.12	10
Driveway WB right	B	13.7	0.03	2

# = 95th percentile volume exceeds capacity; queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for 95th percentile queue is metered by upstream signal.

Gray shading indicates a change in level of service from the previous condition.

Under 2014 Build Conditions, only 1 approach will experience a change in level of service. During the p.m. peak hour, at the Washington Street/Central Street/Grove Street intersection, the eastbound Central Street approach will worsen from LOS E to LOS F. The overall intersection, however, will continue to operate at LOS F.

Two driveways on Washington Street will serve the site. Both will be 1-way, with the northern driveway for entering traffic and the southern driveway for exiting traffic. The 2 new intersections will be unsignalized. Traffic exiting the southern driveway will be able to turn left or right onto Washington Street and be controlled by a stop sign. An exclusive right-turn lane will be provided on the exiting driveway; a short left-turn storage lane will also be provided. The length of the storage lane will be determined during final site design, but based on queue analysis, the lane only needs to be about 50' in length to satisfy

The left turns out of the Washington Street/South Site Driveway will operate at LOS E during the a.m. peak hour and LOS C during the p.m. peak hour. The queue for exiting Center traffic will generally be short—about 1 vehicle long. The right turns out of the Center will operate at LOS A during each peak hour. While traffic volumes on Washington Street are fairly steady throughout the day, the traffic signals at Wellesley Avenue and Kingsbury Street/State Street meter the traffic stream and provide gaps in the Washington Street flow, making it easier to turn out of the Center.

***The additional traffic generated by the Center will not adversely impact intersection operations in the study area. The Center's site driveways will operate with acceptable level of service and delays.***

## Parking

The Center will provide 34 on-site parking spaces for staff and visitor use with 1 space reserved for the COA shuttle van.

A standard source for parking demand data is the ITE *Parking Generation* manual. This book is a reference for compiled parking data. However, as with trip generation, parking generation data for senior centers is not specifically included. The most similar land use included in the Manual is Recreational Community Center (Land Use Code 495). This type of center is similar to a YMCA; these facilities include classes and clubs for adults and children; a day care, meeting rooms, swimming pools, and athletic facilities. Furthermore, each of the 5 study sites had an average of 20 employees. Because this type of facility is not comparable to a senior center, the ITE *Parking Generation* manual was not used to evaluate the Tolles-Parsons Center.

Instead, parking demand characteristics were derived based on the trip generation data developed for the Center under a variety of scenarios:

### Scenario 1A and Scenario 1B

***Scenario 1A*** is a typical weekday at the Center with about 200 participants. Because some participants will stay for more than 1 activity, the number of corresponding visitors is lower. Assuming that half of the participants stay for 1 activity and half stay for 2 activities, the corresponding number of visitors is 150 persons. Staff at other established centers interviewed

for this study reported that a maximum of 150 visitors are served daily at those centers. In reality, a typical day is likely to include about 100 visitors, but to assess a “highest impact” condition, the parking demand generated by the Tolles-Parsons Center on a typical day is based on 150 visitors.

By using the vehicle trips by time of day (see **Table 13**) and assessing whether the vehicle trip requires a parking space or not, the study team estimated parking demand by time of day, as shown in **Figure 19**.

For Scenario 1A, the peak parking demand generated by the Center is forecast at 50 spaces, which is more than the available 34 on-site spaces. When the parking lot at the Center fills up, estimated to occur late in the morning, arriving visitors will need to park on Washington Street. As visitors leave the Center’s parking lot, spaces again become available for successive visitors.

A second typical day condition, *Scenario 1B*, was developed to reflect different program scheduling and attendance. Scenario 1B programming, as shown in **Table 17**, incorporates 175 participants with 130 corresponding daily visitors. The associated parking demand by time of day is shown in **Figure 20**.

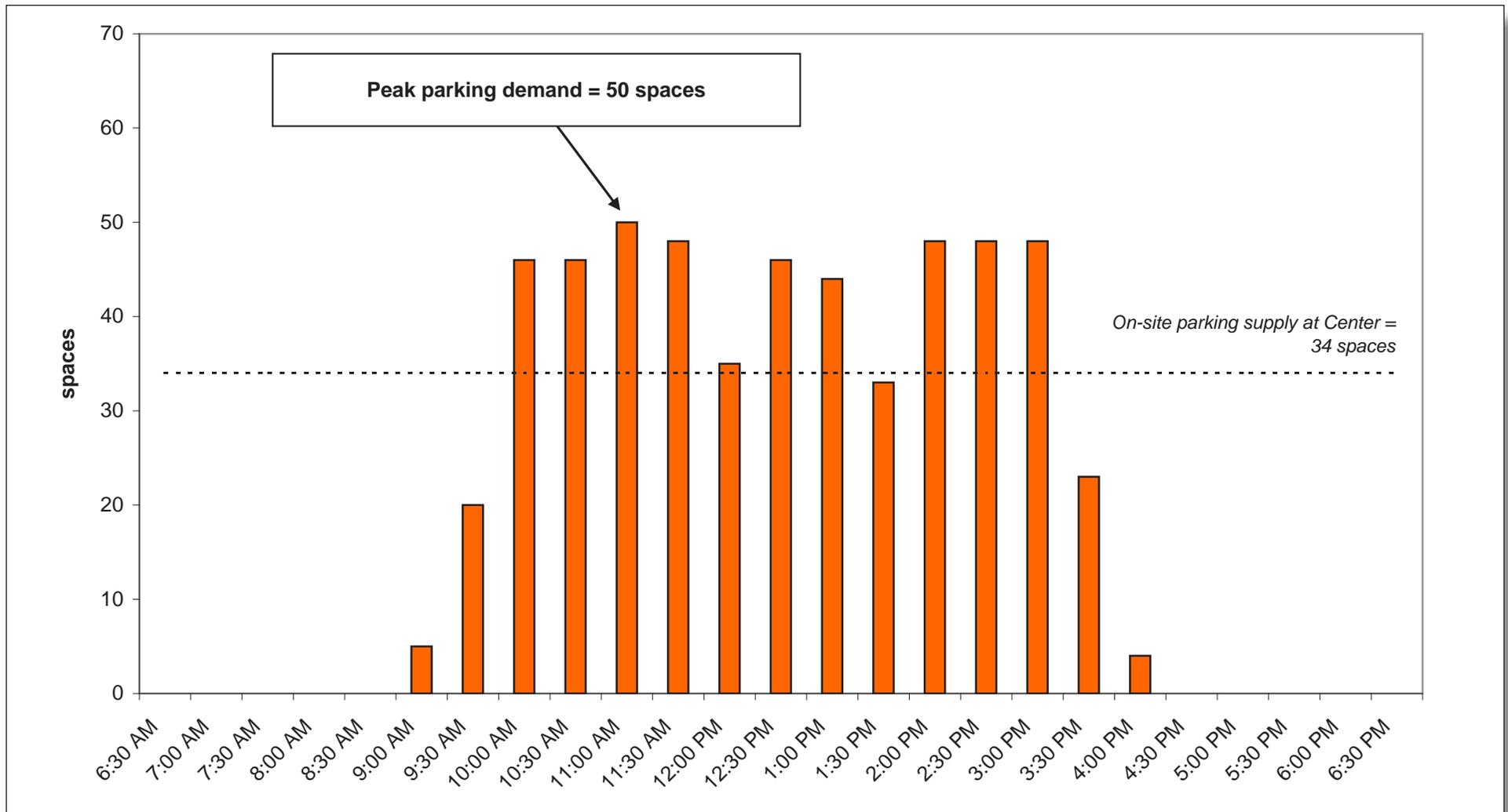
**Table 17. Scenario 1B—Program Duration and Participation at Tolles-Parsons Center**

