BIKE SOMERVILLE

CITY OF SOMERVILLE BICYCLE NETWORK PLAN

April 2023

Welcome to Somerville's first-ever Citywide Bicycle Network Plan! Our community prides itself on civic activism, progressive values, and a can-do attitude. We are committed to rapidly de-carbonizing our transportation system. We are committed to saving lives by installing protected bike lanes and physical traffic calming at the citywide scale. We are committed to connecting our residents and workers to economic opportunity. This Bicycle Network Plan will help us achieve these community priorities.

Through the tireless efforts of residents, advocates, elected officials and City staff, Somerville has made great progress toward a bicycle network that is safe and useful for people of all ages and abilities. This Plan is intended to accelerate the pace of change as we work to make our streets safer and more accessible for all users. It is also intended to create more predictability for our diverse stakeholders, so that residents, business owners, workers, visitors and agency partners can plan for the future.

Twentieth-century transportation planning has created deep and lasting harms in Somerville, and these historic policy failures affect our youth, seniors, people of color and low-income residents most acutely. Somerville demands human-scaled mobility – streets and intersections that are designed for walking, rolling, bicycling and riding the bus. Somerville knows that bike-friendly streets improve safety for everyone, not just for people on bikes.

I've lived this experience, biking my children across town to our public schools long before the first protected bike lanes were installed in our city. When I read the public feedback that informed this plan, I am transported back to those days. There is so much work ahead, but please know that your local government is with you. Let's get to work!

Mayor Katjana Ballantyne

BIKE SOMERVILLE

ACKNOWLEDGMENTS

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BIKE SOMERVILLE

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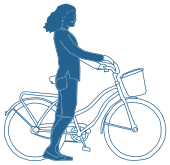
Somerville Bicycle Network Plan
Executive Summary

"There are soooo many people I know who would bike here if they weren't afraid! And for people like me who do not own cars, feeling safer biking during peak traffic times would allow me to visit shops and restaurants much more often."



What is the Somerville Bicycle Network Plan?

The City of Somerville wants more people to bike to reduce air pollution and increase transportation safety in our community. We are developing a citywide bicycle network plan so that people of all ages and abilities can ride a bicycle to anywhere in the City safely and comfortably.

What are the Somerville Bicycle Network Plan Goals?

- Goal #1 – Increase biking as the main mode of transportation for daily trips and aim for 15% of residents traveling by bike by 2050.
- Goal #2 - Provide infrastructure throughout Somerville that is safe and comfortable for biking for all residents regardless of age, ability, gender, and background.
- Goal #3 - Ensure that every resident in Somerville has access to a bicycle and can safely reach their everyday destinations by biking.

To support this vision, we have designed a network that designates streets for various bicycle infrastructure to create a connected bike network, link important destinations like schools, libraries, T stations, commercial squares, and support more people biking.

How did we create the network vision?

From Fall 2021 to Spring 2022, we hosted group bike rides, an online survey, virtual community meetings, virtual mapping workshops, street pop-ups and community event tables connecting with over 1,000 people. In this outreach, we heard from people that the top issues that prevent them biking or biking more were vehicle speeding, a lack of a connected bike network, the lack of protection from cars, and the fear of being hit by someone opening a car door. People like to bike to a range of destinations such as shops, commercial squares, schools, connections to transit, to see friends, family and loved ones, grocery stores, and parks. People advocated for installing more protected bike lanes, increasing connectivity, creatininge smoother road and bike lane surfaces, and improving safety at intersections. The feedback shared shaped the proposed network vision and the types of facilities selected for each street on the network.

What is the proposed network?

The proposed network was created by considering the importance of

- having protected bicycle lanes on higher volume and higher speed roads while still maintaining parking on at least one side of the street,
- offering alternative safe and low stress residential routes, if possible,
- accommodating current or proposed bus service,
- providing plentiful north-south and east-west bike routes to ensure connections to schools, parks, and commercial centers.

Figure E.1: Network Vision Map
The proposed citywide network takes Somerville's bicycle network from 30.1 miles to a total of 88.1 miles, an increase of 58 miles.

What are the proposed bike facilities?

Protected Bike Lane: We aim to install bike lanes with separation from traffic on all roads in the network with higher speeds and higher volumes. They provide vertical and horizontal separation between people biking and people driving. Separation may include raised concrete or granite curbs, bollards, delineators, parked cars, or sidewalk level lanes. This includes facilities such as parking protected lanes, sidewalk-level lanes, and two-way cycle tracks.

One-Way Protected Bike Lane: Some streets are designated with protected bike lanes but only in one direction of travel. This is because there is not enough width to accommodate one side of parking and a bicycle lane in each direction.

Neighborway: Streets designated as Neighborways in the network are walk-and-bike friendly streets that run parallel to larger main streets, creating a low-stress alternative biking experience on residential streets. These streets are designed to lower volume and speeds for vehicles with measures like speed humps or narrowing the entrance to the street to discourage people using the street as a cut through. Neighborways will always provide a two-way connection for people biking even if the street is one-way for vehicular traffic.

Shared Street: Shared streets are low volume streets where the street is a shared space and people walking and wheeling are prioritized over cars. Physical traffic calming elements, such as plantings and different street surfaces, communicate to people driving that they are not the primary users of the street.

Off-Street Path: Paths or connections away from roads with cars serve as Off-Street Paths. They are often used for people walking, wheeling, and biking like the existing Somerville Community path.

Existing Bike Lane: Outside of the proposed bicycle network, Somerville still has some existing infrastructure such as green painted bike lanes between the travel lane and the parking lane. These will not be removed but are not considered part of the network for people of all ages and abilities.

When will this be implemented?

The Plan outlines an 88-mile network to develop over the next couple of decades. The Plan identifies priority streets for protected bike lanes and Neighborways based on a set of criteria that focuses on equity, connectivity, access to destinations, topography, and safety. The goal is to implement quick-build designs with tools like paint, flexible posts, and signage, for the priority streets by 2030. Quick-Build designs allow staff to evaluate changes and adjust for more permanent long-term designs. As the City moves to implement new bike facilities, we will do street specific public engagement.

Total Miles of Priority Network	
Protected Bicycle	29.8 Lane Miles*
Neighborways	10.4 Street Miles

* A two-way protected bicycle lane equates to 2 Lane Miles (versus 1 Street Mile)

Figure E.2a: Top Ranking Network Streets

Protected Bicycle Lanes

	Street	Length
PBL-A	Broadway West	2.2 mi
PBL-B	Broadway Center	2.8 mi
PBL-C	Broadway East	1.2 mi
PBL-D	Central St	1.6 mi
PBL-E	College Ave	1.4 mi
PBL-F	Cross St	0.5 mi
PBL-G	Curtis St	0.5 mi
PBL-H	Elm St	1.5 mi
PBL-I	Foley St	0.6 mi
PBL-J	Franklin St	0.5 mi
PBL-K	Highland Ave	3.6 mi
PBL-L	Lowell St	0.9 mi
PBL-M	McGrath Hwy	4.1 mi
PBL-N	Pearl St-Gilman Sq	0.6 mi
PBL-O	School St	1.1 mi
PBL-P	Somerville Ave	3.5 mi
PBL-Q	Temple St	0.6 mi
PBL-R	Washington West	1.1 mi
PBL-S	Washington Center	0.4 mi
PBL-T	Washington East	1.1 mi

Neighborways

Neighborway Route	Length
NWR-A	1.4 mi
NWR-B	1.4 mi
NWR-C	1.5 mi
NWR-D	1.3 mi
NWR-E	0.7 mi
NWR-G	0.8 mi
NWR-I	1.2 mi
NWR-L	0.7 mi
NWR-Q	0.5 mi
NWR-S	0.9 mi

Figure E.2b: Top Ranking Network Streets

What's next?

The full plan is now available for review at somervillema.gov/bikenetwork.

To request a translated full draft plan in Spanish, Portuguese, Haitian Creole, Nepali, Traditional Chinese, and Simplified Chinese, please contact the SomerViva Office of Immigrant Affairs at SomerViva@somervillema.gov or by calling 311 Constituent Services at 617-666-3311.

Individuals with disabilities who need auxiliary aids and services for effective communication, written materials in alternative formats, or reasonable modifications in policies and procedures, in order to access the programs and activities of the City or to attend meetings, should contact the City's ADA Coordinator, Adrienne Pomeroy, at 617-625-6600 x2059 or apomeroy@somervillema.gov.

Thank you to everybody who has helped with the creation of Somerville's first Bicycle Network Plan. We are on our way, and we hope you continue to or join the City in its effort to reach goals set by Somerville Vision 2040, Climate Forward, and Vision Zero.

0. Introduction

"Biking is an essential avenue through which we can make positive change. I hope the city takes it as a serious and longterm priority. It probably sounds crazy now but I dream that someday our streets can be cut in half because the need for cars will be so much lower."

The City of Somerville has committed to becoming America's most walkable, bikeable, transit-oriented community. We installed our first basic on-street bike lanes in 2002, and today's network includes roughly 30 miles of bike facilities. With more bicycle infrastructure implemented, ridership has grown and diversified. Somerville is now ready to build a citywide network and develop a more inclusive culture of biking.

Our first Bicycle Network Plan will help Somerville coordinate our efforts in advocacy, planning, design, finance, construction and maintenance. It will accelerate the pace of progressive change in our city's transportation system. It will improve predictability for all our community members, helping residents, businesspersons, workers, advocates and agency partners to plan for the future.

This plan is being prepared at a time when Somerville is changing rapidly. The COVID-19 pandemic has altered travel patterns. A strong real estate economy is transforming land use and exacerbating housing cost pressures. New mass transit solutions are available, including the hard-won Green Line Extension. Community members and community leaders are demanding more investment in safe streets.

The City of Somerville enthusiastically supports the expansion of biking in our community. Official City policy calls for a dramatic shift away from automobile travel and toward taking transit, walking and biking. Our Climate Action Plan prioritizes the rapid buildout of a safe, protected bike lane network as a top transportation priority. Our Vision Zero Action Plan directs the City to complete two protected bike lane projects each year and complete three "Neighborway" enhancement projects each year. The public engagement process for this Bicycle Network Plan has unambiguously reinforced and ratified these commitments. More information on our community goals is presented in **Chapter 1**.

Between 2002 and 2017, Somerville grew its network of on-street bicycle facilities from less than one mile to more than 23 miles. The modern era of protected bike facility design and construction began in 2017, and Somerville has created roughly 6 miles of on-street protected – permanent and quick-build - facilities as of December 2021. Two key lessons learned during this era is the importance of establishing continuous links rather than a fragmented networ, and the importance of planning for continued operations and maintenance of protected bicycle infrastructure.

Bike ridership in Somerville has grown during the past decade, and network expansion likely accounts for some of that change. US Census data offers one data point: people reporting that they primarily use a bike for commuting increased by 78% between 2012 and 2021. The City's annual bike counting program offers another data point: average peak-hour count of people biking at 40 intersections citywide increased by roughly 41% from 2010 to 2021. Ridership data from the region's public bikeshare program illustrate a growth of approximately 223% between 2017 and 2022. More information on existing conditions and trends is presented in **Chapter 2**.

