

**To:** Alison C. Steinfeld, Planning Director  
 Department of Planning and Community Development  
 333 Washington Street  
 Brookline, MA 02445

**From:** James. D. Fitzgerald, P.E., LEED AP

**Date:** March 29, 2019

**Subject:** 1299 Beacon Street, Brookline MA  
 Response to Traffic Peer Review

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Vanasse & Associates has provided updated Level of Service analyses dated March 22, 2019 to reflect the updated trip generation summary dated February 15, 2019. This updated trip generation reflects the change in size of the development as reflected in the table below:

December 21, 2018	February 15, 2019
80 units	74 units
7,125 sf retail	5,000 sf retail OR
3,500 sf restaurant	5,000 sf restaurant

**Trip Generation**

The latest February 15, 2019 trip generation used Land Use Code (LUC) 252 (“Senior Adult Housing – Attached”) from the 10<sup>th</sup> Edition of the Institute of Transportation Engineer’s (ITE) Trip Generation Manual assuming age restricted (55+) housing only. According to ITE, “Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing, and active adult communities.” The fitted curve method was used in generating apartment trips. Back-up for these calculations were provided and appear reasonable.

Given the proximity to transit opportunities and general mode splits in the Town of Brookline, a reduction in site generated traffic was anticipated for residential trips based on census data from 2012-2016. Based on the information in this document, 28.0% of commuters use public transportation, 24.8% walk, 8.6% bicycle, 0.9% use taxi or other means, and 3.4% work at home. Therefore, projected apartment trips were reduced by 65%, which appears reasonable.

Since it is unknown whether the 5,000 sf on the first floor will be used for restaurant or retail space, VAI evaluated the space as either retail or restaurant in order to analyze the more conservative traffic generator. LUC 820 (“Shopping Center”) from the 10<sup>th</sup> Edition of the ITE Trip Generation Manual was used to calculate the number of trips anticipated to be generated by the 5,000 sf of retail space. However, since this LUC is not ideal for this small sized retail development; there are very few data points for shopping centers of this size and the great majority of data points for

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substantially larger developments skew the results from the standard ITE methodology. Given this concern raised during earlier peer review, VAI used data points from LUC 820 for more appropriately sized developments to more accurately predict trips generated by a retail development of this size. Environmental Partners agrees with this methodology and the calculations appear to be accurate. The 38% reduction for transit of LUC 820 trips is also supported.

LUC 931 (“Quality Restaurant”) was used to calculate the number of trips anticipated to be generated by the 5,000 sf of restaurant space. Methodology for the 5,000 sf of quality restaurant space appears to be accurate and the 38% reduction for transit of LUC 931 trips is supported.

VAI identified the more conservative traffic generator (retail versus restaurant) by identifying the greatest number of trips generated by the proposed site for each peak hour. During the morning peak hour, the “total new trips” reflect the higher trip generation of trips generated by the apartments and 5,000 sf of *retail*. During the evening and Saturday peak hours, the higher trip generation occurred with the apartments and 5,000 sf of *restaurant*.

The above evaluations result in the proposed development generating a total of:

- 12 new vehicle trips (5 entering and 7 exiting) during the weekday morning peak hour
- 31 new vehicle trips (22 entering and 9 exiting) during the weekday evening peak hour
- 41 new vehicle trips (26 entering and 15 exiting) during the Saturday midday peak hour

## Traffic and Parking Comparison

The following outlines a comparison of peak traffic and parking demand of 5,000 sf of retail versus 5,000 sf of “quality” restaurant. A comprehensive review of parking needs has been provided by Walker Consultants under separate cover.

