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DEPARTMENT OF PLANNING and
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CC: Jennifer Raitt, Director, Department of Planning and Community Development
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Mass Ave/Appleton Design Review Committee

From: Daniel Amstutz, Senior Transportation Planner, Department of Planning and Community Development

Date: March 10, 2022

RE: Mass Ave/Appleton Area Parking Study

Overview and Summary

The Department of Planning & Community Development is submitting this report which studied on-street parking in the Mass Ave/Appleton area. This study was proposed during discussions of potential short-term safety improvements to the Mass Ave and Appleton Street/Appleton Place intersection and nearby area that occurred over the course of 2021 and was requested by the Select Board as part of their approval of the short-term improvements in fall 2021. Town staff, with the assistance of resident volunteers, collected data on 136 on-street parking spaces over 22 hours across six days in October 2021.

Overall, the study finds that there is a plentiful supply of available on-street parking in the study area over the course of the day, that parking utilization for the area as a whole is well below the industry standard, and that some segments of Mass Ave have low turnover with vehicles parked well beyond the 2-hour time limit. The section of Mass Ave with the highest observed parking utilization and turnover was on the north side of Mass Ave between Forest Street and Appleton Street for several hours during the middle of the day. Much of the south side of Mass Ave and adjacent side streets had very low parking utilization for each hour of the day. It is also noted that the parking spaces removed as part of the short-term improvements that the Town implemented in November 2021 would have had minimal impact on the parking activity observed for this area.

Further information about the study's background, existing conditions and methodology, data collection, data analysis, and results of the analysis is provided on the following pages of this document.

Study Background

This parking study was conducted as proposed by the Town Manager in his memo to the Select Board dated September 9, 2021 ("Mass Ave/Appleton Intersection Short-Term Safety Recommendations") and referenced in the Department of Planning & Community Development Report to the Board also dated September 9 ("Background and Overview of Mass Ave/Appleton Intersection Short-Term Safety Recommendations"), both of which were presented to the Board on at their September 13, 2021 meeting. As part of the Board's approval of the modified Mass Ave/Appleton short-term implementation at their October 13, 2021 meeting, a request was made to revisit the short-term implementation in February 2022 and include a report on the parking study completed by staff.

The purpose of this parking study is to provide additional information about existing parking activities on Mass Ave and on nearby side streets proximate to the intersection of Mass Ave and Appleton Street/Appleton Place to help inform changes to street design that may impact on-street parking in the area. The original "Option 2" short-term design recommended by the Mass Ave/Appleton Design Review Committee would have removed approximately 22 on-street parking spaces. The modified improvements approved by the Board removed approximately 16 on-street parking spaces. As the Mass Ave/Appleton project moves into a phase of working towards long-term improvements for the area, this parking study will help to understand the on-street parking utilization, duration, and turnover for the Town to make informed decisions on the impacts of future improvements to the on-street parking supply.

Existing Conditions, Methodology & Data Collection

DPCD staff conducted the parking study along Mass Ave between Richardson Ave and Fessenden Road. The study also included several side streets within this area to get a more complete picture of on-street parking usage.

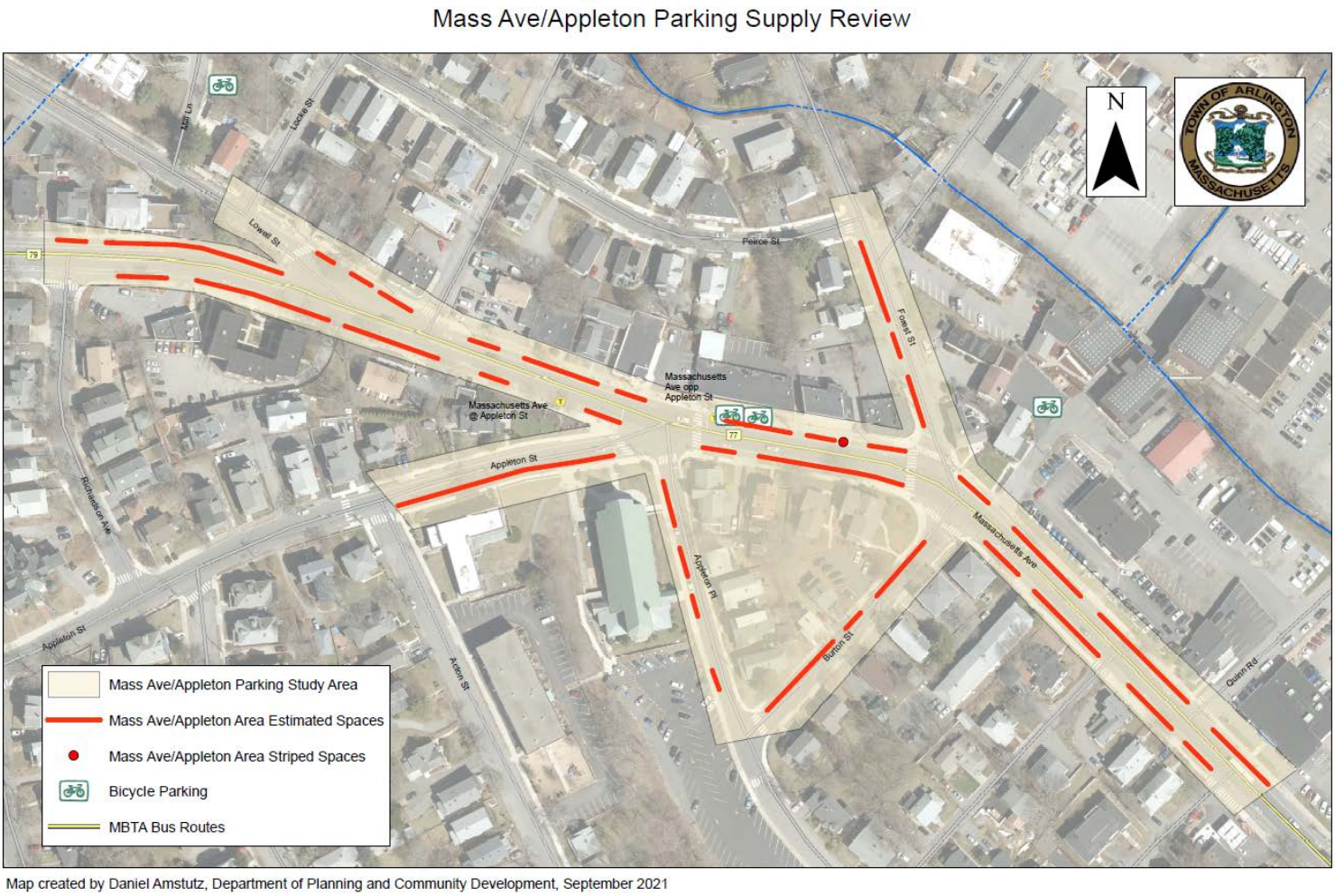
Data were collected on the following street segments (approximate number of parking spaces in parentheses):

- Mass Ave from Fessenden Road to Richardson Ave (97)
- Forest Street from Mass Ave to Peirce St (7)
- Appleton St from Mass Ave to Acton St (14)
- Appleton Place from Mass Ave to Burton St (7)
- Burton St from Appleton Place to Mass Ave (11)

In total, 136 parking spaces were surveyed in this effort.

Because on-street parking spots are not individually marked in this area – except for one handicap placard (HP) spot – staff estimated the number of parking spaces along the curb line. Using an industry standard of 20' of length for each parking space, staff estimated the number of legal parking spaces on each street, accounting for driveways, crosswalks, fire hydrants, bus stops, and other zones where parking is expressly prohibited. The total number of on-street parking spaces estimated above is slightly less than what was estimated in DPCD's original

memo in September 2021 due to field review identifying additional no parking locations and to be conservative about the on-street parking supply.



Map created by Daniel Amstutz, Department of Planning and Community Development, September 2021

Figure 1 - Mass Ave/Appleton Parking Study Area

As noted in DPCD's previous report dated September 9, 2021 ("Background and Overview of Mass Ave/Appleton Intersection Short-Term Safety Recommendations"), the area surveyed for this study was chosen to include on-street public parking spaces that are less than a five-minute walk from the main commercial area on the north side of Mass Ave between Appleton Place and Forest Street/Burton Street. Staff consider these areas to be a reasonable walking distance from a parking space to a location within this general area.

Methodology

To determine a method to collect the parking data for this study, staff utilized the Metropolitan Area Planning Council (MAPC) guidance on how to conduct a parking study.[1] This guidance provides information on how to determine a study scope, collect parking data, observations to make, and how to analyze the data. The guidance is oriented towards helping local communities in the region collect data in a local context to help with planning and decision-

[1] MAPC, "How to do a Parking Study": https://www.mapc.org/resource-library/how-to-do-a-parking-study/

making. MAPC used this same methodology for a parking study for Mass Ave in East Arlington as part of the BRT Pilot project in 2018 and provide it as an example in the guide.

Parking data were collected in October 2021 before the short-term improvements to the Mass Ave/Appleton area were made. Collecting data at this time allowed staff to account for the following concerns that prevented prior data collection:

- Data was collected in the fall season while Arlington Public Schools was in session;
- Traffic volumes had rebounded in the fall from people returning to work and conducting business as usual; and
- COVID-19 infections were at a low point at the time of data collection, and the Omicron surge was still several weeks away.

