NEWTON LEADS 2040

A Transportation Strategy for Newton

Newton › in › motion

FEBRUARY 2017

NEWTON LEADS 2040

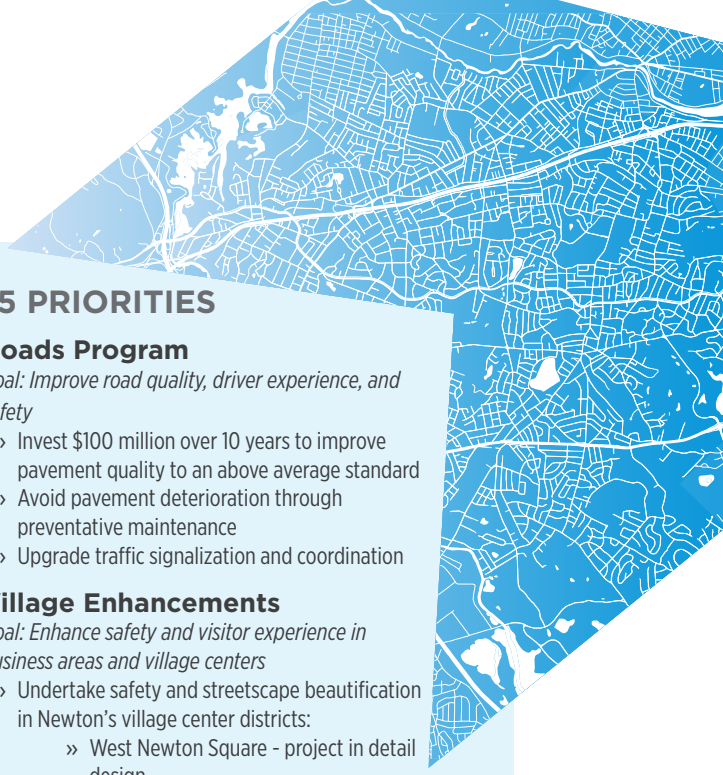
Transportation is fundamental to the quality of life in Newton. This Transportation Strategy embraces the gamut of multi-modal transportation choices - walking, biking, driving, and transit - now and in the future.

As a City, we make significant investments in the maintenance and efficacy of our transportation infrastructure in order to ensure the safety, health, and economic success of our citizens. This Strategy lays out a pathway for this investment. As with all issues my administration has addressed, we started this process with data collection to gain a clear, objective understanding of Newton's current transportation system. We then conducted robust community engagement to understand the concerns and aspirations of Newton residents. Simultaneously, we undertook a thorough review of best practices from other places around the region and the nation. Over the course of the past year, we synthesized all of this work into a set of concrete actions that Newton can take to make our transportation system safer and more efficient for everyone.

Last October, I released the annual Capital Improvement Plan, which included a number of the strategies and actions. My immediate priorities include an accelerated program to improve the quality of our roads, signalization upgrades to reduce traffic congestion, village center enhancements, new public-private shuttle service for Newton residents and businesses, bike share and bike facility improvements, and smart parking management. We are already implementing some of these strategies and we are about to embark upon others; all of them are actions we can take quickly to serve Newton.

I am pleased to be releasing the final strategy for Newton-in-Motion. This was a joint project of our Planning and Public Work Departments, with contributions from the Police, Newton Public Schools, the Mayor's Office of Sustainability, and others. I am grateful for the thinking, participation, and advice of hundreds of Newton residents and businesses. This strategy is not an ending but is the beginning of an ongoing process of engagement, collaboration, and implementation as we work with the community and City Council to advance these improvements.

- Mayor Setti D. Warren



TOP 5 PRIORITIES

1. **Roads Program**
   Goal: Improve road quality, driver experience, and safety
   - » Invest $100 million over 10 years to improve pavement quality to an above average standard
   - » Avoid pavement deterioration through preventative maintenance
   - » Upgrade traffic signalization and coordination

2. **Village Enhancements**
   Goal: Enhance safety and visitor experience in business areas and village centers
   - » Undertake safety and streetscape beautification in Newton's village center districts:
     - » West Newton Square - project in detail design
     - » Walnut Street - project in concept design
     - » Washington Street - preparatory planning
     - » Newton Corner - preparatory planning

3. **Bike Facilities**
   Goal: Increase bicycling use and safety
   - » Launch bikeshare program within 18 months
   - » Expand bike lane network
   - » Install bike racks near transit hubs and village centers

4. **Shared Transit**
   Goal: Offer shuttle service to Newton residents and businesses
   - » Pilot at least one public-private partnership for a shared shuttle service in Newton within 18 months

5. **Smart Parking Management**
   Goal: Provide convenient available parking for Newton residents and businesses
   - » Pilot kiosks accepting multiple forms of payment in municipal parking lots
   - » Initiate village center parking plan(s) for employees to free up front-door spaces for customers


Community & Stakeholder Input
VISION
SAFE | SMART | ACCESSIBLE | LIVABLE | SUSTAINABLE
Safe Travel
Transit & Shared Mobility
Active Transportation
Parking
Congestion Reduction
Strategies
Actions
Implementation
Measure & Adjust
2040
TARGET
TARGET
TARGET
TARGET
TARGET

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FIGURES

All images from Nelson\Nygaard, unless otherwise noted

1 NEWTON'S LAWS OF MOTION

A Framework for Action

NEWTON'S LAWS OF MOTION - A FRAMEWORK FOR ACTION

TRAVEL IN NEWTON

Newton has a rich and varied transportation system that provides residents, businesses, and visitors a multitude of travel choices. Newton's well-developed transportation networks, coupled with its superior location and regional connections, make it a desirable place to live, work, and visit. Newton's central location within metro-Boston with its booming economy and growing population means that Newton is experiencing increased through traffic as well as growing demand for travel to, from, and within the city.

Newton-in-Motion includes a comprehensive data-driven analysis of these travel conditions as well as a set of recommendations for investing limited transportation resources to achieve an equitable and safe multimodal system that creates economic growth and provides environmental benefits.

Credit: Sasaki

THE NEWTON-IN-MOTION PROCESS

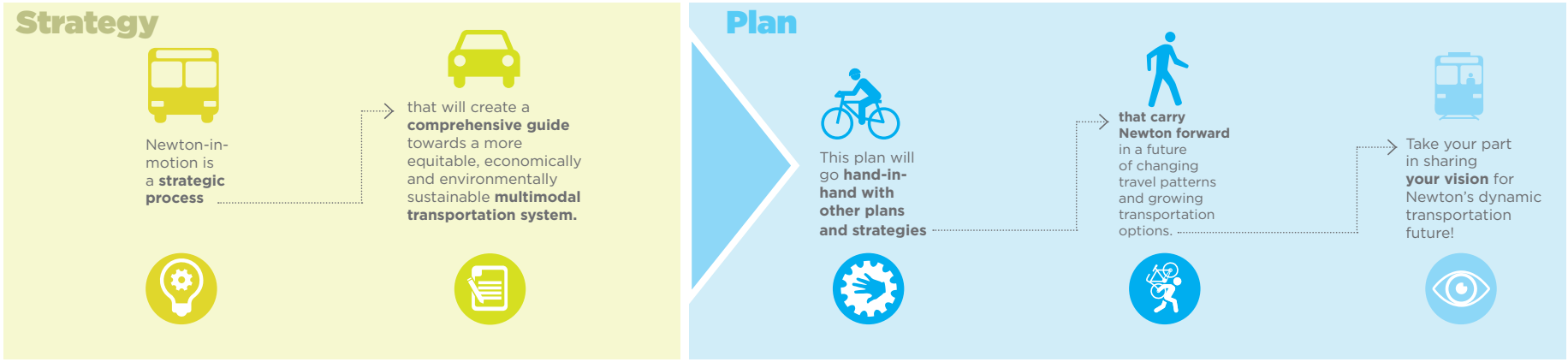
The Newton-in-Motion process began in Fall 2015 by synthesizing existing travel data, identifying needs and gaps in Newton's transportation system, and initiating an extensive and varied public engagement effort that included open houses, stakeholder meetings, presentations, pilot projects, and online surveys—all intended to let Newtonians guide the City's transportation policies and investments.

PUBLIC INPUT

Throughout 2016, Newtonians contributed their ideas, questions, comments, and concerns about transportation. Newtonians shared their experiences traveling in Newton and their wishes for a better system. They advised on the City's existing goals and vision, shared their opinions on testing solutions during a demonstration of roadway redesign ideas, and they provided feedback on early drafts of the strategies and actions.

A TRANSPORTATION STRATEGY FOR NEWTON

This year of transportation conversations has resulted in *Newton-in-Motion, A Transportation Strategy for Newton*. The report has five parts. Parts 1-2, which you are reading now, is the Strategy itself. Part 3 is the Newton-in-Motion Factbook—the data analysis behind the recommendations in the Strategy. Part 4 documents the public engagement process and the numerous points at which Newtonians provided input and feedback on this project. Part 5 offers a detailed sustainability analysis of the recommendations, completed by the Mayor's Office of Sustainability to show how ideas in this strategy relate to the City's broad sustainability goals.



ORGANIZING IDEAS INTO STRATEGIES AND ACTIONS

Newton-in-Motion is not just a transportation plan but a way to enable on-going citywide action towards Newton's transportation vision.

Newton-in-Motion includes 18 proposed strategies, each of which can be tested, tried, and implemented on its own schedule. Every strategy sets forth a need, objective, and several recommended action steps. Strategies and actions can be revised or supplemented over time without losing sight of the broad community input and analysis that framed the vision and needs which generated these initial approaches. To that end, this plan is intended to be a living document that is revisited at least annually to monitor progress, accommodate appropriate changes, and react to evolving community travel needs.

The strategies are organized into five chapters, each of which contains a multi-year set of actions that the City, regional and local partners, and all Newtonians can help implement to achieve the transportation vision.

Credit: Sasaki

VISION

By 2040, Newton's transportation system will be: **safe, smart, accessible, livable, and sustainable**

These five core values encapsulate what this transportation strategy hopes to achieve. They were developed through the public engagement process and had many iterations—each one building on feedback from the numerous voices involved in crafting this strategy.

Safe | The City's first priority is the safety of all travelers.
Newton's transportation strategy aims to eliminate all transportation-related fatalities and injuries. To do so, Newton will address all travel modes equitably and will use infrastructure investments to eliminate hazards, near-misses, and collisions. All travelers in Newton will feel safe and be safe when traveling in Newton, no matter how they travel. We will especially be in tune with the young, the elderly, and those with differing capabilities.

Smart | The City will incorporate cutting-edge transportation, technology, and data-driven solutions.
Newton will continue to adapt to evolving transportation needs and adopt innovative tools. The City will monitor, analyze, and revise decisions as needed to guide the system towards its vision.

Accessible | The City will ensure that everyone has a variety of attractive, efficient, and affordable travel options.
Newton will aim to reduce congestion without expanding roads by building on our own successful environment and expanding travel choices. Newtonians, age 9 to 90, already walk, bike, and take public transit at some of the highest rates in the country, avoiding tens of thousands of car trips every day.

Livable | The City's transportation networks will further Newton's character as 'The Garden City.'
Newton's transportation systems will nurture its verdant environment and support its vibrant quality of life. Transportation will connect people to each other and to exceptional public space, while making travel enjoyable.

Sustainable | Newton's transportation network will enhance the environmental, social, and economic prosperity of the City.
Newton is working in all areas to address climate change, public health, and economic vitality. Newton will provide transportation options that allow people to rely less on cars and instead walk, bike, or take public transportation.

FIGURE 1 FIVE CORE VALUES KEY

Throughout this document, each strategy is rated on how closely it supports each of the five core values:

(A fully colored-in circle means fully supported)

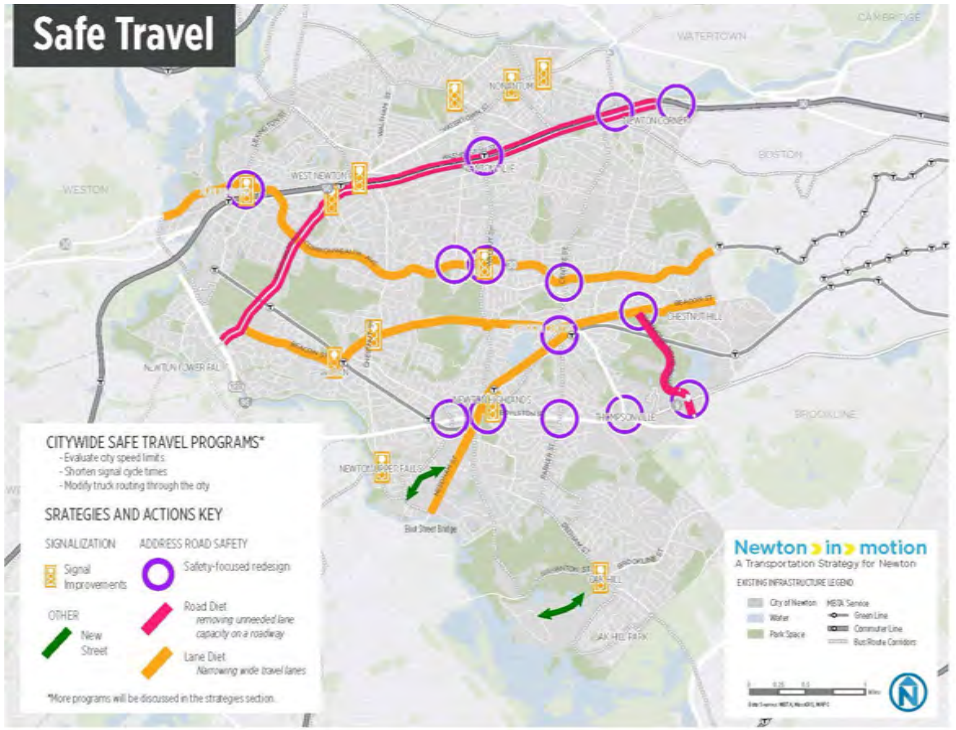
SAFE TRAVEL

Make the transportation network safe for all users

The City's top priority in any transportation-related decision is to ensure public safety. With an average of 1,451 vehicle, bicycle, and pedestrian crashes each year over the past five years, Newton must do better to prevent these occurrences, particularly with respect to people who walk and bike, who suffer disproportionately in terms of serious injuries and fatalities. [1]

Newton aspires to eliminate crash injuries and fatalities by lowering speeds, improving design, and educating travelers. The City will institute safety-focused transportation policies and projects that prioritize people's lives first. Cities across the region and the country have been adopting such "Vision Zero" policies, and Newton seeks to lead by example on this front.

1 Crash statistics reflect a five-year average of data reported to MassDOT from 2010 through 2015 and include automobile, pedestrian, and bicyclist crashes.



Strategies include:

» **Reduce Crashes Citywide –** investigate, study, and eliminate the sources of crashes that cause fatalities and injuries across Newton

» **Improve Safety at Intersections –** focus on Newton's primary conflict and collision points

» **Re-Envision Major Traffic Corridors –** ensure major streets serve as safe connectors for travelers using any mode

Full Size Map available on page 2-12

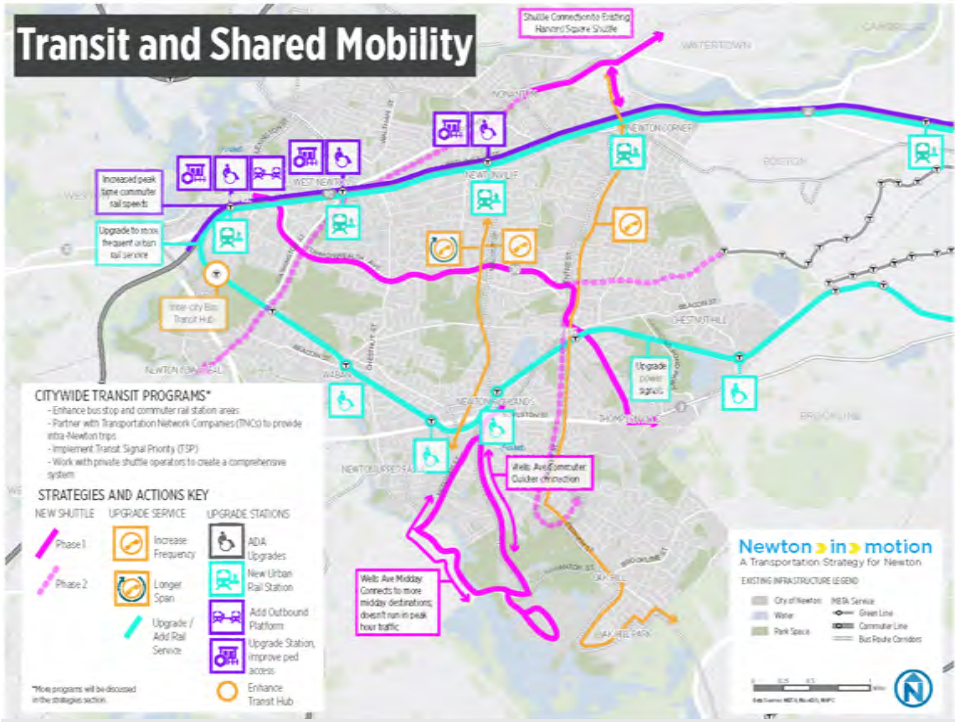
TRANSIT AND SHARED MOBILITY

Plan for a variety of shared transportation options

By providing alternatives to driving, transit systems benefit everyone, even those who do not ride regularly or at all. Every person choosing transit for their commute represents one less car on the road, meaning that well-used transit de-congests rush hour traffic. Riders may realize substantial financial savings. Transit also releases significantly less climate-changing pollutants per traveler than driving.

Newton's distinct village centers are a product of more than one hundred years of transit success in our region and allow Newtonians to connect directly from their villages and neighborhoods to jobs and activities in Boston and other communities in the region.

Although Newton has a variety of public transit options, the frequency and quality of access to these options varies widely. The "D" Branch of the Green Line, the Framingham/ Worcester commuter rail line, five local MBTA bus routes, nine MBTA express bus routes, and an assortment of college and private shuttles serve Newton's villages and certain major corridors with varying degrees of service quality. Improving service quality is a goal that Newton cannot pursue without partnering with service providers. In addition to working with the MBTA, the City can partner with existing shuttle providers and emerging shared mobility services to drive ridership growth and limit roadway congestion.



Strategies include:

- **Create New Community Transit Options –** work with the public and private sectors to improve shared mobility within Newton
- **Work with the MBTA to Improve Transit Experience –** work proactively with the MBTA to improve transit frequency, reliability and comfort
- **Enhance Options for Getting to Transit –** create safe walking, bicycling, and drop-off connections to transit stops

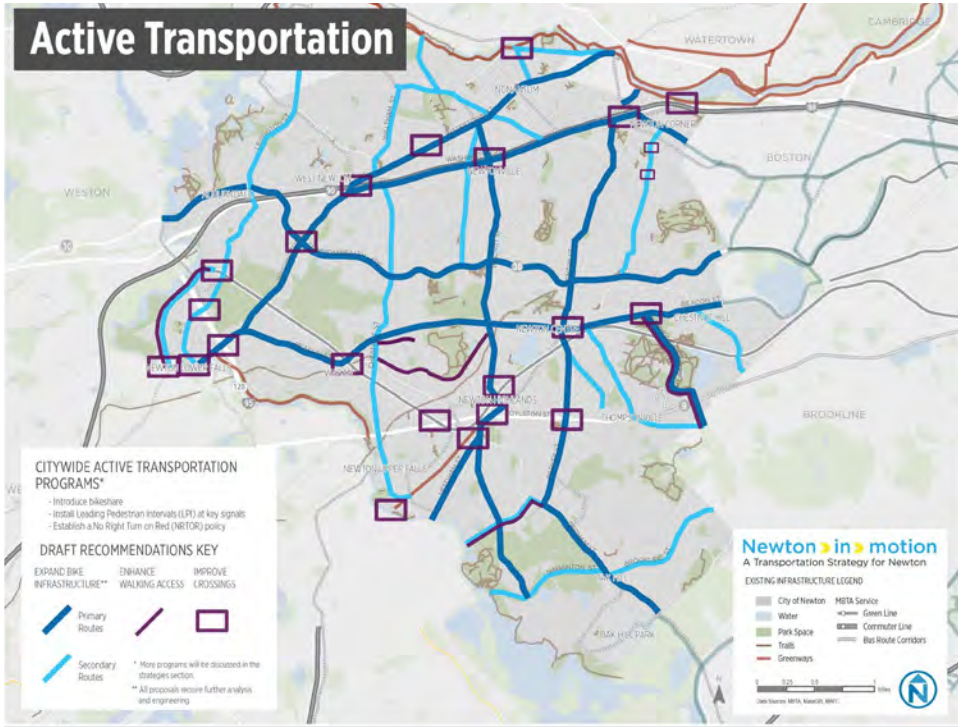
Full Size Map available on page 2-22

ACTIVE TRANSPORTATION

Encourage walking and bicycling to support wider economic development, sustainability, and public health goals

Newton's historic villages and verdant residential neighborhoods make for high-quality walking and bicycling environments. An even more robust walking and bicycling network would not only support Newton's sustainability, economic development, social equity, and public health goals, but it would also help to alleviate congestion and improve the overall safety of the city's streets. The City has many opportunities to make walking and bicycling the default choice of travel for thousands of Newtonians. Investments in new connections to shared paths, better access to villages and MBTA stations, and safer routes to schools can make this happen in highly cost-effective ways.

By adjusting its priorities, Newton can dramatically improve its appeal for active lifestyles. Newton can be a very comfortable place to walk, but deference to the automobile has diminished the city's walkability. By the commonly used WalkScore measure, Newton overall is less walkable than nearby peers that also have similar transit access, such as Brookline and Watertown. While Newton is also located within a great regional network of walk and bike trails, there are still many barriers to connecting with this infrastructure. Newton is obliged under Title II of the Americans with Disabilities Act (ADA) to provide access to municipal services to people with disabilities, including transportation networks. This particularly comes into play when designing walking connections so that they welcome people using wheelchairs and people with low-vision. Fortunately, the city's highly connected road network with a high density of intersections gives travelers many route options and makes a great foundation for Newton to become an award-winning walking and bicycling community.



Strategies include:

- **Embrace and Promote Alternatives to Driving –** create a more balanced transportation system for people who walk and bike
- **Make Short Trips Active & Attractive –** facilitate walking and bicycling to village centers and schools
- **Extend the Reach of Bicycles –** add new routes and protection for people who bike
- **Promote Village and Neighborhood Comfort –** make walk- and bike-friendly design the standard

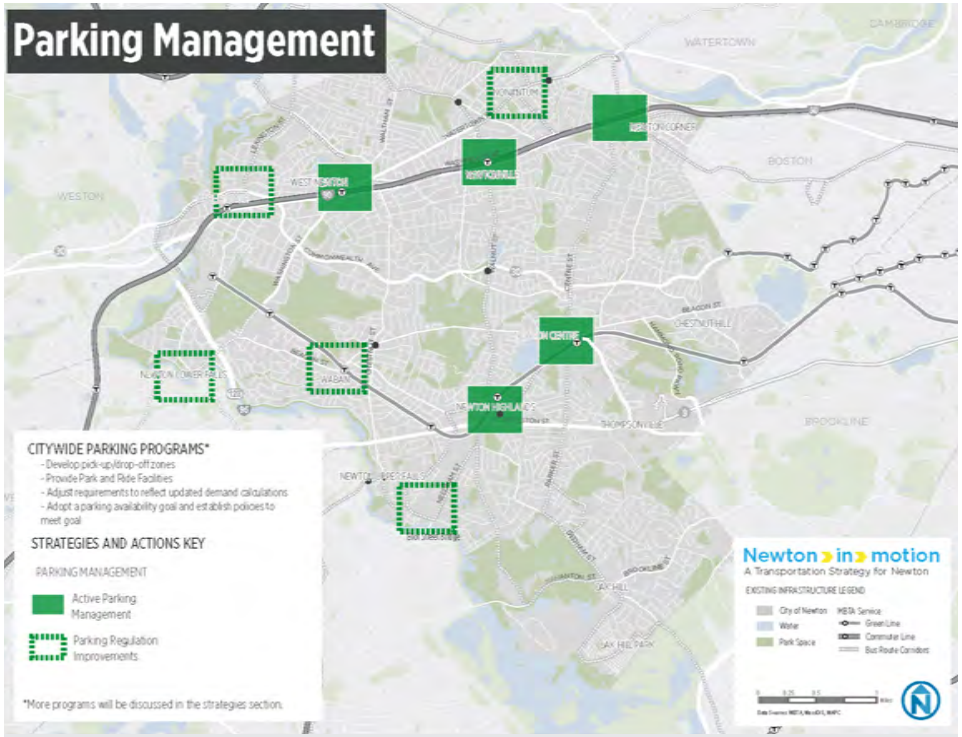
Full Size Map available on page 2-32

PARKING

Actively manage parking to support business vitality and balance the need for driving access with traffic congestion reductions

Parking is an essential part of daily life for most Newtonians and Newton-based businesses, but Newton has evolved more quickly than its parking management practices. The more parking there is, the more people are given an incentive to drive and broadly expanding the amount of land devoted to parking is not in line with the City's transportation vision or Newton's 'Garden City' character. The City can meet its goals of keeping congestion in check and reducing greenhouse gas emissions while also providing convenient parking for drivers by managing parking resources.

Today's parking issues can only be addressed through a comprehensive program that balances and satisfies the demands of Newton's various users. Newton recently completed a parking strategy for Newton Centre that has spawned several possible solutions. Adjusted and expanded to other villages and areas of high parking utilization, the City can enhance business access, accommodate commuters and employees, and protect residential neighborhoods in a simple, fair, and responsible manner which makes where to park clear, relieving frustrations, and focusing Newtonians on the places and destinations they are trying to reach, rather than why they can't find a parking space.



Strategies include:

» **Create Availability –** make finding parking clear and easy

» **Plan for the Future of Parking –** prepare for shifts in parking behavior and technology

Full Size Map available on page 2-40

CONGESTION REDUCTION

Smart transportation, planning, and land use decisions will enable better travel decisions

Highly developed urban areas like metro-Boston cannot increase the width of roads for more vehicles without taking land from property owners and/or changing the character of neighborhoods. This is especially true in Newton, where widening single lane roads would undermine the historic feel of streets that are lined with beautiful homes and neighborhood businesses.

Additionally, as was shown during much of the 20th Century, widening and building new roads actually *increases*, not decreases traffic. This is due to a "build it and they will come" phenomenon that has been documented in countless cities across the country. Fortunately, cities such as Newton that did not succumb to the road building craze of the 20th Century, have avoided a lot of the traffic that plagues newer congested suburban cities. Today, Newton is seen as a model city.

This is not to say traffic congestion does not exist. It does, even on Newton's small charming streets and thoroughfares. The key to reducing congestion without building new roads is to learn from our own success. Newtonians already walk, bike, and take public transit at some of the highest rates in the country, removing tens of thousands of car trips every day. They make the roads better for all of us. Collectively, they mean fewer people ahead of you at a stop light, less time spent looking for a parking space, and shorter times to your destinations when you do drive. Promoting these other modes is our most cost-effective congestion strategy possible.

Strategies include:

» **Create Smart Developments –** ensure that new development does not lead to new congestion

» **Manage Travel Demand –** embrace measures that reduce the need to drive

PROCESSES AND PRIORITIZATION

Establish vision-oriented procedures and priorities

Newton-in-Motion is intended to provide a framework for future actions and investments related to transportation. There are a number of specific recommended strategies related to the behind-the-scenes work of the City's departments and transportation-decision making bodies in order to support all of the other strategies.

Putting the Newton-in-Motion strategies into effect will be the ongoing project of the Transportation Division of the Public Works Department with support from the Planning Department as well as other City departments and partner agencies. Tracking changes in the dynamic transportation system and implementing the proposed strategies to achieve Newton's vision requires deliberate changes in how transportation projects, programs, and policies are developed, prioritized, and implemented.

Strategies include:

- **Match Processes With the Vision –** coordinate all transportation policy and investment processes with the vision
- **Secure Sufficient Resources –** ensure funding and staffing are adequate
- **Establish Data-Driven Prioritization –** institute routine data collection and use analysis to inform decisions
- **Explore Emerging Solutions –** seek flexible and tailored solutions and experiment with new ideas in small-scale projects

MAPPING STRATEGIES

As previewed in this summary, each chapter includes a collection of strategies, and each of those comprises a number of specific actions that will be tested, tried, and implemented over the next 25 years and beyond. These strategies and associated actions are mapped below by chapter. There is no corresponding map for Reducing Congestion since the strategies in that chapter are citywide efforts and/or policies that could be utilized in any location across the city.

IMPLEMENTING ACTION

Not all strategies can be executed at the same time, but the City has developed an initial implementation plan along with an associated capital improvement plan for the next five years. Every strategy implemented is expected to be monitored, adjusted, and improved over time. This evolutionary "living document" will ensure that Newton is moving toward its transportation vision and keeping true to its stated transportation values for years to come.

Credit: Sasaki

2017 CAPITAL IMPROVEMENT PLAN

The following projects have already been put into the City's 2017 Capital Improvement Plan, which will be carried out over the next 1-5 years and updated annually. These reflect many of the short-term actions within the full implementation plan for Newton-In-Motion. The priorities of the 2017 CIP reflect a commitment to implementing the top strategies within Newton-in-Motion as soon as possible.

Project Title	Project Description
Citywide Signalization Upgrades	Improve upon safety, traffic flow, reduce congestion, meet Americans with Disabilities Act (ADA) Compliance, and install accessible pedestrian signals (APS)
Street Paving & Marking Maintenance	Necessary pavement maintenance, Chestnut, Lincoln, Linwood, Aspen, Hawthorne, Longfellow
Street Paving & Marking Maintenance	Necessary pavement maintenance, Dedham, Highland, Albemarle, Fuller, Vine, Pembroke, Marlboro, Arlington, Bishopsgate, Prince, Allertown
Street Paving & Marking Maintenance	Necessary pavement maintenance, Cherry, California, Albemarle, Warwick, High, Woodcliff, Langdon
Street Paving & Marking Maintenance	Necessary pavement maintenance, Nevada, Prescott, Auburn, Lowell
Street Paving & Markings Upgrades	Necessary pavement maintenance and new bike markings, Watertown, Walnut, Washington, Centre, Winchester
Walnut Street (Homer Street to Route 9) - Final Design	Eliminate deteriorated roadway condition, enhance public safety, and new bike markings. Arterial minor. Federal funds for construction only. Design funded by City.
Elliot St. Bridge	Reconstruct bridge in collaborative effort with the Town of Needham
Commonwealth Avenue - Preliminary and Final Design	Eliminate deteriorated roadway condition, improve public safety, reduce lane width, add turn pockets, add bike markings. Arterial minor.
Washington Street - Preliminary and Final Design	Eliminate deteriorated roadway condition, enhance public safety, and new bike markings. Arterial minor. Federal funds for construction only. Design funded by City.

Project Title	Project Description
Comm Ave Improvements & Markings	Paving and curb changes to accommodate new bike facility
Beacon & Hammond Pond Improvements	Eliminate double-left and integrate bike markings
Jefferson Bike Boulevard	Bike connection to river paths on Jefferson & Maple
Needham Street Markings	Installing bike markings
Beacon Street Markings	Lane diet and bike markings
Grove Street Markings	Bike markings
Off-Street Multi-Use Path	Grading, paving, signing, lighting on Cochituate Aqueduct, Chestnut to Walnut
Newton Corner Safety Improvements	Intersection improvements for public safety including curb extensions, walk signals, signing
Newton Centre Safety Improvements	Intersection improvements for public safety including curb extensions, walk signals, signing
Newtonville Safety Improvements	Intersection improvements for public safety including curb extensions, walk signals, signing
Newton Shuttle System	Three 30pax buses
Wells Ave Walk to Transit	Improved walking path between Wells Ave and Walsh Road
Chestnut Hill Walk to Transit	Improved sidewalks and path between mall & MBTA station
Greenway Extension	New path between existing greenway & Rt. 9 ped bridge to Eliot MBTA station

CIP PRIORITIES

1. Roads Program Implementation
2. Signal Optimization Effort
3. Smart Parking Management
4. Shared Transit Initiative
5. New Bike Share & Bike Facilities
6. Village Enhancements
7. Corridor Improvements
8. Vision Zero Policy
9. Transportation Demand Management Ordinance
10. Advocate for better MBTA Service
11. Street Design Guide

PRIORITY ACTIONS

Priority projects to build on the Transportation Strategy, supported by additional actions

	Priority Action & Location	Status	Strategy Goals Served	Project Description	Anticipated Timeline (process begins | implementation begins)
1	Roads Program *Citywide*	Begin implementation	SAFE SMART ACCESSIBLE LIVABLE	Improve Pavement Quality Upgrade Signals	Oct. 2016 | ongoing
2	Village Enhancements *West Newton Square*	Detail Design	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Enhance Safety Improve Visitor Experience	June 2016 | Spring 2017
3	Corridor Improvements *Needham St & Winchester St*	Detail Design	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Enhance Safety Improve Visitor Experience	ongoing | Summer 2017*
4	Village Enhancements *Walnut Street, Newtonville*	Concept Design	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Enhance Safety Improve Visitor Experience	January 2017 | Spring 2018
5	Corridor Improvements *Washington Street*	Concept Design	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Enhance Safety Improve Visitor Experience	Summer 2017 | Spring 2019
6	Village Enhancements *Newton Corner*	Concept Design	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Enhance Safety Improve Visitor Experience	Winter 2018 | TBD*
7	Bike Share *Locations TBD*	Planning	SAFE SMART ACCESSIBLE LIVABLE SUSTAINABLE	Offer One-way Biking Option	Oct. 2016 | Summer 2018
8	Bike Facilities *Citywide*	Planning	SAFE ACCESSIBLE LIVABLE SUSTAINABLE	Add Bike Lanes and Markings Add Bike Racks in Village Centers	Fall 2017 | TBD
9	Shared Shuttle Service *Locations TBD*	Planning	SMART ACCESSIBLE LIVABLE SUSTAINABLE	Establish Public-Private Partnership to bring new shuttle service to Newton	Oct. 2016 | Summer 2018
10	Smart Parking Technology *Austin Street Parking Lot*	Begin Implementation	SMART LIVABLE	Replace Meters with Central Parking Kiosks	Winter 2017 | Spring 2017
11	Village Parking Plan(s) *Newton Centre***	Begin Implementation	SMART ACCESSIBLE LIVABLE	Free up Front-Door Parking Optimize Parking Resources	Fall 2015 | TBD

* Project Timeline dependent on coordination with MassDOT ** Newton Centre Parking Strategy outlined a number of village parking plan options, many of which can be carried forward to other villages and business areas as well

MEASURING SUCCESS

In order to ensure that this living document continues to remain relevant as a guide for policies and actions, a set of easily-monitored metrics is necessary that can track the effectiveness of the many proposed strategies at accomplishing Newtonians' vision for their transportation future. The City is making a commitment to track progress towards each of the City's transportation values so that Newtonians can easily determine the effectiveness of the Newton-in-Motion strategies and advocate for additional strategies that might meet the community's vision. This process ensures that City staff remain committed to accomplishing Newton's transportation targets through their regular departmental duties, future planning efforts, and annual capital programing.

The measures below are intended to be simple to collect and track at least annually, but additional or replacement measures may be more appropriate over time as long as they reflect the City's values. Some measures will require additional data gathering in order to establish baselines and targets.

FIGURE 2 METRICS USED TO MEASURE PROGRESS

					
THE MEASURES Five primary metrics will measure progress toward each of the five values	**CRASHES** Counts and analysis of collisions to measure progress towards making travel safer	**TRAVEL TIME** Surveys of Newtonians' commutes and other trips to gauge the value of technological improvements to signals, buses, etc.	**TRIPS** Volumes of use of every mode to track shifts from driving to other modes	**NEIGHBORHOOD VITALITY** Regular surveys of Newtonians' satisfaction with the quality of their travels	**VEHICLE OWNERSHIP** Recording the amount of cars and miles traveled to track greenhouse gas reductions
THE BASELINE Where the city stands today:	1,451*	26 minutes†	73% Driving 13% Transit 4% Walking 1% Biking ‡	TBD	1.3 cars per household**
THE TARGETS:	0	<26 minutes	53% Driving 23% Transit 9% Walking 6% Biking	TBD	1 car per household

*Crash statistics reflect a five-year average of data reported to MassDOT from 2010 through 2015 and include automobile, pedestrian, and bicyclist crashes.
†Travel time is the average time, in minutes, it takes for a Newton resident to commute to work. Data on Newton residents' commuters are from U.S. Census Bureau, 2009-2013 5-Year American Community Survey.
‡ Commuting mode share percentages come from U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates of Newton residents. Anecdotal reports suggest significantly more bike use for non-commute trips. Data collection for non-commute trips is needed.
**Vehicle ownership per household is determined by the vehicles available to Newton residents and the number of households in Newton. Data on Newton residents' vehicle ownership are from U.S. Census Bureau, 2010-2014 American Community Survey 5-Year Estimates.

2 THE STRATEGY

a comprehensive guide for how Newton can achieve a more equitable, economically and environmentally sustainable multimodal transportation system

INTRODUCTION

At the core of Newton-In-Motion is a set of strategies designed to address long-standing complaints about growing congestion by making it much safer and easier for the growing population of Newtonians seeking to walk, bike, and take transit to leave their cars at home. While Newton may not be able to build its way out of congestion with more roads, it can successfully reduce existing congestion by attracting more people to other modes. Newton-In-Motion's strategies are grouped in five areas: Safe Travel, Transit & Shared Mobility, Active Transportation, Parking, and Congestion Reduction. Each strategy is evaluated against Newton-In-Motion's five values from the community's vision: Safe, Smart, Accessible, Livable, and Sustainable. Knowing that some strategies can have greater impact on certain values more than others will be important for prioritizing actions in future years, as not all actions can be executed at the same time. The City will monitor its targets over time and focus on strategies that address any values which are being underserved.

Every strategy description frames a common need and objective for all of its actions so that a clear causal connection can be made in the future between changes that are implemented and the problems they are intended to solve. This allows strategies and actions to be revised, replaced, or supplemented over time without losing sight of the broad community input and analysis that framed the need and generated these initial strategies. The end of this chapter outlines an initial implementation plan that is based on the five values, but this plan is intended to be a living document that is revisited at least annually to monitor progress, accommodate appropriate changes, and react to evolving community travel needs.

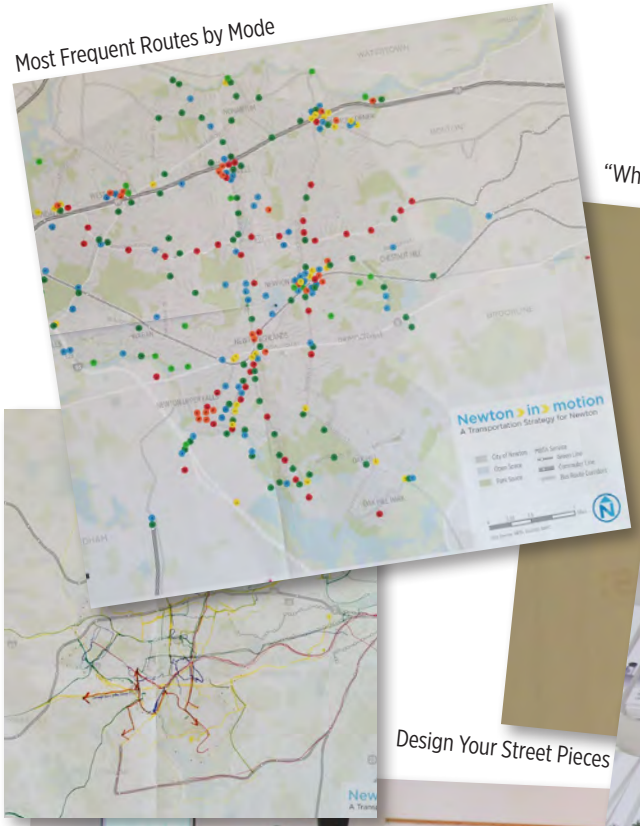
All of the strategies described here are well within the capacity of the City of Newton and its local and regional partners to achieve, given sufficient time, resources, and commitment. They are grounded in best practices applied to Newton's unique context and most have already been tested in various forms within Newton or in nearby communities. Undertaking all of them at once would be nearly impossible, so it is expected that only one or two actions in each group might be carried out at once, with other actions following over time, and not all strategies may be able to be active at the same time due to natural staffing and budgeting limitations. However, the implementation plan's intent remains that Newton will always be working in every group of strategies to advance Newton-In-Motion's vision.

FIGURE 3 FIVE CORE VALUES KEY

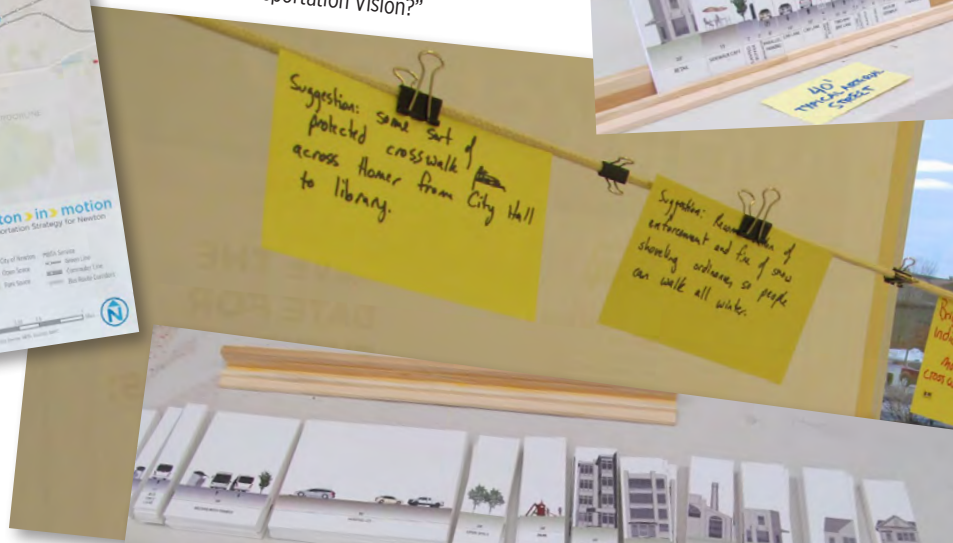
Throughout this document, each strategy is rated on how closely it supports each of the five core values:

(A fully colored-in circle means fully supported)

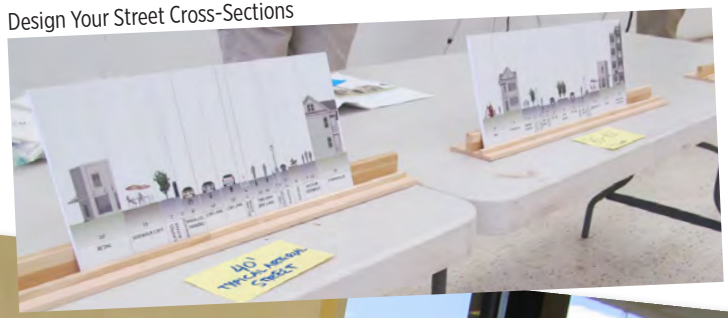
Most Frequent Routes by Mode



"What's Your Transportation Vision?"



Design Your Street Cross-Sections



Design Your Street Pieces

Project Overview Presentations

Sign-In and Sign-Up

SAFE TRAVEL

SAFE TRAVEL

The City of Newton's primary role in any transportation-related decision is to first ensure the safety of the public. With an average combined total of 1,451 vehicular, bicycle, and pedestrian crashes per year over the past five years, Newton can and must do better to prevent these occurrences, particularly with respect to people who walk and bike, who suffer disproportionately in terms of serious injuries and fatalities.

In addition to the specific actions outlined in this section, it is recommended that Newton adopt a "Vision Zero" policy and approach (see box) with a goal of preventing all traffic-related injuries and fatalities. Newton would join local communities such as Boston and Cambridge in adopting and pursuing a "Vision Zero" approach to transportation.

FIGURE 4 HIGHER SPEEDS RESULT IN HIGHER LIKELIHOOD OF FATALITY AND SEVERE INJURY IN CRASHES

Vision Zero was introduced by the Swedish Parliament in 1997 to seek to eliminate traffic fatalities and serious injuries by the year 2020. Now there is a network of 20 American cities and even more around the world working toward Vision Zero goals. Among the Vision Zero core principles are that traffic deaths and injuries are preventable, safety is the primary consideration in transportation decision-making, and traffic safety solutions must be addressed holistically.

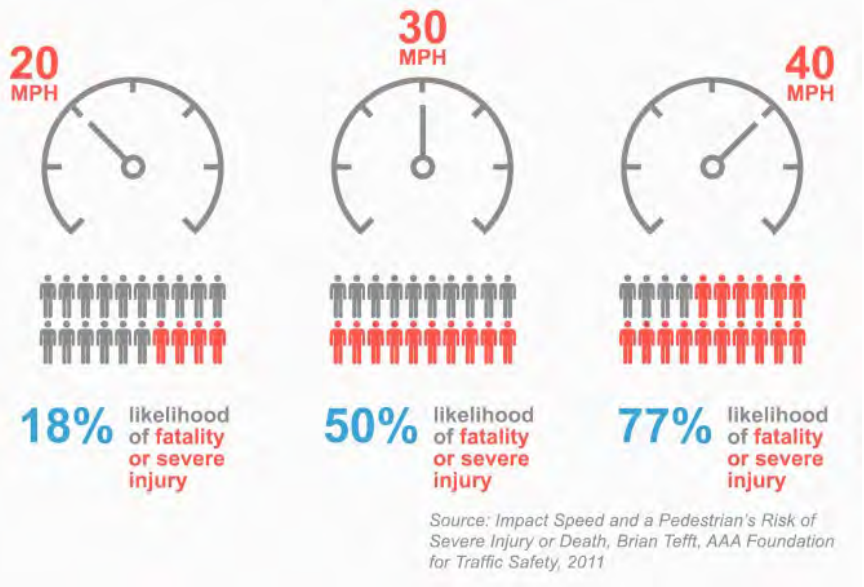
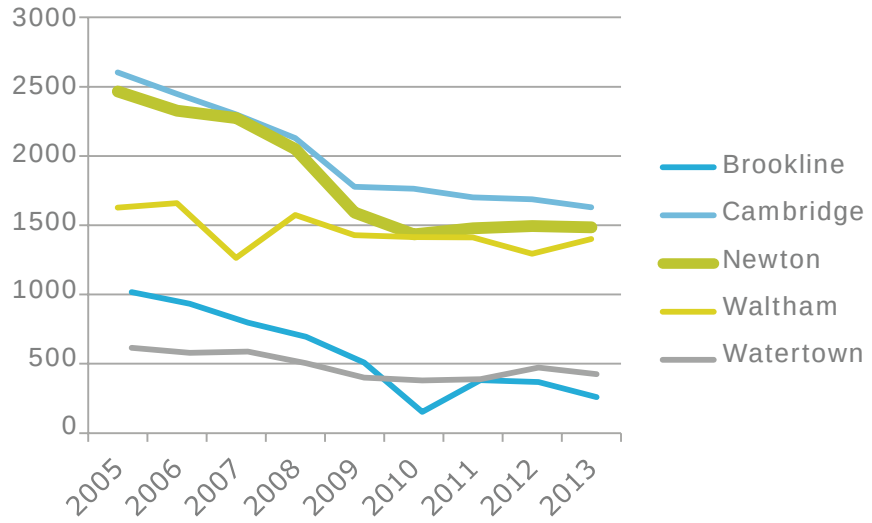


FIGURE 5 MOTOR VEHICLE-RELATED CRASHES PER THOUSAND PEOPLE



Source: Collision data from Massachusetts Department of Transportation Crash Portal (http://massdot.state.ma.us/crashportal)

Population data from U.S. Census Bureau (http://www.census.gov/)*

*Except Brookline 2005-2006 population data, from Massachusetts Department of Health and Human Services (http://www.mass.gov/eohhs/docs/dph/research-epi/city-town-pop-estimates06.pdf)

NEEDS ASSESSMENT

While Newton has made progress in reducing the overall crashes involving vehicles, pedestrians and bicyclists, it still has certain crash hot spots like Newton Corner, Newton Centre, West Newton, Washington Street, and along Route 9.

