Consolidated List of Councilor Questions and Responses

Councilor Susan S. Albright

1. Have you road tested your drive times at rush hour - actually by driving the route?

   Response:

   128 Business Council has road tested each and every stop-to-stop timing several times throughout the route planning process, beginning in 2017 and then again, each time a major change has been made to the planned routing. One of 128BC's shuttle vendors also road tested the routes on our behalf using an actual shuttle in order to test the differences in timing between using a standard-sized car and a 32-passenger bus. 128 Business Council also compared (and re-compared at approximately 6-month intervals) their results against Google's traffic data, as well as their 32 years of operations experience more generally.

   The schedule tables shown on p. 2, p. 4, and p. 6 of the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19 (attached – Exhibit G) reflect 128 Business Council's most up-to-date assessment of all of this data. We therefore consider these schedules to be accurate and achievable based upon today's traffic conditions. However, all routes will be retimed in the months leading up to commencement of shuttle service.

2. Newton is about to discuss city and citizens Climate Action Plans and we are trying to reduce the greenhouse gas emissions. The shuttles are positive and negative. Positive because it is ride share negative because it operates on gas. To be good citizens you should try to use electric vehicles. Can you?

   Response:

   We agree. Unfortunately, electric buses are not viable for most shuttle systems at this time. 32-passenger buses such as the ones we will employ must be charged at more frequent intervals than must an electric car and would require charging at irregular intervals when sitting in dense traffic. The Commonwealth currently lacks the electric charging infrastructure to use electric vehicles on longer trips (such as the Boston and Cambridge Express routes), and frequent charging would also reduce service frequency and prevent schedule reliability on the shorter Newton Local route. It is our hope that alternate fuel vehicles will become more viable in time. 128 Business Council is well-apprised of state and national standards and projections in this regard and will make fleet upgrade recommendations as they become feasible.

3. Have you thought about on-demand local service on Needham St that would at least go to Newton Center and back? You can use those wonderful 8-seater electric golf carts like the ones in Key Biscayne (and I guess also in Aspen).

   Response:

   We believe that there are many options to expand shared transit service, and we are particularly interested in the opportunity to expand the Newton circulator route. However, we must first establish the success of our three core routes before exploring other options.

   On-demand routing was actually something we discussed in depth at the very beginning of the planning phase. However, 128 Business Council has recommended (and we have followed this

recommendation) that on-demand models be explored as an option for future expansion, rather than as a backbone of the service. In terms of building daily ridership, the problem with on-demand routing is that, from a daily commute (rather than single trip) perspective, it is not predictable. Shuttle availability, pick-up times, and on-board duration would vary from day to day, making on-demand routing an unreliable solution for riders who are commuting to and from work, or for other repetitive, time-sensitive trips. More in general, 128BC has yet to see a model anywhere in the nation for an on-demand public transportation service that has proven itself successful in terms of financial viability or in terms of meeting rider needs.

That said, 128BC has been actively exploring options for using on-demand solutions for expanding or altering the schedule for off-peak and less frequent trips.

4. With respect to the parking garage - can you use a system like the one at the Natick mall which not only tells you what level has the spaces but by red and green lights tells you where the vacant spaces are. It feels like - if you run at full capacity often because of reducing parking - a system of lights could really help - and make it more believable that it could work.

   Response:

   Technology such as the system in the Natick Mall has changed the dynamics of garage parking operations, significantly improving efficiency and customer convenience. Smart garage technology will continue to evolve rapidly with tracking applications, vehicle integration, and data analytics. NND will employ the latest technology, which will be more effective than current systems being used by the Natick Mall.

5. Beta mentioned certain tracker (which i guess was mentioned by Leon based on where this appears in my notes). Have you considered using this tracker? why? why not?

   Response:

   We are not aware of a specific tracker recommended by Beta. However, Beta made recommendations for signal coordination and signal priority capability along the Needham Street corridor in conjunction with the MassDOT improvements. These improvements will be coordinated with the City and funded through a mitigation fund established for NND.

6. have you studied how waze would affect traffic in the neighborhoods around needham st? Can we do anything to help this problem - if it is a problem?

   Response:

   Commuter cut-through traffic has been a challenge to Needham Street and other feeder roads to Route 9 long before the use of GPS traffic tracking software. The problem will continue to get worse without greater reliance on alternate transit modes. This is what NND is committed to accomplishing with a concrete goal of reducing single occupancy vehicle trip generation. NND's traffic impact and access study has captured peak traffic volumes that reflect technology-aided traffic behavior, and these results have been incorporated into our planning and mitigation.

7. What examples can you provide that ridership will appear - this is a subset of another question i had - will you let people from upper falls use the shuttle?

Response:

Yes, the shuttles will be fully open to the public. Members of Upper Falls, and in fact, all members of the public, are invited and encouraged to use the shuttles and take advantage of the convenience. We expect that they will, particularly the environmentally conscious millennials and the empty nesters.

As for examples that we can point to in order to confirm that ridership will appear: As Monica Tibbits-Nutt stated: "There is no other system like this in the United States. We have looked, we have asked, we have called. No one has built anything of this scale." As such, there are no examples to point to as a true comparison to the NND Shuttle System. That said, 128 Business Council has 32 years of experience building ridership among suburban populations with high rates of single-occupancy vehicle dependency. They currently have successful routes running throughout Waltham, Bedford, Lexington, and Needham. However, these routes are different from what is being proposed here for two major reasons:

(1) Almost all of 128BC's current public routes are either built primarily for a work commuter population or primarily for a residential population. This means that they've had to build ridership without guaranteeing the possibility of car-free living, without the ability to have the shuttles 'multitask' across trip types, and without the ability to expand service beyond extended commuting hours. The fact that NND's Shuttle System will operate out of a mixed-use site, provide two-directional trips, and continue service beyond normal commuting hours means that building ridership should actually be easier than it has been with 128BC's current shuttles—all of which have been successful for the length of their operation.

(2) All of 128BC's current public routes are shared routes co-financed by a group of organizations who "opt in" each year. As a result, the specific routing may vary from year to year as participants join or drop out. In contrast, the shuttle system proposed here is the result of a major commitment by one entity in perpetuity—meaning that public riders can count on routes only changing thanks to established rider need (or an established the lack thereof). Again, this means that building (and maintaining) ridership should be easier than it has been with 128BC's preexisting shuttles.

Moreover, the fare structure is cheaper than parking in Boston/Cambridge and cheaper-to-comparable to the MBTA service into Boston/Cambridge, yet offers much more comfortable and amenitized service.

8. What percent do you think will both live and work on the same site? Leon's presentation had a large number - was that correct?

Response:

Mr. Schwartz's information was dated, based upon the prior programming of NND, and error filled. It is difficult to accurately predict the number of NND residents that will also work at NND. However, we estimate that 20% to 25% of residents will work in the office building, in co-working space, or the stores and restaurants. This will include Larry Gottesdiener and other Northland personnel. This estimate, though, is not scientific.

9. Leon's chart on the number of cars by category added up to more than 1550 spaces - which was explained by shared parking which i get across office and retail. What about the number of cars across residential and office/retail - is 1550 the right number? Should it be 50 cars bigger? Happy to hear that 1550 is the right number i just need a better explanation.

   Response:

   In order to bridge the divide between parking minimalist and parking maximalists, we have developed a creative response that should appeal to both. The revision will reduce striped spaces to 1450. This will be the parking count in the ordinary course. That reduction will also free up a 200-space valet pod which will create the excess capacity to accommodate the peak holiday season. This plan is responsive to the marketplace (peak demand) and our commitment to reducing single occupancy vehicles (lowered number of parking spaces).

   It should be noted that Mr. Schwartz's lay parking analysis was inaccurate, ignored the concept of shared parking, and inflated the number of employees on-site. Beta, on the other hand conducted a professional analysis and concluded that Northland got the parking just about right. However, the complementary nature of the uses allows extra daytime office parking to spill over into vacated residential parking during the weekday and retail parking to spill over into vacated office parking in the evenings and on weekends. Shared parking is a widely accepted concept in the real estate industry and our plan is aligned with generally accepted metrics endorsed by national trade organizations such as the Urban Land Institute and the Institute of Transportation Engineers.

10. One more on the parking garage - I know that in December you will be above planned occupancy - but how often will you be close to maximum capacity in an average day/month?

    Response:

    Parking demand will be greater during the weekday than on the weekend. At peak times during the week, the garage will operate at 97% to 98% occupancy. On weekends, peak demand will reach 86% to 88%. The additional parking program referenced above will provide expanded capacity to efficiently manage event-related or seasonal surges.

Councilor Marc C. Laredo

1. What is the source of the base numbers for current traffic counts on Needham Street being used by the developer and when and how the information was gathered?

   Response:

   The traffic counts were conducted in May 2017 and October 2017. The May 2017 traffic counts were conducted for the Functional Design Report for MassDOT's reconstruction project of Needham Street and were used by NND to be consistent with the roadway reconstruction project. Locations not included in the roadway reconstruction project were counted in October 2017. These counts are consistent with the MassDOT TIA guidelines. All turning movement counts were conducted with cameras and all daily automatic traffic recorder (ATR) counts were conducted with tubes across the roadway. The base counts for all locations were included in the Appendix to the TIA filed in October 2018.

2. Do the current base numbers being used by the developer include traffic counts for a fully occupied Marshall's plaza and Piano building? If so, what are the actual traffic counts today given that much of the site is unoccupied?

   Response:

   The traffic counts were conducted in May and October 2017, at the time Northland filed an Environmental Notification Form for this project under MEPA and reflect the occupancy rates at those times. Marshalls Plaza was at 92% occupancy at the time of the traffic counts, while the office space was mostly empty, and the former manufacturing space was completely empty.

   Traffic counts have not been taken since May and October 2017. However, measuring traffic at this time does not accurately characterize the traffic impact of NND, as space has been purposely left vacant because of our special permit application and could be re-tenanted at any time if we elected. The future "No Build" scenario in the traffic impact study assumed the existing office space would be fully occupied in the future without the project and therefore the "No Build" analyses includes traffic generated by the office. As of April 2019, Marshall Plaza remains 87% occupied.

3. Using current traffic counts as they exist today with the site essentially empty, what will the total traffic increase be if the project is fully built as proposed?

   Response:

   The projected weekday morning peak hour volume would be 396 vehicles, the weekday evening peak hour volume would be 487 vehicles and the Saturday midday peak hour volume would be 558 vehicles. This data is presented in Table 8 of VHB's March 28 Expanded Revised Building Program Traffic Generation Memorandum, which shows the projected peak hour traffic generation under the "Robust Shuttle" mode share without existing vehicle trips.

4. Have there been traffic increases due to the opening of the grocery store, the Nexus site, and any other recent developments and, if so, have those numbers been included in the current base numbers the developer is using? If not, why not and what are those numbers?

   Response:

   The Planning Department has not made us aware of any post development traffic assessment data for the Nexus development, including the grocery store. Traffic projections for recently completed projects were incorporated into the future No-Build and Build traffic assessments for NND in accordance with standard MassDOT TIA guidelines.

5. Have the addition of the buses been included in traffic counts as projected on Needham Street? If so, how are the buses being counted – as the equivalent of a single car or multiple cars (and if the latter, how many) and why is that particular standard being used?

   Response:

   While not called out specifically, traffic projections for the project were based on standard methodology includes all vehicle types, so the expected activity is essentially covered. As outlined in the 128 BC shuttle plan, the peak hour of operations will see 4 shuttles entering the site and 5 shuttles leaving the site during the weekday morning peak hour. The same is true during the weekday evening peak hour period where 4 shuttles will enter and 5 will exit over the course of the peak hour. This amount of activity is not significant. No adjustments were made or included in the traffic projections that replace multiple vehicles with buses.

6. What are the planning department's specific proposals for remedies in a Council order if the developer's projections on bus usage are incorrect and there is more traffic than anticipated?

   Response:

   [Note – this is a question directed to the Planning Department to respond. The Planning Department's specific proposal outlined in its April 5th memo is to require Northland to return to the City Council to amend the special permit and establish alternative mitigation strategies if it has not met the performance goal for two consecutive years and there continues to be no improvement.]

   Northland is committed to doing what is necessary to achieve the performance goal recommended by the Planning Staff, if actual vehicle trips exceed the goal for a sustained period, then further measures would be implemented to reduce vehicle trips, including: additional MBTA and shuttle incentives; modification of shuttle routes, schedule, or capacity; improved marketing and community awareness; or introduction of additional transit options.

7. How does the planning department envision that post-construction travel to and from the site be determined (I very much doubt that there could be any survey that tracks the travel practices of all residents)?

   Response:

   Post-development traffic monitoring will be conducted annually that will include formal traffic counts at each site driveway during peak hours. Additional data will be collected from shuttle

riders, residents and office workers through surveys. While the surveys may not provide exact travel data of everyone within NND, they will be effective in identifying transit use patterns and preferences.

8. Is the developer willing to commit to the bus service at the proposed levels in perpetuity and, if so, how will pricing be determined? If there is not that commitment, what assurances will we have about alternate transit in the future and how will that be enforced?

   Response:

   Northland will comply with the performance goal recommended by the Planning Department in perpetuity. The goal can be achieved "regardless of what tools, systems and/or approaches implemented by the petitioner", as the Department stated in its April 5 memo. While the shuttle is an integral part of the plan today, the tools, including the shuttle, may shift in the future as transportation trends change. "The transportation field is rapidly changing and evolving and there will likely be more tools available as this project progresses" according to the Planning Department memo.

   Regarding shuttle fares, please see p. 9 of the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19 (attached - Exhibit G). If the program were put into effect today, the rates would be $2.50 per ride on the Newton Local (serving Newton Highlands and Newtonville) and $7.00 per ride on the Boston and Cambridge express routes, which is competitive with MBTA services while providing a superior rider experience (greater predictability, comfortable seats, WIFI, real-time shuttle tracking, in-app pay options, etc.). The pricing will change from time to time to reflect changes in the market and to stay on-scale with MBTA service.

9. What specific measures is the planning department proposing to ensure that if parking is limited on site it does not spill over onto neighboring streets?

   Response:

   [Note: This is a question directed to the Planning Department to respond]

   Northland is not aware of any specific proposals for parking restrictions on neighborhood streets. We will put in place a provision in residential leases to restrict parking on neighborhood streets and void incentives for violators. However, the most effective means of controlling spill-over parking is to impose a neighborhood resident parking sticker program for the time period outside the November 15th to April 15th winter parking ban.

10. Have any shadow studies been done on the proposed buildings on site?

    Response:

    An updated shadow study is shown on Exhibit E. Based on the revised program of NND and the fact that the height is concentrated in the center of the site and 232 feet from the west property line, no shadows are cast on any buildings in the Upper Falls beyond 9:00 am on the winter solstice, the most impactful period.

11. Why is having 40% of residents using alternative transit an acceptable number to the planning department?

Response:

Transportation is changing and there are underlying trends shifting away from traditional commuting relating to the target cohorts for NND, millennials, empty-nesters and seniors. These include greater corporate opportunities for remote officing and working from home, more prevalent use of alternate transit modes as part of a growing green consciousness, and a greater desire for live/work/play experiences.

12. What are the specific reasons that the planning department is willing to rely on the transit-oriented development calculations in assessing this project when it is not near transit? Is it solely the proposed bus service or are there other factors that are being relied upon? Has any other project in Newton or elsewhere in eastern Massachusetts applied transit-oriented standards in this manner?

Response:

[Note: this is a question directed to the Planning department to respond]

The breadth of service of the NND Shuttle System will provide an equal or better-quality TOD experience than typical suburban TOD developments. Unlike other developments that may rely on a single mode of public transit, NND will offer both door-to-workplace transit service and 20-minute frequency service to both commuter rail and T service. For instance, The NND Shuttle System will provide transit to downtown Boston, The Seaport, Kendall Square and Central Square within 60 minutes or less during peak commuting times and will also provide convenient and timely transit access for commuters traveling to the LMA, Boston Landing, Fenway and Back Bay.

Several factors enable NND to achieve a higher concentration of alternate transit use. The mix of residential, retail and office within NND and the immediate neighborhood allows greater reliance on pedestrian and bike travel, supported by the connections to Greenway, a network of bike paths, and on-site bike storage and bike-share. The shuttle program will provide reliable door-to-workplace commuting options as well as 20-minute frequency access to the T system.

13. If the planning department will be doing post-construction review and enforcement, who will be doing that work and what will be the cost to the city?

Response:

The post development monitoring and reporting will be provided by a qualified engineering firm engaged and paid for by Northland. The City will bear no cost.

Councilor Alison M. Leary

1. Can we include other conveniences, like making it easy to pay with apps and integrating your payment options with the T's automated fare collection system upgrades that are coming soon?