<b>Program Times</b>	<b>Program</b>	<b>Participants</b>
9:30–11:00 a.m.	Needlepoint	15
9:45 a.m.–12:30 p.m.	Yoga	36
10:00–11:15 a.m.	German Class	15
11:45 a.m.–1:00 p.m.	Lunch	25
1:00–2:00 p.m.	Line Dancing	15
1:00–2:30 p.m.	Travel to Malaysia	22
1:00–3:00 p.m.	Quilting	15
2:00–4:00 p.m.	Mah Jong	12
2:30–4:00 p.m.	Wii Fitness	20
<b>Total</b>		<b>175</b>

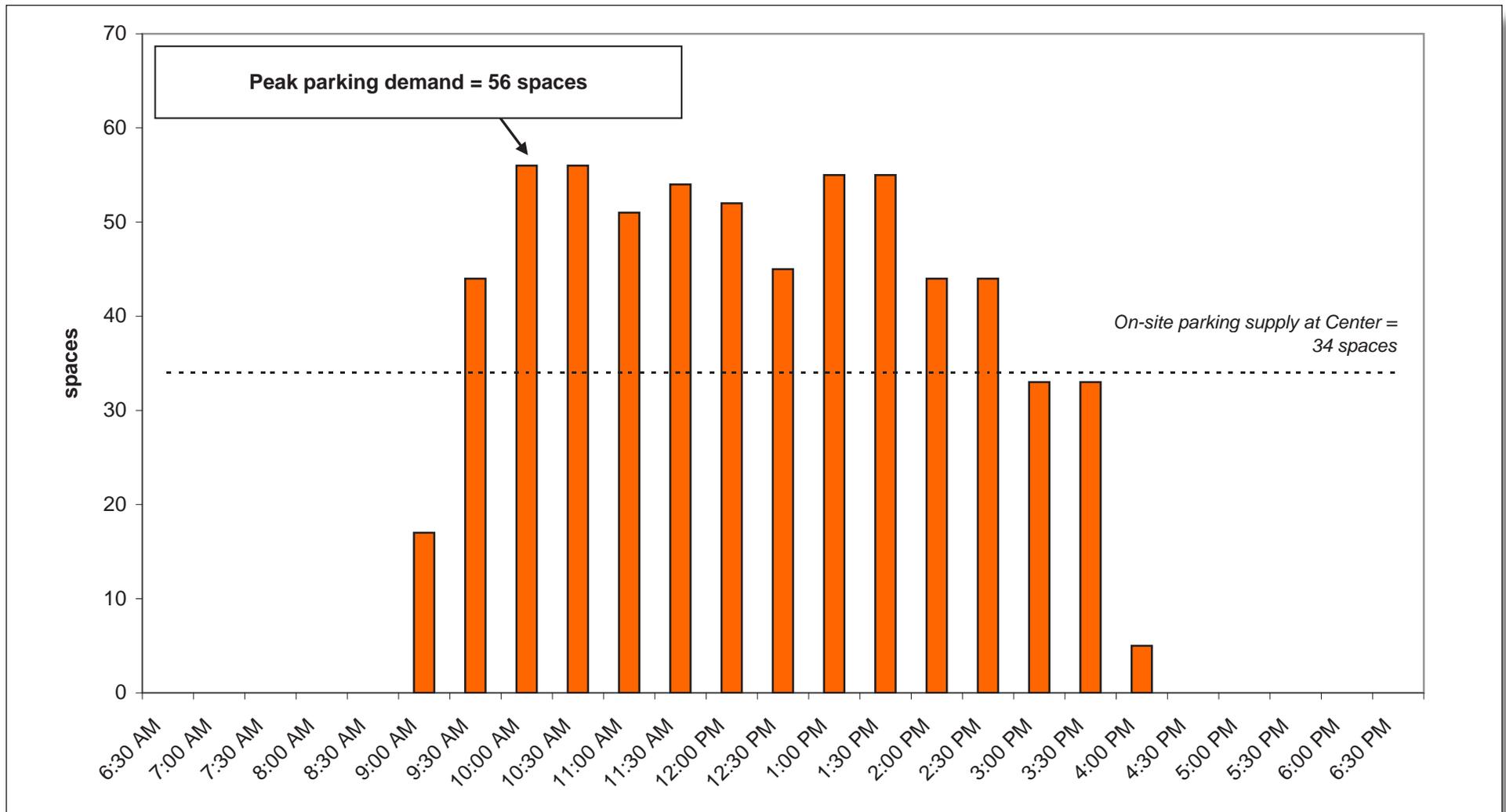
Note that the 175 program participants reflect 130 daily visitors. It is assumed that half of the participants stay for one activity and half stay for two activities.

Using information on the typical parking demands of the nearby Police Department, St. Paul’s Parish and School (described earlier in this report), and the two medical office buildings on Washington Street near Morton Street, the study team estimated the overall Washington Street public parking demand for Scenarios 1A and 1B, shown in **Figure 21** and **Figure 22** and color-coded by the demand for each use.