<b>Peak Hour Trips</b>		
	74 Units, 5,000 SF Retail, 0 SF Restaurant	74 Units, 0 SF Retail, 5,000 SF Restaurant
<b>Weekday Morning Peak Hour</b>		
Entering	5	2**
Exiting	7	5**
<b>Total</b>	<b>12*</b>	<b>7**</b>
<b>Weekday Evening Peak Hour</b>		
Entering	15	20
Exiting	14	11
<b>Total</b>	<b>29</b>	<b>31*</b>
<b>Saturday Midday Peak Hour</b>		
Entering	20	24
Exiting	18	17
<b>Total</b>	<b>38</b>	<b>41*</b>

<b>Peak Parking</b>		
	74 Units, 5,000 SF Retail, 0 SF Restaurant	74 Units, 0 SF Retail, 5,000 SF Restaurant
<b>Weekday Peak Parking</b>		
Residential	67	67
Commercial	11	59
<b>Total</b>	<b>78</b>	<b>126</b>
<b>Weekend Peak Parking</b>		
Residential	67	67
Commercial	12	67
<b>Total</b>	<b>79</b>	<b>134</b>

\*Trips used by VAI

\*\*Too few data points during this time period for accurate trip generation



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## Traffic Operations

Updated Level of Service analyses was provided for the updated trip generation summary to compare operations under the future 2025 No-Build conditions to the 2025 Build conditions. Evaluation of the morning peak hour was not provided for review although site trips generated during the morning are less than half that of the weekday evening and Saturday peak hours.

### *Signalized Intersections*

The increase in trips will have little impact on delay at signalized intersections (as vehicles will likely still clear in a single cycle). However, queues are predicted to increase for a few intersections. Below is a table summarizing the difference in queue lengths for the signalized intersections and approaches that will be most affected.

**Table 1: Queue Length at Signalized Intersections**

Intersection	Approach	2025 No-Build	2025 Build	Difference (in feet)
Beacon Street at Pleasant Street <i>Weekday Evening</i>	<i>Beacon St EB TH</i>	33/167	33/273	0/+106
Beacon Street at Charles Street <i>Weekday Evening</i>	<i>Beacon St WB TH</i>	135/174	157/202	+22/+28
Beacon Street at Charles Street <i>Saturday MIDDAY</i>	<i>Beacon St WB TH</i>	111/146	140/182	+29/+36

At signalized intersections, the most notable difference will occur along the eastbound Beacon Street approach to Pleasant Street where 95<sup>th</sup> percentile queue lengths will increase by approximately five vehicles during the weekday evening peak hour. However no increase in 50<sup>th</sup> percentile queues will be experienced at the approach. Per the March 18, 2019 letter from the Brookline Transportation Board, a Transportation Access Plan Agreement including traffic monitoring complying with the Town's Transportation Access Guidelines is anticipated.

Queue lengths along the westbound Beacon Street approach to Charles Street will increase by one to two vehicles during both the weekday evening and Saturday peak hours.

All other intersections are predicted to experience a negligible increase in delay and operational conditions.

### *Unsignalized Intersections*

On the following page is a table summarizing the difference in queue lengths and delay for unsignalized intersection approaches that will be most affected.



**Table 2: Queue Length and Delay at Unsignalized Intersections**

Intersection		2025 No-Build		2025 Build		Difference	
		Delay	Queue	Delay	Queue	Delay	Queue
Harvard Street at Longwood Avenue							
Weekday Evening	Longwood Ave LT/RT	120.4	253	134.5	267	14.1	14
Saturday Midday	Longwood Ave LT/RT	102.2	233	115.6	247	13.4	14
Sewall Avenue at Longwood Avenue							
Weekday Evening	Sewall Ave LT/RT	60.3	240	73.1	268	12.8	28

At unsignalized intersections, delay along the westbound Longwood Avenue approach to Harvard Street will increase by 14 seconds during the evening peak hour and 13 seconds during the Saturday peak hour. Queue lengths along Longwood Avenue will increased by up to only one vehicle during those periods.

Delay along the northbound Sewall Avenue approach to Longwood Avenue will be increased by 13 seconds during the evening peak hour with increased queue lengths of one to two vehicles.