   Response:

   The NND Shuttle System will offer a wide variety of conveniences, both in keeping with 128 Business Council's current fleet and surpassing it. This will include mobile in-app payment options, real-time shuttle tracking on desktop and mobile, real-time shuttle alerts, comfortable seating, in-seat mobile device charging, reading-optimized lighting, and WIFI. Based upon Ms. Tibbits-Nutt's deep experience in the field and resulting from her combined duties at 128 Business Council, the MBTA, and MassDOT, the shuttle system is proactively designed to "fill in the gaps" and complement MBTA service rather than compete with it.

   As for AFC 2.0, specifically: The completion timeline for this project currently extends into 2021, but 128 Business Council will be ready to integrate their operations with these and other MBTA technological upgrades as soon as those options become available.

2. One way to attract ridership is to reduce fares. Would that be something that could be considered?

   Response:

   If necessary, yes, we would reduce fares to ensure robust ridership.

   However, the fare structure recommended by 128 Business Council and accepted by Northland (see p. 9 of the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19, attached Exhibit G) are competitive with current MBTA fares, while still allowing for a superior rider experience (greater predictability, comfortable seats, WIFI, real-time shuttle tracking, in-app pay options, etc.). As a point of reference, 128 Business Council has studied the effects of fare raises on ridership and has not found that measure increases reduced shuttle participation among most populations, as long as the fares are within range of other public transportation options. That said, shuttle riders and non-riders alike will be surveyed regularly as part of the Project's metrics commitment, and the effects and perceptions of shuttle fares can be included in this surveying. If fares emerge as a barrier to ridership, they will absolutely be adjusted. We will also provide financial incentives that will further reduce transit costs for riders, including multi-ride shuttle passes and T discounts.

3. Could we consider incentivizing residents who choose not to pay for a parking spot a reduced shuttle service fare and/or offer free shuttle service for the first year?

   Response:

   Residents that commit to living car-free at NND will be offered a free annual T pass and a shuttle discount.

4. I would explore reducing onsite parking even further if the goal is to truly market this project as a TOD.

   Response:

   We worked very diligently to reduce the number of parking spaces at NND down to 1,550, the lowest parking ratio of any existing development in the Greater Boston suburbs (a level that maximizes shared parking and yet provides a base number satisfactory to finance and lease NND).

   That being said, we have prepared and submitted a revised plan that we hope will appeal to both parking minimalists and parking maximalists. The new plan reduces striped spaces from 1,550 to 1,450 AND creates a 200-car valet pod (total of 1,650) that will accommodate overflow in the peak holiday season.

   This plan is responsive to the marketplace (peak demand) and our commitment to reducing single occupancy vehicles (lowered number of parking spaces). We agree that any further reduction of parking should be done in concert with parking restrictions or resident parking policy on neighborhood streets. We will include a lease provision to restrict parking on neighborhood streets and void incentives for violators. However, that may be difficult to enforce without a neighborhood resident parking sticker program (although the City of Newton winter parking ban will resolve the issue from November 15th to April 15th each year).

Follow Up Questions (4/17.19 via N Khan):

1. I am not clear how the shared parking program will work. I understand the basic concepts of shared uses, but the details are murky. I also know the City's shared parking program is not faring well at all. I would like more information.

   Response:

   In order to bridge the divide between parking minimalist and parking maximalists, we have developed a creative response that should appeal to both. The revision will reduce striped spaces to 1,450. This will be the parking count in the ordinary course. That will also free up a 200-space valet pod which will create the excess capacity to accommodate the peak holiday season. This plan is responsive to the marketplace (peak demand) and our commitment to reducing single occupancy vehicles (lowered number of parking spaces). That being said, we have tried to communicate how it works very clearly in our revised submission. The City's shared parking program is informal and voluntary. NND's is neither. Please see attached Exhibit B shared parking analysis

2. Peter describes the transportation management plan as "radically aggressive". While it is robust, I am not convinced that it is aggressive enough. Peter mentions the financing may be jeopardy if they lower parking too much, but transportation is transforming before our eyes, and if they have a commitment to getting people out of their cars and into shuttles then I believe they can reduce parking even further. I also believe there a lot of people ready to live car free and families who can function well with one vehicle who would love to live in Newton.

Response:

We completely agree and that is why we programmed the lowest parking ratios of any existing development in the Greater Boston suburbs why we have reduced striped parking even further, and (in part) why we placed the parking underground (if it is underutilized, at least it will not be an above grade multi-level eyesore for decades to come – as will be the case for many "comparable" developments). While we agree on the future, we will still need the buy-in of the construction lender and the Commercial and retail tenants in the present. It is our professional opinion that current NND parking programming pushes them as hard as they will accept.

3. The Upper Falls Greenway ends at National Lumber. Is the plan to connect to the Newton Highland's Green Line? If so, I would like more information about this plan.

   Response:

   Northland has not dug in on the access issues behind National Lumber. We are committed to make every effort to help create this critical link.

4. 800 units is a lot, but I am concerned if the project size drops too much it will could jeopardize the robust shuttle bus service. We could very well end up with a smaller project that could end up causing even more traffic.

   Response:

   800 units represents the lowest density of all the comparable Newton developments, including Avalon Newton Highlands, Avalon Chestnut Hill, Washington Place, Austin Street, Village Falls Condominiums and Chestnut Hill Towers. NND's 22.6 acres comprises three large individual parcels, 156 Oak Street, 55 Tower Road, and Marshalls Plaza, which could each be a development project in their own right, with access onto only one street. We have worked patiently over 40 years to assemble the three parcels, and it is this assemblage that allows for the permeability, connectivity, and open space of NND's landmark design.

   Further, Northland has nearly 50 years of national experience, and we have never seen a mixed used development with 43% open space, nor have we ever witnessed NND's level of neighborhood permeability including the fact that NND is accessible on all four sides by parks.

   Regarding smaller programming, it is the 677 market rate units that provide the financial underpinning to fund the Shuttle, create 9.8 acres of open space, place 900 parking spaces underground, and build the community amenities.

   Please see Exhibit F for a comparison of density.

Councilor Andreae Downs

1. She sees that in the ENR DOT recommended "banking" some spaces, i.e. there could be spaces built and not programmed for use and then used when necessary. It is a workaround – and it could allow us to have 2 numbers out there and get where we need to be

   Response:

   We agree.
   In order to bridge the divide between parking minimalist and parking maximalists, we have developed a creative response that should appeal to both. The revision will reduce striped spaces to 1450. This will be the parking count in the ordinary course. That will also free up a 200-space valet pod which will create the excess capacity to accommodate the peak holiday season. This plan is responsive to the marketplace (peak demand) and our commitment to reducing single occupancy vehicles (lowered number of parking spaces).

2. She wants the shadow study

   Response:

   Attached for your review is an updated shadow study (Exhibit E) for NND based on the revised programming we presented at the March LUC hearing. We are pleased to note that, based upon the revised programming of NND 2.0, no shadows attach to ANY Upper Falls buildings beyond 9:00 am on the winter solstice.

3. She is struggling with why density is good. She gets the green argument, and she thinks density is good, but she's not sure why.

   Response:

   On the merits of density, we firmly believe density is critical to enlivening NND's streets and open spaces to create a sense of place. NND will be the heart of activity along the corridor and the N-Squared District and will achieve the over-arching goals of the Needham Street Vision Plan, most importantly the vision for land use. We cannot achieve this with lower density. We have put our parking underground to create a more desirable pedestrian environment. We have dedicated 43% of development to open space, and are providing a dedicated community building, a playground and several large green spaces for public benefit. Density is the financial engine necessary to provide these critical place-making ingredients. Finally, it enables us to add critically needed housing inventory to the City, including 123 affordable housing units and a dedicated building designed to allow seniors to age in-place.

   128 Business Council's contribution: Higher density can be good for both environmental and social justice reasons. Beginning with the social justice reasons, the Greater Boston Area is experiencing a major housing crisis, and the deleterious effects of this crisis fall disproportionately upon those without the means to pay "whatever it takes" to find convenient housing. We cannot increase housing stock within the Greater Boston Area itself without increasing residential density. This ends up being closely related to the environmental reason, since those with less financial means must move to further-flung locations and/or to areas with poor-to-no alternative transportation options, and therefore end up dependent upon single-occupancy vehicles. Higher-density developments (if they contain a diverse mix of multi-use tenants, which this development is definitely designed to do) further promote

environmental goals by not only counteracting suburban expansion but also reducing local trips thanks to a wider range of destinations being located within walking or biking range.

Follow Up Questions (4/17.19 via N Khan):

1. One of the mitigation measures mentioned initially was a connection of the Greenway spur to Christina Street and help negotiating the eventual connection to the Needham side of the Charles River, and parks and pathways there. Is that still part of the discussion?

   Response:

   The potential Greenway spur that would connect the Upper Falls Greenway to the myriad of recreational opportunities across the Charles river for pedestrians and bicyclists of Newton was an important motivation in our decision to acquire 56 Christina Street. It is only due to our patient assemblage and thoughtful design that this spur is possible. We are 100% committed to try to make that connection a reality.

2. Another transportation enhancement—building a better-than-average bus shelter with benches and real-time bus arrival information—has been floated for the stop on the northbound side of Needham Street. Can that be added to the developer's mitigation mix?

   Response:

   Northland intends to build a state-of-the-art bus shelter on northbound side of Needham Street, integrated with the Mobility Hub so that commuters can have comfortable options on both sides of the street, while waiting for the MBTA Route 59 bus.

3. Whom is the Oak Street entrance/exit meant to serve? Can traffic there be restricted to that population?

   Response:

   The four means of ingress/egress currently programmed are required to adequately operate NND. The Oak Street curb cut, which currently exists (and would handle an order of magnitude more traffic in the "as of right" build scenario) is essential to minimize impact on key intersections along the corridor. Beta thoroughly studied alternatives for the Oak Street entrance and arrived at the same conclusion.

4. If not, can the Oak Street entrance/exit be trialed at full build out and closed to some or all traffic in the event that neighbors' fears of Oak/Chestnut/Eliot street gridlock prove correct?

   Response:

   The four means of ingress/egress currently programmed are required to adequately operate NND. The Oak Street entrance is essential to minimize impact on key intersections along the corridor. Beta thoroughly studied alternatives for the Oak Street entrance and arrived at the same conclusion.

5. What is the Transportation Alternatives Analysis and what will it allow Newton to do?

   Response:

The Transportation Alternatives Analysis is proposed by the Planning Department to study the feasibility of improved or faster MBTA service and to identify future priorities. The Planning Department can respond to the specifics of the analysis.

6. How many peak hour trips are we talking about total?

   Response:

   The Planning Department recommended a performance goal be established for limiting NND trip generation based upon the "Robust Shuttle" model mode share projection in VHB's traffic impact study, which assumes 60% vehicle usage and 40% other usage (including transit) by residents and office workers during the weekday morning and evening peak hour. Based on the updated traffic projections reviewed and accepted by the City's peer reviewer, the goal would be set at 396 total vehicle trips in the weekday morning peak hour and 487 total vehicle trips in the weekday evening peak hour. If actual vehicle trips exceed this amount for a sustained period, then further measures would be implemented to reduce vehicle trips, including additional MBTA and shuttle incentives, modification of shuttle routes or capacity, or improved marketing and awareness, or introduction of additional transit options. Northland agrees with the performance goal for NND and will abide by the requirement as long as the special permit is in effect

7. Can the parking be "banked," that is, not built unless shown to be needed as the project is completed?

   Response:

   Thank you for this suggestion. We have prepared and submitted a revised parking program and operations plan that we hope will bridge the divide between the parking minimalists and the parking maximalists. Please see Exhibit B for the revised parking plan. This plan is responsive to the marketplace (peak demand) and our commitment to reducing single occupancy vehicles (lowered number of parking spaces).

8. I have heard that real-time trip counts are possible and can be set up to be monitored remotely and transparently. Can we require this to ensure project trip generation remains below target, particularly for rush hour(s)?

   Response:

   Continuous and real-time traffic counting devices are typically built into traffic signal systems. Since NND trip generation data must be recorded at all driveways, having continuous count/real-time count at only one location will not be productive in measuring overall site-generated traffic. Traffic counts will be conducted by Northland's traffic engineer at each NND driveway during the peak hours each year to determine the level of NND trip generation as part of its compliance obligation.

Councilor Deborah J. Crossley

4.17.19 via N Khan

1. Which buildings, uses and public outdoor spaces would come on line first, second, etcetera?

   Response:

   NND will not be phased. It will be financed and built as one project. The actual development of the buildings will be sequenced to efficiently manage construction and allow for orderly lease-up of the apartments. Based on our current planning, the first sequence of construction will include blocks 5 and 6, and buildings 2, 3, and 7. Also included with the first sequence will be the renovation of 156 Oak Street and the construction of the Village Green, the Community Park & Playground, the Community Building, the Mill Park, the Mobility Park, and the restoration of South Meadow Brook. The second sequence will include Buildings 4, 8, the townhouses, and the Oak Street Park. The first sequence will comprise 498 units and the second sequence will include 302 units.

2. Will the shuttle be a fully operational system at that [C of O first 400 Units] point?

   Response:

   The NND Shuttle System (meaning all three of the routes shown in the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19, attached Exhibit G, and running on the complete schedules shown on the included time tables) will start with 100% service once NND has received a certificate of occupancy for 400 units. We will hit this point in the first sequence of construction. The shuttle program will be an integral part of our marketing program – meaning that we believe that many tenants will move to the development because of the shuttle options – so it is essential that it be operational in this first sequence.

3. I see that some opinions we are seeing in letters from the public, try to relate the intensity of use proposed for this site to others they can see - particularly Avalon at Newton Highlands and Chestnut Hill. I believe both of those projects have more square foot of building relative to site area, and far less usable open space relative to the amount of building on each sites, although Avalon at Newton Highlands may be more comparable to Northland. I believe that both Austin Street and Washington Place were permitted with a higher proportion of building area to open space a well. **It would be helpful if the Planning Department could verify the numbers.**

   Response:

   800 units represents the lowest density of all the comparable Newton developments, including Avalon Highlands, Avalon Chestnut Hill, Washington Place, Austin Street, Village Falls Condominiums and Chestnut Hill Towers. None of the comparables in Newton or in Greater Boston, for that matter, have anything resembling 43% open space. 43% sets a new standard.

   NND's 22.6 acres comprises three large individual parcels, 156 Oak Street, 55 Tower Road, and Marshalls Plaza, which could each be a development project in their own right, each with access onto only one street. We have worked patiently over 40 years to assemble the three parcels, and it is this assemblage that allows for the permeability, connectivity, and open space of NND's landmark design.

It is also important to recognize the type of density. For example, Newton Highland's unit mix is comprised of 67.3% two- and three-bedroom apartments (which generally generate more traffic, requires more parking, and attracts more families), whereas NND's unit mix is comprised of 40% two-bedroom apartments and 5% three-bedroom apartments.

Further, we have never seen, anywhere in the country, the permeability of NND, particularly for pedestrians and bicyclists, given that NND is accessible on all four sides by parks (a design which we have never seen).

Please see Exhibit F for a comparison of density.

4. I also heard at the meeting that the intersection of the Avalon Bay drive and Needham Street works at a level of service **LoS A.** There are 294 units there on less than eight acres, and now the Nexus lot is connected directly to Avalon, providing another egress from their site. **It would be helpful if the Planning Department would confirm this data.**

   Response:

   Planning Department to Respond

5. I understand that given the investments made so far - two layers of underground parking, more open space, a subsidized shuttle serve, and more we'll hear about with stormwater management, affordability and building design... that there is proposed a cap on other mitigation spending of five million. This is related to the list of investments we'd like to make in alternative transit options including a 275K comprehensive feasibility study including a look at a Greenline extension, accessible access to the Elliot and Highlands T stops, extending the bikeway to Needham over the Christina bridge, etcetera. Some of these ideas have been kicking around for a few years. **Can the Planning Department help us understand what each of these projects would entail, where they stand** - and identify the challenges to achieving each one.

   Response:

   Planning Department to respond. Northland is passionately interested in ALL of these initiatives, Green line extension, Elliot/Highland T access, Christina Bridge access, etc. We would very much welcome an update and status report.

6. Finally, the public comment went so late that the committee did not have a chance to hold a constructive conversation the same night. Although we are invited to put forward our questions in this forum, it would be more helpful - given how managed transit is critical to the success of the project - if we could have a conversation in committee to make sure we all understand the intricacies of this very new approach to transit. It would be my **preference to hold such a meeting completely separately** from the final design, stormwater and sustainability meeting coming up in May.

