Recommendations for Transportation Demand Management
Town of Brookline

Introduction

In the interest of improving the commute for Town employees, reducing congestion, and lowering parking demand, the Town of Brookline’s Transportation Department asked Howard Stein Hudson (HSH) to recommend effective and context sensitive Transportation Demand Management (TDM) tactics to help Town employees drive less often. While a wide variety of TDM tactics have been used across the nation with varying degrees of success, the task of this memorandum is, to the best of our knowledge and capabilities, recommend the most effective tactics for Brookline’s workforce, and how to implement them.

To understand the commuting challenge each individual employee of the Town faces, HSH gathered data on existing parking conditions, the major transit routes that serve Town locations, and the major road and bikeways that employees map use. We mapped full time employees home ZIP codes related to their workplaces, and surveyed them on their current commuting habits, as well as their own ideas on how they might change them.

The investigation reveals a variety of parking conditions—but generally parking is free and in many cases amply provided for, a transit system that aligns with some but not all employee desire lines, and a workforce that overwhelmingly drives to work. Over 35% of employees live within four (4) miles (easy biking distance) and 20% are within two (2) miles (maximum walking distance). Around 31% of employees live more than 10 miles away. Depending on the workplace location, there are also significant pockets of employees who currently use transit, bike, or walk to work. These commuters could help lead the way to different commuting choices among their coworkers who have easy access
to these modes. See Figures 2-7 at the end of this memo for a visualization of where Town employees live relative to their workplaces.

Employee attitudes revealed similar opportunities for change. Of the 1,370 employees surveyed, 73% of their commuting trips were driving trips. However, only 24% of employees said they would not be interested in transit, walking, or biking as an alternative to driving. The other 76% are willing to try other ways to get to work or already do.

If respondents are believed at their word, Brookline has the potential to nearly double employees walking to work, increase transit use by 380%, and increase biking by a factor of 12. Carpooling could also increase by 1700%. Of course, there are many inherent challenges in taking advantage of employees’ willingness to change. Real and lasting changes in employee decision-making come from making sure that biking, walking, and transit are the more attractive options available, either for their speed, enjoyment, or cost, and eliminating barriers such as safety concerns, and perceptions about appearances and carrying cargo.

If the employee lives within one or two miles, they are much more likely to walk—particularly if they perceive driving or parking has a cost. If they live within four miles they are likely to ride a bike if driving or parking has a cost, (biking is also the fastest mode at this distance), but only if they perceive that it will be safe to do so. If they live within 10 miles—and sometimes further away—transit can be an attractive option, but only if the time it takes to do so is not extraordinarily long, transfers are few or none, service is relatively frequent, and the ride is comfortable and safe both day and night.

Currently, these commuting options—walking, biking or taking transit—are already feasible for many (but not all) employees. However parking and driving is perceived as a free option that is highly convenient and doesn’t require physical activity. The offer of free parking is essentially subsidizing the choice to drive.

To this date, no TDM measures have been enacted for Brookline’s employees, meaning the opportunity for change is high. The only commuting benefit currently offered to Town employees is free parking, and, counter to the Town’s interest (providing parking has a cost), this benefit only increases the demand for parking. At some locations, parking is widely available and at others it is becoming constrained because of the high percentages of people who drive to work (see Table 2 for parking inventory and ratios). Among those who do drive, 71% say their first preference is to park in a designated parking lot; in other words, a parking lot that is owned and managed by the Town. On-street parking that is designated for the workplace was the second-most popular choice, followed by public parking lot and public on-street parking. Only .6% of employees use MBTA Park & Ride, even
though the D-Line offers some viable parking opportunities along with the Needham Heights MBTA Station (which can be accessed via the 51 Bus Route and the D-Line). Park & Ride locations charge between $4 and $6 for parking, while parking at the Town’s workplaces is free.

The lack of walking, biking, or transit benefits for Town employees has also kept these mode choices less popular than they otherwise would be if parking at the workplace had a cost. These facts represent a significant opportunity for behavioral change, and a change that many survey respondents said they are willing to make. 16% of employees said they would consider walking more, 44% said they would try transit, and 41% they would consider biking if it was safer. Creating a parity, or better a higher benefit for those who choose not to drive, can have a significant impact on mode split, particularly at sites near transit in northern Brookline. Even a gradual change in the monetary incentives would have the potential to lower single-occupancy vehicle (SOV) use at all Town sites. See Figures 8 and 9 at the end of this memo for a visualization of how Town employees are currently commuting to work, as well as their willingness or non-willingness to consider a change in that commuting behavior. This illustration will be particularly useful in showing people the opportunity that exists for change, even if they themselves are resistant to changing their own habits.

Parking incurs a cost for the Town including the initial cost of real estate, the loss of that space for other uses, and the cost of maintaining facilities. The demand for more parking at today’s construction prices can cost the Town millions. In the case of neighborhood parking for school staff, it has occasionally come into conflict with residential parking resources. High demand for parking also hurts employees who do not have transit, biking, and walking options like when their only option is to drive and they cannot locate parking because the lot is full.

Less tangible benefits can also be had from the physical activity inherent in walking, biking, and transit commuting choices. Not only does physical activity create better health outcomes and lower healthcare costs1, it has also been shown to increase productivity, attentiveness, and overall well-being.2

A NOTE ABOUT JURISDICTION AND RESPONSIBILITIES

Every municipality and company is unique, and while HSH has a strong understanding of transportation behavior and how to affect people’s choices of transportation—we do not have nearly the same resources as those involved internally in the Town of Brookline in terms of where responsibilities lie for implementing the following recommendations. However, we can relate some general principles that will help those with that knowledge make informed choices.

First and foremost, TDM measures need strong support from leadership. Not only should support for these recommended TDM policies come from the highest authority in the town, it should also be monitored annually or biennially to show clearly the town’s interest in reducing parking demand. Therefore the responsibility of monitoring progress on reducing the use of Single Occupancy Vehicles (SOVs) should be assigned to a relevant individual or committee in the town. A survey of town employees can record changes in commuting behavior to indicate progress for this ongoing monitoring.

As is common to many employee policies, the simpler to understand and interpret, the better. A policy that is common to all town employees, or at most differs for full-time and part-time employees will be superior to one that makes additional distinctions by geography, workplace, or availability of transportation options. A policy that is easy to understand and the same for all employees will be easier for the relevant town staff to implement.

For each of the recommendations below, a relevant department, individual, or committee should be identified who is best suited and has the authority to implement it. In some cases, this may be administrative, as part of the employee benefits package managed by the human resources department, in other cases it may be more suited to the Facilities Department, and in still others it may be something for every individual workplace to address.

We see our role in this memo as recommending these actions rather than determining what party carries them out—though we are willing to be involved and helpful in this discussion moving forward. Many of the references in this memo also link to studies that cover dozens of workplaces where the tactics described have been carried out.