Specific safety concerns raised by the community included:

- Poorly designed and functioning intersections, especially for people who walk and bike
- High rates of speed on certain roads
- Poor designation of bike lanes, travel lanes, and turn lanes
- Lack of education for rules of the road

FIGURE 6 CRASHES INVOLVING WALKERS AND BIKERS, 2008-2013

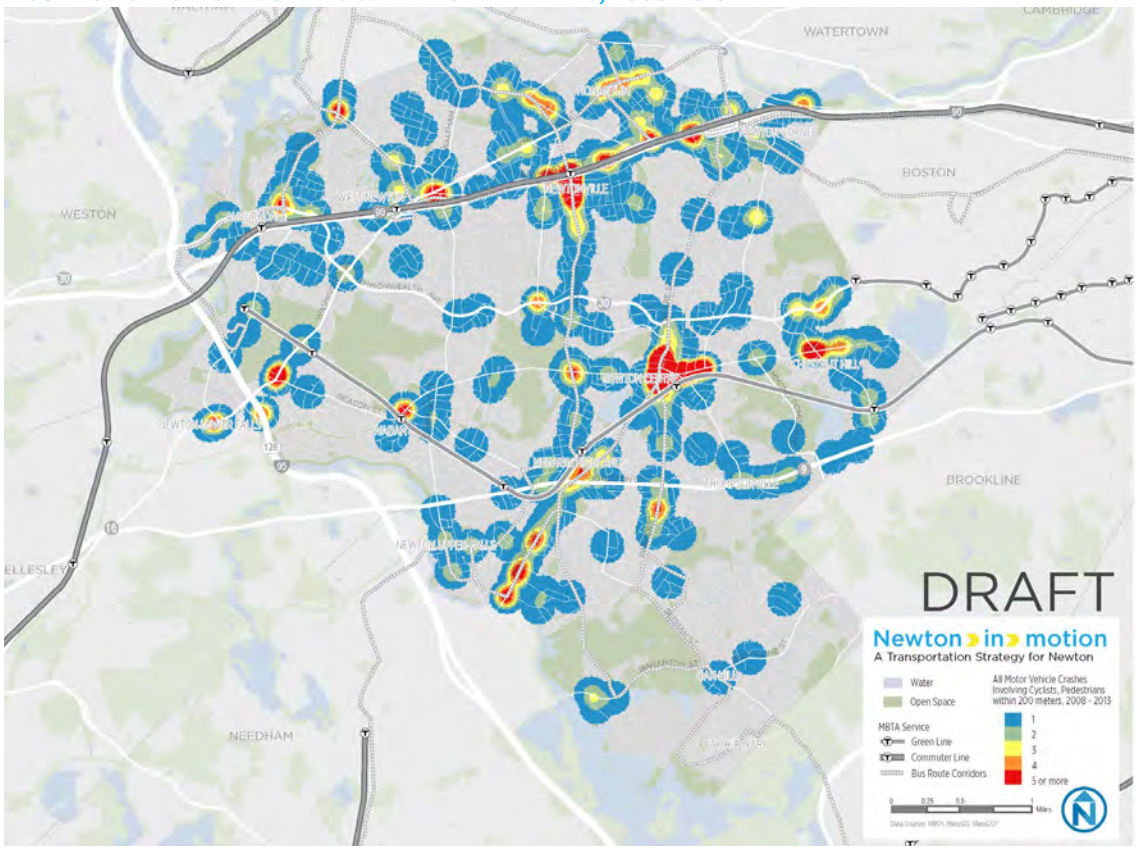
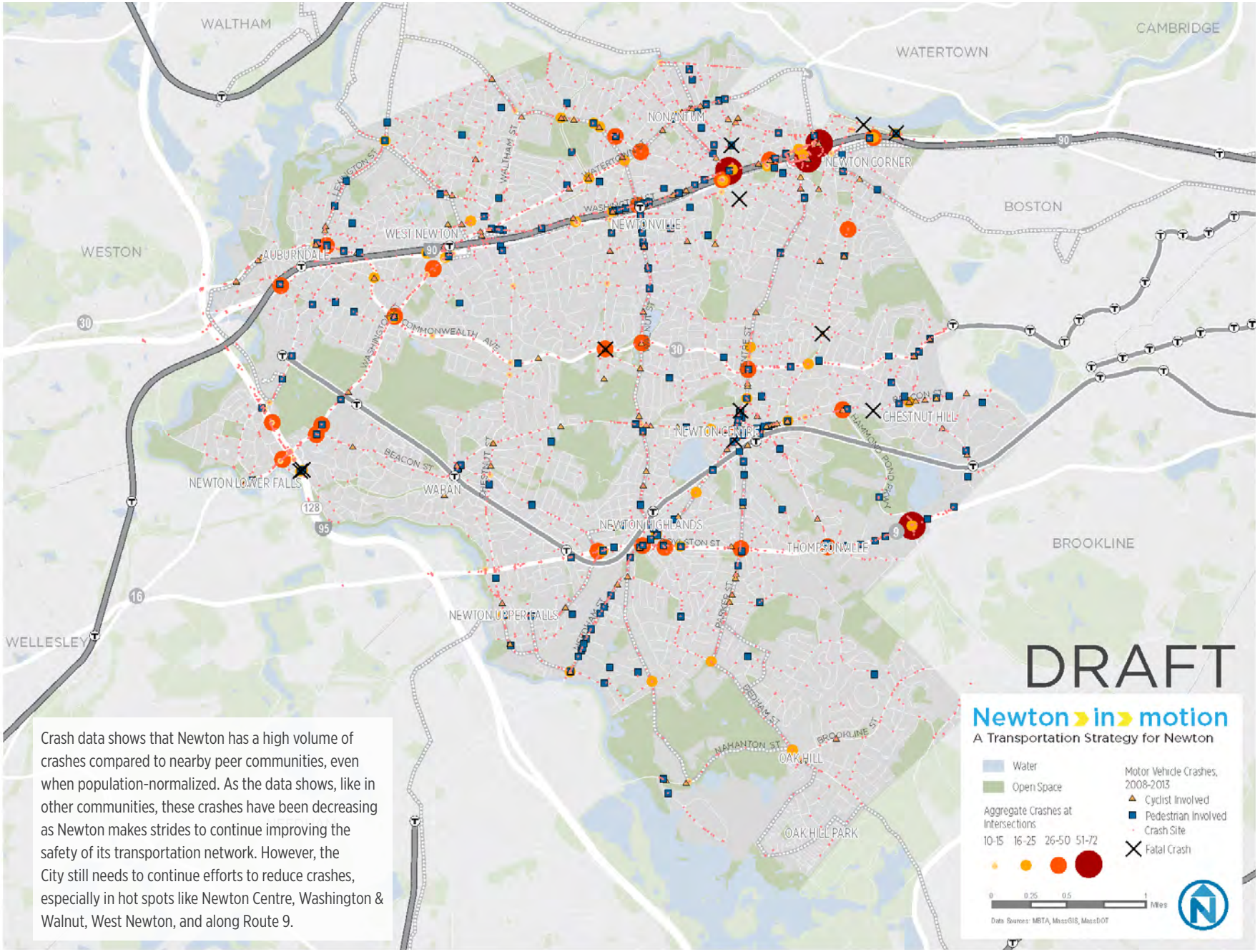


FIGURE 7 MOTOR VEHICLE CRASHES, 2008-2013



1.1 Reduce Crashes Citywide

Investigate, study, and eliminate the sources of crashes that cause fatalities and injuries

WHY

Newton should strive to eliminate physical factors which contribute to crashes

Traditional road design has assumed that making roads wide to increase sight-lines would increase safety, but the opposite has proven to be true as wider roads statistically lead to greater crashes because they encourage drivers to take turns at higher speeds.

Newton has adopted a "Complete Streets" approach to road design, which accounts for the safety of walkers, bicyclists, and drivers in a holistic manner.

HOW

Develop both pro-active and responsive approaches to reduce crashes in Newton

The City of Newton must always be committed to the safety of the traveling public, which means responding with new and better approaches to eliminate collisions.

Action 1.1A: Adopt a Vision Zero policy
Newton should adopt a Vision Zero policy of proactively redesigning roadways for safety and—in cases where crashes have occurred—systematically addressing the factors which have led to the incident.

Action 1.1B: Create a Complete Streets design guide
Newton should create a "Design Guide" for Newton's network of streets to have a ready set of safety principles to apply as appropriate.

Action 1.1C: Evaluate city speed limits
The Massachusetts Legislature recently ceded its authority to establish speed limits to individual Cities and Towns. Newton should undertake a comprehensive analysis of its speed limits and recommend changes.

Action 1.1D: Undertake educational campaigns to promote safety
Newton should encourage, promote and undertake educational campaigns aimed at motorists, walkers, and bicyclists to help each better understand and obey the rules of the road.

Action 1.1E: Examine existing truck routes
Newton should re-examine its existing network of truck routes to determine the most appropriate and safest routes for trucks to minimize conflicts with walkers and bicyclists.

1.2 Improve Safety at Intersections

Focus on Newton's primary conflict and collision points

WHY

Conflicts and crashes disproportionately happen at intersections

People in vehicles, on transit, on bikes, and those walking on the sidewalks all cross paths and/or engage in turning movements at intersections. Potential conflict is always present. Despite being a relatively small portion of any roadway system, intersections see a high proportion of total crashes, fatalities, and serious injuries. Nationally, crashes at intersections make up 39% of total crashes leading to 27% of total fatalities and 23% of serious injuries. Unfortunately, 21% of intersection fatalities are people on foot or on bicycle[1]—highly disproportionate with the low percentage of total intersection traffic that walkers and bicyclists typically represent.

Newton's intersections are not friendly to those walking or bicycling. Many have long crossing distances and long crossing wait times, which leads to jaywalking. Meanwhile, bikes are currently not accounted for in Newton's intersections.

1 Federal Highway Administration Strategic Intersection Safety Program Guide (Publication No. FHWA-SA-09-004)

HOW

Design safer intersections, considering engineering and human behavior

Many proven treatments can bring Newton's intersection safety into the 21st Century.

Action 1.2A: Adjust turning radii standards

Reducing the turning radius—creating a more sharply-angled turn and more sidewalk space at the intersection—minimizes crossing distances for those walking, lowers driving speeds at corners, and gives right-turning vehicles a more direct view of potential conflicts with those walking or bicycling.

Action 1.2B: Shorten traffic signal cycle times and minimize walking delay

Shorter signal times move the same number of cars in the same amount of time but with more frequency, making the wait time shorter for all intersection users and reducing the likelihood of jaywalking. The use of concurrent walk signal phases on recall (i.e. getting a "walk" phase parallel to traffic automatically at every signal cycle) instead of pedestrian-activated walk phases further reduces delay for those walking and driving. Accessible pedestrian signals (APS) with audible tones and/or crossing directions clarify walk phases for people who are blind or have low-vision.

Action 1.2C: Adopt & implement No Right Turn on Red (NRTOR) policy

A large proportion of right-turn-on-red crashes involve a driver looking left for a sufficient gap in vehicle traffic and striking an unseen walker or bicyclist on their right. The City can create a process for evaluating appropriate locations to eliminate right turns on red.

Action 1.2D: Align wheelchair accessible curb ramps with path of travel

Wheelchair accessible ramps have historically been placed at the "apex" of the curve of an intersection. These are challenging for blind and low-vision pedestrians to navigate and should be reconstructed in line with the path of travel along the sidewalk, letting walkers down directly within a crosswalk. Reconstruction should be ADA-compliant, with ramps graded so they are easy to navigate and prevent areas that collect water, debris, and ice.

Action 1.2E: Paint bike crossings green

Brightly-colored bike treatments through appropriate intersections increase visibility of potential conflict areas and raise awareness of bicyclists. Studies of painted bike crossings in intersections confirm bicyclist comfort is enhanced and motorists yield more often.

1.3 Re-Envision Major Traffic Corridors

Ensure major streets serve as safe connectors for travelers using any mode

WHY

Major traffic corridors offer tremendous opportunities to accommodate all modes of travel with safe redesigns

Newton's major traffic corridors (Washington Street, Needham Street, Route 9) were designed with vehicle capacity and speed in mind. These original designs often conflict with today's desire for more walk- and bike-friendly and safe roadways.

Specific examples of corridors where re-envisioning can occur include:

» **Needham Street –** scheduled to be redesigned as part of the Massachusetts DOT 2018 Transportation Improvements Program

» **Washington Street –** the subject of a previous study to introduce bike lanes for the entire stretch from West Newton to Newton Corner

» **Newton Corner –** the existing traffic circle pattern operates poorly for all modes of travel

Credit: Sasaki

HOW

Consider needs of all users of the corridor, with an emphasis on safety

Improving safety on major arterials requires significant planning, design, and construction effort as well as significant funding. Newton's corridor-level safety programs must be programmed in the Capital Improvement Program and submitted for State and Federal funding. Due to the length of time associated with such larger investments, shorter-term pilots and smaller interventions should be developed to improve safety as soon as possible.

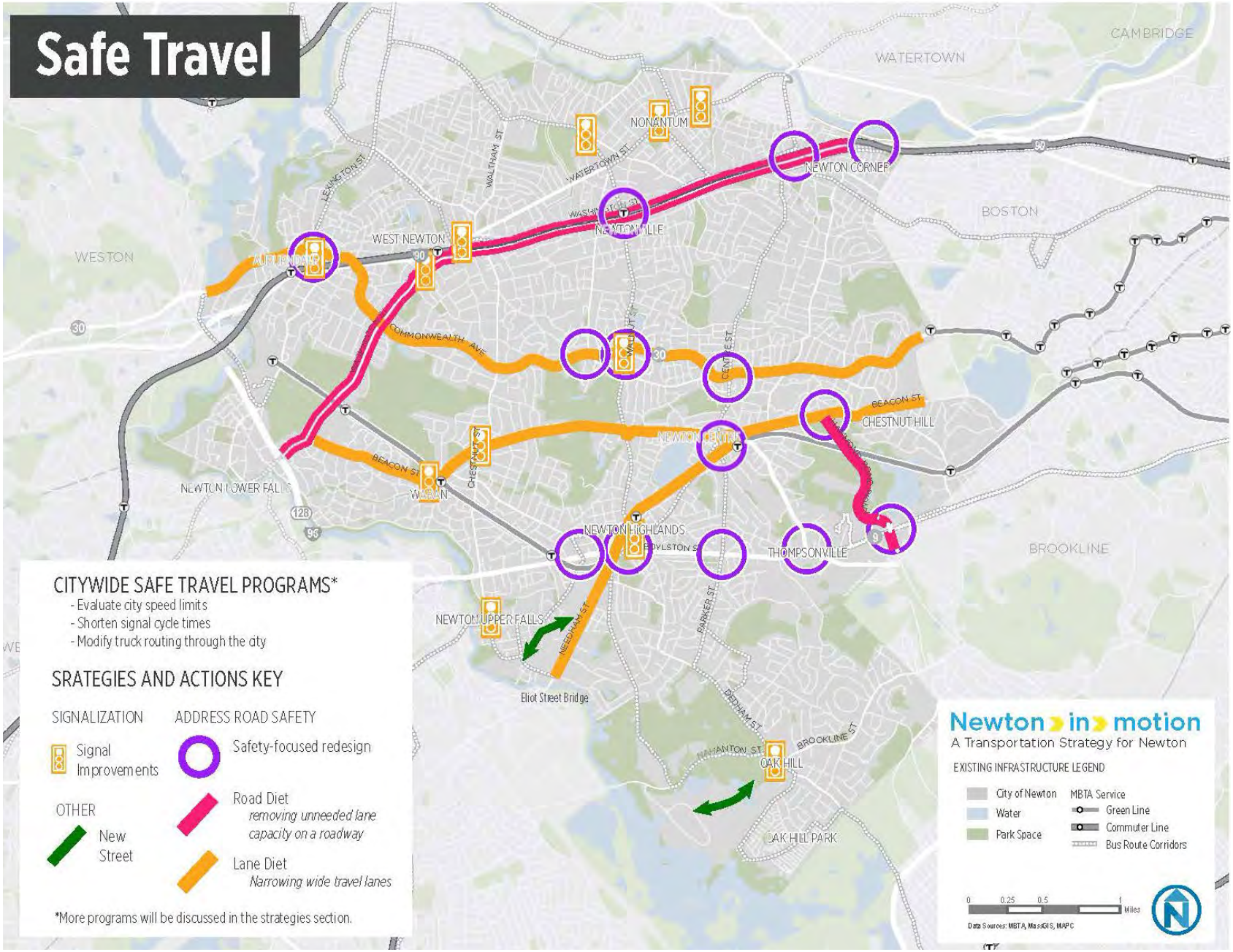
Action 1.3A: Redesign roads to accommodate all travel modes

Reallocating space along major traffic corridors with coordinated traffic signals, narrowed travel lanes, shortened crosswalks, and protected bike lanes can have a beneficial effect in terms of overall corridor safety and delay.

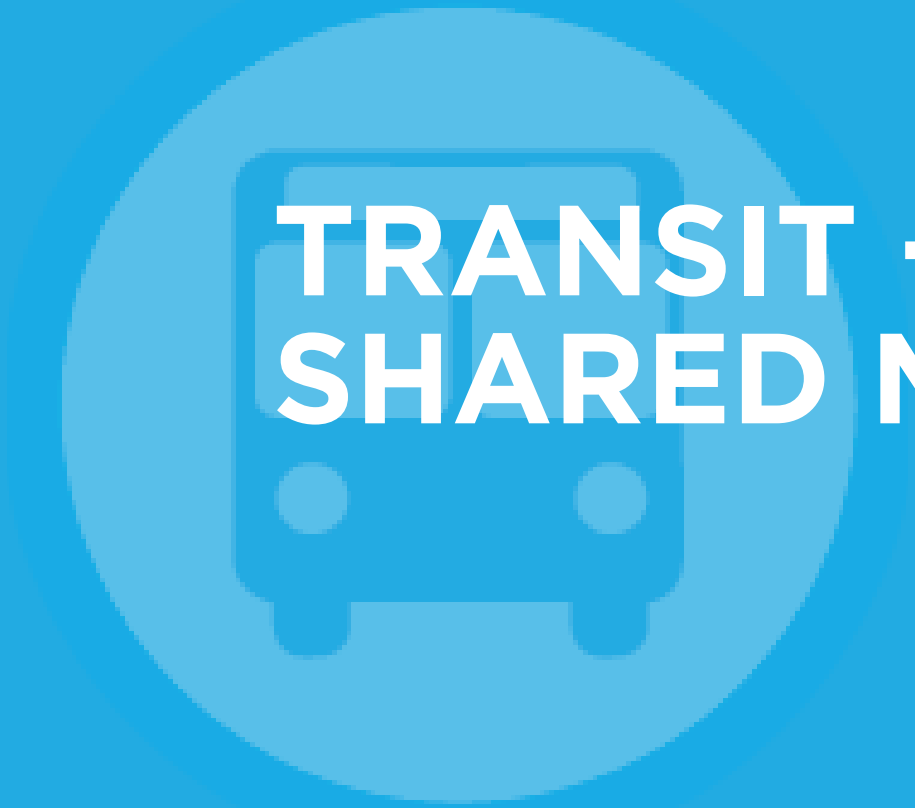
Action 1.3B: Create better crossings along Newton's major traffic corridors

Improving the visibility and safety of the walk and bike crossings along Needham Street, Washington Street, Newton Corner and Route 9 will better serve and connect Newton's residents with their destinations.

FIGURE 8 SAFE TRAVEL STRATEGIES AND ACTIONS



In order to improve transportation safety across the City, Newton should implement a series of place-specific strategies to reduce speeding, shorten delay, and to right-size streets for those who use them. A "road diet" (i.e. removing unneeded lane capacity on a roadway) on Washington Street will reduce speeds and improve intersection performance. A road diet on Hammond Pond Parkway will allow room for needed walking and biking facilities connecting to the trail network. Narrowing wide travel lanes to current standards of 9 ft. - 11 ft. (also known as a "lane diet") will help reduce speeding on major connector roads like Needham Street, Beacon Street, and Commonwealth Avenue. Geometric changes and signal upgrades to improve safety are recommended at a number of intersections, particularly where there are also crash hotspots; for instance, at Washington & Walnut Street, and in the intersections of Newton Corner, Newton Centre, and along Route 9. New street connections off of Needham St and Wells Ave can help improve connectivity, relieve congestion, and reduce the frequency of frustration induced fender-benders.



TRANSIT + SHARED MOBILITY

TRANSIT + SHARED MOBILITY

Newton has a variety of public transit options–bus, light rail, commuter rail, and private shuttles–that connect residents and workers to destinations in Newton and to the regional transit network. The "D" Branch of the Green Line connects Newton to Boston with seven stops at Chestnut Hill, Newton Centre, Newton Highlands, Elliot, Waban, Woodland, and Riverside and the "B" line stops at Boston College. The Framingham/Worcester commuter rail line connects Newton with South Station at Newtonville, West Newton and Auburndale. In addition, Newton is served by five local MBTA bus routes, nine MBTA express bus routes to downtown Boston, and MetroWest Regional Transit Authority bus service. A number of colleges and businesses also run private shuttles for their students and workers in Newton.

Frequency and quality of access varies greatly. The most frequent transit option is the Green Line, which runs every 7 minutes on weekdays. The commuter rail, on the other hand, runs infrequently, and it only stops in Newton at peak morning and evening hours.

Transit systems offer a range of benefits even to those who do not ride regularly or at all. Because Newton's roads are very congested during peak commuting hours, people who drive will benefit when others take transit more frequently. Retail destinations benefit when workers and customers are connected by transit: workers can reliably get to work on time and customer foot traffic increases. People who take transit often save money. Transit is especially important for younger residents, older adults, and entry-level employees who may not have funds to maintain their own car. Relative to driving, taking transit also reduces fossil fuel consumption, and releases significantly less climate-changing and air-quality degrading pollutants per traveler.

The City of Newton has identified a set of medium and long-term transit improvements. Partnerships are essential to implementing these strategies. Included is a mix of upgrades, service additions, development plans, and management programs to be carried out in collaboration with the Commonwealth, the regional transit authority, and the private sector.

NEEDS ASSESSMENT

People decide to take transit for a variety of reasons. The potential or "propensity" for Newtonians to ride transit was mapped using a combination of factors including income, age, race, marital status, and residential density. Newton's existing services do not align very well with areas that need transit service—particularly Nonantum and West Newton.

The experience of riding transit in Newton often gets low marks. Improvements to quality of existing transit service include:

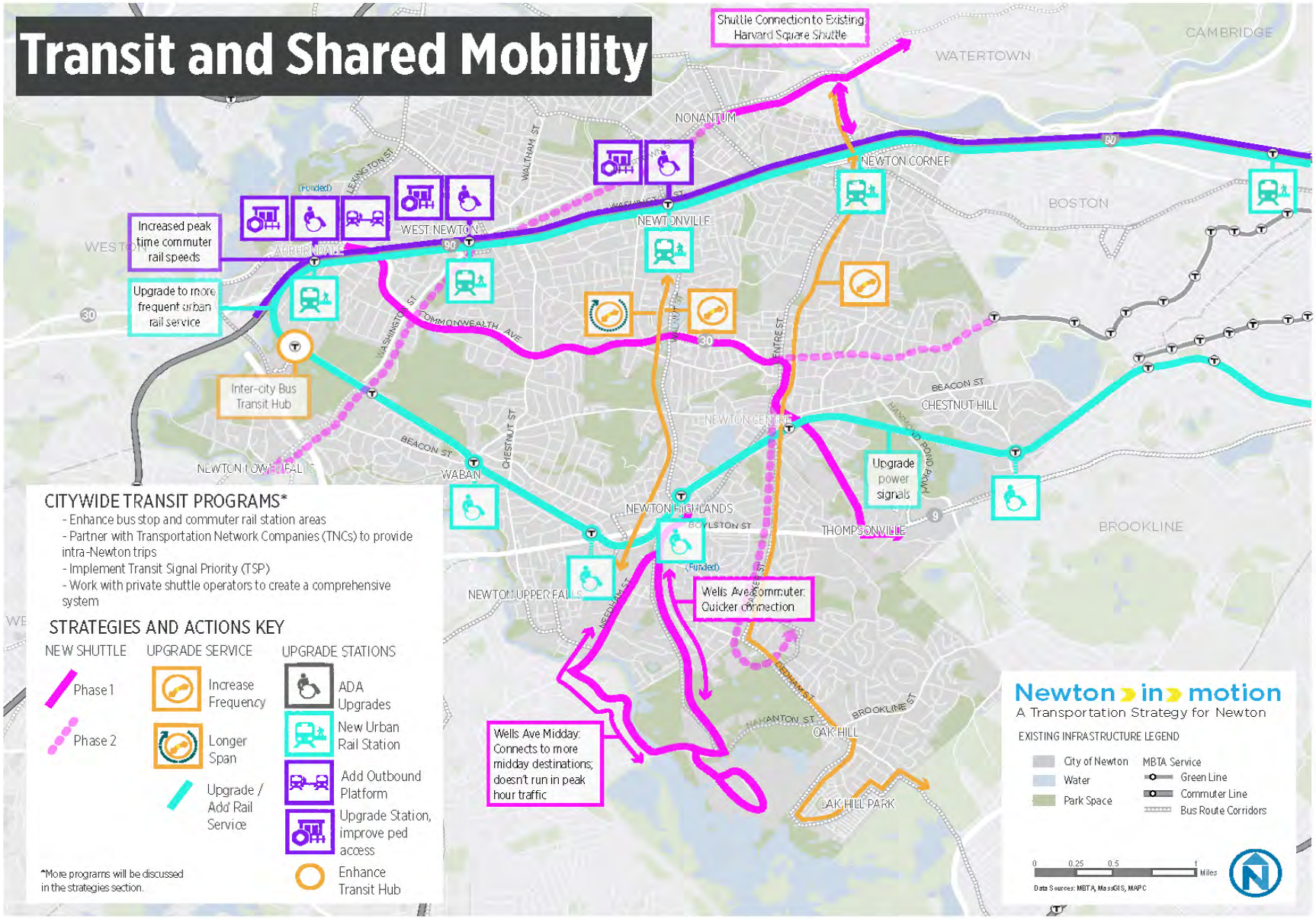
- Make commuter rail platforms wheelchair accessible and install better lighting.
- Increase bus frequency on existing routes;
- Improve comfort and safety of shelters for express buses;

MassDOT and MBTA are necessary partners for many of these and other transit needs identified by stakeholders. The MBTA is currently in the process of "Focus 40", an infrastructure investment plan for the year 2040. MassDOT and MBTA already have long-term plans for necessary Green Line improvements, which include power and signal upgrades, the introduction of three-car trains to relieve overcrowding, implementation of a collision avoidance system to improve safety, and station accessibility upgrades. The MBTA is also evaluating commuter rail service through Newton. Additional express and local commuter rail service in Newton during both peak and off-peak periods would balance the needs of people traveling to and from outer stations and people who remain within Route 128.

To supplement service provided by the MBTA, many employers and institutions have developed their own dedicated shuttle services connecting users with MBTA stations and Park and Ride lots. These strategies get more people riding transit and reduce congestion in Newton and nearby communities, however pick-up and drop-off congestion near Newton's train stations needs better management. The 128 Business Council operates several shuttles, which are open to the public for a low fare, but many others are private—often running closed-door through areas with high transit need. A coordinated network would better serve Newtonians.

Credit: City of Newton

FIGURE 9 TRANSIT POTENTIAL INDEX



Source: MBTA, ACS 2010, 5-year estimates via Census Transportation Planning Products

2.1 Create New Community Transit Options

Work with the public and private sectors to improve mobility within Newton

WHY

Shared community transit makes it easy for residents to get around without driving

More frequent, reliable, and direct shared transportation options will help provide more safe, convenient, and affordable alternatives to driving for more Newtonians.

HOW

Enhance existing public transit services and create new privately-operated, publicly-accessible options

Enhancing the existing network is the most cost-effective transit strategy, as public transit already has a loyal ridership, established routes, and dedicated funding sources. However, private partnerships should be considered to create new options in areas where it is deemed more cost-effective.

Action 2.1A: Incentivize ridership growth

Newton should work with the MAPC, MBTA, and other regional partners to incentivize new riders. Actions include: promoting transit pass programs; improving marketing and information campaigns; and piloting "park and pedal" or other innovative programs.

Action 2.1B: Create intra-Newton shuttles and partner with adjacent municipalities to create a sub-regional transit service

Adding transit shuttles would create fixed and regular connections to regional destinations in adjacent municipalities and provide more options for Newton residents and visitors. Regional partnerships should explore new shuttle routes and consolidating existing routes to make a more robust and useful system.

Action 2.1C: Work with private shuttle operators to create an inclusive and comprehensive system

Newton should seek partnerships with existing shuttle operators like the 128 Business Council and the MetroWest Regional Transit Authority to develop mutually-beneficial collaborations with private employer and institutional shuttles that could improve services for worker and student populations while adding public service to other Newton destinations.

Action 2.1D: Partner with TNCs to provide intra-Newton trips

Transportation network companies (TNCs) such as Uber, Lyft, or Bridj are great shared transit options for short intra-Newton trips that are not well-served by fixed-route options. Financial partnerships with TNCs extend the radius that transit serves at little additional cost to riders.

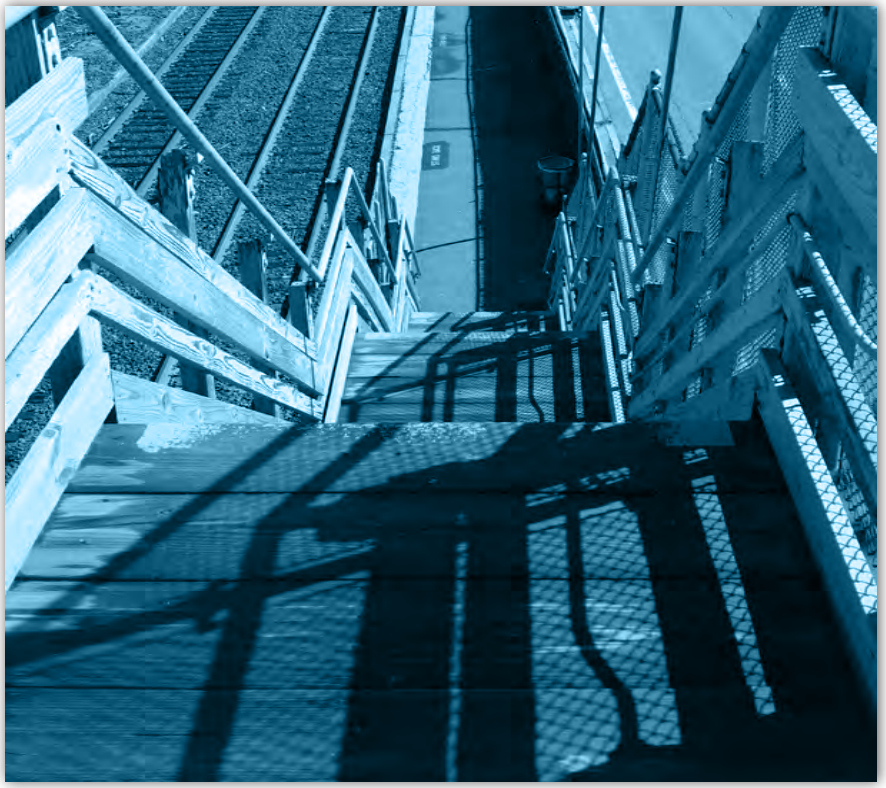
2.2 Make MBTA Transit Better

Work proactively with the MBTA to improve transit frequency, reliability, and comfort

WHY

Small investments in transit's frequency, reliability, and safety can generate higher ridership

When public transit is prioritized through investments in frequency, reliability, and safety, commuters embrace it as a travel option. These investments lead to increased transit ridership, taking cars off the road, easing congestion, and improving air quality. Both transit operators and municipalities play a role in implementing transit improvements.



HOW

Focus on the user experience from the beginning to the end of the trip

Investing in small and low-cost improvements to transit routes, stops, and frequencies can have a considerable effect on the transit-riding experience.

Action 2.2A: Work with MBTA to enhance quality and ADA-compliant access of green line stations, bus stops and commuter rail station areas

Adding dynamic real-time information, better signage and maps, shelters, benches, and Americans with Disabilities Act (ADA) compliant access to bus stops and rail stations improves the experience of riding transit, encouraging higher ridership. Newton and the MBTA can work together to add amenities to bus stops. By classifying each stop's ridership, transfer points, and location, Newton can help prioritize which stops most need enhancement.

Action 2.2B: Implement Transit Signal Priority

Transit Signal Priority is traffic signal technology that can give transit vehicles priority when passing through intersections. This technology reduces wait time at stops and increases on-time performance. When Newton implements Transit Signal Priority, buses traveling through Newton can better maintain efficiencies and reduce delays and bunching, making transit service faster, more predictable, and more reliable.

Action 2.2C: Work with MBTA to provide urban rail service on the commuter rail line

Frequent urban rail service running on the commuter rail line will bring another mode of rapid transit through Newton and into Boston. With new Federal rules enabling smaller subway-like trains, Newton can work with the MBTA and the City of Boston to create a new service on the Framingham/Worcester line that could be as frequent as the Green Line D Branch. Adding this service would allow commuter suburban trains to run through Newton without stopping. This strategy would provide new intra-Newton rail service; those traveling from suburban stops would have a faster and more direct trip; and riders commuting to Boston from Newton would gain more frequent service.

2.3 Enhance Options for Getting to Transit Stops in Newton

Create safe walking, bicycling, and drop-off connections to transit stops

WHY

Improving local walking, bicycling, and other connections to transit improves safety and increases transit ridership

Providing people with safe, clear, and easy connections to and from transit stops and stations helps to encourage multimodal trips involving transit. People may want to ride transit but feel uncomfortable getting to a stop or station. Creating a safe environment for people to arrive at their transit stop or station increases the likelihood people will take transit.

These connections also have significant health and economic benefits. By providing residents with better bicycling and walking infrastructure around transit stops and stations, the City is simultaneously encouraging more active lifestyles among its residents. Making areas more walkable and bike-able also makes them more desirable places to live.

Credit: City of Newton

HOW

Prioritize "first-mile/last-mile" walking and bicycling infrastructure projects

To enhance first-mile/last-mile transit connections, it is imperative to prioritize infrastructure projects that make it safe, clear, and convenient for walkers, bicyclists, and other road users to access transit stops and stations. Shared mobility options can also benefit from and contribute to enhanced safety in first-mile/last-mile connections.

Action 2.3A: Invest in first-mile/last-mile connections to transit

Newton can prioritize adding improved crossings, wayfinding signage, bike infrastructure, sidewalk amenities, drop-off and loading areas, and station amenities to increase safe access for people to get to transit. Disconnected sidewalks, crosswalks, and bike facilities create a barrier for riders.

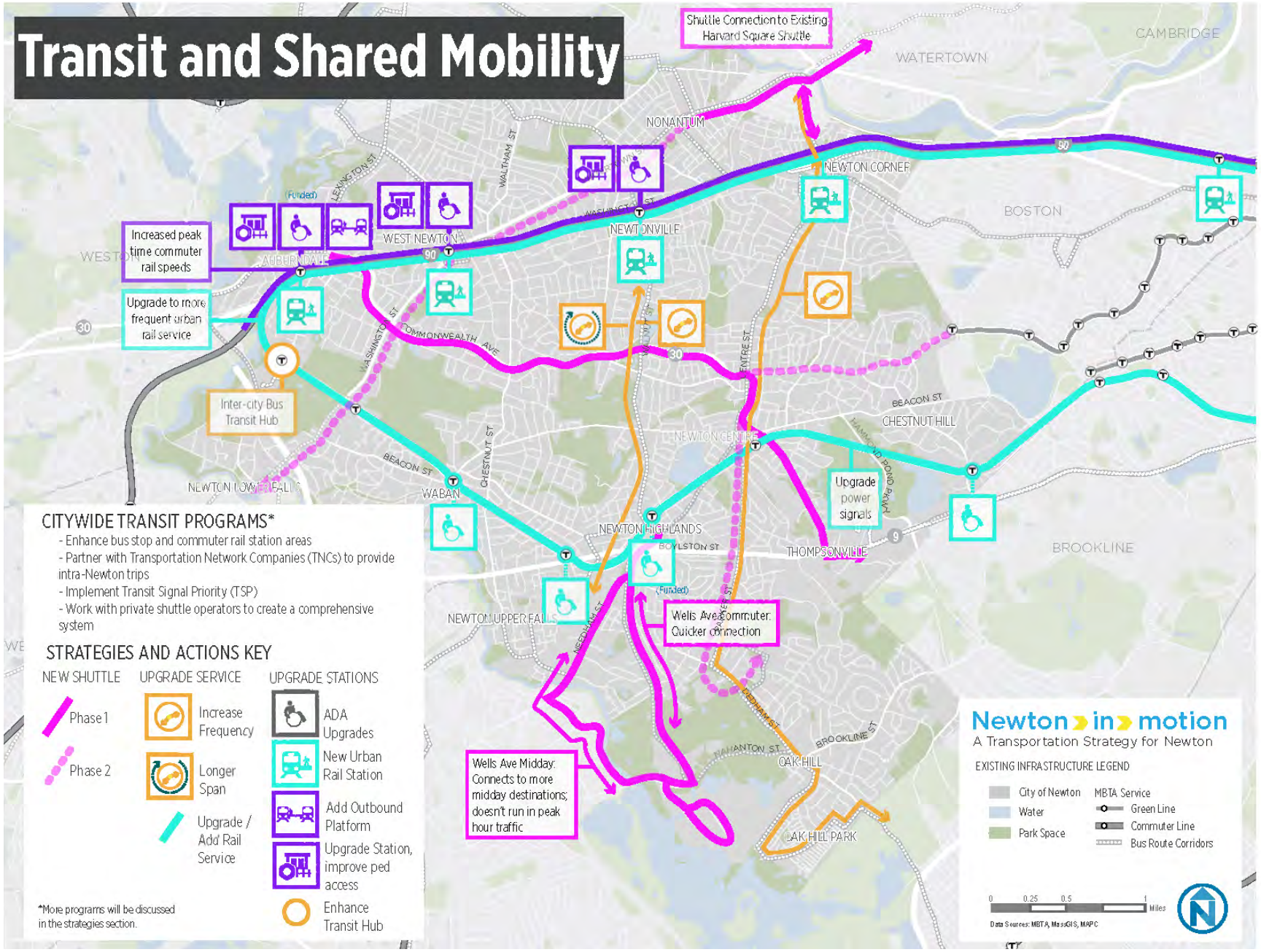
Action 2.3B: Introduce bikeshare

Bikeshare—a borrow-a-bike program like Hubway—offers the option for a one-way trip on a bike that can be picked-up and dropped-off at a shared user station/location. Bike share is useful for last-mile transit connections and other short trips. Newton can advocate for Hubway to expand from Brighton into the city. The City could also pursue installation of a smaller-scale, independently-operated bikeshare program to connect its village centers.

Action 2.3C: Expand carshare

Carshare—a borrow-a-car system such as Zipcar—provides the option for short-term rental within a shared-car fleet for occasional drivers. Newton can advocate for Zipcar expansion further into Newton and add more vehicles at Newton Centre, Waban, West Newton, Riverside, and Newton Corner. More carshare vehicles at transit and commercial hubs would extend the destinations that Newtonians living car-free and car-lite can access.

FIGURE 10 TRANSIT AND SHARED MOBILITY STRATEGIES AND ACTIONS



The City of Newton should work with the MBTA to improve rail service on the Green Line by carrying out the required power, signal, and other upgrades. For the commuter rail, Newton should explore the feasibility of urban rail service to and from Boston. The City should also continue to advocate to the MBTA for accessibility enhancements to train and rail stations. Other priorities include working with the MBTA to upgrade the frequency and the span of service on select bus routes while investing City resources in street improvements—such as transit signal priority—that help MBTA services work better. To accommodate the most common local trip needs, the City should examine the feasibility of partnerships to enhance shared mobility within Newton and nearby communities. Priorities include making a new intra-Newton shuttle, working to allow public access to private shuttle services, and partnering with Transportation Network Companies to create additional community transit services. Finally, stops and stations throughout Newton should be upgraded for accessibility, safety, comfort, and walking and bicycling access—things the City can do on its own or in partnership with the MBTA.

ACTIVE TRANSPORTATION

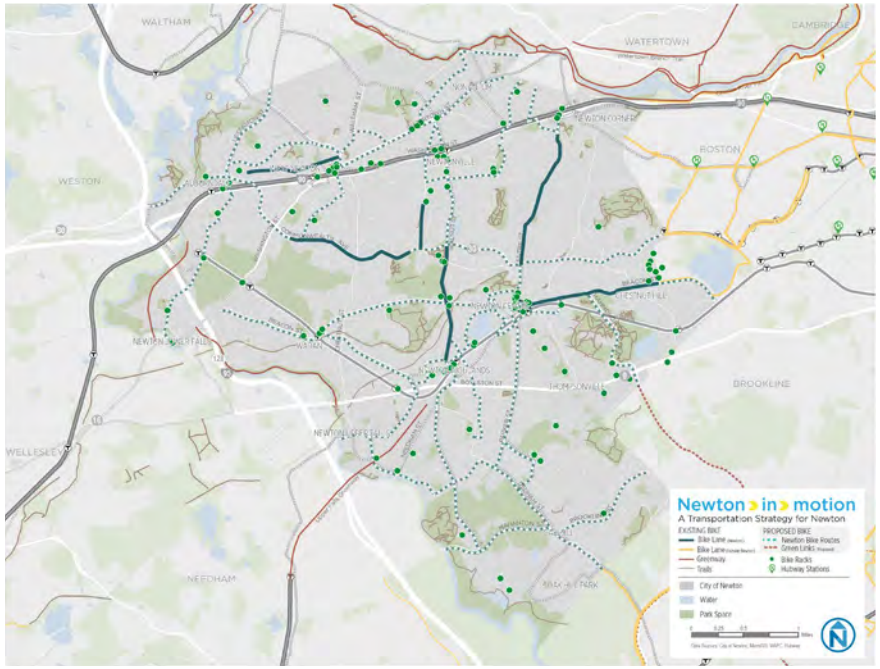
ACTIVE TRANSPORTATION

Newton's historic villages and verdant residential neighborhoods make for high-quality walking and bicycling environments, reflected in high WalkScores in villages like Newtonville and Newton Centre. However, Newton's overall WalkScore is much lower than nearby peer communities with similar transit access, such as Brookline and Watertown. Although Newton is located within an excellent regional network of walk and bike trails, there are many barriers to connecting with it. Newton is obliged under Title II of the Americans with Disabilities Act (ADA) to provide access to municipal services to people with disabilities, including transportation networks. This particularly comes into play when designing walking connections so that they welcome people using wheelchairs and people with low-vision. Fortunately, the city's highly connected road network with a high density of intersections gives travelers many route options and makes a great foundation for Newton to become an award-winning walking and bicycling community.

The City has many opportunities to make walking and bicycling the primary means of travel for thousands of Newtonians. Investments in needed connections to shared paths, better access to villages and MBTA stations, and safer routes to schools can be highly cost-effective compared to the increasing expense of maintaining over-crowded roadways.

A more connected walking and bicycling network would support Newton's sustainability, economic development, social equity, and public health goals, and would help to alleviate congestion and improve the safety of city streets. Newton can be a very comfortable place to walk, but deference to the automobile has diminished the city's walkability. By adjusting its priorities, Newton can dramatically improve its appeal for active lifestyles.

FIGURE 11 EXISTING BIKE FACILITIES



NEEDS ASSESSMENT

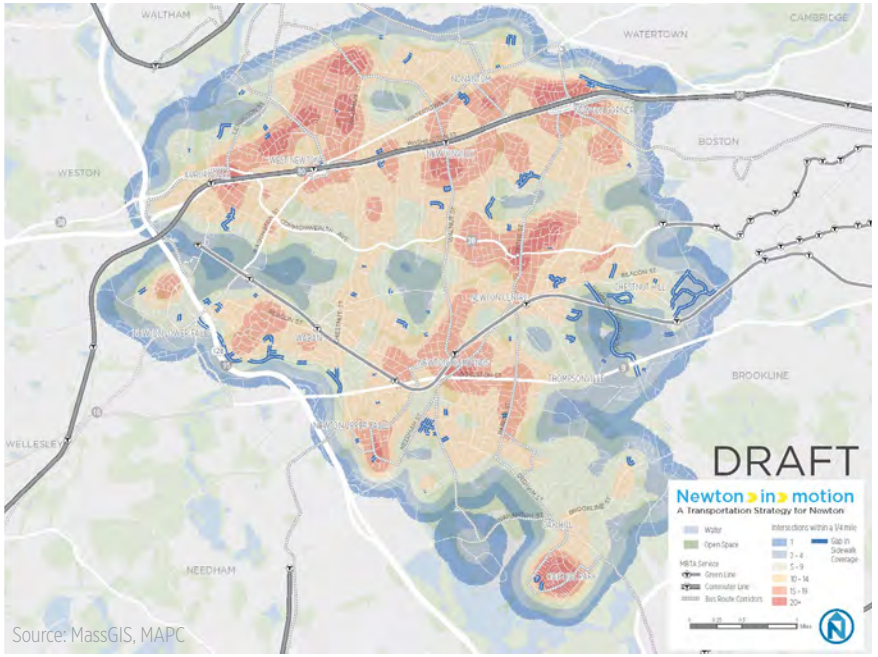
A lower percentage of residents walk and bike in Newton than in most regional peer communities, but villages like Auburndale and Chestnut Hill have a higher percentage of walkers and bicyclists than in the City overall. With the exception of the Riverside T stop, the bicycling mode share near transit is quite low. However, enhancements to bicycle facilities and bike parking at Green Line and commuter rail stations can raise those numbers substantially.

With an active Safe Routes to Schools Task Force, it is no surprise that a higher than average number of students walk to school (at 24%) than in peer communities. However, according to a recent Newton Student Transportation Survey, most children that are driven to school live less than a mile and a half away—the same distance as most who walk and bike to school. Safety enhancements near schools can make the active options more attractive, thereby increasing the well-being of students while reducing congestion at school drop-off zones.

While the City has decent sidewalk coverage, many curb ramps are non-compliant with the Americans with Disabilities Act (ADA) requirements and gaps in safe street crossings pose barriers to people of all abilities hoping to walk to villages, transit, schools, and work. In addition, many residents noted that the sidewalk lighting could be improved to encourage more walking in the evening.

Though Newton has plans for a strong bicycle network, only about eight miles of lanes have been built, and they do not form a connected network within the City. As this network is developed, careful design consideration will be needed so that potential riders are protected along high traffic volume corridors where bike connections are essential.

FIGURE 12 INTERSECTION DENSITY AND GAPS IN SIDEWALK COVERAGE*



Studies have found intersection density to be a key indicator of walkability. With higher intersection densities, shorter block distances and greater walking route options, Newton's village centers are the most walkable areas of Newton.

* Intersection density was measured using the geostatistical technique of Kernel Density Estimation, which estimates the density of intersections within a given search radius. The search radius was 564 meters, yielding a circular area of exactly one square kilometer. Any network intersections containing interstate highways or highway on-ramps were excluded from this analysis, as these roadway features are inaccessible to pedestrians. Sidewalk gaps are based on geospatial data and feedback from the workshop. There may be additional undocumented gaps.

Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

3.1 Embrace Alternatives to Driving

Create a more balanced transportation system for people who walk and bike

WHY

Active transportation provides benefits for individuals, the community, and the environment

Transportation system improvements are often limited by financial, social, and environmental costs and impacts. Promoting and providing active transportation options can be a cost-effective way to address these challenges, while providing additional benefits to the community.

Convenient active transportation provides health benefits to walkers and bicyclists, and creates environmental benefits for the community. A city that provides alternatives to cars is usually better connected in general. Improved connectivity can foster small business development, improve property values, and make the city more livable and friendlier. Well-running transportation alternatives enable young people, the elderly, those with disabilities, and those of lower-income to fully participate in and enjoy their community.

Credit: The Greenway Collective

HOW

Create a coherent active transportation program that promotes facility quality and user education

Coordinate the creation of new active transportation facilities to form a coherent and useful network that is well-signed and incorporates a variety of facility types. Create design standards which include lighting and wayfinding that promotes safety and security, builds awareness of the network's utility, and features Newton's unique identity.

Action 3.1A: Create bike network plan

Develop a bike network plan, with low-stress routes and sufficient bike parking, designed to support a growing number of bicyclists, by connecting villages, transportation nodes, schools, public buildings, and business districts. Newton should add protected bike lanes, bicycle boulevards, and several off-street trails.

This network can help Newton reach its sustainability and safety goals while reducing roadway congestion.

Action 3.1B: Expand safe routes to school and bike education programs

Newton already has a robust safe routes to school education program to support and build upon. One area to consider enhancing is bike education across all ages and supporting education with small-scale physical improvements.

Action 3.1C: Create and implement sidewalk lighting standards

Design appropriate street lighting for sidewalks and bike lanes that reduces glare on sidewalks and enhances personal security, safety, and the character of the area. Critical features like ramps, crosswalks, transit stops, seating areas, and bridges must be visible and well lit.

3.2 Make Short Trips Active and Attractive

Facilitate walking and bicycling to village centers and schools

WHY

Multiple options for traveling to and from daily destinations helps create a vibrant, connected and convivial community

Sixty-one percent of all trips taken nationally are short—five miles or less[1]—which lend themselves to a combination of transit, bicycling, or walking. Often these short trips are made for multiple purposes, such as picking up a prescription or doing a quick shop while commuting home. When sidewalks and bike lanes are available, safe, and appealing, walking and bicycling can be preferable to driving as being more efficient and quicker for the majority of trips Newtonians make.

Creating a physical environment that encourages citizens to choose active transportation for short trips has health, social, and environmental benefits. Additionally, village centers and neighborhoods that feature a comfortable, safe, and useful active transportation environment will benefit from vibrant street activity, which contributes to economic vitality.

1 National Highway Traffic Safety Administration – 2009 National Household Transportation Survey

Credit: City of Newton

HOW

Make improvements to the non-motorized environment at known problem areas and intersections in village centers

While short trips call to mind errands made from home, a walking and bicycling environment in Newton's village centers can enable many to be made without a car, eliminating many unnecessary vehicle trips. Newton should encourage people to walk, ride, or park (once) and walk to multiple destinations through a mix of safety enhancements.

Action 3.2A: Use concurrent signals with Leading Pedestrian Intervals (LPI) at key intersections

State-of-the-art traffic signals can reduce conflict between drivers who want to turn and walkers who want to go straight, by giving those walking across the street concurrent with parallel traffic a safe and visible head start. This is called a leading pedestrian interval (LPI), and it improves visibility between the turning driver and those walking across a street. Converting from push-button crossings to concurrent crossings with LPI improves safety while reducing delay for walkers and drivers. Pairing concurrent signals with leading pedestrian intervals and no right turn on red can be particularly effective.