   Response:

   Our understanding is that time has been set aside for April 30 without public comment. After the issues involving the last LUC hearing, Northland will need to confirm that any public comment will be in writing not in session.

Councilor Maria Scibelli Greenberg

1. Regarding proposed shuttles- Will there be an age restriction for shuttle use? Can students use them? Will stops to the Library, YMCA, NewCAL senior center and Boys and Girls Club be included?

   Response:

   The NND Shuttle System will be open to all, including students.

   In the future, the Newton Local could be expanded or included in a broader system that would include the YMCA, the new senior center, the Boys and Girls Club and others. However, we are first going to establish the success of the initial four destinations included in our initial three routes before contemplating expansion. As an aside, the specific stops in any future expansion can be informed by the surveying of shuttle riders and local non-riders in order to determine demand.

2. The number of announced affordable units is still listed at 123, I would like that increased to 145 as the Planning dept recommended to follow our proposed IZ ordinance.

   Response:

   Northland may have made a mistake in agreeing to make changes worth tens of millions of dollars so early, particularly the undergrounding of parking. This may have given the false impression that the development could afford more concessions. NND is now on the cusp of financial viability. Upon a final Order of Conditions meeting, we will be prepared to address incremental increases in mitigation.

3. In the planning memo dated April 9th BETA analyzed the 4 alternatives for Oak street access and recommend that removing or restricting access from Oak would result in negative impacts on the remaining intersections. Planning also agreed. However, is Alternative #4 "where No left turns allowed to exit site driveway onto Oak" still a consideration? It would make practical sense that left turns would cause delays in traffic flow.

   Response:

   Following Beta's analysis and recommendation, no restrictions will be placed on ingress and egress at the Oak Street entrance.

Councilor David Kalis questions:

1. If the key issue surrounding traffic on Needham St is the high rate of (70%) pass through traffic, what can we do in the short run and long run to reduce this traffic?

   Response:

   Commuter cut-through traffic has been a challenge to Needham Street and other feeder roads to Route 9 long before the use of GPS traffic tracking software. The problem will continue to get worse without greater reliance on alternate transit modes. This is what NND is committed to accomplishing with a concrete goal of reducing single occupancy vehicle trip generation.

2. Given the long list of mitigation that has been listed and the potential tremendous costs of these, has there been discussion with the developer and to what extent are they on board?

   Response:

   Thank you for understanding our extraordinary commitment to newton. We are very proud of our plans for NND that honor this once in a life time opportunity. Northland is fully committed to NND and will begin the development immediately upon obtaining permits. We plan to move our corporate headquarters to the historic Saco Pettee Mill.

3. A second traffic study was done by Ward 8 constituents who hired TEPP LC. One of their key findings was a need for a city-wide traffic study that incorporate not only Northland, but other developments that are in process. Have you seen this report? What are we doing to address this key finding? How can we better understand the complete nature of potential buildout vs one off developments?

   Response:
   Planning Department to Respond

4. Auto ownership in Needham and Newton has been high at 1.5+ cars per HH for some time (since 2010) indicating a low probability of people using transit. How realistic is it to expect new tenants to own just one car?

   Response:

   This statistic reflects predominantly single-family households and therefore is not indicative of the targeted population of NND.

   Northland Is totally committed to reducing automobile reliance at NND by providing the lowest parking ratio of any existing development in the suburbs, offering both door-to-workplace and 20-minute last mile frequency shuttle service, and agreeing to an aggressive performance goal for trip generation reduction. In addition, parking will be charged separately and will be expensive. And further, millennials are increasingly gravitating away from car ownership.

   Finally, 128 Business Council has established and run successful shuttle routes for three decades in Waltham, Bedford, Lexington, and Needham – communities that have similarly high rates of car ownership. The combination of the introduction of viable alternative transportation options, route planning and monitoring by a team of dedicated professionals, in-house public outreach and consistent marketing, and shifting generational attitudes can both (a) invite new residents

open to relying on alternative transportation, and (b) produce a shift in behavior among some preexisting residents.

5. Given people can find lower priced housing and more convenient mass transit in Cambridge, Somerville or Medford, why would people move to Newton and then take a shuttle? Do we really need a shuttle to Cambridge?

   Response:

   The NND Cambridge shuttle not only serves residents commuting to Cambridge, it also serves Cambridge residents that work at NND. The Cambridge shuttle will provide door-to-door express service to Kendall Square and Central Square in comfort with WIFI service and dependable scheduling. If, after time, it is determined that the Cambridge route is not building ridership, then a route adjustment would be considered.

   It is also worth noting that the stock of lower-priced housing in Cambridge, Somerville, and Medford is rapidly disappearing.

6. Given the location of the Northland project, it appears perfect for someone who works on 128. Why are there no plans for shuttle to businesses on 128?

   Response:

   We believe NND will appeal to professionals working along Route 128 as well as in Newton, Boston, Cambridge, LMA and Brookline.

   Based on the available data sets (including traffic data, mode usage data, public transportation ridership, older commuter surveys, and 128 Business Council's more recent in-house origin/destination surveying), possible northbound destinations along Route 128 lack the origin/destination clustering needed to build a route. What this means is that, while there may be a lot of commuters currently traveling between Newton and destinations along Route 128, not enough of them are starting and stopping in adjoining locations.

   However, as the NND Shuttle System manifests, it's likely that there will be opportunities to integrate our service into a broader network that would serve Route 128 office parks. The specific stops for future expansions can be informed both by (a) the surveying of shuttle riders and local non-riders in order to determine demand, and (b) the development of other new shuttle routes that might be connected to ours, which is in keeping with 128BC's historical operating model.

7. I have docketed an item to understand the add a lane impact on the City of Newton. It appears that traffic has increased in some areas and may be flat in others. In theory, what mitigation can actually be done post final work that makes a difference in traffic? Will we have the same issues with Northland - that once it is built, mitigation measures can only do so much?

   Response:

   Northland's commitment to a performance goal for limiting trip generation is unique and forward-looking. We will be able to monitor the success of our shuttle and then make modifications if results are not satisfactory. We will employ a variety of tools to help insure success. But the tool that would probably be most supportive of NND and most effective in animating the shuttles, would be a dedicated bus/shuttle lane.

Councilor Chris Markiewicz Questions:

Note: I understand that not all of these questions affect the granting of a permit, but they may be relevant to conditions included in the Council order or provide context to understand the requirements that the petitioner must address in order to sustain a viable project/investment

Housing:

1. We recently heard testimony (from a demographic expert consultant hired by our schools) that mixed age residential complexes are not for the most part attractive to the over-55 population. Do you have data that supports the opposite conclusion? Is it locally based?

   ***Response*:**

   The information from the demographer regarding mixed age residential was anecdotal, personal, non-New England, and not fact based. I would defer to the experts at the Council of Aging that have the complete opposite view.

Timeline:

2. I understand the timeframe from start to a full build out will be 5 years of more. Is this correct?

   ***Response*:**

   Please see attached Exhibit H for 5 Year Development Schedule

3. Given the timeframe, and understanding that plans can change for several reasons, including economic conditions, can specify which buildings/facilities will be delivered in specific years or at least group them into tranches with target dates? Noting any significant dependencies that could affect this would be appreciated

   ***Response*:**

   Northland is not phasing the project. Northland is investing only internal equity, which it has in hand. Given our long-term view, we have no intention of changing plans in light of near-term market changes or dislocation.

   Our only condition precedent to breaking ground is closing a construction loan. Given our national reputation, the fact that we have borrower channel status with FNMA and a Freddie Mac Select Sponsor and have kept our lenders apprised of our progress, we expect to close the construction financing this year (assuming we get the permits in a timely fashion).

   Please see attached Exhibit H for 5 Year Development Schedule

Transportation/Traffic

4. You have an objective of getting 40% of residents to use one of the 4 shuttles (daily?) to commute. Does this imply that there would be a pro-rata decrease in the number of cars parked onsite considering each unit's planned/traditional estimate of parking need?

   Response:

We expect 40% to use alternative transportation, including the shuttle, the T (free annual T passes), the commuter rail (shuttle access), walking, and biking (and soon presumably scootering). Those numbers are factored into our parking count.

Just an additional clarification: There are three planned routes (the Newton Local serving Newton Highlands and Newtonville, the Boston Express, and the Cambridge Express), but there will be 8 dedicated shuttles needed to achieve the planned frequencies for these routes. See the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19 (attached Exhibit G), esp. p. 8.

5. How will you remediate the situation if this 40% objective is not reached? My understanding of these types of arrangements is that the likelihood of success is often evident early on in the implementation. What kind of timeline(s) do you have to measure whether the objective is being achieved? How will you measure and report?

   Response:

   As outlined in the in the April 5th planning department memo, we have agreed to commit to a metric of performance regardless of method or resource used to achieve that goal using a basket of TDM measures, outlined in the TDM Workplan Exhibit H.

6. The price of one or more of the shuttles was shown at $7 per ride. Are there plans for subsidies, volume or other discounts? For some shuttles, $14 round trip plus additional costs for the next leg of transportation could be more than many can bear, even those who can pay 3k a month for rent. For others, the net difference in cost for driving may not e enough to motivate then to abandon the convenience (for the most part) of using a car.

   Response:

   See p. 9 of the slides from Monica G. Tibbits-Nutt's statement before the LUC on 4/9/19 (attached Exhibit G) for the proposed fare structure. The Newton Local is set at $2.50, while the Boston Express and Cambridge Express are set at $7.00. These rates are set to be competitive with the MBTA, with the latter comparable to the cost of the Commuter Rail, although the two express routes may prove more 'express' than either the Commuter Rail or the Green Line.

   Yes, there are plans for multi-ride passes that will reduce the per-ride cost, as well as other forms of potential subsidies.

   We anticipate there being two distinct audiences for the Boston and Cambridge Express routes:

   (1) Riders who are living a car-free or shared-car lifestyle, for whom the shuttles are an opportunity to avoid using TNCs (like Uber and Lyft) and who will appreciate the more dependable and more direct service as compared to other public transportation options.

   (2) Riders who do own a car but are making the choice to take the shuttle for the sake of comfort and reduced hassle. 128 Business Council has found through both anecdotal and survey research that many drivers do not actually view driving their single-occupancy vehicles

as convenient. In fact, they have an established ridership on their preexisting routes of commuters who own vehicles but self-report that they prefer taking a shuttle, because it allows them to reclaim the time they would have spent driving (since they can work or engage in entertainment on the shuttle), reduce stress, and avoid the hassle of parking. These potential benefits will be a major part of the shuttle system's marketing.

7. Can you make all shuttles electric and require any ride share that is allowed on the property to be electric?

   Response:

   Unfortunately, electric buses are not viable for most shuttle systems at this time. 32-passenger buses such as the ones we will employ must be charged at more frequent intervals than must an electric car and would require charging at irregular intervals when sitting in dense traffic. The Commonwealth currently lacks the electric charging infrastructure to use electric vehicles on longer trips (such as the Boston and Cambridge Express routes), and frequent charging would also reduce service frequency and prevent schedule reliability on the shorter Newton Local route. It is our hope that alternate fuel vehicles will become more viable in time. 128 Business Council is well-apprised of state and national standards and projections in this regard and will make fleet upgrade recommendations as they become feasible.

Finances:

8. Can you provide an estimate of what the rental rates will be for both market and affordable rate units?

   Response:

   We do not yet know the market rate pricing and we are 5 years out. Attached (Exhibit J) is a schedule of typical affordable rents, income levels, and a comparison of salaries for teachers, police, and fire professionals in newton.

9. Can you provide an estimate/range for the rental of office space?

   Response:

   The office space will be best in class. Our consultant is currently contemplating mid 40s per square foot. We believe it will be substantially higher. Northland will take approximately 25% of the mill space for our headquarters.

10. Is there a minimum amount of residential units and total square footage below which the project is financially unattractive to investors and financiers of the project? I do understand that this may not be something you wish to disclose in any detail, and I appreciate the reasons for that, but my intention is to balance the scale of this which concerns many due to the unknowns regarding impacts on traffic and other factors, it would be helpful to have some sense here.

    Response:

Northland does not take investors in our development projects. The funds are internal. As noted above, Northland made a massive concession early in the process to place 1,054 parking spaces underground. That was the recommendation of the peer reviewer and planning and we agree. It will set up NND as a national model of permeability and connectivity and open space. That change along with the open space, the seven fully programmed parks, the community building, the community playground, the mobility hub, the shuttle, the all age friendly building, the I and I contribution, the traffic contribution and the school contribution leaves us at the threshold of financial viability.

11. Do you have plans to securitize this property (e.g. a REIT) ?

    Response:

    No. Northland has <u>never</u> sold a development and we are certainly not going to sell or securitize this crown jewel in our home town.

12. While I hear from many sources that we need housing and more of it everywhere, I also have been hearing from some local landlords of smaller (multifamily) properties that they can't rent their units. Are you aware of this and although anecdotal, does this reflect a move towards the type of complex you are planning to create or is the rental market in Newton showing signs of softening?

    Response:

    Northland owns and operates more than 25,000 units throughout the country. The market is Stable and firm, at 95% occupancy. That anecdotal information does not match our experience.

Other:

1. Will you commit to meet on a regular basis (your representative, not a resident designee) with the neighborhood association(s) to review status of implementation of the various programs that will benefit or issues that are negatively impacting the local neighborhood and seen as being caused by Northland either during construction or after completion? Can you explain how you would have to be accountable to address true adverse conditions cited by the association rather than just acknowledging them without being able to address them in a satisfactory manner. (not trying to be flip, just want to see how this is considered and understanding that our inspections dept. has some authority here as well)

   Response:

   Yes. We have attended hundreds of meetings and met thousands of residents. I believe that all would agree (residents such as Jack Neville specifically) that even when we disagree, we are respectful, honest and direct. We want to be a great neighbor. We believe NND will knit Upper Falls, Newton Highlands, and Oak Hill back together in the most amazing and beautiful way. We know change is hard. But we believe when residents see the fruits of our labors, they will enjoy them immensely.

   We anticipate owing NND for ever (whatever that actually means) and will meet our neighbors, listen to them and respond in a constructive way, if at all possible.

Chief Planner Jen Caira Questions:

Documents to be provided:

1. Information on new shuttle route and numbers of total seats during peak hours
2. Revised shared parking plan
3. Additional peak parking demand information for December
4. Updated traffic generation numbers
5. Historic Shuttle data from other 128 Business Council services or routes– ideally case study of an existing development that is being served by their shuttles; ridership trends on services provided over the last three years; provide examples of how they have adjusted services in response to demand at the companies they serve.
6. Annual (or phased?) TDM work plans from first occupancy through full occupancy. This should be as detailed an outline as possible at this point.

Updated 4.19.2019 From J Caira: (Redundancies omitted)

7. Provide mode share and internal capture trip generation adjustment calculations; this should be as detailed as possible and should serve as an example of how changes in mode share will be reported to the Planning staff.
8. Approach, as detailed as possible, on managing TNC operations (see attached link on how Uber plans to enter the shuttle bus market.) https://www.geekwire.com/2019/uber-sees-rapid-adoption-new-bus-service-recruits-high-capacity-vehicles-team-seattle/
9. Approach to conducting the annual transportation surveys: methodology; sample size; how will they ensure a representative sample; what kind of tabulations will they run; how will it be administered; sample questionnaire.

Responses to Councilor questions, including:

10. Will there be age restrictions on the shuttles?
11. Where will the shuttles stop? Will they (should they) stop at places like the library, YMCA, Boys and Girls Club, Senior Center, etc.?
12. How are the shuttles counted in the trip generation?
13. What will the pricing be for the shuttles and what control will there be over time?
14. How will the shuttle system be phased?
15. What will the travel time be for shuttles during rush hour?
16. Can electric shuttles be utilized?
17. How will the parking garages be designed and operated to improve efficiency (red and green lights over available spaces, etc.)?
18. What will be the impact of Waze on the neighborhoods?
19. How did they come up with ridership numbers? What examples show the riders will come?
20. What percentage of people are expected to live and work on site?
21. How will the surveys be administered and what sort of data is expected?

VHB's Responses to the comments received on April 3, 2019, from BETA Group:

Trip Generation Comment

1. In Table 2 – Project Trip Generation – ITE Unadjusted Vehicle Trips, the weekday morning peak hour unadjusted vehicle trips is shown as 668 trips. BETA has calculated the number of unadjusted vehicle trips in the weekday morning peak hour to be 592 trips. Please confirm and recalculate Build Condition vehicle trips.

   Response:
   VHB rechecked the calculations for the Build Conditions unadjusted weekday morning vehicle trips and has confirmed that number to be 668 vehicle trips. The unadjusted vehicle trips are based on the ITE land use code regression equations for each proposed land use. The ITE trip generation worksheets for each land use are included in the Attachments to this memorandum.