**Key Recommendation: Equalize Commuting Benefits**

To better manage parking and travel demand, the most important recommendation this memo will make is to ensure all employees, not just those who drive, receive a commuting benefit. Today free parking is the only transportation-related benefit given to employees; we recommend that there be a benefit to all employees regardless of their chosen travel mode. The simplest way to achieve this is
to monetize the current parking benefit and allow the money allocated for parking be used for transit, biking, and walking if the employee chooses not to use parking. So this recommendation includes:

- Providing a monthly Commuting Benefit to either all employees, or a subset of employees (such as full-time employees)
  - Part-Time Employees could be offered the full benefit, a partial benefit, or no benefit.
- Creating one monthly cost for all employee parking permits, or creating different parking permits for full-time and part-time employees that have different costs
  - Part-Time Employees could have a parking permit that is matched in cost to a special part-time employee Commuting Benefit
- Requiring parking permits for all town-provided parking (including parking lots, on street designated parking, and town regulated on-street parking)
- Offering transit passes via automatic paycheck deduction (and use of the commuter benefit)
- Offering Hubway membership via automatic paycheck deduction (and use of the commuter benefit)
- Offering Zipcar membership via automatic paycheck deduction (and use of the commuter benefit)
- When the Commuting Benefit is not used for any of the above, it is included in the employee’s income.

The Commuting Benefit and passes and memberships included above can help increase the performance of parking pricing, but would be unlikely to decrease parking or travel demand significantly without assigning a cost to parking—with one exception. Studies have shown that providing a transit pass subsidy is effective as a standalone policy, but not as effective as parking pricing.

According to studies collected by the Federal Highway Administration (FHWA), parking pricing has reduced vehicle trips by anywhere between 13% and 35% depending on the attractiveness of other transportation options in the area and the level of support for those other options within the workplace³; another study measures the range at 5% to 24% for parking cash outs at locations in the Los Angeles area.⁴ In other words, the Town of Brookline can expect that locations near transit and biking facilities will see a greater reduction and those with fewer bike and transit options will see less of a reduction. **Every location will benefit from a small percentage of employees who**

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live close enough to walk or bike, and as an employee benefit a combined commuting benefit and parking permit program will be perceived as fair if it is rolled out for every employee rather than only those in certain locations.

Every other recommendation in this report acts in support of this central recommendation of combining a commuting benefit with the pricing of a parking permit. People make choices based on the associated financial and/or time costs. Tactics that encourage other modes without any monetary incentive have proven to be far less effective at reducing parking demand.

DETERMINING THE COMMUTING BENEFIT/PARKING PERMIT COST
The Commuting Benefit should be considered as an incentive—not as a measure of the value of parking in a given area, and the Commuting Benefit should be the same as the cost of employee parking permit. The amount should not be seen as constant, but as something that is subject to change over time based on observed results in reaching the Town’s goals for reducing parking demand. There are many factors that go into determining what this amount could be, including:

INCENTIVE FOR CHANGE
The Commuting Benefit should be significant enough to cause people to consider the value of not driving to work. There is evidence that the amount of the benefit is not sensitive, in that doubling a cash incentive does not double the desired behavior, however it goes without saying that a $10 a month Commuting Benefit would have less impact that a $40 a month benefit or higher. The benefit must be perceived as valuable to the commuter.

OVERALL COST OF THE COMMUTING BENEFIT PROGRAM TO THE TOWN
Assuming that Brookline’s experience is similar to other employers who have offered a cash benefit, there will be an increase in employees who walk, bike and take transit to work in addition to those who already do so. For those do not choose those other options and continue to drive and use Town of Brookline parking facilities, the cost of providing the monthly Commuting Benefit will be recouped via the cost of the monthly parking permit. There will be no cost to the town. For those who do walk, bike, and take transit, there will be a cost to the town.

RELATIONSHIP TO COST OF OTHER NEARBY PARKING RESOURCES
There may be one or two locations where parking is readily available for free off the worksite. This may encourage on-street parking instead of parking on the town-owned parking lot. For this reason, at some worksites that have ample on-site parking, such as the Municipal Services Center, an additional employee rule against off-site parking in the surrounding neighborhood during work hours may be needed. This can be enforced by workplace managers as part of the employee rules, or nearby parking can be regulated by the town as resident only.
RELATIONSHIP TO COST OF TRANSIT PASS AND OTHER OPTIONS

Another relationship to consider is how much subsidy to provide for those using transit. Any subsidy at all does incentivize transit, and like other similar incentives doubling the amount of the subsidy does not necessarily double the increase in transit use. However, a significant benefit helps employees decide to opt for transit more than one that is perceived as insignificant.

Before deciding what the monthly Commuting Benefit and Parking Permit cost should be, the benefits to the employee and the costs to the town should be considered. The examples below are based on providing the benefit to full-time employees only for simplicity’s sake, but a similar calculation can be created for all employees.

EXAMPLE A:

Every full-time employee is offered a $90 monthly commuting benefit, which can either be counted as income as part of their regular paychecks, or can be deducted from automatically to pay for any of the following:

- $90 Monthly Parking Permit (allows parking in any Town-owned parking lot);
- MBTA Monthly LinkPass (Currently $84.50);
- Zipcar Membership (Corporate discount program); or
- Hubway Membership (Corporate discount program).

Any unspent portion of the commuting benefit becomes income for the employee. In areas where driving is necessary, the commuting benefit can be used for parking permits and there is no harm or cost to the Town or loss associated with the effort.

At the time of our study, Brookline had 1,545 full-time employees. Around 73% of them drive, according to the Town of Brookline Employee Transportation Survey. If there is no change in driving habits, this $90 benefit would cost the Town only $24.30 per employee per month not including administering the program. If we are highly optimistic and assume a 20% reduction in SOV use among full time employees, this would result in a per-employee cost of $37.44 per month.

EXAMPLE B:

Starting at a lower cost may produce similar results, and be easier to enact. A $40 benefit paired with a $40 parking permit would cost $10.80 per full time employee per month with no change to driving habits, and $16.64 per full-time employee if a 20%t reduction in SOV use is the result. The difference in each of these options in effectiveness is likely proportionally smaller than the difference in their price, and each has the added benefit of the commuting benefit being tax free income for the employee when used.
Given the number of variables involved in individual commuting decisions and the varying conditions of the available case studies, we cannot make a reliable estimate on SOV use reduction for the Town of Brookline. However, we can say with confidence that these key recommendations are the most effective approach to reducing parking demand. A similar program is in operation at the Longwood Medical Area (LMA) where parking is priced and employees can also choose to use their automatic parking paycheck deduction to pay for transit costs. The program is called “Commute Swap” and is run by MASCO. It has also become very common for large employers to offer paycheck deductions for MBTA transit passes, Hubway, and Zipcar, and each of those organizations have corporate programs to assist companies who want to participate.