Despite this progress, Somerville residents consistently share that safety is a deterrent to biking. Crash data indicate that there are several dozen reported crashes involving people biking in Somerville every year. In 2017, there were 50 reported bike crashes. In 2021, there were 23 reported bike crashes. Although the trend line may be moving in the right direction, crash data only tell part of the story. No reporting mechanism currently exists in Somerville to capture "near miss" events. On many Somerville streets, motor vehicle speed and volume contribute to a "Level of Traffic Stress" (LTS) that discourages people from biking.

This Bicycle Network Plan is intended to build on Somerville's successes to date and help mitigate challenges encountered over the past decade. In order for people of all ages and abilities to travel safely and comfortably, the City must rapidly build out a connected network of protected bike lanes and Neighborways. Simultaneously, the City must ensure that expansion of our bicycle network is orderly and predictable and performed in concert with expansion of accessible parking and commercial loading. Some residents feel that Somerville has moved too quickly to build out our bicycle network, or with insufficient community engagement. The City is committed to participatory planning and will continue to build capacity for meaningful, timely and culturally-competent outreach and engagement. Our community engagement approach and the feedback we heard in the development of this Plan is described in **Chapter 3**.

Not all streets are equal in this plan. Community engagement and national best practice led the City to emphasize two primary bike facility types: protected bike lanes for high traffic and high volume arterial streets, and "Neighborway" treatments for low-volume back streets that offer key connections. Both facility types can be created using "quick build" solutions like paint, signage, flexposts or more permanent materials like asphalt speed humps, concrete curb extensions or islands. Our process for creating the network vision is described in **Chapter 4**.

The Bicycle Network Plan is the first step in a citywide vision for a safe, connected network of protected bike lanes and back street Neighborways. To help break this huge task into manageable pieces, several following distinct processes and work products will be required. A design guide will be prepared to help City staff, agency partners and the public at large speed up project engineering. A wayfinding guide will be created to help users navigate the network. An operations & maintenance manual will help ensure that Somerville can take care of the increasingly complex streets of the future, and a community engagement guide will layout the foundation for the engagement approaches in these projects. Learn more about the City's implementation framework in **Chapter 5**.

1. BICYCLE PLAN GOALS

The Somerville Bicycle Network Plan is a key component in realizing the City's overall goals for quality of life and safety, set forth in policies and plans discussed in this chapter. Based on these overall City goals, best practices, and research summarized, specific goals for the Bicycle Network Plan are derived.

"I feel safe in parks and on certain paths but at intersections and a majority of roads I feel unprotected and very much so at the whim of traffic."

BICYCLE PLAN GOALS

1.1 POLICY CONTEXT

SOMERVISION 2040

In 2021 the City revised SomerVision2030 (adopted in 2012) and adopted its current comprehensive plan, SomerVision2040, which defines city goals, policies, and actions that reflect the vision and shared values established by the community and the City - Diversity, Community, Growth, Accessibility, Sustainability, and Innovation.

Priorities identified in the plan that drive the goals for this Bicycle Network plan include encouraging sustainable and active transportation and providing safe routes to parks. The plan calls for 75% of work commutes to be taken via non-car transportation by 2040 and for an emphasis on low-carbon transportation modes in city projects.

SomerVision also sets equity goals that are important to consider when creating a strategy to increase bicycle ridership across Somerville, including:

- **Increase Transportation Equity Across the City**
- **Prioritize Vulnerable Road Users**
- **Prioritize Walking, Biking, and Transit Access**

For further information, refer to www.somervision2040.com.

NEIGHBORHOOD PLANS

The City of Somerville is committed to engaging residents in shaping the environment in which they live. Neighborhood level plans are the City's effort to create a collaborative and inclusionary process to set development strategies, policies, and transportation goals on a smaller scale than SomerVision.

The following existing Neighborhood plans provided context and direction for this Bicycle Network Plan:

- Assembly Square Neighborhood Plan
- Brickbottom Vision Plan
- Davis Square Plan
- East Somerville Plan
- Gilman Square Station Area Plan
- Lowell Street Station Area Plan
- Magoun and Ball Square Plan
- Union Square Neighborhood Plan
- Winter Hill Neighborhood Plan

Future neighborhood plans will continue to inform the refinement and implementation of this Bicycle Network Plan.

For access to each of the plans, see www.somervillebydesign.com

CLIMATE FORWARD

Somerville Climate Forward launched in 2018 as the City's first plan to set policies, programs, strategies, and implementable actions to make the City sustainable and climate resilient. The City's commitment is to reduce our contribution to climate change and work towards carbon neutrality, prepare for the unavoidable impacts of climate change, and fairly distribute the opportunities created by climate action to alleviate the unequal burdens of climate changes.

In order to achieve these goals the plan recognizes that everyone must have access to safe, affordable, low-carbon transportation. This includes improved walking infrastrucure, reliable bus service, more rail transit, and improved and expanded bicycle infrastructure.

The plan puts forward a mode share target of 50% public transportation and 15% bicycle ridership by 2050.

COMPLETE STREETS

In 2014 the City of Somerville passed the first Complete Streets ordinance in Massachusetts. The ordinance requires the City of Somerville to enhance the safety, convenience, and comfort of our transportation system so that users of all ages and abilities have access to a connected network of facilities accommodating all travel modes.

It also requires the city to approach every transportation project and program as an opportunity to improve the transportation network for all users, and to incorporate bicycle, pedestrian, and transit facilities when applicable and practical, in all street projects, such as reconstruction, repaving, and rehabilitation projects.

VISION ZERO

The City joined a worldwide campaign that aims to eliminate transportation related deaths and injuries, adopting the Vision Zero Somerville plan in 2017. Vision Zero uses a Safe Systems approach, which is a human-centered framework that acknowledges humans make mistakes and are vulnerable. It seeks to design our transportation system to separate travel modes and lower travel speeds, so that the inevitable mistakes people will make are less likely to result in serious injuries and deaths. It also prioritizes proactive actions to identify and mitigate risks before crashes take place based on known risk factors.

The's City's Vision Zero Action Plan plan sets forth an equitable policy framework and calls upon the City to focus on filling gaps in transportation infrastructure for underserved communities.

Strategies to get to zero fatalities include the creation of a robust network of both neighborhood streets - routes with lower traffic volumes and speeds - and thoroughfares where bicycle lanes are physically separated from motor vehicles.

For all objectives, strategies, and defined actions listed in the plan see www.somervillema.gov/visionzero

1.2 BEST PRACTICES AND RESEARCH

Somerville has a wonderful tradition of learning from cities around the world and customizing ideas to serve our community. To prepare this Bicycle Network Plan, we closely studied peer cities including Cambridge MA, Jersey City NJ, Burlington VT, New Haven CT, Portland OR and Oakland CA. These cities and many others have successfully advanced safety and equity in their local transportation context through preparation and implementation of bike network plans.

Similarly, Somerville strives for policymaking that builds on high-quality academic and practical research. This plan is rooted in the principles and research endorsed by the National Association of City Transportation Officials (NACTO); the Association of Pedestrian & Bicycle Professionals; the League of American Bicyclists; People for Bikes; the National Complete Streets Coalition; and, the Congress for the New Urbanism. Our own Massachusetts Department of Transportation has published the award-winning "Separated Bike Lane Planning & Design Guide"; this document stongly influences our work in Somerville.

These resources include recommendations and design guidance along many common themes, such as: designing our bicycle facilities for use by people of all ages and abilities; planning a connected, useful, and integrated network; and giving operations professionals a seat at the planning and design table in order to incorporate operations and maintenance considerations.

In addition, in transportation planning, cities must acknowledge that common terms like safety, equity and inclusion can have multiple meanings for people with different backgrounds. In many communities of color, discussions of street safety must also include related issues like gun violence and safety from over-policing, rather than just safety from traffic violence. For older adults and people with diverse physical abilities, discussions of transportation equity can ring hollow when the term is perceived to apply to people biking but not people using other types of mobility assistance devices. In many low-income communities, bicycle facilities can be perceived as symbols of gentrification and displacement rather than inclusive infrastructure investment. The City of Somerville must address these concerns directly alongside discussions about improved bicyucle infrastructure.

1.3 GOALS

Three Bicycle Network Plan goals were derived from citywide policies and plans as well as from nationwide best practices. These goals are being used to assess where the City is today, inform the criteria for a network of streets for bicycling, and guide next steps and action items for this plan.

GOAL #1

Increase Ridership

Increase biking as the primary mode of transportation for commuting and daily trips; aim for 15% Bicycle Mode share by 2050.

GOAL #2

Serve All Ages & Abilities

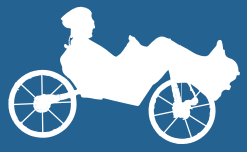
Provide infrastructure throughout Somerville that is and comfortable for biking for all residents regardless of age, ability, gender, and background.

GOAL #3

Provide Equal Access

Ensure that every resident in Somerville has access to a bicycle, and is able to safely reach their every day destinations by riding a bicycle.


Park Regulations
Open to the Public
Somerville
Neighborway
Ball Square
8 min
2 min
Davis Square
9 min
3 min
Porter Square
11 min
5 min



2. Bicycling in Somerville Today

This chapter details existing conditions for bicycling in Somerville today and highlights the progress made and the challenges encountered by the City in building a citywide bicycle network consistent with existing polcies and plans.

"The separate cycle tracks make me feel significantly more visible and I'm less stressed while biking."

Photo by Marilyn Humphries

2.1 EXISTING NETWORK

The amount of dedicated bicycle infrastructure in Somerville has grown significantly from the first 2.7 mile bikeway constructed in 2002, the Somerville Community Path, to the 30.1 miles of streets with bicycle infrastructure that exist today. This represents a more than a 1,000% increase in bikeway milage.

The existing bicycle network includes a range of infrastructure types, from Off-Street paths like the Somerville Community Path, where people biking are completely separated from vehicles, to on street bicycle lanes, which use a variety of different strategies to separate people biking from vehicles. A Bike Facilities Guide with detailed descriptions of all the different types of infrastructure can be found on Somerville's web site at www.somervillema.gov/BikeFacilitiesGuide.