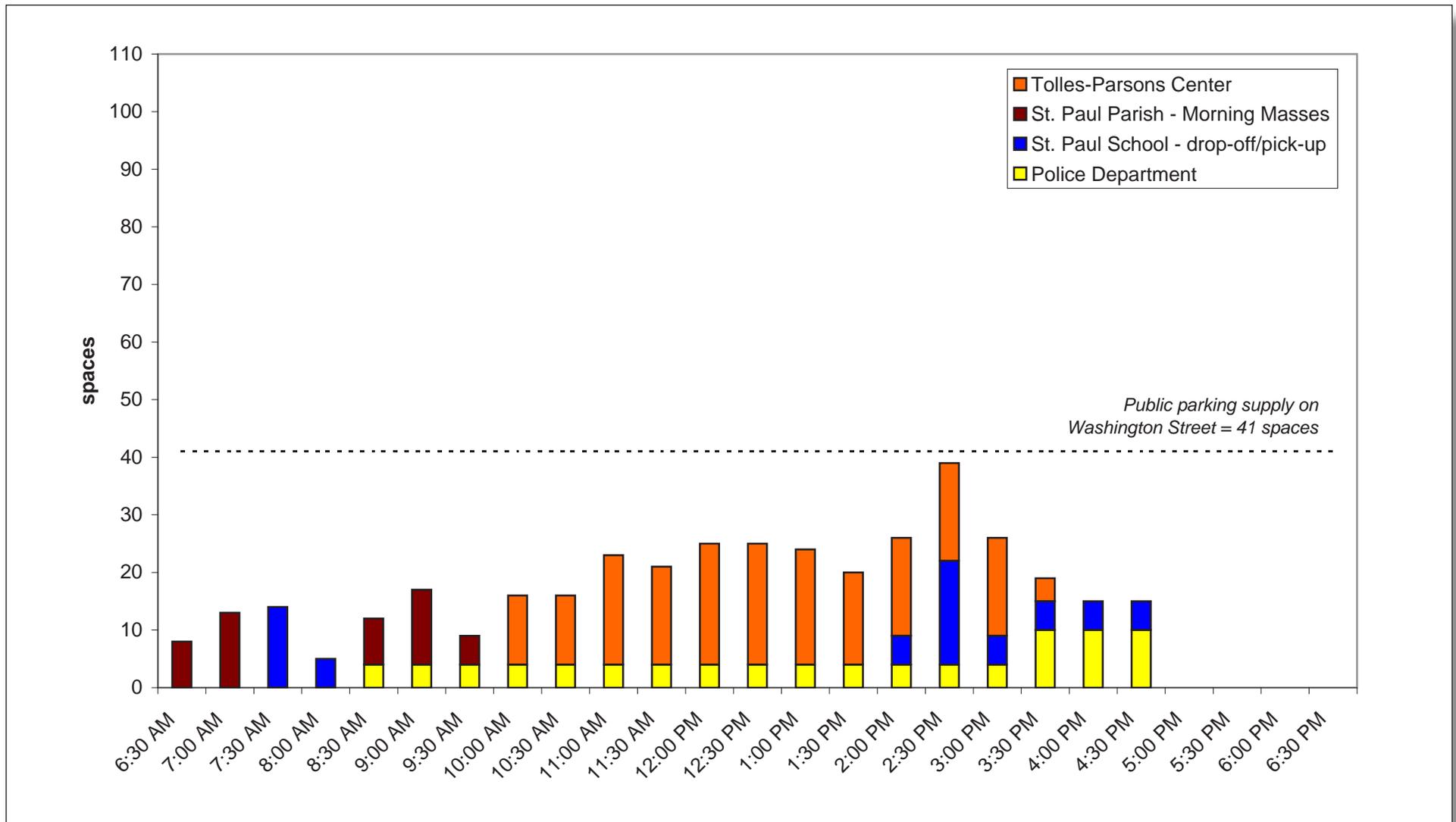
**Figure 19. Tolles-Parsons Center Parking Demand by Time of Day:  
Scenario 1A, Weekday with 200 participants (150 Visitors)**



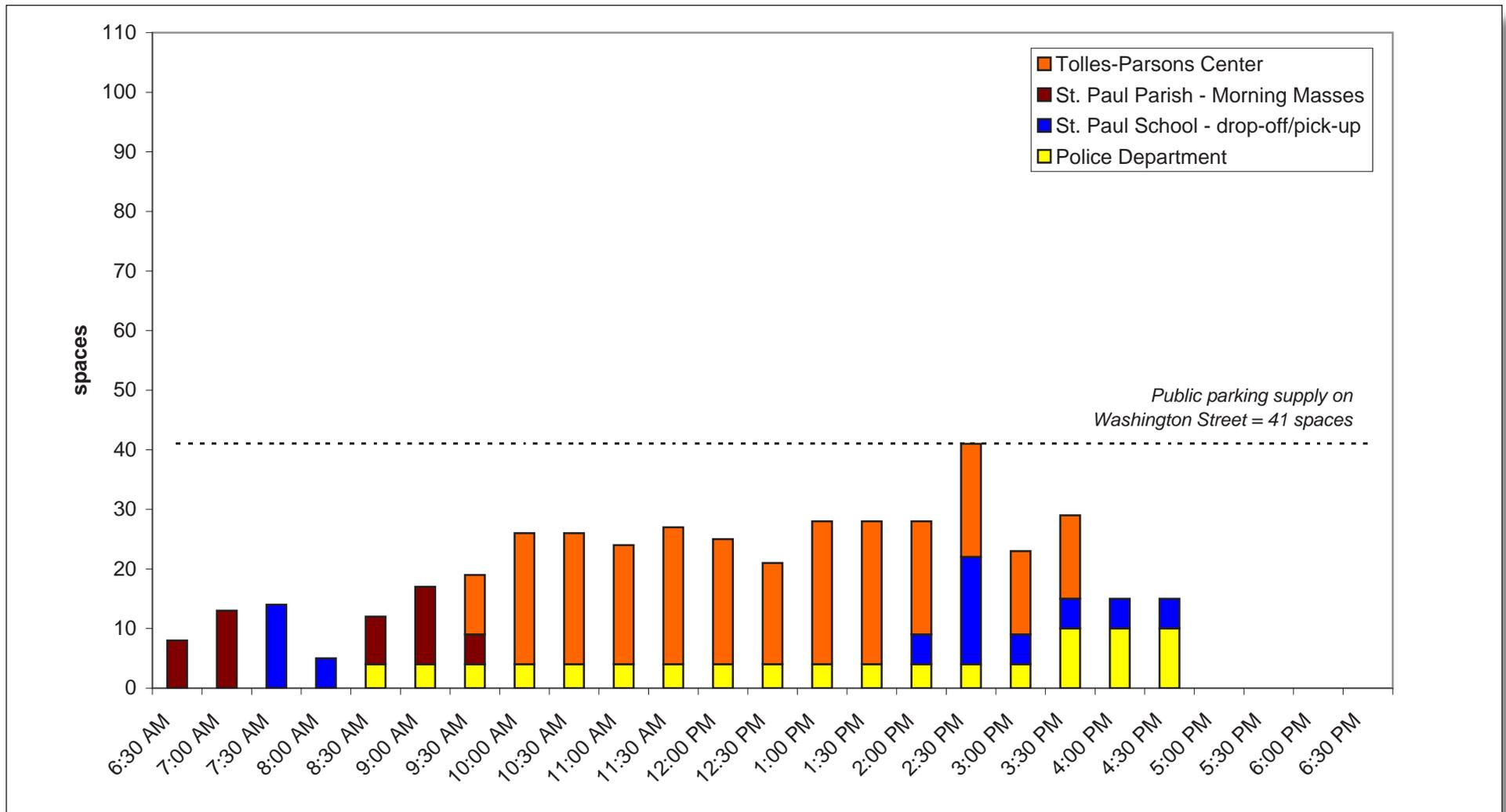
**Figure 20. Washington Street Public Parking Demand by Time of Day:  
Scenario 1B, Weekday with 175 participants (130 Visitors)**