Action 3.2B: Improve walking and bicycling routes near schools, grocery, libraries, parks, and village centers

Prioritizing walking and bicycling infrastructure improvements that expand access to desirable destinations can reduce the desire to drive, especially when they are safe, convenient, and fun opportunities to walk or bike. Newton can examine collision histories around the City's elementary and middle schools to prioritize those most in need of improvements, including enforcement of pick-up and drop-off "blue zones."

Action 3.2C: Enhance tree canopy maintenance and new tree plantings

Tree-lined streets make walking and biking more pleasant. Their shade makes walking much more comfortable in the summer, and enhance the aesthetic quality of Newton's streets. Trees have also been found to encourage drivers to slow down because they give the street a sense of enclosure and highlight that the roadbed is part of a public space that includes sidewalks and other users. As such trees have been found to focuses drivers' attention on potential conflicts making for a safer environment to walk and bike.

3.3 Extend the Reach of Bicycles

Add new routes and protection for bicyclists

WHY

In addition to health and economic benefits, a larger bicycle network reduces stress and congestion on the road system

Year after year, large metropolitan areas deal with congestion that causes billions of hours of travel delay, wastes billions of gallons of fuel, and results in billions of dollars in congestion costs.[1] Relieving this congestion to move people and goods more efficiently requires a strong contribution from other modes of transportation such as bicycling.

States who have implemented programs designed to encourage bicycling have seen reductions in the drive-alone mode share for commute trips, according to census data. In terms of user benefits, cycling improves health while being an order of magnitude cheaper than the cost to purchase, operate, and maintain a motor vehicle. Additionally, the quality of a city's bicycle network can be a destination in and of itself that attracts visitors and tourists.

1 National Conference of State Legislatures – Encouraging Bicycling and Walking: The State Legislative Role

Credit: City of Newton

HOW

Enlarge the separated bicycle facility network and take steps to improve safety where the roadway is shared

Expanding the bicycle network in Newton will require a mix of new, dedicated off-street facilities, protected and standard on-street lanes, and signed neighborhood bikeways on lower volume streets. All are intended to create safe riding environments where even novice bicyclists can feel comfortable making trips.

Action 3.3A: Create off-road connections in parks and aqueducts

Off-road trails and shared-use paths provide a safe, scenic alternative to city streets for recreational and commuting trips by bicycle, showcasing Newton's diverse parks and historic sites, while linking its village centers. The City can better connect to and maintain these facilities (includes the Sudbury and Cochituate Aqueduct Trails, the Lifecourse Trail in Cold Spring Park, the Upper Falls Greenway, and the Dr. Paul Dudley White Bike Path).

Action 3.3B: Install neighborhood bikeways and protected bike lanes

A combination of traffic calming and bike accommodations on low-volume, slow-speed side streets can create ideal neighborhood routes for bicyclists of all abilities. Separated bike lanes are necessary on streets with higher vehicle volumes and speeds. Newton needs new facilities on key crosstown and through roads and protected lanes on arterials like Washington Street.

3.4 Promote Village and Neighborhood Comfort

Make walk- and bike-friendly design the standard

WHY

Public space is at the foundation of community identity, serving as a focal point for transportation best practice

When a pedestrian is struck by a vehicle traveling 20 miles per hour, the odds of that collision resulting in a fatality are 5%. At 40 MPH, that figure increases to 83-85%. Stopping distances also increase with speed. In order to provide high-quality public space that promotes both safety as well as civic pride, measures should be taken to calm traffic through the design of the public realm.

Well-designed public space makes it easier for all, regardless of physical ability, to move through and use the villages that define Newton. Public spaces in villages and neighborhood centers should be attractive and encourage social interaction. They should accommodate people who walk, bike and take transit as well as promote reasonable vehicle flow and access to parking assets that support local business—without sacrificing safety and quality for the sake of being able to drive faster to the next signal.

Credit: City of Newton

HOW

Adjust policy and implement infrastructure changes to create public spaces where modes can intersect seamlessly

In order to signal that people are indeed first, Newton should create high-quality public spaces, especially near transit connections, that serve all modes equally.

Action 3.4A: Expand place-making and beautification efforts

Place-making is a people-centered approach to creating community gathering spaces that promote social activity, health, happiness, and a sense of collaborative ownership. Across Newton there are opportunities in sidewalks, plazas, traffic islands, etc. to showcase the unique character of Newton's villages and neighborhoods.

Action 3.4B: Neighborhood slow zones

Slow zones are community-based programs that reduce the speed limit to 20 mph in a select area to decrease the severity of crashes, reduce cut-through traffic, and limit traffic noise. Safety measures such as gateway signage, road narrowing, and traffic calming features are self-enforcing nudges to change driver behavior.

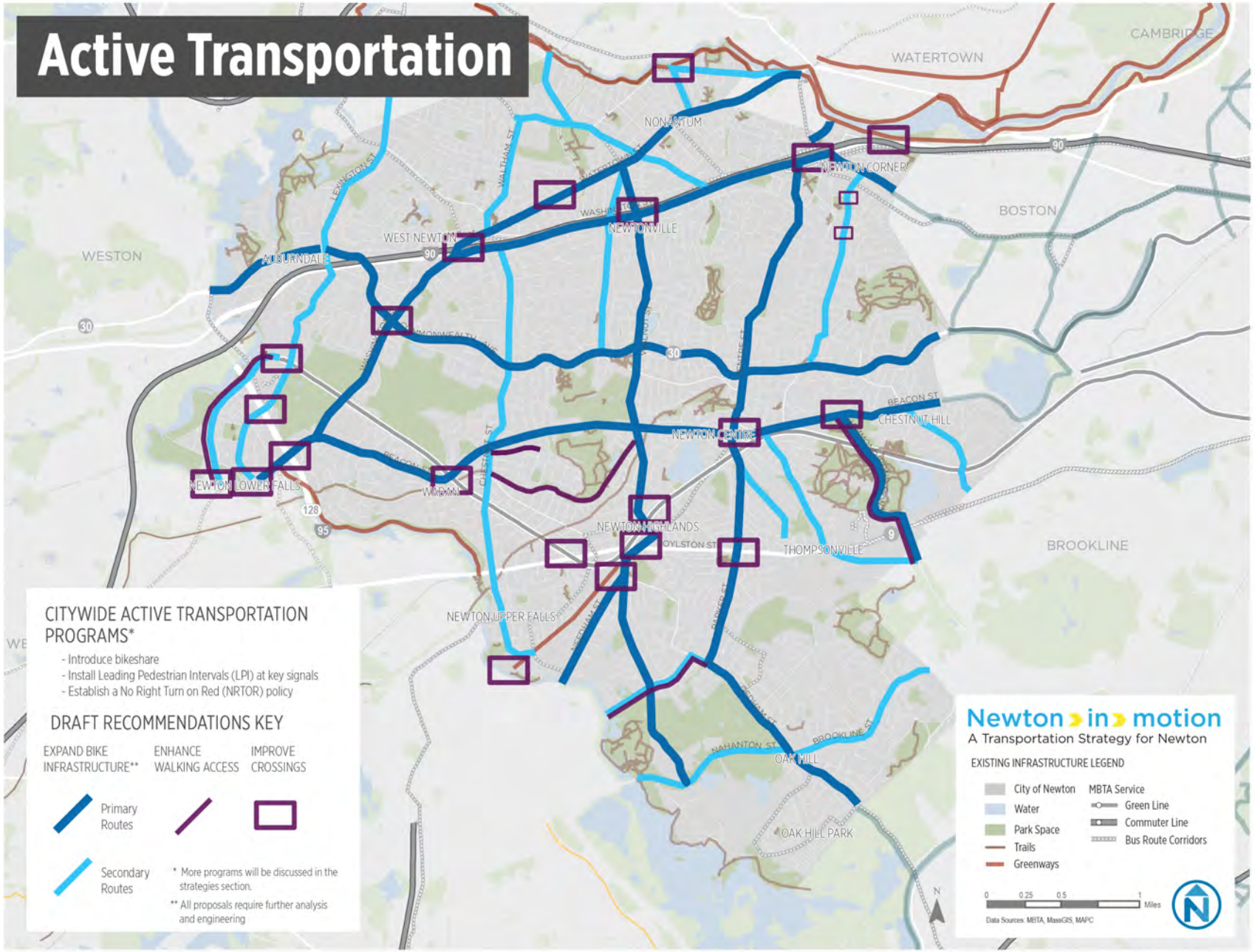
Action 3.4C: Adjust siting and design standards for new development and new schools in multi-modal areas

Adjusted zoning regulations can encourage more walkable developments in Newton and more units close to Newton's transit assets. Locating and designing housing, offices, shops, and schools to encourage transit use and active transportation can have a dramatic reduction on vehicle traffic.

Action 3.4D: Widen sidewalks and increase bike parking in village centers

Sidewalk widths should be based on adjacent land uses, street conditions, and level of safety, with more width when planters, furniture, street lamps, etc. are also needed. Bike parking should be prioritized near transit to encourage last-mile connections, as well as at schools and village centers.

FIGURE 13 ACTIVE TRANSPORTATION STRATEGIES AND ACTIONS



The City of Newton adopted a Complete Streets policy in the summer of 2016. Installing enhanced crossings at intersections and filling gaps in the walking and bicycling network will help make the policy a reality for getting around safely in Newton. Most designated bike routes should be examined for the feasibility of installing bike infrastructure, and corridors like Washington Street could be considered for protected bicycle infrastructure given the high level of exposure and repeated safety issues. Similarly, Commonwealth Avenue's extra width can become an ideal commute facility, and Watertown Street must have a safe bicycling facility. Meanwhile, bike crossings could be improved at intersections throughout Newton, especially in village centers and at the bridges and underpasses crossing the Pike and Route 9. Finally, signals throughout Newton should be upgraded to ensure the safety of people crossing the street.


PARKING
MANAGEMENT

PARKING MANAGEMENT

Parking is an essential part of daily life for most Newtonians and Newton-based businesses, but Newton has evolved more swiftly than its parking management practices, and the city's goals sometimes are misaligned with the results of current parking management.

The more parking there is, the more people are given an incentive to drive. The City can meet its goals of keeping congestion in check and reducing greenhouse gas emissions by limiting new parking and better-managing existing parking resources. Newton is also a largely built out city that places a high value on the character of its neighborhoods and village centers, so broadly expanding the amount of land devoted to parking is not in line with the city's vision.

Today's parking issues can only be addressed through a comprehensive program that balances and satisfies the demands of Newton's various users. Newton recently completed a parking strategy for Newton Centre that has spawned several possible solutions. Adjusted and expanded to other villages and areas of high parking utilization, the City can enhance business access, accommodate commuters and employees, and protect residential neighborhoods in a simple, fair, and responsible manner which makes where to park clear, relieving frustrations, and focusing Newtonians on the places and destinations they are trying to reach, rather than why they can't find a parking space.

Several successful best practice solutions can easily be applied throughout Newton. Solutions should be tailored to the demands of a district, recognizing basics such as the need for prime spaces in village centers to be available to customers, while residential neighborhoods should be protected from excessive spill-over by commuters or local employees. Dynamic parking management strategies can support Newton's business vitality by creating parking availability, while systems that accommodate employees and long-term parkers can preserve job access, promote transit, and allow residents access to on-street parking on their street without conflict.

Kiosk: Dwight Burdette

NEEDS ASSESSMENT

Newton has addressed evolving parking availability problems in mostly a reactionary way over the years. Public on- and off-street parking has been added where demand is high, sometimes sacrificing open space or other valuable uses for the sake of storing cars. Management is mostly done by enforcing restrictions, rather than incentivizing appropriate parking behavior. As a result, drivers regularly take advantage of loopholes, ignore or cheat the system, and find little incentive to park and walk from nearby areas where parking is readily available.

Newton has layered on parking meters in many of its villages and off-street lots. Fees are fixed and parking times are limited. Parkers report frustration that the parking options are inconsistent with their needs, that it is difficult to find an available parking space, and that spaces are not available for long enough to allow them to complete their business without staying beyond the allowed time and getting ticketed.

The pricing of parking should reflect the value of parking to its users and avoid the appearance of an arbitrary tax on top of the threat of a ticket. Current meters can be upgraded to be more customer-friendly and to include more dynamic demand-based pricing approaches, including discounting remote parking or making it free to park when demand is low.

Parkers are also split into two categories: short-term and long-term. Right now, they are competing with each other for every parking space and neither group's needs are directly addressed. Short-term parkers are most typically customers who are looking to get in and out quickly as close as possible to their destination. Long term parkers (mostly commuters and employees) desire parking spaces that are consistently available for the entire time they need the space.

There have been some efforts to create long-term parking options for commuters taking the Green Line or the Commuter Rail and to provide long-term employee parking, but there is still a great deal of work to be done to manage long-term parking needs. Research in Newton Centre found that many of the front-door spaces that short-term customers consider prime are consistently utilized by long-term parkers, so resolving long-term parking can improve the situation for short-term parkers as well. The second challenge is that long-term parkers often spill over into residential neighborhoods. So far, the most frequent tool to limit the volume of long-term parkers on residential streets is to limit the time anyone can park to 1-2 hours. The result is suboptimal for residents as well, since they no longer have the option to park on their own street for more than a short time. Balancing all of these parking needs is challenging but possible.

4.1 Create Availability

Make finding parking clear and easy

WHY

A healthy amount of consistently-available parking supports business districts by facilitating quick customer visits

A well-managed parking system where parking spaces are easy to find, priced according to need, and complimented by programs and features that foster easy access by foot to shopping, dining, and places of employment is an important component of making Newton's transportation system welcoming. When an effective parking management system is in place, the experience of visiting various villages within the city is perceived as comfortable and convenient by visitors and residents alike.

Active parking management supports other strategic objectives such as reducing development impacts, improving public space design, reducing impervious surfaces, and incentivizing habits that reduce default reliance on driving for every trip. When all aspects of parking management are appropriately applied, a smaller parking inventory may still provide a higher level of service to customers.

HOW

Focus on creating available parking supported by clear information about cost, options, and walking opportunities

Parking spaces should be treated as assets in Newton and actively managed as such through dynamic price controls rather than time restrictions. Short-term areas should be well-designed to facilitate both goods loading and passenger drop-off and pick-up. Availability can also be created through incentivizing remote parking and the use of other modes.

Action 4.1A: Adopt parking availability goals and establish policies to meet goals

Parking policy can ensure availability at a fair price that the market demands. As a starting point, Newton can set a goal of 15% available street parking for any block, which ensures quick access to reduce circling. Pricing is needed in high-demand areas to meet the availability goal, while some lower-demand priced areas should see their rates drop.

Action 4.1B: Develop pick-up/drop-off zones

At the curb, drivers need to park, buses and taxis need to drop-off and pick-up passengers, trucks and commercial vehicles need to load and unload freight; all have potential conflicts with pedestrians and bicyclists over the limited curbside resources. Designating clear areas limited to appropriate times for vehicles to pull up to the curb rather than double-park reduces congestion and potential for conflicts.

Action 4.1C: Active parking management in high demand areas

Active management of parking spaces can help Newton better utilize existing spaces, staff, and revenue from parking. Using new meter technology and restructuring parking rates to respond fairly to demand can create essential customer access while incentivizing commuters and residents to use other modes. Meter revenues can be dedicated back to improvements in the districts in which they are collected.

4.2 Plan for the Future of Parking

Prepare for shifts in parking behavior and technology

WHY

Being prepared for future challenges, technologies, and societal trends will avoid outdated and costly practices

Many converging behavior patterns give us a hint of the future of parking demand. Basic technological advances such as internet banking and telework already have reduced trips and downtown parking demand. Other trends such as active web-based lifestyles and growing desires to live in dynamic urban environments has increased the desire to live near employment and recreation, greatly reducing the need for car parking. Mixed-use districts already benefit from the advantages of shared parking supply, but shifts away from driving in Newton and the broader region are really driving down parking needs, demanding new approaches and policies. It is incumbent on any city to understand how these and other cultural shifts such as online retail, alternative fuel vehicles, transportation network companies (e.g. Uber), and autonomous vehicles will impact parking demand and to act accordingly.

Newton can begin to influence behavior patterns through active parking management and by providing facilities for transportation services that are anticipated to grow in popularity. Similarly, Newton can enable less auto-oriented development to occur by minimizing the construction of new parking with new development and focusing on sharing existing resources as much as possible.

HOW

Focus on efficiently sharing existing resources that can serve current and future system users without overbuilding parking

Newton should revise parking requirements for new development to better reflect the realities of its shared, mixed-use pattern of development. Incentives for sharing can result in better projects, efficient use of existing parking resources, and can avoid excess parking that is likely to become wasted land and investment in the coming years. Smart parking policies in particular can prepare Newton for the days of autonomous vehicles when much of the existing on-site parking supply is rendered obsolete.

Action 4.2A: Adjust requirements to reflect updated demand calculations

Observed parking demand in Newton is less than half what zoning requires, and future demand projections continue downwards, especially with the introduction of autonomous vehicles. Newton should promote smarter sharing of existing parking resources before adding new spaces that may be entirely vacant in the near future. Solutions include shared parking, in-lieu fees, tailored maximums, and demand-management requirements.

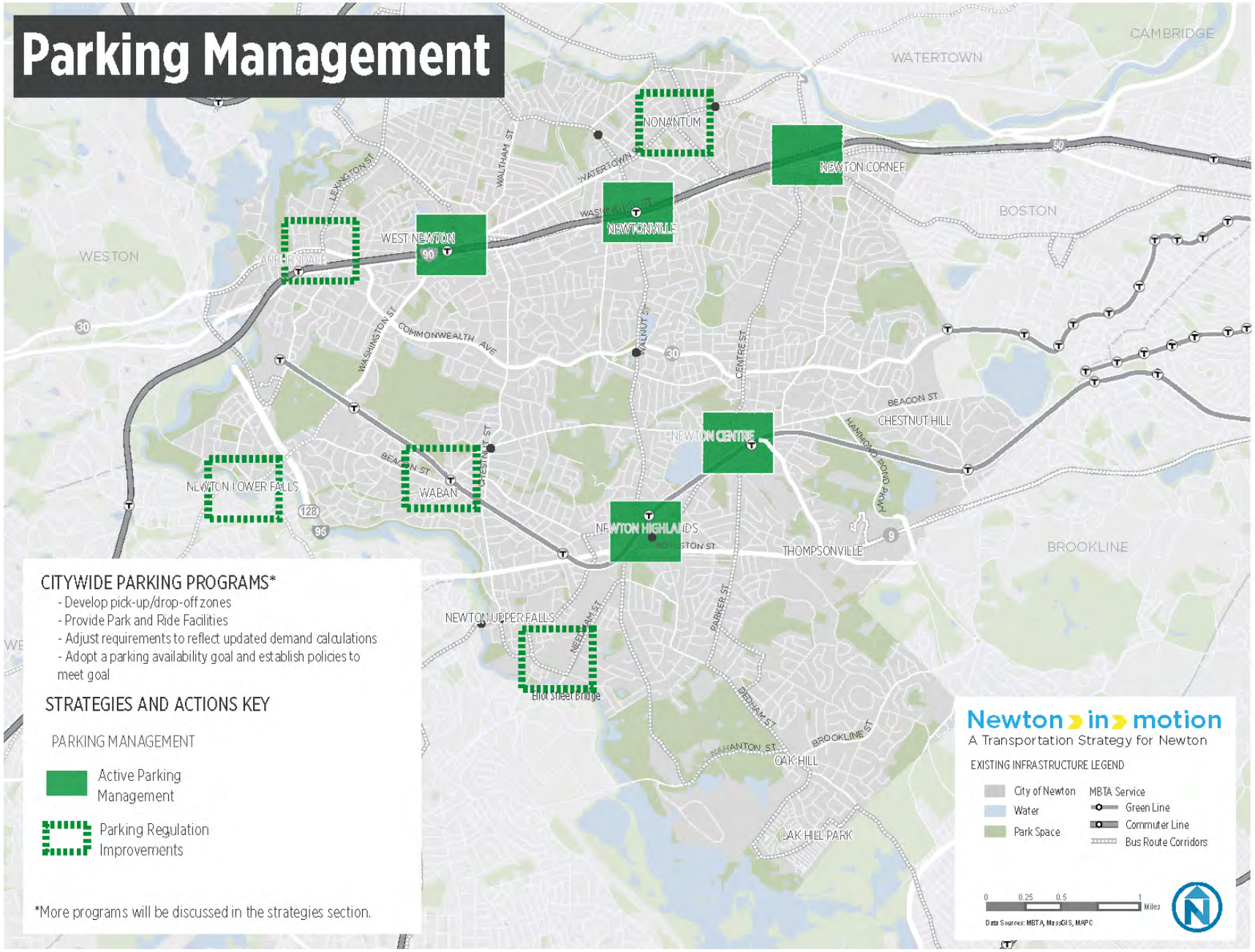
Action 4.2B: Expand EV charging

Creating a comprehensive network of charging stations can support an expanded fleet of electric vehicles in Newton, helping reduce air pollution and greenhouse gas emissions within the City. Charging stations should be provided in visible locations in pods of 2-3. The number of spaces should increase based on existing usage and regional EV ownership trends.

Action 4.2C: Provide park-and-ride facilities

Safe and convenient park-and-ride locations in strategic locations with secure space for both vehicular and bike parking help travelers park their car or bike and catch a carpool, vanpool, shuttle, bus, or train to work, shopping, or recreation. Combining park-and-ride lots with programs like Park & Pedal or installing a Hubway station nearby encourages multi-modal trips and reduces congestion.

FIGURE 14 PARKING STRATEGIES AND ACTIONS



Newton can improve parking across the City through active parking management and regulation improvements. In Newton Centre, the City should continue to implement the outcomes of the Newton Centre parking strategy. In West Newton, Newtonville, Newton Corner, and Newton Highlands, the City should inventory supply, measure demand, and implement similar principles of establishing a parking availability goal, implementing dynamic parking pricing to meet this goal, and improving wayfinding and multimodal access to parking. Based on feedback collected during engagement, the parking regulations should be examined for needed improvements in areas like Nonantum, Auburndale, Waban, Newton Lower Falls, and Newton Upper Falls as well. Finally, citywide development regulations should respond to demand trends and observed utilization to promote sharing of existing resources and build better environments that prepare for the near future when autonomous technology will make on-site parking unnecessary.

CONGESTION REDUCTION

CONGESTION REDUCTION

Highly developed urban areas like metro-Boston cannot increase the width of roads for more vehicles without taking land from property owners and/or changing the character of neighborhoods. This is especially true in Newton, where widening single-lane roads would undermine the historic feel of streets, many of which are lined with beautiful homes and neighborhood businesses.

Additionally, as was shown during much of the 20th Century, widening and building new roads actually increases, not decreases traffic. This is due to a "build it and they will come" phenomenon. Fortunately cities such as Newton that did not succumb to the road building craze of the 20th Century have avoided a lot of the traffic that plagues newer congested cities. Today, they stand as model cities.

This is not to say traffic congestion does not exist. It does, even on Newton's small charming streets and thoroughfares. The key to reducing congestion is to learn from our own success. Newtonians and their neighbors today already walk, bike, and take public transit at some of the highest rates in the country, removing tens of thousands of car trips every day. They make the roads better for all of us. Collectively, this means fewer people ahead of you at a stop light, less time spent looking for a parking space, and shorter times to your destinations when you do drive.

This section discusses strategies to encourage and support people bicycling, walking and taking transit. Reducing just a small percentage of vehicle trips can have a dramatic effect; eliminating 10-percent of the cars at an intersection can mean the difference between Monday morning rush hour conditions and a Sunday afternoon ride.

NEEDS ASSESSMENT

Traffic volumes in Newton as well as greater Boston have grown negligibly over the past two decades. The growing population has instead adopted transit, walking, and bicycling at increasing rates. Shifting trips to these modes is now recognized as the most effective means of reducing congestion.

Corridors such as Route 9, Washington Street, Walnut Street, and Centre Street have had congestion for many years and will continue to do so. The City and State have alleviated some delays by optimizing signal timing and improving engineering, but these tools are limited. For Newton and the rest of the country, the best congestion relief will continue to be shifting trips to other modes.

The good news is that creative policies and programs, many of which are employer- or resident-based, successfully incentivize people to change their driving behavior. Currently, Newton residents see few incentives to leave the car at home, with the economics of transportation heavily tailored to driving. Drivers see the cost of driving as a sunk cost, while transit costs are borne daily or monthly; employers and the City regularly and heavily subsidize the cost of providing parking, given land development and maintenance costs. These basic economics of transportation work directly against Newtonians' goals of reducing congestion and delay. Fortunately, many highly-successful best practices from around the country and greater Boston prove that incentives not only reduce congestion but help employers and developers attract workers and residents.

Credit: Urban Ambassadors in Des Moines; Tobin Bennett

5.1 Create Smart Developments

Ensure that new development does not lead to new congestion

WHY

Building housing and jobs near public transportation hubs significantly reduces driving

Smart developments of the 21st Century decrease driving by making walking, bicycling and taking public transit convenient, affordable and attractive. Smart developments co-locate housing, office, retail, and other amenities with quality transportation choices; they provide amenities to encourage walking, bicycling and taking transit, such as safe sidewalks, bike share, car share, bicycle parking, off-street paths, bus shelters, heated waiting areas, and transit arrival information. The best developments create clear financial incentives to not drive. People living and working in such mixed use locations often leave their car at home, finding walking, bicycling, and transit to be more convenient and less expensive.

» Smart developments that increase the use of public transit, walking, and bicycling over driving provide myriad benefits, including: reduced congestion, air pollution, and greenhouse gas emissions; improved access to jobs; enabling seniors to age in place; providing options for people that are too young, too old, too poor, have a disability, or otherwise cannot drive; and encouraging healthier, active lifestyles.

Credit: City of Newton

HOW

Link housing, jobs, and transportation through commuter programs and development policies

Building upon local, regional, and national best practices, Newton can accommodate appropriate economic development in a smart manner by incentivizing walkable transit-oriented development with amenities that not only embrace non-auto travel but attract quality employers and residences.

Action 5.1A: Incentivize development near jobs, housing and public transit

People living or working near mixed-use developments with excellent transit, walking and bicycling amenities regularly choose not to drive. Specific tools may include vertical use mixing, reduced parking ratios, shared open space requirements, shared workspaces for telecommuting, tax abatements for meeting certain priorities, etc.

Action 5.1B: Create a TDM ordinance

Transportation demand management (TDM) ordinances create regulations requiring developers to provide amenities and programs to reduce drive-alone trips and encourage the use of public transit, walking, bicycling, and working from home/remotely. The best ordinances include a target mode share.

5.2 Manage Travel Demand

Embrace measures that reduce the need to drive

WHY

People will walk, bike and take public transit when it is faster, cheaper, and more comfortable than driving

Managing travel demand first became popular in the 1970s as a way to encourage people to consume less oil during the energy crisis. Today, it is more closely associated with policies that aim to make communities more livable. For many years, transportation and land-use policies around the country encouraged single occupancy-vehicle use through parking minimums, tax incentives, and commute reimbursement programs. Travel demand management aims to reverse this historical trend.

HOW

Implement strategies that provide information, options, and incentives for commuters to travel smarter

When provided with the right blend of information, options, and incentives, commuters will make thoughtful transportation choices with positive implications for both their own commute and those of their neighbors.

Action 5.2A: Implement congestion reduction incentive campaigns that include financial incentives

Incentives and subsidies that reward people for using alternative modes are particularly effective at reducing congestion. Incentive programs may include free taxi rides home, discounted transit passes, bikeshare membership, carpool subsidies, telecommuting support, and more.

Action 5.2B: Provide educational information including a central transportation information website

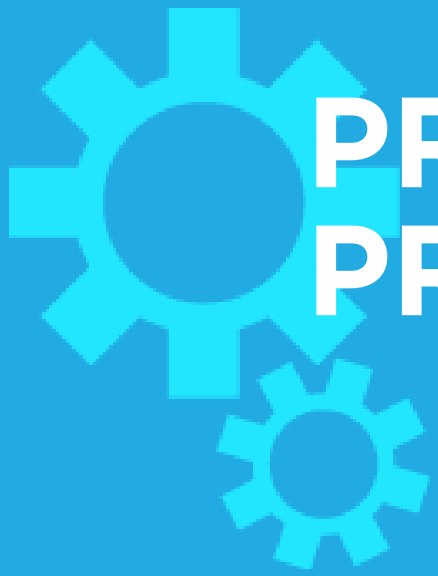
Information and marketing campaigns advertise options and attract workers and residents who prefer car-free and car-lite lifestyles. A one-stop web dashboard can include real-time transit information, parking and car-share locations, bicycling and walking networks, car-share availability, and other resources that empower travelers to make informed multimodal decisions.

Action 5.2C: Require major employers to join a TMA

A Transportation Management Association (TMA) leverages public and private funds to increase the use of ridesharing, employee shuttles, and other commuting options. A municipal ordinance can require participation.

Action 5.2D: Create City of Newton and schools TDM plan

A municipal Transportation Demand Management plan can demonstrate a commitment to reducing vehicle trips by giving City staff incentives to leave their cars at home. The City should also work with the school district to encourage students to ride buses, walk, bike, and carpool, while implementing incentives for school staff to do the same and lead by example.



PROCESSES AND PRIORITIZATION

PROCESSES AND PRIORITIZATION

In order to implement many of the strategic recommendations contained in this report, the City must upgrade its approach to transportation decision-making.

The City of Newton regularly undertakes three types of projects:

- **Service requests –** operational and maintenance concerns *(e.g. replace a broken meter, fix a burned-out street light, replace a missing sign, etc.)*
- **Small project requests and citizen petitions** for new additions, installing new equipment, or addressing an observed problem *(e.g. add or move a crosswalk, add traffic calming, install a stop sign or bike rack, etc.)*
- **Significant projects –** any project involving multiple departments and/or public participation *(e.g. reconfigure a road or intersection, new land use development review, traffic corridor signalization, etc.)*

Newton's current transportation decision-making protocols are designed primarily to respond to the first two project types above: service requests and citizen petitions for small incremental changes. This consumes an inordinate amount of focus, staff time, and resources while causing the City to be reactive instead of proactive. This short-term focus ultimately hampers the City's ability to pursue an overall transportation vision, priorities, or guiding principles.

The City's approach to small projects and citizen petitions likewise can be improved. City staff currently examine requests separately and independent of other requests. This can result in inconsistencies and redundancies, even within small areas. For example, the streets surrounding Newton Centre have over 40 different parking regulations.

While the Transportation Division of the Public Works Department has primary responsibility for transportation decisions, numerous City departments and elected bodies play a role in transportation planning, operations, and maintenance.

There is an overall lack of clarity as to the roles of each group on any level of project. Involved departments include:

- Department of Public Works divisions
- Planning and Development Department
- Newton Police Department
- Office of the Accessibility Coordinator
- Mayor's Office of Sustainability
- Newton Public Schools
- Newton Fire Department
- Parks and Recreation Department

Elected and appointed officials also have influence and authority in transportation decision-making, including the Mayor, City Council, School Committee, and Traffic Council—an appointed body established to manage small changes in transportation infrastructure.

Additionally, at any point in the process and for any scale of project, staff and elected officials can turn to the Transportation Advisory Group (TAG), an appointed committee established in 2012 and made up of citizen advocates, staff, and elected officials that is intended to advise on transportation topics. TAG has a number of subcommittees, including a Bicycle Advisory subcommittee, a Youth and Senior Travel subcommittee, a Parking subcommittee, Urban Fabric subcommittee, Transportation Planning and Complete Streets subcommittee, and Outreach and Engagement subcommittee. The TAG's role is unclear; it is neither an independent citizens' voice advocating to the City, nor is it an official part of the decision-making process. Clarification is needed, not only as to the role of the TAG, but for many other participants in the process.

NEEDS ASSESSMENT

Newton needs a more rational and efficient transportation decision-making process, and Newton-in-Motion is intended to provide a framework to improve the process. Service requests, operational issues, and small project requests must not be allowed to dominate the program and must be viewed and evaluated in light of the city's broader goals and vision.

To successfully implement its strategic transportation vision, Newton must leave behind its reactive history and adopt a responsive and proactive approach. Most importantly:

- Current procedures should be reevaluated and redesigned if necessary to ensure that they align with the vision.
- Transportation investments and initiatives must be prioritized based on credible data and according to the vision.
- The overall decision-making process must be clarified and simplified with clear definitions of the role for each actor or constituency. Although Newton's staff, elected officials, and citizen advocates collaborate well, it is often unclear who is supposed to do what.

6.1 Match Processes with the Vision

Coordinate all transportation policy and investment processes with the vision

WHY

Set consistent processes and protocols

Each of the three project types has its unique challenges. Service requests are the best-managed in terms of having a clear, consistent, and direct trajectory from idea to project completion. Citizens input requests to the City's 311 system, which are then prioritized, tracked, and implemented by the operations and maintenance teams.

Small project requests and ideas currently take up an outsized amount of staff time and resources. With dozens of items in the queue at any time, Transportation Division staff get bogged down in reacting to tailored requests submitted by individuals to the detriment of working on proactive investments in the system.

Substantial projects suffer from a lack of clear decision-making trajectories and clear roles for project participants. While some projects will not fit into any mold, there are a number of types of projects that occur relatively routinely that the City can set consistent pathways for, e.g. signalizing an intersection, redesigning an intersection, or improving a sidewalk. These established pathways should also include roles and responsibilities for various departments, boards, and committees.

HOW

Set consistent processes and protocols

The City of Newton can better assist residents as they seek to impact the transportation investment process. Procedures that set clear expectations help keep projects on time and on budget. Newton can streamline the disaggregated decision-making structure by setting consistent processes and defining decision-making roles.

Just as Newton-in-Motion is a living document, procedural policies should also be revisited routinely to ensure that they are consistent with the City's transportation vision.

Action 6.1A: Clarify procedure for substantial projects
Develop standard decision-making pathways for frequently occurring substantial projects. At the beginning of any project, the project leads should prepare a project trajectory that outlines the problem that is being solved, major milestones, and the decision-making points and decision-makers at each step in the process.

Action 6.1B: Prioritize small requests
Redefine the timeline for responding to requests for small infrastructure changes in order to jointly review and prioritize requests of similar types and in the same geographic area.

Action 6.1C: Clarify role of citizen advisors
Creating clear objectives and procedures for community groups to advise and engage in transportation projects will allow the City to incorporate feedback and concerns in an organized manner. Advisors can represent all areas of the city and interest groups who may not have a voice in City government.

Action 6.1D: Expand public engagement
Newton can expand its efforts to engage with Newtonians at all stages of projects in ways that are effective, transparent, and responsive. One way to deliver better public service is to create dynamic, engaging forums to listen to community needs, creating more transparent opportunities for input and feedback in the decision-making process.

6.2 Secure Sufficient Resources

Ensure funding and staff levels are adequate; ensure consultants and staff have appropriate experience

WHY

Newton needs funding options besides general taxation to enact reforms and overcome budget shortfalls

While transportation projects have typically been paid for through some combination of State and Federal funds, there are available methods to raise project funds through other non-traditional means. Innovative funding sources can include a variety of different mechanisms such as public-private partnerships, developer payments, and more. Additionally, without enough institutional capacity and staff to review data, evaluate potential policies, and carry them out, Newton's ability to achieve its transportation vision is limited.

HOW

Create expanded transportation resources and funding

An earmarked transportation fund will ensure that decisions can be made quickly and with proper attention. Properly funding transportation—specifically, demand management programs and transit improvements—through a dedicated portion of tax revenue and/or as mitigation from development projects ensures that recommended projects can be implemented.

Action 6.2A: Evaluate City staffing levels

The City should determine if sufficient staff is available to manage transportation projects, data collection, and policy implementation in an efficient manner. If staff capacity or expertise is lacking in any area, more staff may be needed or existing staff could receive additional training.

Action 6.2B: Create transportation fund

A fund that is dedicated to transportation projects can highlight the importance of these projects relative to others and be more secure from competing demands on the City budget. Newton can dedicate revenue from parking lots and meters or other sources to transportation projects in its capital improvement program.

Action 6.2C: Create funding stream for TDM and transit

A dedicated and consistent investment in TDM and transit in Newton would result in reliable, long-term incentive, education, and improvement programs. Maintaining programs over an extended time makes them recognizable and more likely to be utilized, thereby returning substantial financial, environmental, and quality-of-life benefits to the City and its residents.

Action 6.2D: Require developers to pay for site context improvements

While under construction, a development should contribute funds to improve the transit stop or roadway condition according to the City's schedule. The MU3/TOD district that covers the Riverside terminal requires the developer to submit a roadway and transportation plan reflecting a traffic impact analysis and that includes TDM commitments. Newton should investigate broadening this approach to large development projects in other areas of the city.

6.3 Establish Data-Driven Prioritization

Institute routine data collection and use analysis to inform decisions

WHY

Data-driven prioritization helps identify where interventions are most needed and which policies or practices best address issues

To achieve its vision, Newton has to develop clear and coherent goals and use its available resources efficiently to overcome identified issues. Knowing a problem exists is frequently not enough to solve it. A data-driven policy-making process helps diagnose problems with precision, allows information to be shared transparently, engages our civic-minded community to participate in ongoing constructive feedback mechanisms, and enables Newton to be targeted and more responsive. Answering policy questions requires careful analysis that is often aided by databases, data-mining, and geospatial information technologies.

HOW

Establish processes to collect, organize, analyze and disseminate key data related to the City's goals

Newton's policy-making processes should concentrate on outcome-focused projects and programs that achieve desired goals by collecting data that supports quantitative metrics to monitor the City's performance.

Action 6.3A: Update data collection methods

With more up-to-date, accurate, and easily-accessed data on transportation conditions across Newton, the City can evaluate progress on plans and programs put in place to achieve City goals. Newton will improve collection methods and use data to identify safety hazards, top crash locations, parking utilization, bicycling volumes, bicycle network gaps, sidewalk conditions, and more, along with consistent metrics to track overall progress on City vision areas.

Action 6.3B: Improve development review process

A streamlined review process can facilitate an efficient and consistent evaluation of design, density, use, transportation, and social impacts for all development projects across Newton, regardless of proposed uses. Requirements for multi-modal data collection and analysis can be based on development size, trip generation, number of residential units, or other minimums.

Action 6.3C: Develop project prioritization standards that value multi-modal and experiential improvements

Adopt transparent and measurable metrics and weighting factors based on local priorities to consider what transportation projects get implemented when. Applying quantitative criteria based on city goals, Newton can develop a ranking system that helps prioritize projects, both for internal funding as well as outside funding.

Action 6.3D: Update street classifications to reflect all modes of travel

Streets should be classified by surrounding land uses as well as volumes of all travel modes. The City can use this classification to establish a context-sensitive street network plan with corresponding design guidelines at each level that give space to pedestrians, bicyclists, transit users, drivers, and people with disabilities.

Action 6.3E: Create sidewalk maintenance priority program

Newton needs an ongoing maintenance program to restore and clear debris from sidewalks to ensure they remain usable. Priority should be given to sidewalks with the lowest remaining service life and the highest expected pedestrian volume, based on proximity to village centers, schools, houses of worship, government buildings, etc.

Action 6.3F: Establish a pavement management/ rehabilitation schedule

Smooth roadways reduce damage to vehicles, improve safety for all road users, and encourage more bicycle activity. After evaluating and rating the conditions of the City's roadways, using a data-driven approach, Newton has drafted a schedule for maintenance and reconstruction of streets at the appropriate time in order to extend their overall life-expectancy in the most efficient and economical manner (the Roads Program).

6.4 Explore Emerging Solutions

Employ and implement state-of-the-practice solutions including piloting small-scale projects

WHY

Employing new and emerging solutions ensures Newton stays current

Changes in how people travel and the options they have access to are increasing at a dramatic rate. Mobile data, crowd-sourced apps, individual geospatial positioning, cash-less transactions, and other high-technology information and data-handling advancements have opened the door for a new mobility future. Private shared-ride services are now electronically dispatched and shared by dozens of people a day; travelers can chain trips across multiple modes effortlessly without cash; and automated technologies open doors, count riders, brake and steer cars, and warn people at crosswalks about threats. The current 20 and 30-something millennials are already changing the face of mobility with plummeting car ownership and driving rates. Generation Z (current middle and high school students) have lived their entire lives with digital devices, and are coming of age with connected transportation services at their fingertips. If Newton continues to provide transportation infrastructure in a 20th-century manner, future residents may go elsewhere.

HOW

Maintain detailed knowledge of best and emerging practices and use pilot projects to accelerate implementation

Newton should employ new and emerging technologies to advance all aspects of this plan. This can be supported by pilot implementation programs that temporarily test innovations at low-cost to determine their effectiveness at meeting goals while avoiding unwanted major capital investments.

Action 6.4A: Maintain detailed knowledge of best and emerging practices
Ensure staff are exposed to current practices via trainings, conferences, and list-serves. Ensure consultants and contractors are best-in-class and have history of producing top level projects using most current principles.

Action 6.4B: Use pilot projects to test and measure before building
Pilot projects are small-scale preliminary programs or infrastructure designs used to evaluate feasibility, time investment, and cost before spending the effort on a full-scale program or construction. They can be designed and implemented rapidly and iterated to test alternatives for bike lanes, crosswalks, slow zones, etc. to gauge impacts or adverse effects before making them permanent.

Action 6.4C: Develop public health metrics for transportation systems
How people travel impacts their wellbeing as well as healthcare costs. To meet Newton's public health goals, the City should collect health performance metrics related to active lifestyles and transportation injuries/fatalities, such as commute mode share, road traffic crashes, public transportation trips per capita, and miles traveled by bicycle, and compare with health and healthcare data.

Action 6.4D: Follow and plan for changes in traveler technologies
The proliferation of smart phones means that travelers make more efficient multi-modal route choices using Newton's infrastructure differently, which will change further with the introduction of self-driving vehicles in as little as 5 years. The City must track technological changes to ensure that smart infrastructure solutions can adjust positively to coming changes in travel behavior.

IMPLEMENTING ACTIONS & MEASURING SUCCESS

To accomplish the community's vision for travel in Newton, efforts must be underway in each set of strategies for as long as it is necessary to meet every value and accomplish Newton-In-Motion's targets. As the City refines its process for getting transportation policies and projects done in 2017-2018, it will simultaneously be embarking on a number of programs within each action area to address mobility needs in the short, medium, and long term. Many early actions can be accomplished within one year, with higher-cost strategies already identified in the City's Capital Improvement Program for 2017. Other actions can be accomplished over the short and medium term within existing departmental functions and resources by re-prioritizing efforts to align with Newton-In-Motion's values. Still others may need longer-term coordination with City, regional, State, Federal, private, and other resource partners.

The draft implementation plan on the following pages was designed to indicate how actions within each strategy might be executed over time, including rough sequencing, cost estimates, and lead responsibilities. Not all actions can be implemented at once, but the plan intends to keep at least one action within any strategy active at all times going forward. City staff will maintain a more detailed implementation plan that is regularly updated and shared with concerned parties. Only with a firm commitment to carrying out these strategies can the City ensure it is working towards Newton-In-Motion's targets and addressing the community's values.

In order to track progress on accomplishing the community's vision and values, every target can be measured through one or more quantitative metrics on a recurring basis over the months and years ahead. These are summarized in Newton's Laws of Motion/Executive Summary and will be incorporated as part of regular capital planning updates, policy development, and state of the City reporting.