In addition, data was collected on typical weekdays – and one Saturday – where there were no special events, holidays, or other unusual traffic increases/decreases expected.[2] Based on these factors, staff believe the data collected for this parking study is a faithful picture of parking activity in the area.

Data were collected by Town staff, Transportation Advisory Committee members, and Arlington residents who volunteered their time. Town staff and volunteers collected 22 hours' worth of parking data in the Mass Ave/Appleton area, on the following days and times:

- Thursday October 7: 8 AM – 6 PM
- Tuesday October 12: 12 PM – 4 PM
- Wednesday October 13: 10 AM – 12 PM
- Thursday October 14: 8:30 AM – 10:30 AM
- Saturday October 16: 9 AM – 12 PM
- Tuesday October 19: 1 PM – 2 PM

One person at a time was able to collect the data in the area of the study. A spreadsheet was provided with all the locations of the on-street parking spaces so they could record the location of each vehicle within each street block once an hour. The parking location of vehicles parked was written down using the first few digits of the vehicle license plate on the spreadsheet. This allowed the surveyor to confirm whether the vehicle was the same car parked there the next hour or if it was a different car, providing data on vehicle duration and turnover along the street. To collect the parking data, the person walked the study area each hour, which took about 20-25 minutes. They then waited until the beginning of the next hour to begin their walk again and collect the next hours' worth of data. (All data except one was collected at the beginning of the hour; one set of data – Thursday, October 14 -- was collected halfway through each hour for the period studied.)

[2] On Tuesday, October 12, it was observed that Forest Street was closed in the afternoon for construction. This does not appear to have impacted on-street parking in a significant way; very little parking was observed on Forest Street during this study.

Through this method, staff were able to collect a robust, block-by-block set of parking utilization and turnover data in the study area. Other observations were made about general parking conditions and in some cases, the utilization of private parking lots. Note that this method did not directly collect data on very short stays in parking locations, i.e., rapid turnover when someone parks for five or ten minutes to quickly run into a store. However, this information can indirectly be borne out through both the data showing different cars parked in an on-street location each time data were collected, and through general observations recorded by the surveyors.

Analysis of Parking Data

Parking data were analyzed for utilization on all the streets reviewed and for turnover on Mass Ave. This was done on an hour-by-hour basis, as the data was collected at either the beginning or the middle of each hour over the course of the data collection period. A parking space was considered utilized if it was occupied at the time of data collection. Duration and turnover was analyzed in terms of which vehicles were parked in spaces on Mass Ave and for what length of time, looking at whether the same vehicle was parked in the same space or if a new vehicle had been parked in that location. The richest and most beneficial data set was collected on Thursday, October 7, when 10 hours' worth of parking data were collected.

Figure 2 - North side of Mass Ave next to Mirak Hyundai dealership. Note empty curb space on the other side of the street. Picture taken at 11:40 AM on Thursday, October 7, 2021.

In analyzing the parking data, staff used a parking industry standard which considers a parking occupancy at 85-90% to be the ideal situation for on-street parking spaces, so that at least one or two parking spaces per block are open. If parking utilization is consistently above this at 100%, or greater (via illegal or informal parking), the parking supply is considered over capacity;

if utilization is shown to be less than 85-90%, the parking supply is considered to be under capacity or under-utilized. This 85-90% standard is referred to on page 3 of MAPC's "How to do a Parking Study" (referenced earlier) as well as the Arlington Center Parking Study from 2014 (Parking Availability Goal under "Supporting Elements", page 27)[3] and "Managing Curb Space in the Boston Region: A Guidebook" released in October 2021 and funded by the Boston Region Metropolitan Planning Organization (MPO) (see page 43, "Balancing Supply and Demand")[4]. For this analysis, staff also referenced the documents "Curb Appeal: Curbside Management Strategies for Improving Transit Reliability" (National Association of City Transportation Officials, 2017)[5], "Transportation Access Studies of Central Business Districts" (Central Transportation Planning Staff [CTPS] of the Boston Region MPO, 2019)[6], and the Strategies & Implementation section of the Connect Arlington Sustainable Transportation Plan.[7]

Parking Utilization

A spreadsheet showing the analysis of all the data collected is provided at an attachment to this document. A summary of the utilization analysis is provided below.

Mass Ave

Staff analyzed the utilization of the entire corridor studied (Richardson Ave to Fessenden Ave) as well as specific segments of interest based on the public comments and discussion during the Mass Ave/Appleton Design Review Committee meetings, Select Board meetings, and based on the data collected. These more detailed areas of interest are:

- The north side of Mass Ave between Forest Street and Appleton Street
- The north side of Mass Ave between Lowell Street and Richardson Ave
- The south side of Mass Ave between the Dunkin' Donuts driveway to Appleton Street
- The south side of Mass Ave between Appleton Place and Burton Street

For of the 97 parking spaces reviewed on Mass Ave as part of this study, for all the days data were collected, average utilization for the entire day was not more than 42%. The highest utilization rate was 53.6% (52 vehicles parked), on Saturday, October 16, at 11:00 am. The next highest utilization time period was on Thursday, October 7, at 11:00 am, at 50.5% or 49 vehicles parked. Figure 3 visually shows the utilization observed for October 7 with a red dashed line delineating the 85% occupancy threshold. Additional bar graph Figures in this section also show utilization with the same red dashed line showing the 85% threshold.

[3] Arlington Center Parking Study: https://www.arlingtonma.gov/home/showpublisheddocument/32193/636105638692470000

[4] "Managing Curb Space in the Boston Region: A Guidebook": https://www.bostonmpo.org/data/pdf/studies/other/Managing-Curb-Space-in-the-Boston-Region-Guidebook.pdf

[5] "Curb Appeal: Curbside Management Strategies for Improving Transit Reliability": https://nacto.org/wp-content/uploads/2017/11/NACTO-Curb-Appeal-Curbside-Management.pdf

[6] "Transportation Access Studies of Central Business Districts" : https://www.ctps.org/data/pdf/studies/other/Access-Central-Business-Districts.pdf

[7] Connect Arlington Part 2: Strategies & Implementation: https://www.arlingtonma.gov/home/showpublisheddocument/56978/637641176808770000

The next several pages provide information on the Mass Ave segments detailed above, with maps, photographs, and charts of utilization for October 7 (the day with the most parking data collected).

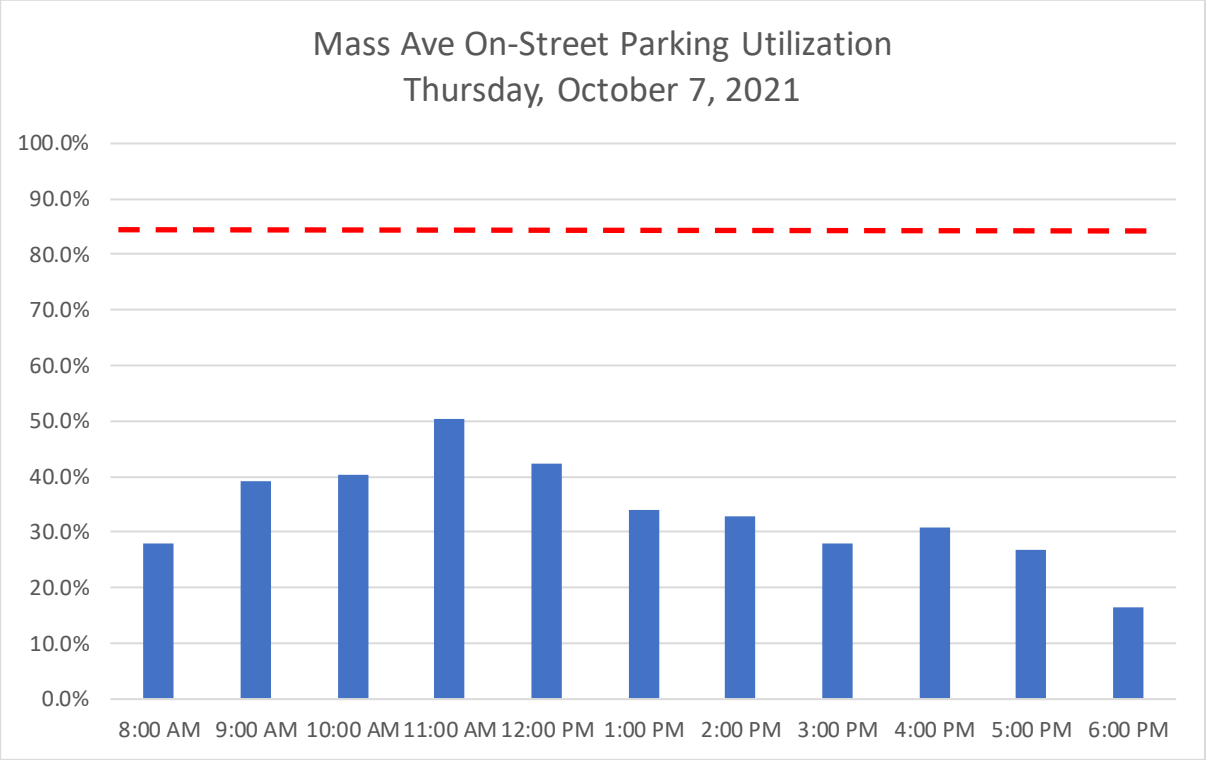


Figure 3 - Chart showing utilization of parking spaces by percentage of spaces with parked vehicles on Mass Ave in the study area from 8 AM - 6 PM on October 7, 2021.