VARIATIONS ACROSS LOCATIONS
Every location in the Town will have a fairly unique experience with the Commuting Benefit and pricing of the parking permit in terms of their geography and their workforce. At most locations, the implementation will be straightforward and simple. However there are a handful of locations that will require some attention to local context and monitoring as it is implemented.

It is important to note that this is also true of the current policy of providing free parking to employees. Some employees have ample parking resources today and can easily find a convenient place to park, such as at Larz Anderson or the Putterham Branch Library. Others have very limited parking resources such as the Public Safety Building during the day shift and the Washington Square Fire Station. Because Transportation Demand Management is based on a policy-level citywide goal to reduce single occupancy vehicle use, all situations can benefit from parking pricing and a commuter benefit despite their variations. Here are three scenarios the Town may encounter, and suggestions for addressing the:

LOCATIONS WITH LIMITED PARKING RESOURCES
Some locations, such as the Fire Station in Washington Square, share very limited parking resources such as a driveway or apron. By pricing the Parking Permit to park in these limited locations, the town may help those who live close enough or along transit to choose not to drive, thus reducing parking demand and making parking easier for those who come from farther away. However, because some parking resources are limited—it should be clear that the parking permit does not guarantee a parking space will be available, but instead gives an employee access to it if it is available. Some employees may still drive and choose not to purchase the permit, and instead rely on on-street parking. This too helps preserve the parking resource for those who feel they need it.
LOCATIONS WITH PARKING LOTS AND PLENTIFUL FREE PARKING NEARBY

Some locations, such as the Multiple Services Center in South Brookline, may be adjacent to significant parking resources nearby. The effect of pricing the Parking Permit in these situations, which are few, may be to encourage employees to park outside of the employee parking lot. This situation is not beneficial to the Town because it impacts the surrounding neighborhood and also costs the Town money without influencing the desired effect. There are two tools that can help if this occurs. One is creating an employee policy that disallows parking in the surrounding neighborhood, and another is regulating the parking surrounding the facility so that it more difficult to access the free parking. Local managers may also devise even better solutions.

LOCATIONS WITHOUT PARKING LOTS AND PLENTIFUL FREE PARKING NEARBY

Some locations, such as BEEP at Temple Emeth in South Brookline, depend entirely on free parking that is available on nearby streets. In these cases, it would be beneficial to the town to create new permit parking zones near the place of employment. Because employees are receiving a commuting benefit equal to the cost of a parking permit, employees are held harmless. The workplace may also create an employee policy that disallows outside of the permitted zone. Local managers may also devise even better solutions.

IMPLEMENTING A PARKING FEE AND COMMUTING BENEFIT IN A UNION ENVIRONMENT

The combination of a Commuting Benefit and a parking fee (also known as a “Parking Cash Out”) is seen as an employee benefit because it gives all employees an option of receiving extra money instead of using the benefit for parking or to subsidize a transit pass. If employees are willing to carpool, use transit, bike, or walk to work, they receive extra income every month. Because there is no additional cost or other detrimental effect on employees who drive to work, both people who drive and who don’t drive typically perceive the program as fair.5

There are several excellent resources available that will help town administrators connect to other employers that have implemented similar programs in union environments. Some of these include:

- Success Stories of Employer-Sponsored Transportation Programs, USEPA (2012)6
- Parking Cash Out Report, Donald Shoup7
- Commuter Financial Incentives, Victoria Transport Policy Institute (2017)8

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6 http://www.ctaa.org/webmodules/webarticles/articlefiles/SuccessStoriesEmpTranspPrograms.pdf
7 http://shoup.bol.ucla.edu/Parking%20Cash%20Out%20Report.pdf
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The Victoria Transport Policy Institute is a strong resource for many TDM policies and ideas, and can be contacted directly via their website.

Many towns and cities have implemented or are working on implementing similar parking cash out programs for their employees. A small sampling of these include:

- Burlington, VT
- Grand Rapids, MI
- Rockville, MD
- Salem, OR
- Alameda County, CA

Locally, the City of Cambridge’s Sustainability Planner Jennifer Lawrence has a great deal of experience negotiating with employee unions on related topics, such as transit subsidies and parking fees. Cambridge currently charges $2 per day for employee parking, offers different levels of transit subsidy for union and non-union employees, but does not offer an equivalent benefit for employees who walk and bike as we recommend in this report for Brookline. Because Brookline has fewer transit resources than Cambridge, we believe the Commuting Benefit and Parking Fee (Parking Cash Out) option will help Brookline achieve stronger results.

A NOTE ON PAYCHECK DEDUCTIONS FOR TRANSIT PASSES

Part of our key recommendations is offering transit passes via a paycheck reduction and/or offering a transit subsidy. Over 29% of Brookline Town employees said this might encourage them to try taking transit to work or take it more often. The most frequented MBTA services for Brookline’s employees are the Green Line C and D trolley lines, the 66 Bus, and the Red and Orange Lines. The 65, 39, and 51 Bus Routes may also play strong roles in getting people to work. When the Town looks at strengthening transit connections, these are the routes to focus on. The MBTA is preparing to adjust their bus routes in a process that will take two to four years, so the Town may want to consider advocating for more direct and frequent bus connections to Forest Hills MBTA Station, Brighton, and Dedham/West Roxbury.

Currently, around twice as many Town of Brookline employees pre-pay their Charlie Cards as do buy a monthly pass; many of the pre-payers are likely to be enticed by a paycheck deduction, a transit subsidy, or both. When employees have passes, they will be more likely to use transit to get to work. The Commonwealth of Massachusetts allows individual employees to deduct the full cost of

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8 http://www.vtpti.org/tdm/tdm8.htm
(up to $130 a month) of a transit pass if it is done via a payroll deduction. This covers any weekly or monthly commuter pass, the commuter rail twelve-ride pass, or the express bus or commuter boat ten-ride pass. The IRS allows a deduction of up to $255 a month. Any amount paid by the employee is indicated on their pay stub as a deduction. More information on the MBTAs Corporate Pass Program is below in the Promoting Transit section.

Joining a Transportation Management Association (TMA)

The Town of Brookline is not directly in a particular TMA’s catchment area, but more than one may be interested in having the Town as a member; TMA’s offer many services that can benefit Town employees that are also mentioned below. In particular, MASCO operates a shuttle service on Route 9 that may benefit some employees, and another that connects Ruggles MBTA Station on the Orange Line to the LMA. While these shuttles do not directly service the cluster of Town of Brookline’s employees around Town Hall, MASCO may have ideas about how they could benefit the Town if it were a member of MASCO.

Creating TDM Leaders on the Town Staff

EMPLOYEE TRANSPORTATION COORDINATORS

To support the key recommendation, we also advocate creating a network of Employee Transportation Coordinators (ETC) at the various workplaces in the Town that have more than 20 employees, and two lead coordinators: one for all Town staff and another for all school staff. These two leaders would have access to Town-wide and Public Schools of Brookline leadership and each workplace ETC would have access to that workplace’s leadership. The ETC role is well-established and ETC training is available at the Allston/Brighton TMA, MASCO, and A Better City locally. The Town of Brookline may also benefit from joining one of these TMAs.