**Figure 21. Washington Street Public Parking Demand by Time of Day:  
Scenario 1A, Weekday with 200 participants (150 Visitors)**



**Figure 22. Washington Street Public Parking Demand by Time of Day:  
Scenario 1B, Weekday with 175 participants (130 Visitors)**



On a typical weekday, with school in session, the peak parking demand on Washington Street is forecast to occur when parents are picking up students at St. Paul's School at about 2:30 p.m. The peak demand for spaces on Washington Street generated by the Center will occur earlier in the day. Around 2:00 p.m., given the current programming schedules of Scenario 1A and Scenario 1B, the Center will generate some demand for public spaces on Washington Street, corresponding to the dismissal period at St. Paul's School. To avoid parking conflicts with the school, the study team recommends that major programs or activities do not start between 2:00 p.m. to 2:30 p.m. on school days.

Under Scenario 1A and Scenario 1B, adequate parking is available for the Center in the on-site spaces and public parking on Washington Street.

To further describe how the Center's daily program schedule affects parking demand at the Center, **Table 18** and **Table 19** show the parking demand and on-site persons by time of day for Scenario 1A and Scenario 1B, respectively. Even though the overall activities under Scenario 1B would have fewer participants, they would generate a slightly higher peak parking demand. This is due to the start time, duration, and number of participants for each activity.

Table 18. Scenario 1A—Parking Demand and Persons On-site, Weekday with 200 Participants

Time Period	Parking (vehicles)		Persons
	On-site	On-street	
8:45–9:15 a.m.	5	0	5
9:15–9:45 a.m.	20	0	25
9:45–10:15 a.m.	34	12	60
10:15–10:45 a.m.	34	12	60
10:45–11:15 a.m.	31	19	65
11:15–11:45 a.m.	31	17	62
11:45 a.m.–12:15 p.m.	14	21	47
12:15–12:45 p.m.	25	21	59
12:45–1:15 p.m.	24	20	56
1:15–1:45 p.m.	17	16	41
1:45–2:15 p.m.	31	17	61
2:15–2:45 p.m.	31	17	61
2:45–3:15 p.m.	31	17	60
3:15–3:45 p.m.	19	4	25
3:45–4:15 p.m.	4	0	5

Table 19. Scenario 1B—Parking Demand and Persons On-site, Weekday with 175 Participants

Time Period	Parking (vehicles)		Persons
	On-site	On-street	
8:45–9:15 a.m.	17	0	20
9:15–9:45 a.m.	34	10	56
9:45–10:15 a.m.	34	22	71
10:15–10:45 a.m.	34	22	71
10:45–11:15 a.m.	31	20	63
11:15–11:45 a.m.	31	23	67
11:45 a.m.–12:15 p.m.	31	21	67
12:15–12:45 p.m.	28	17	54
12:45–1:15 p.m.	31	24	67
1:15–1:45 p.m.	31	24	67
1:45–2:15 p.m.	25	19	52
2:15–2:45 p.m.	25	19	52
2:45–3:15 p.m.	19	14	37
3:15–3:45 p.m.	19	14	37
3:45–4:15 p.m.	5	0	5

## Scenario 2

In Wellesley, public elementary schools are dismissed at noon on Wednesdays. St. Paul's School also follows this practice. The parking demand graph in **Figure 23** shows that, with a typical schedule at the Center, public parking along Washington Street would be at capacity during the noontime dismissal period.

Because the conditions under Scenario 2 will regularly occur about 30 times each year, staff at the Center will take steps to mitigate the parking impacts, as presented in the next section.

## Scenario 3

Occasionally, the Center will have major events that will attract about 150 visitors at one time, as opposed to 150 visitors who will come and go over the course of the day (as described in Scenario 1). On such days, the normal schedule of programs would be suspended and only the major event would occur. An example would be a holiday party that would start in the late morning and last until mid-afternoon. The parking demand graph in **Figure 24** shows that, with a major event, parking at the Center and public parking along Washington Street would not be sufficient to meet the demand.

While the conditions under Scenario 3 will only occur a few times a year, staff at the Center will take steps to mitigate the parking impacts associated with such a major event, as presented in the next section.