The north side of Mass Ave between Forest Street and Appleton Street is a focal point for this study given the adjacent business land uses and high turnover and usage that was observed during this study and discussed at length during the discussion of short-term improvements to the Mass Ave/Appleton intersection. Nine parking spaces were estimated for this segment of road, including the one designated handicap placard space within the study area. Over the course of the day, and based on data collected, the average utilization was not more than 50%. The highest utilization was observed on Thursday, October 7, at 11:00 am, with an 88.9% utilization rate or 8 out of 9 parking spaces occupied. The next highest utilization was observed on Saturday, October 16, at 11:00 am with a utilization rate of 77.8% or 7 out of 9 parking spaces occupied. Except for these two instances, at least three parking spaces were unoccupied during every other hour that data were collected. Figures 4, 5, and 6 refer to this segment.

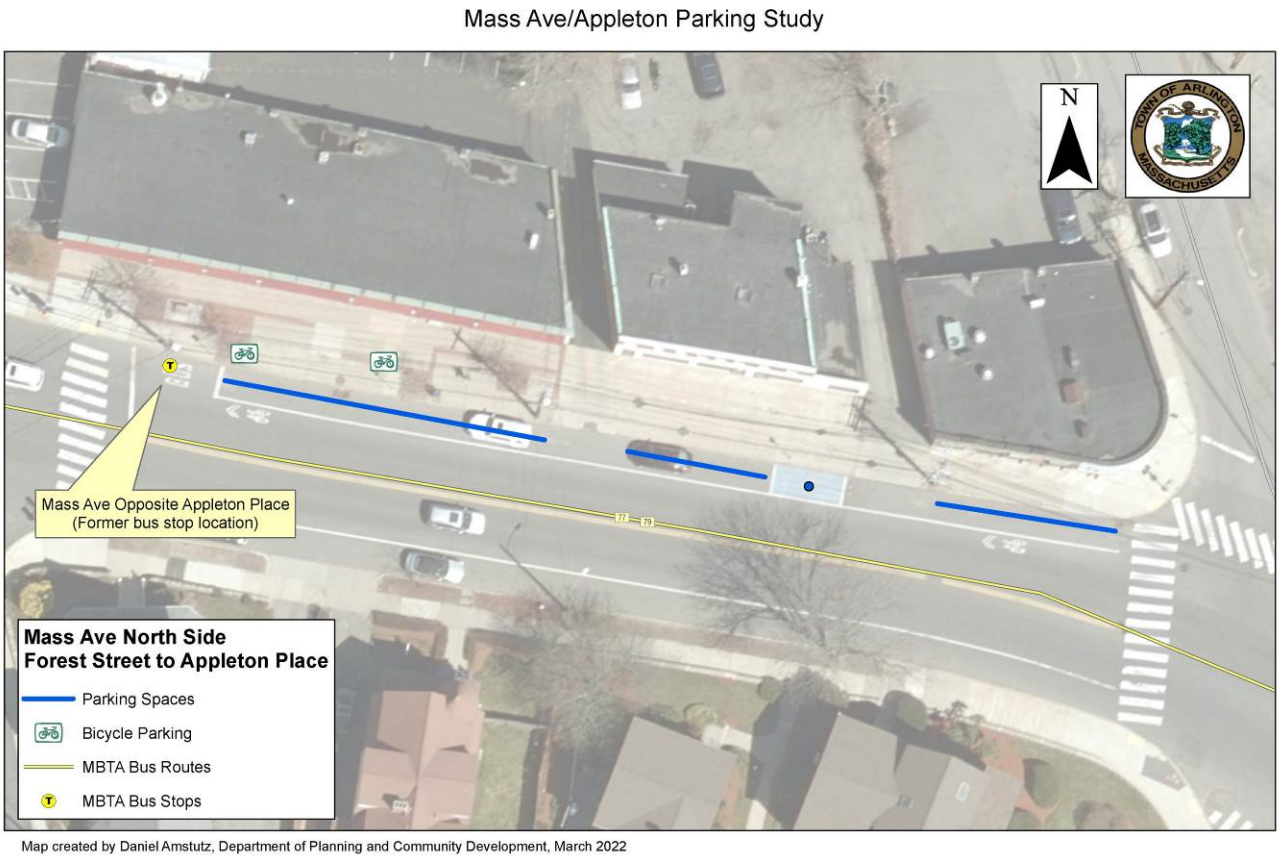


Figure 4 - Map showing parking spaces on the north side of Mass Ave from Forest Street to Appleton Place.

Figure 5 – Picture of the north side of Mass Ave from Forest Street to Appleton Place, from October 12, 2021 at approximately 1:26 PM. Picture credit: Joe Solomon.

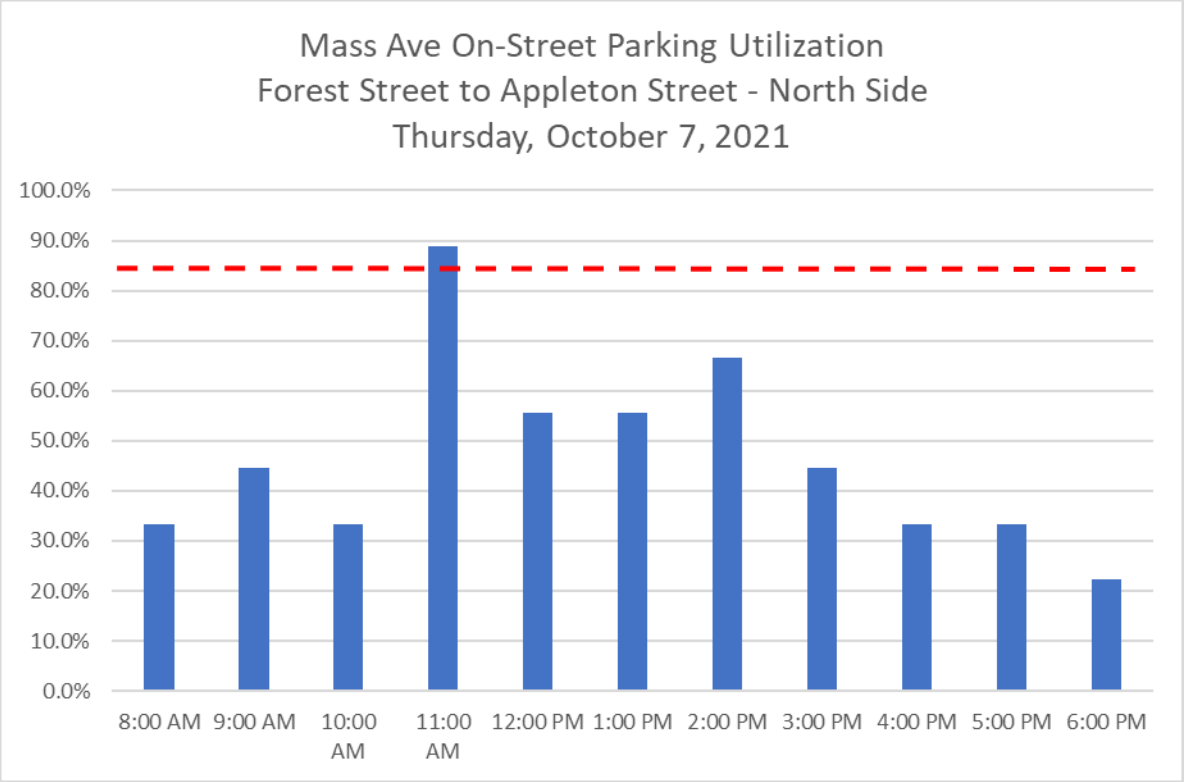


Figure 6 - Chart showing utilization of parking spaces by percentage of spaces with parked vehicles on Mass Ave on the north side from Forest Street to Appleton Place from 8 AM - 6 PM on October 7, 2021.

The north side of Mass Ave between Lowell Street and Richardson Ave is next to the Foot of the Rocks and is across from the Dunkin' Donuts in Arlington Heights. Thirteen parking spaces were estimated for this side on this segment of Mass Ave. Most notably, this segment had the most consistent level of parking utilization of all the segments of Mass Ave studied, with at least 70% or 9 out of 13 parking spaces in use in 15 out of 22 hours of data collection. This was especially the case in the morning hours. However, this segment also had the lowest level of turnover of all the segments studied, with vehicles frequently parked well past two hours – sometimes for at least five or six hours. On Thursday, October 7, the day with the largest amount of data collected, eleven vehicles (out of 23 unique vehicles) were observed parking past the two-hour time limit; seven had been parked for at least four hours. Given the consistency of this long-term parking and seeing the same vehicles parked, staff suspect the drivers parking are either residents in directly adjacent properties or employees of nearby businesses. Figures 7, 8, and 9 refer to this section of Mass Ave.