CIP PRIORITIES

1. Roads Program Implementation
2. Signal Optimization Effort
3. Smart Parking Management
4. Shared Transit Initiative
5. New Bike Share & Bike Facilities
6. Village Enhancements
7. Corridor Improvements
8. Vision Zero Policy
9. Transportation Demand Management Ordinance
10. Advocate for better MBTA Service
11. Street Design Guide

Credit: Sasaki

FIGURE 15 NEWTON-IN-MOTION: ACTION IMPLEMENTATION PLAN

SHORT-TERM		MID-TERM		LONG-TERM
1. SAFE TRAVEL				
1.1 Reduce Crashes Citywide				
1.1.A Adopt a Vision Zero policy *Cost: N/A Lead: Mayor*	1.1.C Evaluate city speed limits *Cost: N/A Lead: Council*	1.1.B Complete Streets design guide *Cost: $$ Lead: Trans.*	1.1.E Examine Existing Truck Routes - medium *Cost: N/A Lead: DPW*	1.1.D Educational campaigns (ongoing) *Cost: $ Lead: Mayor's Officer*
1.2 Improve Safety at Intersections				
1.2.E Paint bike crossings green *Cost: $ Lead: Trans.*	1.2.C No Right Turn on Red Policy *Cost: $ Lead: Planning*	1.2.A Adjust turning radii standards *Cost: $$ Lead: DPW*	1.2.B Shorten traffic signal cycle times *Cost: $$ Lead: DPW*	1.2.D Align wheelchair accessible curb ramps with path of travel *Cost: $$ Lead: DPW*
1.3 Re-Envision Major Traffic Corridors				
1.3.B Create better crossings along Newton's major traffic corridors *Cost: $$$ Lead: DPW*		1.3.A Redesign roads to accommodate all travel modes *Cost: $$$ Lead: Planning*		
2. Transit and Shared Mobility				
2.1 Create New Community Transit Options				
2.1.A Incentivize ridership growth *Cost: $ Lead: Planning*	2.1.D Partner with TNCs *Cost: N/A Lead: Mayor*	2.1.C Work with private shuttle operators to create an inclusive system *Cost: N/A Lead: Mayor*		2.1.B Create intra-Newton shuttles and sub-regional transit service *Cost: $$ Lead: Mayor*
2.2 Make MBTA Transit Better				
		2.2.B Implement Transit Signal Priority *Cost: $$ Lead: DPW*	2.2.A Enhance stop quality and ADA-compliance *Cost: $$ Lead: DPW*	2.2.C Work with MBTA to provide urban rail service *Cost: N/A Lead: Planning*
2.3 Enhance Options for Getting to Transit Stops in Newton				
2.3.C Expand carshare Cost: N/A Lead: Planning	2.3.B Introduce bikeshare *Cost: $$ Lead: Trans.*	2.3.A Invest in first/last mile connections to transit *Cost: $$ Lead: Planning*		
3. Active Transportation				
3.1 Embrace Alternatives to Driving				
3.1.C Create and implement sidewalk lighting standards *Cost: $ Lead: Planning*		3.1.A Create bike network plan *Cost: $ Lead: Trans.*	3.1.B Expand safe routes to school and bike education programs *Cost: $$ Lead: Trans.*	
3.2 Make Short Trips Active and Attractive				
3.2.A Use concurrent signals with Leading Pedestrian Intervals (LPI) *Cost: $$ Lead: DPW*		3.2.B Improve walking and biking routes near schools and village centers *Cost: $$ Lead: DPW*	3.2.C Enhance tree canopy *Cost: $$ Lead: DPW*	
3.3 Extend the Reach of Bicycles				
		3.3.B Bikeways and protected lanes *Cost: $$$ Lead: Trans.*		3.3.A Create off-road connections in parks and aqueducts *Cost: $$$ Lead: Planning*

$ = Funding within existing Departmental budgets $$ = Additional funding approval required $$$ = Major external funding sources necessary

SHORT-TERM		MID-TERM		LONG-TERM
3.4 Promote Village and Neighborhood Comfort				
3.4.D Sidewalks and bike parking *Cost: $$ Lead: Planning*	3.4.C Adjust development standards *Cost: N/A Lead: Planning*	3.4.A Expand place-making *Cost: $$$ Lead: Planning*	3.4.B Neighborhood slow zones *Cost: $$$ Lead: Trans.*	
4. Parking Management				
4.1 Create Availability				
4.1.A Adopt parking availability goal and establish policies to meet goal *Cost: N/A Lead: Council*		4.1.B Develop pick-up/drop-off zones *Cost: $ Lead: DPW*	4.1.C Active parking management *Cost: $ Lead: DPW*	
4.2 Plan for the Future of Parking				
4.2.A Adjust requirements to reflect updated demand calculations *Cost: N/A Lead: Planning*		4.2.B Expand EV Charging *Cost: $ Lead: Trans.*		4.2.C Provide park-and-ride Facilities *Cost: $$$ Lead: Planning*
5. Congestion Reduction				
5.1 Create Smart Developments				
5.1.A Create a TDM ordinance *Cost: N/A Lead: Planning*		5.1.B Incentivize development near jobs, housing, and public transit *Cost: N/A Lead: Planning*		
5.2 Manage Travel Demand				
5.2.C Require TMA membership *Cost: N/A Lead: Mayor*	5.2.B Central transportation website *Cost: $ Lead: Planning*	5.2.A Congestion reduction incentives *Cost: $ Lead: Planning*	5.2.D City & school staff TDM plan *Cost: $ Lead: Mayor*	

FIGURE 16 ACTION INDEX, BY STRATEGY

SAFE TRAVEL

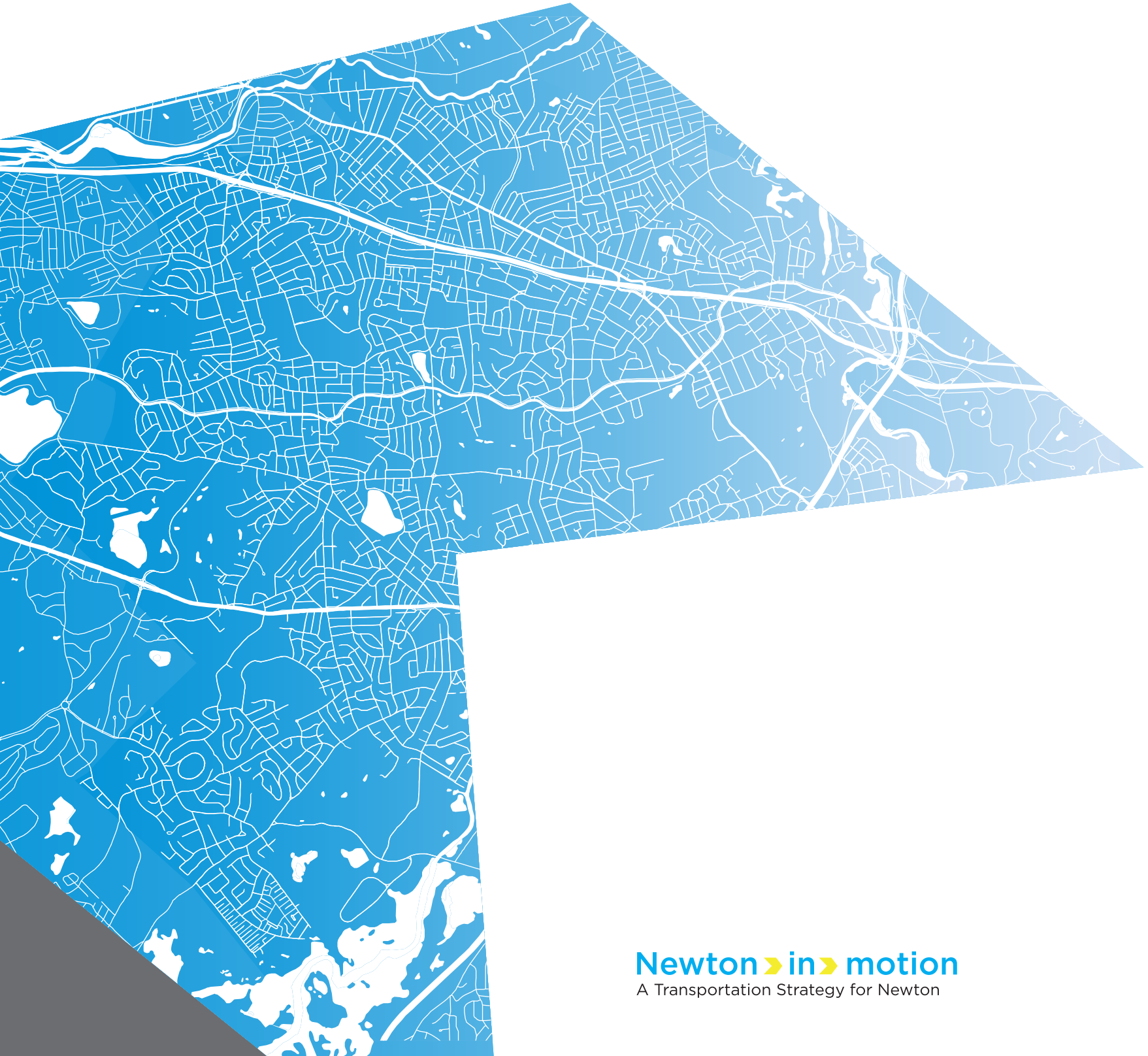
TRANSIT + SHARED MOBILITY

ACTIVE TRANSPORTATION

PARKING MANAGEMENT

CONGESTION REDUCTION

PROCESSES AND PRIORITIZATION



Newton in motion

A Transportation Strategy for Newton

TRANSPORTATION FACTBOOK

PART 3

Newton › in › motion

A Transportation Strategy for Newton

FEBRUARY 2017

Contents

Figures

THE FACTS

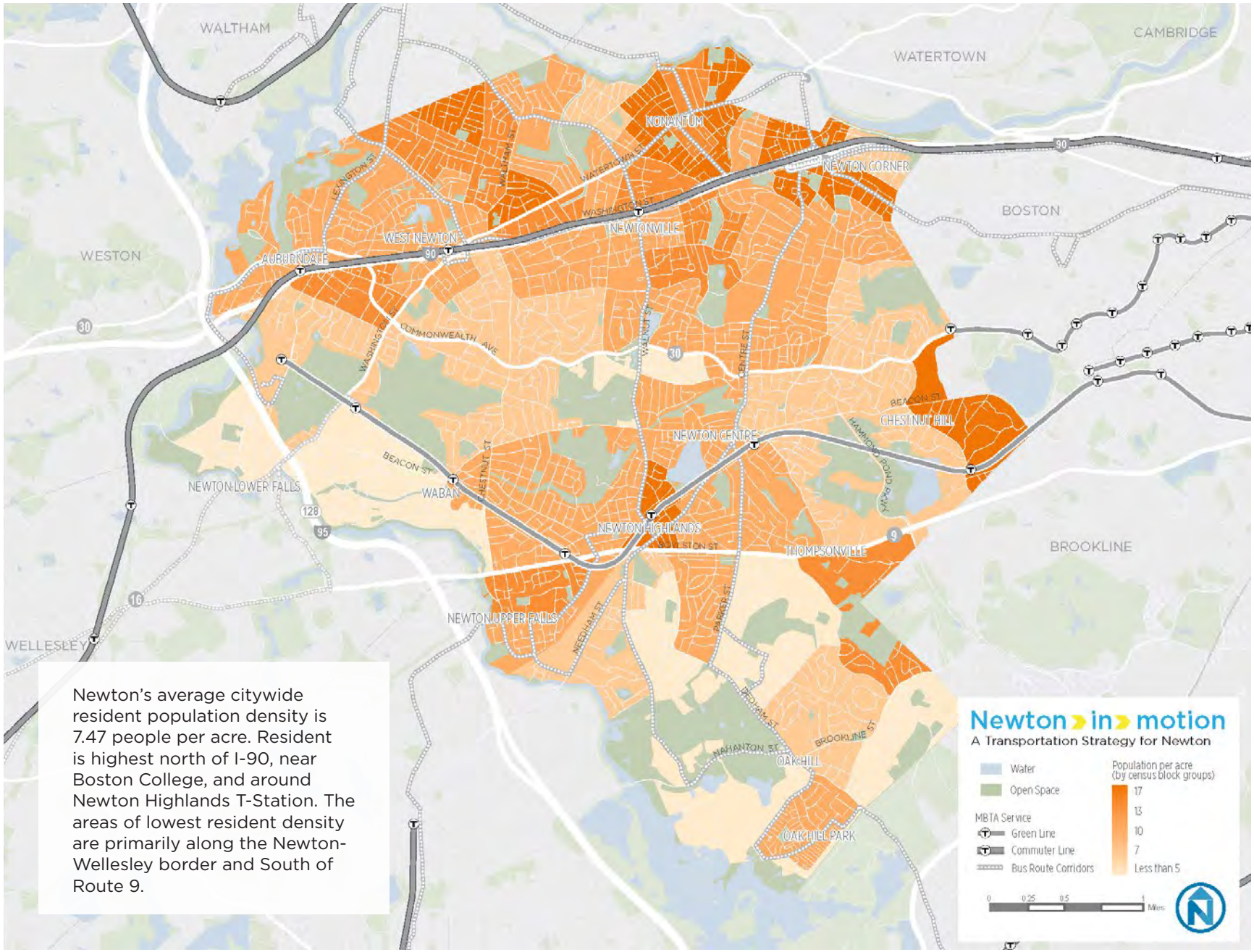
01 PEOPLE

Newton's population is diverse and changing. The City is expected to have a significantly different population composition in 2030 as compared to today. Transportation networks connect people to jobs, services, and recreation opportunities, and it is essential to know where people are and where they are going.

- Resident Density
- Job Density
- Transportation for Residents under 18
- Transportation for Residents over 60
- Transportation Affordability

RESIDENT DENSITY

FIGURE 1 RESIDENT DENSITY

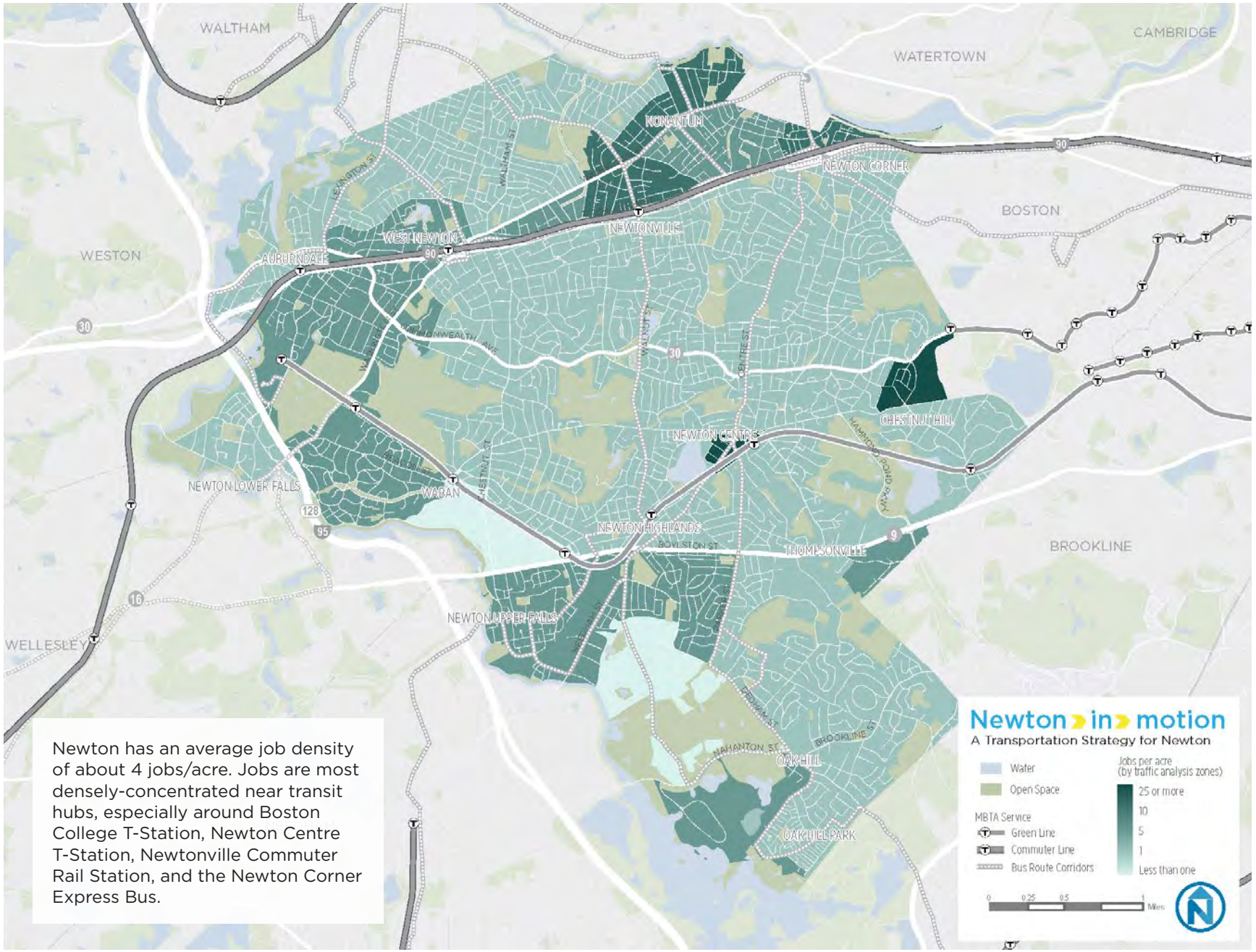


Newton's average citywide resident population density is 7.47 people per acre. Resident is highest north of I-90, near Boston College, and around Newton Highlands T-Station. The areas of lowest resident density are primarily along the Newton-Wellesley border and South of Route 9.

Source: ACS 2014, 5-year estimates

JOB DENSITY

FIGURE 2 JOB DENSITY

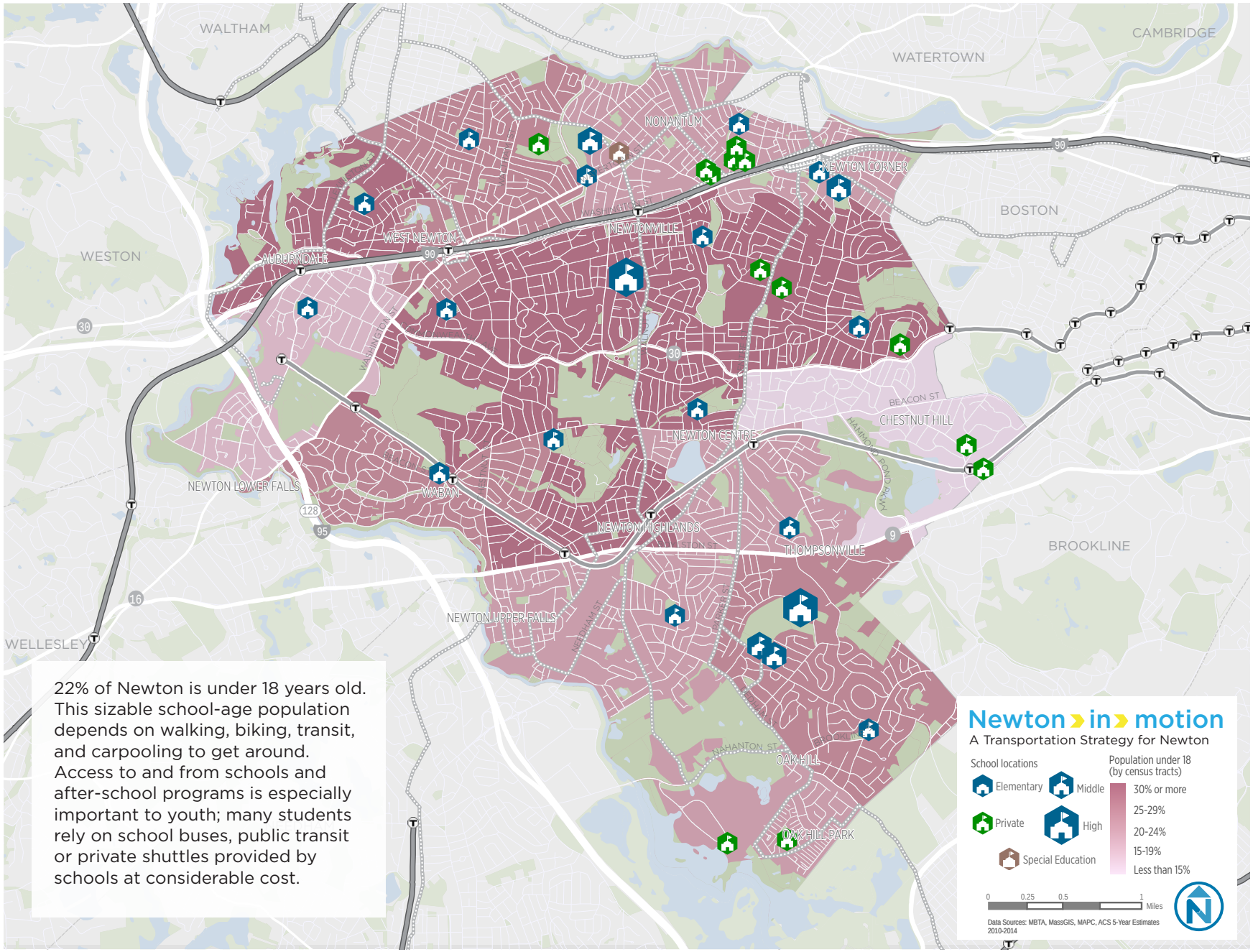


Newton has an average job density of about 4 jobs/acre. Jobs are most densely-concentrated near transit hubs, especially around Boston College T-Station, Newton Centre T-Station, Newtonville Commuter Rail Station, and the Newton Corner Express Bus.

Source: ACS 2010, 5-year estimates via Census Transportation Planning Products

TRANSPORTATION FOR RESIDENTS UNDER 18

FIGURE 3 POPULATION UNDER 18 AND SCHOOL LOCATIONS IN NEWTON



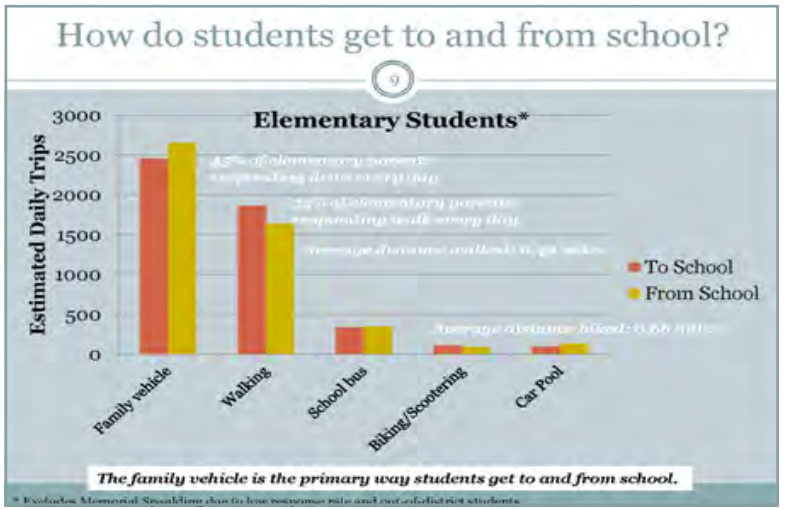
Source: ACS 2015, 5-year estimates, City of Newton

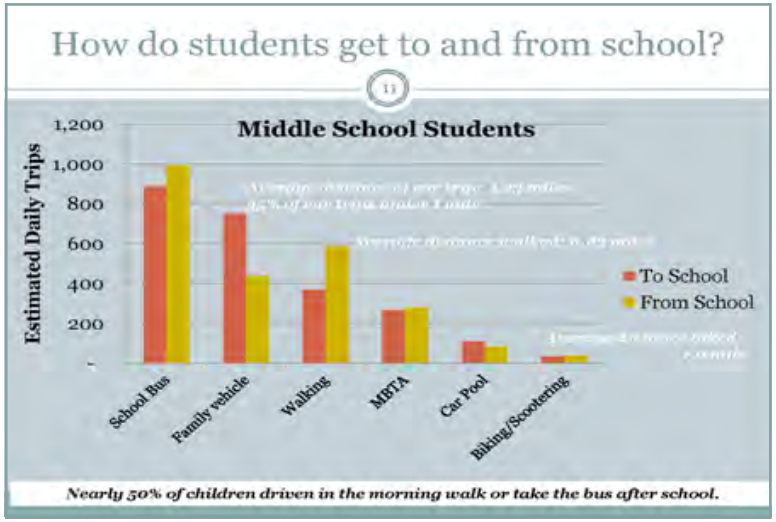
More often than not, Newton students start out walking, biking, using transit, or carpooling to and from school. A recent Newton Student Transportation Survey found that 55% of elementary student families are using one of these alternatives to driving to school in a family vehicle. As Newton students age into young adults, they are already learning the skills for utilizing a broad range of transportation options.

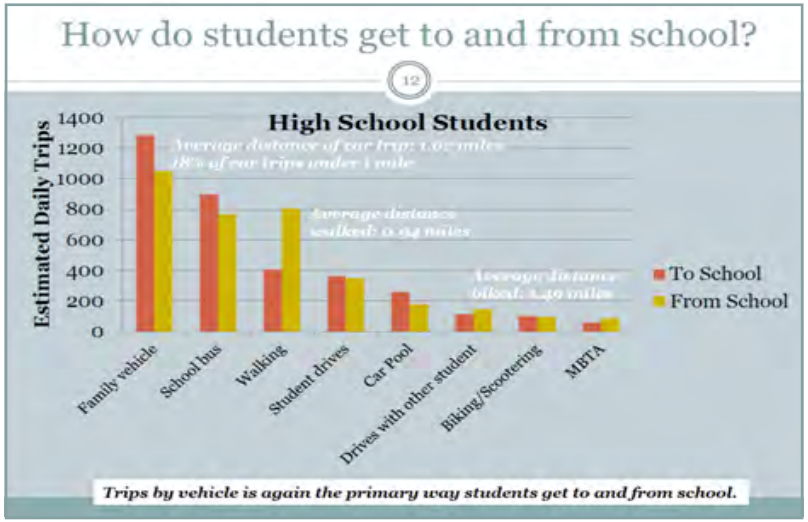
While many students continue to use the options available as they transition to middle and high school, the study also found that 35% of middle school students and 18% of high school students are being driven less than 1 mile to and from school. In total it is estimated that Newton Public Schools generates 4,500 vehicle trips in the mornings and a little more than 4,000 vehicle trips in the afternoons, from students alone.*

Newton has an active Safe Routes Task Force that is working both to improve and encourage safe access to school by walking, biking, and taking transit or school buses, as well as to reduce the congestion and pollution in front of Newton schools.

**Does not include Memorial Spaulding School.*







Source: Newton Student Transportation Survey. City of Newton Planning Department Safe Routes To School Spring 2014

TRANSPORTATION FOR RESIDENTS OVER 60

Projections indicate that Newton's residents are expected to age in place. By 2030, 1 of 4 Newtonians are expected to be 65 or older.

From 2000 to 2010, residents over 50 increased by 15%, although the population in the City overall increased by 2%. Nearby communities are experiencing similar trends.

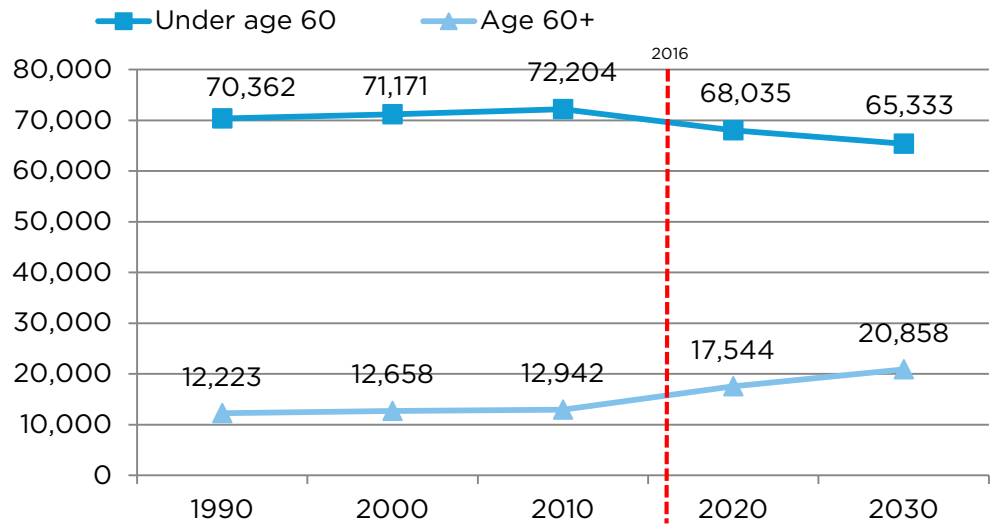
According to the 2013 Senior Citizens Fund of Newton survey, 88% of seniors today feel it is important to stay in Newton as long as possible.

FIGURE 4 POPULATION GROWTH BETWEEN 2000 AND 2010: MASSACHUSETTS, NEWTON, AND SURROUNDING COMMUNITIES

	ALL AGES			BOOMERS (AGE 50-59)			SENIORS (AGE 60+)		
Community	**Population 2010**	**Population 2000**	**% Growth**	**Population 2010**	**Population 2000**	**% Growth**	**Population 2010**	**Population 2000**	**% Growth**
Massachusetts	6,547,629	6,349,097	3%	929,823	721,410	29%	1,273,271	1,096,567	16%
Newton	85,146	83,829	2%	12,320	11,091	11%	18,636	15,921	17%
Brookline	58,732	57,107	3%	6,586	6,742	-2%	10,816	9,053	19%
Needham	28,886	28,911	0%	4,462	3,601	24%	6,498	6,371	2%
Waltham	60,632	59,226	0%	7,240	6,070	19%	10,429	9,933	5%
Wellesley	27,982	26,613	5%	3,729	3,402	10%	5,429	4,780	14%
Weston	11,261	11,469	-2%	1,834	1,687	9%	2,746	2,463	11%

Source: US Census Bureau. 2010, Census, Summary File 1, Table QT-P1; and 2000 Census, Summary File 1, Table QT-P1

FIGURE 5 CHANGE IN THE NUMBER OF NEWTON RESIDENTS UNDER AGE 60, AND AGE 60 AND OLDER, 1980 TO 2010, WITH PROJECTIONS TO 2030



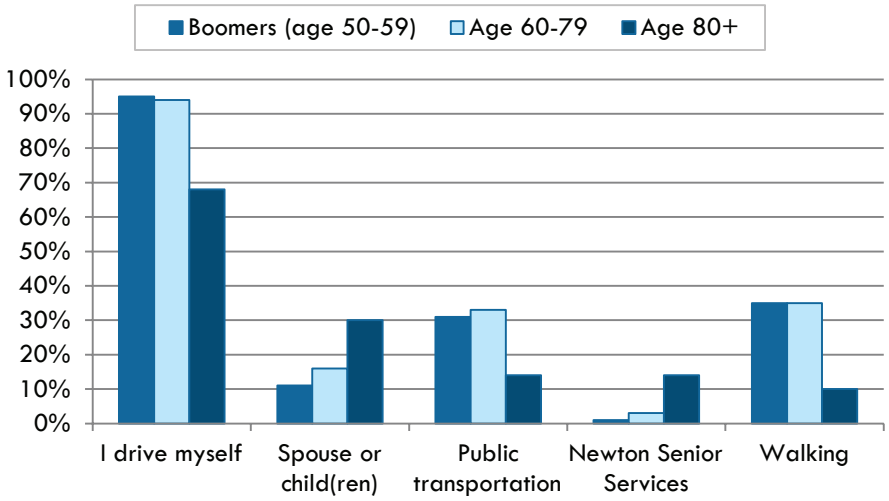
Source: Barry Bluestone & Tracy Corley, Dukakis Center Demographic Projections for the City of Newton, Massachusetts, May 2014

FIGURE 6 AGING STATISTICS

AGING STATISTICS, CITY OF NEWTON	
Percent of households in which head resident is 60+ years old	37%
Percent of households with at least one member who is 60+ years old	39%
Percent of residents aged 60+ who live alone	23%
Percent of residents aged 65+ with incomes under $25,000	25%
Percent of residents aged 50+ who have lived in Newton for 25+ years	63%
Percent of seniors who feel it is important to stay in Newton as long as possible	88%

Source: 2013 Senior Citizens Fund of Newton, Inc. survey of 1,111 Newton adults aged 50 years and older.

FIGURE 7 PRIMARY MODES OF TRANSPORTATION BY AGE CATEGORY

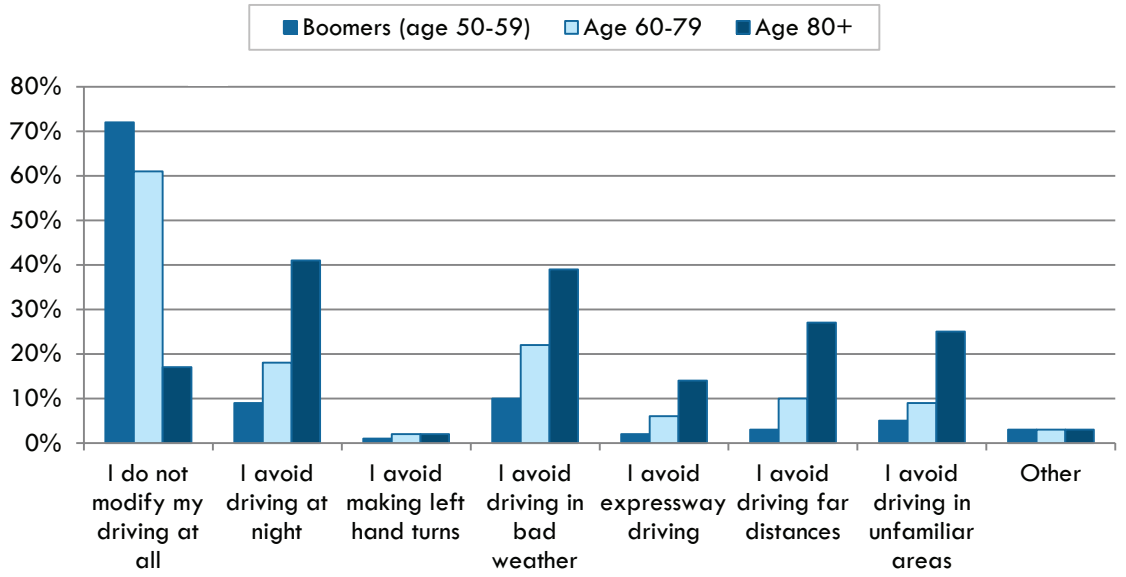


Source: 2013 Senior Citizens Fund of Newton, Inc. survey of 1,111 Newton adults aged 50 years and older.

As adults in Newton age, they are less likely to drive themselves and more likely to be driven by spouses or children. Survey results also indicate that those over 80 are less likely to take public transportation but more likely to use transportation from Newton Senior Services.

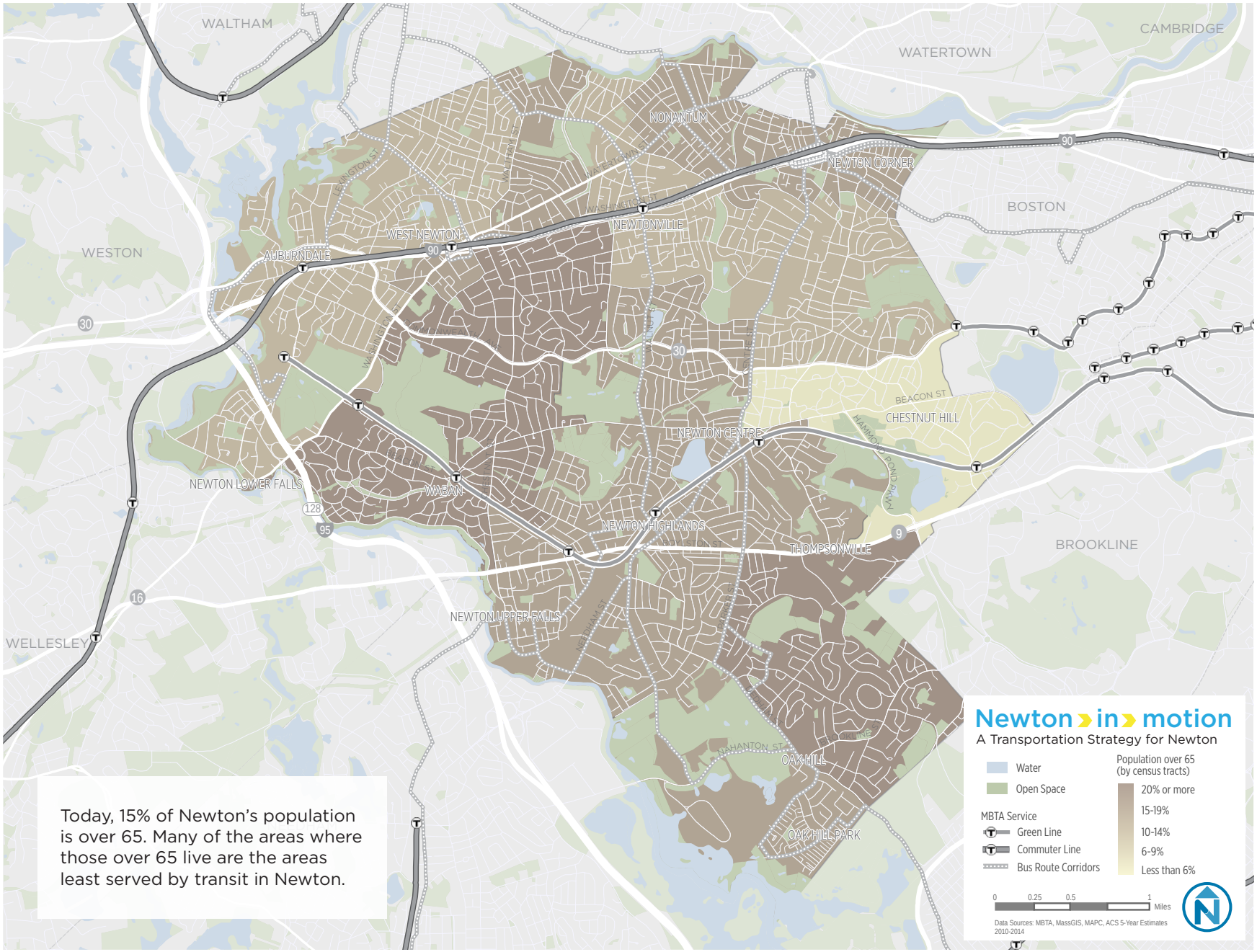
Seniors over 80 are much less likely to drive than those under 80, particularly at night and during bad weather.

FIGURE 8 MODIFICATION TO DRIVING BY AGE CATEGORY



Source: 2013 Senior Citizens Fund of Newton, Inc. survey of 1,111 Newton adults aged 50 years and older.

FIGURE 9 POPULATION OVER 65



Source: American Community Survey, 2010-2014 Five-Year Estimates

TRANSPORTATION AFFORDABILITY

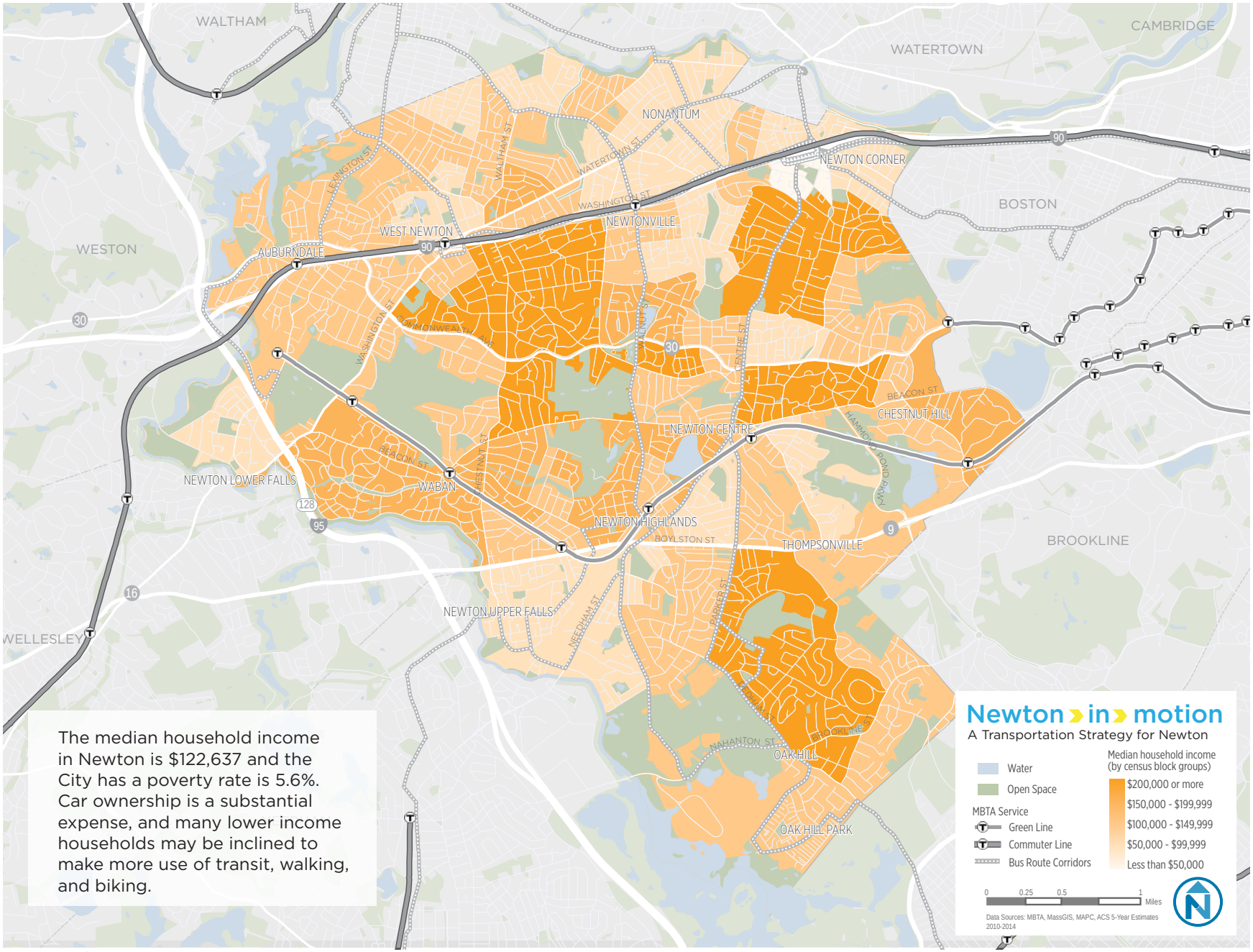
45%

The Department of Housing and Urban Development (HUD) defines a location as "affordable" if the combined housing and transportation costs do not exceed 45% of a household's income before deductions.

Cost of living, in particular the combined costs of housing and transportation, is one of the most relevant factors in evaluating a community's overall quality of life. Like many communities in the Boston region, Newton is facing challenges in providing housing options that are affordable to the broad range of income levels that its residents have.

The location of housing relative to transportation options results in varying trade-offs for individuals and families in Newton. Financial costs, environmental costs, and commuting time are generally lower when people live closer to the places where they go to work, go to school, and go shopping.

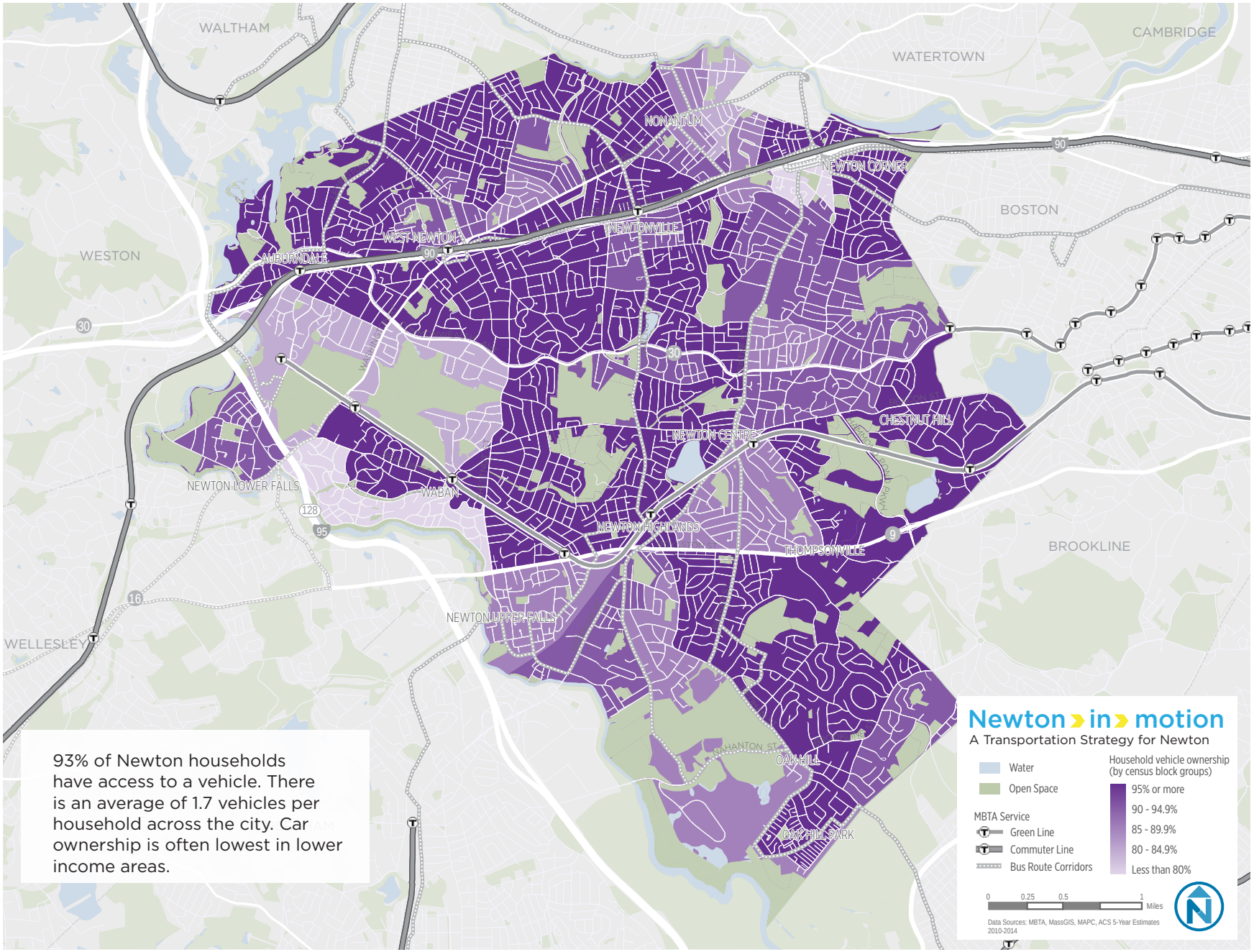
FIGURE 10 MEDIAN HOUSEHOLD INCOME



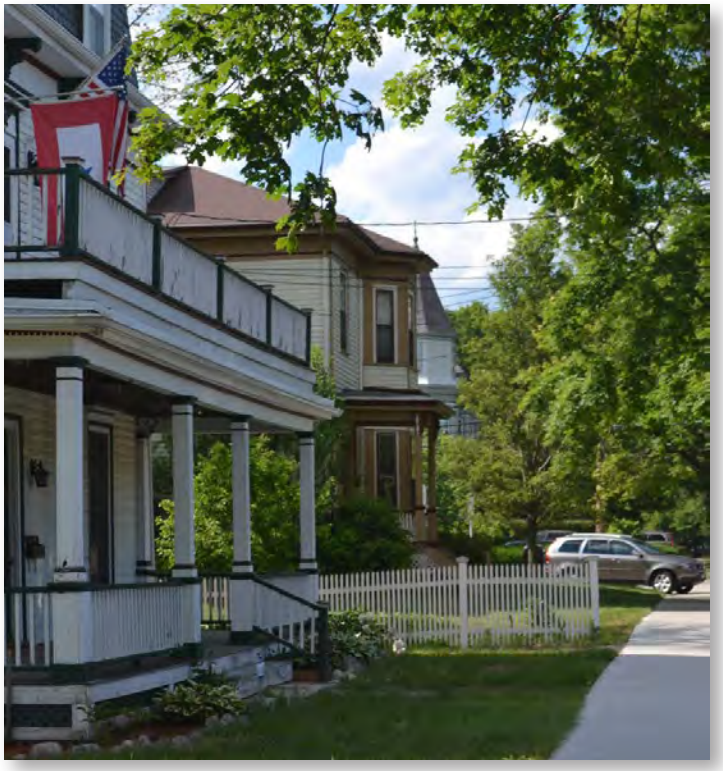
Source: American Community Survey, 2010-2014 Five-Year Estimates

VEHICLE OWNERSHIP

FIGURE 11 HOUSEHOLD VEHICLE OWNERSHIP, BY CENSUS BLOCK GROUP



Source: American Community Survey, 2010-2014 Five-Year Estimates



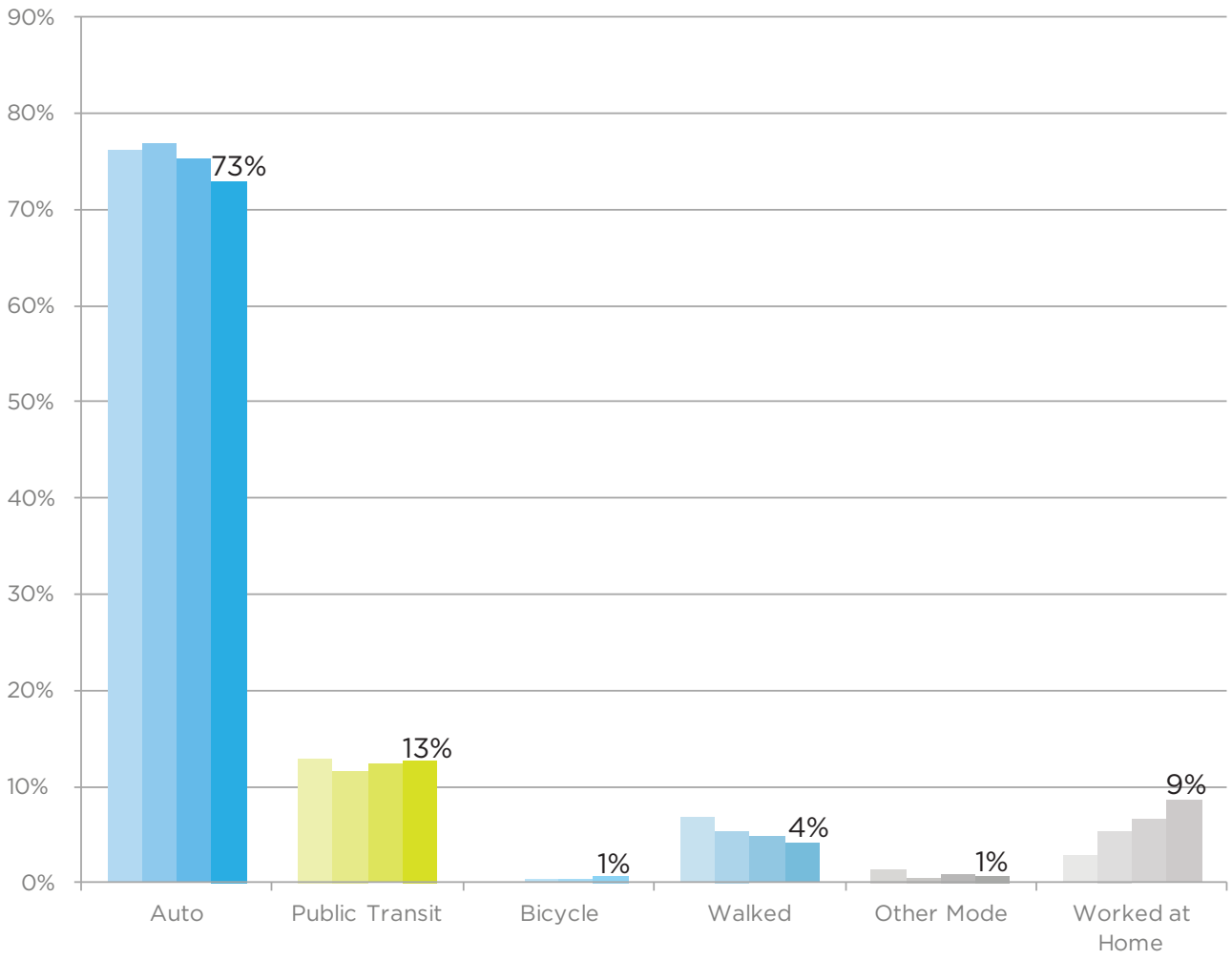
Newton has a mix of lively villages and quiet residential neighborhoods, each with a distinct character and sense of place.

02 COMMUTING

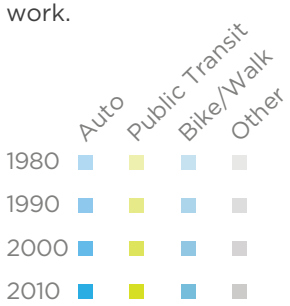
Most Newtonians drive alone to work, but the trends indicate that over the past few decades, more commuters are choosing other options. The means of travel that a person chooses when commuting is recorded by the US Census, which refers to each method of travel as a Mode, and the overall percentages of each method used is referred to as the Mode Split.