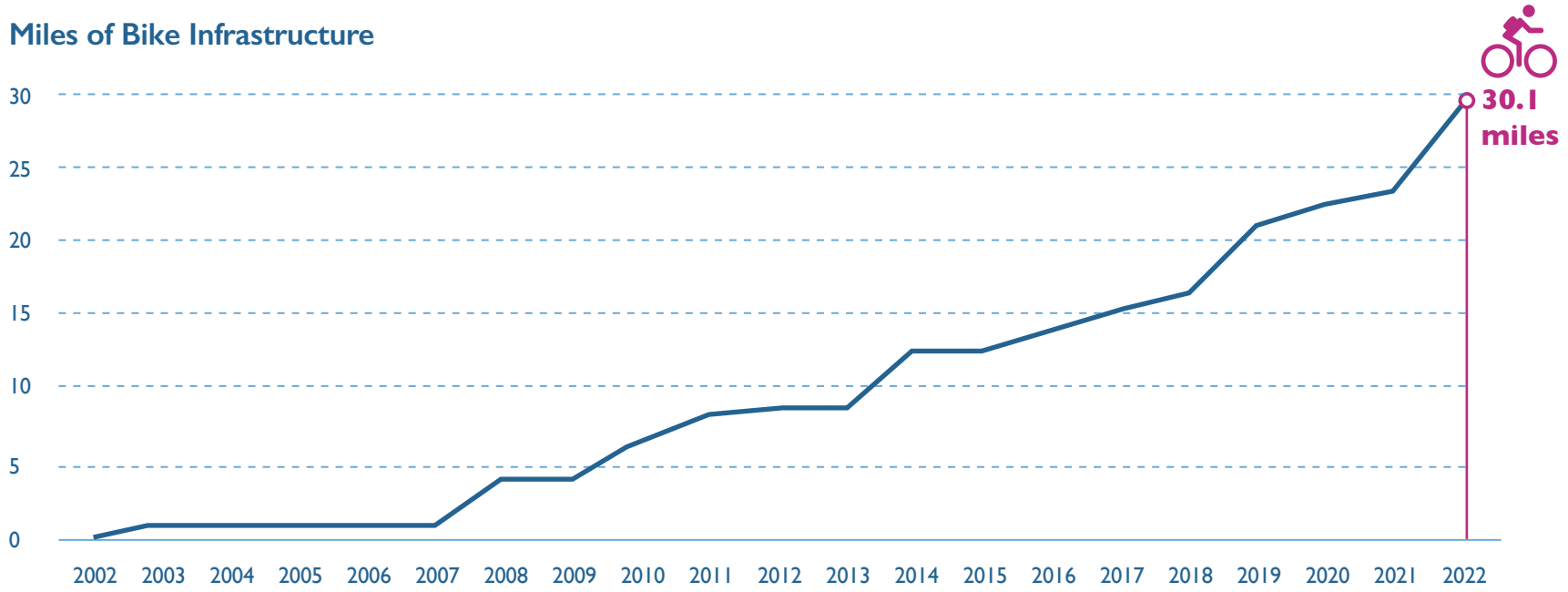


Figure 2.1 Increase in Bicyle Infrastructure in Somerville

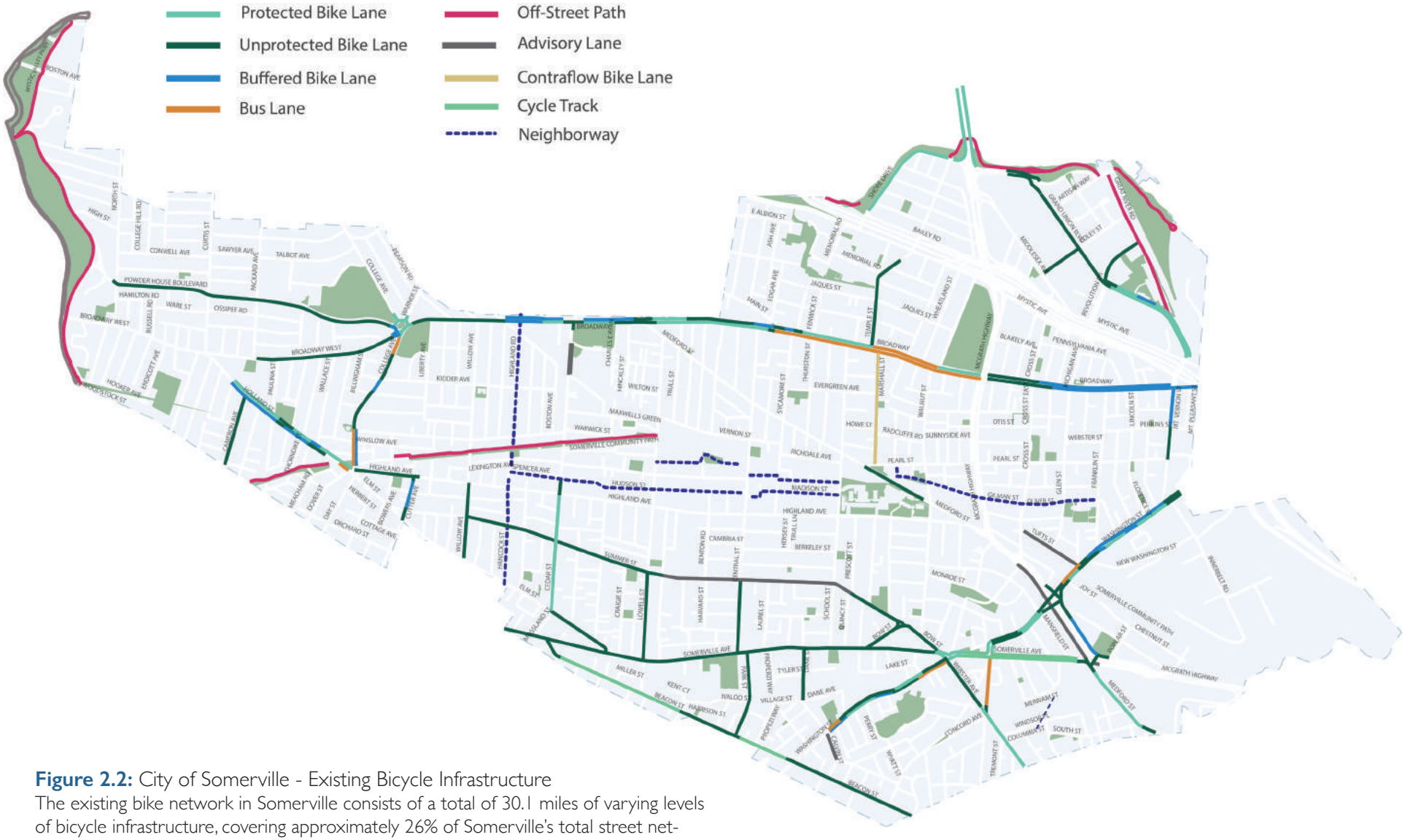


Figure 2.2: City of Somerville - Existing Bicycle Infrastructure
The existing bike network in Somerville consists of a total of 30.1 miles of varying levels of bicycle infrastructure, covering approximately 26% of Somerville's total street network. See Bike Facility Guide for different types www.somervillema.gov/mobility

Geographic Distribution

Somerville is a city of just four square miles, with roughly 100 miles of street centerlines. As of 2022, roughly 26% of Somerville streets have some type of bicycle infrastructure. This Bicycle Network Plan calls for rapid expansion of bike infrastructure to better serve all Somerville neighborhoods, with particular emphasis on areas underserved by the existing network.

The City uses socioeconomic data published by the US Census Bureau to identify "Communities of Concern". This term is used to describe areas meeting one or more of the following criteria:

- Low/moderate income (defined as median household income less than 65% of the statewide median)
- High rate of racial/ethnic diversity (defined as 40% or more non-white residents)
- High rate of linguistic isolation (defined as 25% or more of households with no member over age 14 that speaks English very well)

Neighborhoods that meet these demographic criteria are illustrated in Figure 2.3. People who meet this definition live throughout Somerville, but comprise a higher percentage of the population in these locations. Compared to people in other neighborhoods, people living in these areas are more likely to have fewer choices about how, when, and where they travel and are at a higher risk for traffic fatalities and serious injuries.

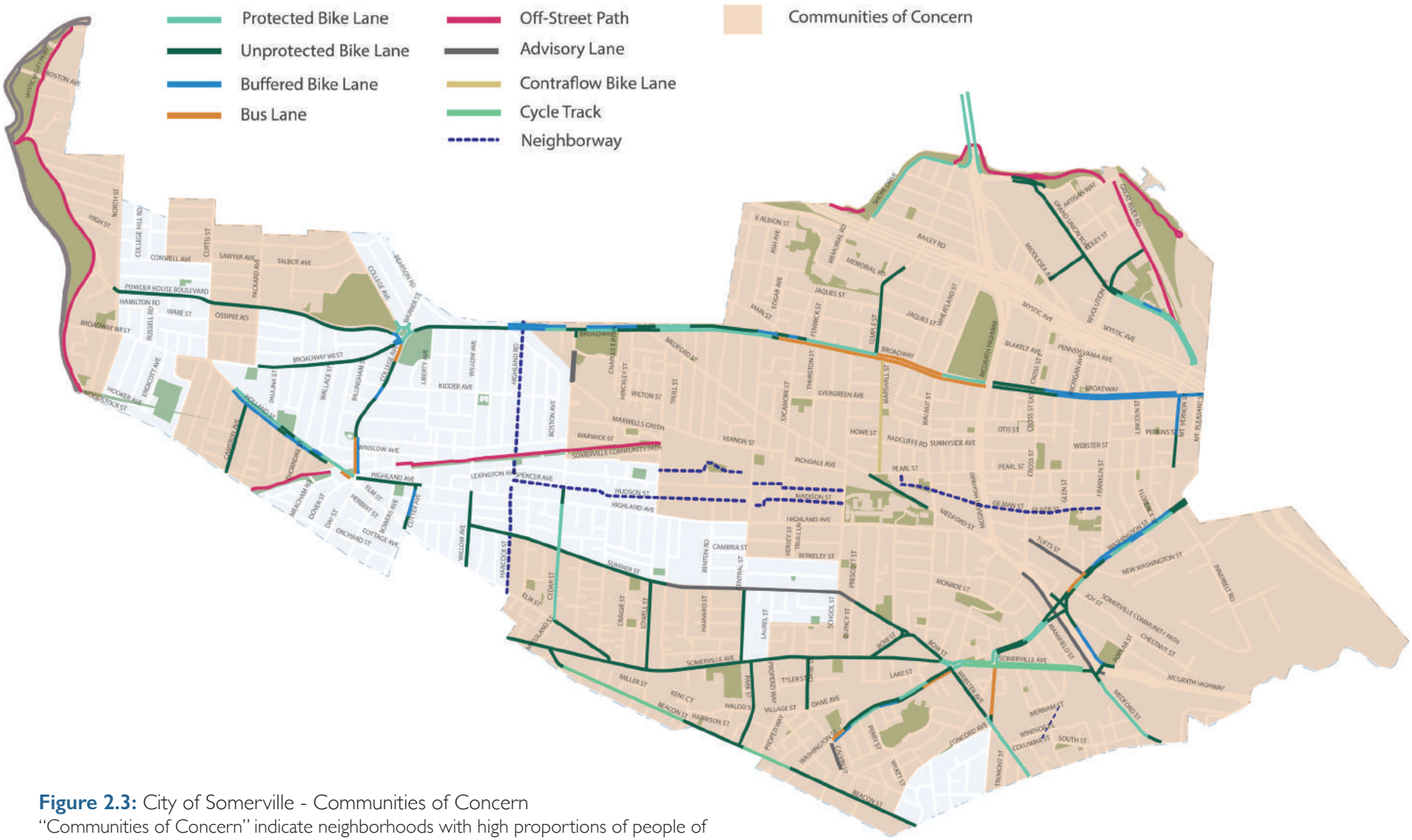


Figure 2.3: City of Somerville - Communities of Concern
"Communities of Concern" indicate neighborhoods with high proportions of people of color and/or low-income households, and/or households with limited English language proficiency.

Safety and Comfort Level

Crash data is a common method of evaluating street safety. Somerville has a defined High Crash Network, utilizing crash data over a five-year period (2017-2021). This High Crash Network identifies 19 streets with the greatest number of total crashes. The amount of crashes on a street involving a person on a bicycle is heavily influenced by the number of people biking using that street. Looking at all crashes helps identify streets that may see lower bike ridership now due to unsafe conditions, but which need to be improved to encourage more people to travel by bike. Of the High Crash streets, Fellsway ranked the highest with over 335 crashes per mile, followed by Mystic Valley Parkway (330 crashes per mile), Mystic Avenue (301) and McGrath Highway (297).