2. Please provide the mode share and internal capture trip generation adjustment calculations.

   Response:
   The mode share and internal capture trip generation adjustment calculations are included in the Attachments to this memorandum.

3. In Table 8 – Project-Generated Peak-Hour Vehicle Trips by Use – Build Condition with Robust Shuttle Service, the vehicle trip numbers under the residential, office, retail, and pass-by columns are not correct. They are the same numbers shown in Table 6 – Project-Generated Peak-Hour Vehicle Trips by Use – Build Conditions with Existing Mode Share. The numbers in this table should be updated.

   Response:
   Table 8 has been updated with the correct numbers for residential, office, retail, and pass-by vehicle trips based on the Robust Shuttle service scenario and is provided below:

Parking

1. Please provide the shared-parking calculations by hour for both weekday and weekend.

   Response:
   The shared-parking calculations for both weekday and weekend for the month of December are included in the Attachments to this memorandum.

   The following is a summary comparing the proposed project parking spaces by use with the MBTA/MassDOT Transit-Oriented Development Policies and Guidelines.

   - The 800 residential spaces (1 space/unit) meet the MBTA/MassDOT TOD guideline of 0.75-1.5 spaces/unit.
   - The 149 retail spaces (3 spaces/KSF) meets the guideline of 1.5-3.0/KSF.
   - The 245 restaurant spaces (6.1 spaces/KSF) exceed the retail guideline of 1.5-3.0/KSF. However, the guidelines do not break out restaurants.

- The 51 medical office spaces (3.4 spaces/KSF) exceed the office guideline of between 1.0 and 2.5 spaces/KSF. However, medical office parking demand is typically higher than general office use.
- The 38 health club spaces (3.8 spaces/KSF) exceed the retail guideline of 1.5-3.0/KSF, but not significantly so and they are relatively few spaces.
- The office use has 298 spaces with a rate of 1.7 spaces/KSF, which meet the guidelines between 1.0 and 2.5 spaces/KSF.
- The proposed 1,550 parking spaces will meet demand, except for the peak December shopping season (1,596 vehicles). The option to use a portion of the residential spaces for shared-parking, if needed, appears reasonable.
- Overall, the proposed 1,550 parking spaces appear adequate to accommodate parking demand for the mix of land uses in a shared-parking operation.

Exhibits

Exhibit A – Shuttle Detail

Exhibit B – Shared Parking Management Plan

Exhibit C – Hourly Parking Detail

Exhibit D – Updated Traffic Generation Response from VHB

Exhibit E – Updated Shadow Studies April 2019

Exhibit F – Newton Multifamily Development Density

Exhibit G – Monica Tibbets Nutt LUC Presentation

Exhibit H – Development Five Year Timeline

Exhibit I – TDM Work Plan

Exhibit J – Newton Salaries & HUD Affordable Rents 80% AMI

Exhibit K – NND Open Space Comparison

Exhibit A

Option 4.4 - Reduced Schedule Recommendation 2
60-minute frequencies **weekdays** from 6:45am-11:00am and 3:45pm-9:00pm
60-minute frequencies **weekend** from 7:30am-10:30pm

Monday-Friday

	B1	B2	B1	B2	B1	B1	B2	B1	B2	B1	B2
depart Transit Hub		7:00	8:00	9:00	10:00		4:00	5:00	6:00	7:00	8:00
Central Square	6:45	7:45	8:45	9:45	10:45	3:45	4:45	5:45	6:45	7:45	8:45
Kendall Square	6:55	7:55	8:55	9:55	10:55	3:55	4:55	5:55	6:55	7:55	8:55
arrive Transit Hub	7:40	8:40	9:40	10:40		4:40	5:40	6:40	7:40	8:40	

Saturday-Sunday

	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1
depart Transit Hub	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30	6:30	7:30	8:30	9:30
Central Square	8:15	9:15	10:15	11:15	12:15	13:15	2:15	3:15	4:15	5:15	6:15	7:15	8:15	9:15	10:15
Kendall Square	8:25	9:25	10:25	11:25	12:25	13:25	2:25	3:25	4:25	5:25	6:25	7:25	8:25	9:25	10:25
arrive Transit Hub	9:10	10:10	11:10	12:10	13:10	14:10	3:10	4:10	5:10	6:10	7:10	8:10	9:10	10:10	

Option 1NH.4 - Newton Highlands Express with Alternating Extension to Newtonville Commuter Rail
Service 6:00am - 10:30pm weekdays and 7:30am - 10:30pm weekends.
20-minute frequencies weekdays from 6:00am-10:00am and 4:00pm-8:00pm.
30-minute frequencies all other times.

Monday-Friday

	PEAK PERIOD 20-MIN FREQUENCIES													OFF-PEAK 30-MIN FREQUENCIES										PEAK PERIOD 20-MIN FREQUENCIES														30-MIN FREQ			
	B1	B3	B2	B3	B1	B2	B1	B3	B1	B2	B1	B2	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B2	B3	B2	B1	B3	B1	B2	B1	B3	B1	B2	B3	B1	B1	B1	B1	B1
depart Transit Hub	6:00	6:20	6:40	7:00	7:20	7:40	8:00	8:20	8:40	9:00	9:20	9:40	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:20	4:40	5:00	5:20	5:40	6:00	6:20	6:40	7:00	7:20	7:40	8:00	8:30	9:00	9:30	10:00
arrive Newton Highlands	6:10	6:30	6:50	7:11	7:32	7:52	8:13	8:34	8:54	9:13	9:32	9:52	10:11	10:40	11:11	11:40	12:11	12:42	1:11	1:41	2:10	2:40	3:10	3:41	4:12	4:33	4:53	5:13	5:34	5:54	6:13	6:32	6:52	7:11	7:30	7:50	8:10	8:40	9:10	9:40	10:10
depart Newtonville	6:23		7:03	7:27		8:14		8:56																3:57			5:09		5:50		6:29			7:25							
depart Newton Highlands	6:37		7:19	7:43		8:32		9:16																4:16			5:28		6:07		6:45			7:41							
arrive Transit Hub	6:20	6:50	7:21	7:43	8:03	8:25	8:47	9:07	9:25	9:43	10:03	10:21	10:40	11:00	11:21	11:50	12:23	12:55	1:25	1:53	2:22	2:52	3:22	3:54	4:25	4:47	5:07	5:27	5:49	6:09	6:27	6:45	7:05	7:23	7:41	8:01	8:20	8:50	9:20	9:50	10:20

Saturday-Sunday

	30-MIN FREQUENCIES																													
	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1
depart Transit Hub	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00
arrive Newton Highlands	7:39	8:09	8:39	9:09	9:39	10:09	10:39	11:09	11:39	12:09	12:39	1:09	1:39	2:09	2:39	3:09	3:39	4:09	4:39	5:09	5:39	6:09	6:39	7:09	7:39	8:09	8:39	9:09	9:39	10:09
depart Newton Highlands	7:43	8:13	8:43	9:13	9:43	10:13	10:43	11:13	11:43	12:13	12:43	1:13	1:43	2:13	2:43	3:13	3:43	4:13	4:43	5:13	5:43	6:13	6:43	7:13	7:43	8:13	8:43	9:13	9:43	10:13
arrive Transit Hub	7:56	8:26	8:56	9:26	9:56	10:26	10:56	11:26	11:56	12:26	12:56	1:26	1:56	2:26	2:56	3:26	3:56	4:26	4:56	5:26	5:56	6:26	6:56	7:26	7:56	8:26	8:56	9:26	9:56	10:26

Shuttle Capacity Numbers, i.e. "available seats on the bus"

	average potential rides per hour across entire workday period	potential rides per hour during **peak workday hours (a.m. & p.m.)**	average potential rides per hour across entire weekend period	potential rides per hour during **peak weekend hour (midday)**
Option 1.1 - Newton Circulator Original Schedule (pp. 3-4)	137.8 87.49*	(170.67)	128 85.33*	128 85.33*
Option 1.2 - Newton Circulator 30-minute frequencies (pp. 5-6)	197.67 126.38*	212 128*	189.44 126.29*	192 128*
Option 1.3 - Newton Circulator Reduced Schedule Recommendation (pp. 7-8)	196.40 121.60*	212 128*	128 85.33*	128 85.33*
Option 1NH.1 - Newton Highlands Express on 20/30-min frequencies (pp. 17-18)	159.03	192	128	128
Option 1NH.2 - NH Express Alternating Extension to Newtonville (pp. 19-20)	141.58 128*	(152) 128*	128	128
Option 1NH.3 - Newton Highlands and Newton Centre on 30-min frequencies (pp. 21-22)	189.13 126.09*	192 128*	188.85 125.90*	192 128*
Option 1NH.4 - NH Express Alternating Ext to Newtonville on 20/30-min freq (pp. 23-24)	178.42 **159.03***	(232) **192***	**128**	**128**
Option 4.1 - Boston/Cambridge Express Original Schedule (pp. 9-10)	62.32	64	62.32	64
Option 4.2 - Boston/Cambridge Express 30-minute frequencies (pp. 11-12)	119.58	128	119.58	128
Option 4.3 - Boston/Cambridge Express Reduced Schedule Rec 1 (pp. 13-14)	108.80	128	61.87	64
Option 4.4 - Boston/Cambridge Express Reduced Schedule Rec 2 (pp. 15-16)	60.63	64	61.87	64

*Adjusted *downward* to only consider the seats immediately available upon leaving or entering the development, rather than seats that may become available when riders alight and board away from the Development.

Exhibit B

NORTHLAND NEWTON DEVELOPMENT
UPDATED PARKING MANAGEMENT PLAN
APRIL 23, 2019

The parking supply at the Northland Newton Development ("NND") will be reduced to 1,450 striped parking spaces in four underground garages and NND streets (see Table 1). Additional valet pods aggregating 200 spaces will be created in the two largest garages to accommodate peak daily and seasonal parking demand. The monthly peak parking demand for NND is estimated to range from 1,507 to 1,596 spaces on the busiest weekdays and 1,331 to 1,447 spaces on the busiest weekend days (see Table 2).

Table 1 – Proposed Parking Supply

Location	No. of Marked Spaces
Building 3	103
Building 4	294
Building 5/6	840
Building 8	107
Building 14	6
NND On-street	100
	1,450

Table 2 – Peak Parking Demand – Shared Parking, by Month

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Weekdays												
Residential	800	800	800	800	800	800	800	800	800	800	800	800
Commercial	707	708	733	719	729	728	715	725	723	738	742	796
Total	1,507	1,508	1,533	1,519	1,529	1,528	1,515	1,525	1,523	1,538	1,542	1,596
Weekends												
Residential	800	800	800	800	800	800	800	800	800	800	800	800
Commercial	531	534	569	554	568	567	567	568	575	554	576	647
Total	1,331	1,334	1,369	1,354	1,368	1,367	1,367	1,378	1,355	1,374	1,376	1,447

A parking management plan is necessary to accommodate the day-to-day parking needs of the mix of users. The key elements of the parking management plan of the Northland Newton Development include:

- A state-of-the-art monitoring system to track parking space availability and occupancy patterns,
- Short-term parking in the most convenient locations,
- Resident-only parking in smaller parking garages,
- Visitor and customer parking in the central garage only, and
- Use of valet and/or assisted parking to provide extra parking capacity when needed.

Monitoring of Parking Occupancy

The parking occupancy patterns in the garages will be monitored using the latest available and highest quality technology. For a resident-only parking garage this may be in the form of automated overnight counts of unused parking spaces. For the Building 5/6 Garage, where most commercial parking will be, the monitoring will be an automated count system continually tracking occupancy.

The monitoring of the parking utilization in the garages will provide data on parking occupancy trends so that proactive transportation and parking management strategies can be implemented. For example, as the project is being leased the parking counts can be used to estimate the point during the lease-up that certain parking management strategies will first be needed. When the project is fully occupied, the parking counts can be used to determine the appropriate level of parking attendant and valet staffing for each day of the week and times during each day.

On Street Parking Within NND:

After allocation of parking spaces for loading zones, valet parking stations, and TNC pickup, there will be approximately 100 on-street parking spaces available within the development. The objective for managing on-street parking is to accommodate most of the site's short-term parkers. The on-street parking time limit will be predominately one hour. Some of the most convenient spaces, including those near entrances to residential buildings, will be "quick stop" parking spaces with time limits of 20 minutes or less.

Underground Garage Parking

The garage parking will be shared by residents and commercial users, including office employees, restaurants, retailers and customers. Residents will have unassigned parking among designated areas for residential use.

Permits will be issued for each garage except for the designated retail and visitor parking areas of the central garage of the 5/6 Block, and only those with the specific permit will be allowed to park in those garages. The assignment of the parking will be as follows:

Building 3 Garage
The parking for this 103-space garage will be used by residents of Building 3 (94 units). The remaining parking will be available for Building 7 residents.

Building 4 Garage
This garage comprises 294 spaces on two levels. The lower level will be the designated parking location for residents of Buildings 4, 9, 10, and 11 (142 units). The remaining parking located on Level One will be available to office tenants (152 spaces). Level One will also be utilized for valet parking by restaurants in the evenings and weekends.

Building 8 Garage
The parking for this 107-space garage will be used by residents of Building 8 (80 units), with remaining spaces available to Building 7 residents.

Building 14 Garages

The parking for these six townhouse units will be in individual garages connected to the units and reserved for the unit occupants.

Block 5/6 Garage

The Block 5/6 Garage has 840 spaces on two levels and represents more than half of the total parking supply. The garage will be the location for all customer/visitor parking, most of the commercial (office and retail) parking, and parking for residents of Block 5, Block 6, Building 12 and the balance of parking for Building 7.

Parking for residents will generally be on Level Two of the garage (430 spaces). Level One (410 spaces) will be used for office, retail, visitor parking and valet service. Some of the parking spaces in the commercial area may be designated for short-term parking, but most will be available to all commercial parkers.

Valet-Assist Parking

A portion of the office and restaurant parking will be managed using valet or assisted parking once the entirety of the anticipated commercial (office and retail) parking demand is reached. Per Table 2, the monthly peak parking demand for the commercial space is estimated to range from 707 to 796 spaces on the busiest weekdays and 531 to 647 spaces on the busiest weekend days. There will be enough self-parking available for commercial users on weekends other than in December. Additional parking capacity may be needed, at full occupancy, during the daytime on weekdays.

This additional capacity will be available through valet and attendant-assist parking in the Block 5/6 Garage and in the commercial portion of the Building 4 Garage. In the Block 5/6 Garage, parking attendants will stack cars in the 25-foot wide drive aisles and will be available to move and retrieve cars. Additional valet capacity will be made available on Level Two of the Block 5/6 Garage as needed. The commercial parking area in Building 4 will be used for valet services operated by restaurants. The additional capacity made available by valet parking will be approximately 200 vehicles, or up to 30% of the striped capacity of the parking areas. See Table 3 below.