## Scenario 4

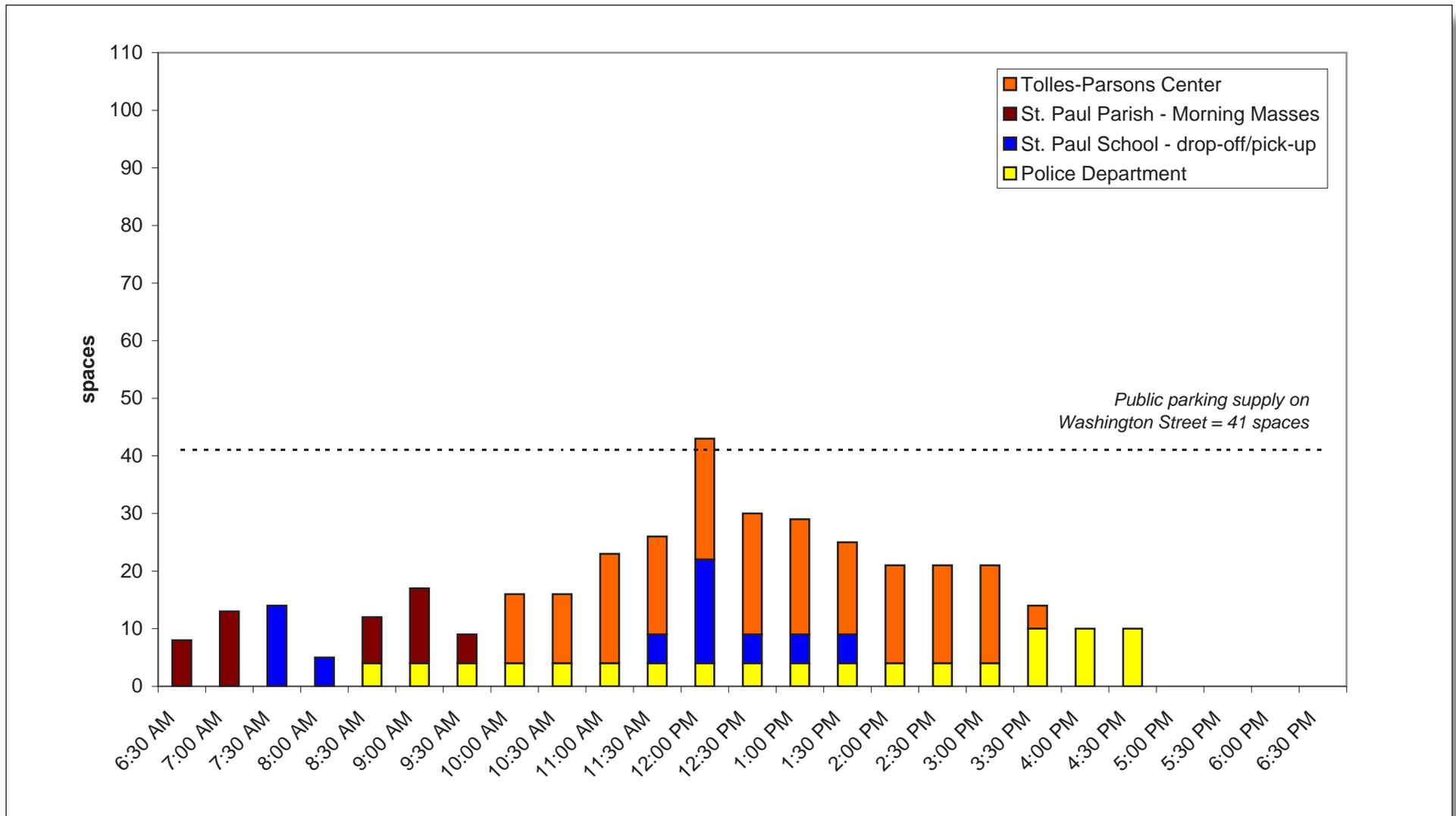
Each year, about 50 to 60 funerals occur at St. Paul's Parish. On weekdays, funerals are usually scheduled for 10:00 a.m.; attendance varies between 40 and 300 people. The Wellesley Police Department estimates that the largest funerals occur about 5 times per year. During funerals, parking occurs both on-site at the church and in the public parking spaces along Washington Street.

**Figure 25** shows the parking demand on Washington Street with a moderately sized funeral with about 170 people in attendance. For the parking demand assessment, vehicle occupancy was assumed to be about 2.1 persons per auto, reflecting the fact that families and friends travel together to funerals. Sometimes, attendees at major funerals must park farther west on Washington Street toward the Library and farther east toward Kingsbury Street. Because of the church's limited on-site parking, major funerals cause disruption on Washington Street even without traffic generated by the Center.

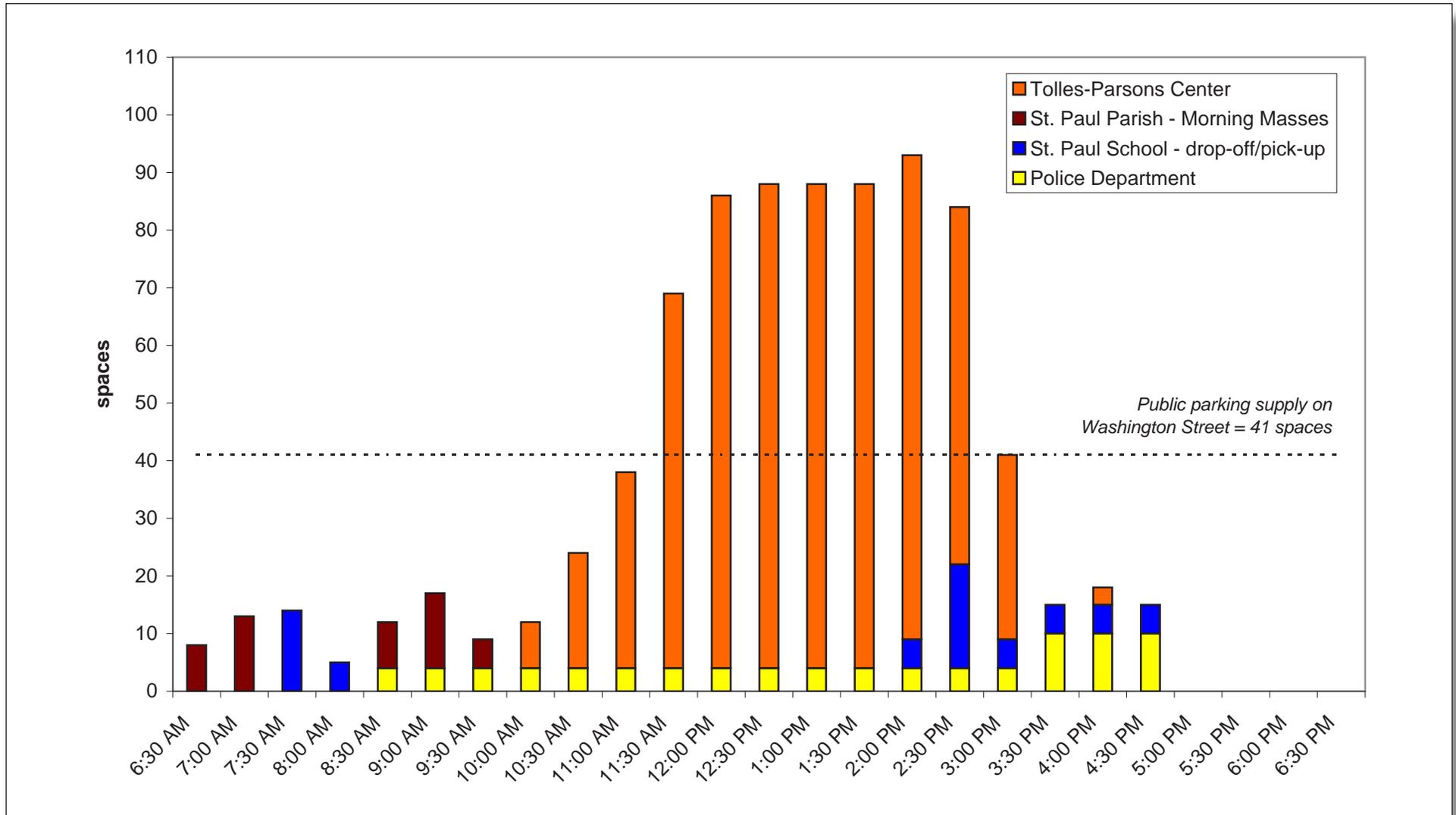
It is estimated that the parking demand for a funeral with about 130 attendees can be accommodated by on-site spaces at St. Paul's Parish and the available public spaces on Washington Street.