Filtering by streets that are in both the top percentile of overall crashes and crashes involving bicycles helps identify the most unsafe streets where people are biking today. Some of the top streets identified as safety priorities include Webster Avenue (29 bike crashes per mile), Somerville Avenue (22), followed by Elm Street (19). In addition, Beacon Street and Central Street are in the top quantile for bike crashes, but not overall crashes, suggesting that these streets pose a particular hazard for people on bikes.

The survey that the City conducted during the development of the bicycle network plan highlighted Somerville residents' perception of safety on certain streets. When asked to describe what streets feel unsafe for biking, the most mentioned street was Highland Avenue, followed by Somerville Avenue, Washington Street, Broadway, and Medford Street. The overlap of three of the high bicycle crash corridor streets with the streets most often perceived as unsafe shows that residents' comfort level closely aligns with streets that have a significant recent crash history.

The topography of Somerville also creates constraints when it comes to improving biking for people of all ages and abilities. A comfortable climbing grade is typically understood to be less than 5%. Many of the City's east-west corridors feature low-grades (less than 3.5% slope). However, many of the key north-south connections feature steeper grades (3.6% - 9%), creating conditions that are physically challenging for many residents and uncomfortable for most people without separated bicycle infrastructure.

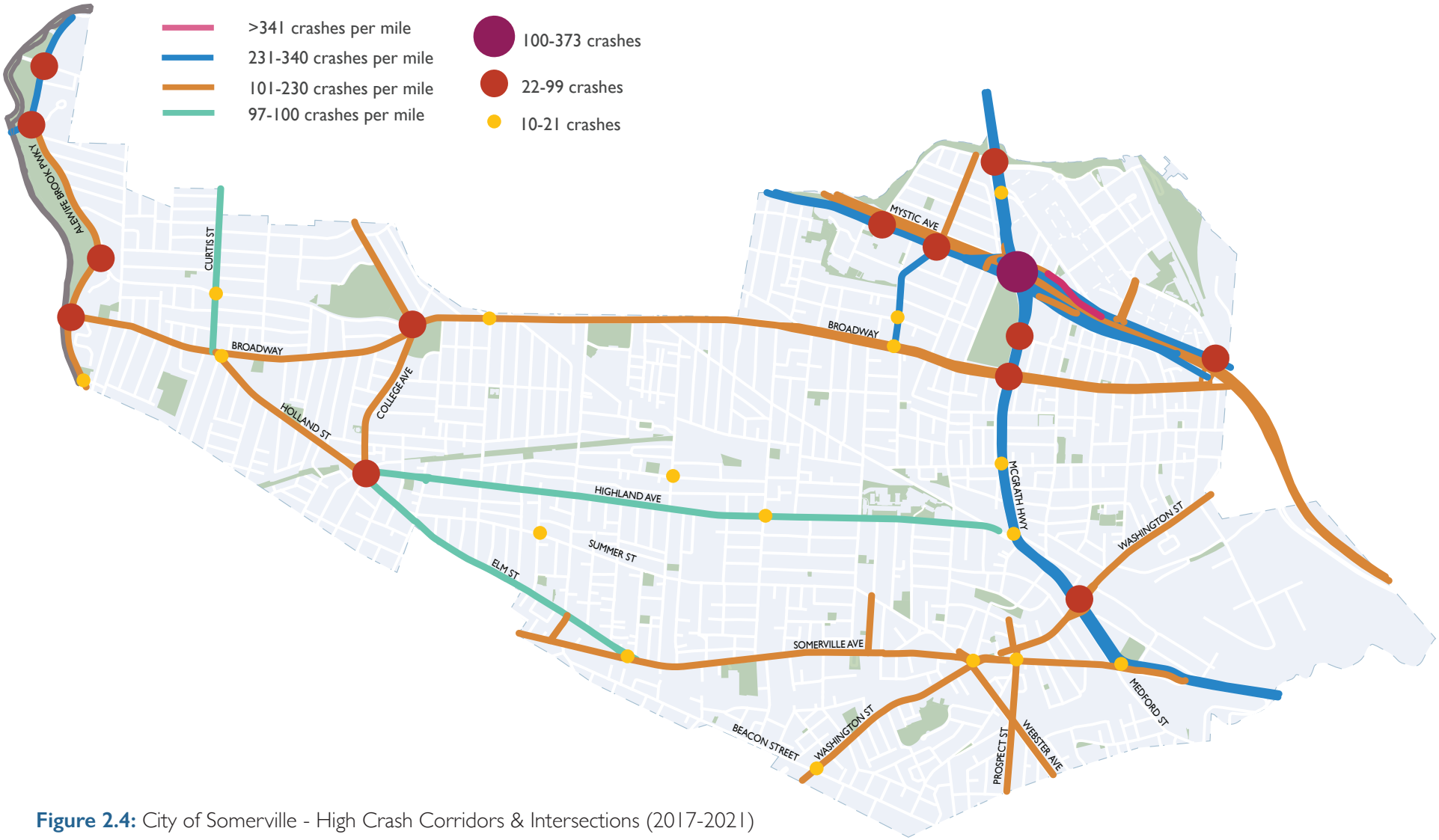


Figure 2.4: City of Somerville - High Crash Corridors & Intersections (2017-2021)

2.2 CURRENT BICYCLE USE

Somerville - Mode Share

According to U.S. Census Data, while 34.1% Somerville residents choose to get to work by motor vehicle (both driving alone and carpooling), 46.8% of Somerville residents commute via sustainable transportation modes like walking, biking, and taking public transport. 12.7% work from home. Somerville's bicycle mode share for commuting at 7% is far above the national average of 0.5%. As early as 2014 Somerville was the #1 in the Northeast and #5 in the Nation for bike commutnig mode share accorsing to the League of American Cyclists. This is a great starting point for growth and there is still significant potential to increase biking as part of the City's broader strategy to shift more people away from single-occupancy vehicles. This Bicycle Network Plan aims to achieve the City's 2040 goal of 75% commutes taken without the use of a motor vehicle.

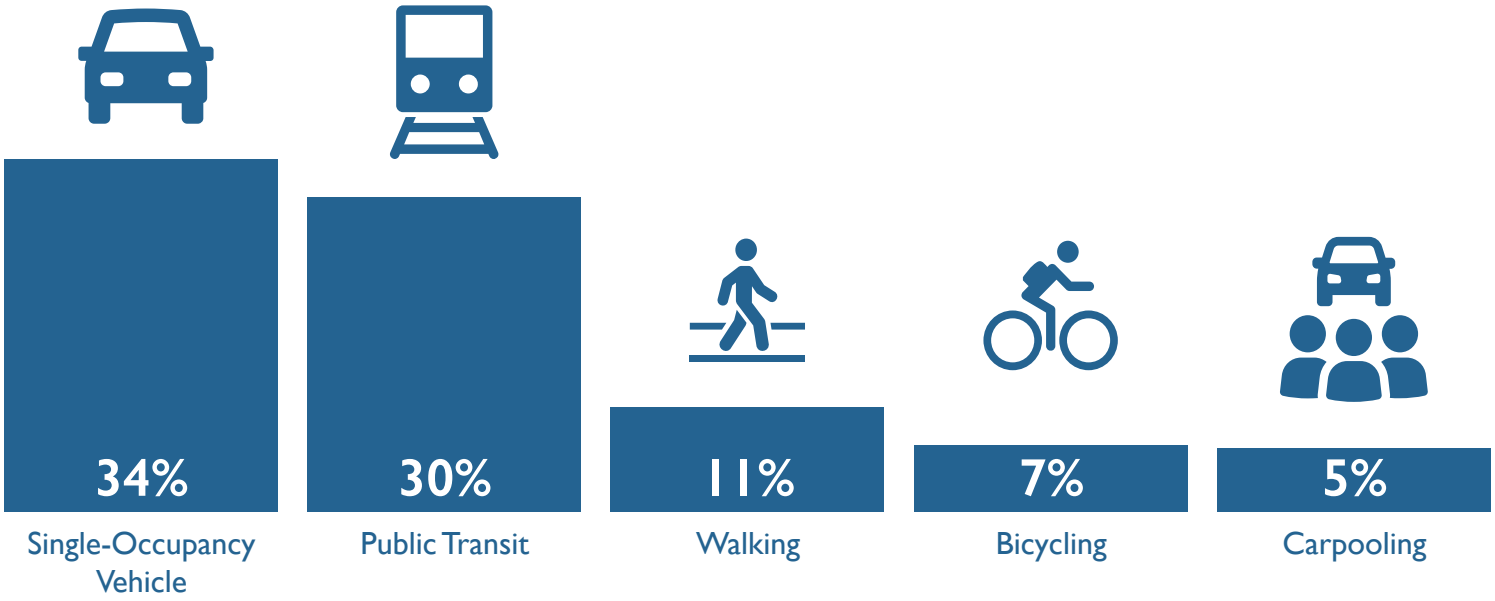


Figure 2.5: City of Somerville - Commuter Mode Share
ACS 2020 5-Year Estimates Means of Transport to Work

Motor Vehicle Ownership vs. Preferred Travel Mode

Although most Somerville residents do not drive to work, they do have a high level of access to motor vehicles at 87.8% of households (ACS Data, 2021). One reason may be because viable alternative transportation options for accessing the metro area have historically not been available or reliable, especially for non-commuting trips. When SomerVision 2040 was published, only 15% of Somerville residents lived within a half-mile radius of a light rail station. However, with the Green Line extension opening on December 12, 2022, now 85% of Somerville residents live within a half-mile radius of a light rail station. This opens new opportunities for residents to move around locally and regionally. In addition, the MBTA's Bus Network Redesign will provide new high frequency bus transportation to a larger network of destinations.

Bicycle Network Plan survey contributors identified biking and walking as the two most preferred modes of travel. This underscores the potential to shift more trips to biking as the City's infrastructure continues to improve.