Table 3 – Parking Supply with Additional Valet Capacity

Location	Total Available Parking	Residential Spaces	Commercial Spaces	Additional Capacity with Valet Parking
Building 3	103	103	0	0
Building 4	339	142	152	45
Building 5/6	995	430	410	155
Building 8	107	107	0	0
Building 14	6	6	0	0
On-street	100	12	88	0
	1,650	800	650	200

Exhibit C

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
January

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	56%	68	1	3	10	24	44	58	64	68	64	61	61	64	64	64	54	34	20	7	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	85%	114	-	-	-	-	17	46	85	85	74	46	57	85	108	114	114	114	108	85	28
	Employee	30	95%	29	-	6	14	21	26	26	26	26	26	21	21	29	29	29	29	29	29	24	10
Family Restaurant	Customer	106	85%	90	23	45	54	68	77	81	90	81	45	41	41	68	72	72	72	54	50	45	23
	Employee	22	95%	21	10	16	19	19	21	21	21	21	10	10	10	20	20	20	20	17	14	14	7
Health Club	Customer	53	100%	53	37	21	21	37	37	42	32	37	37	37	42	48	53	48	42	37	19	5	-
	Employee	4	100%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1608	885	990	1,216	1,360	1,451	1,482	1,456	1,492	1,488	1,425	1,394	1,346	1,288	1,220	1,183	1,112	1,053	984	868

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
February

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	57%	69	1	3	10	24	45	59	66	69	66	62	62	66	66	66	55	34	21	7	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	86%	115	-	-	-	-	17	46	86	86	75	46	58	86	109	115	115	115	109	86	29
	Employee	30	95%	29	-	6	14	21	26	26	26	26	26	21	21	29	29	29	29	29	29	24	10
Family Restaurant	Customer	106	86%	91	23	46	55	68	77	82	91	82	46	41	41	68	73	73	73	55	50	46	23
	Employee	22	95%	21	10	16	19	19	21	21	21	21	10	10	10	20	20	20	20	17	14	14	7
Health Club	Customer	53	95%	50	35	20	20	35	35	40	30	35	35	35	40	45	50	45	40	35	18	5	-
	Employee	4	100%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1609	883	990	1,216	1,358	1,450	1,482	1,458	1,493	1,490	1,424	1,394	1,346	1,289	1,221	1,184	1,112	1,054	986	869

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
March

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	64%	77	1	4	12	27	50	66	74	77	74	70	70	74	74	74	62	39	23	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	95%	127	-	-	-	-	19	51	95	95	83	51	64	95	121	127	127	127	121	95	32
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	95%	101	25	50	60	76	86	91	101	91	50	45	45	76	81	81	81	60	55	50	25
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	85%	45	32	18	18	32	32	36	27	32	32	32	36	41	45	41	36	32	16	5	-
	Employee	4	95%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1636	883	994	1,223	1,369	1,465	1,501	1,484	1,518	1,509	1,441	1,411	1,369	1,314	1,247	1,209	1,133	1,072	1,002	876

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
April

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	63%	76	1	4	11	27	50	65	72	76	72	69	69	72	72	72	61	38	23	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	92%	123	-	-	-	-	18	49	92	92	80	49	62	92	117	123	123	123	117	92	31
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	92%	98	24	49	59	73	83	88	98	88	49	44	44	73	78	78	78	59	54	49	24
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	70%	37	26	15	15	26	26	30	22	26	26	26	30	33	37	33	30	26	13	4	-
	Employee	4	80%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1619	875	989	1,217	1,359	1,454	1,488	1,470	1,504	1,496	1,430	1,400	1,352	1,296	1,229	1,195	1,121	1,064	997	874

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
May

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	66%	80	1	4	12	28	52	68	76	80	76	72	72	76	76	76	64	40	24	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	96%	129	-	-	-	-	19	51	96	96	84	51	64	96	122	129	129	129	122	96	32
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	96%	102	25	51	61	76	86	92	102	92	51	46	46	76	81	81	81	61	56	51	25
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	65%	34	24	14	14	24	24	28	21	24	24	24	28	31	34	31	28	24	12	3	-
	Employee	4	75%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1629	874	990	1,219	1,361	1,458	1,495	1,481	1,514	1,504	1,435	1,405	1,361	1,305	1,240	1,205	1,129	1,071	1,002	876

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
June

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	67%	81	1	4	12	28	53	69	77	81	77	73	73	77	77	77	65	41	24	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	95%	127	-	-	-	-	19	51	95	95	83	51	64	95	121	127	127	127	121	95	32
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	95%	101	25	50	60	76	86	91	101	91	50	45	45	76	81	81	81	60	55	50	25
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	65%	34	24	14	14	24	24	28	21	24	24	24	28	31	34	31	28	24	12	3	-
	Employee	4	75%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1628	874	989	1,218	1,361	1,459	1,495	1,480	1,513	1,503	1,435	1,405	1,361	1,305	1,239	1,204	1,127	1,069	1,000	876

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
July

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	64%	77	1	4	12	27	50	66	74	77	74	70	70	74	74	74	62	39	23	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	98%	131	-	-	-	-	20	53	98	98	85	53	66	98	125	131	131	131	125	98	33
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	98%	104	26	52	62	78	88	93	104	93	52	47	47	78	83	83	83	62	57	52	26
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	65%	34	24	14	14	24	24	28	21	24	24	24	28	31	34	31	28	24	12	3	-
	Employee	4	75%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	95%	39	-	-	8	23	39	18	6	18	39	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	95%	295	9	89	222	281	295	295	266	266	295	295	266	148	74	30	21	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1614	875	987	1,209	1,346	1,441	1,480	1,469	1,500	1,486	1,420	1,392	1,355	1,304	1,241	1,206	1,131	1,074	1,005	878

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
August

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	69%	83	1	4	13	29	54	71	79	83	79	75	75	79	79	79	67	42	25	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	99%	133	-	-	-	-	20	53	99	99	86	53	66	99	126	133	133	133	126	99	33
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	99%	105	26	52	63	79	89	94	105	94	52	47	47	79	84	84	84	63	58	52	26
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	70%	37	26	15	15	26	26	30	22	26	26	26	30	33	37	33	30	26	13	4	-
	Employee	4	80%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	95%	39	-	-	8	23	39	18	6	18	39	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	95%	295	9	89	222	281	295	295	266	266	295	295	266	148	74	30	21	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1625	877	988	1,212	1,351	1,448	1,488	1,477	1,510	1,494	1,427	1,399	1,364	1,314	1,251	1,216	1,139	1,079	1,007	878

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
September

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	64%	77	1	4	12	27	50	66	74	77	74	70	70	74	74	74	62	39	23	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	91%	122	-	-	-	-	18	49	91	91	79	49	61	91	116	122	122	122	116	91	30
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	91%	96	24	48	58	72	82	87	96	87	48	43	43	72	77	77	77	58	53	48	24
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	80%	42	30	17	17	30	30	34	25	30	30	30	34	38	42	38	34	30	15	4	-
	Employee	4	90%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1623	880	991	1,220	1,363	1,458	1,493	1,473	1,508	1,501	1,435	1,404	1,358	1,302	1,235	1,198	1,124	1,064	995	873

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
October

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	66%	80	1	4	12	28	52	68	76	80	76	72	72	76	76	76	64	40	24	8	-
	Employee	28	80%	22	2	3	9	17	19	21	22	22	22	22	22	21	21	21	20	17	9	3	-
Fine/Casual Dining	Customer	134	96%	129	-	-	-	-	19	51	96	96	84	51	64	96	122	129	129	129	122	96	32
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	96%	102	25	51	61	76	86	92	102	92	51	46	46	76	81	81	81	61	56	51	25
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	85%	45	32	18	18	32	32	36	27	32	32	32	36	41	45	41	36	32	16	5	-
	Employee	4	95%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1641	883	995	1,224	1,370	1,467	1,504	1,488	1,523	1,513	1,444	1,414	1,372	1,317	1,251	1,213	1,137	1,075	1,004	876

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
November

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	72%	87	1	4	13	30	57	74	83	87	83	78	78	83	83	83	70	44	26	9	-
	Employee	28	90%	25	3	4	10	19	21	24	25	25	25	25	25	24	24	24	23	19	10	4	-
Fine/Casual Dining	Customer	134	93%	125	-	-	-	-	19	50	93	93	81	50	62	93	118	125	125	125	118	93	31
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	93%	99	25	49	59	74	84	89	99	89	49	44	44	74	79	79	79	59	54	49	25
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	85%	45	32	18	18	32	32	36	27	32	32	32	36	41	45	41	36	32	16	5	-
	Employee	4	95%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1643	884	994	1,224	1,372	1,472	1,509	1,492	1,527	1,518	1,450	1,419	1,377	1,321	1,255	1,216	1,137	1,072	1,001	875

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekday - Seasonally Adjusted Parking Demand by Time of Day
December

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	100%	121	1	6	18	36	67	91	109	121	121	121	115	103	97	91	79	61	36	12	-
	Employee	28	100%	28	3	4	11	21	24	27	28	28	28	28	28	27	27	27	25	21	11	4	-
Fine/Casual Dining	Customer	134	100%	134	-	-	-	-	20	54	101	101	87	54	67	101	127	134	134	134	127	101	34
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	100%	106	27	53	64	80	90	95	106	95	53	48	48	80	85	85	85	64	58	53	27
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	95%	50	35	20	20	35	35	40	30	35	35	35	40	45	50	45	40	35	18	5	-
	Employee	4	100%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1702	889	1,002	1,237	1,389	1,495	1,543	1,539	1,581	1,572	1,507	1,472	1,418	1,358	1,285	1,246	1,173	1,098	1,016	880

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
january

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	56%	94	1	5	9	28	47	61	75	84	94	94	89	84	75	70	61	47	33	14	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	85%	159	-	-	-	-	-	24	79	87	72	72	72	95	143	151	159	143	143	143	79
	Employee	33	95%	31	-	6	9	19	24	24	24	24	24	24	24	31	31	31	31	31	31	27	16
Family Restaurant	Customer	187	85%	159	16	40	72	111	143	143	159	135	103	64	72	95	111	111	103	48	40	24	16
	Employee	33	95%	31	16	24	28	28	31	31	31	31	20	20	20	30	30	30	30	25	20	20	11
Health Club	Customer	56	100%	56	45	25	20	28	20	28	28	17	14	17	31	56	53	34	17	6	1	1	-
	Employee	3	100%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1491	883	917	1,044	1,151	1,216	1,269	1,316	1,252	1,189	1,142	1,147	1,224	1,271	1,249	1,222	1,118	1,081	1,034	922

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
February

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	57%	95	1	5	10	29	48	62	76	86	95	95	90	86	76	71	62	48	33	14	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	86%	161	-	-	-	-	-	24	80	88	72	72	72	96	145	153	161	145	145	145	80
	Employee	33	95%	31	-	6	9	19	24	24	24	24	24	24	24	31	31	31	31	31	31	27	16
Family Restaurant	Customer	187	86%	161	16	40	72	113	145	145	161	137	105	64	72	96	113	113	105	48	40	24	16
	Employee	33	95%	31	16	24	28	28	31	31	31	31	20	20	20	30	30	30	30	25	20	20	11
Health Club	Customer	56	95%	53	43	24	19	27	19	27	27	16	13	16	29	53	51	32	16	5	1	1	-
	Employee	3	100%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1493	881	916	1,044	1,153	1,218	1,271	1,319	1,256	1,191	1,142	1,146	1,225	1,274	1,252	1,226	1,120	1,083	1,036	923

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekend - Seasonally Adjusted Parking Demand by Time of Day
March

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	187	64%	107	1	5	11	32	53	69	86	96	107	107	102	96	86	80	69	53	37	16	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	95%	178	-	-	-	-	-	27	89	98	80	80	80	107	160	169	178	160	160	160	89
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	95%	178	18	44	80	124	160	160	178	151	115	71	80	107	124	124	115	53	44	27	18
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	85%	48	38	21	17	24	17	24	24	14	12	14	26	48	45	29	14	5	-	-	-
	Employee	3	95%	3	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1536	878	918	1,053	1,166	1,238	1,295	1,354	1,290	1,221	1,168	1,173	1,255	1,307	1,288	1,260	1,148	1,108	1,057	936

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekend - Seasonally Adjusted Parking Demand by Time of Day
April

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	63%	105	1	5	11	32	53	68	84	95	105	105	100	95	84	79	68	53	37	16	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	92%	172	-	-	-	-	-	26	86	95	77	77	77	103	155	163	172	155	155	155	86
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	92%	172	17	43	77	120	155	155	172	146	112	69	77	103	120	120	112	52	43	26	17
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	70%	39	31	18	14	20	14	20	20	12	10	12	22	39	37	24	12	4	-	-	-
	Employee	3	80%	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	-	-	-	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1514	870	914	1,047	1,158	1,230	1,284	1,339	1,279	1,211	1,159	1,161	1,236	1,287	1,272	1,248	1,140	1,101	1,050	932

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
May

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	66%	110	1	6	11	33	55	72	88	99	110	110	105	99	88	83	72	55	39	17	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	96%	180	-	-	-	-	-	27	90	99	81	81	81	108	162	171	180	162	162	162	90
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	96%	180	18	45	81	126	162	162	180	153	117	72	81	108	126	126	117	54	45	27	18
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	65%	36	29	16	13	18	13	18	18	11	9	11	20	36	35	22	11	4	-	-	-
	Employee	3	75%	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	-	-	-	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1532	869	915	1,050	1,163	1,238	1,294	1,353	1,293	1,224	1,170	1,172	1,247	1,302	1,288	1,264	1,151	1,112	1,059	937

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
June

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	67%	112	1	6	11	34	56	73	90	101	112	112	106	101	90	84	73	56	39	17	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	95%	178	-	-	-	-	-	27	89	98	80	80	80	107	160	169	178	160	160	160	89
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	95%	178	18	44	80	124	160	160	178	151	115	71	80	107	124	124	115	53	44	27	18
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	65%	36	29	16	13	18	13	18	18	11	9	11	20	36	35	22	11	4	-	-	-
	Employee	3	75%	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	-	-	-	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1529	869	914	1,049	1,162	1,237	1,293	1,352	1,292	1,223	1,170	1,171	1,247	1,300	1,285	1,261	1,149	1,109	1,057	936

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
July

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	64%	107	1	5	11	32	53	69	86	96	107	107	102	96	86	80	69	53	37	16	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	25	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	98%	183	-	-	-	-	-	27	92	101	82	82	82	110	165	174	183	165	165	165	92
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	98%	183	18	46	82	128	165	165	183	156	119	73	82	110	128	128	119	55	46	27	18
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	65%	36	29	16	13	18	13	18	18	11	9	11	20	36	35	22	11	4	-	-	-
	Employee	3	75%	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	-	-	-	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	95%	5	-	1	3	4	4	5	4	4	3	2	1	-	-	-	-	-	-	-	-
Office	Employee	52	95%	49	-	10	30	40	44	49	44	40	30	20	10	5	2	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1533	869	915	1,050	1,162	1,235	1,291	1,352	1,293	1,223	1,168	1,171	1,247	1,304	1,290	1,266	1,153	1,114	1,061	939

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
August

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	69%	115	1	6	12	35	58	75	92	104	115	115	109	104	92	86	75	58	40	17	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	99%	185	-	-	-	-	-	28	93	102	83	83	83	111	167	176	185	167	167	167	93
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	99%	185	19	46	83	130	167	167	185	157	120	74	83	111	130	130	120	56	46	28	19
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	70%	39	31	18	14	20	14	20	20	12	10	12	22	39	37	24	12	4	-	-	-
	Employee	3	80%	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1	-	-	-	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	95%	5	-	1	3	4	4	5	4	4	3	2	1	-	-	-	-	-	-	-	-
Office	Employee	52	95%	49	-	10	30	40	44	49	44	40	30	20	10	5	2	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1548	872	918	1,053	1,169	1,243	1,302	1,363	1,304	1,234	1,179	1,182	1,260	1,316	1,302	1,276	1,161	1,119	1,065	941

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekend - Seasonally Adjusted Parking Demand by Time of Day
September

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	64%	107	1	5	11	32	53	69	86	96	107	107	102	96	86	80	69	53	37	16	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	91%	170	-	-	-	-	-	26	85	94	77	77	77	102	153	162	170	153	153	153	85
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	91%	170	17	43	77	119	153	153	170	145	111	68	77	102	119	119	111	51	43	26	17
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	80%	45	36	20	16	22	16	22	22	13	11	13	25	45	43	27	13	4	-	-	-
	Employee	3	90%	3	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1518	875	916	1,049	1,159	1,230	1,285	1,340	1,279	1,213	1,161	1,166	1,242	1,293	1,274	1,247	1,138	1,100	1,049	931

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
October

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	66%	110	1	6	11	33	55	72	88	99	110	110	105	99	88	83	72	55	39	17	-
	Employee	32	80%	26	3	4	10	19	22	24	26	26	26	26	26	24	22	20	19	17	12	4	-
Fine/Casual Dining	Customer	187	96%	180	-	-	-	-	-	27	90	99	81	81	81	108	162	171	180	162	162	162	90
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	96%	180	18	45	81	126	162	162	180	153	117	72	81	108	126	126	117	54	45	27	18
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	85%	48	38	21	17	24	17	24	24	14	12	14	26	48	45	29	14	5	-	-	-
	Employee	3	95%	3	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1543	878	920	1,054	1,169	1,242	1,300	1,359	1,296	1,227	1,173	1,178	1,260	1,313	1,295	1,267	1,153	1,113	1,060	937

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
November

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	72%	120	1	6	12	36	60	78	96	108	120	120	114	108	96	90	78	60	42	18	-
	Employee	32	90%	29	3	4	12	22	24	27	29	29	29	29	29	27	24	23	22	19	13	4	-
Fine/Casual Dining	Customer	187	93%	174	-	-	-	-	-	26	87	96	78	78	78	104	157	165	174	157	157	157	87
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	93%	174	17	43	78	122	157	157	174	148	113	70	78	104	122	122	113	52	43	26	17
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	85%	48	38	21	17	24	17	24	24	14	12	14	26	48	45	29	14	5	-	-	-
	Employee	3	95%	3	1	1	1	1	1	1	1	1	1	1	2	3	3	2	1	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1545	877	918	1,054	1,171	1,244	1,303	1,361	1,300	1,233	1,181	1,184	1,264	1,314	1,295	1,266	1,153	1,110	1,055	933

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking
Weekend - Seasonally Adjusted Parking Demand by Time of Day
December

March 2019

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	167	100%	167	2	8	17	58	100	117	142	159	167	167	159	150	134	125	109	84	58	25	-
	Employee	32	100%	32	3	5	13	24	27	30	32	32	32	32	32	30	27	26	24	21	14	5	-
Fine/Casual Dining	Customer	187	100%	187	-	-	-	-	-	28	94	103	84	84	84	112	168	178	187	168	168	168	94
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	100%	187	19	47	84	131	168	168	187	159	122	75	84	112	131	131	122	56	47	28	19
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	90%	50	40	23	18	25	18	25	25	15	13	15	28	50	48	30	15	5	1	1	-
	Employee	3	100%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential		800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1624	883	928	1,068	1,206	1,300	1,360	1,432	1,374	1,300	1,244	1,246	1,327	1,378	1,356	1,323	1,194	1,143	1,077	942

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Exhibit D

Memorandum

To: Kent Gonzales
Northland Development

Date: April 16, 2019

Project #: 12239.00

From: Randall C. Hart, Principal

Matthew Duranleau, EIT

Re: Response to Transportation Peer Review Memo Dated April 3, 2019
The Northland Newton Development
Newton, Massachusetts

VHB has prepared the following response to comments received on April 3, 2019, from BETA Group. The comments received from BETA Group were in response to the *Expanded Revised Building Program Traffic Generation Memo* by VHB dated March 28, 2019, and the *Right-Sized Parking Memo* by VHB dated March 27, 2019. For ease of review the comments that were received are outlined below along with the responses.