COMMUTING CHOICES WITHIN NEWTON

FIGURE 12 TRIPS TO WORK - MODE SPLIT TRENDS (1980-2010)



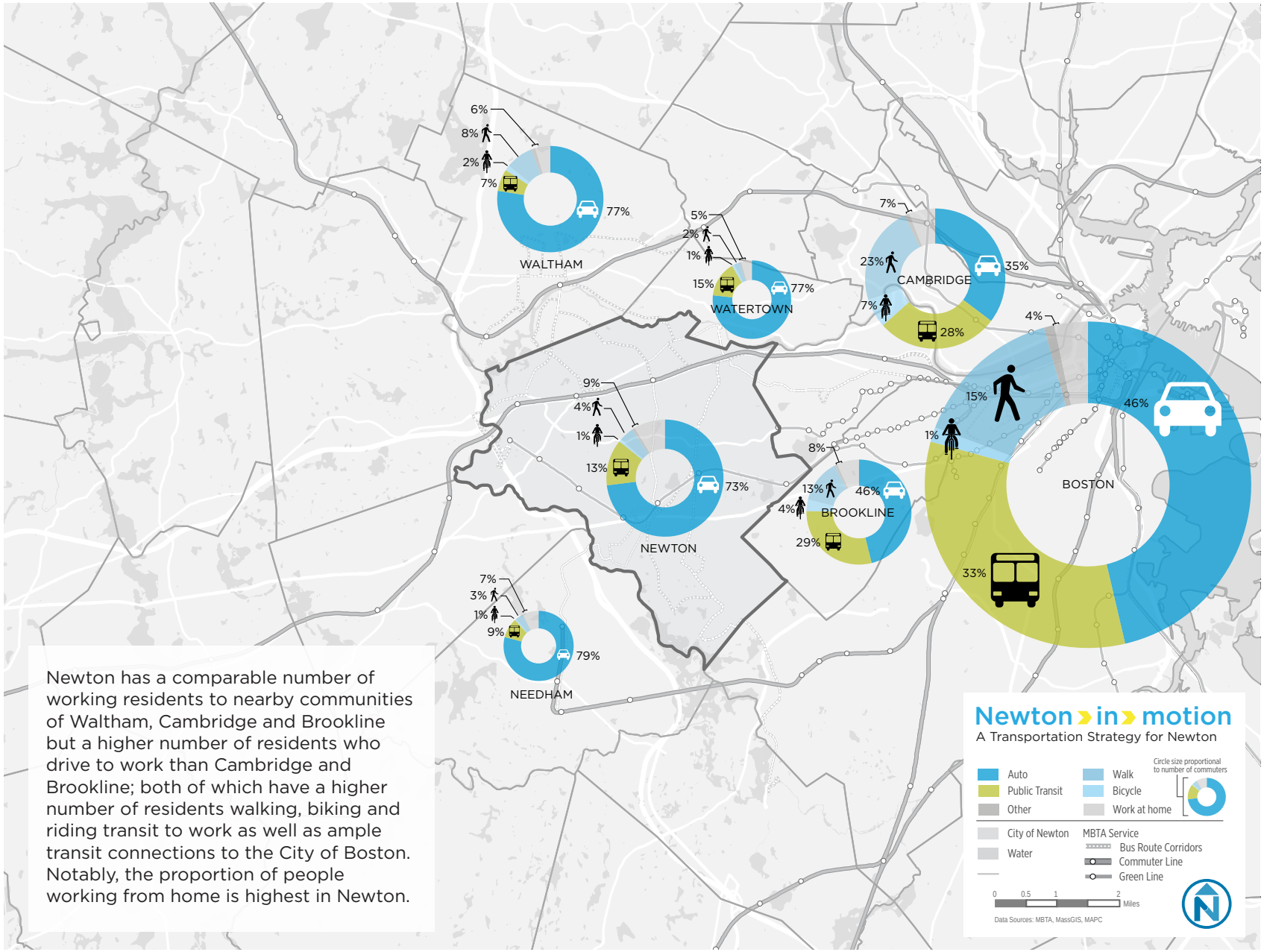
Since 1980, the share of Newtonians driving to work has modestly decreased since 1980 by 3.1% while the population increased by 2%. The percentage of people riding public transit and biking to work has increased and there has also been a steady increase of Newtonians who work from home, which may explain the decrease in both the percentages of people driving and walking to work.



Source: Census 1980-2000 and ACS 2010, 5-year estimates via Boston Region MPO's CTPS data

COMMUTING CHOICE, REGIONAL COMPARISON

FIGURE 13 TRIPS TO WORK - REGIONAL MODE SPLIT

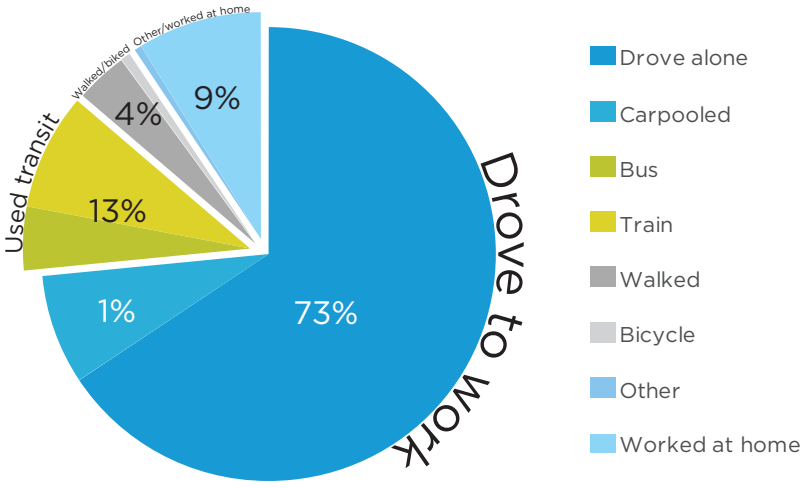


Newton has a comparable number of working residents to nearby communities of Waltham, Cambridge and Brookline but a higher number of residents who drive to work than Cambridge and Brookline; both of which have a higher number of residents walking, biking and riding transit to work as well as ample transit connections to the City of Boston. Notably, the proportion of people working from home is highest in Newton.

Source: Census 1980-2000 and ACS 2010, 5-year estimates via Boston Region MPO's CTPS data

HOW NEWTON RESIDENTS COMMUTE & HOW WORKERS COMMUTE TO NEWTON

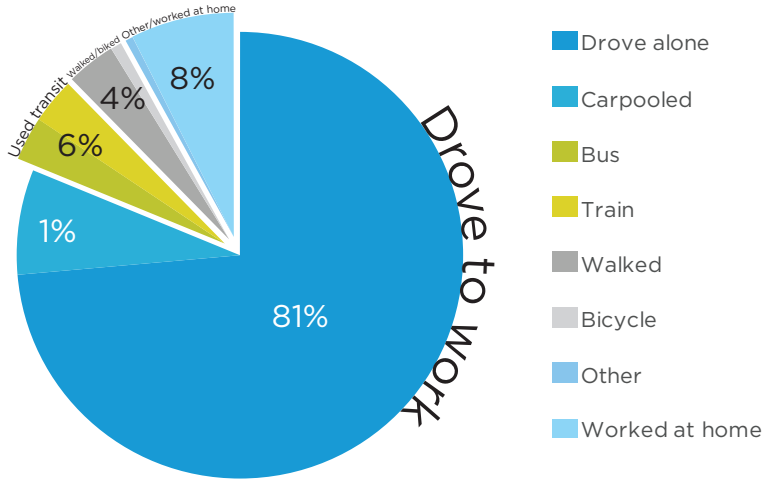
FIGURE 14 HOW NEWTON RESIDENTS COMMUTE



Source: ACS 2010, 5-year estimates via Census Transportation Planning Products

Nearly three out of every four Newton residents drive alone to work, and four of every five people that work in Newton drive alone. Newton residents have a higher propensity to commute by transit than those coming to Newton for work (more than double).

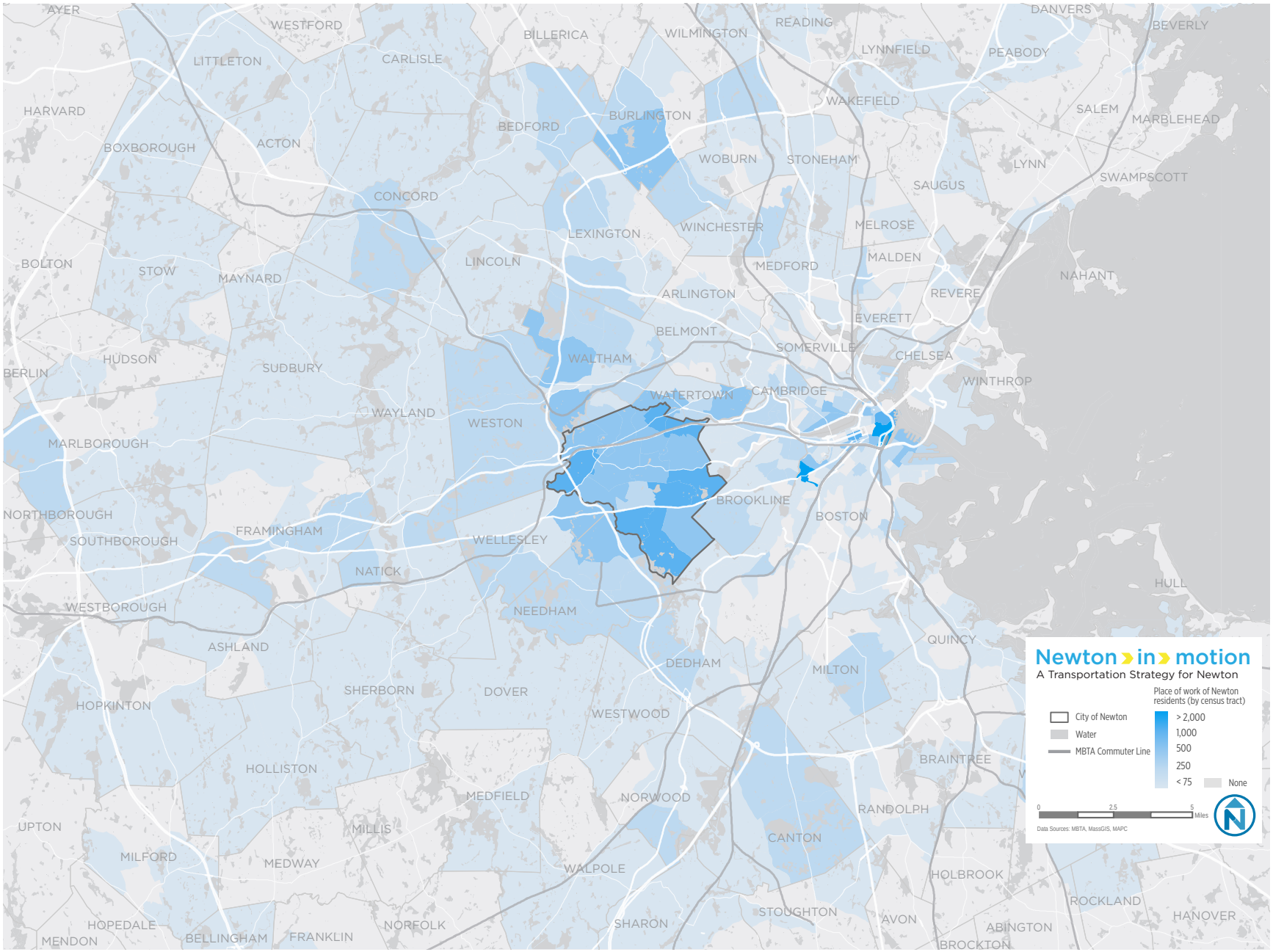
FIGURE 15 HOW WORKERS COMMUTE TO NEWTON



Source: ACS 2010, 5-year estimates via Census Transportation Planning Products

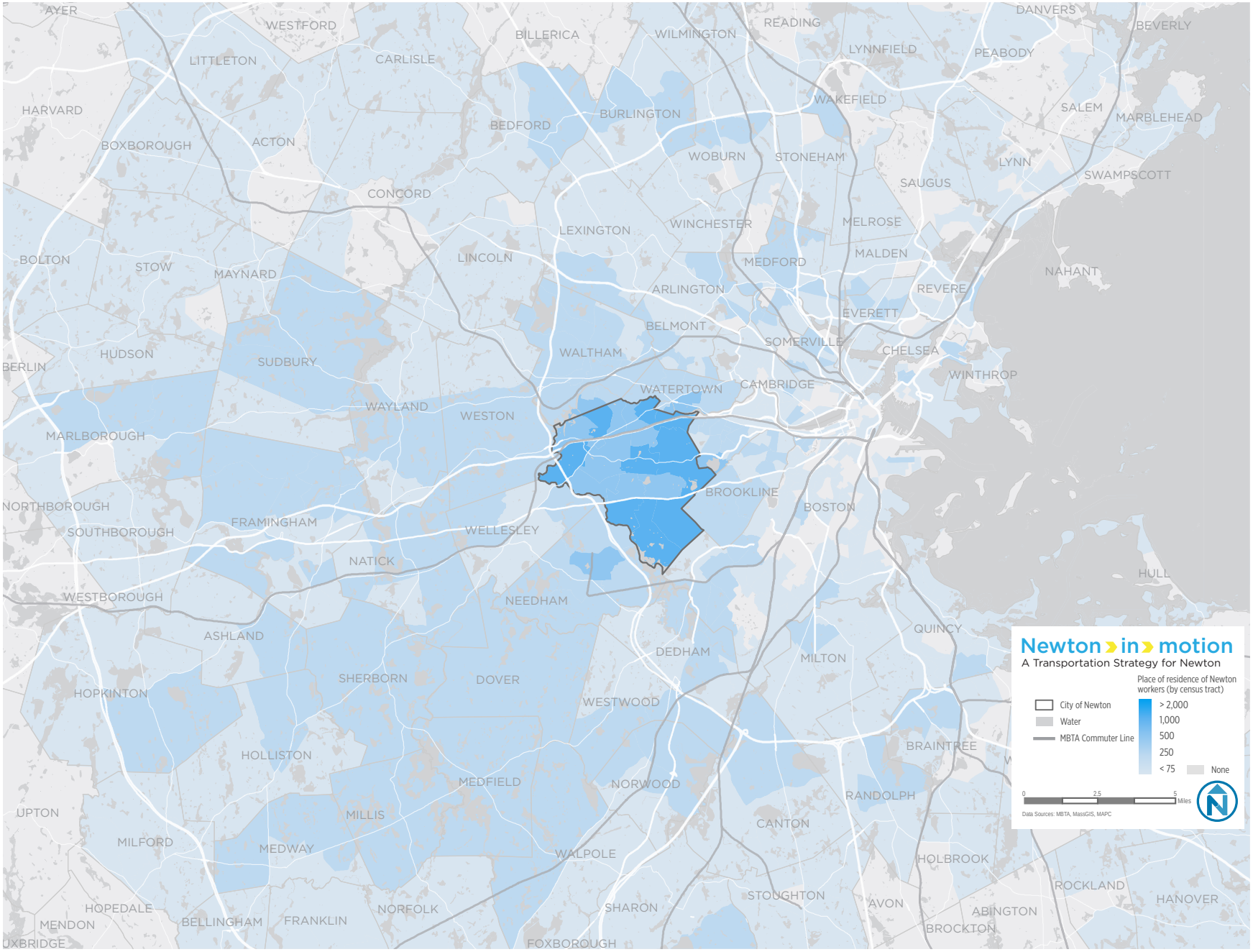
The origins of Newton employees and destinations of Newton residents are shown in the following figures. Most of Newton residents commute to Boston, either to downtown or the Longwood Medical area. Of those who work in Newton, 22% also live in Newton, and there is also a substantial number of employees that come to Newton from suburban communities west of Newton.

FIGURE 16 WHERE DO NEWTON RESIDENTS GO TO WORK?



Source: ACS 2010, 5-year estimates via Census Transportation Planning Products

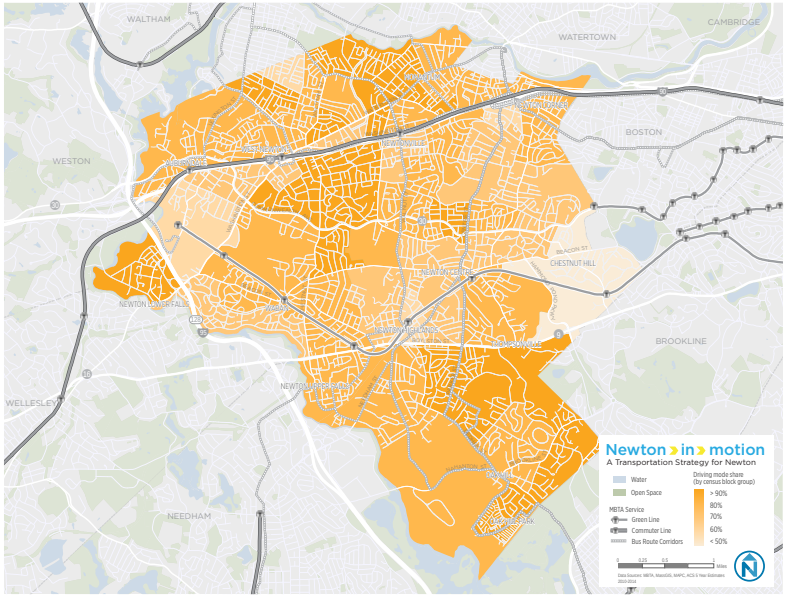
FIGURE 17 WHERE DO NEWTON WORKERS COME FROM?



Source: ACS 2010, 5-year estimates via Census Transportation Planning Products

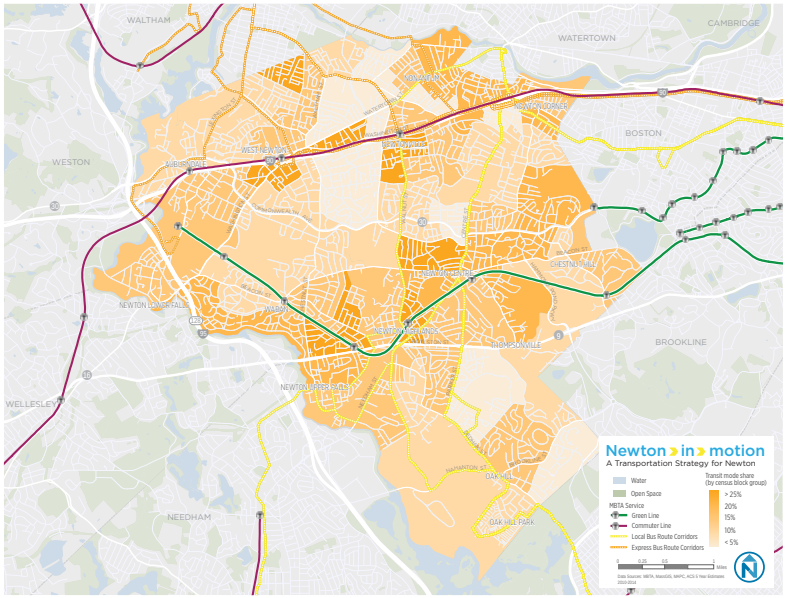
COMMUTING CHOICE MODE SHARES

FIGURE 18 DRIVE ALONE TO WORK MODE SHARE



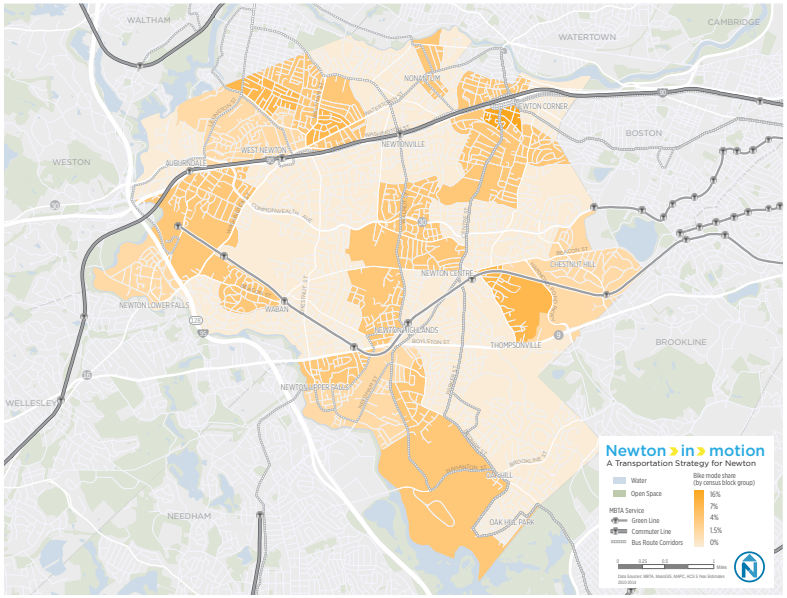
Even in neighborhoods with good access to transit, most residents drive to work.

FIGURE 19 RIDE TRANSIT TO WORK MODE SHARE



The areas of Newton with the highest percentages of residents riding transit to work are closest to the transit network, such as in Newton Centre and in Newtonville.

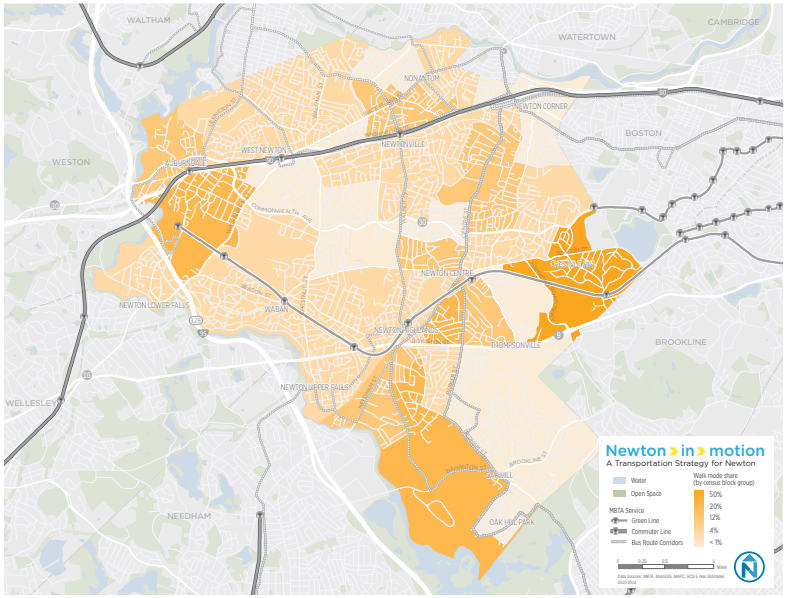
FIGURE 20 BIKE TO WORK MODE SHARE



The percentage of Newtonians who bike to work is low but residents in Newton Corner bike to work more than others.

Source: ACS 2013, 5-year estimates

FIGURE 21 WALK TO WORK MODE SHARE



Chestnut Hill has the highest percentage of those who walk to work.

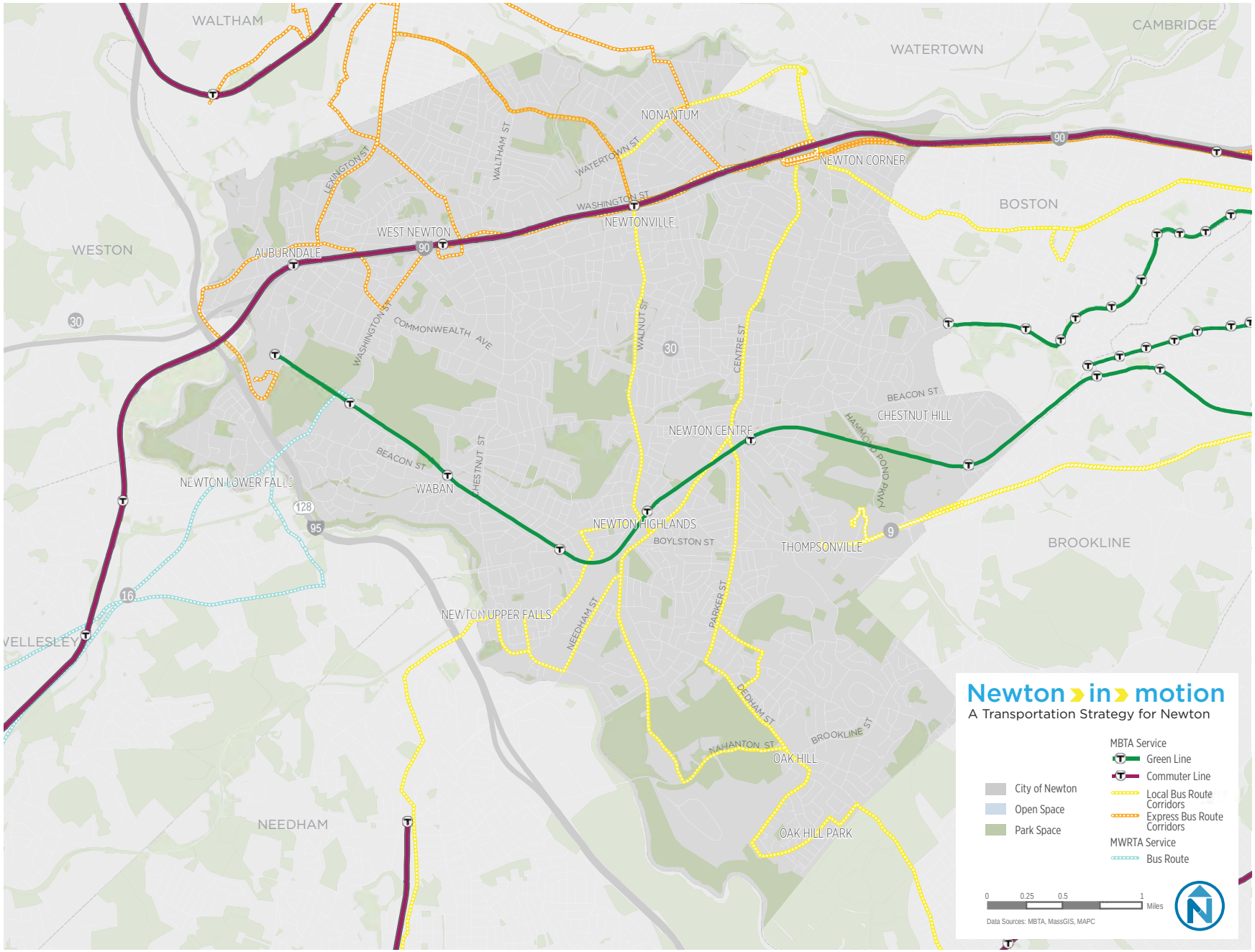
03 TRANSIT

Although Newton has a variety of public transit options, including Green Line service every 7 minutes on weekdays, the frequency and quality of access to these options varies widely.

- Public Transit in Newton
- Walking Distance to Transit
- Transit Potential Index
- Transit Ridership

PUBLIC TRANSIT IN NEWTON

FIGURE 22 NEWTON PUBLIC TRANSIT



Source: MBTA, MassGIS, MAPC, City of Newton

Newton's rapid transit lines cross the city as east-west routes, while the north-south routes are served by buses. Newton is served by the "D" Branch of the MBTA Green Line with seven stops at Chestnut Hill, Newton Centre, Newton Highlands, Elliot, Waban, Woodland, and Riverside. The MBTA Commuter Rail's Framingham/Worcester Line serves three stops in Newton at Newtonville, West Newton, and Auburndale. In addition, the City is serviced by five local MBTA bus routes as well as nine MBTA express bus routes which connect Newton to downtown Boston via the Massachusetts Turnpike. All of Newton's express bus routes run north of I-90. The MetroWest Regional Transit Authority also provides bus service to Newton, connecting at Woodland Station

In 1997, the City of Newton initiated an internal bus system, the Newton Nexus. The system originally operated with 3 rush-hour routes and 3 midday routes, including the following service loops:

- A loop connecting Newton Corner to Newton City Hall
- A loop connecting Newton Highlands Station, Winchester St, and Dedham Street
- A loop connecting West Newton Station to Auburndale, Riverside, and Woodland Stations

Midday service was operated to Newton City Hall and the Newton Free Library on all three routes. Due to low ridership and high operating costs, the service was consolidated over time and eventually discontinued in 2003.

NON-MBTA TRANSIT AND OTHER PRIVATE SHUTTLES

Boston College Shuttle
Service between Newton Campus at 885 Centre Street and the Main Campus, along with service from Main Campus to Reservoir Station

Lasell College Shuttle
Service between Riverside Station and West Newton Campus

Mt. Ida College Shuttle
Service between the College, Chestnut Hill and Newton Centre

Route 128 Business Council Needham Shuttle
Service between Needham Office Park and Newton Highlands Station

MASCO Chestnut Hill Shuttle
Service between park and ride at Congregation Mishkan Tefila in Chestnut Hill and Longwood Medical Area

FIGURE 23 PM PEAK HOUR HEADWAYS ON NEWTON TRANSIT LINES

Route	PM Peak Hour Headway (Minutes)
Express Bus Routes	
501	6/7
502	12
503	30/35
504	11-12
505	15
553	60
554	55-66
556	30
Commuter Rail	
Worcester Line	40
Mass Transit	
Green Line "D" Branch	6

WALKING DISTANCE TO TRANSIT

FIGURE 24 PROXIMITY TO TRANSIT BY TRANSIT TYPE

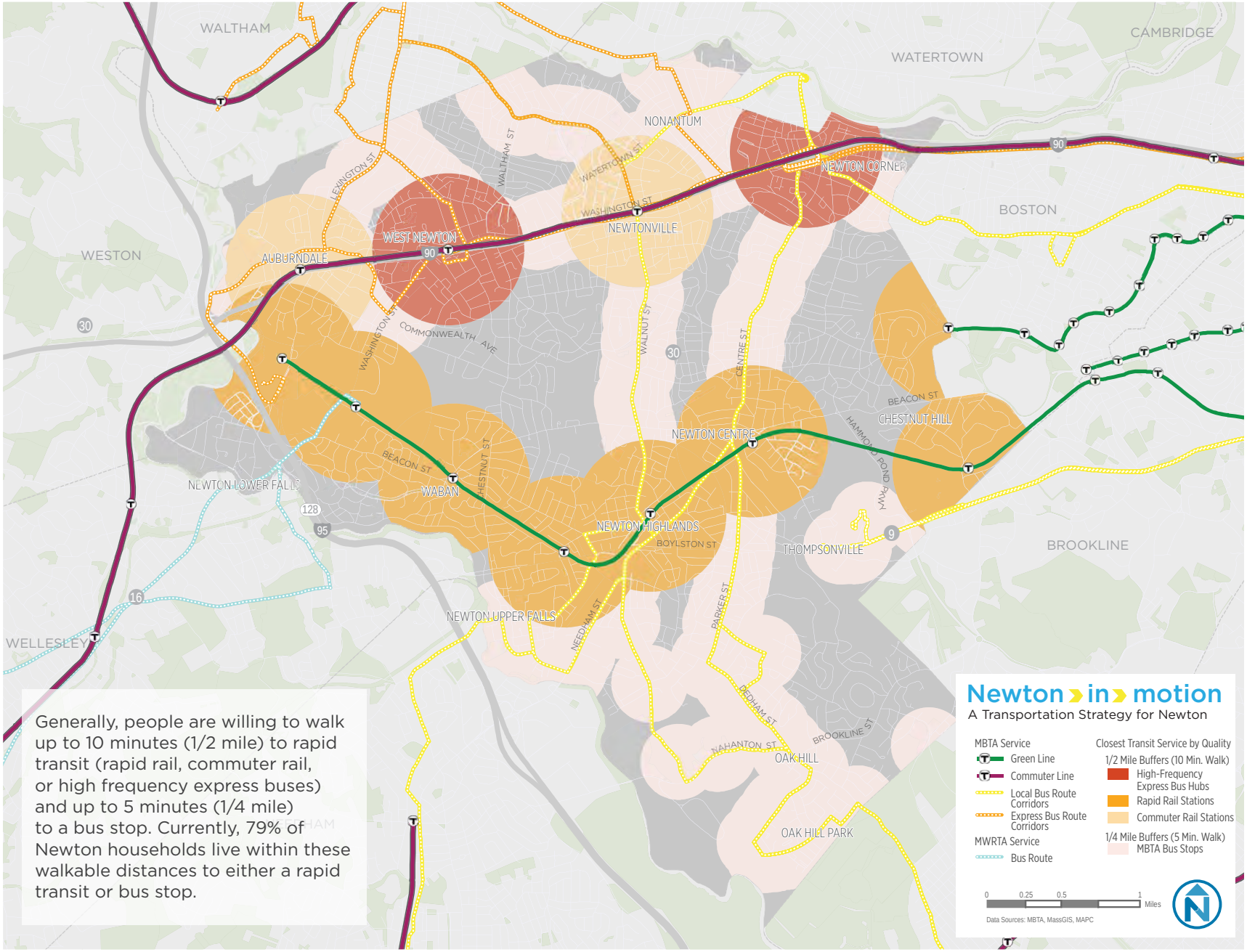
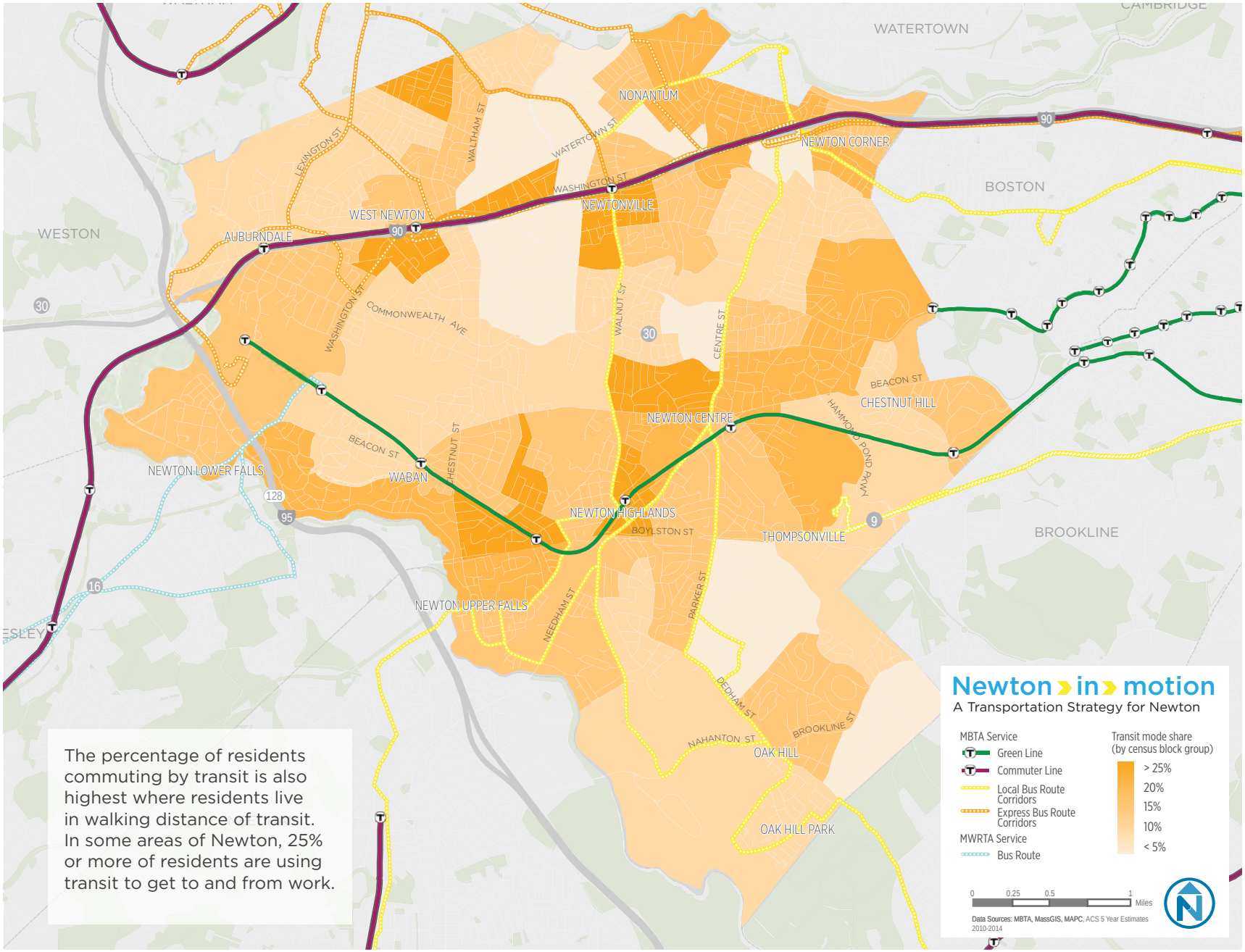
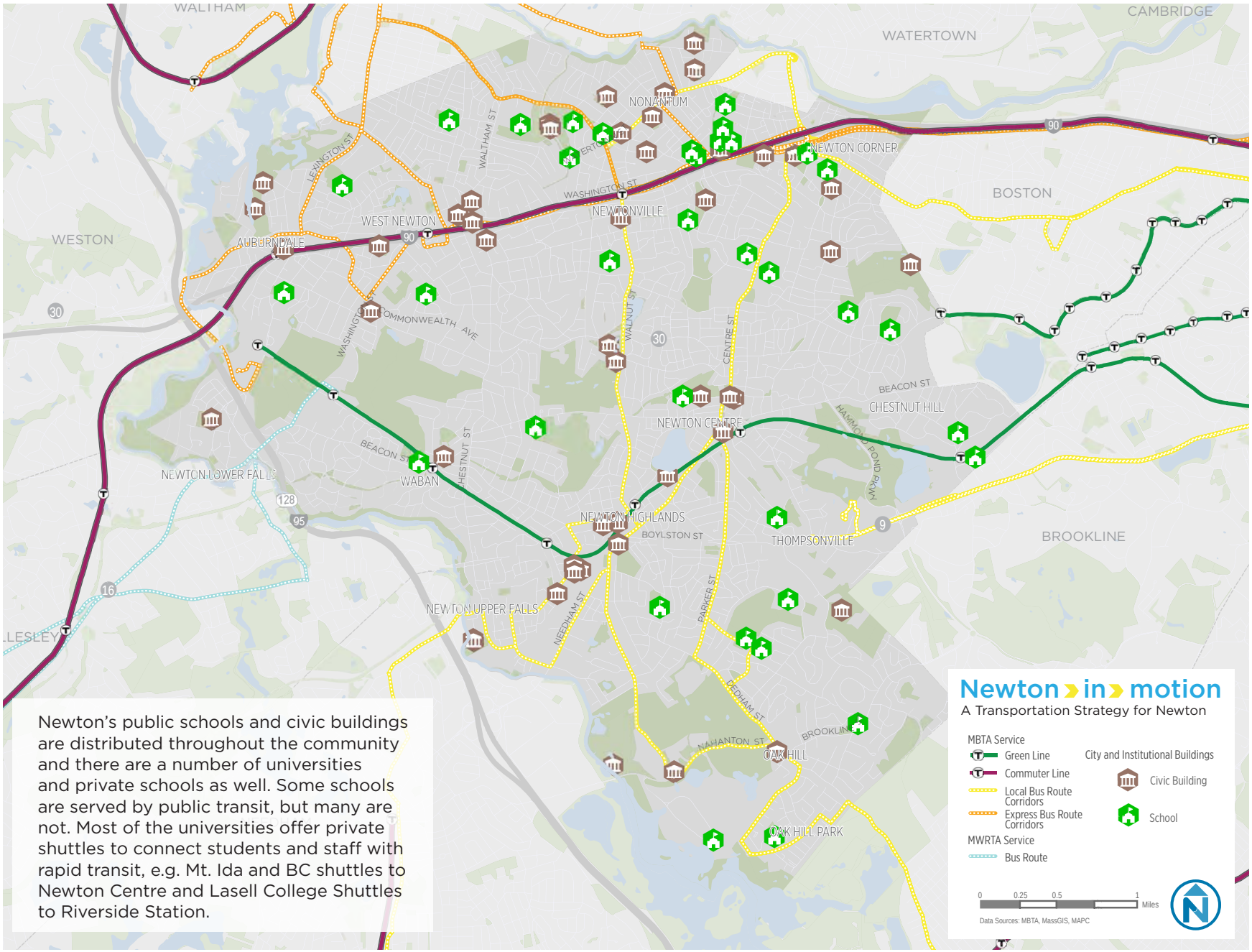


FIGURE 25 PROXIMITY TO TRANSIT BY TRANSIT MODE SHARE



The percentage of residents commuting by transit is also highest where residents live in walking distance of transit. In some areas of Newton, 25% or more of residents are using transit to get to and from work.

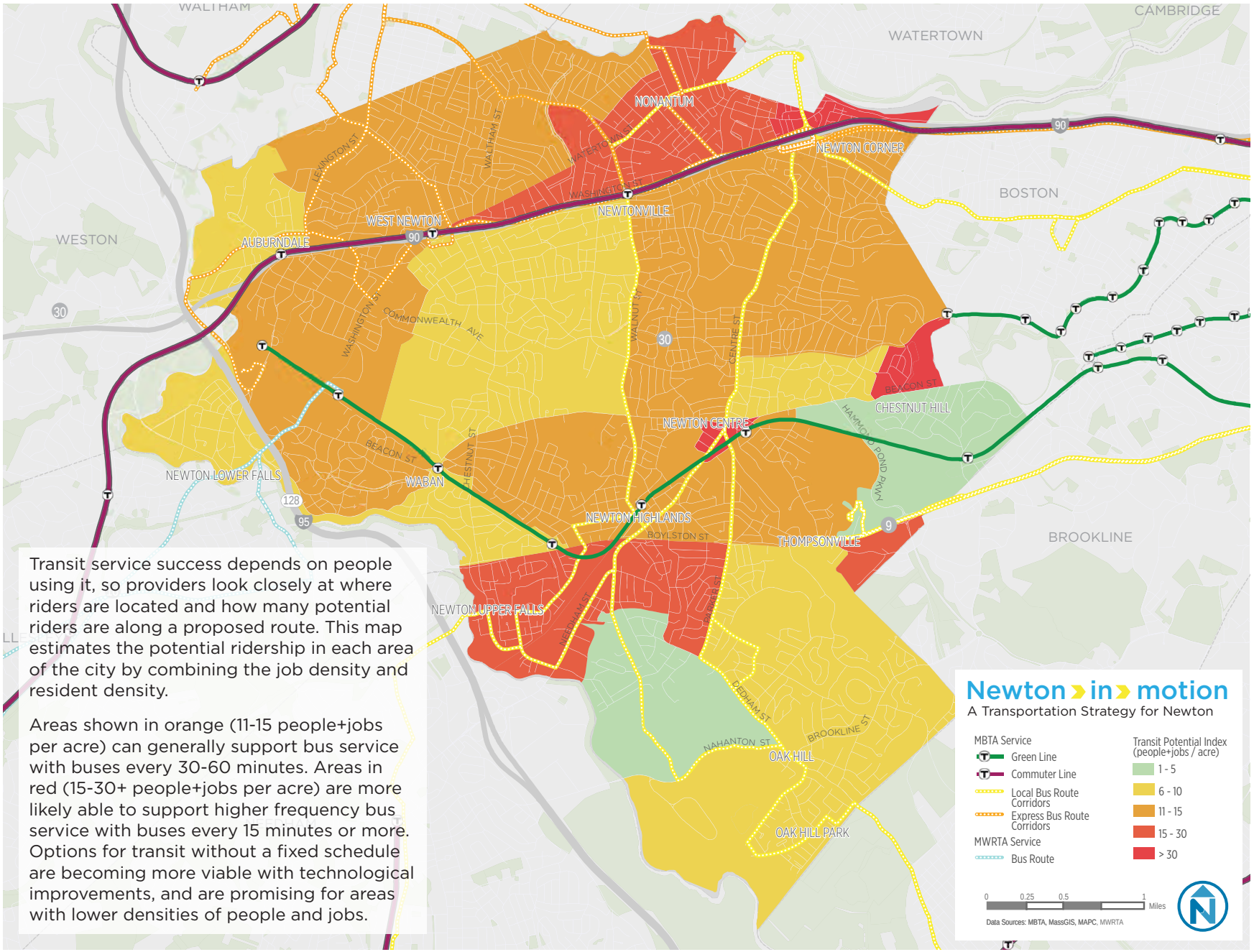
FIGURE 26 NEWTON TRANSIT AND INSTITUTIONS



Source: MBTA, ACS 2010, 5-year estimates via Census Transportation Planning Products

TRANSIT POTENTIAL INDEX

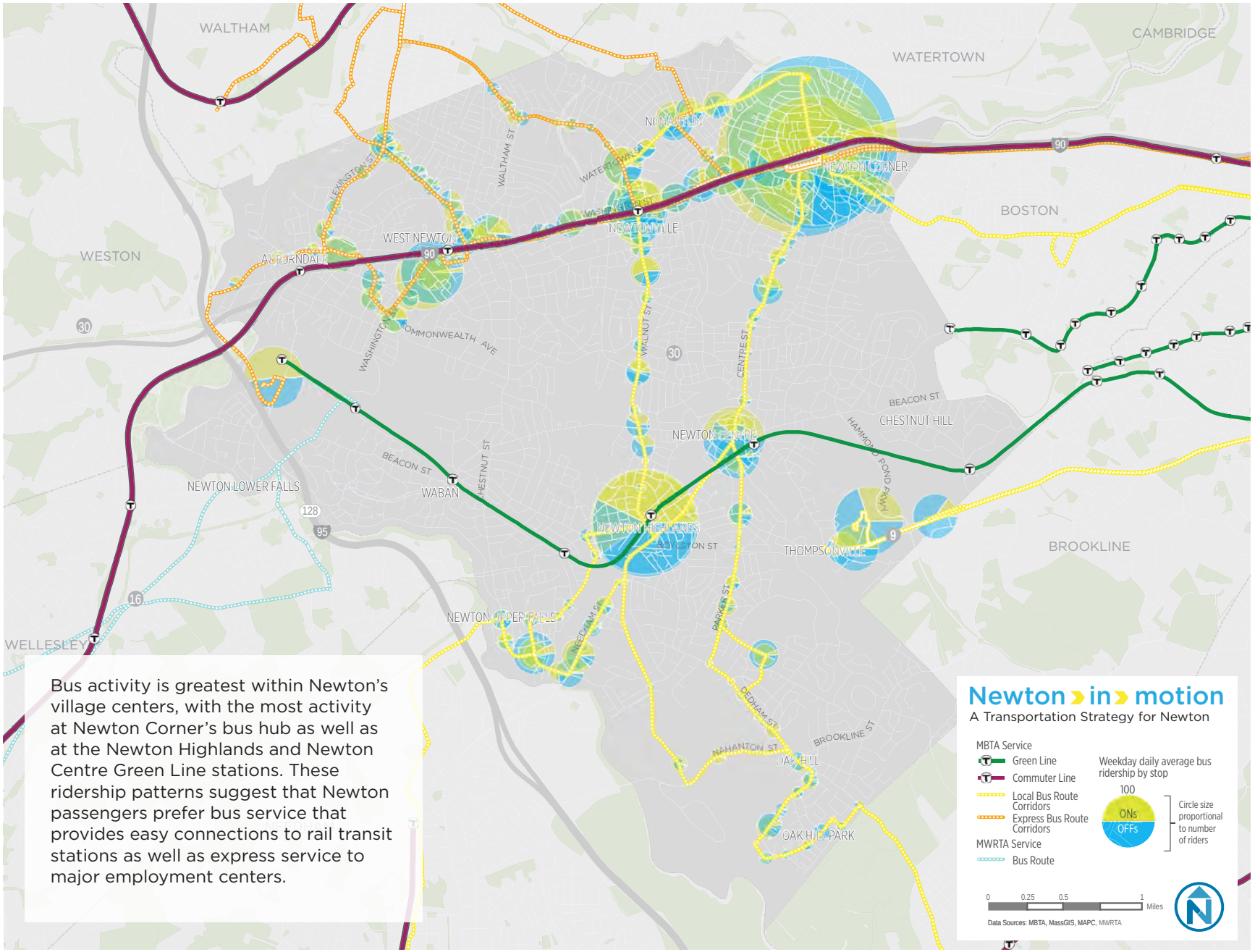
FIGURE 27 TRANSIT POTENTIAL INDEX



Source: MBTA, ACS 2010, 5-year estimates via Census Transportation Planning Products

TRANSIT RIDERSHIP

FIGURE 28 MBTA BUS RIDERSHIP BY STOP, 2014



Source: MBTA, ACS 2010, 5-year estimates via Census Transportation Planning Products

FIGURE 29 BUS RIDERSHIP BY COMMUNITY

City	Total Weekday Bus Boardings	Total Saturday Bus Boardings	Total Sunday Bus Boardings	Bus Stops	Avg. Weekday Bus Boardings Per Stop
BOSTON	265,130	133,830	85,874	1,998	132.7
CAMBRIDGE	39,585	22,656	13,674	273	145.0
SOMERVILLE	16,746	10,252	5,735	265	63.2
MALDEN	12,896	6,683	3,062	266	48.5
QUINCY	12,889	6,115	3,426	502	25.7
CHELSEA	11,632	7,321	4,849	102	114.0
MEDFORD	10,346	5,562	2,883	222	46.6
LYNN	7,245	4,106	2,459	416	17.4
EVERETT	7,176	4,511	2,613	114	62.9
REVERE	7,137	4,773	3,427	183	39.0
ARLINGTON	6,360	3,318	1,857	163	39.0
WATERTOWN	6,256	3,661	2,358	89	70.3
BROOKLINE	4,756	2,571	1,582	105	45.3
NEWTON	**4,199**	**1,134**	**477**	**308**	**13.6**
BELMONT	3,607	1,665	1,004	85	42.4
WALTHAM	2,967	1,688	820	274	10.8
BRAINTREE	1,837	1,166	702	173	10.6

Of all the cities and towns served by the MBTA, Newton has the 14th highest bus ridership, with approximately 4,200 boardings per weekday. However, averaged across all stops, the utilization of any particular bus stops is rather low, with about 13.6 boardings per bus stop. Meanwhile, Brookline has over triple that average and Watertown has over five times that amount. This implies that Newton's bus ridership is highly concentrated in certain stops (such as Newton Corner and Newton Centre) while other local bus stops are very lightly used. Additionally, the responsibility of Newton to maintain accessible sidewalks around 308 bus stops is relatively sizable; only Boston, Quincy, and Lynn have more bus stops.

FIGURE 30 GREEN LINE AND COMMUTER RAIL RIDERSHIP AND ACCESSIBILITY

Stop	Line	Daily Boardings	Accessible?
Chestnut Hill	Green - D Branch	1,416	No
Newton Centre	Green - D Branch	1,891	Yes
Newton Highlands	Green - D Branch	1,627	No
Eliot	Green - D Branch	814	No
Waban	Green - D Branch	545	No
Woodland	Green - D Branch	957	Yes
Riverside	Green - D Branch	2,241	Yes
Boston College	Green - B Branch	1,136	Yes
Newtonville	Framingham/Worcester	293	No
West Newton	Framingham/Worcester	284	No
Auburndale	Framingham/Worcester	325	No

On an average weekday, there are 11,529 boardings on the MBTA Rapid Transit and Commuter Rail system within Newton. The busiest rail station in Newton is Riverside, which is the western terminus for the Green Line's D branch and is the westernmost station of any station in the MBTA Rapid Transit network. Located in close proximity to both I-95 (Route 128) and I-90 (Massachusetts Turnpike), and with almost 1000 parking spaces provided on-site, Riverside Station is a major regional park-and-ride for commuters, in and beyond Newton. Other high ridership stations include Newton Centre, Newton Highlands, and Chestnut Hill. Newton Centre and Newton Highlands are located at the center of Newton villages, linking riders with commercial and residences. Chestnut Hill is located less centrally, but is a critical transit link for large residential and especially commercial districts nearby.