The ETC’s role is essentially to oversee the TDM program in their individual workplaces, and the lead ETCs oversees the overall TDM program. They are typically at the managerial level and have access to decision-makers; they are problem solvers, and able to organize and inspire their fellow staff. Ideally, they are passionate about transportation solutions and use transit, walk, or bike for at least part of their commuting mix.

Annually, each ETC should report on their activities for the previous year, and describe the tactics and strategies they are using to effect change. The Town of Brookline Transportation Survey can be implemented each year to measure the success of the key recommendations and the work of the ETCs.
Supporting Recommendations for ETCs in the Workplace

The following tactics have proven results when paired with parking pricing. When implemented alone many will have only minimal impact. To be precise, the Commuting Benefit and parking pricing described above provides a powerful incentive to consider a switch to transit, walking, biking, and/or carpooling. These supporting tactics help people ease into that switch. ETCs, with their position at the workplace level, can be very effective at helping people carry out the change, but many of the tactics below will require the assistance of other departments in the Town.

COMMUTING OPTIONS EMPLOYEE PACKET AND/OR WEBSITE
Brookline’s employees are situated in locations all over Town, but their attentions can easily be gathered in one place with a welcome packet, website, or a page on the Town’s existing website that is set up to share information on commuting options and transportation-related employee benefits. These materials can be useful tools for ETC’s who will be asked many questions over the course of a week. The speed and ease with which they can answer these questions is a determinant of their success and enjoyment of the role. These resources can be built simply and over time, and many are available from existing Transportation Management Associations such as MASCO and A Better City. ETC’s can also collaborate Town-wide to build the information required based on the requests they receive. A consulting firm such as HSH can also be hired to create an initial iteration of the resource that is customized to Brookline employees, or there may be existing resources in Brookline such as the Transportation Board that are well suited to the effort.

PROMOTE “SUPERSHARING” (RIDE SHARE, CAR SHARE, BIKE SHARE, ETC.)
The world of transportation is changing quickly, and a new sharing economy is taking hold of transportation. Transportation Network Companies (TNCs) like Uber, Lyft, Fasten, Safr, and Hubway are becoming part of people’s everyday lives and car-share services like Turo, Hertz 24/7, and Zipcar have been shown to reduce personal car ownership. These options are quickly evolving, and are the precursor to automated vehicles (AVs), shared AVs, and other future options which will completely revolutionize what we know as transportation. One way to measure the potential of AVs in Brookline is the transportation survey’s question about carpooling. 54% of Brookline employees said they’d consider carpooling if it was convenient. While traditional carpooling’s problem is that it is rarely convenient, AV rides are likely to come in at a very low price point, similar to the cost of transit. At these lower prices, those considering carpooling if it is convenient today may be the AV users of tomorrow. This reality would indicate that any parking that is constructed for Town employees in future projects should be built in a way that is editable for other uses, looking forward to a time in the near future when parking is no longer in demand.
Today, Brookline employees are using ridesharing but less so car sharing and bike sharing. This distinction is important as “supersharers” (people who use multiple sharing services) are more likely to use transit and less likely to drive.\(^9\) Approximately 42% of Brookline employees are currently using some form of sharing (see bullet points below) to get from place to place, and this group of Brookline employees drives 26% less and uses transit 50% more. The statistics bear out what may be considered common sense, the more options people have, the less they drive. For this reason, HSH recommends promoting the entire suite of transportation sharing options available to employees, including car-, ride-, and bike-sharing, as well as future configurations we have not yet seen or heard of. The companies offering transportation sharing to Brookline at the time of writing (and how many employees are currently using them) are:

- Uber (385 Employees)
- Lyft (190 Employees)
- Zipcar (40 Employees)
- Fasten (12 Employees)
- Hubway (6 Employees)
- Turo (4 Employees)
- Safr (2 Employees)
- Getaround (1 Employee)
- Hertz 24/7 (1 Employee)
- Maven Car Sharing (0 Employees)

As can be seen from these numbers, Uber and Lyft are far more adopted amongst Brookline employees than other services, and Hubway has not yet gained favor with staff. Much of this may have to do with the physical environment. While Uber and Lyft range anywhere in Brookline, Zipcar locations are limited to the north end of Town and Hubway locations are denser in nearby Boston than in the Town. The few employees who do use Hubway are typically employees of Brookline High School and Town Hall.

As the Town does have an influence in Hubway location siting, installing Hubway Stations at or near the following locations may help employees who live nearby or connect from nearby transit, particularly if they are promoted internally. They are, in order of importance:

- School Street and Washington Street;

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Sharing services should also be promoted through marketing materials, inviting sharing companies to employee or other events at or near Town property, and through employee benefits such as subsidized Hubway and Zipcar memberships. Both companies offer programs to employers.

In 2017, dock-less bike sharing companies have begun to offer services in Greater Boston. Though Brookline’s contract with Hubway may present a barrier to their implementation in Brookline, the Town may want to consider future options. OFO bike share has begun operating in Worcester and Revere, LimeBike has entered Malden, Zagster is in Salem, and the Scientific American magazine is reporting that Boston is negotiating with some of the services. The MAPC has also created a 16-municipality working group, including Brookline’s neighbor Newton, that will work to select dock-less bike share providers in a cooperative manner.

GUARANTEED RIDE HOME
Providing a guaranteed ride home for employees who are experimenting with biking, transit, and walking is an important way to reduce the perceived risk of trying new ways to get to work. Guaranteed Ride Home (GRH) programs are very common at workplaces throughout the Greater Boston area and come with membership to TMAs such as A Better City and MASCO. They typically carry a limit to the number of ride homes available per employee per month or per calendar year, and depend on outside ride services and allow the employee to choose a taxi, TNC, or transit when a bike or other means of transport fails them. Afterward, they are reimbursed for their expense. Utilization of GRH by employees can vary, but costs are generally low and absorbed by TMAs. If the Town operated its own GRH program instead of joining a TMA, other GRH programs have been studied and the average cost per registrant was $1.69 in 2007. Individual claims ranged from $0 to $114.08.

PROMOTE WALKING (AND RUNNING)
Around 20% of Town of Brookline employees live within two miles of their workplaces and 16% of employees said they would consider walking to work or walking more often to work. Currently walking is part of 9% of the commuting trips for Town employees, and around 7% of trips are exclusively by foot. Only 6% of employees walk to work every day. However, 15% of employees say

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they walk to work once in a while, and monetizing parking could encourage more people from this
group to walk consistently, raising the walking mode share significantly. The full opportunity
available to the Town is to more than double its walking mode share. Monetizing parking will be the
most powerful tool in this effort, and it can be enhanced by marketing the physical, social, and
mental benefits of the physical activity of walking which are well-documented. Many survey
respondents also said they would be encouraged by the addition of showers and changing rooms
at their workplaces and many teachers cited the need to carry school materials as a burden that
keeps them from walking. A bag or cart that makes carrying school materials enjoyable
while walking could mitigate this problem, and may be worth promoting as many Town employees
who currently walk are in the school department. Also asking teachers who do walk how they
manage carrying their materials could inform ETCs on a strategy for meeting this concern.