Trip Generation

Comment 1: In Table 2 – Project Trip Generation – ITE Unadjusted Vehicle Trips, the weekday morning peak hour unadjusted vehicle trips is shown as 668 trips. BETA has calculated the number of unadjusted vehicle trips in the weekday morning peak hour to be 592 trips. Please confirm and recalculate Build Condition vehicle trips.

Response: VHB rechecked the calculations for the Build Conditions unadjusted weekday morning vehicle trips and has confirmed that number to be 668 vehicle trips. The unadjusted vehicle trips are based on the ITE land use code regression equations for each proposed land use. The ITE trip generation worksheets for each land use are included in the Attachments to this memorandum.

Comment 2: Please provide the mode share and internal capture trip generation adjustment calculations.

Response: The mode share and internal capture trip generation adjustment calculations are included in the Attachments to this memorandum.

Comment 3: In Table 8 – Project-Generated Peak-Hour Vehicle Trips by Use – Build Condition with Robust Shuttle Service, the vehicle trip numbers under the residential, office, retail, and pass-by columns are not correct. They are the same numbers shown in Table 6 – Project-Generated Peak-Hour Vehicle Trips by Use – Build Conditions with Existing Mode Share. The numbers in this table should be updated.

Response: Table 8 has been updated with the correct numbers for residential, office, retail, and pass-by vehicle trips based on the Robust Shuttle service scenario and is provided below:

101 Walnut Street
PO Box 9151
Watertown, MA 02472-4026
P 617.924.1770

Table 8 Project-Generated Peak-Hour Vehicle Trips by Use – Build Condition with Robust Shuttle Service

	Residential [a]	Office [b]	Retail [c]	Pass-By [d]	Total Net Vehicle Trips [e]	Existing Vehicle Trips [f]	Total Net New Vehicle Trips
Weekday Morning							
Enter	40	95	89	22	224	221	3
Exit	115	12	45	22	172	56	116
Total	155	107	134	44	396	277	119
Weekday Evening							
Enter	63	10	140	75	213	120	93
Exit	46	79	149	75	274	248	26
Total	109	89	289	150	487	368	119
Saturday Midday							
Enter	55	20	216	70	291	186	105
Exit	67	21	179	70	267	163	104
Total	122	41	395	140	558	349	209

Note: Table 8 only presents the Project-generated vehicle trips. The Project-generated transit trips and walk/bike trips are presented in Table 7.

a New vehicle trips with internal capture and mode share credits applied.
b New vehicle trips with internal capture and mode share credits applied.
c New vehicle trips with internal capture, mode share, and pass-by credits applied.
d Pass-by Credits of 25%, 34%, and 26% applied to weekday morning, weekday evening, and Saturday midday peak hour retail trip generation, respectively.
e Sum of columns a through c.
f Net vehicle trips that can be generated by the Site under existing conditions (from Table 3).

Parking

Comment 4: Please provide the shared-parking calculations by hour for both weekday and weekend.

Response: The shared-parking calculations for both weekday and weekend for the month of December are included in the Attachments to this memorandum.

Comment 5: The following is a summary comparing the proposed project parking spaces by use with the MBTA/MassDOT Transit-Oriented Development Policies and Guidelines.

- *The 800 residential spaces (1 space/unit) meet the MBTA/MassDOT TOD guideline of 0.75-1.5 spaces/unit.*
- *The 149 retail spaces (3 spaces/KSF) meets the guideline of 1.5-3.0/KSF.*
- *The 245 restaurant spaces (6.1 spaces/KSF) exceed the retail guideline of 1.5-3.0/KSF. However, the guidelines do not break out restaurants.*
- *The 51 medical office spaces (3.4 spaces/KSF) exceed the office guideline of between 1.0 and 2.5 spaces/KSF. However, medical office parking demand is typically higher than general office use.*

- *The 38 health club spaces (3.8 spaces/KSF) exceed the retail guideline of 1.5-3.0/KSF, but not significantly so and they are relatively few spaces.*
- *The office use has 298 spaces with a rate of 1.7 spaces/KSF, which meet the guidelines between 1.0 and 2.5 spaces/KSF.*
- *The proposed 1,550 parking spaces will meet demand, except for the peak December shopping season (1,596 vehicles). The option to use a portion of the residential spaces for shared-parking, if needed, appears reasonable.*
- *Overall, the proposed 1,550 parking spaces appear adequate to accommodate parking demand for the mix of land uses in a shared-parking operation.*

Response: No response needed.

Attachments

- Trip Generation Calculations
- Shared Parking Calculations

Trip Generation Calculations

ITE TRIP GENERATION WORKSHEET
(10th Edition, Updated 2017)

PROPOSED

LANDUSE: Mid-Rise Residential
LANDUSE CODE: 221
SETTING/LOCATION: General Urban/Suburban
JOB NAME:
JOB NUMBER:

Independent Variable --- Number of Units

800 units

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	27	0.77	5.44	1.27	12.50	205	21	494	50%	50%
AM PEAK OF GENERATOR	48	0.69	0.32	0.06	0.77	225	21	1,168	27%	73%
PM PEAK OF GENERATOR	47	0.66	0.41	0.09	1.26	211	21	1,168	60%	40%
AM PEAK (ADJACENT ST)	53	0.67	0.36	0.06	1.61	207	26	703	26%	74%
PM PEAK (ADJACENT ST)	60	0.72	0.44	0.15	1.11	208	26	703	61%	39%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	4,352	2,176	2,176	4,358	2,179	2,179
AM PEAK (ADJACENT ST)	288	75	213	263	68	194
PM PEAK (ADJACENT ST)	352	215	137	326	199	127

SATURDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	6	0.73	4.91	4.03	8.51	224	111	336	50%	50%
PEAK OF GENERATOR	8	0.89	0.44	0.34	0.73	264	111	462	49%	51%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	3,928	1,964	1,964	2,849	1,425	1,425
PEAK OF GENERATOR	352	172	180	343	168	175

SUNDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	6	--	4.09	3.06	8.41	224	111	336	50%	50%
PEAK OF GENERATOR	6	--	0.39	0.26	1.07	224	111	336	62%	38%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	3,272	1,636	1,636	N/A	N/A	N/A
PEAK OF GENERATOR	312	193	119	NA	NA	NA

ITE TRIP GENERATION WORKSHEET **PROPOSED**
(10th Edition, Updated 2017)

LANDUSE: Shopping Center
LANDUSE CODE: 820
SETTING/LOCATION: General Urban/Suburban
JOB NAME:
JOB NUMBER:

Independent Variable —

FLOOR AREA (KSF): 115.0

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	147	0.76	37.75	7.42	207.98	453	9	1,510	50%	50%
AM PEAK OF GENERATOR	47	0.71	3.00	0.70	23.74	323	8	1,320	54%	46%
PM PEAK OF GENERATOR	53	0.76	4.21	0.78	27.27	298	7	1,320	50%	50%
AM PEAK (ADJACENT ST)	84	0.90	0.94	0.18	23.74	351	9	1,510	62%	38%
PM PEAK (ADJACENT ST)	261	0.82	3.81	0.74	18.69	327	2	2,200	48%	52%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	4,341	2,171	2,171	6,611	3,306	3,306
AM PEAK (ADJACENT ST)	108	67	41	209	130	80
PM PEAK (ADJACENT ST)	438	210	228	603	289	313

SATURDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	58	0.71	46.12	13.07	167.89	602	56	1,510	50%	50%
PEAK OF GENERATOR	119	0.87	4.50	1.42	15.10	416	4	1,510	52%	48%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	5,304	2,652	2,652	9,719	4,860	4,860
PEAK OF GENERATOR	518	269	248	691	359	332

SUNDAY

RATES:

	# Studies	R^2	Total Trip Ends Average	Low	High	Independent Variable Range Average	Low	High	Directional Distribution Enter	Exit
DAILY	30	–	21.10	4.15	148.15	509	47	1,510	50%	50%
PEAK OF GENERATOR	24	–	2.79	0.39	12.40	382	47	1,268	49%	51%

TRIPS:

	BY AVERAGE Total	Enter	Exit	BY REGRESSION Total	Enter	Exit
DAILY	2,427	1,213	1,213	N/A	N/A	N/A
PEAK OF GENERATOR	321	157	164	N/A	N/A	N/A

ITE TRIP GENERATION WORKSHEET
(10th Edition, Updated 2017)

PROPOSED

LANDUSE: General Office Building
LANDUSE CODE: 710
SETTING/LOCATION: General Urban/Suburban
JOB NAME:
JOB NUMBER:

Independent Variable ---

FLOOR AREA (KSF): 180

WEEKDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	66	0.83	9.74	2.71	27.56	171	6	1,300	50%	50%
AM PEAK OF GENERATOR	228	0.84	1.47	0.57	4.93	209	6	2,408	88%	12%
PM PEAK OF GENERATOR	243	0.82	1.42	0.49	6.20	205	6	2,408	18%	82%
AM PEAK (ADJACENT ST)	35	0.85	1.16	0.37	4.23	117	5	511	86%	14%
PM PEAK (ADJACENT ST)	32	0.88	1.15	0.47	3.23	114	6	511	16%	84%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	1,753	877	877	1,877	938	938
AM PEAK (ADJACENT ST)	209	180	29	196	168	27
PM PEAK (ADJACENT ST)	207	33	174	199	32	167

SATURDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	5	--	2.21	1.24	7.46	94	28	183	50%	50%
PEAK OF GENERATOR	3	--	0.53	0.30	1.57	82	28	183	54%	46%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	398	199	199	N/A	N/A	N/A
PEAK OF GENERATOR	95	52	44	N/A	N/A	N/A

SUNDAY

RATES:

	# Studies	R^2	Total Trip Ends			Independent Variable Range			Directional Distribution	
			Average	Low	High	Average	Low	High	Enter	Exit
DAILY	5	--	0.70	0.19	3.05	94	28	183	50%	50%
PEAK OF GENERATOR	3	--	0.21	0.11	0.68	82	28	183	58%	42%

TRIPS:

	BY AVERAGE			BY REGRESSION		
	Total	Enter	Exit	Total	Enter	Exit
DAILY	126	63	63	N/A	N/A	N/A
PEAK OF GENERATOR	38	22	16	N/A	N/A	N/A

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PROPOSED SHARED PERSON TRIPS - WEEKDAY

RETAIL - OFFICE

WEEKDAY DAILY

RETAIL	%	#	BALANCED	#	%	OFFICE
EXIT ->	3%	5,884	**159**	1,060	15%	-> ENTER
ENTER <-	4%	5,884	**233**	1,060	22%	<- EXIT

WEEKDAY MORNING

RETAIL	%	#	BALANCED	#	%	OFFICE
EXIT ->	29%	142	**8**	190	4%	-> ENTER
ENTER <-	32%	231	**9**	31	28%	<- EXIT

WEEKDAY EVENING

RETAIL	%	#	BALANCED	#	%	OFFICE
EXIT ->	2%	558	**11**	36	31%	-> ENTER
ENTER <-	8%	515	**38**	189	20%	<- EXIT

RETAIL - RESIDENTIAL

WEEKDAY DAILY

RETAIL	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	26%	5,884	**1,133**	2,462	46%	-> ENTER
ENTER <-	10%	5,884	**588**	2,462	42%	<- EXIT

WEEKDAY MORNING

RETAIL	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	14%	142	**2**	77	2%	-> ENTER
ENTER <-	17%	231	**2**	220	1%	<- EXIT

WEEKDAY EVENING

RETAIL	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	26%	558	**104**	225	46%	-> ENTER
ENTER <-	10%	515	**52**	144	42%	<- EXIT

OFFICE - RESIDENTIAL

WEEKDAY DAILY

OFFICE	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	2%	1,060	**21**	2,462	3%	-> ENTER
ENTER <-	0%	1,060	**0**	2,462	0%	<- EXIT

WEEKDAY MORNING

OFFICE	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	1%	31	**0**	77	0%	-> ENTER
ENTER <-	1%	190	**4**	220	2%	<- EXIT

WEEKDAY EVENING

OFFICE	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	2%	189	**4**	225	4%	-> ENTER
ENTER <-	57%	36	**6**	144	4%	<- EXIT

TOTAL SHARED TRIPS - WEEKDAY DAILY

	ENTER	EXIT	TOTAL
RETAIL	821	1,292	2113
OFFICE	159	254	413
RES	1,154	588	1742

TOTAL SHARED TRIPS - WEEKDAY MORNING

	ENTER	EXIT	TOTAL
RETAIL	11	10	21
OFFICE	12	9	21
RES	2	6	8

TOTAL SHARED TRIPS - WEEKDAY EVENING

	ENTER	EXIT	TOTAL
RETAIL	90	115	205
OFFICE	17	42	59
RES	108	58	166

1 Weekday AM and PM Internal capture rates based on NCHRP Report 684, Saturday midday rates assumed to be the same was weekday evening rate
2 Daily Internal capture rates based on Trip Generation Handbook, 1st Edition, 2001

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12239.00

PROPOSED SHARED PERSON TRIPS - SATURDAY

RETAIL - OFFICE

SATURDAY DAILY

RETAIL	%	#	BALANCED	#	%	OFFICE
EXIT ->	3%	8,650	**34**	225	15%	-> ENTER
ENTER <-	4%	8,650	**50**	225	22%	<- EXIT

SATURDAY MIDDAY

RETAIL	%	#	BALANCED	#	%	OFFICE
EXIT ->	2%	591	**12**	58	21%	-> ENTER
ENTER <-	8%	640	**10**	50	20%	<- EXIT

RETAIL - RESIDENTIAL

SATURDAY DAILY

RETAIL	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	26%	8,650	**741**	1,610	46%	-> ENTER
ENTER <-	38%	8,650	**676**	1,610	42%	<- EXIT

SATURDAY MIDDAY

RETAIL	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	26%	591	**87**	190	46%	-> ENTER
ENTER <-	10%	640	**64**	198	42%	<- EXIT

OFFICE - RESIDENTIAL

SATURDAY DAILY

OFFICE	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	2%	225	**5**	1,610	4%	-> ENTER
ENTER <-	0%	225	**0**	1,610	0%	<- EXIT

SATURDAY MIDDAY

OFFICE	%	#	BALANCED	#	%	RESIDENTIAL
EXIT ->	2%	50	**1**	190	4%	-> ENTER
ENTER <-	57%	58	**8**	198	4%	<- EXIT

TOTAL SHARED TRIPS - SATURDAY DAILY

	ENTER	EXIT	TOTAL
RETAIL	726	775	1501
OFFICE	34	55	89
RES	746	676	1422

TOTAL SHARED TRIPS - SATURDAY MIDDAY

	ENTER	EXIT	TOTAL
RETAIL	74	99	173
OFFICE	20	11	31
RES	88	72	160

1 Weekday AM and PM Internal capture rates based on NCHRP Report 684, Saturday midday rates assumed to be the same was weekday evening rate
2 Daily Internal capture rates based on Trip Generation Handbook, 1st Edition, 2001