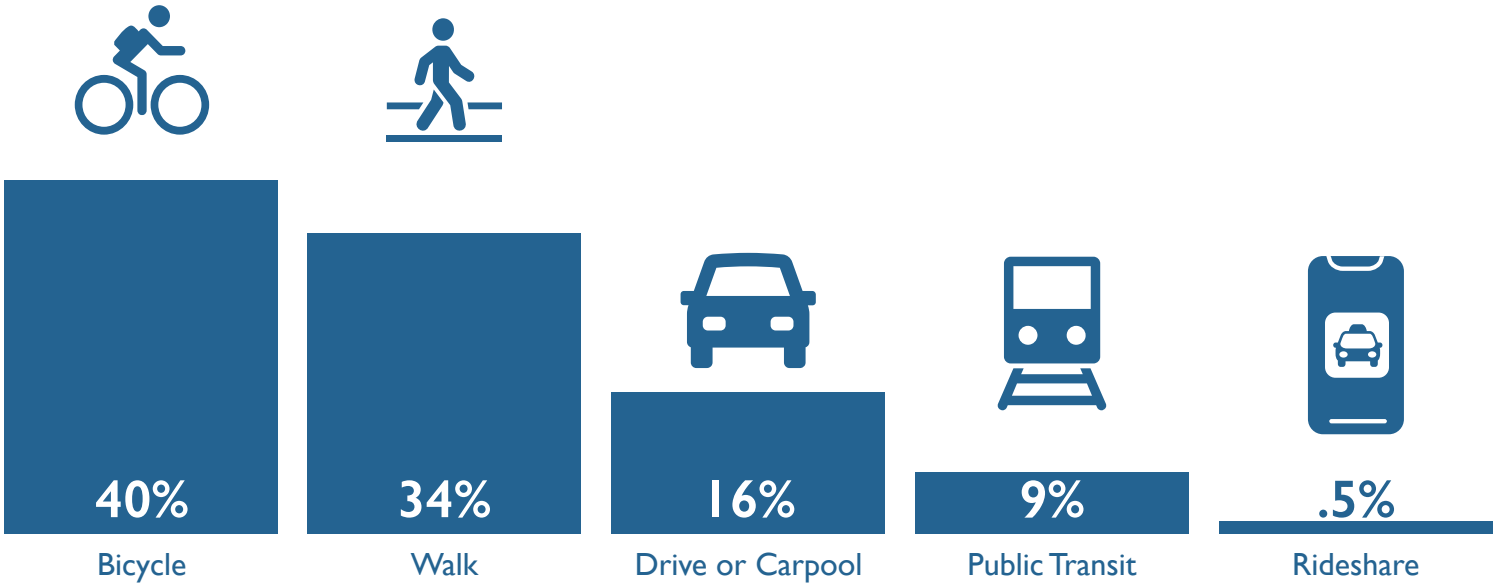


Figure 2.6: City of Somerville - Preferred Mode of Transportation
Survey results from 320 survey participants (2022)

2.3 PUBLIC BIKE SHARE

Bluebikes is the Boston area's public bike share system that allows people to use shared bicycles from stations found all across the region. Bluebikes offers multiple pass options including single trip and day passes, monthly and annual memberships, an income eligible membership, and group/ corporate membership programs. The bike share system is primarily owned by the municipalities it is located within and is operated by a private vendor under contract. The system is fully integrated among all participating municipalities, so people can borrow and return bikes anywhere there is a station in the region.

Bike share can be useful for many different types of trips, including commute, one-way bike trips, and connecting from home or work to bus or train stations. Visitors to the city can also use the system to explore or take recreational rides.

Bike share reduces the barriers for people to use bikes as transportation because it is low cost, eliminates the need for maintenance, repair and storage, allays concerns about bike theft, and can be flexibly used in combination with other forms of transportation.

A map of the bike share system stations can be found at: www.member.bluebikes.com/map/

+223%

increase in Bluebikes trips starting in Somerville from 2017 to 2021

A Dense Regional Network

Public bike share launched in 2011 with 61 stations in Boston. In 2012 it expanded to Brookline, Cambridge, and Somerville. Today, there are 33 bike share stations in Somerville, and more than 400 stations systemwide across 13 municipalities. The swift growth of the station network has been largely fueled by the 2018 title sponsorship of the system by Blue Cross Blue Shield of Massachusetts, and support from municipal funds, federal and state grants, private developer contributions, and private sponsorships and donations.

Expansion in Somerville and Beyond

New stations are planned by municipalities across the system. New municipalities are preparing to join the system and install new stations. In Somerville, there are many new stations planned for commercial districts, near parks, civic spaces, and in residential neighborhoods. All transit stations, municipal buildings and schools have a Bluebikes station within a five minute walk. The goal is to locate a bike share station within a short walk of each home and destination in the city.

15 Million Rides and Counting

A dense and growing network of stations has fueled exponential growth in system ridership. There have been more than 15 million rides taken since the system's inception in 2011, and more than 3.5 million rides taken in 2022, the largest ridership year so far. The number of trips taken on Bluebikes in Somerville each year has increased by 223% between 2017 and 2021.

2.4 RELATED PLANNING AND STUDIES

Two key planning efforts closely relate to this Bicycle Network Plan because they impact the allocation of space on Somerville's narrow streets. Close coordination with this plan is required to ensure that community goals for biking, public transportation, and use of curbside space can all be coordinated and accomplished.

Citywide Parking & Curb Use Study

The Citywide Parking & Curb Use Study completed in late 2022 is an effort to comprehensively understand the parking and curb use system in Somerville and make recommendations that will guide the City in bringing its policies in alignment with city goals, community values, and future needs.

The study includes key recommendations that are intended to enhance mobility and access, improve the equity, safety, dependability, and sustainability of our transportation system, reduce our reliance on vehicles, allow for growth with less parking, and satisfy parking demand to the extent feasible and practical. The study recognizes that the City's mode shift and climate goals will require less space dedicated to vehicle parking and more space dedicated to people walking, biking, and taking public transportation. With this in mind, it seeks to prioritize and make the best use of Somerville's limited curb space.

The prioritization and allocation of curbside lanes greatly impacts existing and planned bicycle facilities, which are often along the curb. The expansion of bicycle facilities may require the repurposing or relocating of vehicle parking locations, particularly along main streets that have many commercial, civic, institutional, and residential destinations.

The Parking & Curb Use Study recommends a prioritization of the of curbside space depending on land use context. It prioritizes active uses of the curb for mobility, access, activation, and commercial activity over storage of private motor vehicles.

Learn more about the study at www.somervillema.gov/parkingstudy.

MBTA Bus Network Redesign

The MBTA's Bus Network Redesign proposal includes major changes to bus service that intend to serve the region more equitably. The final proposal creates 25% more bus service system-wide, including much more service on weekends and better all-day frequency on weekdays. It also expands access to high frequency bus service to more communities of color and low income households. In Somerville, there are proposed routes in the redesign that would increase the number of high frequency bus lines from zero to four.

The City undertakes its own Transit Planning efforts to complement and evaluate MBTA's proposals, rooted in a commitment to ensure the future bus network aligns with key City priorities to support sustainability, economic development, equity, and opportunity for Somerville residents. The City is mindful that changes to bus routes can have both positive and negative impacts to riders, and is committed to advocating together with residents for the best possible outcomes of this network redesign for bus riders in Somerville.

Coordinating this bicycle network plan with plans for public transportation routes is essential. Somerville's narrow Rights-Of- Way (ROW) require difficult decisions about the allocation of space where transit delay is high and safety improvements for people biking are needed. In some locations, people bicycling may need to share space with MBTA buses. Thus, great care must be taken to offer alternative cycling routes that are comfortable for people of all ages and abilities, well-marked with wayfinding, and not overly circuitous so they serve as true alternatives.

In addition, cycling is well suited for first and last mile connections between transit routes and key origins/ destinations across Somerville, which makes planning for additional bike parking and bike share stations proximate to transit stops a priority.

Bus lanes on Broadway contributed to an increase in ridership with 36% more weekday riders and over **65%** more riders on weekends.

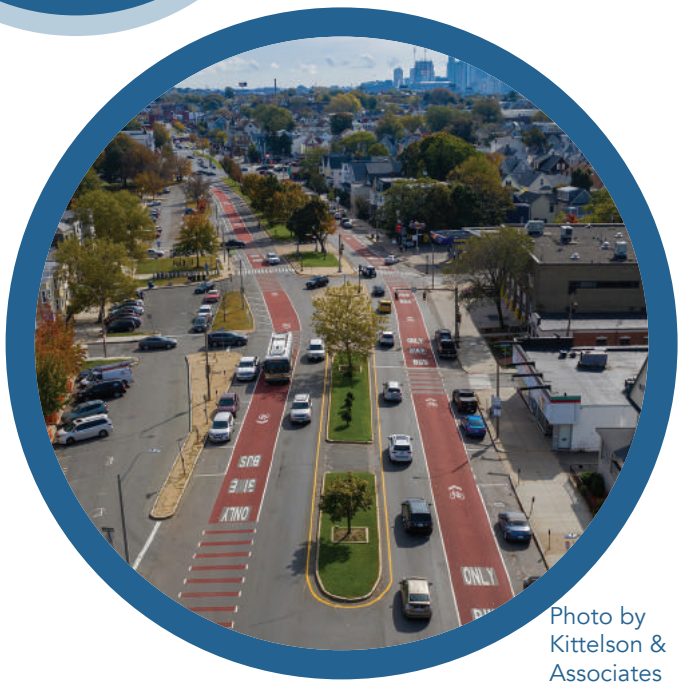


Photo by Kittelson & Associates

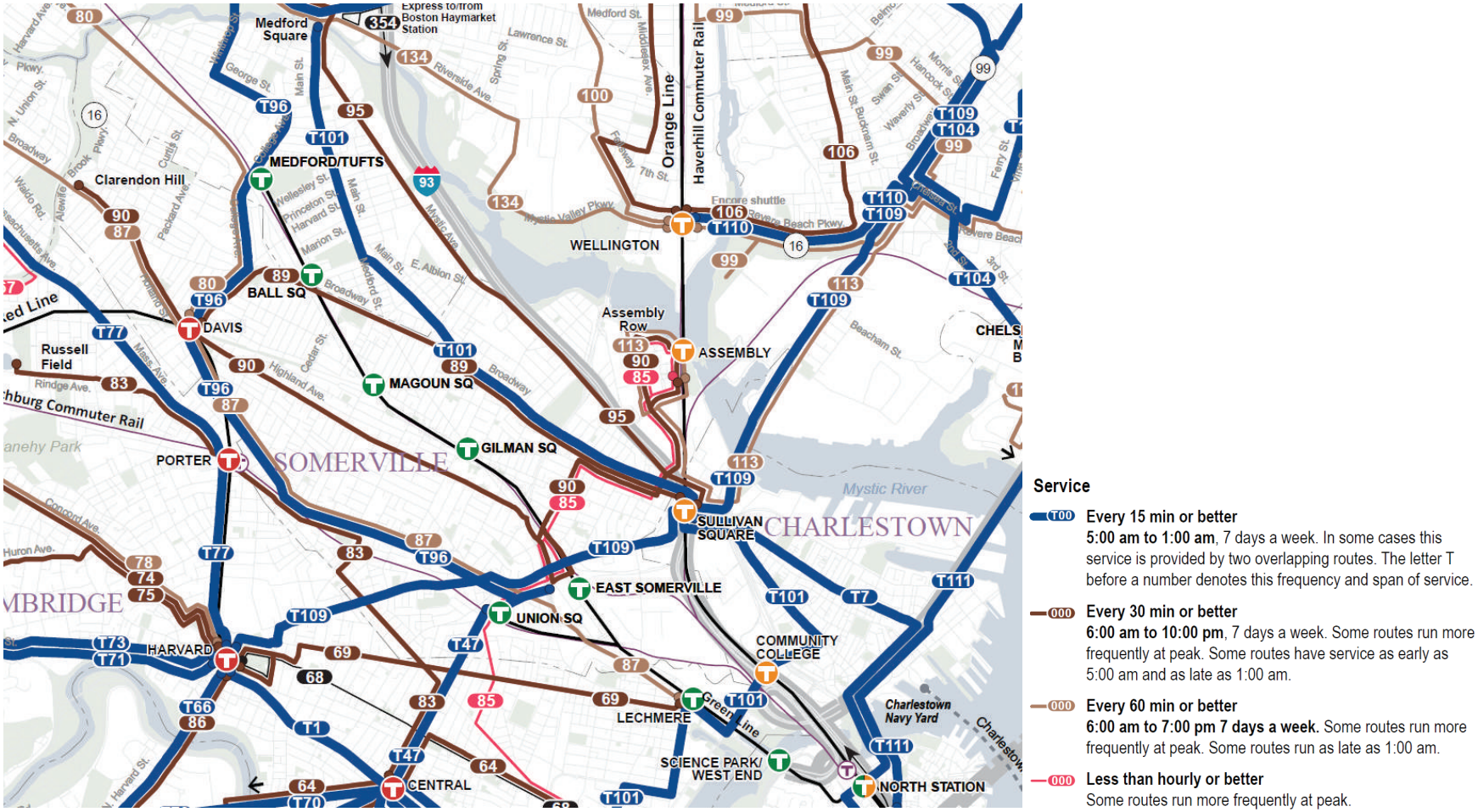


Figure 2.7: MBTA - Bus Network Redesign
The map above details the proposed new bus network published by the MBTA. New high frequency routes are shown in blue - details on route frequency are shown in the legend at the right.