Town-wide, a guaranteed ride home program, better sidewalk snow clearance in the winter,
and reimbursement for car- or ridesharing for business use could also have an impact, as would
pedestrian safety improvements and general improvements to the public realm.

Some people who would otherwise walk to work cite the need to drive to get to mandatory meetings
and other activities; allowing reimbursement for car- or ride-sharing services could help some people
in their decision to walk as well.

**PROMOTE BICYCLING**

Just under half (49.86%) of Brookline’s employees who live within 10 miles own a bicycle, and 74% of
those bike owners love or like their bike. 41% of Brookline employees said they would consider
riding a bike “in a perfect world,” 9% of employees ride their bike to work at least once in a while,
and 2% currently ride in winter weather. While bikes only make up 3% of commuting trips for
Brookline employees, there is a clear opportunity for growing this mode, particularly when bike
safety improvements are made on roadways near the workplace. Providing the option of using the
commuting benefit as income will help many of these people decide to bike more often, but there are
many things ETCs and the Town of Brookline can do to make that decision easier.

Promoting bicycling in the workplace is an important role for the workplace’s ETC, with help from
colleagues and support from workplace leadership. One of the most important roles the ETC can
play is bringing people together around bikes, so they can trade information. The best way to do
that is to provide services, tools, and information and if possible, to host at least one event per year
around bikes to build the community. However, Brookline facilities can also contribute by providing
safe, dry, and convenient bike parking and, if possible, showers and locker rooms at all work
locations.
For Brookline Facilities, the quality of bike parking available is the most visible indicator of the Town’s support for the biking option among its employees and students. The best location for outdoor bike parking is close to the main entrance of the workplace, with high visibility to the street and well-lit to provide safety and theft-prevention. The style of bike rack is also important. The rack must make it easy to lock the frame and front wheel of a bike. Brookline employs several good options at work sites, including hoop racks, hitch racks, swerve racks, and rolling racks. However, low-profile triangle racks and grid racks are difficult to lock a bike frame to. These styles should be replaced or removed to prevent bike theft that occurs when bikes are not locked properly. Indoor bike parking should be a goal for all locations. Some employees with more expensive bikes will be more likely to ride, and indoor parking also encourages riding during winter months. Table 3 includes existing parking and HSH’s recommendations for improvements for key locations in Brookline.

Once ETCs have been chosen, a small amount of funding would allow ETCs to purchase a shop-quality air pump and a few basic tools for each work location with more than 20 employees. The suggested tools are as follows:

- Shop quality floor pump, with capability for Shrader and Presta valves;
- Hex-Wrench Multi-Tool (Metric);
- Flat-Tire Kit:
  - 15mm box wrench;
  - Adjustable crescent wrench;
  - Patch kit; and
  - 2 Tire Levers; and
- 3-Way “Y” 8/9/10mm Socket wrench.

With these basic tools, most repairs can be made, and the ETC can hold these tools for when they are needed.

ETCs can also provide information resources, such as:

- Bicycle maps;
- Bike shop recommendations;
- How to buy-a-bike guides;
- Recommendations/resources on bike safety;
- Hubway Information; and
- “How to carry things on a bike” information (bike racks, bike panniers, trailers, etc).
At Brookline Town Hall and Brookline High School we recommend holding annual events to help people learn about biking. The purpose of this event is primarily to provide information and build confidence; secondarily, it is a way to allow co-workers who bike to meet each other and trade information. Connecting the cyclists in Brookline’s employ will yield benefits beyond what any program can provide. Experienced cyclists can also act as mentors to those just starting out. A bike event should provide as many of the following services/information as is possible, although even one or two can draw a crowd:

- Free/discounted bicycle lights and helmets;
- Bike locks for sale and how-to;
- Routing information (bicycle maps);
- Free bike-maintenance lessons;
- Free bike repair;
- How to buy a bike information;
- Bike safety lessons;
- MBTA bike rack how-to;
- Product demonstrations (such as e-bikes, bike bags, and panniers, bike-parking solutions for the home, etc);
- Free bike wash (springtime);
- Free breakfast/coffee; and
- Hubway and other bike-share promotion.

In particular, employees noted that free bike repair would help them bike or bike more often. Many of these services can be found for free in the community from bike shops, donors such as bike lawyers, local police, local shops, local bike non-profits, and advocacy groups like Brookline Bikes. Cyclists are eager to get more people to ride with them, and simply providing an event or a place for them to do so, and encouraging Brookline employees to attend, is likely enough to create change.

As with walking and transit, a Guaranteed Ride Home program was suggested. If a bike fails, gets a flat, or it rains in the afternoon, people would benefit from knowing a ride is always available when needed.

PROMOTE TRANSIT USE

Over 22% of Brookline’s employees use transit occasionally, but just under half of this group uses it one day a week or less. Around a third of the full group of transit users already buy MBTA passes, and the rest pay the per trip fare. The key to encouraging these transit users to ride more often is monetizing parking, and allowing the Commuting Benefit to be used to subsidize a transit pass.
using a paycheck deduction. With these changes, using transit becomes an affordable option that allows for more personal time, to read a book or be productive using a smart phone while riding the T. However, there are other things that the Transportation Department, HR, Brookline Facilities Department, and workplace ETCs can do to hasten the new trend.

**PROVIDE T-PASSES VIA PAYCHECK DEDUCTION**

Using the MBTA’s Corporate Pass Program, which has an online interface accessible to an “administrator” (or multiple administrators), the Town can provide its employees with Charlie Cards that are automatically renewed each month (or distribute Charlie Tickets monthly for Express Buses, Commuter Rail, and Commuter Boats). The administrator enters employees into the program, and those employee’s passes will automatically renew until they are removed by the administrator. ACH payment is processed automatically. Town is then responsible for administering the paycheck deduction to the employee, and any amount paid by the employee is noted on their pay stub as a deduction for the MBTA pass they obtained. The Massachusetts Department of Revenue allows for a $130 deduction per month and the IRS allows for a $255 deduction per month. The MBTA maintains a “FAQ” web page for the “Corporate Pass Program” that provided detailed information about the program and every eventuality the administrators may face. The

**PROMOTE TRANSIT APP**

ETCs can encourage their colleagues to download any of a number of apps that share the same information, including the MBTA’s chosen favorite: Transit App. Upon opening this app, the user is provided with the departure times of every transit line in the area. When a destination is selected, the app compares the time it would take to walk, bike, take an Uber, or take any number of transit options to get there