TRIP GENERATION - WITH ROBUST SHUTTLE SERVICE

	FUTURE DEVELOPMENT - RETAIL						FUTURE DEVELOPMENT - RESIDENTIAL				FUTURE DEVELOPMENT - OFFICE				TOTAL NON-VEHICLE		TOTAL VEHICLE TRIPS		
	Proposed Retail Net Person Trips [a]	Proposed Retail Walk/Bike Trips	Proposed Retail Transit Trips	Proposed Retail Vehicle Trips	Proposed Retail Pass-By	Proposed Retail Net 237 KSF	Proposed Residential Net Person Trips [a]	Proposed Residential Walk/Bike Trips	Proposed Residential Transit Trips	Proposed Residential Net 824 UNITS	Proposed Office Net Person Trips [a]	Proposed Office Walk/Bike Trips	Proposed Office Transit Trips	Proposed Office Net 180 KSF	Proposed Walk/Bike Trips Net	Proposed Transit Trips Net	Proposed Development Net	Existing Net Trips	Proposed Development Net New
				VOR 1.78						VOR 1.13				VOR 1.12					
Weekday AM Peak Hour					25%														
Enter	220	11	11	111	22	89	75	8	23	40	178	18	53	95	37	87	224	221	3
Exit	132	7	7	67	22	45	214	21	64	115	22	2	7	12	30	78	172	56	116
Total	352	18	18	178	44	134	289	29	87	155	200	20	60	107	67	165	396	277	119
Weekday Evening Peak Hour					34%														
Enter	425	21	21	215	75	140	117	12	35	63	19	2	6	10	35	62	213	120	93
Exit	443	22	22	224	75	149	86	9	26	46	147	15	44	76	46	92	274	248	26
Total	868	43	43	439	150	289	203	21	61	109	166	17	50	89	81	154	487	368	119
Saturday Midday Peak Hour					26%														
Enter	566	28	28	286	70	216	102	10	31	53	38	4	11	20	42	70	291	186	105
Exit	492	25	25	249	70	179	126	13	38	65	39	4	12	21	42	75	267	163	104
Total	1,058	53	53	535	140	395	228	23	69	122	77	8	23	41	84	145	558	349	209

a - Net Person trips includes credit for internal capture

TRIP GENERATION - WITH EXISTING MODE SHARES

	FUTURE DEVELOPMENT - RETAIL						FUTURE DEVELOPMENT - RESIDENTIAL				FUTURE DEVELOPMENT - OFFICE				TOTAL NON-VEHICLE		TOTAL VEHICLE TRIPS		
	Proposed Retail Net Person Trips [a]	Proposed Retail Walk/Bike Trips	Proposed Retail Transit Trips	Proposed Retail Vehicle Trips	Proposed Retail Pass-By	Proposed Retail Net 237 KSF	Proposed Residential Net Person Trips [a]	Proposed Residential Walk/Bike Trips	Proposed Residential Transit Trips	Proposed Residential Net 824 UNITS	Proposed Office Net Person Trips [a]	Proposed Office Walk/Bike Trips	Proposed Office Transit Trips	Proposed Office Net 180 KSF	Proposed Walk/Bike Trips Net	Proposed Transit Trips Net	Proposed Development Net Vehicle Trips	Existing Net Trips	Proposed Development Net New Vehicle Trips
				VOR 1.78						VOR 1.13				VOR 1.12					
Weekday AM Peak Hour					25%														
Enter	220	11	11	111	22	89	75	6	10	16	178	9	12	20	26	38	282	221	61
Exit	132	7	7	67	22	45	214	17	28	44	22	1	2	3	25	37	213	56	157
Total	352	18	18	178	44	134	289	23	38	60	200	10	14	23	51	75	495	277	218
Weekday Evening Peak Hour																			
Enter	425	21	21	215	75	140	117	9	15	24	19	1	1	2	31	37	238	120	118
Exit	443	22	22	224	75	149	86	7	11	18	147	7	10	17	36	43	326	248	78
Total	868	43	43	439	150	289	203	16	26	42	166	8	11	19	67	80	564	368	196
Saturday Midday Peak Hour																			
Enter	566	28	28	286	70	216	102	8	13	21	38	2	3	5	36	44	318	186	132
Exit	492	25	25	249	70	179	126	10	16	26	39	2	3	5	32	44	299	163	136
Total	1,058	53	53	535	140	395	228	18	29	47	77	4	6	10	68	88	617	349	268

a - Net Person trips includes credit for internal capture

Mode Splits - Existing Mode Share
Future Mode Splits Based on 2015 Census Data

Mode Share	Existing Mode Splits [1]			Assumed Future Mode Splits [2]		
	Workers	Residents	Retail [3]	Workers	Residents	Retail
Drive	88%	79%	90%	88%	79%	90%
Transit	7%	13%	5%	7%	13%	5%
Walk / Bike	5%	8%	5%	5%	8%	5%
Total	100%	100%	100%	100%	100%	100%

[1] Based on US Census Bureau Journey to Work Data, City of Newton, 2010 for workers, US Census American Community Survey 2015 for residents of Newton
[2] Based on assumed transit rates
[3] Based on prediction of retail mode split

Mode Splits - Robust Shuttle Service
Future Mode Splits Based on Aggressive TDM and Shuttle Usage

Mode Share	Existing Mode Splits [1]			Assumed Future Mode Splits [2]		
	Workers	Residents	Retail [3]	Workers	Residents	Retail
Drive	88%	79%	90%	60%	60%	90%
Transit	7%	13%	5%	30%	30%	5%
Walk / Bike	5%	8%	5%	10%	10%	5%
Total	100%	100%	100%	100%	100%	100%

[1] Based on US Census Bureau Journey to Work Data, City of Newton, 2010 for workers, US Census American Community Survey 2015 for residents of Newton
[2] Based on assumed transit rates
[3] Based on prediction of retail mode split

Shared Parking Calculations

Northland Newton Development - Right-Sized Parking March 2019
Weekday - Seasonally Adjusted Parking Demand by Time of Day
December

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical	Customer	121	100%	121	1	6	18	36	67	91	109	121	121	121	115	103	97	91	79	61	36	12	-
	Employee	28	100%	28	3	4	11	21	24	27	28	28	28	28	28	27	27	27	25	21	11	4	-
Fine/Casual Dining	Customer	134	100%	134	-	-	-	-	20	54	101	101	87	54	67	101	127	134	134	134	127	101	34
	Employee	30	100%	30	-	6	15	23	27	27	27	27	27	23	23	30	30	30	30	30	30	26	11
Family Restaurant	Customer	106	100%	106	27	53	64	80	90	95	106	95	53	48	48	80	85	85	85	64	58	53	27
	Employee	22	100%	22	11	17	20	20	22	22	22	22	11	11	11	21	21	21	21	18	14	14	8
Health Club	Customer	53	95%	50	35	20	20	35	35	40	30	35	35	35	40	45	50	45	40	35	18	5	-
	Employee	4	100%	4	3	3	3	3	3	3	3	3	3	3	3	4	4	3	2	1	1	1	-
Residential	Reserved	800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	41	100%	41	-	-	8	25	41	18	6	18	41	18	6	4	2	1	-	-	-	-	-
Office	Employee	311	100%	311	9	93	233	295	311	311	280	280	311	311	280	156	78	31	22	9	3	-	-
Medical/Dental Office	Visitor	40	100%	40	-	-	36	36	40	40	12	36	40	40	36	32	27	12	6	-	-	-	-
	Employee	15	100%	15	-	-	9	15	15	15	15	15	15	15	15	15	10	5	2	-	-	-	-
		1705		1702	889	1,002	1,237	1,389	1,495	1,543	1,539	1,581	1,572	1,507	1,472	1,418	1,358	1,285	1,246	1,173	1,098	1,016	880

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Northland Newton Development - Right-Sized Parking March 2019
Weekend - Seasonally Adjusted Parking Demand by Time of Day
December

Land Use	User	Annual Peak Demand	Seasonal Factor	Seasonal Demand	6:00	7:00	8:00	9:00	10:00	11:00	Noon	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12Mid
Shopping Center - Typical		167	100%	167	2	8	17	58	100	117	142	159	167	167	159	150	134	125	109	84	58	25	-
	Employee	32	100%	32	3	5	13	24	27	30	32	32	32	32	32	30	27	26	24	21	14	5	-
Fine/Casual Dining	Customer	187	100%	187	-	-	-	-	-	28	94	103	84	84	84	112	168	178	187	168	168	168	94
	Employee	33	100%	33	-	7	10	20	25	25	25	25	25	25	25	33	33	33	33	33	33	28	17
Family Restaurant	Customer	187	100%	187	19	47	84	131	168	168	187	159	122	75	84	112	131	131	122	56	47	28	19
	Employee	33	100%	33	17	25	30	30	33	33	33	33	21	21	21	31	31	31	31	26	21	21	12
Health Club	Customer	56	90%	50	40	23	18	25	18	25	25	15	13	15	28	50	48	30	15	5	1	1	-
	Employee	3	100%	3	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	1	1	1	-
Residential	Reserved	800	100%	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Office	Visitor	5	100%	5	-	1	3	4	5	5	5	4	3	2	1	1	-	-	-	-	-	-	-
Office	Employee	52	100%	52	-	10	31	42	47	52	47	42	31	21	10	5	3	-	-	-	-	-	-
Medical/Dental Office	Visitor	50	100%	50	-	-	45	45	50	50	15	-	-	-	-	-	-	-	-	-	-	-	-
	Employee	25	100%	25	-	-	15	25	25	25	25	-	-	-	-	-	-	-	-	-	-	-	-
		1630		1624	883	928	1,068	1,206	1,300	1,360	1,432	1,374	1,300	1,244	1,246	1,327	1,378	1,356	1,323	1,194	1,143	1,077	942

Note: Does not include parking demand associated with community space. Assumed to be 15 spaces during peak times.

Exhibit E

9:00 AM

10:00 AM

11:00 AM

12:00 PM

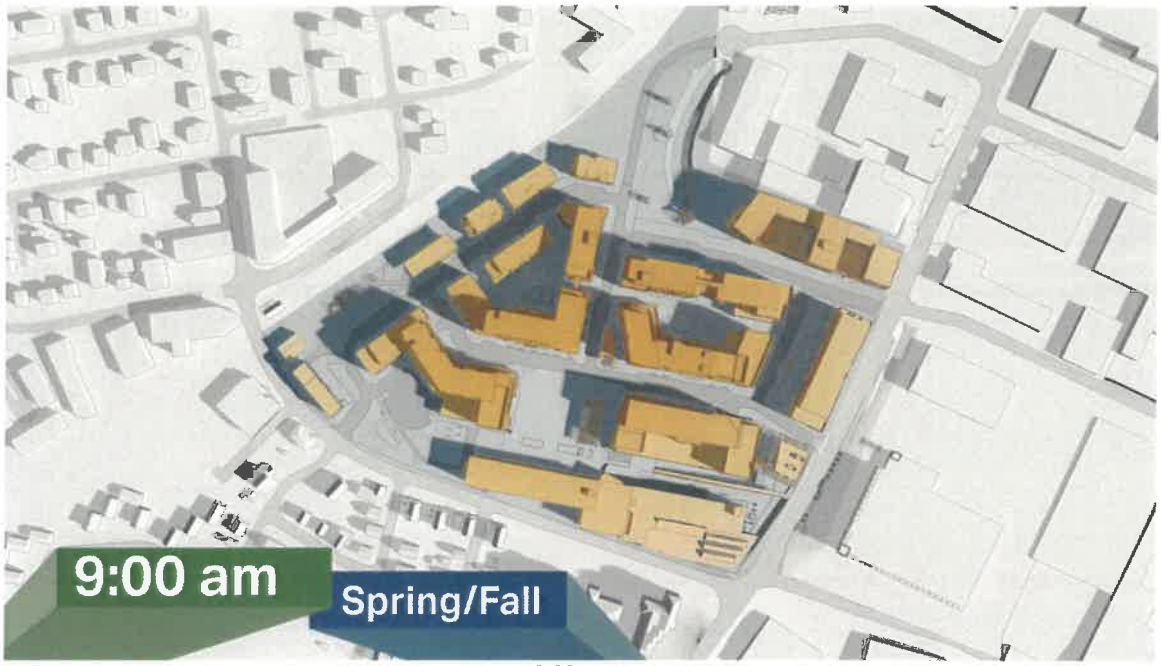
1:00 PM

2:00 PM

3:00 PM

Northland Investment Corporation
NND – Shadow Study
Winter Solstice: 9:00 AM – 3:00 PM

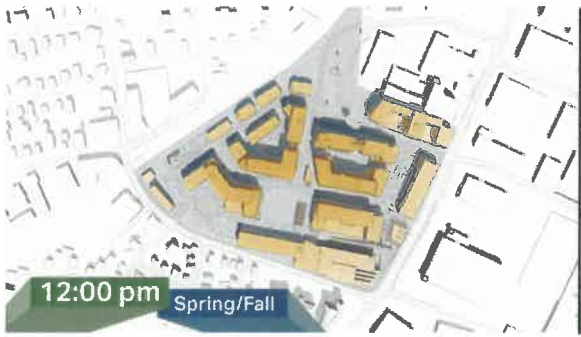
April 22nd,2019



9:00 AM

10:00 AM

11:00 AM



12:00 PM

1:00 PM

2:00 PM

3:00 PM

Northland Investment Corporation
NND – Shadow Study
Spring/Fall Equinox: 9:00 AM – 3:00 PM

April 22nd,2019

9:00 AM

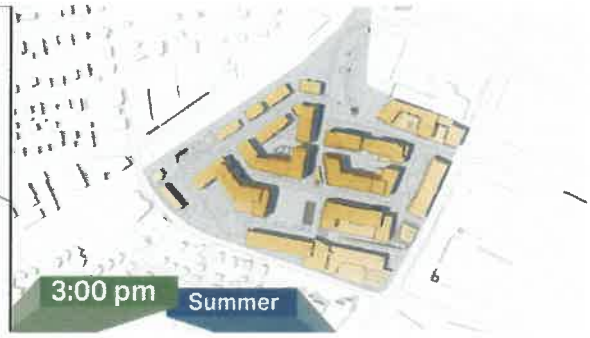
10:00 AM

11:00 AM

12:00 PM

1:00 PM

2:00 PM



3:00 PM

Northland Investment Corporation
NND – Shadow Study
Summer Solstice: 9:00 AM – 3:00 PM

April 22nd,2019

Exhibit F

Exhibit F

Density of Multi Family Developments
Newton, MA

Property	Owner	Address	Units	Site Acreage	Units Per Acre
Avalon @UpperFalls	Avalon	99 Needham Street	294	7.80	37.7
Avalon @ChestnutHill	Avalon	160 Boylston Street	204	4.66	43.7
Washington Place	Mark Development	855 Washington Street	140	3.39	41.3
Austin Street	Dinosaur Capital	28 Austin Street	68	1.71	39.8
Woodland Station Apartments	National Development	1946 Washington Street	180	3.86	46.6
Village Falls Condos	Condominium	183 Oak Street	123	3.40	36.2
The Towers Chesnut Hill	Condominium	250 Hammond Pond Parkway	423	4.46	94.9
Northland Newton Development	NIC	156 Oak / 55 Tower / 241 Needham	800	22.65	35.3

Northland Investment Corp.
4/23/2019

Exhibit G

newton local

Monday-Friday

	PEAK PERIOD 20-MIN FREQUENCIES													OFF-PEAK 30-MIN FREQUENCIES									
	B1	B3	B2	B3	B1	B2	B1	B3	B1	B2	B1	B2	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1
depart Transit Hub	6:00	6:20	6:40	7:00	7:20	7:40	8:00	8:20	8:40	9:00	9:20	9:40	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00
arrive Newton Highlands	6:10	6:30	6:50	7:11	7:32	7:52	8:13	8:34	8:54	9:13	9:32	9:52	10:11	10:40	11:11	11:40	12:11	12:42	1:11	1:41	2:10	2:40	3:10
depart Newtonville	6:23		7:03	7:27		8:14		8:56															
depart Newton Highlands	6:37		7:19	7:43		8:32		9:16															
arrive Transit Hub	6:47	6:40	7:29	7:53	7:43	8:43	8:25	9:29	9:07	9:25	9:43	10:03	10:21	10:50	11:21	11:50	12:23	12:55	1:25	1:53	2:22	2:52	3:22