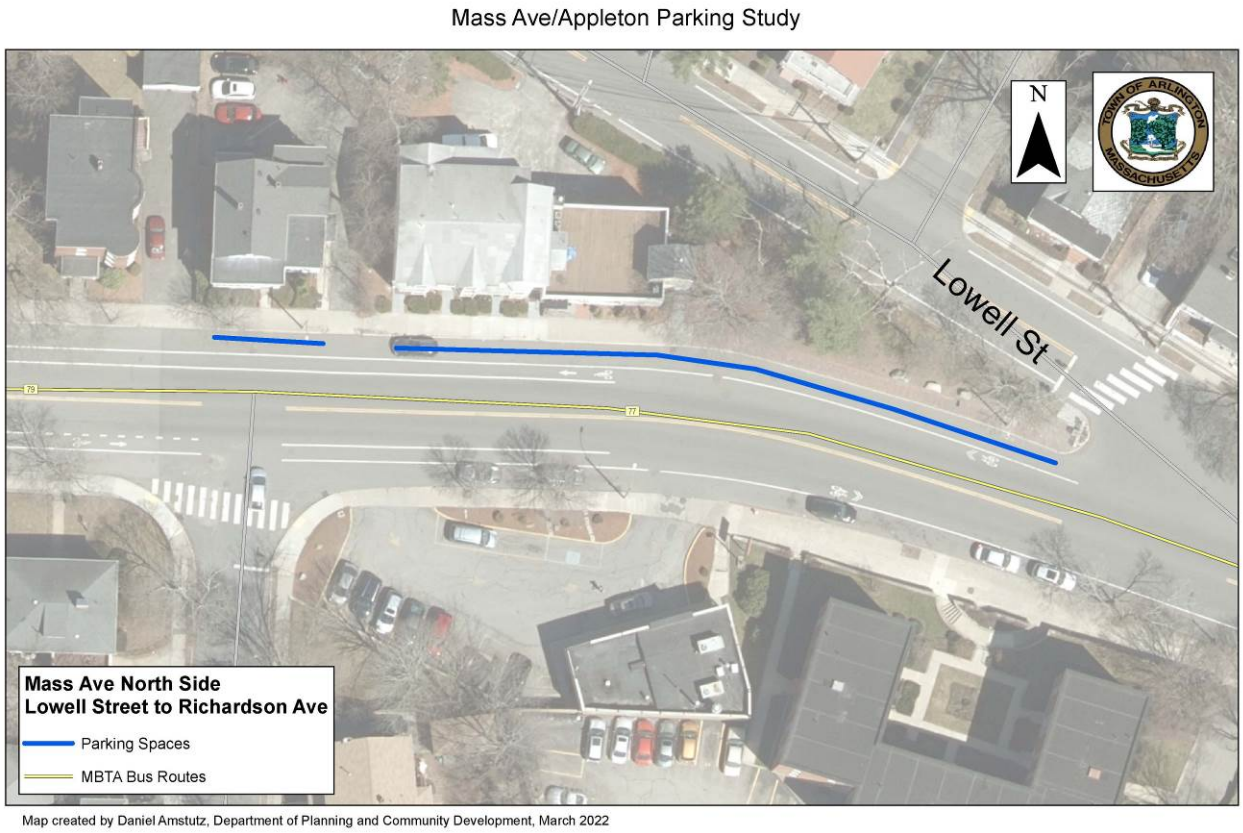


Figure 7 - Map showing parking spaces on the north side of Mass Ave from Lowell Street to Richardson Ave.

Figure 8 - North side of Mass Ave next to Foot of the Rocks. Vehicles were regularly parked for several hours of the day. Picture taken at 10:10 AM on Thursday, October 7, 2021.

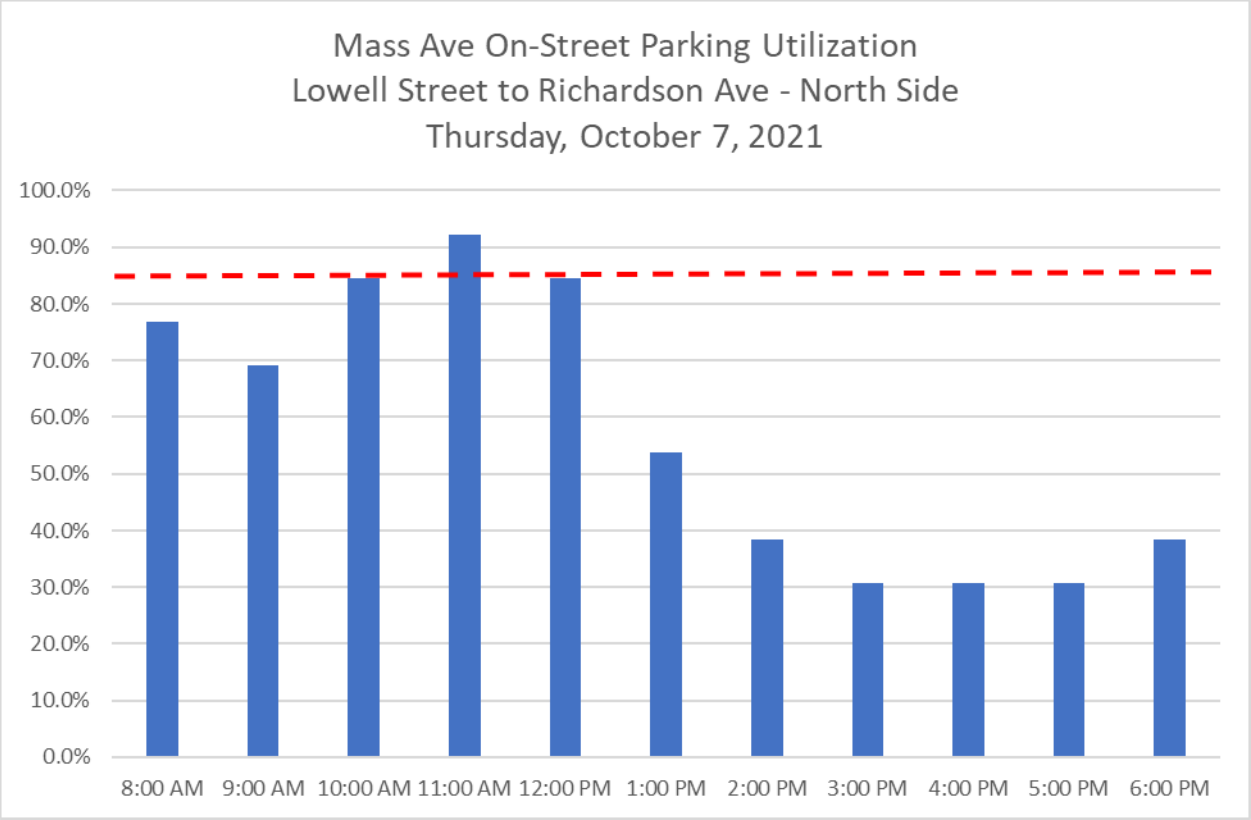


Figure 9 - Chart showing utilization of parking spaces by percentage of spaces with parked vehicles on Mass Ave on the north side from Lowell Street to Richardson Ave from 8 AM - 6 PM on October 7, 2021.

The south side of Mass Ave between the Dunkin' Donuts driveway to Appleton Street is notable for the large amount of curb space offered in this segment (18 on-street parking spaces estimated) and the very low parking utilization observed during all data collection periods. At no time during data collection periods were more than 33% or 6 out of 18 spaces in use. Most of the time, three or fewer spaces were in use over the course of the hours studied. This is also notable considering that this segment is less than one or two blocks from businesses along this section of Mass Ave and is theoretically an easy walk. However, the closest crossing of Mass Ave is at Mass Ave and Appleton Street/Appleton Place and is on the opposite side of the intersection to this segment. The inconvenience and lack of other safe pedestrian crossing options likely affects travel behavior of drivers to the extent that they do not think parking and walking in this segment is a reasonable option to access local businesses and the general area. Figures 10, 11, and 12 refer to this segment of Mass Ave.