**PROMOTE PARK & RIDE**

ETCs can also share information on Park & Ride lot availability. The options below are the most useful for Brookline’s employees, but a full listing of Park and Ride stations is provided on the MBTA website on the “Stations and Rates” page. Parking fees are between $4 and $6:

- Alewife Station – 45 Minutes – Red Line to 66 Bus (5% average parking availability)
- Riverside Station – 31 Min. – Green Line D (7% average parking availability)
- Woodland Station – 30 Min. – Green Line D (28% average parking availability)
- Waban Station – 27 Min. – Green Line D (11% average parking availability)
- Eliot Station – 25 Min. – Green Line D (1% average parking availability)
- Chestnut Hill Station – 16 Min. – Green Line D (1% average parking availability)
- Forest Hills Station – 26 Min. – 39 Bus (1% average parking availability)
Needham Heights – 61 Min. – 59 Bus to Green Line D (28% average parking availability)

*Commuting times based on 8am weekday arrival at Brookline Town Hall from station named.

PROMOTE CARPOOLLING

While 54% of survey respondents said they would consider carpooling as an option, achieving anywhere near that rate of carpooling would be difficult due to the geographic dispersion of Brookline employees. For carpooling to work well, it must be convenient and enjoyable. Carpooling can be increased in Brookline, but it isn’t likely to become significant and it requires regular promotion to maintain.

MassDOT provides a resource for ride-matching called NuRide. The service is available online at https://commute.com/nuride, and any employee can sign up, enter in their commute, and they will be matched with potential partners. If the Town promotes this resource to their employees, it is likely some will find a commuting partner. The same ride-matching could potentially be done internally through an employee newsletter, bulletin board, or announcement service.

Other TDM Considerations

IMPENDING MBTA ROUTE CHANGES

The MBTA’s Service Planning Department is preparing to review the bus system’s routes and frequency on a system-wide scale. Though the planning process is still being chosen, there have been several references to Houston and Baltimore in discussions about the project in the MBTA Board. These are cities that completely revamped their bus routes overnight. This process will take between two to four years, but will be an opportunity for Brookline to improve transit services to its more populated areas. Most Brookline employees live along a line drawn from Allston-Brighton, through Brookline, to Jamaica Plain, West Roxbury, Dedham, and out to Walpole. A single route from that area to serve locations like Town Hall could be impactful, and well-used if paired with denser job locations such as the LMA. Of course, the needs of the rest of the Town must be incorporated as well. When the MBTA’s Service Planning Department begins its public process or before, the Town may desire a closer study of how its commuting needs might be better met with route changes.
Figure 1 indicates which bus and train lines are most important to employees, but there are also some movements that are currently underserved. Analyzing Brookline and the surrounding region’s centers of population and job density would help illuminate how these underserved movements might be served better by route changes.

Figure 1. Services Frequent by Employees who Currently use Transit.
FLEXIBLE SCHEDULING AND GUARANTEED RIDE HOME
The transit schedules published by the MBTA are unfortunately not always reliable. For this reason it is important, where possible, to allow employees some degree of flexible scheduling. If an employee has a range of times when they need to arrive at work, rather than one specific time, they are more likely to use transit. As with walking and biking, a Guaranteed Ride Home program was popular with employees in the survey.

INSTALL TRANSIT INFORMATION SCREENS
At Town Hall and Brookline High School, the simple addition of a screen that shows real-time transit information can help remind people of the options that are nearby and how often they arrive. There are several vendors of these screens, including some that are interactive and can provide routing information and even indicate Hubway availability and rideshare resources – and the time-to-destination for all of these options.

Automated Vehicles and Shared Automated Vehicles
With many experts predicting that Automated Vehicles (AVs) will be begin to enter the transportation marketplace in five years, and become prevalent in 10 to 20 years, it is important to note their potential impact here. There is a clear danger that AVs will increase traffic congestion based on the recent increase in vehicle trips associated with ride share services like Uber and Lyft, and many states and larger municipalities are discussion new ways to derive revenue from these services and create leverage for their regulation, such as Vehicle Miles Travelled (VMT) taxes, by-the-minute curb use charges, and heavy taxes on privately owned AVs. These new revenues will be needed because it is certain that parking revenues will largely disappear, and parking demand will shrink significantly.

For many commuters, AVs will be far cheaper than driving, with the increased benefit of not having to drive or seek parking. HSH are advising all developers of new parking facilities to build them in a way that can be reused for other purposes in the future, with level floors, higher ceilings than the conventional standard, and many other considerations. Significant investment in providing additional parking is not advisable because of this future trend.

Shared AVs (smaller automated buses that can provide more frequent service) may also come to augment traditional transit options, meaning Brookline’s employees may have a number of new options to get to work in the near future.

The survey’s question regarding carpooling can be considered as an indicator for the Town’s employees’ future behavior when AVs become commonplace. While carpooling is only rarely
convenient for employees today (as it requires a partnership with someone who lives and works in roughly the same location), the AVs of the future will have a cost comparable to transit and in many cases offer door-to-door service. With this option available, would the 54% of people who said they would consider carpooling eventually become users of AVs? Given the money they potentially could save on car ownership by doing so, we think it is highly likely they will.

**Annual Reporting on TDM Progress**

HSH strongly recommends implementing a version of the Town of Brookline Employee Transportation Questionnaire annually or biennially to measure progress on TDM goals. This is the only reliable way to record the town’s progress on TDM goals and share them with the public. The survey completed as part of these TDM Recommendations can serve as a baseline for existing mode share, and as these recommendations are implemented an annual or biennial update can measure success and share it with town staff, the board of selectmen, and the community—helping to maintain support for the program. Each time progress is reviewed, a group with relevant experience and authority can recommend small changes to the program that are specifically targeted at, and proven to, reduce SOV use.

**Conclusion**

The Town of Brookline is experiencing high parking demand from its employees, which is causing crowding in some parking facilities and concerns in some neighborhoods where on-street permitted parking is allowed. The Town’s current policy of providing free parking for all employees without providing an equal benefit to employees who don’t use parking facilities is currently raising the demand for parking artificially. This can be remedied by offering an equal “Commuting Benefit” to all employees, regardless of their chosen mode of travel on their daily commute. A host of other supporting recommendations can enhance the Commuting Benefit’s effectiveness at reducing parking demand by educating employees on other modes of travel and their benefits and by further incentivizing their use.

It is clear to our team that if all of the recommendations in this memo are followed, including the key recommendation of equalizing the commuting benefit to all mode users, Brookline could expect to reduce the single occupancy vehicle use among its employees by 20% or more overall. These effects will be stronger in locations with more transit and biking accessibility, and in the more densely populated parts of the Town—but the effects will also be evident at all locations and no location should be exempted from the program.
There are likely to be challenges associated with particular locations, such as locations with limited parking resources (such as some fire stations), locations with ample free parking off-site, or other unforeseen complications. These localized challenges underscore the need for some central responsible individual or body of government to address problems as they arise. These small complications arise with many types of policy changes, and the fact that they will occur can be acknowledged at the outset of the program.