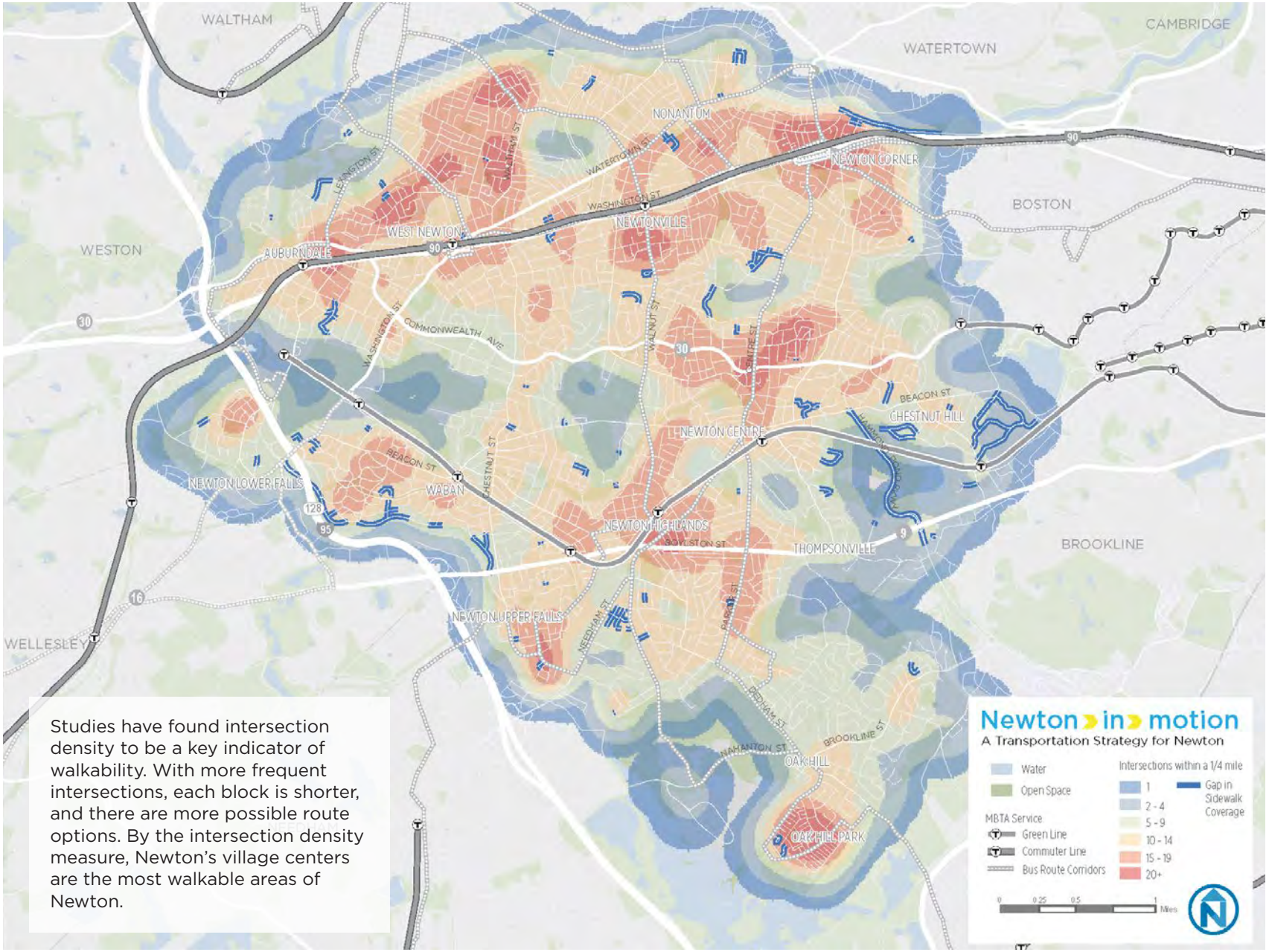
04 WALKING

While Newton's historic villages and residential character make for high quality walking environments, large gaps in appropriate infrastructure and accessible destinations are a barrier to walking in the city.

Measures of Walkability

Walking Infrastructure

FIGURE 31 INTERSECTION DENSITY AND GAPS IN SIDEWALK COVERAGE[6]



Source: MassGIS, MAPC

Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

6 Intersection density was measured using the geostatistical technique of Kernel Density Estimation, which estimates the density of intersections within a given search radius. The search radius was 564 meters, yielding a circular area of exactly one square kilometer. Any network intersections containing interstate highways or highway on-ramps were excluded from this analysis, as these roadway features are inaccessible to pedestrians. Sidewalk gaps are based on geospatial data and feedback from the workshop. There may be additional undocumented gaps.

MEASURES OF WALKABILITY

FIGURE 32 NEWTON WALK SCORE (CITYWIDE)

Walk Score

52

Somewhat Walkable

Some errands can be completed on foot.

Walk Score rates locations based on how easy it is to travel on two feet to amenities like grocery stores and restaurants, including factors like walking safety, access to transit, and proximity to stores and services. Newton has a citywide Walk Score of 52, "Somewhat Walkable." Newton has the same overall score as Waltham, a lower score than Brookline, but a higher score than Needham and Wellesley. The map below shows that there are substantial variations between different areas of the city.

FIGURE 33 NEWTON WALK SCORE MAP (CITYWIDE)

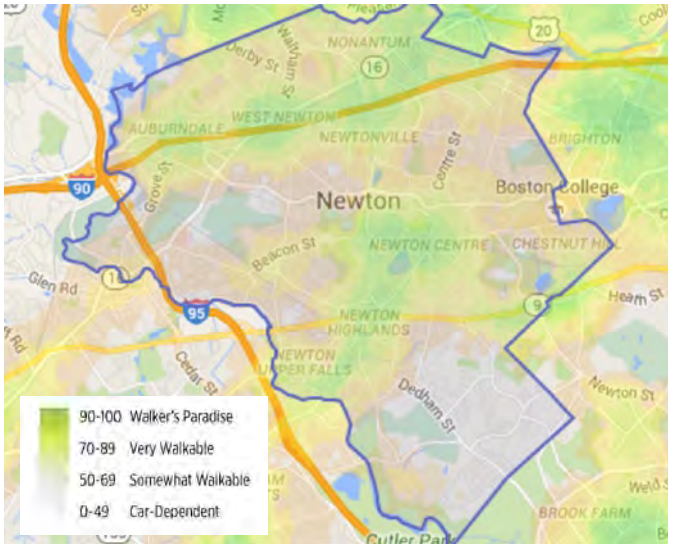


FIGURE 34 NEWTON CENTRE WALK SCORE

Walk Score

60

Somewhat Walkable

Some errands can be completed on foot.

FIGURE 35 WEST NEWTON WALK SCORE

Walk Score

59

Somewhat Walkable

Some errands can be completed on foot.

Addresses in the heart of village centers have even higher scores than the neighborhoods as a whole because a high walk score is closely associated with short walking distances to a variety of retail and dining options. For instance, the Newton Centre Triangle has a walk score of 83, "Very Walkable," even though the aggregate score for the neighborhood is 60, "Somewhat Walkable."

FIGURE 36 PEER SCORE: BROOKLINE (CITYWIDE)

Walk Score

78

Very Walkable

Most errands can be accomplished on foot.

FIGURE 37 PEER SCORE: WALTHAM (CITYWIDE)

Walk Score

52

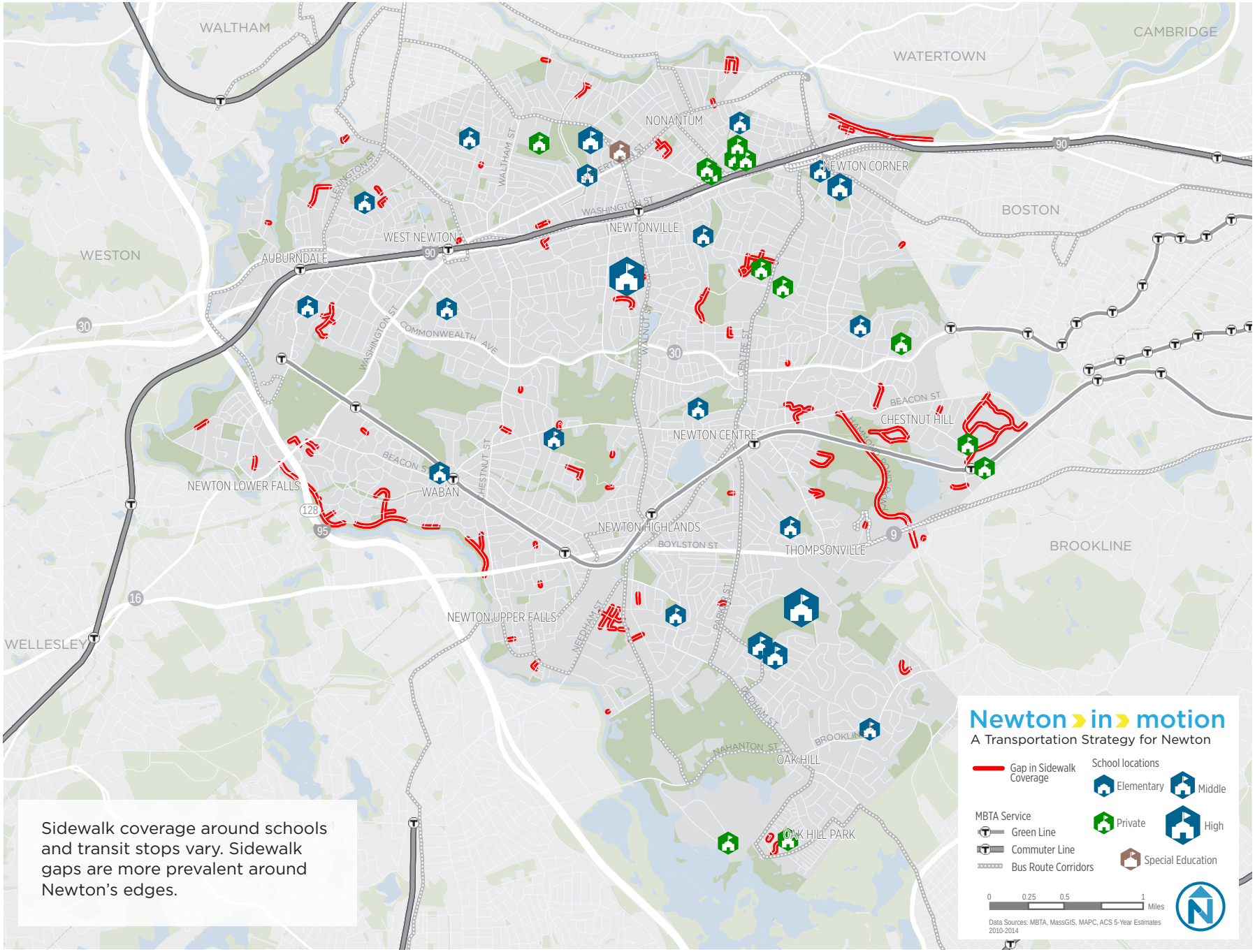
Somewhat Walkable

Some errands can be completed on foot.

SOURCE: https://www.walkscore.com/MA/Newton

WALKING INFRASTRUCTURE

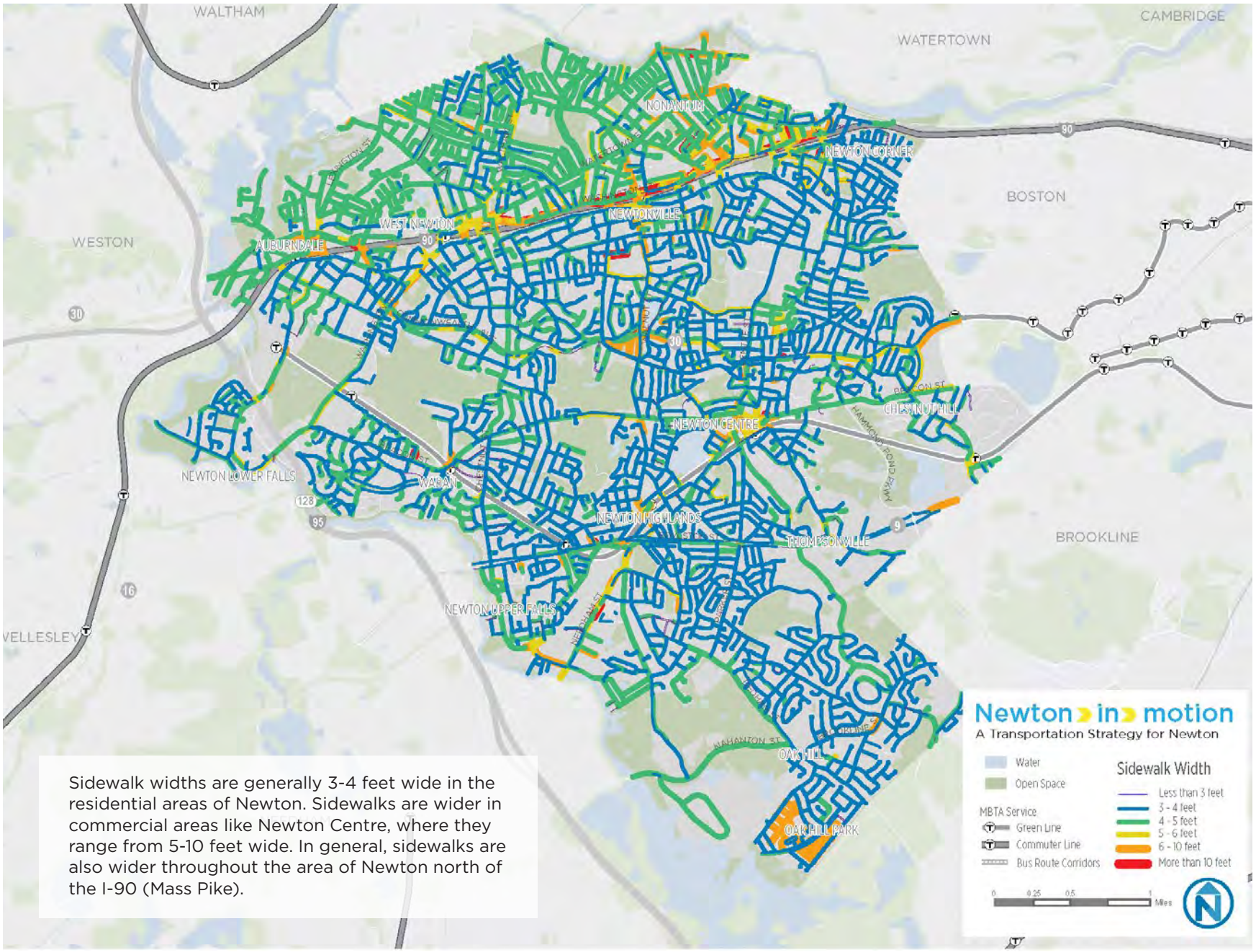
FIGURE 38 SCHOOL LOCATIONS AND SIDEWALK COVERAGE



Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

Source: MassGIS, City of Newton

FIGURE 39 SIDEWALK WIDTH



Source: MBTA, ACS 2010, 5-year estimates via Census Transportation Planning Products

Walking along Commonwealth Avenue and Centre Street

Walking along a crosswalk on Washington Street at Walnut Street

Commuter rail station's stairs in West Newton

Walking path from parking to Newton Centre

Raised crosswalk in Chestnut Hill

Sidewalk in Auburndale

Crosswalk in Newton Upper Falls

Sidewalk in Newton Corner

05 BIKING

Although today's bike network has gaps, there are opportunities within and outside Newton's borders to connect to a larger regional network.

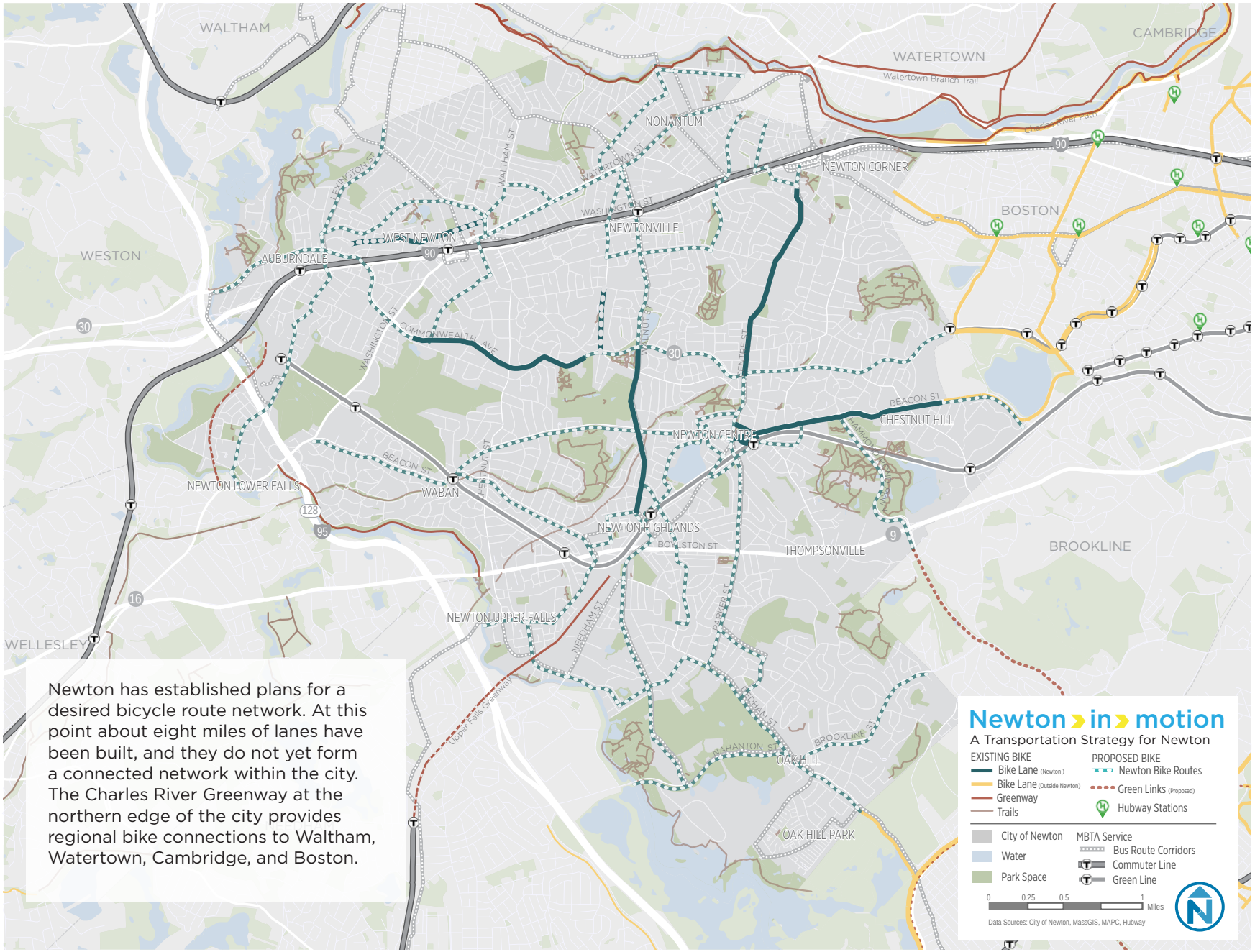
Existing and Proposed Bike Facilities (as of Jan 2016)

Bike Commuting

Biking and Schools

EXISTING AND PROPOSED BIKE FACILITIES (AS OF JAN 2016)

FIGURE 40 BIKE FACILITIES IN AND AROUND NEWTON

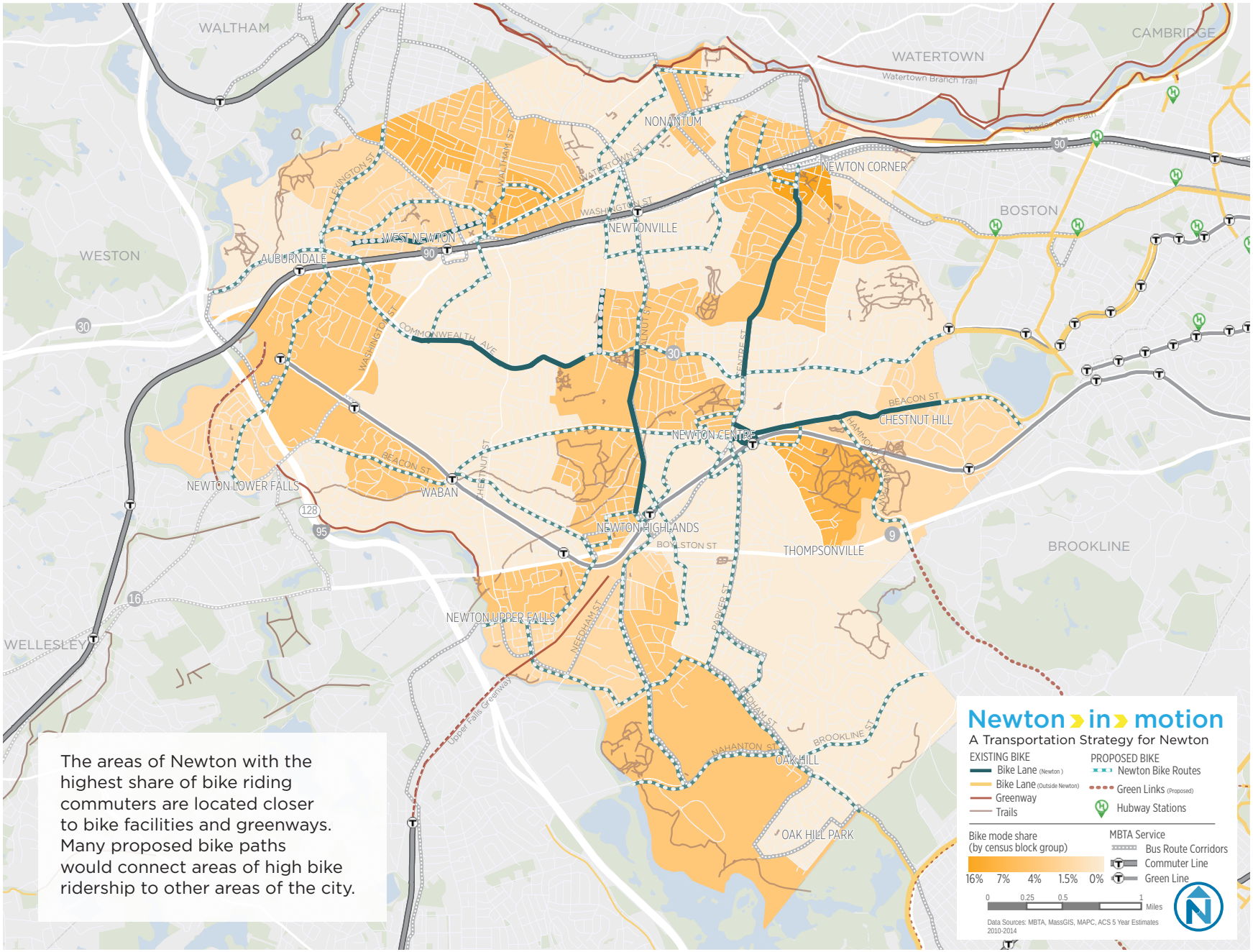


Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

Source: MassGIS, City of Newton, MAPC, Hubway

BIKE COMMUTING

FIGURE 41 BIKE FACILITIES AND BIKE MODE SHARE NEWTON

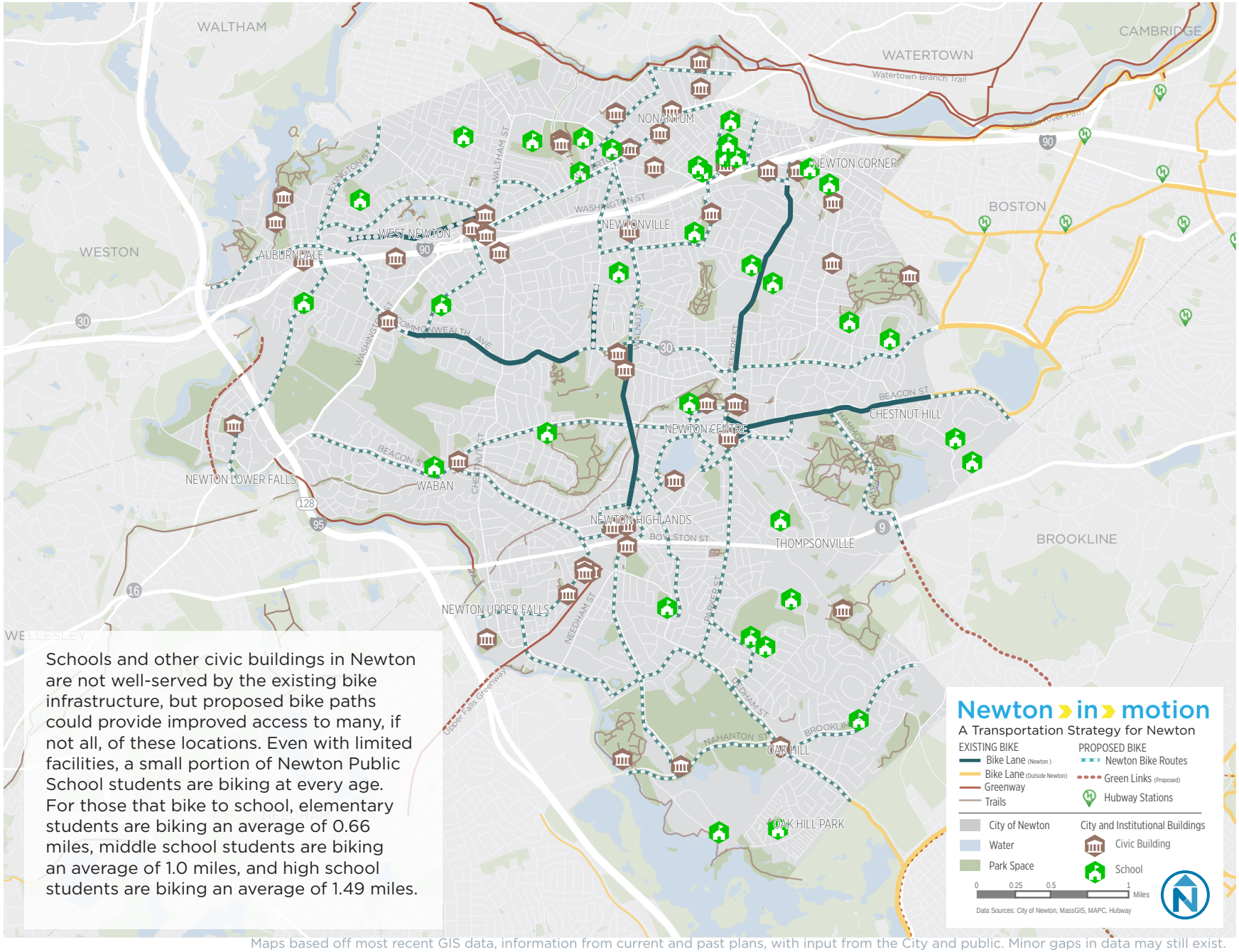


Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

Source: MassGIS, City of Newton, MAPC, Hubway, ACS 2014, 5-year estimates

BIKING & SCHOOLS

FIGURE 42 INSTITUTIONAL BUILDINGS IN NEWTON NEAR BIKE FACILITIES



Maps based off most recent GIS data, information from current and past plans, with input from the City and public. Minor gaps in data may still exist.

Sources: Map - MassGIS, City of Newton, MAPC, Hubway; Text - Newton Student Transportation Survey. City of Newton Planning Department Safe Routes To School Spring 2014

On-street bike corral in Newton Centre

Biking along Needham Street

Wave racks at Newton Centre T Station

Biking on Walnut Street bridge in Newtonville

06 DRIVING

Almost all Newtonians include driving or riding in vehicles as part of their personal transportation system. The City owned roads are primarily residential in character with some wider streets in village centers and commercial corridors. Newton is also crisscrossed by numbered State routes and the MassPike (I-90), which provide fast regional access, but also separate neighborhoods from one another.

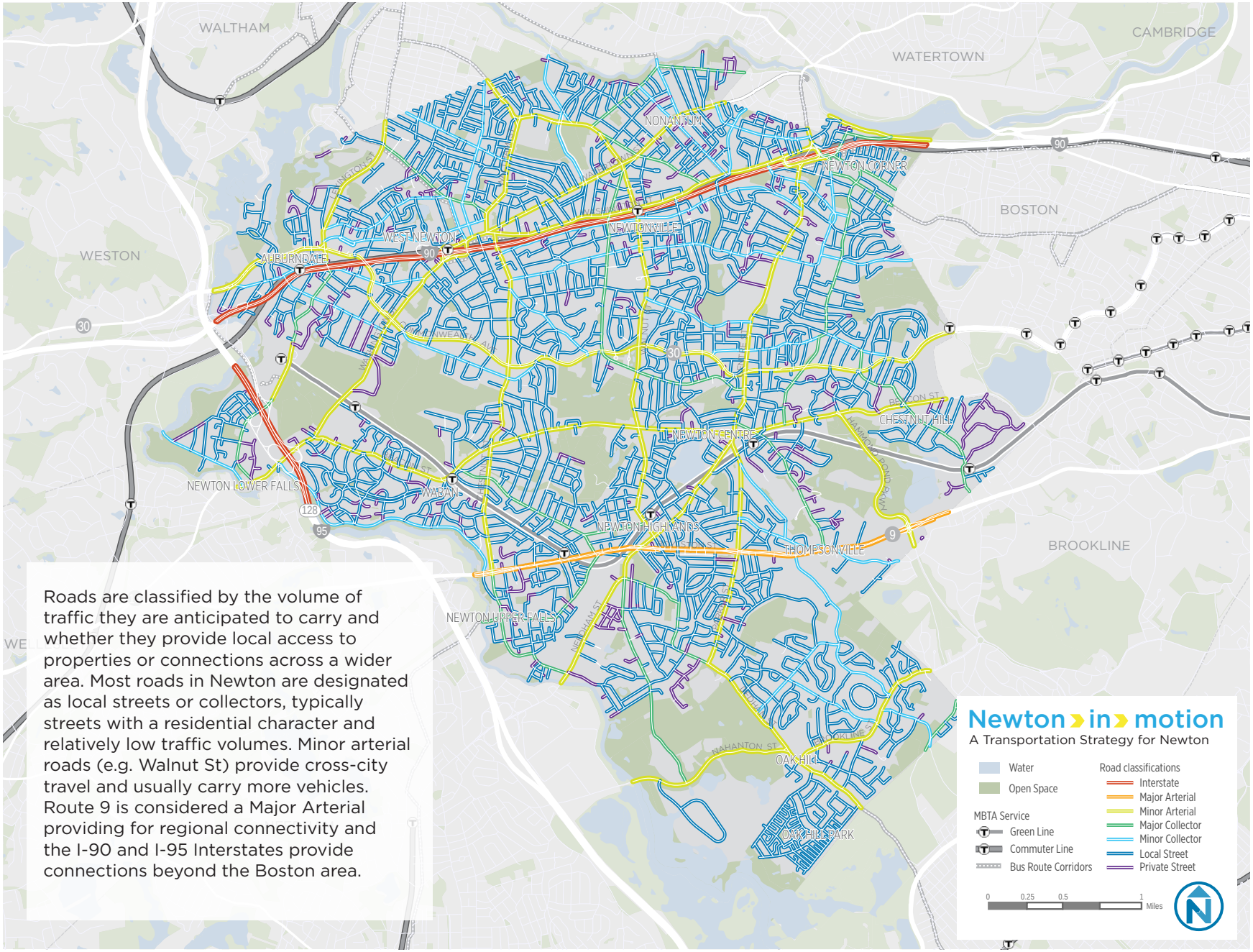
Road Classification

Pavement Width

Traffic Volumes

ROAD CLASSIFICATION

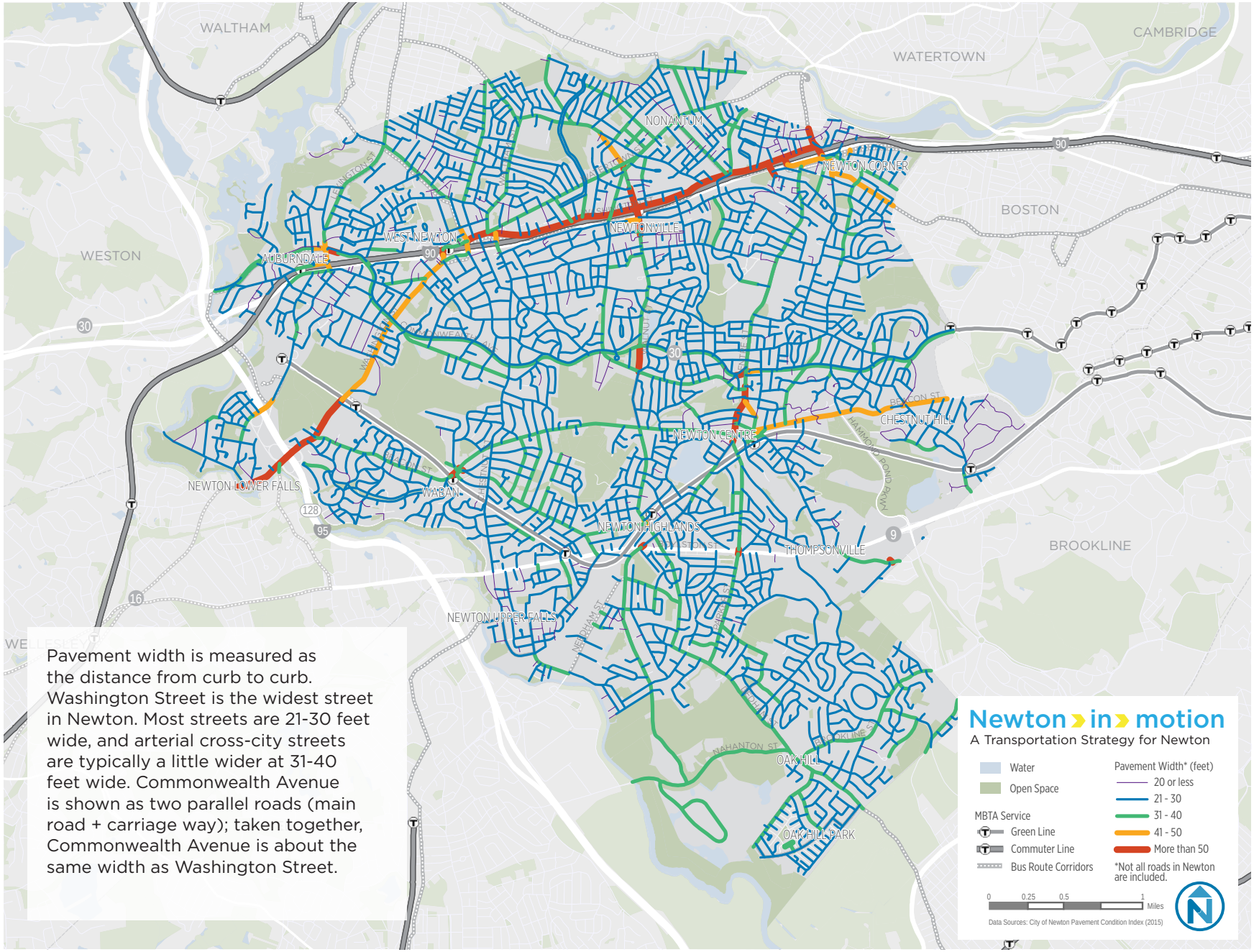
FIGURE 43 ROAD CLASSIFICATION



Source: MassGIS, City of Newton

PAVEMENT WIDTH

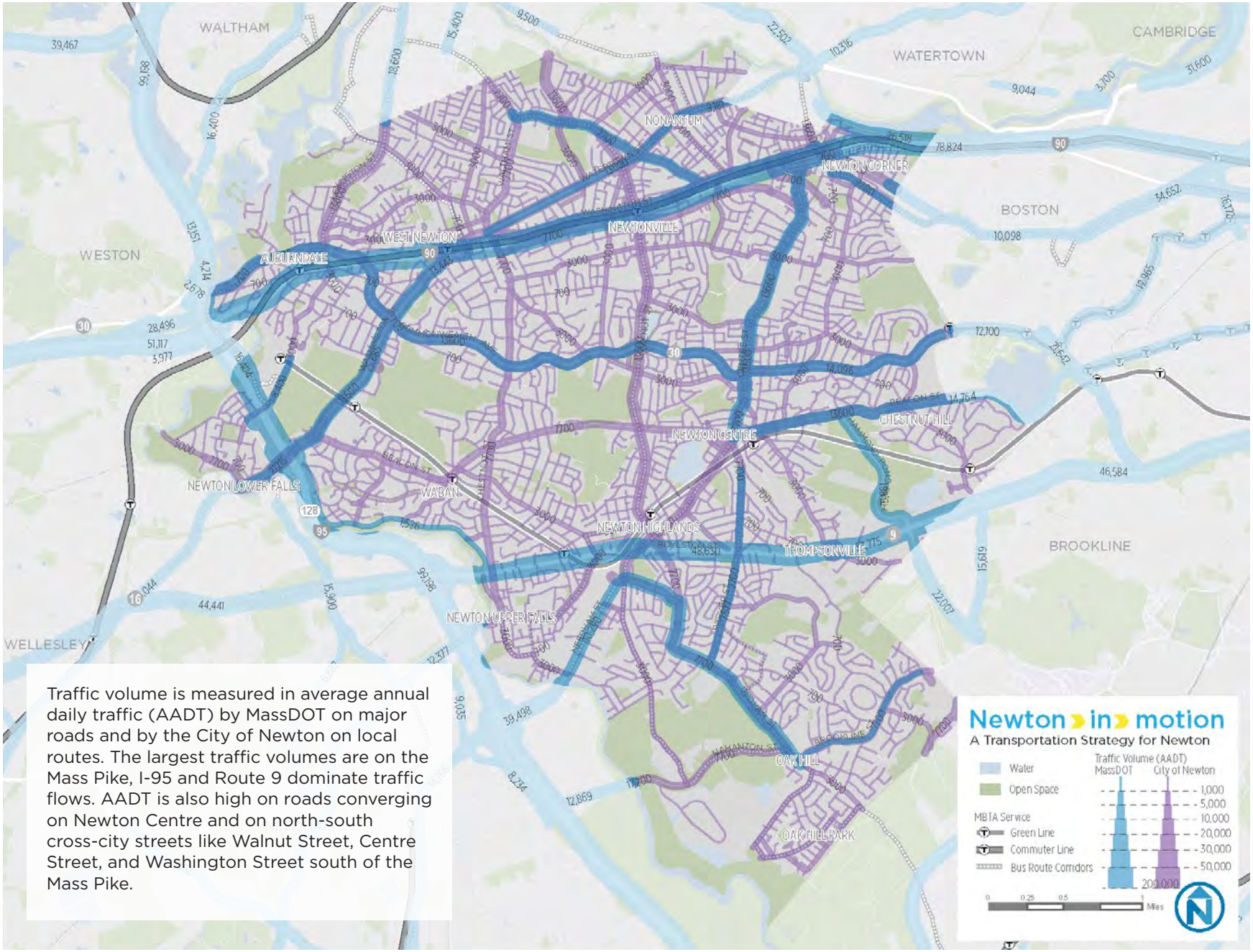
FIGURE 44 PAVEMENT WIDTH OF CITY STREETS



Source: MassGIS, City of Newton Pavement Condition Index (2015)

TRAFFIC VOLUME

FIGURE 45 TRAFFIC VOLUMES



Source: MassGIS, MassDOT, City of Newton

07 HEALTH + SAFETY

Newton continues to make strides toward ensuring that its transportation network is healthy and safe for all its citizens.

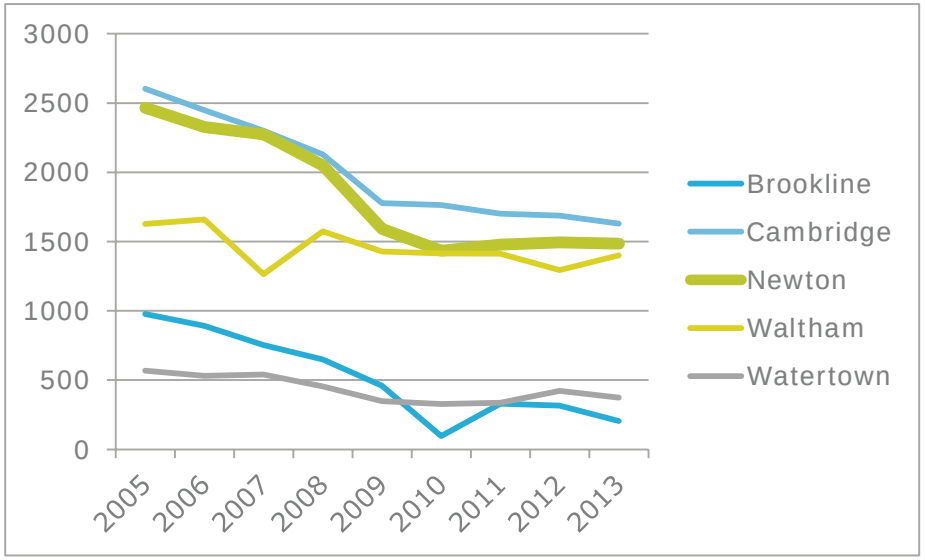
Crash Data

Greenhouse Gas Footprint

CRASH DATA

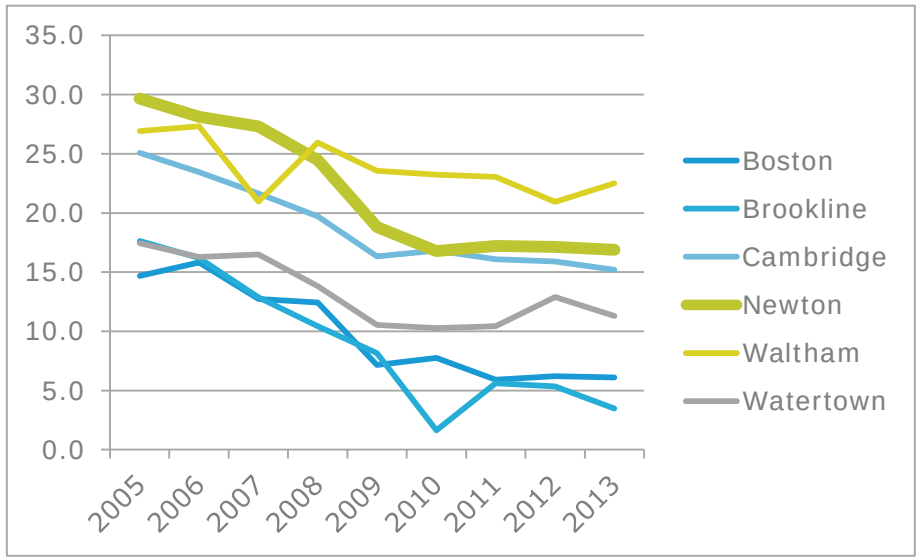
Relative to nearby peer communities, Newton has a high volume of motor vehicle crashes, both in terms of the absolute number of crashes and when normalized (i.e. crashes per thousand people). In the past ten years, these crash numbers have been steadily decreasing in all communities.

FIGURE 46 TOTAL NUMBER OF MOTOR VEHICLE-RELATED CRASHES



Source: Massachusetts Department of Transportation Crash Portal (http://massdot.state.ma.us/crashportal)

FIGURE 47 MOTOR VEHICLE-RELATED CRASHES PER THOUSAND PEOPLE



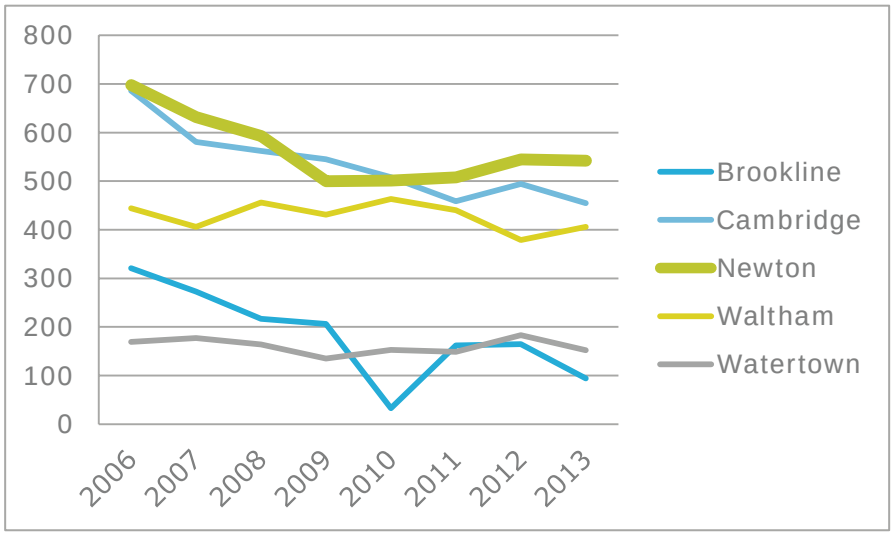
Source: Collision data from Massachusetts Department of Transportation Crash Portal (http://massdot.state.ma.us/crashportal)

Population data from U.S. Census Bureau (http://www.census.gov/)*

*Except Brookline 2005-2006 population data, from Massachusetts Department of Health and Human Services (http://www.mass.gov/eohhs/docs/dph/research-epi/city-town-pop-estimates06.pdf)

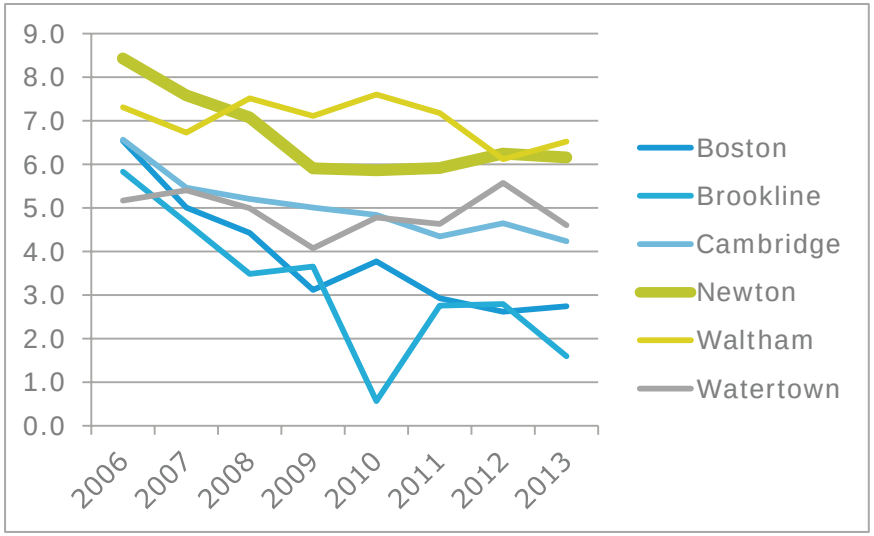
Of these nearby peer communities, Newton ranks among the highest in terms of motor vehicle crashes that resulted in injuries.