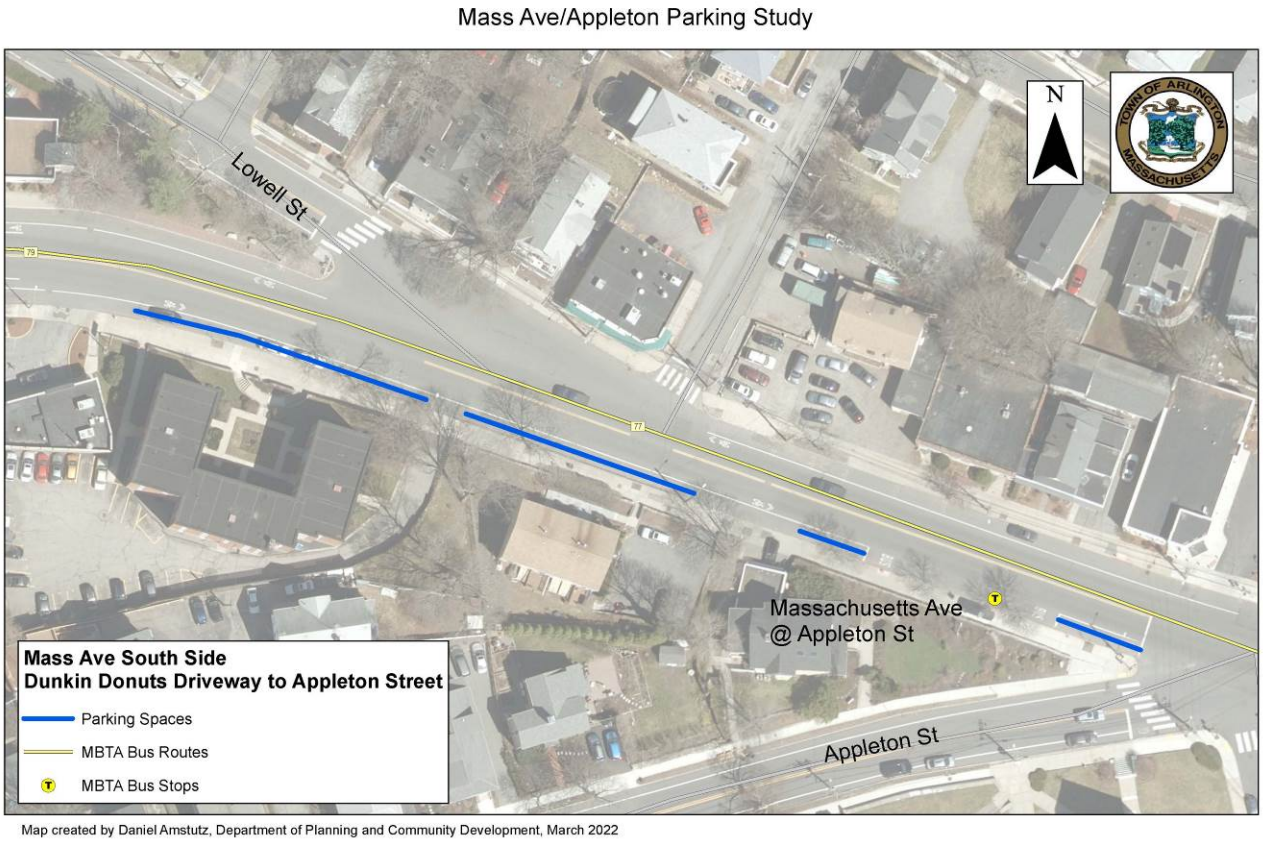


Figure 10 - Map showing parking spaces on the south side of Mass Ave from the Dunkin' Donuts driveway to Appleton Street.

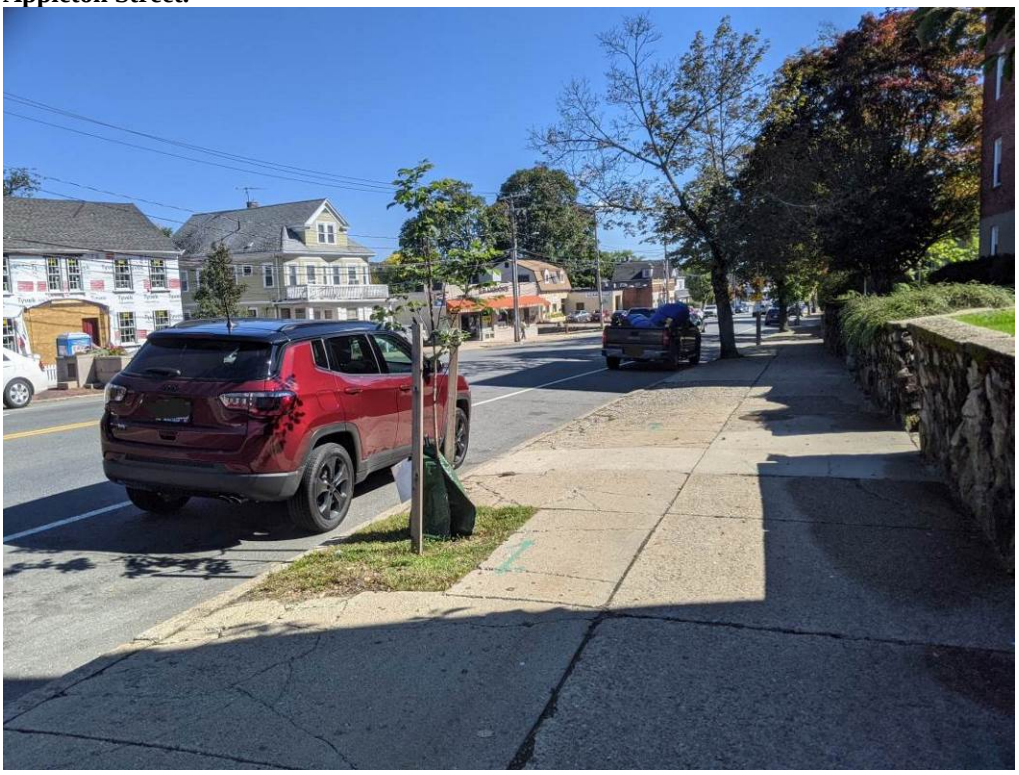


Figure 11 - South side of Mass Ave across from Lowell Street. Picture taken at 12:10 PM on Thursday, October 7, 2021.

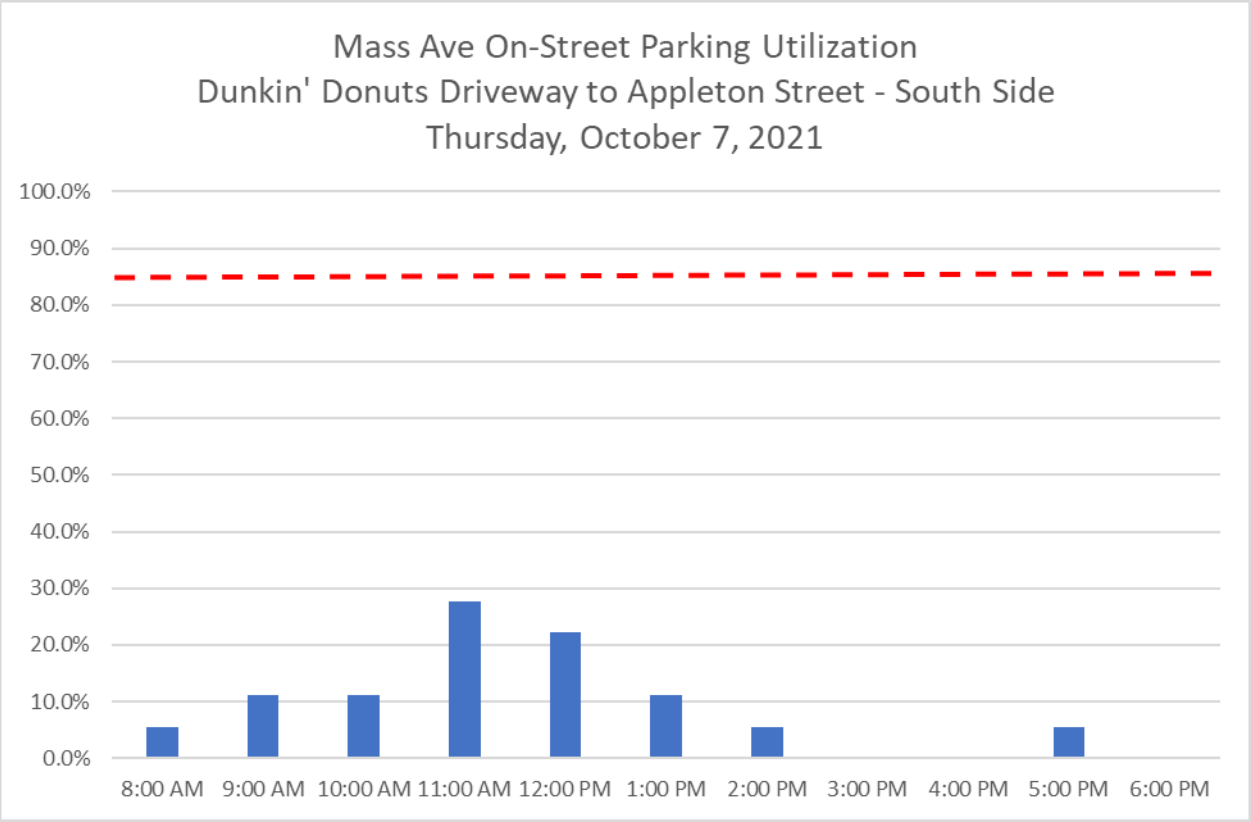


Figure 12 - Chart showing utilization of parking spaces by percentage of spaces with parked vehicles on Mass Ave on the south side from Dunkin' Donuts driveway to Appleton Street from 8 AM - 6 PM on October 7, 2021.

The south side of Mass Ave between Appleton Place and Burton Street is another key focus area of Mass Ave for this study, as it is opposite the primary business area of concern for the Mass Ave/Appleton study area. Ten parking spaces were estimated in this segment. Similar to the opposite side of the street, over the course of the day, and based on all data collected, the average utilization was not more than 30%. Also similar to the opposite side of the street, late morning tended to be the busiest time of day, with the highest utilization observed on Thursday, October 7, at 11:00 am and 12:00 pm, with a 60% utilization rate or 6 out of 10 parking spaces occupied, and on Wednesday, October 13 at 11:00 am, with 70% or 7 out of 10 spaces occupied. In most instances, between two and five vehicles were parked on street in this segment. In some cases, long-term parking beyond two hours was observed with several vehicles during observations. Figures 13, 14, and 15 refer to this segment.