With annual or biennial reporting, the Town can underline the importance of the program, and collect detailed data and suggestions from employees that contribute to improving the program and reducing parking demand overall.

**Implementation**

The Town of Brookline’s Transportation Department, working with the Public Schools Department and the Town’s Human Resources Department, recommended the schedule in *Table 1* that envisions full implementation by 2020 (FY 2021). Unlike a private business, the Town of Brookline must build both political support around the plan as well as negotiating with a number of labor unions to determine with the Town the best outcomes for its employees and the public good. To build that support, the step following this Technical Memo is to build a detailed implementation plan that includes costs, estimates the potential for mode shift, and develops an ongoing system for benchmarking the Town’s progress in reducing SOV use. Working with the Town and School staff, the implementation plan will be a guide to making the recommendations in this memo a reality—and a model for other employers in the Town and the region.

*Table 1. Proposed Implementation Schedule*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Tasks</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>Feasibility and TDM Recommendations Memo, including presentation to Capital Subcommittee of the School Committee Nov. 8, to Transportation Board Dec. 18, and to Select Board in January or February (TBD).</td>
<td>May 2017 to February 2018</td>
</tr>
<tr>
<td>Phase 3</td>
<td>Implementation</td>
<td>July 2020 (FY 2021)</td>
</tr>
</tbody>
</table>
Figure 2. Workplaces and Home Zip Codes for Town of Brookline Full-Time Employees
**Figure 3.** Workplaces and Home Zip Codes for Brookline High School Cluster Full-Time Employees
Figure 4. Workplaces and Home Zip Codes for Devotion School Cluster Full-Time Employees
Figure 5. Workplaces and Home Zip Codes for Heath/Runkle/Driscoll Cluster Full-Time Employees

[Map showing workplace and home zip codes for Heath, Runkle, and Driscoll Elementary Schools]

- MBTA Rapid Transit
- Heath, Runkle, and Driscoll Elementary Schools
- Home Zip Codes for Employees Working at Heath, Runkle, and Driscoll Elementary Schools

- Not to scale.
Figure 6. Workplaces and Home Zip Codes for South Brookline Cluster Full-Time Employees
Figure 7. **Workplaces and Home Zip Codes for Town Hall Cluster Full-Time Employees**

- MBTA Rapid Transit
- Town Hall and Nearby

**Home Zip Codes for Employees Working at Town Hall or Nearby**
- 0
- 1 - 2
- 3 - 7
- 8 - 12
- 13 - 20
- 21 - 31
- 32 - 51

Not to scale.
## Table 2. Car Parking at Key Workplaces

<table>
<thead>
<tr>
<th>Location</th>
<th>Full-time Employees</th>
<th>All Employees (Does not include Adult Ed or Substitutes Teachers)</th>
<th>FTE</th>
<th>Estimated Maximum Employees in one shift</th>
<th>Likely Available Parking Resources</th>
<th>Mode Share (*percentages rounded)</th>
<th>Potentially Available Parking Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Estimated Only Parking Lot</td>
<td>% who Drive</td>
<td>% who Carpool (often w/family)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Public Parking Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unregulated On-street in Low-Density</td>
<td>Total Likely Available Parking Spaces</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>% who Drive</td>
<td></td>
</tr>
<tr>
<td>Town Hall Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webster Place (not including Adult Ed.)</td>
<td>17</td>
<td>17</td>
<td>16.19</td>
<td>45</td>
<td>16</td>
<td>0.7</td>
<td>65%</td>
</tr>
<tr>
<td>Main Library*</td>
<td>28</td>
<td>50</td>
<td>43.5</td>
<td>28</td>
<td>10</td>
<td>35</td>
<td>1.2</td>
</tr>
<tr>
<td>Public Health Building**</td>
<td>29</td>
<td>52</td>
<td>51.4</td>
<td>52</td>
<td>14</td>
<td>0.3**</td>
<td>68%</td>
</tr>
<tr>
<td>DPW Water and Sewer Garage</td>
<td>29</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>32</td>
<td>0.8</td>
<td>75%</td>
</tr>
<tr>
<td>Pierce Elementary</td>
<td>100</td>
<td>127</td>
<td>122.9</td>
<td>127</td>
<td>76</td>
<td>0.3</td>
<td>76%</td>
</tr>
<tr>
<td>Town Hall (including Central School Office)</td>
<td>148</td>
<td>159</td>
<td>155.9</td>
<td>159</td>
<td>120</td>
<td>0.8</td>
<td>75%</td>
</tr>
<tr>
<td>Public Safety Building</td>
<td>145</td>
<td>145</td>
<td>145</td>
<td>145</td>
<td>154</td>
<td>0.5</td>
<td>78%</td>
</tr>
<tr>
<td>Brokerne High Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lincoln Elementary School***</td>
<td>71</td>
<td>100</td>
<td>94.37</td>
<td>99</td>
<td>68</td>
<td>0.7</td>
<td>93%</td>
</tr>
<tr>
<td>Brokerne High School****</td>
<td>274</td>
<td>360</td>
<td>333.13</td>
<td>360</td>
<td>680</td>
<td>1.0</td>
<td>75%</td>
</tr>
<tr>
<td>Devotion School Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolidge Library*</td>
<td>3</td>
<td>20</td>
<td>12.5</td>
<td>9</td>
<td>7</td>
<td>0.3</td>
<td>Low Sample Size</td>
</tr>
<tr>
<td>Brookline Senior Center</td>
<td>28</td>
<td>38</td>
<td>35.17</td>
<td>36</td>
<td>9</td>
<td>0.3</td>
<td>44%</td>
</tr>
<tr>
<td>Lawrence Elementary</td>
<td>61</td>
<td>102</td>
<td>94.64</td>
<td>107</td>
<td>14</td>
<td>1.1</td>
<td>56%</td>
</tr>
<tr>
<td>Devotion Elementary School (Future)</td>
<td>86</td>
<td>95</td>
<td>88.19</td>
<td>94</td>
<td>65</td>
<td>1.3</td>
<td>70%</td>
</tr>
<tr>
<td>Heath/Runkle/Driscoll Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heath School</td>
<td>54</td>
<td>84</td>
<td>76.35</td>
<td>85</td>
<td>61</td>
<td>1.5</td>
<td>69%</td>
</tr>
<tr>
<td>Runkle School</td>
<td>69</td>
<td>119</td>
<td>110.55</td>
<td>121</td>
<td>120</td>
<td>1.0</td>
<td>77%</td>
</tr>
<tr>
<td>Driscoll School</td>
<td>54</td>
<td>93</td>
<td>85.64</td>
<td>109</td>
<td>54</td>
<td>1.4</td>
<td>70%</td>
</tr>
<tr>
<td>South Brookline Cluster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baker Elementary</td>
<td>82</td>
<td>112</td>
<td>106.7</td>
<td>114</td>
<td>75</td>
<td>1.1</td>
<td>91%</td>
</tr>
<tr>
<td>Puttermann Library*</td>
<td>3</td>
<td>12</td>
<td>7.5</td>
<td>7</td>
<td>18</td>
<td>2.6</td>
<td>Low Sample Size</td>
</tr>
<tr>
<td>BEEP at Temple Emeth</td>
<td>10</td>
<td>32</td>
<td>26.3</td>
<td>32</td>
<td>40</td>
<td>1.3</td>
<td>Low Sample Size</td>
</tr>
<tr>
<td>Larz Anderson</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>21</td>
<td>8</td>
<td>6.3</td>
<td>Low Sample Size</td>
</tr>
<tr>
<td>Municipal Service Center</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>26</td>
<td>69</td>
<td>Low Sample Size</td>
</tr>
</tbody>
</table>