2.5 SUPPORTING GROUPS

Somerville's success in adding bicycle infrastructure and creating a shift to larger bicycle ridership is a product of many groups - on local, municipal, state, and nationwide levels - working together.

Committees and Commissions

The three key city committees and commission – **Somerville Bicycle Advisory Committee (SBAC)**, **Somerville Pedestrian and Transit Advisory Committee (PTAC)**, and the **Somerville Commission for Persons with Disabilities (SCPD)** – support the City's goal to provide full and equal access to active and sustainable transportation and advise city staff on proposed transportation improvements. Comprised of dedicated residents who have active interest and experience in these issues, these groups meet once a month and cover an agenda that includes updates from City staff, reviewing and making recommendations on City projects or plans, and facilitating venues for public engagement. While SBAC, PTAC, and SCPD typically meet separately to discuss their specific modes of transportation and access issues, it has proven beneficial to all – City staff, committee members, and interested residents – to hear each other's concerns and feedback by periodically meeting jointly.

The Somerville Bicycle Advisory Committee is key partner for the Bike Network Plan. It was established in 2001 and since then has worked with City staff to promote and enhance biking. Members focus on education, encouragement, engineering and evaluation. They participate and help promote events, organize bike rides and bike breakfasts, and collaborate with other organizations across the City to deliver safer streets.

Community Advocacy Organizations

The following community-based non-profit organizations help advocate for better biking in Somerville and across the metropolitan region.

- **Somerville Bike Safety**: Advocates for protected bicycle lanes in Somerville.
- **Somerville Alliance for Safe Streets:** Advocates for safe and equitable streets for everyone in Somerville. The group emphasizes the importance of including the perspective of all users of the roads and their needs.
- **Friends of the Community Path:** Advocates for enhancing and expanding the existing Community Path.
- **Friends of the Mystic to Charles:** Advocates for new bicycle and pedestrian infrastructure between the Mystic and Charles Rivers.
- **Livable Streets Alliance:** Advocates for streets throughout the Metro Boston area to be safe, active, and vibrant public spaces.
- **MassBike:** A coalition of statewide advocates that work to create safe and accessible cycling within and between communities throughout Massachusetts.

Agency Partners

Some of the highest crash locations in the City of Somerville, including the bridges that cross rail corridors and the Community Path, are on state owned roadways. Therefore, ongoing collaboration between the City and State are crucial to achieve the City's sustainable transportation goals. As such, the City works closely with the **Massachusetts Department of Transportation (MassDOT)** to improve safety along state owned routes such as McGrath Highway (Route 28) and Mystic Avenue (Route 38), and to ensure the continuity of bicycle facilities across MassDOT bridges.

Regular coordination with the **Massachusetts Bay Transportation Authority (MBTA)** and City of Somerville staff ensure safe public transit operation throughout the City along streets used by MBTA buses and near rapid transit stations. The Community Path, a critical off-street path through Somerville, is owned by the MBTA but maintained by the City of Somerville. Some of the larger recreational areas in the City of Somerville – Foss Park, Mystic River, Dillboy – are owned and maintained by the **Department of Conservation and Recreation (DCR).** The City must therefore coordinate improvements within and to these public spaces with the DCR.

The City of Somerville also collaborates with important regional partners at the **Metropolitan Area Planning Council (MAPC)** – the regional planning agency that supports communities to create safe and livable cities and towns – and the **Boston Region Metropolitan Planning Organization (MPO)** - a federally required regional organization charged with deciding how to spend federal transportation money for the region on transportation studies and construction projects. The City of Somerville has a seat on the MPO board representing 13 Inner Core Communities in the Boston region.

2.6 COORDINATING WITH DEVELOPMENT

New development is occurring throughout Somerville, guided by the SomerVision comprehensive plan. The SomerVision Map displayed in Figure 2.9, illustrates how the community seeks to conserve great residential neighborhoods, enhance funky squares and commercial corridors, and transform Somerville's opportunity areas on the eastern and southern edges of the city.

As development occurs, it is an opportunity to implement the Bicycle Network Plan by constructing new bikeways or upgrading existing bikeways and intersections adjacent to each project. These opportunities to leverage private investment for public gain will occur most often in the 'enhance' and 'transform' areas, and will help implement the bike network more quickly within renewed streetscapes.

The Union Square Redevelopment will construct nearly 1,200 long & short term bicycle parking spaces and will improve nearby existing and planned bikeways.

In meeting the requirements of the Somerville Zoning Ordinance, new developments will also provide ample and high quality public short and long-term bicycle parking options to serve their new workplaces, civics spaces, residential, and commercial destinations. For example, the Union Square Redevelopment will construct nearly 1,200 bicycle parking spaces.

Improved streets and added bicycle parking will ensure that biking as transportation will be an attractive and convenient option for the workers, residents and users of these development projects and will help achieve the city's mode share goals.

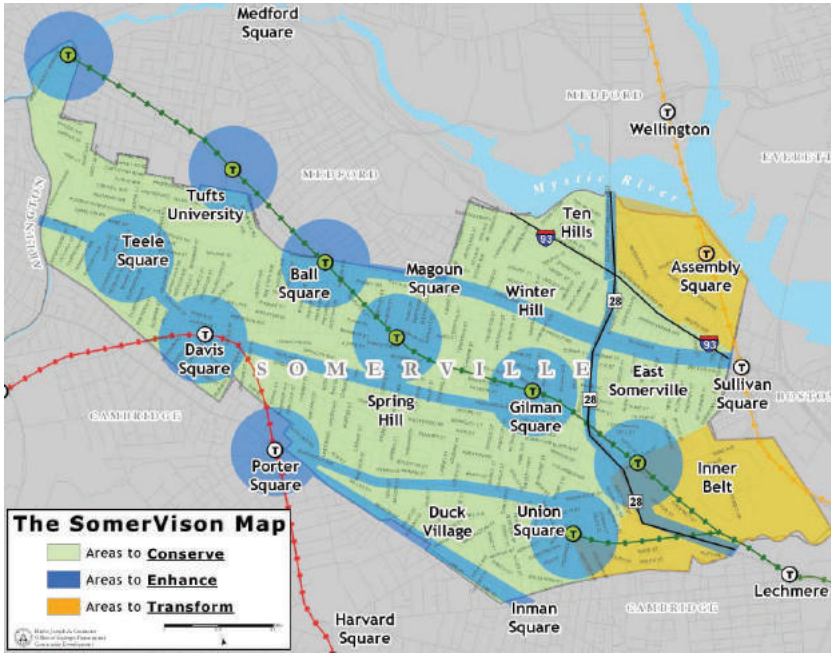


Figure 2.8: SomerVision 2040 Map of Development Areas

2.7 BIKEWAY OPERATIONS & MAINTENANCE

Projects of any scale or intended duration must be maintained. The Department of Public Works (DPW), the Engineering Division, the Mobility Division, and the Parking Department work closely together to set standards for projects that can be maintained over the long-term. Designs are modified, maintenance procedures refined, and new equipment is purchased as necessary. As spotlighted next, all bikeways will be designed so that regular maintenance such as street sweeping and snow removal, flex post replacement, and safe routes through construction activities can take place.

Street Sweeping & Snow Removal

Somerville works to ensure that debris and snow are removed from bikeways. Design standards for facility clear width and the spacing of delineators ensure that bikeways can be maintained. Both city contractors and DPW utilize specialized narrow vehicles with adjustable attachments to complete regular sweeping of bikeways and plowing to remove snow during and after snowstorms. City departments meet annually with PTAC and SBAC to discuss priorities for snow operation. Internal and external coordination will remain essential as bikeway mileage grows and design elements continue to evolve.

Flex Post Repair & Replacement

Residents can now submit requests for the repair and replacement of existing flex posts using the 311 system. These one-off replacements are completed by DPW on a neighborhood-by-neighborhood rolling basis. Although repairs stop in the winter months, DPW and Mobility coordinate on a focused replacement effort each spring to replace posts that were damaged or destroyed during the winter. Continued efforts will focus on ensuring that DPW has adequate storage capacity and human resources for a significantly increased number of bikeways to maintain.

Safe Routes Through Construction

Construction can squeeze our constrained roadways at the expense of people biking. The Engineering Division works to maintain bicycle access through construction zones whenever possible and provides advance warning of changes when a detour is required. Staff are not able to monitor every construction site in real-time but benefit from resident reports through 311 of unsafe conditions. Continued refinements to construction requirements and contractor education can improve the experience of construction sites for biking nearby and will be important as the bike network grows.

2.8 SUMMARY

Somerville is making great strides in becoming a more bicycle-friendly City. The bicycle network has grown significantly, and many new bikeways and supportive infrastructure are in the planning, design, and construction phases for City streetscape projects and private developments. This work is closely coordinated between City departments so that projects can be maintained and operations such as construction detours, flex post installation, catch basin cleaning, street sweeping, and snow plowing can take place.

In addition, the City's robust and growing public bike share system provides fast, fun, and affordable public transportation around metro Boston and connects to existing and planned MBTA bus and rail transit stations.

Subsequently, bicycle ridership continues to grow, with 7% of Somerville residents regularly commuting by bicycle, and many biking for other types of trips like social visits, shopping, errands, and medical appointments. This plan aims to increase that number by over 150%, with the ambitious goal of increasing cycling mode share to 15% by 2050.

However, there is much more work to be done. Not all neighborhoods have access to bicycle infrastructure, especially facilities appropriate for all ages and abilities, and parts of the network are disconnected. We must also acknowledge the difficulty of creating a comprehensive network without a plan identifying needed facilities along private developments, coordinating infrastructure installation with the street repaving and capital reconstruction schedules, and considering city priorities for other modes of transportation. Somerville needs a strategy to manage both quick-build projects that nimbly respond to on-street opportunities and the timeline and expense associated with long-term capital improvements.

In addition, the bicycle network must also keep pace with micro-mobility expansion efforts such as public bike share. We must continue to strengthen the bike share program and integrate location of bike share stations into design of our streets.