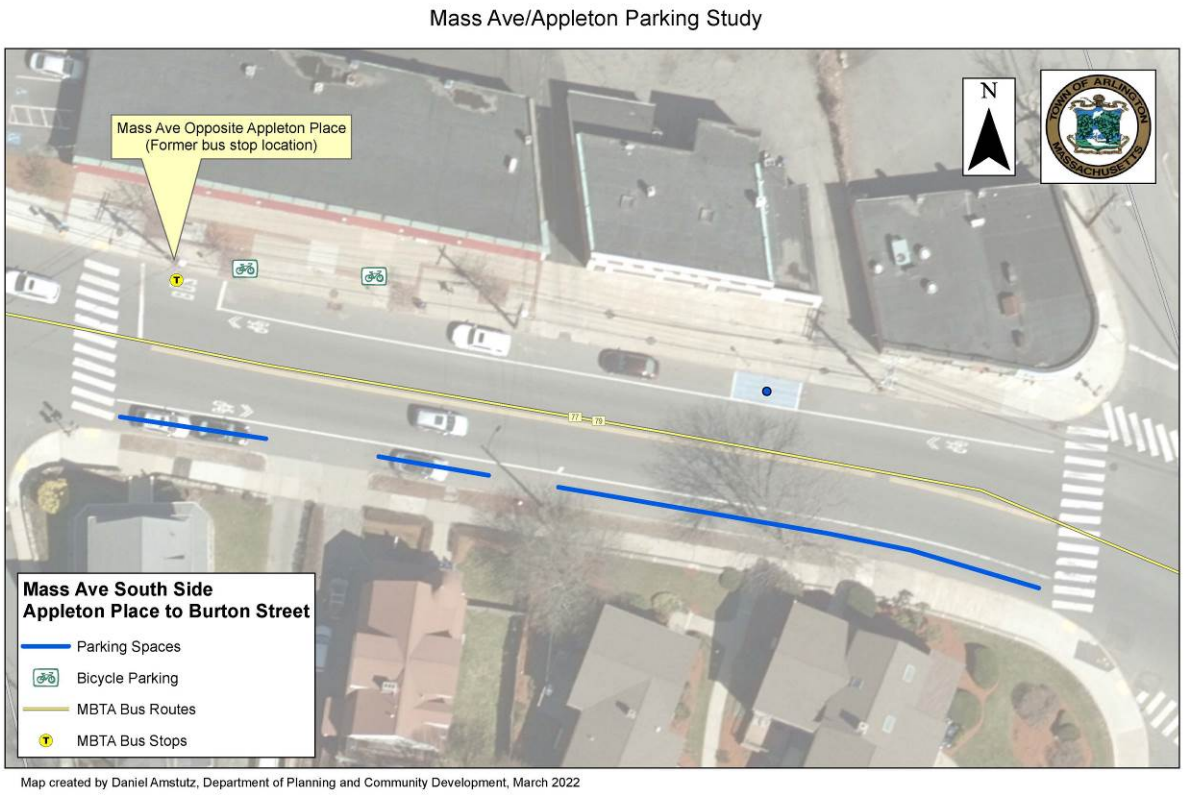


Figure 13 - Map showing parking spaces on the south side of Mass Ave from Appleton Place to Burton Street.

Figure 14 - South side of Mass Ave between Appleton Place and Burton Street. The vehicle covered in plastic in the picture was parked on Mass Ave for six hours. Picture taken at 11:25 AM on Thursday, October 7, 2021.

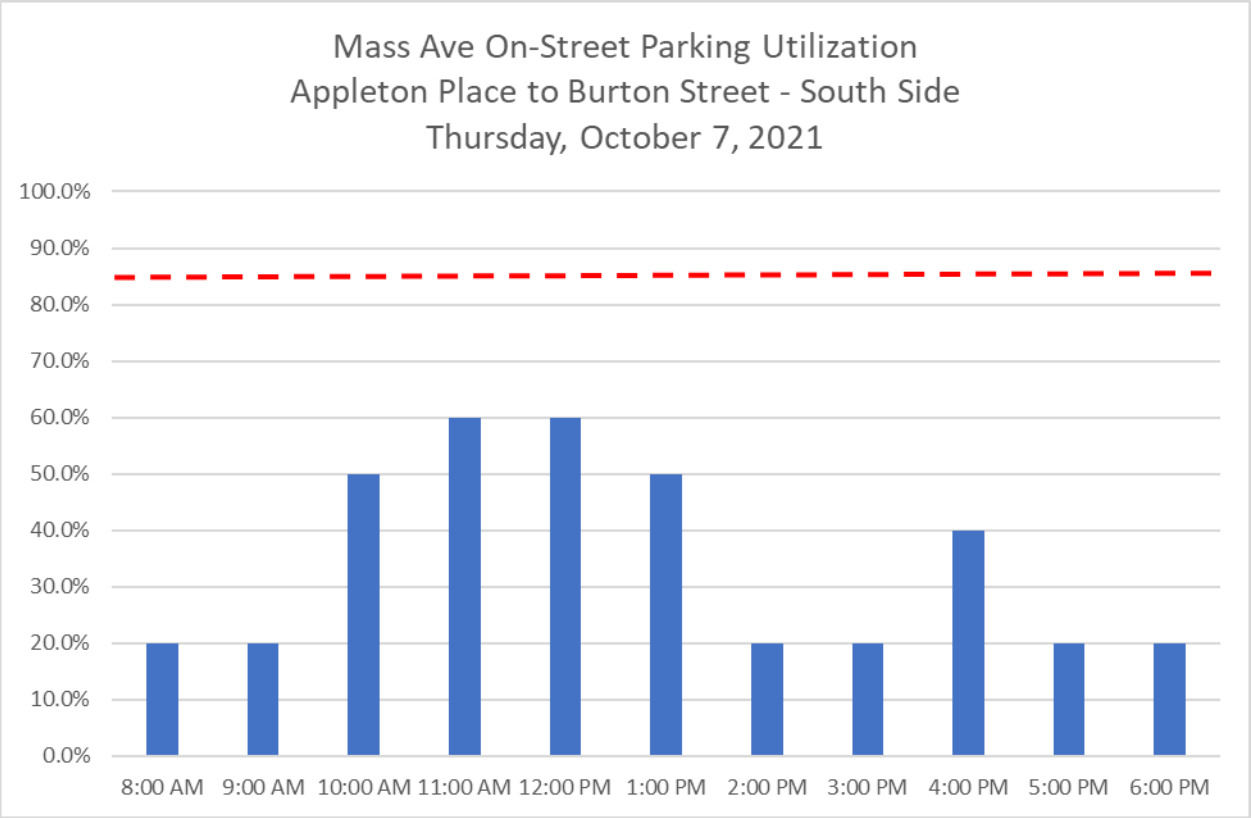


Figure 15 - Chart showing utilization of parking spaces by percentage of spaces with parked vehicles on Mass Ave on the south side from Appleton Place to Burton Street from 8 AM - 6 PM on October 7, 2021.

Forest Street

The west side of Forest Street between Mass Ave and Peirce Street was studied for this report. An estimated seven on-street parking spaces are available in this stretch; the opposite side of Forest Street is signed as No Parking. Although the west side of the street is not explicitly signed for parking, it was clear from the study that these spaces are minimally used, possibly due to concerns of the narrowness of Forest Street and the traffic volumes carried by this street. No more than two parking spaces, or 29% of estimated supply, were ever in use during observations, despite the very close proximity to the businesses around the corner on Mass Ave. It was also observed that an off-street parking lot for customers of Amy's Salon is right off Forest Street and was well-used during the hours when the salon is open (starting at noon, usually at least half full through to the evening hours).

Appleton Street

The south side of Appleton Street between Acton Street and Mass Ave was studied for this report. An estimated 14 on-street parking spaces are available in this stretch, and the opposite side of the street is signed as No Parking. Similar to Forest Street, although the south side is not explicitly signed for parking, these spaces were very rarely used, likely for similar reasons of narrow roadway width and high traffic volumes on Appleton Street. Only one car was ever observed parking on this segment, and was always the same car. Interestingly, based off aerial imagery taken from different sources, including the Town's orthophotos for its own GIS data, it is clear that some times of the week this parking is utilized more heavily. Staff suspect this is the case on Sundays or during church services, as this segment is directly next to St. Athanasius.

Like Forest Street, this segment is very close to businesses and Mass Ave, yet was rarely utilized during the week.

Appleton Place

The west side of Appleton Place between Mass Ave and Burton Street was studied for this report (same side as the St. Athanasius church). An estimated seven on-street parking spaces are available here, and the opposite side of the street is signed as No Parking. There is also a signed HP parking space next to the accessible ramp to enter St. Athanasius church, but it does not have pavement markings like the HP space on Mass Ave. Estimating the number of spaces here was somewhat difficult due to the lack of pavement markings for the HP space and in defining no parking areas for several signs advising drivers to not park across from residential driveways. Unlike other side streets Appleton Place was generally well-used, with several hours where four or five vehicles (out of seven) were parked (57% and 71%, respectively). However, there were usually two or three parking spots available during all the times that data were collected here.