**Library Part Timers were assumed to average 20 hours per week.**

**Public Health Employees are also permitted to use the Town Hall Parking Lot.**

***For Lincoln School, on-street parking available on Route 9 (within 1/4 mile) is also in demand from staff of the Maimonides School nearby, but cannot be depended on as it is on a state road outside of Brookline's jurisdiction.**

****Early results of an HSH parking occupancy study show that BHS’s “Total Likely available Parking Spaces” were 74% occupied at 10 a.m. on Wed. Oct. 18, 2017. This concurs with the mode share found by the Employee Transportation Survey.

† Reserved metered parking for Webster Place employees only.

† † Parking on Boylston Street is available to employees but cannot be considered permanent as it is on a state road.

Source: Town of Brookline Employee Transportation Survey, Howard Stein Hudson Parking Inventory
### Table 3.  Bicycle Parking at Key Workplaces

<table>
<thead>
<tr>
<th>Town Hall Cluster</th>
<th>Indoor Parking</th>
<th>Covered Parking</th>
<th>Outdoor Parking</th>
<th>Theft-Risk or Poor Rack Design</th>
<th>Recommended additional spaces*</th>
<th>Style of Rack(s)</th>
<th>Visibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Webster Place</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>4 in visible garage location</td>
<td>1 Three-Hump Rolling Rack</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Main Library</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>4 in visible garage location</td>
<td>2 Oval-Hitch Racks &amp; 1 Five-Hump Rolling Rack</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Public Health Building</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>4 in visible garage location</td>
<td>1 Two-Hump Rolling Rack</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>DPW Water and Sewer Garage</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Pierce Elementary</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>Replace Grid with 1 Five-Hump Rolling in visible garage location</td>
<td>1 Five-Hump Rolling Rack, 4 Swerve Racks, 1 Grid Rack (Covered)</td>
<td>Medium (Outdoor) Low (covered)</td>
<td></td>
</tr>
<tr>
<td>Town Hall (incl. School Office)</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>10-11 in visible garage location</td>
<td>1 Five-Hump Rolling Rack</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Public Safety Building (in Three shifts)</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>1 Hoop Rack on Sidewalk</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Brookline High Cluster</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lincoln Elementary School</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>18</td>
<td>Replace Triangular Rack with 1 or 2 Five-Hump Rolling Racks</td>
<td>1 Four-Hump Rolling Rack, 1 Low-Profile Triangular Rack</td>
<td>High (Triangle) Medium (Rolling)</td>
</tr>
<tr>
<td>Brookline High School</td>
<td>0</td>
<td>0</td>
<td>76</td>
<td>11</td>
<td>Replace or Remove Grid Rack, Observe Occupancy Rates in Sept./Oct.</td>
<td>5 Five-Hump Rolling Racks, 10 Hoop Racks, 6 Swerve Racks, and 1 Grid Rack</td>
<td>High Medium</td>
</tr>
<tr>
<td><strong>Devotion School Cluster</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lawrence Elementary</td>
<td>0</td>
<td>0</td>
<td>44</td>
<td>0</td>
<td>22 Hoop Racks</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Devotion Elementary School (Future)</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>10-11**</td>
<td>Unknown</td>
<td>Unknown</td>
<td></td>
</tr>
<tr>
<td><strong>Heath/Runkle/Driscoll Cluster</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heath School</td>
<td>0</td>
<td>0</td>
<td>33</td>
<td>Observe Occupancy in Sept./Oct.</td>
<td>11 Hitch Racks, 1 Five-Hump Rolling Rack</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>Runkle School</td>
<td>0</td>
<td>0</td>
<td>36</td>
<td>0</td>
<td>7 Hitch Racks, 11 Hoop Racks</td>
<td>High Medium</td>
<td></td>
</tr>
<tr>
<td>Driscoll School</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>7 Hitch Racks</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td><strong>South Brookline Cluster</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baker Elementary</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>0</td>
<td>1 Four-Hump Rolling Rack, 3 Three-Hump Rolling Racks</td>
<td>Medium Low (Three Hump Racks)</td>
<td></td>
</tr>
<tr>
<td>Municipal Service Center</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8-11</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

* Indoor or covered parking at most convenient location always preferred, high visibility required for theft prevention and safety.

** Total need for Devotion, however if installed in sight of Harvard Avenue (may be preferred for theft-prevention), more may be needed.

Source: Howard Stein Hudson Parking Inventory
Figure 8. Current Versus Potential Mode Share in Brookline, Full-Time Employees

Data Source: Town of Brookline Employee Transportation Survey 2017
Figure 9. Current Versus Potential Mode Share by Cluster

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Mode Share</th>
<th>Employees Who Will Consider Mode Shift</th>
<th>Employees Who Will Not Consider Mode Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brookline High School Cluster</strong></td>
<td></td>
<td><strong>Devotion School Cluster</strong></td>
<td><strong>Heath/Runkle/Driscoll Cluster</strong></td>
</tr>
<tr>
<td><strong>Carpool</strong></td>
<td>29%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td><strong>Bike</strong></td>
<td>54%</td>
<td>55%</td>
<td>42%</td>
</tr>
<tr>
<td><strong>Rideshare</strong></td>
<td>12%</td>
<td>16%</td>
<td>64%</td>
</tr>
<tr>
<td><strong>Walk</strong></td>
<td>3%</td>
<td>4%</td>
<td>64%</td>
</tr>
<tr>
<td><strong>Transit</strong></td>
<td>4%</td>
<td>6%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Single Occupancy Vehicle</strong></td>
<td>6%</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td><strong>Work from Home</strong></td>
<td>3%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>

**Data Source:** Town of Brookline Employee Transportation Survey 2017

**TECHNICAL MEMORANDUM**
Brookline Transportation Demand Management
October 1, 2017