	PEAK PERIOD 20-MIN FREQUENCIES													30-MIN FREQ				
	B1	B2	B3	B2	B1	B3	B1	B2	B1	B3	B1	B2	B3	B1	B1	B1	B1	B1
depart Transit Hub	3:30	4:00	4:20	4:40	5:00	5:20	5:40	6:00	6:20	6:40	7:00	7:20	7:40	8:00	8:30	9:00	9:30	10:00
arrive Newton Highlands	3:41	4:12	4:33	4:53	5:13	5:34	5:54	6:13	6:32	6:52	7:11	7:30	7:50	8:10	8:40	9:10	9:40	10:10
depart Newtonville	3:57			5:09		5:50		6:29			7:25							
depart Newton Highlands	4:16			5:28		6:07		6:45			7:41							
arrive Transit Hub	4:29	4:25	4:47	5:42	5:27	6:22	6:09	6:59	6:45	7:05	7:53	7:41	8:01	8:20	8:50	9:20	9:50	10:20

Saturday-Sunday

	30-MIN FREQUENCIES														
	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1
depart Transit Hub	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30
arrive Newton Highlands	7:39	8:09	8:39	9:09	9:39	10:09	10:39	11:09	11:39	12:09	12:39	1:09	1:39	2:09	2:39
depart Newton Highlands	7:43	8:13	8:43	9:13	9:43	10:13	10:43	11:13	11:43	12:13	12:43	1:13	1:43	2:13	2:43
arrive Transit Hub	7:56	8:26	8:56	9:26	9:56	10:26	10:56	11:26	11:56	12:26	12:56	1:26	1:56	2:26	2:56

	30-MIN FREQUENCIES														
	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1	B1
depart Transit Hub	3:00	3:30	4:00	4:30	5:00	5:30	6:00	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00
arrive Newton Highlands	3:09	3:39	4:09	4:39	5:09	5:39	6:09	6:39	7:09	7:39	8:09	8:39	9:09	9:39	10:09
depart Newton Highlands	3:13	3:43	4:13	4:43	5:13	5:43	6:13	6:43	7:13	7:43	8:13	8:43	9:13	9:43	10:13
arrive Transit Hub	3:26	3:56	4:26	4:56	5:26	5:56	6:26	6:56	7:26	7:56	8:26	8:56	9:26	9:56	10:26

newton local peak hour "available seats on the bus": 192*


boston express
Waltham
Watertown
Cambridge
Boston
Newton
Brookline

Monday-Friday

	B1	B2	B1	B2	B1	B1	B2	B1	B2	B1	B2
depart Transit Hub		7:00	8:00	9:00	10:00		4:00	5:00	6:00	7:00	8:00
Seaport/WTC	6:45	7:45	8:45	9:45	10:45	3:45	4:45	5:45	6:45	7:45	8:45
South Station	6:58	7:58	8:58	9:58	10:58	3:58	4:58	5:58	6:58	7:58	8:58
arrive Transit Hub	7:43	8:43	9:43	10:43		4:43	5:43	6:43	7:43	8:43	

Saturday-Sunday

	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1
depart Transit Hub	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30	6:30	7:30	8:30	9:30
Seaport/WTC	8:15	9:15	10:15	11:15	12:15	1:15	2:15	3:15	4:15	5:15	6:15	7:15	8:15	9:15	10:15
South Station	8:28	9:28	10:28	11:28	12:28	1:28	2:28	3:28	4:28	5:28	6:28	7:26	8:28	9:28	10:28
arrive Transit Hub	9:13	10:13	11:13	12:13	1:13	2:13	3:13	4:13	5:13	6:13	7:13	8:13	9:13	10:13	

boston express peak hour "available seats on the bus": 64

cambridge express

Monday-Friday

	B1	B2	B1	B2	B1	B1	B2	B1	B2	B1	B2
depart Transit Hub		7:00	8:00	9:00	10:00		4:00	5:00	6:00	7:00	8:00
Central Square	6:45	7:45	8:45	9:45	10:45	3:45	4:45	5:45	6:45	7:45	8:45
Kendall Square	6:55	7:55	8:55	9:55	10:55	3:55	4:55	5:55	6:55	7:55	8:55
arrive Transit Hub	7:40	8:40	9:40	10:40		4:40	5:40	6:40	7:40	8:40	

Saturday-Sunday

	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1	B2	B1
depart Transit Hub	7:30	8:30	9:30	10:30	11:30	12:30	1:30	2:30	3:30	4:30	5:30	6:30	7:30	8:30	9:30
Central Square	8:15	9:15	10:15	11:15	12:15	1:15	2:15	3:15	4:15	5:15	6:15	7:15	8:15	9:15	10:15
Kendall Square	8:25	9:25	10:25	11:25	12:25	1:25	2:25	3:25	4:25	5:25	6:25	7:25	8:25	9:25	10:25
arrive Transit Hub	9:10	10:10	11:10	12:10	1:10	2:10	3:10	4:10	5:10	6:10	7:10	8:10	9:10	10:10	

cambridge express peak hour "available seats on the bus": 64

the northland shuttle system

day 1

system-wide stats

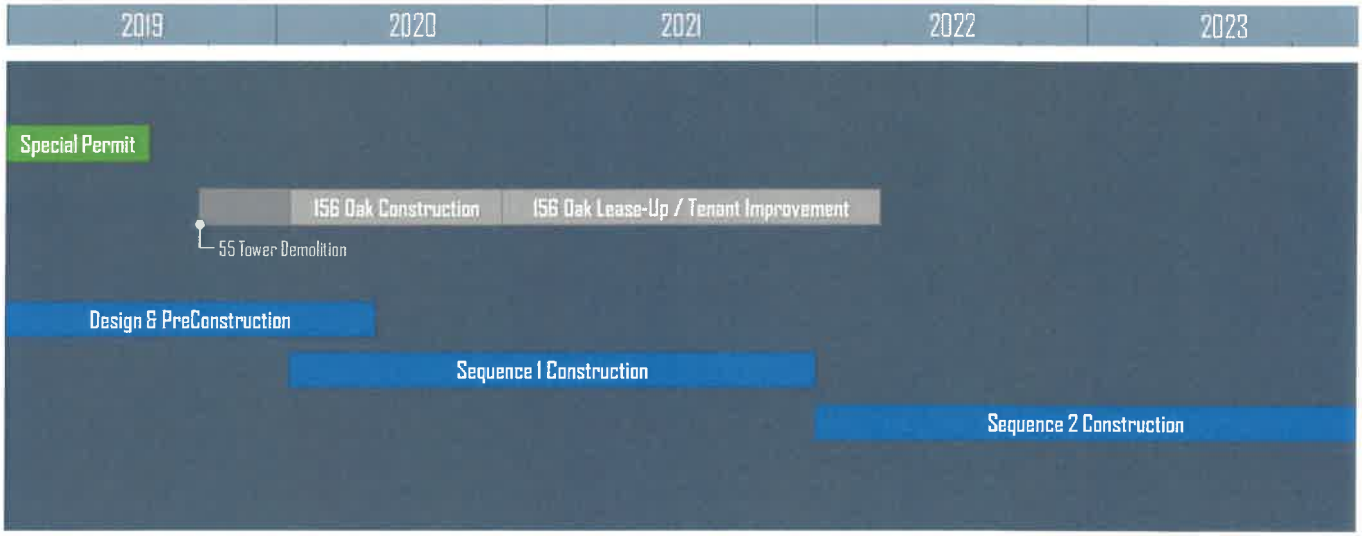
	devoted shuttles	runs per day (Mon-Fri)	runs per day (Sat-Sun)	peak hour available seats on the bus
newton local	3	41	30	192
to newton highlands only		(31)		
to newton highlands + newtonville		(10)		
boston express	2	11	15	64
cambridge express	2	11	15	64
back-up vehicle	1			
	8	**63**	**60**	**320**

fare structure recommendations

one seat on the **newton local**	$2.50
one seat on the **boston** or **cambridge express**	$7.00

Exhibit H

Five Year Timeline



Sequence 1
Buildings 2,3,5,6,7 & Community Building (498 Units)
Village Green, Mill Park, Mobility Hub, Community Playground,
South Meadow Brook Restoration

Sequence 2
Buildings 4,8,9-14 (302 Units)
Oak Street Park, Greenway Connections

Northland
INVESTMENT CORPORATION

Exhibit I

Northland Newton Development
TDM Work Plan Outline

This Work Plan Outline summarizes the key stages in the implementation of the TDM Plan. Please refer to the TDM Plan for background. There will be three basic stages to the implementation of the TDM Plan; **Pre-Shuttle, Shuttle** and **Ongoing.**

Pre-Shuttle Stage:

This is the stage prior to the receipt of Certificates of Occupancy (CO) for the first 400 units. This stage will begin during construction, approximately 6 months prior to the anticipated receipt of the first CO's.

During this stage, extensive marketing to potential residents and commercial tenants will highlight and promote the opportunities for non-SOV modes of transit that the Northland Newton Development (NND) will offer. Due to the nature of building sizes and anticipated sequence of construction, the first of the 400 CO's are anticipated to be issued within two years of the commencement of construction.

1. The **TDM Coordinator** position will be filled and begin outreach and coordination with the 128 Business Council (128BC) on early stage options for non-SOV transit. The TDM Coordinator will also establish plans for education, communication and marketing of the then current, and planned non-SOV transit options. The TDM Coordinator will also work and coordinate with City of Newton officials to minimize SOV use and to monitor SOV tips generated by NND.

2. Opening of the **Mobility Hub** (MH). The TDM coordinator will be located in the MH. The TDM Coordinator will expand communication and outreach to residents and commercial tenants/employees to ensure that they are fully aware of all the non-SOV transit modes available to them, especially the shuttle. The TDM Coordinator will conduct informational sessions in the MH as well as in the Saco Pettee Mill for office employees and in the apartment buildings for residents. The TDM Coordinator will also make sure all residents and tenants/employees are aware of transit incentives such as T-passes, reduced shuttle fees, etc. All marketing materials will highlight and include details about the shuttle and other transit options available at NND.
    a. Two on-street parking spaces will be designated for TNC pick-up/drop-off in front of the MH closest to Main Street.

3. **Residents and commercial tenants/employees** will be provided car sharing, bicycle routes, and MBTA and car/van-pooling information. Residents will be provided T-passes. Employers will be encouraged to provide T-passes to their employees and will be motivated by the lack of typical market-provided parking.

Designated ZipCar (or similar) spaces will be established in the central parking garage as will car/van pool spaces.

4. Residential **bicycle parking** will be provided as the apartment buildings are completed. Retail (in the central parking garage and on-street through-out the project) and office (at the Saco Pettee Mill) bicycle parking will also be provided as the buildings and parks/open spaces are completed.

5. As part of the NND **project website**, there will be a section dedicated to non-SOV transit options for employees, residents and visitors.

6. One on-street parking space will be designated for **TNC pick-up/drop-off** at the following locations:
    a. Building 3, near the residential lobby entrance on Main Street.
    b. Building 6, near the residential lobby entrance on Main Street and near the residential lobby on Charlemont St.
    c. Building 5, near the residential lobby entrance on Main Street and near the leasing office entry on Pettee Lane.

Shuttle Stage:

This stage continues to build on the work started in the Pre-Shuttle Stage and begins upon receipt of the 400th CO. This stage initiates the full TDM Plan including the following:

1. It will be at this stage that the full **Shuttle System** commences it's full service and schedule. All routes will begin operation from the MH. This will include the "guaranteed ride-home" program. The TDM Coordinator will work with the 128BC/Shuttle Operator to monitor operations.

2. The transit options section on the NND **project website** will be enhanced to include information on the shuttles including schedules. Additionally, transit information will be available in the MH, in the residential lobbies and throughout the site on digital information monitors. Marketing efforts for the Shuttle System will be increased leading up to the opening of the shuttle and will be maintained on an ongoing basis.

3. Active management of the **Shared Parking Program** will commence.

Ongoing:

As the remaining 400 residential units and office/retail space become available, the TDM strategy will continue to be enhanced. Some of the elements will have started during the

Pre-Shuttle Stage (e.g., marketing, SOV tracking, etc.) and some will start during the Shuttle Stage (e.g., the shuttle system and shuttle tracking, Active Shared Parking, etc.).

1. As Building 4 comes online, a **TNC pick-up/drop-off** space will be designated near the lobby entrance on Main Street.

2. **TNC activity** will be monitored to ensure that project SOV trip generation limits are not exceeded. The TDM Coordinator will work with the City and the TNC's to manage their utilization. It is important to note that TNC's are an important option for residents without cars. Due to their high cost relative to the shuttles ($14 shuttle round trip to Boston/Cambridge, vs $40-50 for TNC's) it is expected that the TNC option will be used as a limited alternative.

3. **Marketing and outreach** will continue and be adjusted to ensure success as NND progresses.

4. **New transit trends/options** (i.e. Uber shuttles, Shared Autonomous Vehicles, expanded "regional" shuttle system, etc.) will continually be monitored for useful and impactful application to NND.

5. The TDM Coordinator will **maintain communication** with project residents, retail/office employees, the City, area business, the Chamber and others to ensure that the non-SOV transit options available at NND are responsive, effective and successful.

6. The TDM Coordinator will begin the process of **Data Gathering** to for annual review with the City.

7. As part of this Work Plan Outline, there are at least 3 three key points for **review with the City** to make adjustments to the TDM Plan:
    a. Prior to commencement of the initial sequence of construction **(Pre-Shuttle Stage).**
    b. Prior to the commencement of the final sequence of construction **(Shuttle Stage).**
    c. Upon review of metrics provided for understanding SOV generation, shuttle program utilization, TNC utilization, and overall TDM effectiveness. The timing of this review will be at least annually but may be adjusted depending on program operations **(Ongoing Stage).**

Exhibit J

Exhibit F

80% of AMI	HUD Income Limit:	$81,100			
Unit Size	HH Size	HH Income	Max Gross Monthly Rent	Utility Allowance	Max Net Monthly Rent
Studio	1.00	$56,800	$1,420	($90)	$1,330
1 BD	2.00	$64,900	$1,623	($119)	$1,504
2 BD	3.00	$73,000	$1,825	($151)	$1,674
3 BD	4.00	$81,100	$2,028	($182)	$1,846
4 BD	5.00	$87,600	$2,190	($217)	$1,973

Newton Salary Ranges

	25th Percentile	Average	75th Percentile
Newton FD	$39,493	$52,656	$65,821
Newton PD	$58,400	$62,500	$68,100
Public School Teachers	$56,357	$64,557	$74,524

Exhibit K

OPEN SPACE CHARACTER

Site: 22.6 acres
Open Space: 10.4 acres / 46%

4 Types of Open Space

1 – Civic Space
Village Green at Main Street

2 – Community Space & Natural Green
Oak Street Park
Community Park
Greenway
South Meadow Brook Park

3 – Mobility Plaza

4 – Flexible / Semi-public
Mill Park
Courtyard

BLUE BACK SQUARE | West Hartford, CT

24.5 acres

Open Space: ~ 19%

BLUE BACK SQUARE | West Hartford, CT

PIKE & ROSE | North Bethesda, MD

Site: 24 acres

Open Space: ~10%

PARK DISTRICT | North Hills, Raleigh, NC

Site: 22 acres

Open space: ~12%

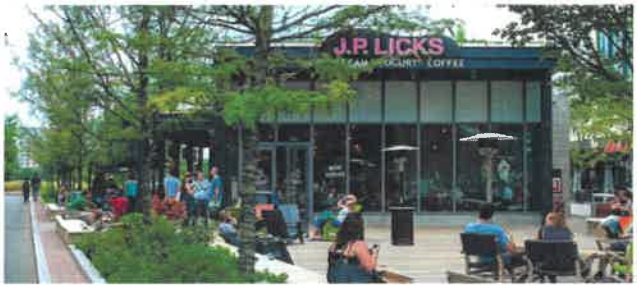
PARK DISTRICT | North Hills, Raleigh, NC

PIKE & ROSE | North Bethesda, MD

ASSEMBLY ROW | Sommerville, MA

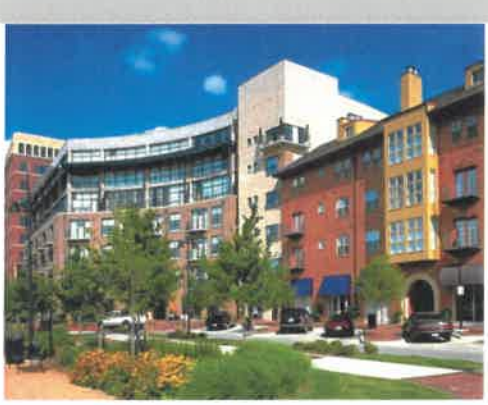
Site: 27.7 acres phase 1 by 2017

Open Space: ~10%



ASSEMBLY ROW | Sommerville, MA

ADISON CIRCLE Dallas, TX



Site: 21.7 acres

Open Space: ~10%

STATION LANDING | Medford, MA

Site: 17 acres

Open Space: ~8%

STATION LANDING | Medford, MA