FIGURE 48 TOTAL NUMBER OF NON-FATAL MOTOR VEHICLE-RELATED INJURIES



Source: Massachusetts Department of Transportation Crash Portal (http://massdot.state.ma.us/crashportal)

FIGURE 49 NON-FATAL MOTOR VEHICLE-RELATED INJURIES PER THOUSAND PEOPLE

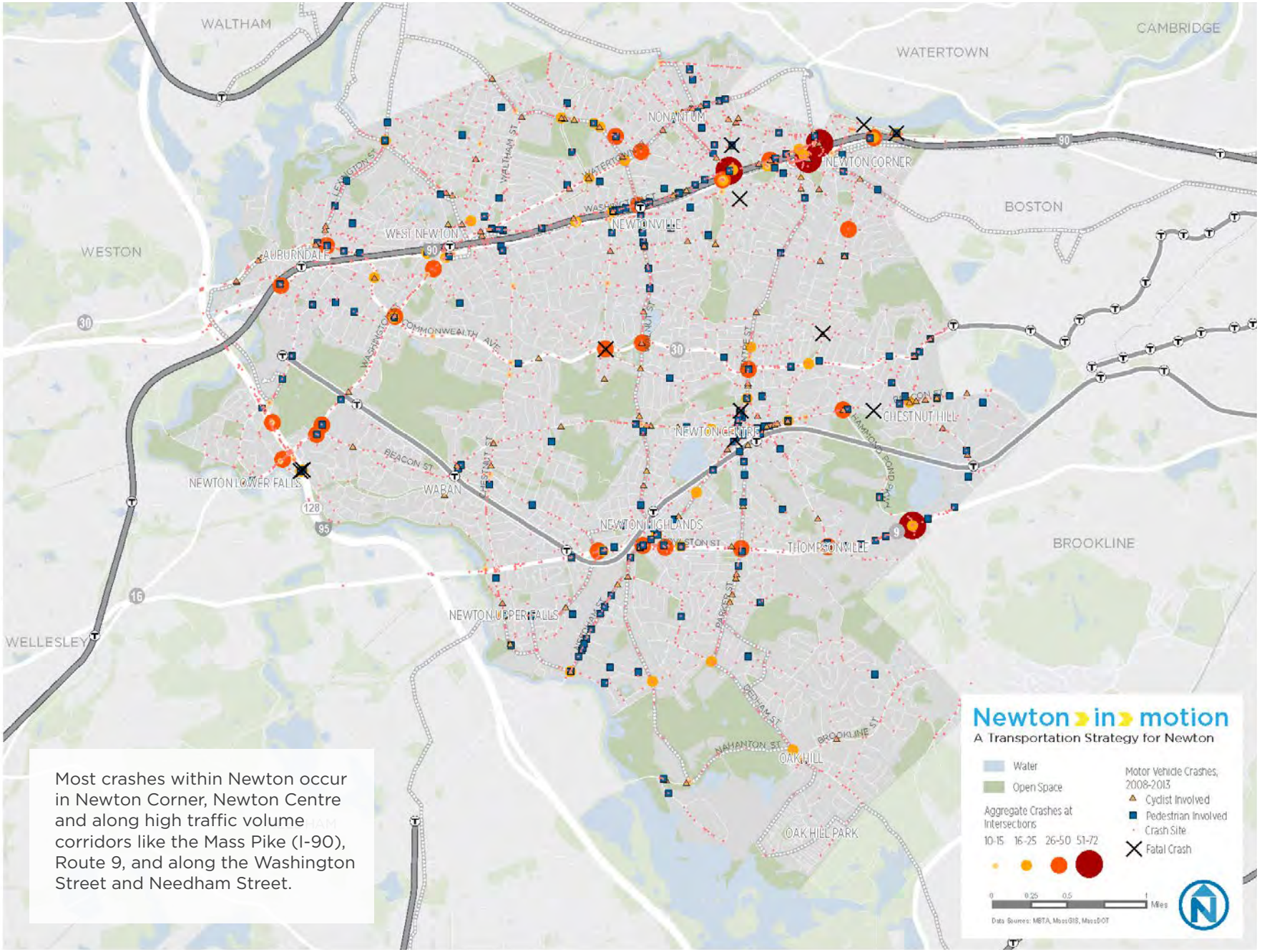


Source: Collision data from Massachusetts Department of Transportation Crash Portal (http://massdot.state.ma.us/crashportal)

Population data from U.S. Census Bureau (http://www.census.gov/)*

*Except Brookline 2005-2006 population data, from Massachusetts Department of Health and Human Services (http://www.mass.gov/eohhs/docs/dph/research-epi/city-town-pop-estimates06.pdf)

FIGURE 50 MOTOR VEHICLE CRASHES, 2008-2013



Source: MassDOT Crash Statistics

FIGURE 51 CRASH HOT SPOTS, 2008-2013

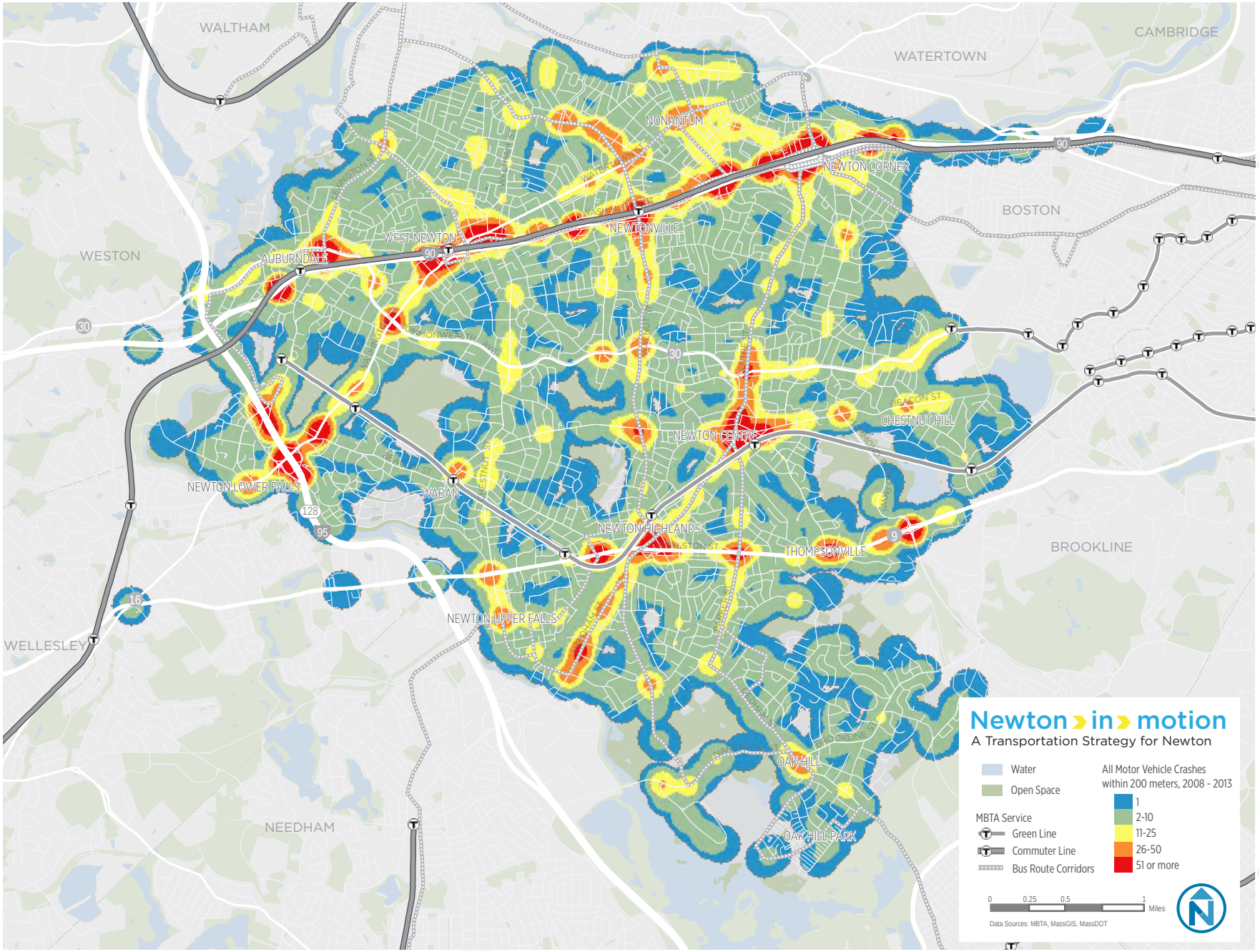
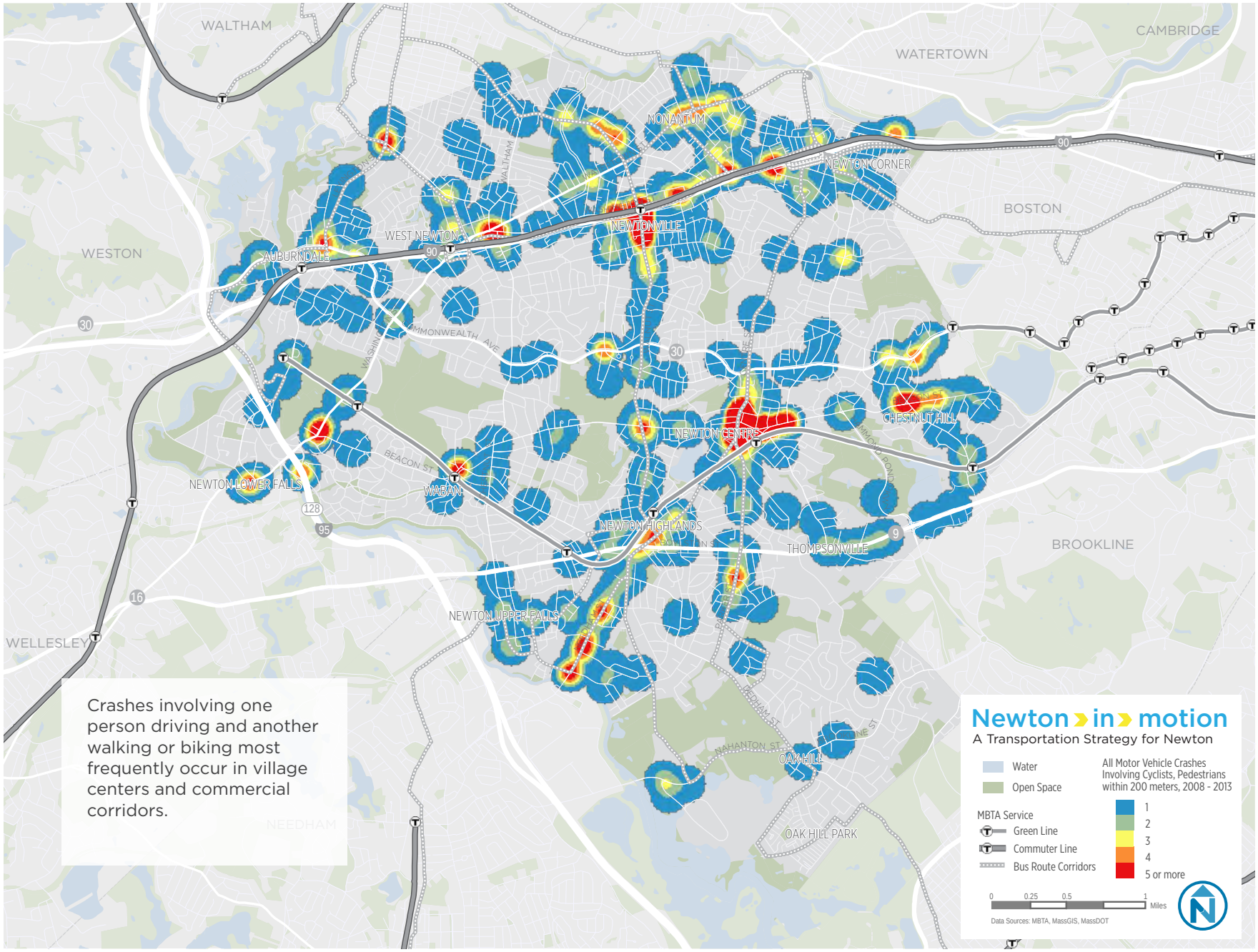


FIGURE 52 CRASHES INVOLVING WALKERS AND BIKERS, 2008-2013



GREENHOUSE GAS FOOTPRINT

FIGURE 53 NEWTON GREENHOUSE GAS FOOTPRINT - PROJECTION FOR THE YEAR 2033

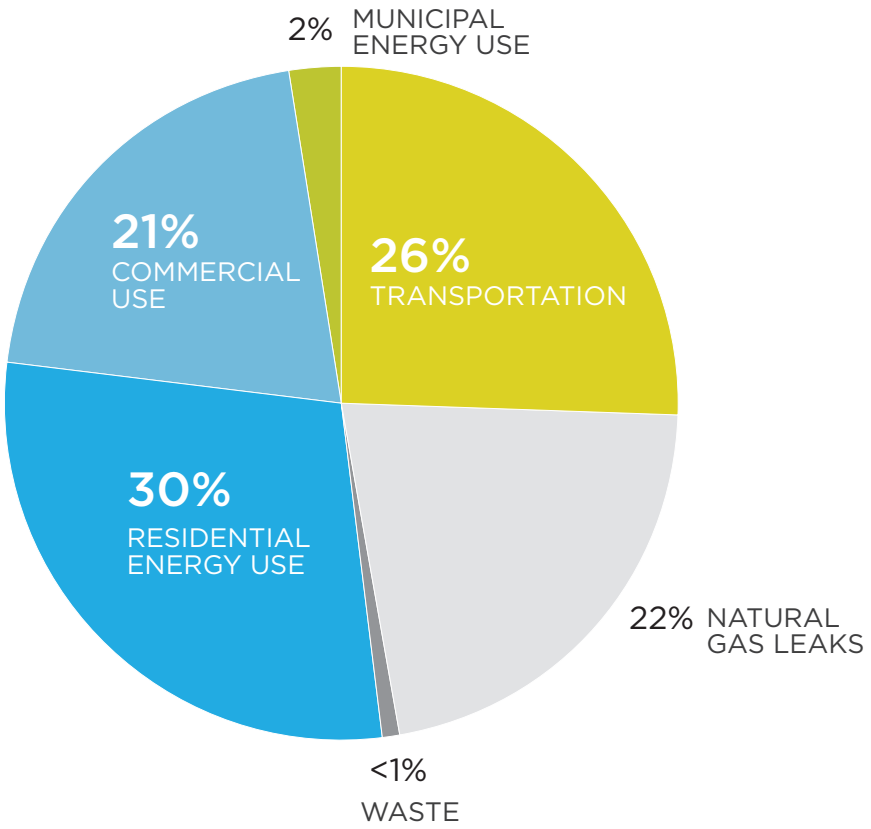
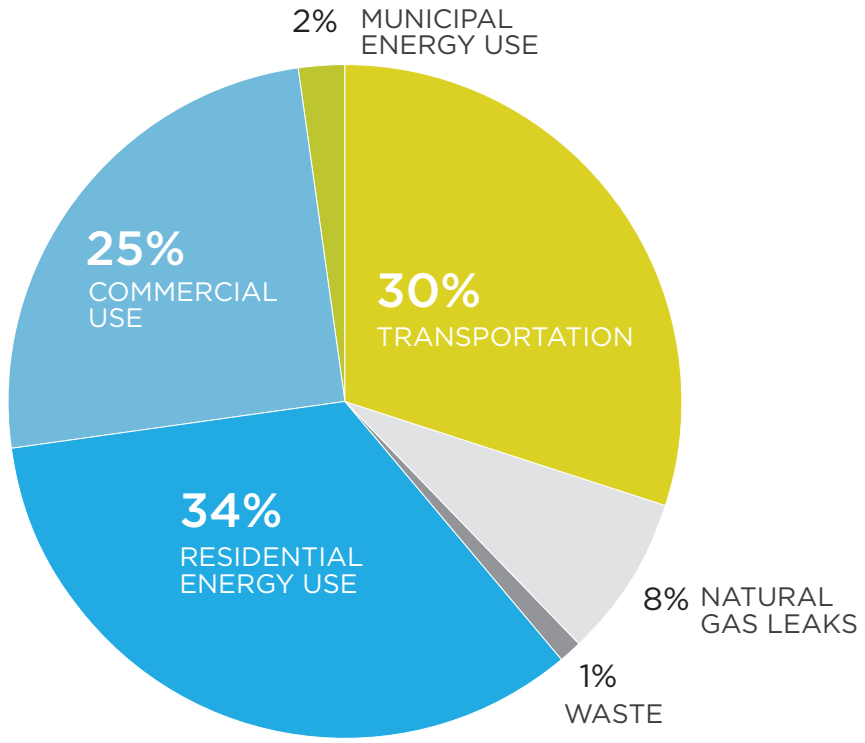


FIGURE 54 NEWTON GREENHOUSE GAS FOOTPRINT - PROJECTION FOR THE YEAR 2113



Every day, motorists are collectively driving 1.9 million miles in Newton (known as "Vehicle Miles Traveled" or "VMT")[6]. Most of these miles are driven by people who are driving alone in the car. All of this driving leads to greenhouse gas emissions. The Metropolitan Planning Organization estimates that Newton's VMT-related emissions in 2013 totaled nearly 300,000 MtCO2e (million metric ton equivalents). This is nearly equal to all of the emissions from residential energy use in Newton in 2013, and is substantially more than all commercial energy use. The above projections suggest that emissions from transportation are expected to be a growing share of the city's overall greenhouse gas footprint.

6 Sustainability Office, City of Newton, Various Sources

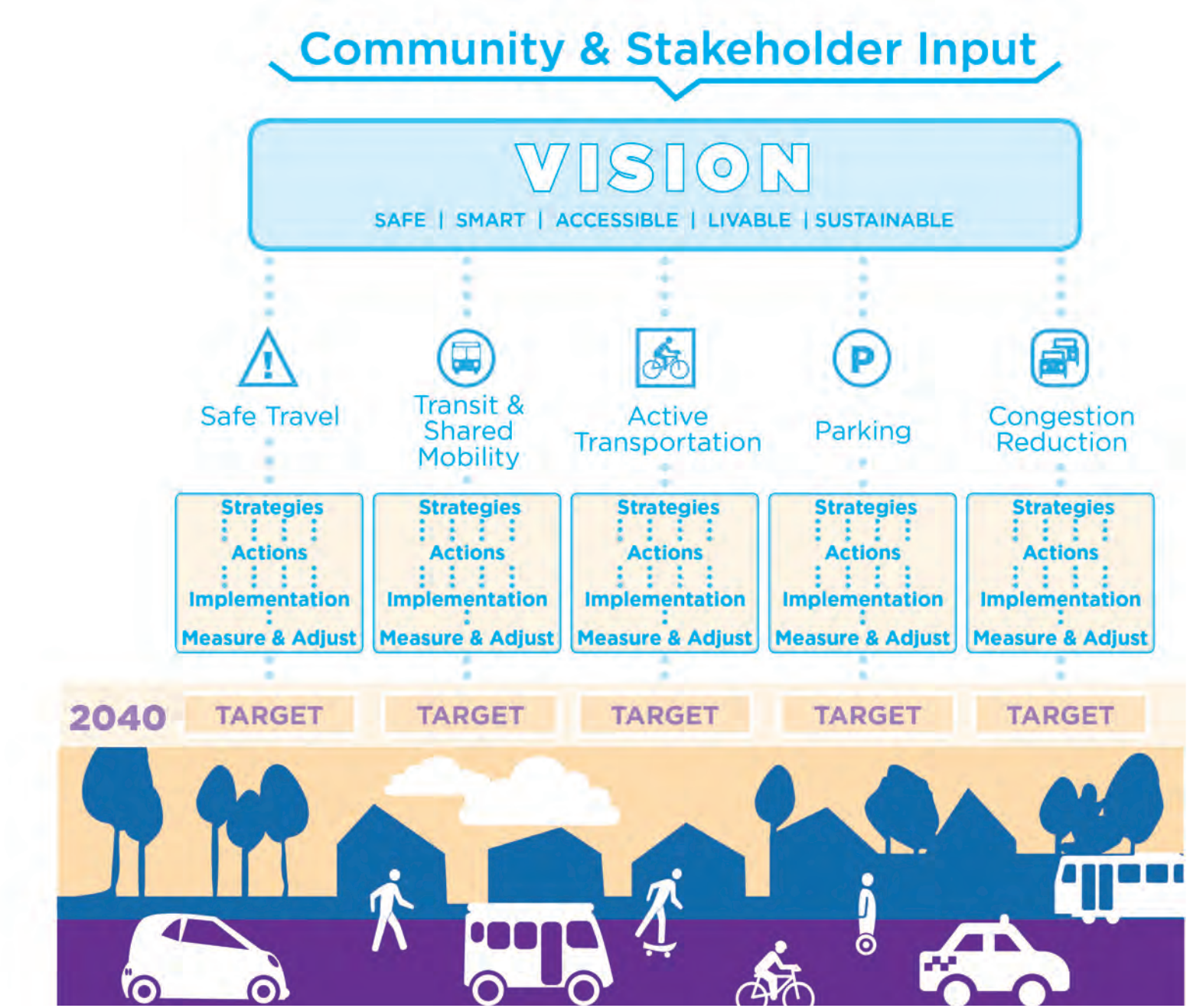
COMMUNITY ENGAGEMENT

PART 4

Newton » in » motion

A Transportation Strategy for Newton

FEBRUARY 2017

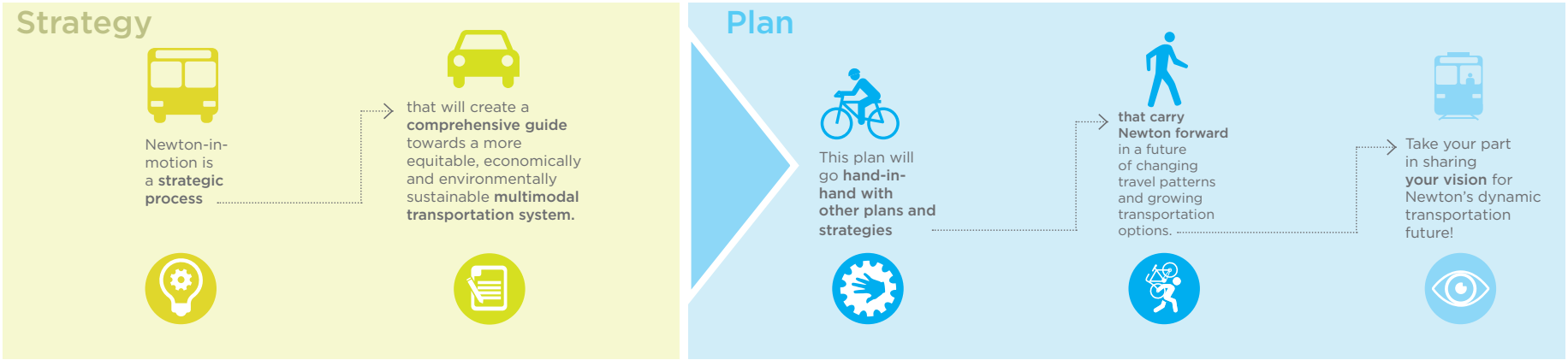

Community & Stakeholder Input
VISION
SAFE | SMART | ACCESSIBLE | LIVABLE | SUSTAINABLE
Safe Travel
Transit & Shared Mobility
Active Transportation
Parking
Congestion Reduction
Strategies
Actions
Implementation
Measure & Adjust
2040
TARGET
TARGET
TARGET
TARGET
TARGET

OUR PROCESS: NEWTON-IN-MOTION COMMUNITY WORKSHOPS

INTRODUCTION

Newton-in-Motion has been guided by a robust community engagement process involving people of all ages and areas of Newton. This process was framed by three major workshops, each of which involved presentations, public open houses and an online component for those not available to attend in person. In total over 550 people provided direct feedback about transportation strategies in Newton.

Information about the workshop structure and types of community participation is provided below followed by results from each workshop in "What We Heard" sections.



Three workshop phases

PHASE ONE

Visioning Workshops, February 4-6, 2016
(Needham Street & Pop-Ups in multiple locations)

The Visioning Workshops included a two and a half day-long storefront open studio on Needham Street in addition to ten pop-up locations across the city in February. The workshops solicited feedback on what transportation goals were most important to Newton residents and what geographic locations people felt the plan should focus on.

PHASE TWO

Street Design Workshop, March 31, 2016
(Newton Senior Center)

Demonstration Workshop June 9-10, 2016
(Walnut Street and Washington Street)

In March, staff gave a presentation about complete streets design elements and conducted a mapping session to discuss possible locations for different complete streets ideas.

The Demonstration Workshop was a two-day trail of various transportation options at a busy intersection in Newtonville.

A new street configuration of traffic lanes, bike lanes, wider crosswalks and sidewalks demonstrated options for improving the safety and quality of experience for all users. The location was chosen because members of Newton's community had repeatedly mentioned mention of safety concerns here during the Visioning Workshop and because of the high volume of crashes recorded there in prior studies. Over two days, thousands of people experienced the demonstration and hundreds stopped to engage in conversation with staff about the temporary design, safety improvements, and the flow of people through the intersection. In total, 106 written surveys were completed in-person and an additional 21 people completed the survey online.

PHASE THREE

Strategy Workshop, June 17, 2016
(Newton City Hall)

The Strategy Workshop invited the public to vote and provide feedback on the strategies identified to address the Newton-in-Motion goals. Using an interactive "ballot passport," the public attendees to ranked how much that they liked various strategy options for Newton helping to prioritize the transportation policies, programs and infrastructure Newton will use to reach the Newton-in-Motion goals by 2040.

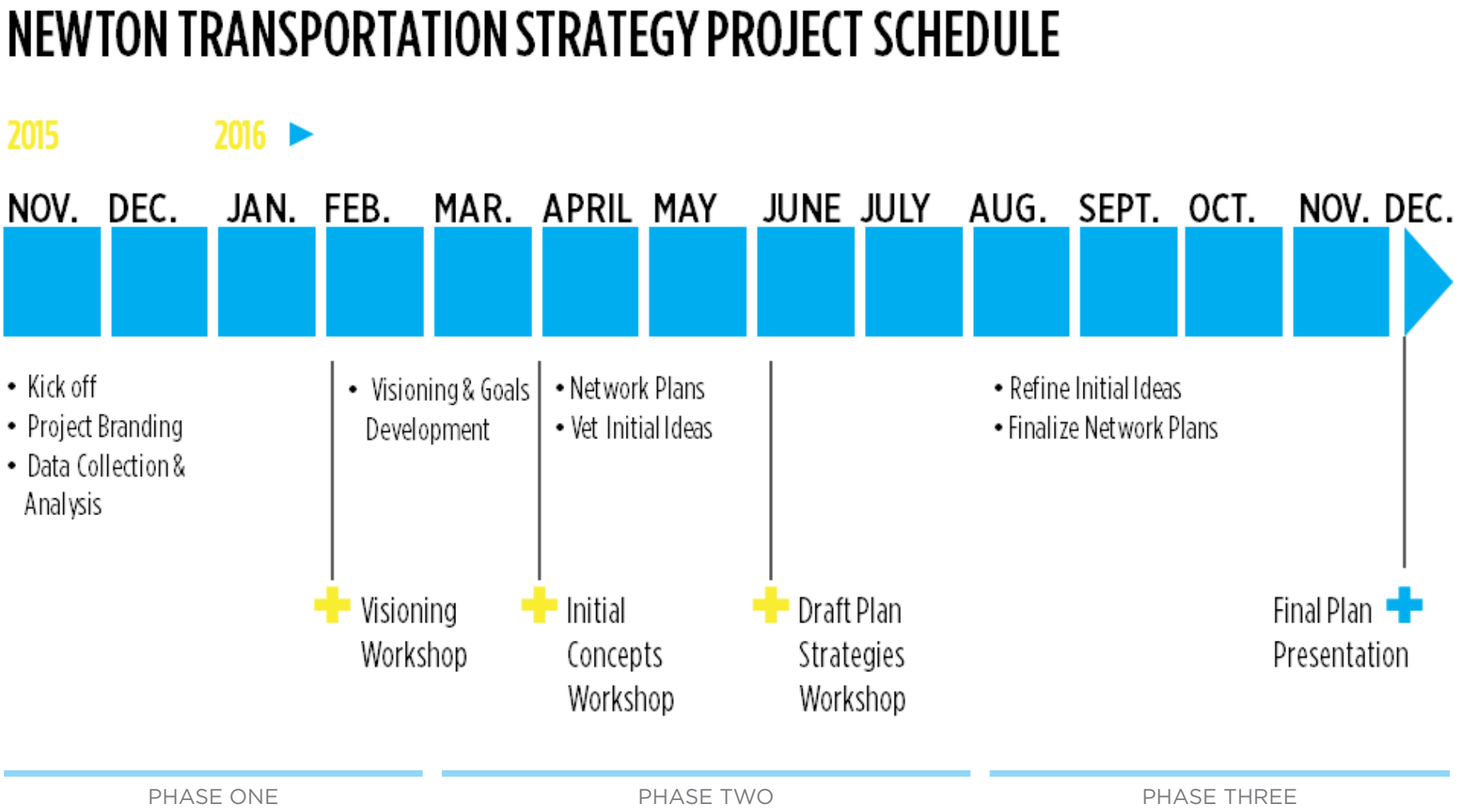


FIGURE 1 PROJECT PROCESS TIMELINE

SUMMARY

Together, the three workshops directly engaged over 550 people of all ages and locations in Newton. Figure 2 shows the breakdown of participation by age and zip code location (not all participants provided their age or zip code). Most participants were over 40 years old, with people over years old representing the largest category by age, and the 02460 zip code (Newtonville and Nonantum) had the highest number of participants. (When weighted by population, 02460 and 02468 zip codes in Waban had the greatest representation with roughly double the number of participants versus their share of the overall population.)

WHO PARTICIPATED? *

OVER 60 YEARS OLD

75

51-60 YEARS OLD

53

41-50 YEARS OLD

55

31-40 YEARS OLD

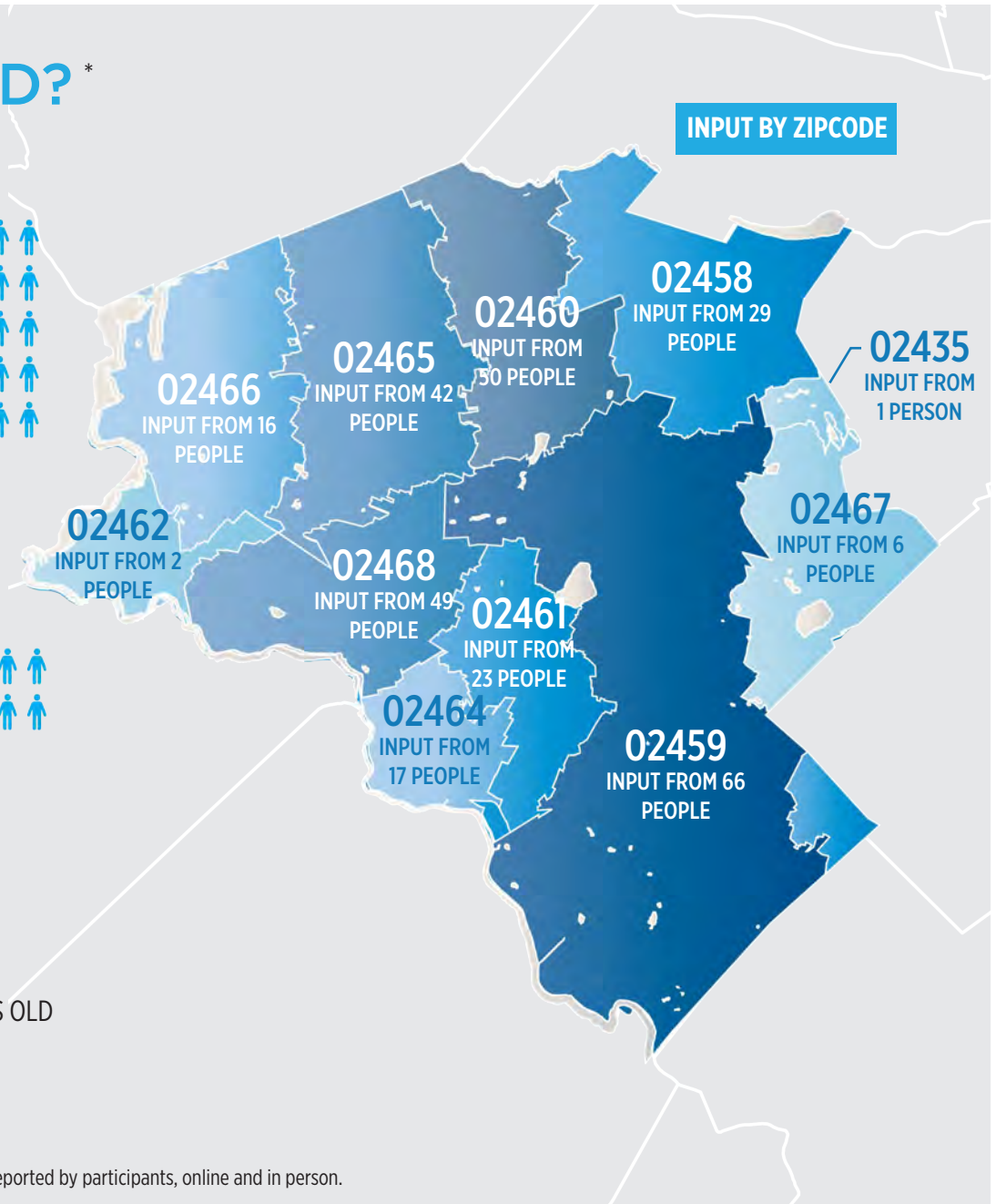
24

21-30 YEARS OLD

7

20 & UNDER 20 YEARS OLD

4



* Age and zip codes collected voluntarily; this infographic reflects information reported by participants, online and in person.

FIGURE 2 PARTICIPATION IN THE NEWTON-IN-MOTION WORKSHOPS

WHAT WE HEARD

Visioning Workshop

The Visioning Workshop kicked off the entire Newton-in-Motion project. Before any rigorous or technical analysis commenced, the February 2016 Visioning Workshop sessions and online surveys identified priority values of Newton community members, geographic areas of concern, and specific transportation issues that shaped the scope and direction of Newton-in-Motion.

Participants were asked to rank and comment on the City's standing transportation goals. The most votes were for Smart Growth, Real Options, and Reducing Driving and Strengthening Alternatives (as can be seen in Figure 3). Participants also provided numerous ideas on how to achieve these goals (see Figure 4, opposite).

Participants were also invited to note specific geographic areas of concern or potential. Over 600 points were submitted, each with notes about recommended fixes or ideas for the future. Figure 5 shows the compilation of submitted points, and figures 6-9 break it down by each mode.

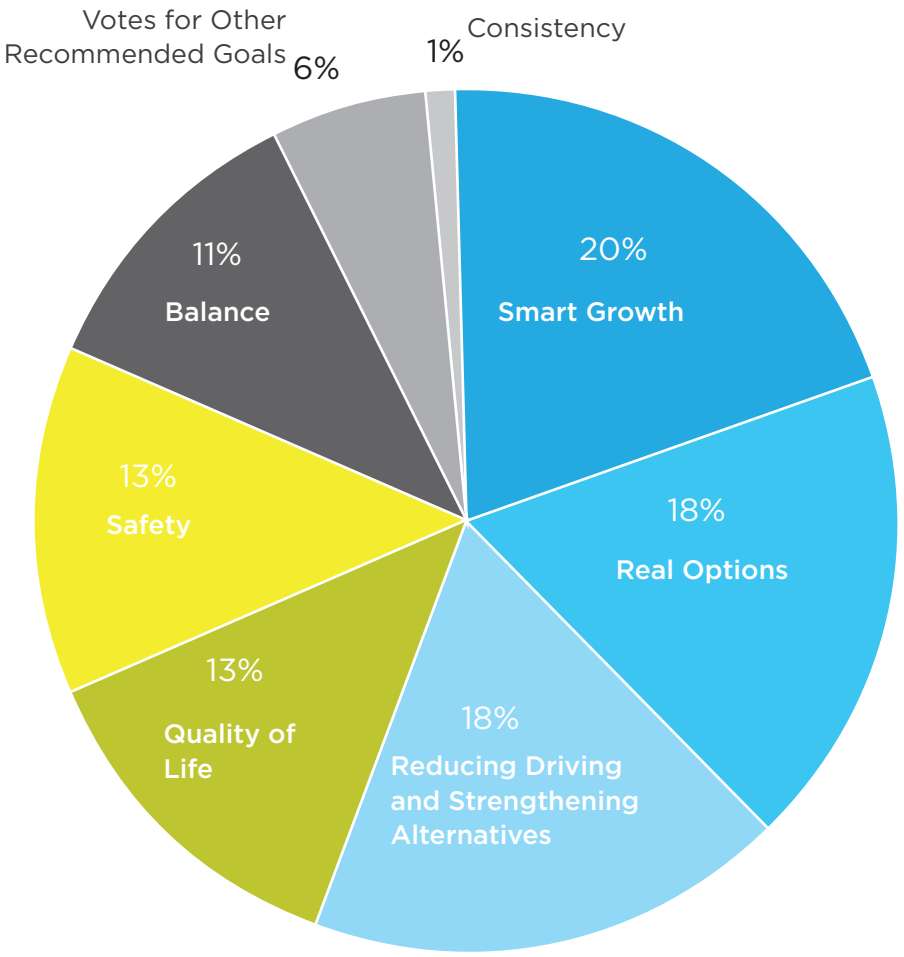


FIGURE 3 RESPONSES TO: "WHICH OF THE INITIAL NEWTON-IN-MOTION GOALS IS MOST IMPORTANT?"

INITIAL GOAL	SAMPLE OF COMMUNITY COMMENTS ON HOW TO ACHIEVE THESE GOALS		
REDUCE DRIVING AND STRENGTHEN ALTERNATIVES Number of Comments: 99	"Reduce speed limits on residential streets. Focus on pedestrian safety vs. drivers / commuters trying to get through Newton Centre."	Join the bike sharing service that is in other nearby communities and cities.	"Better plowing of sidewalks in winter...Very dangerous to walk in the winter if you have to go into the road to walk."
REAL OPTIONS Number of Comments: 94	"Meaningful shuttles for intra-city short trips"	"Separated bike lanes, bike lanes connecting villages on major streets, pedestrian greenways"	"Trains that run on the tracks in our underserved transit hubs, eg. Newtonville, West Newton, Auburndale"
SAFETY Number of Comments: 88	"There seems to be a HUGE lack of traffic enforcement when it comes to speeding and stopping at STOP signs and also for crossing guards in Newton Centre."	"Traffic calming configurations, complete street on Washington, stricter school drop off policy"	"Fix the commuter rail station. It is not ADA-compliant. The stairs are steep and slippery in winter."
QUALITY OF LIFE Number of Comments: 86	"Traffic is ruining quality of life, time suck, road rage, air pollution."	"Clean, safe, well-lit and safe walking and biking paths."	"Slow the growth in the city. Every development brings more cars to over crowded streets."
SMART GROWTH Number of Comments: 84	"DO NOT approve or encourage large apartment complexes, even near public transit. It will not work in Newton!"	"Rezone area surrounding commuter rail and T stations to permit as of right Multifamily housing"	"Smart growth should only be used if provisions severely limit auto use or if street capacity is expanded to accommodate the added auto trips."
BALANCE Number of Comments: 43	"Focus on the needs of the under-served, not the over-"cared""	"We should now invest in biking as much as we have invested in other transport (cars/bus/train)"	We need to understand that Newton is a city that is car first.
CONSISTENCY Number of Comments: 34	"Make the T reliable. Allow Charlie Cards on commuter rail. Add commuter rail trains."	"Roads are so terrible in some parts of Newton, so good in others. I'd like more consistent maintenance."	"Make these changes citywide not just in certain villages."

FIGURE 4 SAMPLE RESPONSES TO: "HOW COULD THE CITY ACHIEVE EACH GOAL?"

ALL MODES LOCATION PRIORITIES: COMMUNITY INPUT COLLECTED ONLINE AND AT WORKSHOP

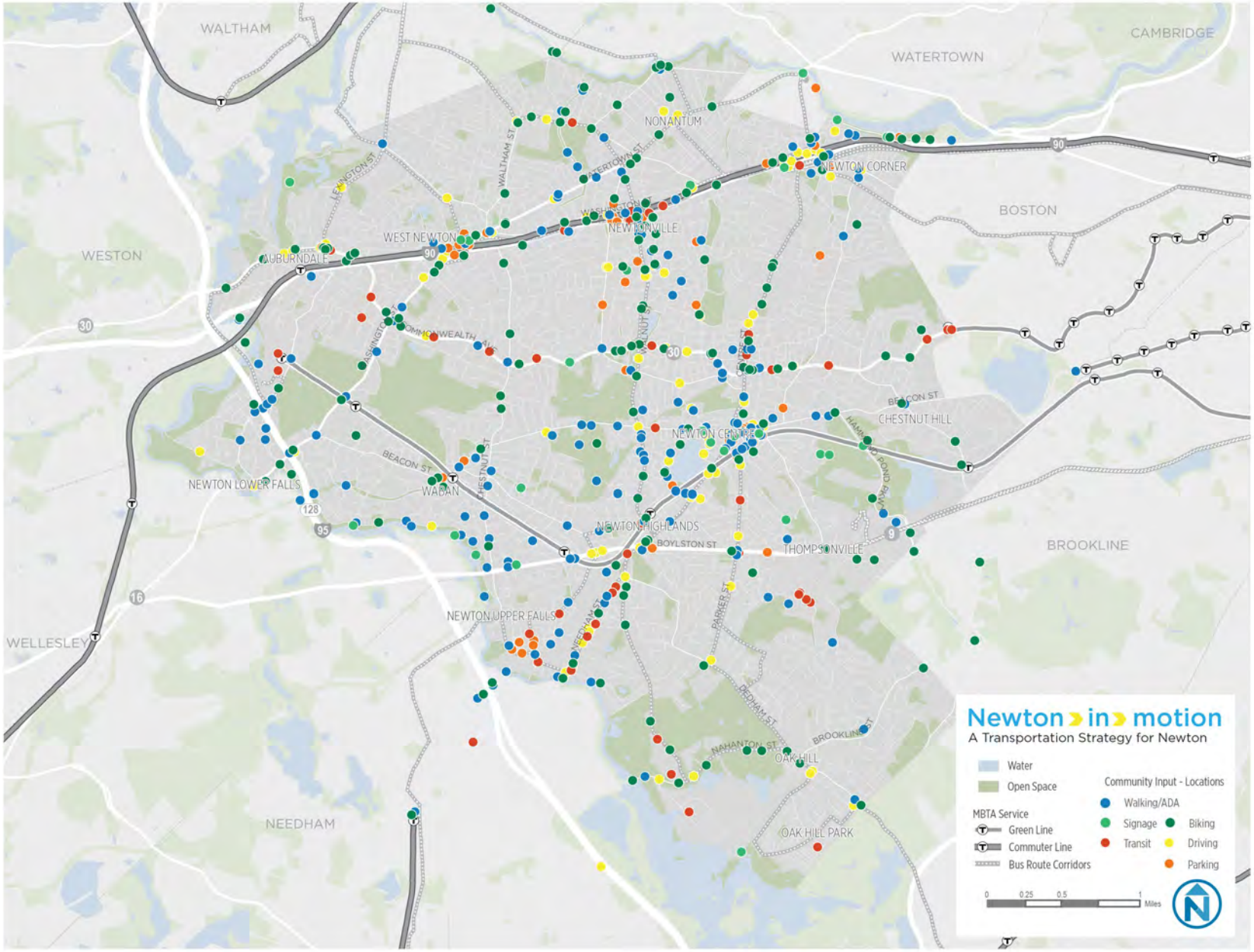


FIGURE 5 GEOGRAPHIC FEEDBACK BY MODE (WALKING & ADA-COMPLIANCE, TRANSIT, DRIVING, ETC.)