Burton Street

Burton Street between Mass Ave and Appleton Place was studied for this report. Staff estimated eleven on-street parking spaces available; due to the narrowness of the street, staff accounted for parking on only one side in creating the spreadsheet to collect data, although drivers could park on either side. Parking calculations and observations were done for both sides of the street since that is what was observed in the field. In general, less than six out of eleven (55%) of parking spots were utilized, except for one hour observed on Tuesday, October 12 at 2 pm when eight spaces out of eleven (73%) were in use.

Summary

Based on the above data collection, which spanned 22 hours over six different days, there is a clear pattern of under-utilization of on-street parking throughout the area, including parking spaces on Mass Ave. Although the parking spaces on the north side of Mass Ave between Forest Street and Appleton Place generally see some of the highest utilization in the corridor, these observations did not find that parking demand outstripped supply during the hours observed for this study. Furthermore, it was frequently observed that there were several unoccupied parking spaces on the same side of the street approximately 200’ west of the main business area, on the other side of the Leader Bank. Nearby side streets also provide adequate unused curb space for parking should there be a need for additional on-street parking.

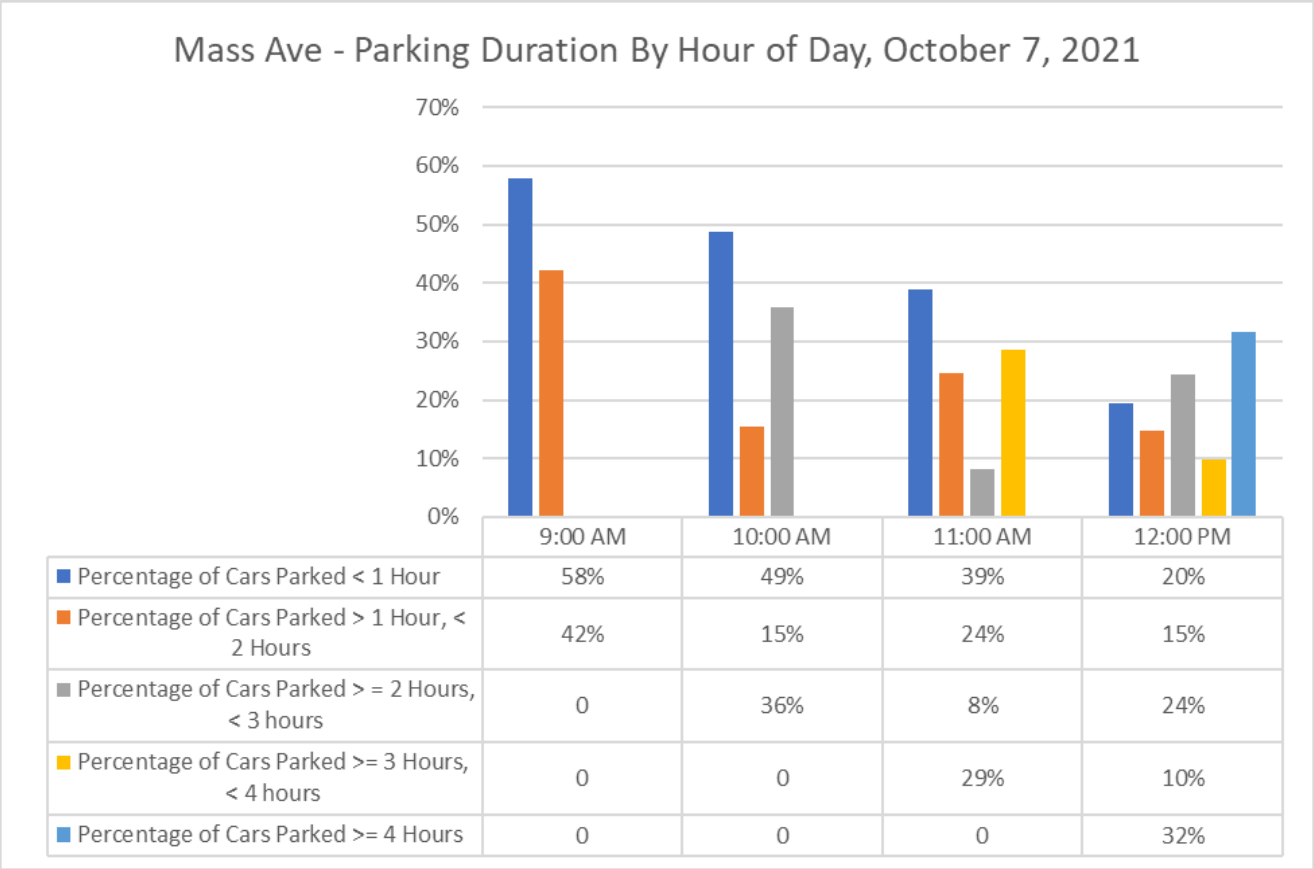
Parking Duration and Turnover

The data collection method used allowed for staff to determine approximately how long each vehicle was parked in a particular location, providing detailed information on parking duration and by extension, turnover. An analysis of parking duration for Mass Ave was conducted, to understand over time how long cars were parked for:

- less than an hour;
- more than one hour and less than two hours;
- at least two hours and less than three hours;

- at least three hours and less than four hours; and
- vehicles parked for four hours in the same space or longer.

Along Mass Ave, signage indicates there is a two-hour parking limit. Signage is generally consistent, although not always visible from every parking space. However, given the frequency of the signage, it was presumed that all curb space along Mass Ave in this section has a two-hour parking limit. Therefore, it was noted that any vehicles observed for parking longer than two hours were in violation of parking regulations.



	9:00 AM	10:00 AM	11:00 AM	12:00 PM
Percentage of Cars Parked < 1 Hour	58%	49%	39%	20%
Percentage of Cars Parked > 1 Hour, < 2 Hours	42%	15%	24%	15%
Percentage of Cars Parked > = 2 Hours, < 3 hours	0	36%	8%	24%
Percentage of Cars Parked >= 3 Hours, < 4 hours	0	0	29%	10%
Percentage of Cars Parked >= 4 Hours	0	0	0	32%

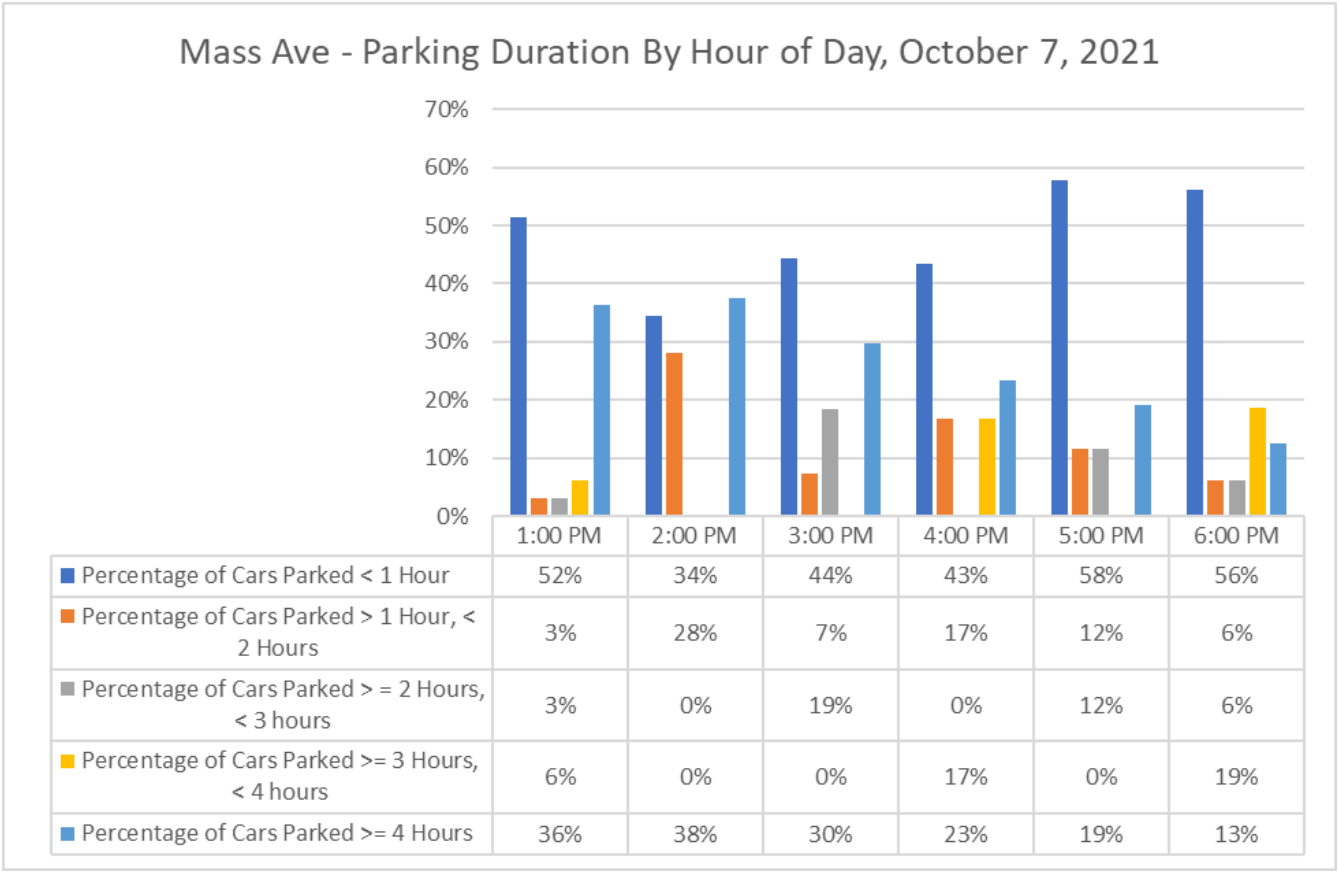
Figure 16 - Chart showing parking duration by hour for Mass Ave in the study area from 9 AM to 12 PM, for October 7, 2021.