This clear-eyed understanding of the progress made, the constrains that remain, and the challenges ahead provides the foundation for this plan. This plan assists the City with implementing an ambitious bicycle network for people of all ages and abilities that will provide equal access to safe bicycle facilities for every resident and significantly increase the use of bicycle for transportation purposes.


eryone
s a team.
there
yours.
ETRA
COMMON
CURRENSY
PUSH BUTTON TO TURN ON WARNING LIGHTS
DUNKIN' DONUTS
RISE
ROOKIE FEDS

3. Community Engagement

This plan was prepared with robust community outreach and engagement. This chapter summarizes the process and feedback that led to the selection of streets identified in the Bicycle Network Vision.

"For my kids bike lanes are much more important for me to feel safe sending them, as they aren't as good at staying away from traffic. We have both our 14 and 11 year old bike by themselves to practices. The changes in union sq have been very helpful - allowing biking from argenziano to capuano/east."

Photo by Marilyn Humphries

3.1 ENGAGEMENT STRATEGY

To develop the Somerville Bicycle Network Plan, the City aimed to center public engagement through a combination of in-person and online opportunities, with specific focus on reaching people who have historically been excluded from planning processes such as people of color, immigrants, low-income households, and people with limited English proficiency. In addition, the project team worked to target engaging older adults, young people, women, and people who do not bike or regularly bike.

To carry out community engagement from October 2021 to July 2022, the project team developed multiple strategies to provide a range of opportunities for community members to participate in the development of the plan. This included facilitating a series of handlebar survey rides, launching and analyzing a survey, hosting virtual public meetings, running virtual scenario mapping workshops, maintaining a project website, hosting pop-up events at parks and on busy streets, tabling at community events, and distributing print material to libraries, convenience stores, and directly on handlebars of locked bikes. These efforts were paired with sending out communications in citywide and Mobility Division newsletters and posts on city social media channels.

The City was able to gather input from over 1,000 people with some regularly being involved in City planning activities and others participating for the first time. We acknowlege that we had some challenges on reaching people who may not bike, bike regularly, or who primarily speak another language other than English. Some of this was limited by the need to do many events virtually in late 2021 and early 2022 due to high COVID rates. In the spring and summer of 2022, project team members focused on going to community events or hosting pop-up events in areas across the city to meet and connect with people where they were, in addition to collaborating more closely with SomerViva Office of Immigrant Affairs to promote the project through social media, multilingual newsletters and in-person events.

The City will continue to adapt and develop more creative strategies to more inclusively connect and expand engagement with community members in the implementation of this plan.

The next sections provide a summary of what we did and what we heard throughout the development of this plan.

Communications and Marketing

The City promoted and encouraged participation in the process of developing the Biycle Netowrk Plan in various ways. A project website was developed to post news updates, materials, public input maps, and surveys. Meetings were included in the monthly Mobility Newsletter.

Information was also distributed on the City's social media and communication channels. In addition, staff and members of the Somerville Bicycle Advisory Committee distributed bicycle hang tags throughout the city on parked bikes and BlueBikes, and hung posters and flyers in libraries and convenience stores.

Council

Throughout 2022, the Mayor and City Council were kept informed about progress and status of the Bicycle Network plan. In particular, the Director of Mobility presented the project at the following Council Meetings: Februrary 2022, April 2022, and September 2022.

Handlebar Surveys

To launch the plan, we conducted seven Handlebar Survey Rides throughout Somerville. Members of the community joined the city and consultant team in surveying the experience of biking along various predetermined routes. The groups stopped multiple times along each route to discuss and rate the conditions of each street segment.

Online Survey

To help inform network design, we conducted a survey, produced in English, Spanish, Portuguese, Haitian Creole, and Nepali, to gather information about safety issues, types of trips people take, desired destinations, and barriers to biking. Contributors were also asked a range of demographic questions, how often they bike, where they feel unsafe biking, and what steps they would like the City to take to reduce barriers to biking.

Mapping Workshops

To better understand how people travel across Somerville, we hosted a series of virtual mapping workshops where participants were given a series of scenarios and asked to develop a route based on each scenario. The aims of these workshops were to explore desired routes and the types of facilities that made people comfortable traveling by bike. Workshops were open to any member of the public with some designated specifically for parents, Spanish speakers, and young adults.

October 2021

44 Participants
7 Biking Routes

March - May 2022

334 Participants

April 2022

75 Participants
7 Workshops

Public Input Map

In June 2022, the City shared the first draft network vision of proposed streets. To provide a digital engagement option, we hosted an interactive "Public Input Map" on the project website. Contributors could add comments to the map and mark their comment pins as "dislike", "like", or "question" to provide feedback.

Public Meetings

In December 2021, and June 2022, we hosted virtual community meetings. In the first meeting, we shared the project details, goals and schedule. We then facilitated small group break out sessions to discuss key destinations and biking safety concerns. At the second community meeting, we shared a summary of the survey and workshop feedback we received, talked through the draft network vision, and gathered feedback on the network in breakout sessions.

Pop-Up and Community Events

In the spring and summer of 2022, we sought to further promote the Plan, connect with people about barriers to biking, and gather feedback on the draft network vision by doing in-person outreach across the City. We tabled at a variety of community events and hosted pop-up engagements within a variety of neighborhoods on sidewalks and in parks where there is a high frequency of people walking, biking, or taking transit.

June 2022

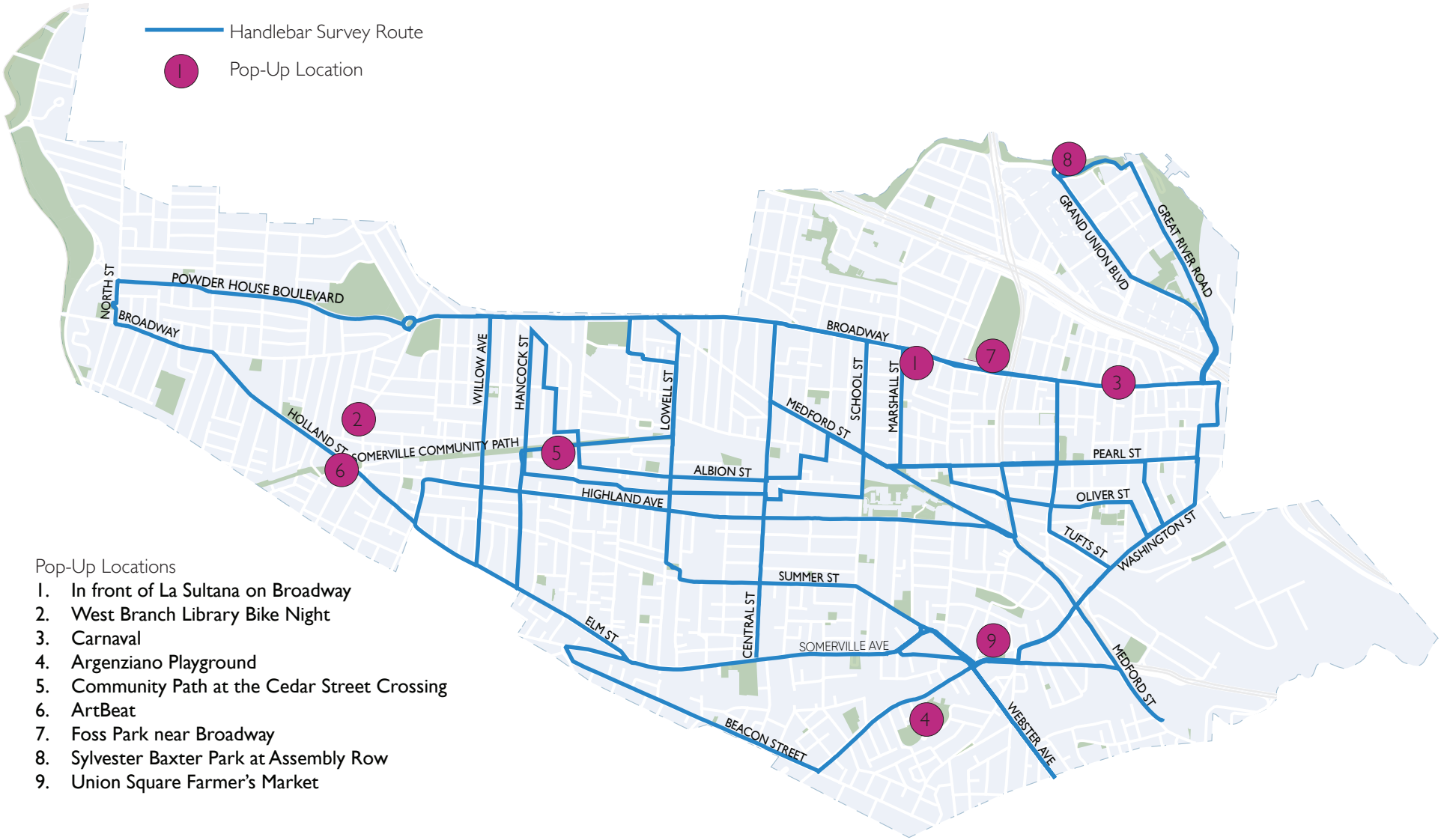
90 Participants
535 Comments

December 2021, June 2022

164 Participants

March - July 2022

200+ Participants
9 Events



Pop-Up Locations

1. In front of La Sultana on Broadway
2. West Branch Library Bike Night
3. Carnaval
4. Argenziano Playground
5. Community Path at the Cedar Street Crossing
6. ArtBeat
7. Foss Park near Broadway
8. Sylvester Baxter Park at Assembly Row
9. Union Square Farmer's Market

Figure 3.1: Locations of Outreach Events
34 surveyed streets and 9 pop-up locations.

3.2 WHAT WE HEARD

The following section summarizes the input we received into four themes; safety concerns, network feedback, design preferences, and policies.

Safety Concerns

Safety concerns were the most frequent type of input heard across all surveys, pop-up events, public meetings and workshops. In the online survey, out of the top five most selected barriers to preventing people from biking or biking more, four were related to safety:

- 69% of people selected "motor vehicles going too fast or drivers not driving safely"
- 62% of people selected a "lack of protection or separation of bikes"
- 61% of people selected "dangerous intersections"
- 60% selected "poor roadway surface conditions"

Survey respondents were asked to share the streets they felt were the most dangerous for biking and the most selected were Highland Avenue, McGrath Highway, and Broadway - see more details in Figure 3.2. Respondents most frequently named Davis Square, Powder House Square and Porter Square as some of the most dangerous intersections.

Participants in the Handlebar Survey evaluated and scored 34 streets. Lower scores indicated unfavorable biking conditions. Figure 3.3 depicts the scoring category for each street evaluted. The streets that received the lowest scores were Central Street, Elm Street, Highland Avenue, Holland Street, Hudson Street, North Street, and Pearl Street.

Diving more into the types of barriers, many parents shared that they felt uncomfortable to travel on bike with their children unless there were protected facilities or an off-street path. They also conveyed that they wish their older children could travel safely to school by bike.