WALKING LOCATION PRIORITIES: COMMUNITY INPUT COLLECTED ONLINE AND AT WORKSHOP

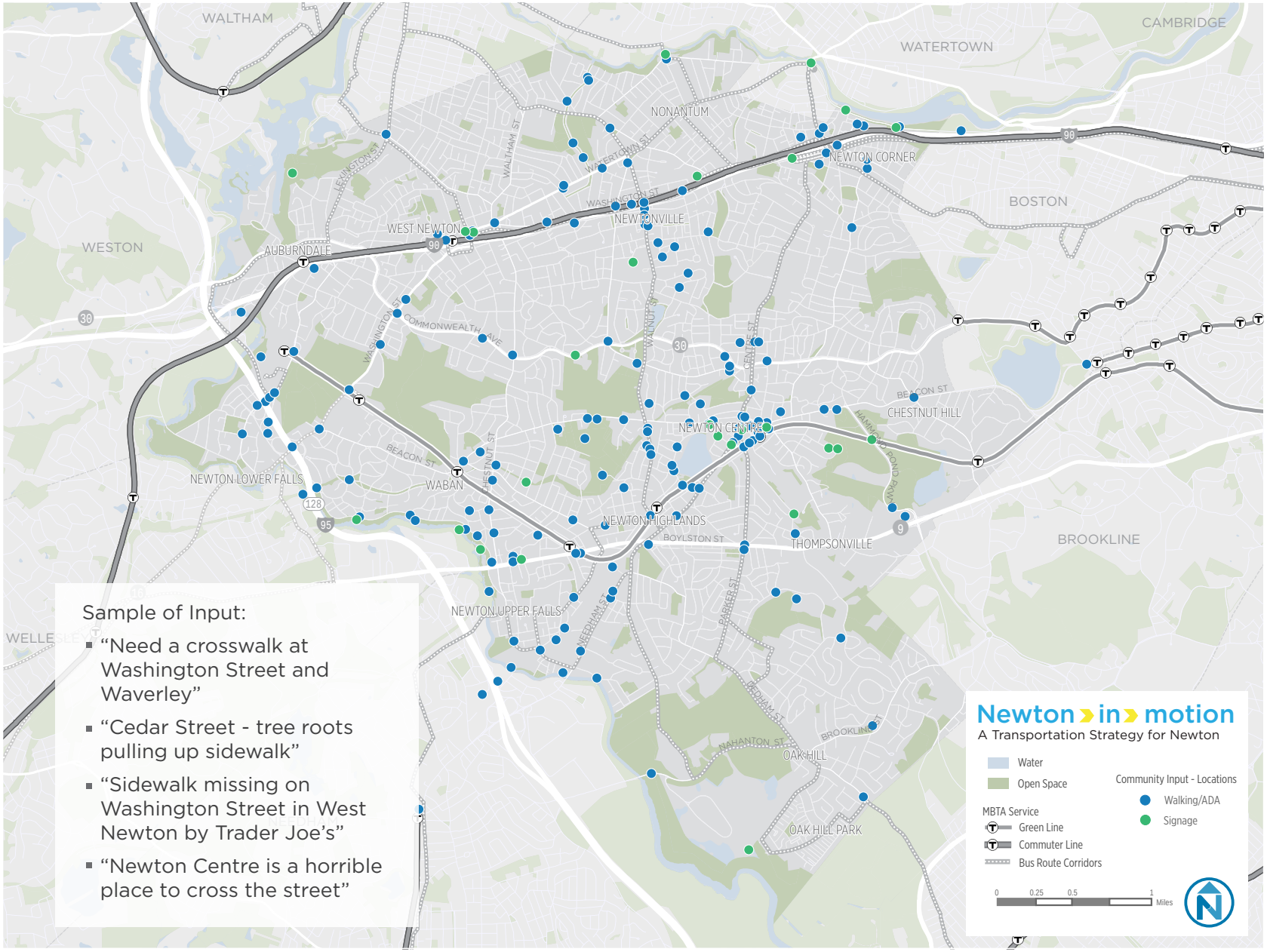


FIGURE 6 WALKING AND ADA-COMPLIANCE ISSUES

BIKING LOCATION PRIORITIES: COMMUNITY INPUT COLLECTED ONLINE AND AT WORKSHOP

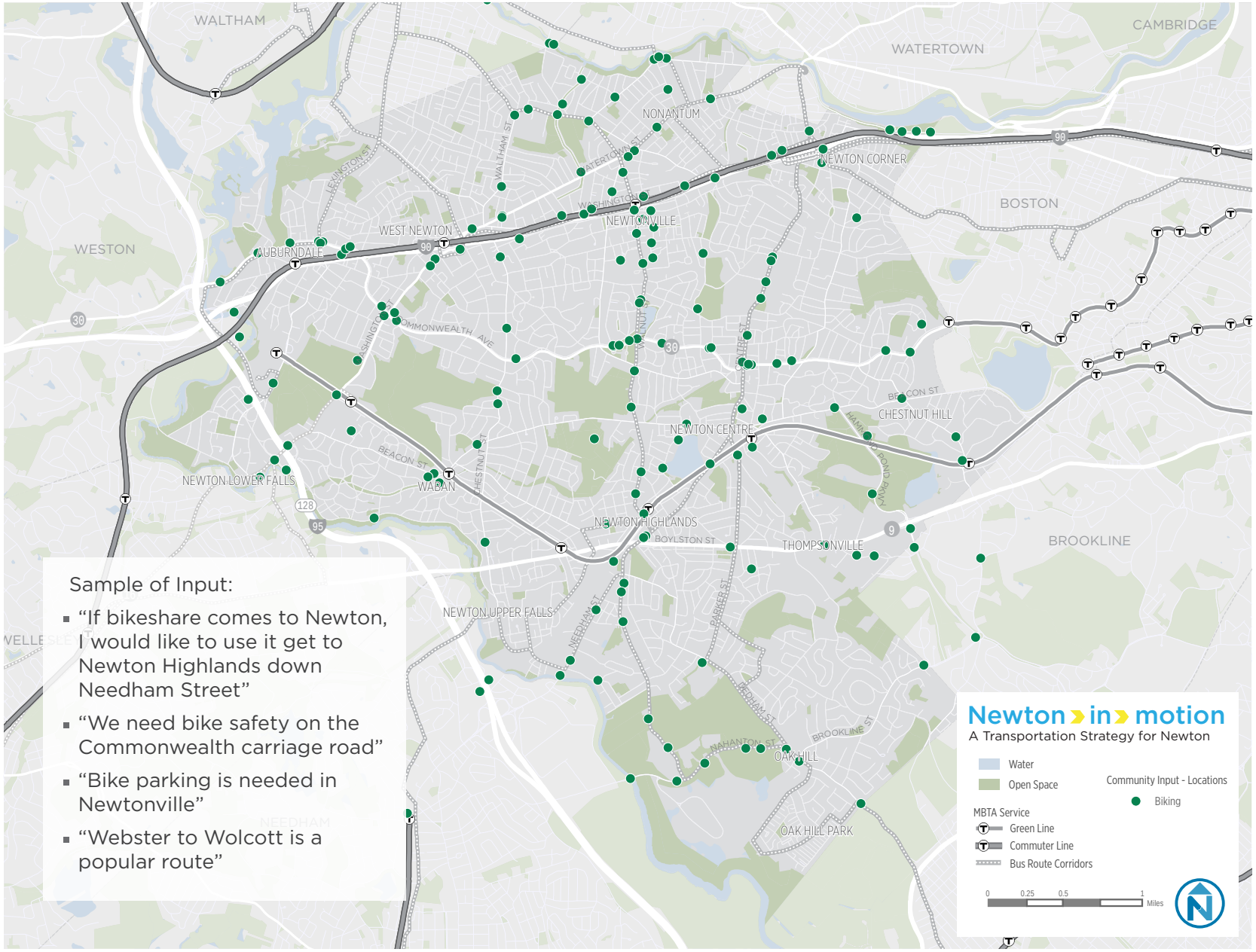


FIGURE 7 BIKING ISSUES

TRANSIT LOCATION PRIORITIES: COMMUNITY INPUT COLLECTED ONLINE AND AT WORKSHOP

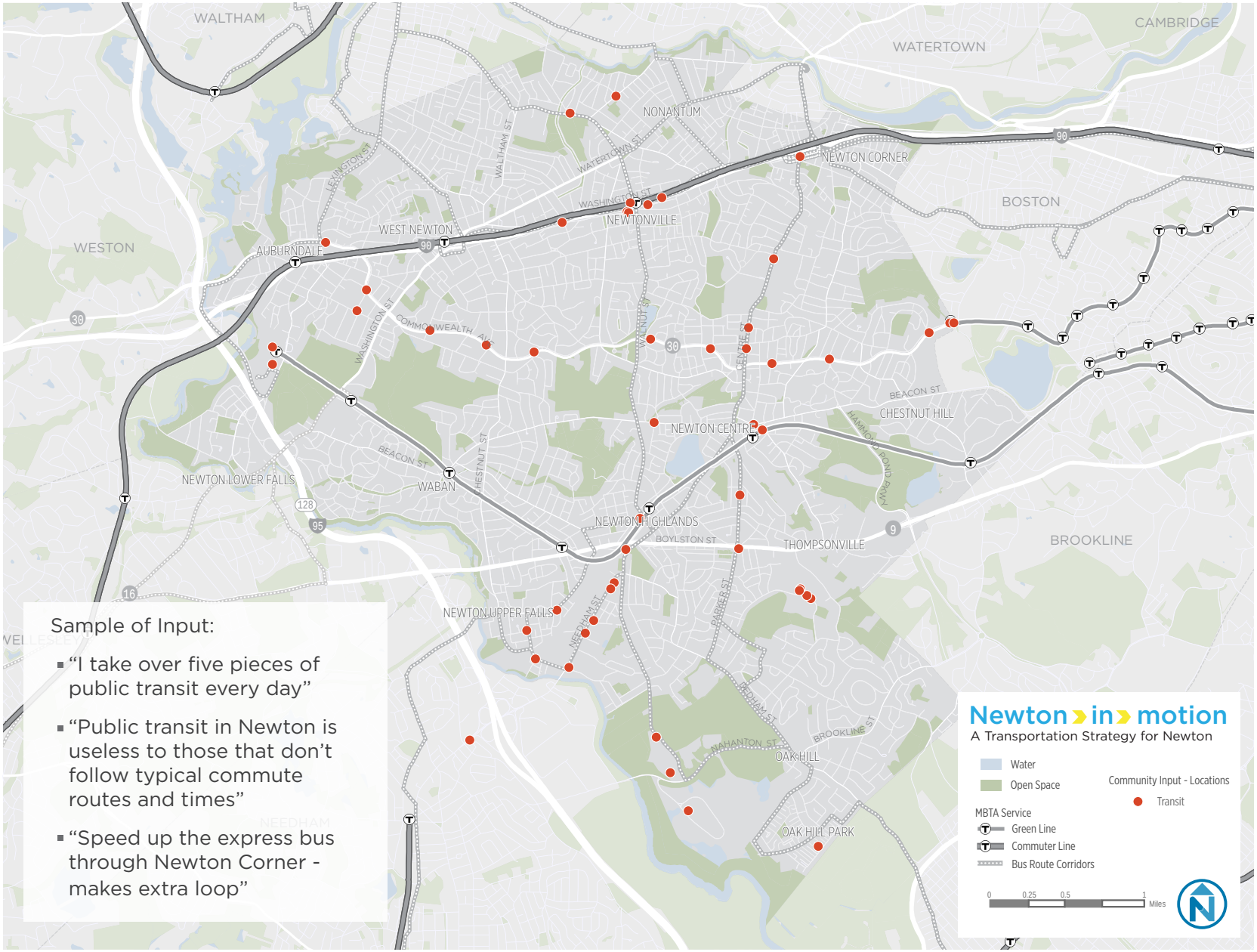


FIGURE 8 TRANSIT ISSUES

DRIVING LOCATION PRIORITIES: COMMUNITY INPUT COLLECTED ONLINE AND AT WORKSHOP

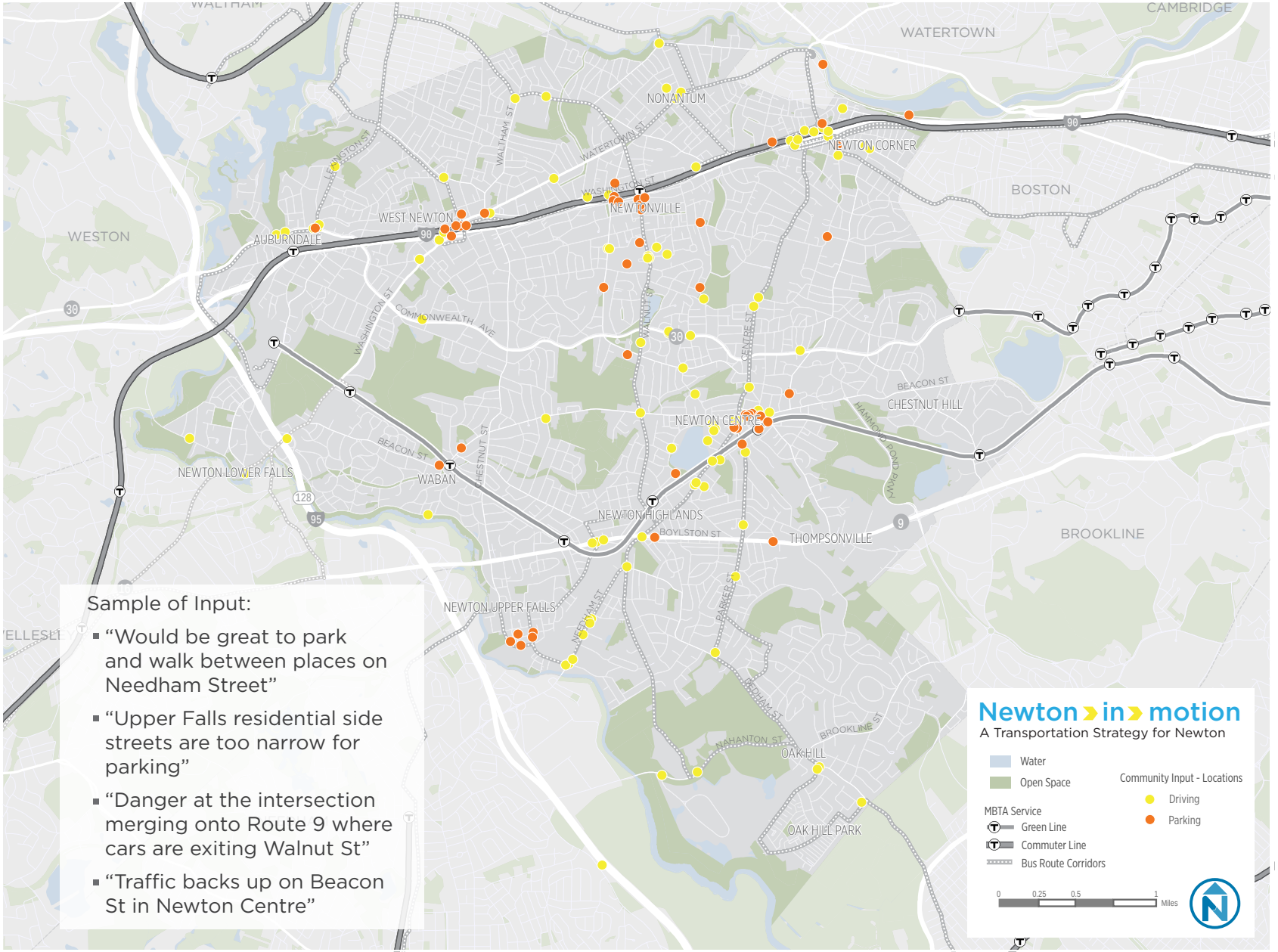
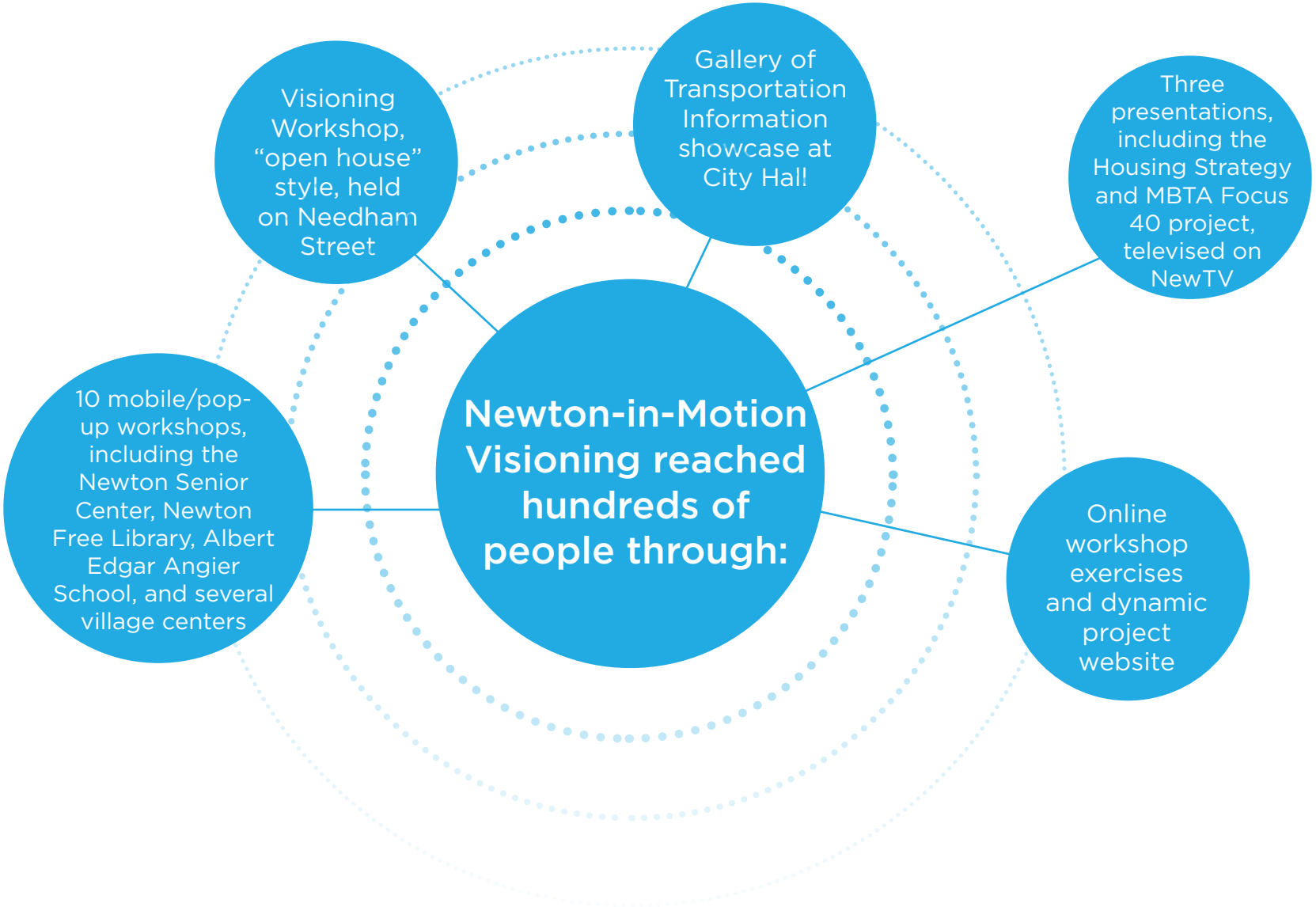


FIGURE 9 DRIVING ISSUES


WATERTOWN
NEEDHAM


6
7
8
*
10
11
12
13
14
15
16


Newton-in-Motion Visioning reached hundreds of people through:
Visioning Workshop, "open house" style, held on Needham Street
Gallery of Transportation Information showcase at City Hall
Three presentations, including the Housing Strategy and MBTA Focus 40 project, televised on NewTV
10 mobile/pop-up workshops, including the Newton Senior Center, Newton Free Library, Albert Edgar Angier School, and several village centers
Online workshop exercises and dynamic project website

WHAT WE HEARD

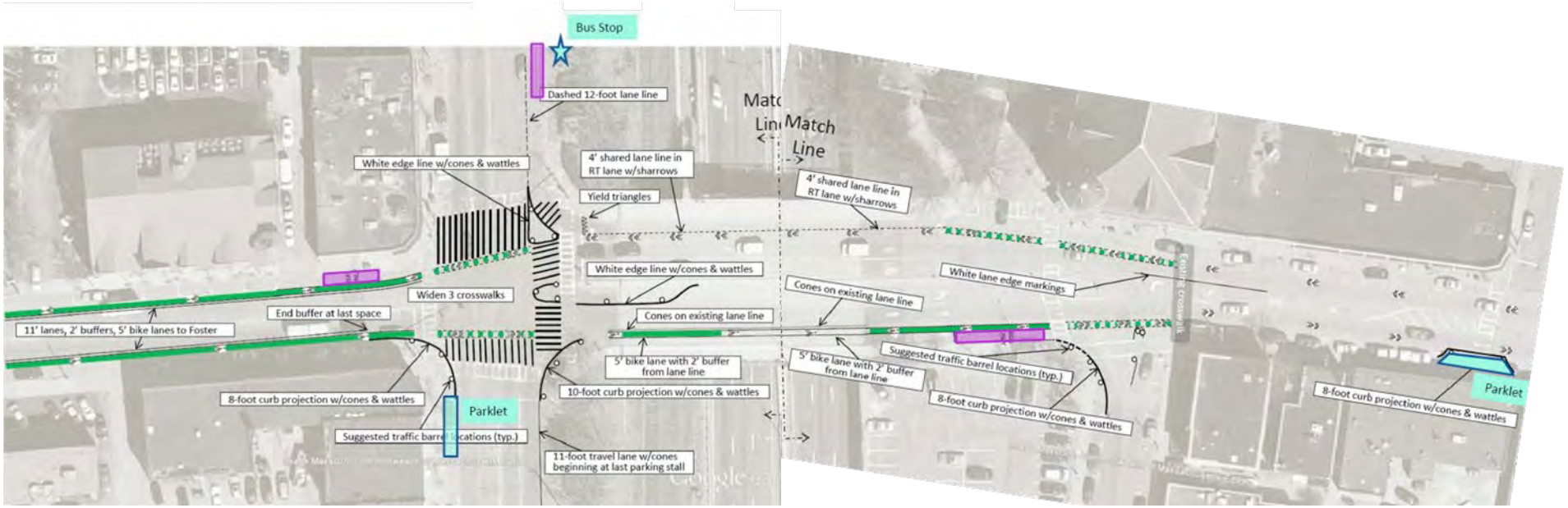
Street Design and Transportation Demonstration Workshops

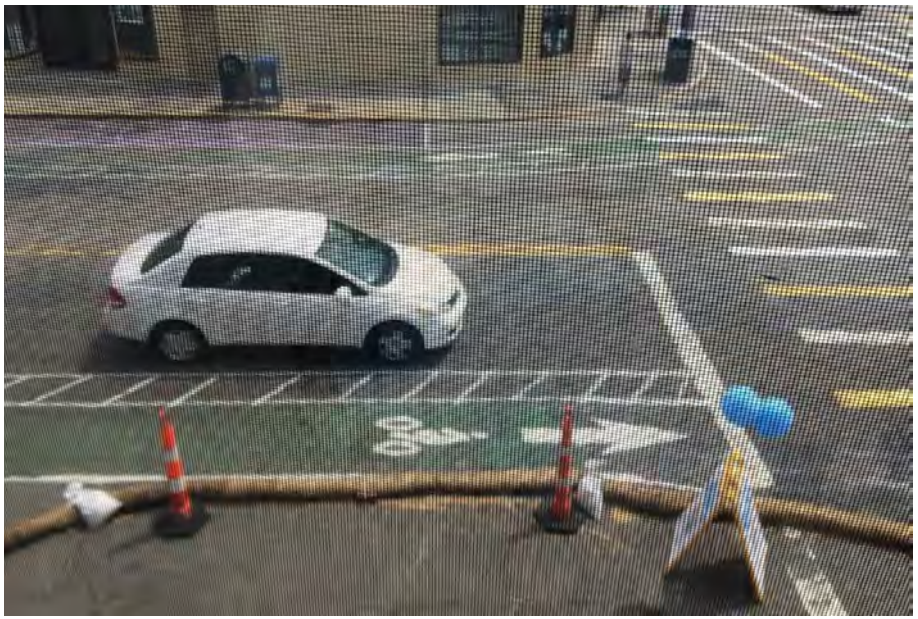
The Demonstration Workshop on June 9-10, 2016 transformed the intersection of Washington and Walnut Streets with temporary design elements including a new configuration of traffic lanes, wider crosswalks and curb extensions, two small pop-up parks, on-street bike parking, colored bus stops and bike lanes.

Results from the 127 surveys taken in-person and online showed that the vast majority of respondents (94%) had a positive response to the demonstration. These same respondents expressed interest in seeing more demonstration workshops in other places in Newton, especially Newton Center, Washington and Crafts Streets, Newton Corner, and West Newton Square.

When asked, “What did you like most about this demonstration?” responses cited the increased safety for people walking and people biking through the intersection as well as the clear focus of the demonstration project. Figure 10 shows the most common words used by people responding to this question.


ORR BUILDING
Karoun
Sysco
50% OFF
FRAMING YOUR


Bus Stop
Dashed 12-foot lane line
Match Line
White edge line w/cones & wattles
4' shared lane line in RT lane w/sharrows
Yield triangles
4' shared lane line in RT lane w/sharrows
White edge line w/cones & wattles
White lane edge markings
Cones on existing lane line
Widen 3 crosswalks
End buffer at last space
11' lanes, 2' buffers, 5' bike lanes to Foster
Cones on existing lane line
5' bike lane with 2' buffer from lane line
Suggested traffic barrel locations (typ.)
5' bike lane with 2' buffer from lane line
10-foot curb projection w/cones & wattles
8-foot curb projection w/cones & wattles
Parklet
Suggested traffic barrel locations (typ.)
11-foot travel lane w/cones beginning at last parking stall
8-foot curb projection w/cones & wattles
Parklet



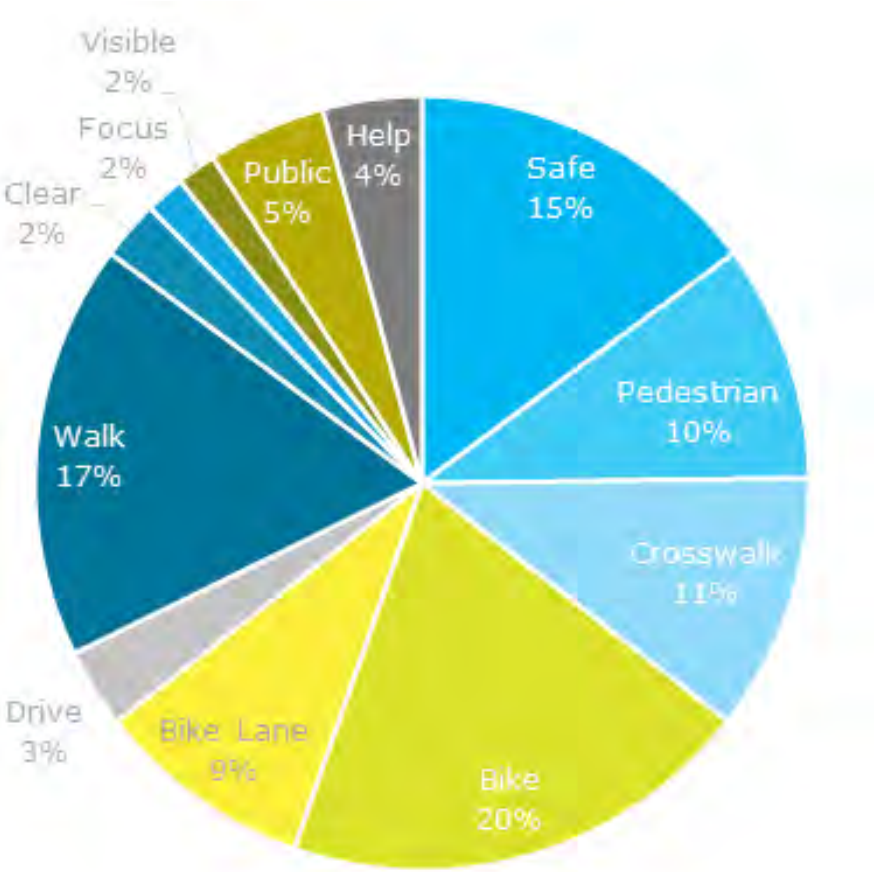


FIGURE 10 MOST COMMONLY USED WORDS IN RESPONSES TO "WHAT DID YOU LIKE MOST ABOUT THIS DEMONSTRATION?"


NO
PARKING

WHAT WE HEARD

Strategy Workshop

This workshop presented participants with potential strategies that could guide the City towards meeting its stated transportation goals and, as well as recommended targets to work toward by 2040. Participants voted on which strategies they like best. From in-person and online feedback from over 60 participants, the overall top three-ranked strategies were:

1. Install Protected Bike Lanes on Key High Traffic Routes
2. Improve Walking Routes to Grocery Stores, Libraries, Schools, Parks, and Village Centers
3. Expand Safe Routes To School (SRTS) Measures

Figure 11 shows the top two strategies for each goal, tabulated by the number of votes the strategy received.

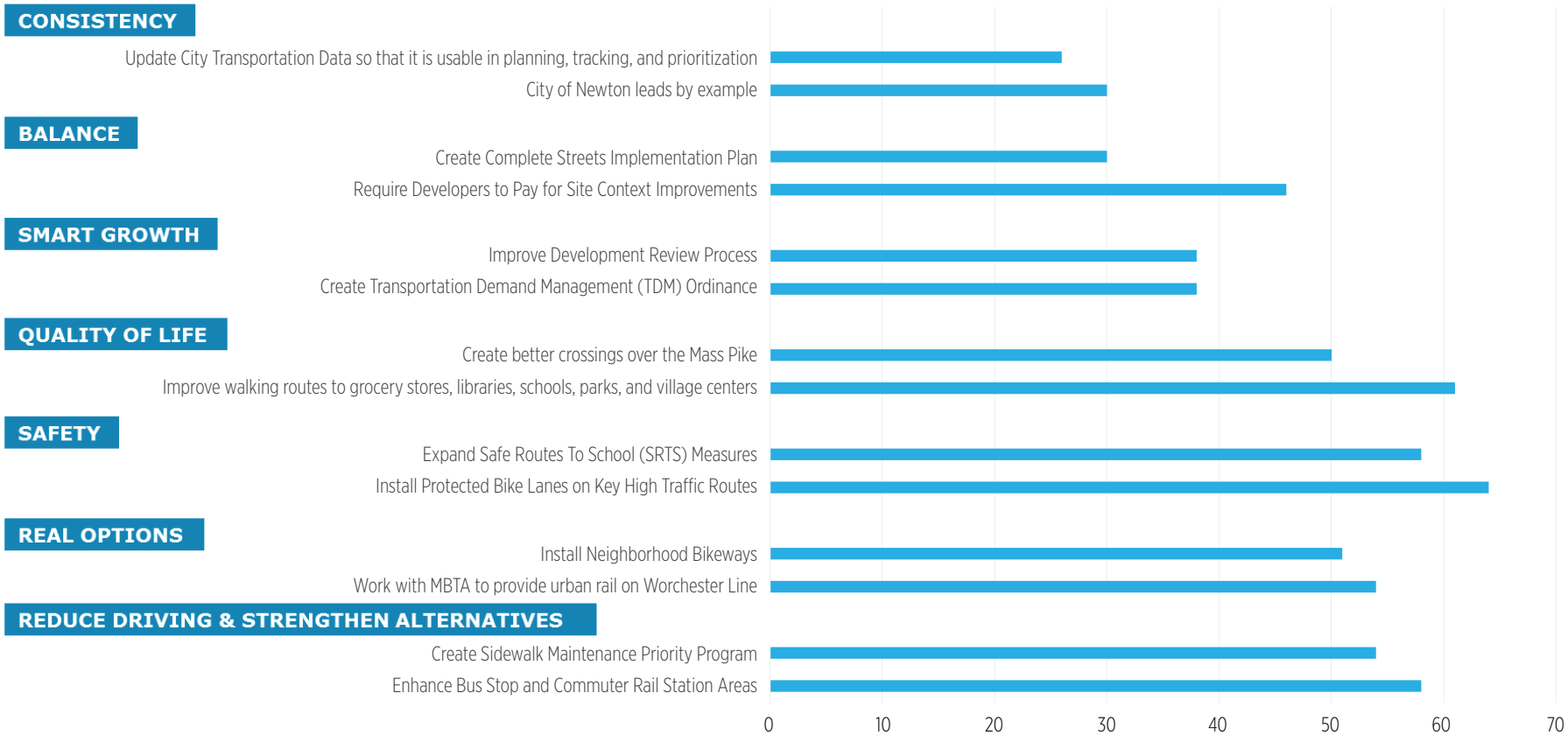


FIGURE 11 TOP TWO STRATEGIES BY BOARD (BY NUMBER OF VOTES)

Newton in motion

A Transportation Strategy for Newton

SUSTAINABILITY IN TRANSPORTATION

PART 5

Newton » in » motion

A Transportation Strategy for Newton

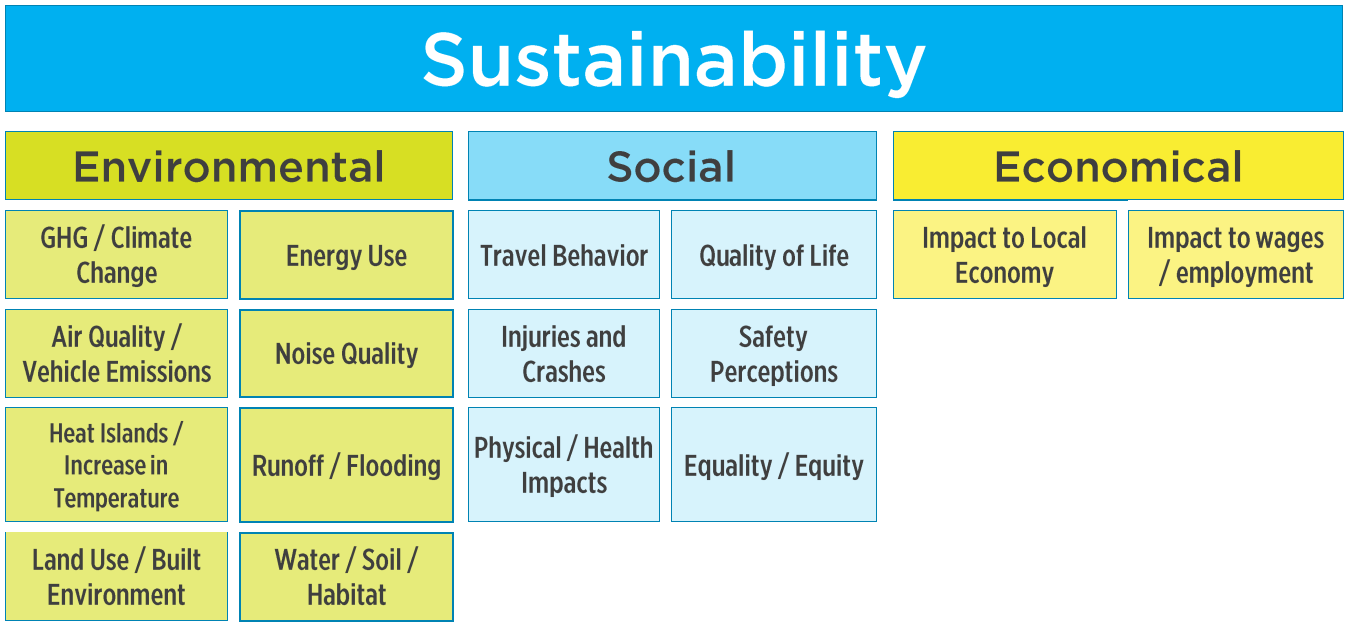
FEBRUARY 2017

Sustainability in Transportation

INTRODUCTION

Newton Transportation Strategy: Evaluating Potential Sustainability Implications

This section summarizes the potential sustainability implications of the key actions identified as part of Newton's Transportation Strategy. To ensure that the actions take into account the growing levels of Environmental, Social and Economic (ESE) impacts generally associated with transportation, they were evaluated on the possible changes to the key ESE criterion listed in the following graphic by the City of Newton Mayor's Office of Sustainability. The following analysis was completed on the first five sets of actions. Process and Prioritization actions were not analyzed as they have only indirect implications for the City's sustainability.



The impacts are grouped into the following 4 categories:

Category	Impact Description
+	Positive Impact
-	Negative Impact
/	No Relationship
+/-	Range of Impacts

1 SAFE TRAVEL

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
1.1 Reduce Crashes Citywide							
1.1A – Adopt a Vision Zero policy	+	+	+	+ Reduced fuel consumption + Reduced vehicular emissions + Improved air quality + Reduced noise	+ Reduced traffic congestion + Reduced traffic speeds + Reduced injuries/crashes + Improved physical health + Improved built environment + Improved biking and walking conditions + Improved quality of life + Changes in travel behavior	+ Reduced health treatment costs + Increased productivity + Less work/school days missed + Reduced fuel expenditure + Reduced vehicle maintenance costs + Reduced infrastructure maintenance costs	• Traffic and accident reports • Revised policy measures promoting ped/bike safety • Presence of supportive infrastructure including street access restrictions, road design etc.
1.1B – Create a Complete Streets design guide	+/-	+	+	+ Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality + Improved stormwater retention and flood control with use of permeable pavers + Improved microclimate and CO2 emission sequestration due to increased tree canopy + Reduction in fuel use	+ Reduced traffic congestion + Reduced traffic speeds + Reduced injuries/crashes + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved biking and walking conditions + Improved access to recreational, cultural, employment and service	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs + Increased productivity + Improved affordability of transport + Reduced maintenance costs	• Bicycle lanes (distance, width) • # of driveways within ROW segment • Intersection improvements (numeric count or description) • Landscape strip (length or square area) • Medians (length, width, description of treatment) • On-street parking spaces (numeric count) • Roadway segment (rating of pavement condition, paint)

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				- *Possible increase in heat island effect due to increased paving* - *Use of impermeable pavers will impact stormwater retention and flood control*	centers + Improved quality of life + Improved access to transit + Changes in travel behavior		• Roadway speed (mph) • Sidewalks (length, width) • Traffic calming (# of lanes, lane width, posted speed limit) • Transit (schedule changes, added routes) • Transit stops (numeric count, density, numeric count of enhanced stops) • Vegetation (numeric count of trees/bushes) • Ratio of pervious to impervious surfaces on urban arterials • Project dollars spent per mode (pedestrian, bicycle, auto, public transit)
1.1C – Evaluate City Speed limits	+	+	+	+ Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality	+ Reduced traffic speeds + Reduced injuries/crashes + Improved biking and walking conditions		
1.1D – Undertake educational campaigns to promote safety	/	+	/		+ Changes in travel behavior + Reduced injuries/crashes + Improved safety perceptions		
1.1E – Examine existing truck	+	+		+ Reduction of GHG and vehicular emissions	+ Reduced injuries/crashes + Improved safety perceptions	+ Improved distribution/delivery of goods	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
routes				+ Improved air quality + Improved noise quality			
1.2 Improve Safety at Intersections							
1.2A – Adjust turning radii standards	/	+	/		+ Reduced speed at turnings		
1.2B – Shorten traffic signal cycle times and minimize walking delay	+	+	+	+ Reduced vehicular emissions due to reduction in vehicle idling times	+ Improved safety + Changes in travel behavior + Improves pedestrian journey times + Reduced traffic congestion + Reduced signal violations by pedestrians	+ Increased revenue for retailers and destinations	
1.2C – Adopt & implement No Right Turn on Red policy	-	+	+/-	*- Increased idling time of a car sitting at a light* *- Reduced fuel efficiency* *- Increase in vehicular emissions at intersections*	+ Reduced risk of crashes and injuries at intersections + Improved safety for pedestrians and bicyclists at intersections	+ Reduced healthcare costs associated with crashes/injuries *- Increased fuel costs* *- Increased healthcare costs associated with respiratory illness such as asthma*	• ROTR collision data for all modes • Traffic flow data
1.2D – Align accessible curb ramps with path of travel	+	+	+	+ Improved stormwater retention and flood control with use of permeable pavers + Improved microclimate and CO2 emission sequestration due to increased tree canopy	+ Reduced flooding + Improved built environment + Improved biking and walking conditions + Improved access + Improved quality of life	+ Reduced maintenance costs	• SIIP Plan

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
1.2E – Paint bike crossings green	/	+	+		+ Reduced traffic/signal violations at intersections + Reduced crashes/injuries to bicyclists	+ Reduced health treatment costs	
1.3 Re-Envision Major Traffic Corridors							
1.3A – Redesign roads to accommodate all travel modes	+	+	+	+ Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality + Reduction in fuel use	+ Reduced speeds + Reduced traffic congestion + Reduced injuries/crashes + Improved biking and walking conditions + Improved access + Improved quality of life + Changes in travel behavior + Improved built environment + Improved quality of life + Improved access to transit + Changes in travel behavior	+ Reduced health treatment costs + Reduced maintenance costs	
1.3B – Create better crossings along Newton's major traffic corridors	/	+	+		+ Improved access to transit + Improved transport options + Improved biking and walking conditions + Changes in travel behavior	+ Promotion of local economic development	

2 TRANSIT AND SHARED MOBILITY

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
2.1 Create New Community Transit Options							
2.1A – Incentivize ridership growth	/	+	/		+ Changes in travel behavior		
2.1B – Create intra-Newton shuttles and partner with adjacent municipalities to create a sub-regional transit service	+	+	+	+ Reduce traffic congestion + Reduction in vehicle miles travelled (VMT) + Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality	+ Reduced traffic congestion + Improved access to recreational, cultural, employment and service centers + Improved quality of life + Improved access to transport + Changes in travel behavior + Increased first mile/last mile (FMLM) options	+ Improved affordability of transport + Increased productivity + Reduced fuel expenditure costs	
2.1C – Work with private shuttle operators to create an inclusive comprehensive system	+	+	+	Same as 2.1B	Same as 2.1B	Same as 2.1B	
2.1D – Partner with TNCs to provide intra-Newton trips	+	+	+	Same as 2.1B	Same as 2.1B	Same as 2.1B	
2.2 Make MBTA Transit Better							
2.2A – Work with	+	+	+	+ Reduction in vehicle miles	+ Improved safety perceptions	+ Increased revenue for retailers	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
MBTA to enhance quality and ADA access of green line stations, bus stops, and commuter rail station areas				travelled (VMT) + Reduction of GHG and vehicular emissions	+ Improved quality of life + Improved access to transit + Improved transport options + Changes in travel behavior	and destinations	
2.2B – Implement transit signal priority	+	+	/	+ Reduced vehicular emissions due to reduction in vehicle idling times	+ Reduced travel time using public transit + Improved safety + Change in travel time		
2.2C – Work with MBTA to provide urban rail service on the commuter rail line	+	+	+	+ Reduce traffic congestion + Reduction in vehicle miles travelled (VMT) + Reduction in vehicle miles travelled (VMT) + Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality	+ Reduced traffic congestion + Improved access to recreational, cultural, employment and service centers + Improved quality of life + Improved access to transport + Changes in travel behavior + Increased first mile/last mile (FMLM) options	+ Improved affordability of transport + Increased productivity	• Transportation emissions • VMT per household
2.3 Enhance Options for Getting to Transit Stops in Newton							
2.3A – Invest in first mile/last mile connections to transit	+	+	+	+ Reduce traffic congestion + Reduction in vehicle miles travelled (VMT) + Reduction of GHG and vehicular emissions + Improved air quality	+ Reduced traffic congestion + Improved access to recreational, cultural, employment and service centers + Improved quality of life	+ Improved affordability of transport + Increased productivity	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				+ Improved noise quality	+ Improved access to transit + Improved transport options + Changes in travel behavior + Increased first mile/last mile (FMLM) options		
2.3B – Introduce bikeshare	+	+	+	+ Reduction in vehicle miles travelled (VMT) + Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality	+ Reduced traffic congestion + Improved physical health and reduction in diseases associated with obesity + Improved access to transport + Changes in travel behavior + Increased first mile/last mile (FMLM) options	+ Reduced health treatment costs + Increased productivity + Improved affordability of transport	• # of bikes checked out per day • Increase in # of bike facilities such as lockers, stands etc. • Distance/Miles travelled - Pick up/drop off location
2.3C – Expand carshare	+/-	+/-	+	+ Reduce traffic congestion + Reduction in vehicle miles travelled (VMT) + Reduction of GHG and vehicular emissions + Improved air quality + Improved noise quality *- Possible increase in VMT for a non-driver* *- Possible increase in vehicular emissions if CarShare vehicle is not fuel efficient* *- Possible increase in traffic congestion*	+ Reduced traffic congestion + Improved access to recreational, cultural, employment and service centers + Improved quality of life + Improved access to transit +Improved transport option + Changes in travel behavior + Increased first mile/last mile (FMLM) options *- Change in travel behavior due to mode shift from public transportation to car*	+ Improved affordability of transport + Increased productivity	

3 ACTIVE TRANSPORTATION

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
3.1 Embrace Alternatives to Driving							
3.1A – Bike Network Plan	/	/	/				
3.1B – Expand safe routes to school and bike education programs	+	+	+	+ Reduce vehicular trips to school + Reduced GHG emissions + Improved air quality + Improved noise quality	+ Improved awareness + Changes in travel behavior + Reduced traffic congestion + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved walking conditions + Increased perception of safety – "eyes on the street" + Improved sense of community + Improved access to recreational, cultural, service, and employment centers + Improved quality of life + Improved access to transit	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	
3.1C – Create and implement sidewalk lighting standards	+	+	+	+ Reduced energy use	+ Improved safety	+ Reduced maintenance costs	• Street light inventory • Lighting energy costs • Illumination (square area, # of blocks)

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
3.2 Make Short Trips Active and Attractive							
3.2A – Use concurrent signals with Leading Pedestrian Intervals (LPI) at key intersections	+	+	+	+ Reduced vehicular emissions due to reduction in vehicle idling times	+ Improved safety + Improves pedestrian journey times + Reduced signal violations by pedestrians	+ Increased revenue for retailers and destinations	
3.2B – Improve walking and bicycling routes near schools, grocery, libraries, parks, and village centers	+/-	+	+	+ Reduced vehicle miles travelled by change in accessibility and behavior + Reduced GHG emissions + Improved air quality + Improved stormwater retention and flood control with use of permeable pavers *- Possible increase in heat island effect due to increased paving* *- Use of impermeable pavers will impact stormwater retention and flood control*	+ Reduced traffic congestion + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved walking conditions + Increased perception of safety – "eyes on the street" + Improved sense of community + Improved access to recreational, cultural, service, and employment centers + Improved quality of life + Improved access to transit + Changes in travel behavior	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	• Sidewalks (length, width) • Ratio of pervious to impervious surfaces
3.2C – Enhance tree canopy maintenance and new tree plantings	+	+	+	+ Improved air quality + Improved stormwater retention and flood control + Improved microclimate and CO2 emission sequestration	+ Improved built environment + Improved biking and walking conditions + Improved quality of life	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment	• Landscape strip (length or square area) • Vegetation (numeric count of trees/bushes) • Tree cover, e.g., percentage of

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				due to increased tree canopy		conditions	block group area with tree canopy cover
3.3 Extend the Reach of Bicycles							
3.3A – Create off-road connections in parks and aqueducts	+	+	+	+ Reduced damage to resources and wildlife habitat + Improve air and water quality + Reduced amount of roadway pavement and the number of vehicular trips on the road + Opportunities for alternative transportation bicycling routes + Improved pedestrian mobility by connecting destinations	+ Improved quiet natural experience for non-motorized visitors + Improved physical health and reduction in diseases associated with obesity + Improved environment + Improved quality of life + Improved access to open spaces + Changes in travel behavior	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	
3.3B – Install Neighborhood bikeways and protected bike lanes	+	+	+	+ Reduced vehicle miles travelled by change in accessibility and behavior + Reduced GHG emissions + Improved air quality	+ Improved safety and biking conditions + Increase in biking + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved access to recreational, cultural, service, and employment centers + Improved quality of life + Improved access to transit + Changes in travel behavior	+ Improved affordability of transport + Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
					+ Better FMLM connections		
3.4 Promote Village and Neighborhood Comfort							
3.4A – Expand place-making and beautification efforts	+	+	+	+ Reduces congestion + Reduces air pollution	+ Improved access to destinations + Improved built environment + Encourages navigation and use of the City and villages + Increases walking & cycling journeys and enhances the discovery of the City + Promotes pedestrian activity + Facilitates City efficiency, function, and economics + Increases safety & security	+ Increased revenue for retailers and destinations + Reduced fuel costs – Time per trip is reduced and saves fuel + Provides a framework for revenue generation through advertising & sponsorship	
3.4B – Neighborhood slow zones	+	+	+	+ Reduced fuel consumption + Reduced vehicular emissions	+ Reduced traffic congestion + Reduced traffic speeds + Reduced injuries/crashes + Improved biking and walking conditions + Improved quality of life + Changes in travel behavior	+ Reduced health treatment costs + Reduced fuel expenditure + Reduced vehicle maintenance costs	
3.4C – Adjust siting and design standards for new development and new schools in	+	+	+	+ Reduced VMT + Reduced GHG emissions + Reduced vehicular emissions + Improved air quality + Possible reduction in	+ Improved safety and more "eyes on the street" + Changes in travel behavior + Improved quality of life + Improved conditions for	+ Reduced expenses associated with car ownership + Promotion of local economic development + Increase in real estate and	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
multi-modal areas				impermeable areas usually allotted for parking + Improved stormwater retention + Reduced runoff and flooding	walking and biking + Increase in physical activity – walking and biking + Reduced injuries/crashes + Reduced congestion + Improved built environment and infrastructure + Fewer school days missed + Improved access to transit + Improved sense of community	property values due to improved built environment conditions + Increased productivity + Reduced healthcare costs + Savings in school bus/transportation expenses + Reduced maintenance costs	
3.4D – Widen sidewalks and increase bike parking in village centers	+	+	+	+ Improved air quality + Improved noise quality + Improved stormwater retention and flood control with use of permeable pavers + Reduction in vehicle miles travelled (VMT) due to possible mode shift - *Possible increase in heat island effect due to increased paving* - *Use of impermeable pavers will impact stormwater retention and flood control*	+ Reduced traffic congestion + Reduced traffic speeds + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved biking and walking conditions + Improved access to recreational, cultural, service, and employment centers + Improved quality of life + Improved access to transit + Changes in travel behavior, increase in biking	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs + Increased productivity + Improved affordability of transport + Reduced maintenance costs	• Sidewalks (length, width) • Ratio of pervious to impervious surfaces • Number of bike racks

4 PARKING MANAGEMENT

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
4.1 Create Availability							
4.1A – Adopt parking availability goals and establish policies to meet goals	/	+	+		+ Reduce motorist delay and frustration	+ Promotion of local economic development	
4.1B – Develop pick-up/drop-off zones	/	+	+		+ increase the accessibility of a pedestrian-oriented district, accommodating visitors with limited mobility who may not be able to walk long distances	+ Promotion of local economic development	
4.1C – Active parking management in high demand areas	+/-	+/-	+	+ Reduced land consumption + Reduced stormwater management costs, water pollution and heat island effects due to reduced pavement area + Reduced traffic congestion, roadway costs, pollution emissions, energy consumption and traffic accidents *- Changes in the amount of land devoted to landscaping, farms, habitat and other*	+ Improved access to recreational, cultural, service, and employment centers + Improved walkability + Create accessible and efficient land use patterns + Support transit + Improved access to transit *- Too much parking supply* *- Can cause spillover problems such as undesirable use of off-site parking spaces.*	+ Promotion of local economic development + Facility cost savings by reducing the need to subsidize parking facilities + Revenue generation through priced parking + Improved affordability of transport	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				forms of landscaping *- Changes in the amount of impervious surface, stormwater management costs, and solar heat gain*			
4.2 Plan for the Future of Parking							
4.2A – Adjust requirements to reflect updated demand calculations	/	+	/		+ Incentive to reduce automobile travel and shift to other modes or destinations.		
4.2B – Expand EV Charging	+/-	+/-	+/-	+ Reduce GHG emissions especially if clean power is used + Improved air quality + Reduced noise pollution + Less heat *- Using conventional, fossil/coal powered fuels to charge electric vehicles leads to indirect increase in emissions* *- Reliability on electric grid*	+ Improved air quality + Reduced noise pollution + Less heat *- No reduction in traffic congestion* *- Time taken to charge vehicle* *- Availability of charging stations* *- Per-vehicle consumption of energy will increase with multiple users* *- Short Driving Range and Speed*	+ Increased energy security + Improve fuel economy + Lower fuel costs *- Cost of batteries* *- High electricity bills*	
4.2C – Provide Park-and-Ride Facilities	+/-	+	+	+ Automobile park and ride - modest reductions in local road traffic, pollution, energy	+ Tends to reduce trips during peak periods	+ Reduces road and parking costs in urban centers	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				use and consumer costs + Bicycle Park & Ride provides greater environmental benefits - *Local automobile trip is still made* - *Vehicle miles and atmospheric pollution may increase* - *Large areas of land devoted to car parking* - *Changes in the amount of land devoted to landscaping, farms, habitat and other forms of landscaping* - *Changes in the amount of impervious surface, stormwater management costs, and solar heat gain* - *Pollutants from vehicles – oil, particulates, lead etc. – may be deposited on the ground and water flowing over the surface may pick up these pollutants, and this leads to deterioration in water quality*	+ Reduces automobile travel + Supports transit and ridesharing + Improves transit as a travel choice + Supports ridesharing + Supports transit use + Supports cycling when bike parking is provided + Increased choice and security for cyclists - *Increase the social exclusion of those without access to a car*	+ Reduces travel expenses + Local shopping centers near park and ride facilities benefit from additional shopping	

5 CONGESTION REDUCTION

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
5.1 Create Smart Developments							
5.1A – Incentivize development near multi-modal nodes	+	+	+	+ Reduced vehicle miles travelled by change in accessibility and behavior + Reduced GHG emissions + Improved air quality + Improved stormwater retention and flood control with use of permeable pavers *- Possible increase in heat island effect due to increased paving* *- Use of impermeable pavers will impact stormwater retention and flood control*	+ Reduced traffic congestion + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved walking conditions + Increased perception of safety – "eyes on the street" + Improved sense of community + Improved access to recreational, cultural, employment and service centers + Improved quality of life + Improved access to transit + Changes in travel behavior	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	
5.1B – Create a TDM ordinance	+	+	+	+ Improved air quality + Reduced greenhouse gas emissions + Improved water quality reduced polluting emissions and fluid leaks + Reduced need for paved	+ Reduced dependence on fossil fuels + Reduced congestion and resulting time savings + Multiple options for getting around + Enhanced quality of life	+ Reduced costs of car ownership + Reduced cost of parking + Reduced health treatment costs + Increased productivity + Reduced fuel expenditure	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
				surfaces	+ Improved conditions for walking and biking + Improved transportation options + Reduced community fragmentation caused by wide, high-speed roads + Fitness benefits of active transportation (biking and walking) + Health benefits of improved air quality + Stress reduction + Reduced traffic congestion + Reduced traffic speeds + Reduced injuries/crashes + Improved physical health + Improved built environment + Changes in travel behavior	+ Reduced vehicle maintenance costs + Reduced infrastructure maintenance costs	
5.2 Manage Travel Demand							
5.2A – Implement congestion reduction incentive campaigns that include financial incentives	/	+	/		+ Increased awareness + Reduced congestion		

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
5.2B – Provide educational information including a central transportation information website	/	+	/		+ Improved access to information + Increased awareness		
5.2C – Require major employers to join a TMA	+	+	+	+ Improved air quality + Reduced greenhouse gas emissions	+ Reduced congestion and resulting time savings + Multiple options for getting around + Enhanced quality of life + Improved transportation options + Stress reduction	+ Reduced costs of car ownership and maintenance + Reduced cost of parking	
5.2D – Create City of Newton and schools TDM plan	+	+	+	+ Reduced vehicle miles travelled by change in accessibility and behavior + Reduced GHG emissions + Improved air quality + Improved stormwater retention and flood control with use of permeable pavers	+ Reduced traffic congestion + Improved physical health and reduction in diseases associated with obesity + Improved built environment + Improved walking conditions + Increased perception of safety – "eyes on the street" + Improved sense of community + Improved access to recreational, cultural, employment and service	+ Promotion of local economic development + Increase in real estate and property values due to improved built environment conditions + Reduced health treatment costs	

Actions	Sustainability Impacts			Key Impacts/Benefits			Related Metrics
	Environmental	Social	Economic	Environmental	Social	Economic	
					centers + Improved quality of life + Improved access to transit + Changes in travel behavior		

Newton in motion

A Transportation Strategy for Newton