Funeral timing and attendance are unpredictable. While Center staff will work with St. Paul's Parish to minimize the parking conflicts during a funeral, it will be difficult for Center staff to reschedule programs and activities on short notice.

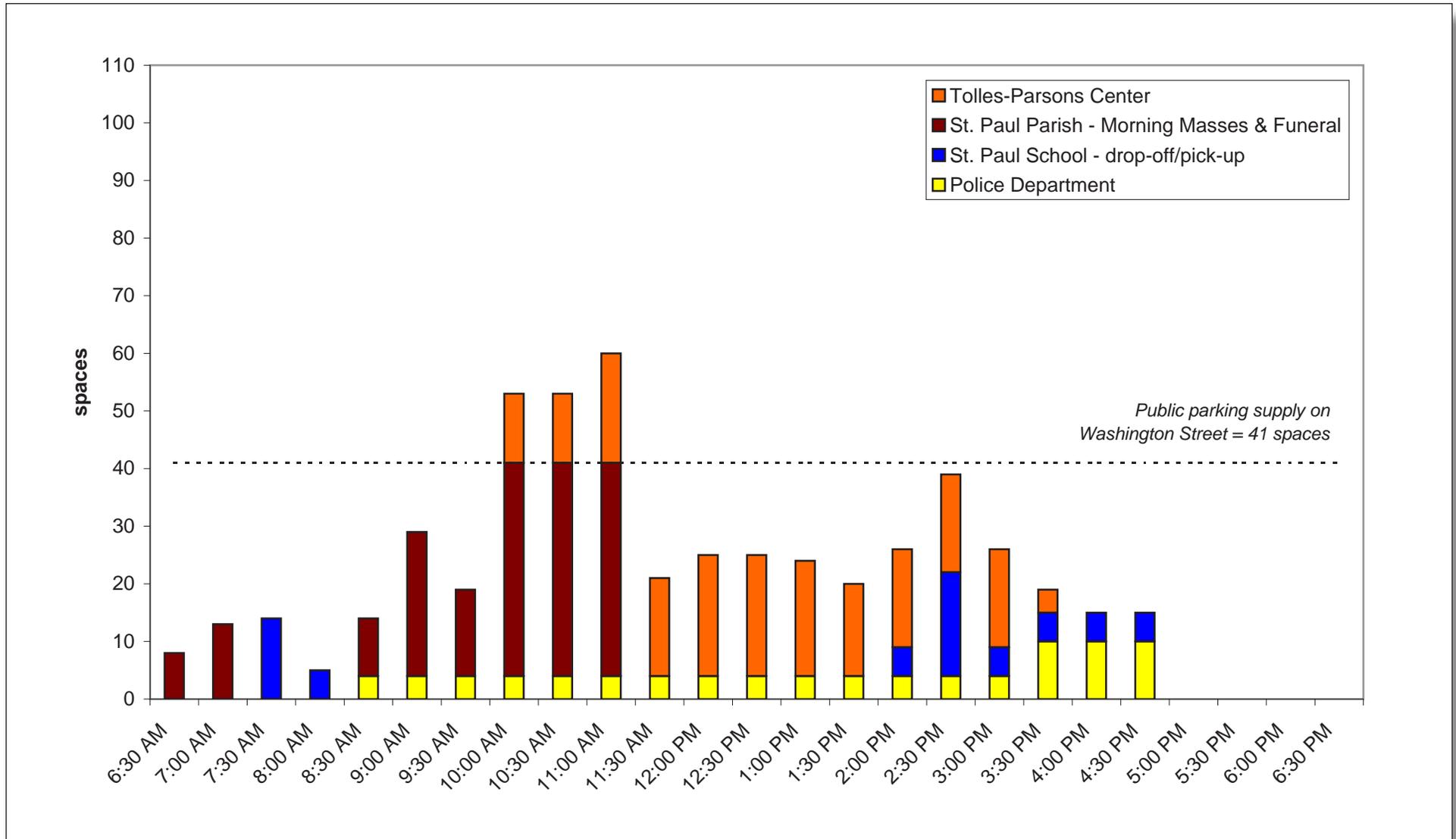
**Figure 23. Washington Street Public Parking Demand by Time of Day:  
Scenario 2, Wednesdays (with 200 participants) During School Year**



**Figure 24. Washington Street Public Parking Demand by Time of Day:  
Scenario 3, Major Mid-day Event at Center**



**Figure 25. Washington Street Public Parking Demand by Time of Day:  
Scenario 4, Weekday (with 200 participants) with Funeral at St. Paul Parish**



## Sight Distance

Vehicles exiting the Center's south driveway (1-way exit) will be required to stop before making a left or right turn onto Washington Street. Having adequate sight distance to the left and right will make it easier for exiting drivers to safely complete turning maneuvers onto Washington Street.

When no vehicles are parked along the western side of Washington Street, there is adequate sight distance in both directions to easily make left and right turns from the Center's south driveway. Parked vehicles along Washington Street, however, may obstruct the sight distance for drivers leaving the Center.