All other intersections are predicted to experience a negligible increase in delay and operational conditions.

### Remaining Comments

The following outstanding comments remain from Environmental Partners’ past peer reviews of this project.

#### Comment #1

**EPG’s Latest Comment:**  
(11/27/18)

The layout of the two proposed site driveways in combination with the provided truck template (backing into the loading driveway) appears to eliminate the existing 5 on-street parking spaces along Sewall Avenue.

It is requested that the vehicle templates be revised to see if it is feasible for trucks to access each driveway while retaining any on-street parking.

**VAI’s Response:**  
(12/21/18)

*The attached figure depicts the revised truck template with on-street parking added. As shown, three on-street spaces can be maintained.*

**EPG’s Response:**

Two of the on-street parking spaces are shown between the crosswalk and the first site driveway (loading zone), within a distance of only approximately 30 feet. It does not appear to be physically realistic for two vehicles to park within this tight space



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with their bumpers touching and their other bumpers either at the crosswalk line or at the driveway opening. Also, the vehicle parked adjacent to the crosswalk would need to back into the crosswalk and into the path of pedestrians in order to depart given the lack of buffer. This space seems better sized for only one vehicle.

While one parked vehicle can fit in between the crosswalk to the first site driveway and another can fit between the two site driveways, on-street parked vehicles will impact sight distance for exiting vehicles (looking southerly, toward Longwood Avenue). Large sized trucks exiting the loading dock driveway may have improved line of sight over (lower) parked vehicles along Sewall Avenue, but passenger vehicles exiting the parking garage driveway may have more of a challenge. However, while sight distance is important for safety, vehicles travelling along Sewall Avenue appear to be travelling at slow travel speeds and sight distance in urban environments is not always attained.

As previously stated, while AASHTO sight distance requirements should be followed, it is challenging to achieve in many urban environments such as this section of Brookline. According to the Town's Transportation Division, "Transportation Board & Transportation Division staff have consistently opposed the removal of the public parking supply (especially in high demand areas as Sewall Ave) for sightlines alone".

Given the anticipated impacts to existing on-street parking, parking mitigation and/or additional TDM measures should be considered to encourage alternative modes of transportation including compliance with the Town's Transportation Access Plan Guidelines. Per the March 18, 2019 letter from the Brookline Transportation Board, on-site transit screens with real time MBTA information, on-site covered bicycle racks, and curb extensions (between Longwood Avenue and the first driveway) for the purposes of locating a BlueBikes station should be included by the Applicant.

## Comment #2 (Not Addressed)

### **EPG's Latest Comment: (11/27/18)**

Despite the low crash rates it should be noted that the project site and several of the study intersections fall within both the 2006-2015 Highway Safety Improvement Program (HSIP) Bicycle Crash Cluster and Pedestrian Crash Cluster. HSIP crash clusters are different from crash rate in that they take into consideration the severity of the experienced crashes and identify areas or "clusters" that fall within the top 5% crashes in the region.



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The following intersections fall both within the Bicycle and Pedestrian clusters:

- Longwood Avenue at Sewall Avenue;
- Harvard Street at Longwood Avenue;
- Beacon Street at Harvard Street;
- Beacon Street at Pleasant Street.

The following intersection falls within the Pedestrian cluster only:

- Harvard Street at Sewall Avenue



Therefore, despite the low crash rates at the subject intersection, it appears that enough severe bicycle and pedestrian crashes have been experienced at intersections that immediately surround the project site to justify their falling within HSIP Crash Clusters. The pedestrian, bicycle and motorist traffic generated by the proposed development may further exasperate safety concerns at the immediately surrounding intersections and some mitigation should be considered.

**VAI's Response:**  
(12/21/18)

No response.

**EPG's Response:**

No response was provided for the above comment, however bump outs have been proposed by the Applicant at the Longwood Avenue at Sewall Avenue intersection to improve pedestrian crossing safety.

Please do not hesitate to contact me with any questions.