Observations and data collection indicate that the two-hour time limit is frequently violated and parking for long periods of time on Mass Ave is common, especially for what appears to be the same people with the same vehicles. In several cases, the same vehicles were parked all day on Mass Ave for over eight hours. The analysis of parking duration data is provided in an attached spreadsheet. Figure 16 shows the duration of cars parked as a percentage of total vehicles parked for the morning of October 7, 2021. Figure 17 shows this information for the evening period of October 7. A summary of day-by-day parking duration is provided below:

- Thursday, October 7, 8 AM – 6 PM:
    - At 11:00 am, the highest overall Mass Ave parking occupancy for this day in the study area (48 vehicles parked), 18 vehicles had been parked for more than two

hours (37% of all cars parked on Mass Ave); 14 vehicles had been parked for more than three hours (29% of the total).

- At 12:00 pm, when 41 vehicles were observed to be parked on Mass Ave, two out of every three vehicles (66%) had been parked for more than two hours, with one third (32%) parked on Mass Ave for more than four hours.
- By 2:00 pm it was observed that 38% of vehicles parked on Mass Ave (12 out of 32) had been parked for more than four hours.
- Over the course of the day, 172 unique vehicles were counted utilizing on-street parking on Mass Ave. 28 vehicles (16%) were observed violating the two-hour parking time limit.
  - 19 of these vehicles were parked in the same space for four hours or more.
  - 14 of these vehicles were parked in the same space for more than four hours.
  - Six of these vehicles were parked in the same space all day on Mass Ave (at least seven hours).



	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM
Percentage of Cars Parked < 1 Hour	52%	34%	44%	43%	58%	56%
Percentage of Cars Parked > 1 Hour, < 2 Hours	3%	28%	7%	17%	12%	6%
Percentage of Cars Parked > = 2 Hours, < 3 hours	3%	0%	19%	0%	12%	6%
Percentage of Cars Parked >= 3 Hours, < 4 hours	6%	0%	0%	17%	0%	19%
Percentage of Cars Parked >= 4 Hours	36%	38%	30%	23%	19%	13%

Figure 17 - Chart showing parking duration by hour for Mass Ave in the study area from 1 PM to 6 PM, for October 7, 2021

- Tuesday, October 12, 12 PM – 4 PM:
  - At 3 PM, 41 vehicles were observed parking on-street on Mass Ave. Of these, 16 vehicles (39%) had been parked longer than two hours.

  - By 4 PM, 16 vehicles out of 35 vehicles parked on Mass Ave (46%) had been parked for over two hours. Eleven vehicles (31%) had been parked for more than four hours (they had not been moved during the entire period of data collection on this day).
- Wednesday, October 13, 10 AM – 12 PM:
  - Only three hours of data were collected on this day. At the end of the data collection period (12 PM) there were 41 vehicles parked on Mass Ave in the study area, and more than half (51%) had been parked on Mass Ave for at least two hours.
- Thursday, October 14, 8:30 AM – 10:30 AM:
  - Like October 13, only three hours of data were collected this day. At the end of the data collection period (10:30 AM) there were 38 vehicles parked on Mass Ave in the study area, and 16 of the total (42%) had been parked on Mass Ave for at least two hours.
- Saturday, October 16, 9 AM – 12 PM:
  - At 11 AM, 52 vehicles were observed parking on-street on Mass Ave. Of these, 25 vehicles (48%) had been parked longer than two hours.
  - By 12 PM, 24 vehicles out of 45 vehicles parked on Mass Ave (53%) had been parked for over two hours. 23 vehicles (51%) had been parked for more than three hours (they had not been moved during the entire period of data collection on this day).
- Tuesday, October 19
  - Unfortunately, not enough data was collected on this day to draw useful conclusions about parking duration or turnover.

During data collection, observers noted a lack of turnover of parking spaces and same vehicles appeared to be parking in the same spaces over multiple days observed. The duration of parking of these vehicles generally exceeded that of the parking time limits for Mass Ave.

Impacts of Short-Term Implementation

As noted in the earlier section of this report documenting the study background, this study was conducted before the short-term improvement plan was implemented in November 2021 that included striped bike lanes, temporary geometric changes, some parking restrictions, and new signage. In all, approximately 16 on-street parking spaces were removed as part of the short-term improvements. By collecting data before the improvements were made, staff could establish parking conditions pre-project and determine to what extent the changes to parking supply would have on parking activity in the area.

Analyzing the parking data shows that as a whole, none of the streets observed for this study reached the 85% goal for average parking occupancy over the course of the days studied. On a few occasions, during certain hours, some segments of Mass Ave were close to or at this goal for parking occupancy; however, most segments were very underutilized. For the one segment of Mass Ave that did have consistently high utilization (Lowell Street to Richardson Ave), there was little vehicle turnover and vehicles were often parked beyond the 2-hour time limit. Removing 16 on-street parking spaces for the short-term improvements reduces the total on-

street parking supply on Mass Ave to 81 spaces. Despite this, parking on Mass Ave in the study area would still be considered underutilized because the greatest number of parking spaces occupied (52 spaces at 11:00 AM on Saturday, October 16) would constitute a utilization rate of 65% for the new parking space total. In addition, the locations where parking spaces were removed would either not be drastically impacted or comparable parking spaces could be found within the same area.

- **1 space** was removed between Appleton Street & Forest Street on the north side just before the crosswalk at Appleton Place to facilitate better sight lines for crossing pedestrians.
    - This is in the most heavily utilized part of Mass Ave studied. However, parking is frequently available on-street east of Forest Street and west of Appleton Street on the same side of the street; in addition, there was no point where all the parking spaces in this segment were used, and safety of pedestrians was a primary goal of the improvements which eliminated the parking space.
- **2 spaces** on the north side of Mass Ave were removed near Clark Street, in front of the property of the proposed hotel development, to facilitate a continuous bike lane on the westbound side of Mass Ave.
    - These spaces were occasionally occupied, sometimes by vehicles staying past the two-hour time limit. However, it was found that at least two or three on-street parking spaces were always available approximately 100' east of this location, on the same side of the street, near the Leader Bank.
- **6 spaces** on the north side of Mass Ave were removed between Lowell St and Richardson Ave to facilitate a continuous bike lane on the westbound side of Mass Ave.
    - Although heavily utilized, as noted previously, these spaces were being used to store vehicles beyond the two-hour time limit. Comparable parking spaces are readily available on the opposite side of Mass Ave or further west on Mass Ave towards Park Ave.
- **2 spaces** on the south side of Mass Ave near the Children's Room and before the bus stop were removed to facilitate a continuous bike lane on the eastbound side of Mass Ave.
    - Although these parking spaces were occasionally used, the study showed there was always plenty of unused curb space west of this area on the same side of the street.
- **2 spaces** on the south side of Mass Ave were removed near the Appleton Street. intersection, between the inbound bus stop and Appleton Street. This was done to facilitate a continuous bike lane on the eastbound side of Mass Ave and create better sightlines at the intersection.
    - During all the days and times data was collected, these parking spaces were never used. Ample parking is available west of the bus stop on the same side of the street towards Park Ave.
- **3 spaces** were removed between Appleton Place & Burton Street (south side) to provide a continuous eastbound bike lane and improve sight lines for the crosswalk at Forest Street/Burton Street.
    - This change results in approximately 7 parking spaces remaining, down from 10. During the parking study, 7 was the maximum number of spaces that were

utilized, with four or five being occupied on average during the busiest times of day. Given the importance of the safety features that the parking removal allows, and the ample parking opportunities on nearby side streets and one block east on Mass Ave, this impact should be negligible.

Conclusion

The parking study conducted by Town staff finds overall low utilization of on-street parking in the Mass Ave/Appleton Street area, except for certain segments of Mass Ave within the study area. The average utilization of the 97 parking spaces studied was about 42%, with a high of 53.6% during one particular hour over the course of the day. The parking spaces studied on side streets within a short walk of Mass Ave, including Forest Street, Appleton Street, Appleton Place, and Burton Street had very low utilization. At the same time, some parts of Mass Ave had low turnover, with vehicles being stored on-street for several hours at a time, beyond the two-hour parking time limit signed along Mass Ave.

In summary, this study shows there is sufficient on-street parking supply in this area, and any further repurposing of on-street parking spaces would be possible to facilitate safety and accessibility improvements for pedestrians, cyclists, drivers, and transit users.

I would be glad to discuss this further, should you have any questions about this report.

Attachments:

- Map of Mass Ave/Appleton Parking Supply Review and Study Area
- Mass Ave/Appleton Parking Study Data Analysis Spreadsheet, including street-by-street utilization, Mass Ave duration/turnover, and associated charts.