For exiting vehicles turning left onto Washington Street, the removal of 3 parking spaces in front of the Center (to create a drop-off area) will provide drivers with a clear view to the right toward the Police Station. When vehicles are stopped in the drop-off area in front of the Center, drivers exiting the driveway may have their view to the left temporarily obstructed.

For exiting Center vehicles turning right onto Washington Street, the view to the left (toward Town Hall) may be obstructed by parked vehicles on Washington Street. If vehicles are parked in any of the 3 parking spaces located between the pedestrian signal and the Center's exiting driveway, it will be difficult for an exiting vehicle to see the oncoming traffic to the left. Prohibiting parking in 1 or more of these spaces during the Center's operating hours would help exiting drivers see to the left on Washington Street.

A further review of the driver sight distance issue will be conducted with BETA Group, the Town's traffic consultant.

# Impacts and Mitigation

This section summarizes the traffic and parking impacts associated with the new Center and outlines mitigation measures to be completed by the Applicant to reduce the impacts.

## Roadway Impacts

The Town’s PSI guidelines define an *impacted* roadway segment as:

1. a signalized intersection approach having 20 or more peak-hour, project-related trips and an increase in daily or peak-hour volume of 5% or more, or
2. an unsignalized intersection approach having 20 or more peak-hour, project-related trips and having a minor street approach peak-hour volume of 50 or more vehicles per hour (vph). These PSI guidelines state that for...

“...signalized impacted intersections, and any unsignalized impacted intersection having 50 or more peak-hour vehicle trips on any minor approach, there shall be no degradation in the overall level of service designation to a level below the level of C and, if an impacted intersection is projected to operate at an overall level of service lower than C in a design year no-build alternative, then the proposed development shall not degrade the level of service designation below the projected design year no-build levels; and with respect to unsignalized impacted intersections having fewer than 50 peak-hour vehicle trips on any minor approach, the Applicant shall undertake an evaluation to identify any specific circumstances requiring further action or mitigation.”

**Table 20** identifies the traffic thresholds for identifying impacted roadways and shows that none of the study intersections meet these thresholds. These thresholds are assessed for the comparison between No-Build and Build traffic volumes.

**Table 20. Impacted Roadways**

Threshold	Location Deemed an Impacted Roadway
Signalized intersection with net new approach volume increase >20 vph and approach volume increase >5.0% for daily or peak-hour conditions	None
Unsignalized intersection with net new approach volume increase > 20 vph and minor street approach volume > 50 vph	None
Overall LOS change to below LOS C.	None

Because no traffic operation impacts are anticipated with the Center, no traffic mitigation measures are proposed.

## Parking Impacts and Mitigation

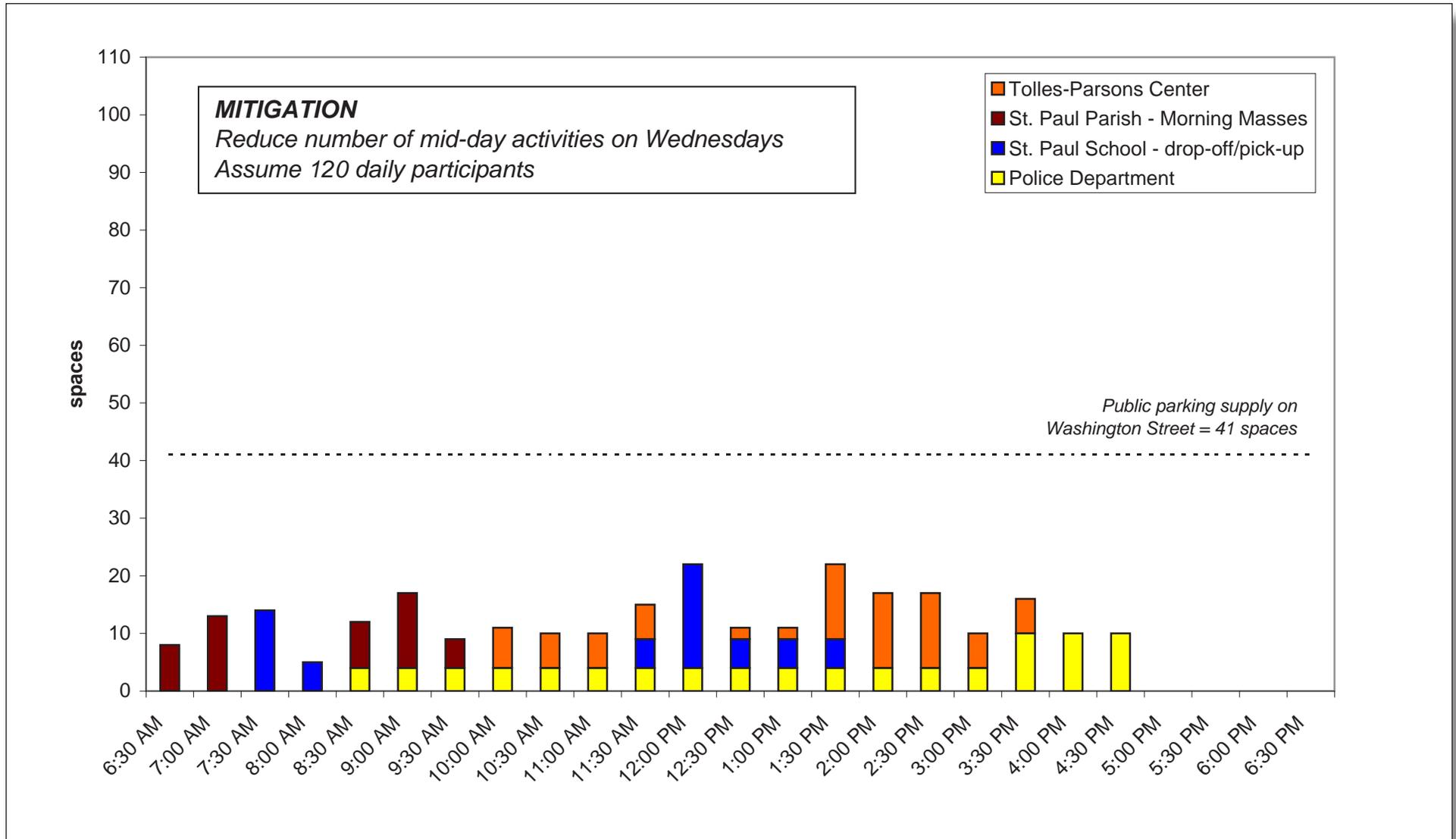
Under *Scenario 1A* and *Scenario 1B*, typical weekdays, the Center's parking demand will be met with on-site parking and available spaces on Washington Street. No parking mitigation is proposed.

On Wednesdays, the typical weekday schedule proposed under *Scenario 2* would result in parking on Washington Street reaching capacity during noontime as parents arrive for St. Paul dismissal and as morning programs at the Center are ending. To minimize the conflicts, the Center's staff will reduce the number of morning programs and possibly move the start time of some programs later into the afternoon. Daily attendance is anticipated to be about 110 visitors. **Figure 26** shows the parking demand result with the Wednesday program reduction.

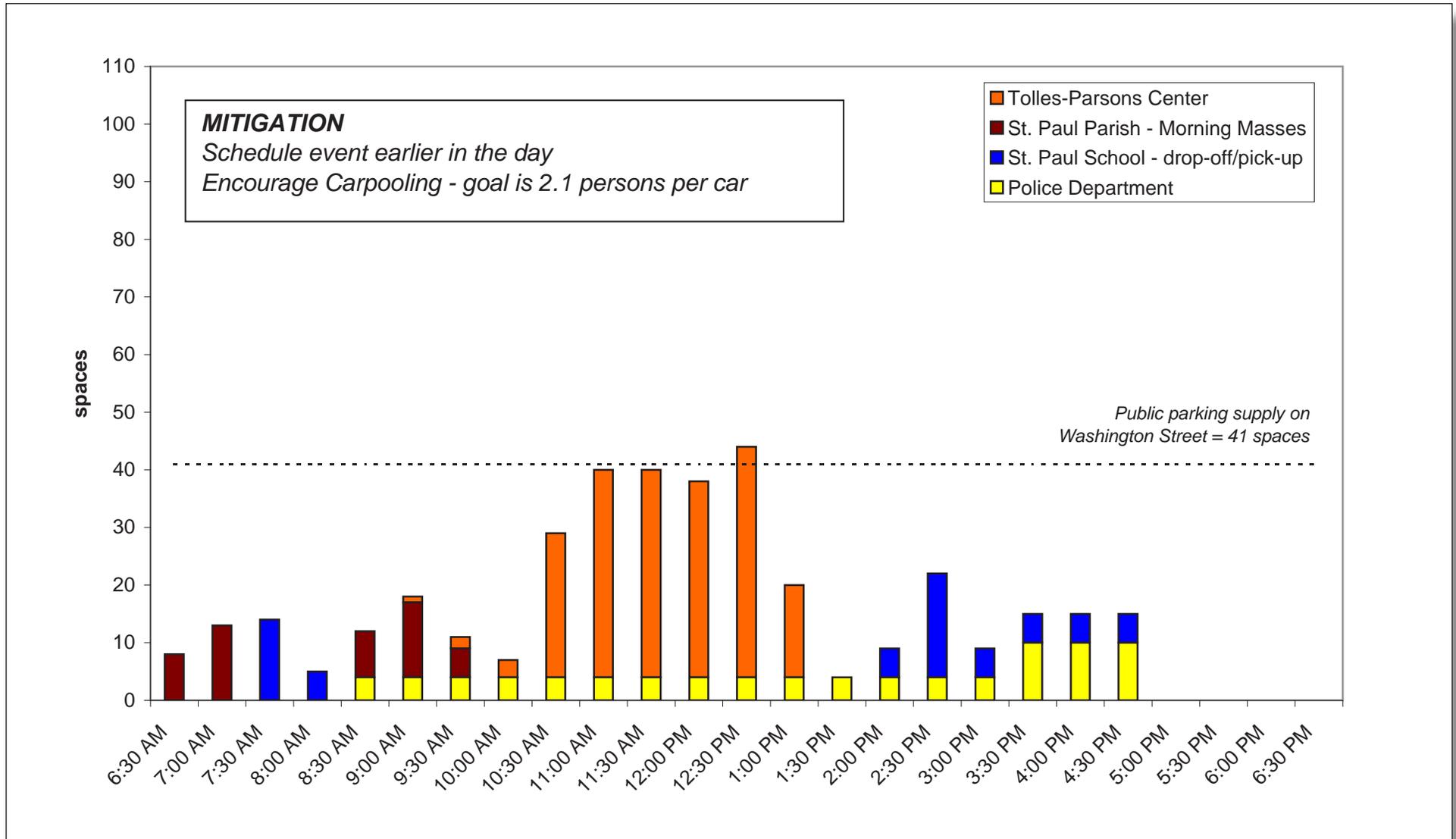
To minimize parking impacts of the few major annual events at the Center, as described in *Scenario 3*, the staff will schedule such events to end by about 1:30 p.m., thereby reducing the conflicts with St. Paul dismissal activity. The staff will also aggressively promote carpooling for these major events. Increasing average auto occupancy from 1.2 to about 2.0 persons per vehicle will greatly reduce the parking demand. As shown in **Figure 27**, instituting such measures will allow parking demand to be met by on-site parking and the available public spaces on Washington Street.

The parking demand generated by a weekday funeral at St. Paul's may cause a short-term lack of available public parking spaces on Washington Street for Center visitors, depending on the number of attendees at the funeral. Funerals with up to about 130 attendees can be accommodated by available St. Paul's Parish parking and available public parking on Washington Street. Larger funerals, as described under *Scenario 4*, do require attendees to park farther east and west along Washington Street. Because the peak parking demand for funerals occurs before the peak morning demand at the Center, it is the Center visitors who will be forced to park farther away—an estimated 10 vehicles destined to the Center will be required to park farther away during funerals with more than 130 attendees. When such a funeral is over, at about 11:00 a.m., the public spaces on Washington Street again become available. While Center staff will work with St. Paul's Parish to minimize the parking conflicts during a funeral, funeral timing and attendance are unpredictable.

**Figure 26. Washington Street Public Parking Demand by Time of Day:  
 Scenario 2, Wednesday During School Year with Mitigation**



**Figure 27. Washington Street Public Parking Demand by Time of Day:  
 Scenario 3, Major Mid-day Event at Center with Mitigation**



## Appendix A. Traffic Counts

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## ATR Traffic Counts

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## Peak-hour Traffic Counts

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## Appendix B. Synchro Reports

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## Appendix C. Supporting Data

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## Sidewalk Conditions

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## Intersection Volumes

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## Trip Activity by Mode

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## Sight Distance Data

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## Crash Data

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