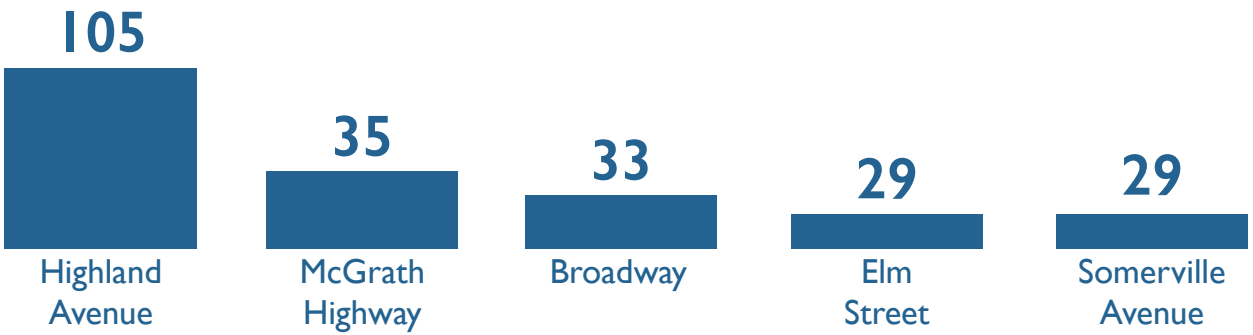


Figure 3.2: Online Survey Results
Number of times a street was mentioned as unsafe.

Many of our commercial squares were mentioned as feeling unsafe to travel to and through because of the high amount of vehicles, lack of protected infrastructure, a large amount of vehicles turning, and frequent double-parking or parking in bike lanes.

Access to Assembly Square was frequently brought up by residents and visitors with it being particularly challenging to cross under Interstate 93 (I-93) or over Mystic Avenue, Fellsway, and Middlesex Avenue.

People mentioned that they were most scared at intersections because of issues like low visibility for all roadway users, speeding, and aggressive behavior from people driving.

To increase safety, many advocated for the City to:

- install more protected bike lanes and paths physically separated from vehicles
- create smoother road and bike lane surfaces
- improve visibility at intersections by restricting parking close to them
- and installing features like speed humps and raised crosswalks to reduce vehicle speeds.

People advocated for a more connected network so they would not have to experience traveling on safe separated infrastructure and then being dropped into an intersection or new street with no infrastructure.

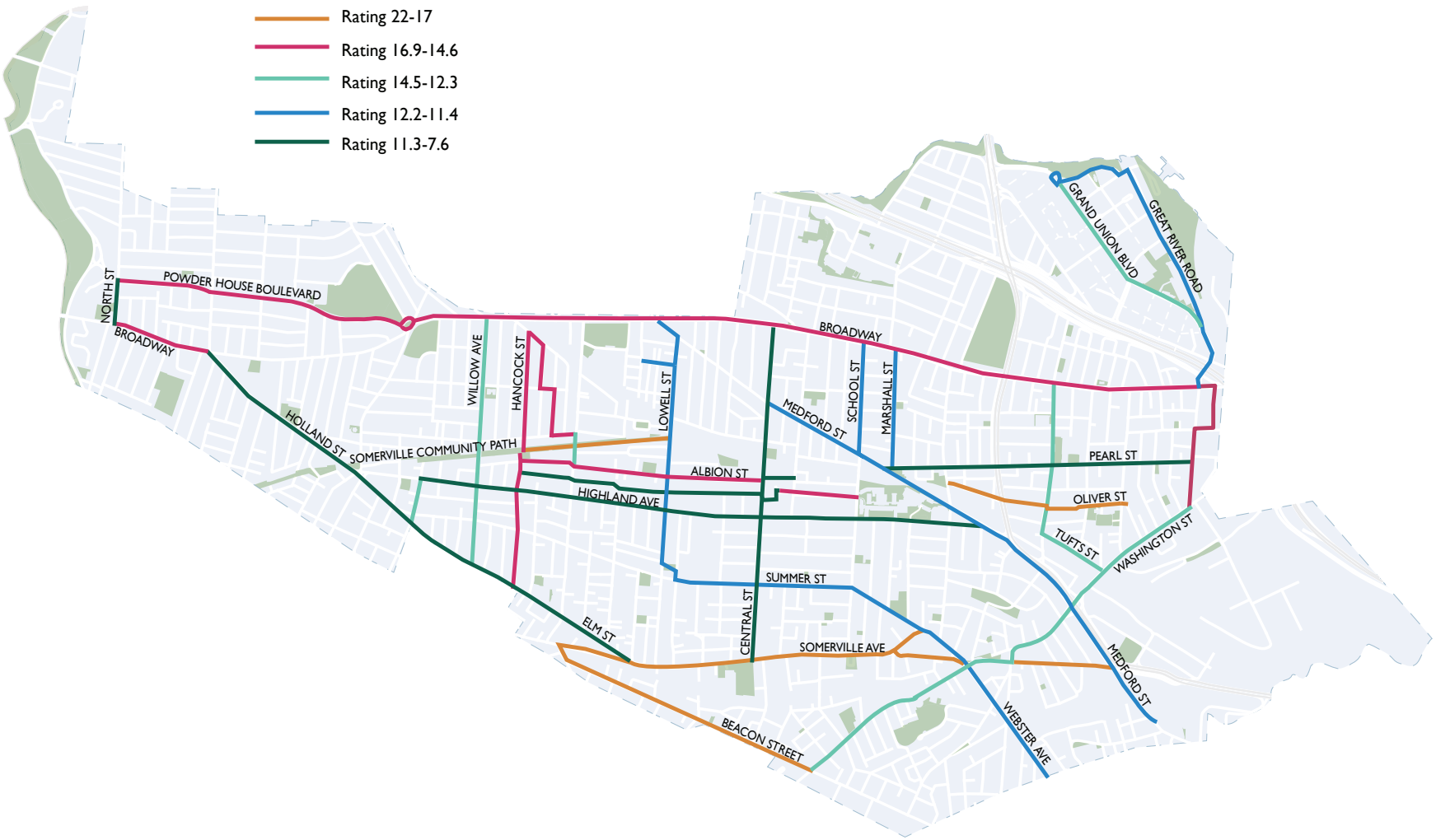


Figure 3.3: Handlebar Survey Results
34 streets were scored based on answers to six questions. The lower the score the less comfortable and safe are cycling conditions.

Network Feedback

The Network Vision aims to increase connectivity across the city, and help people travel to key destinations. In developing the network, we asked people where they travel by bike and the most frequently mentioned places were:

- shops
- the homes of friends, family, or loved ones
- grocery stores and farmers' markets
- and restaurants and nightlife.

We then designated key destinations such as schools, civic centers, commercial squares and streets, parks, and MBTA stations in the Network Vision based on the feedback we received.

Through the public meetings, pop-ups, and online public input map engagements, a wide range of feedback was shared on the draft network. Aspects of the draft network that people were supportive of included:

- Protected facilities for main streets throughout the city
- Shared street designations for Elm Street and Bow Street
- Improved access to Assembly Square, Davis Square, and Union Square
- Two-way options on streets designated as Neighborways
- Clear connections to Somerville Public Schools and new Green Line Stations

Changes that people wanted to see on the proposed network include:

- Transforming some of the proposed streets with one-way protected facilities to two-way protected facilities
- Increasing the amount of protected facilities throughout East Somerville, especially by the East Somerville Community School and Capuano Early Childhood Center
- Designating more streets as Neighborways
- Adding bike parking options around the City to make it easier to park a bike and access restaurants, stores, and services
- Strengthening connections to the Community Path

There was significant support for Neighborways but also skepticism on the feasibility of truly implementing these types of streets with immense traffic calming and reduced vehicle volumes.

People also encouraged the City to ensure that the network connects to other bike connections in Cambridge, Boston, and Medford.

Design Preferences

Feedback on design preferences generally fell into the following three categories.

Major Streets

- Create separated or protected bike lanes
- Upgrade Quick-Build installations with permanent infrastructure
- Ensure infrastructure consistency
- Add protected facilities on key north/south connections
- Expand off-street paths
- Install more traffic calming features like raised crosswalks and raised intersections

Residential Streets

- Formalize contraflow movements on one-way streets designated as Neighborways
- Add clear signage, wayfinding and pavement markings to indicate residential street options
- Implement more traffic-calming features like speed humps to reduce speeds
- Incorporate more greenery into new street design

Intersections

- Reduce conflict with motor vehicles, especially making right turns
- Install bike signals
- Add left turn boxes, protected intersections and other treatments at intersections.

Policy

Survey contributors and people engaging at pop-ups and public meetings advocated for the following policies:

- Repair poor pavement
- Maintain bicycle infrastructure in the winter
- Improve education and awareness for people biking and driving
- Implement automated enforcement with red light and speed cameras
- Increase enforcement and ticketing of vehicles illegally parked in bike lanes
- Ensure enforcement of bus/bike lane driving violations
- Expand the Bluebikes bike share network

Summary

Residents, workers, and visitors strongly advocated for safety through improved facilities, better connectivity to key destinations and throughout the city, and moving policies forward on construction, operations, and maintenance. Although many focused on safety, people often shared that more people would bike if the experience was more enjoyable and exciting. To find more detailed information on public input collected, review Appendices A, A1, A2, A3, A4, A5, A6, and A7.

4. Network Vision

In order to save lives and achieve our climate commitments, the City will deliver a connected network of bicycle facilities useable for people of all ages and abilities. This chapter summarizes the major elements of the future bicycle network, which includes protected bike lanes, low-volume "Neighborways" streets, shared streets, off-street paths, signals, wayfinding, and bike parking.

"Please keep in mind the needs of all skill levels of bicyclists. My elementary-aged kid loves to ride his own bike, but there are limited routes we feel safe letting him do that."

4.1 PROCESS

The first step in establishing a Biycle Network Vision was to create a draft network. Streets in the draft network were selected based on criteria that support the Bicycle Plan Goals. In particular:

- The streets in the Network need to be connected and not leave gaps.
- The Network needs to serve people of all ages and abilities.
- The Network needs to give access to bicycle infrastructure within a block of each home in Somerville.
- The Network needs to connect to destinations that are important for daily life.

The criteria were applied to over 200 streets in Somerville to help determine which routes should be included in the network. If the street scored high in multiple criteria categories, it was typically considered a good candidate for the bicycle network. To see the criteria in more detail, see Appendix B.

Streets in the network were selected to either have protected bicycle lanes, or to be a residential bicycle street (Neighborway), a shared street, or off street path.

Over multiple months of community feedback, the network was tested and refined by continuously considering the importance of:

- having protected bicycle lanes on higher volume and higher speed roads while, in most locations, still maintaining parking on at least one side of the street,
- offering alternative safe and low stress residential routes if possible,
- and providing plentiful north-south and east-west bike routes to ensure connections to schools, parks, and commercial centers.

In addition, street widths were checked to confirm the types of infrastructure that can be accommodated given Somerville's generally narrow roadways. Consideration was also given to which streets are better to prioritize for vehicular and transit traffic.

4.2 BICYCLE STREET TYPES

The currently available bicycle infrastructure in Somerville is a great first step in making the City more bicycle friendly. However, our many miles of basic bicycle lanes (lanes that are only painted and lack physical separation) can leave users exposed to moving traffic and people exiting parked vehicles.

In order to build a safe and comfortable bike network for every type of rider, the Network Vision defines four types of bicycle infrastructure: protected bicycle lanes, Neighborways, Shared Streets, and Off-Street Path. Riding a bicycle from one point on the network to another might include riding on multiple different types of infrastructure. All the different bicycle street types are intended to provide a safe and comfrtable journey.

Protected bicycle lanes

Bicycle lanes with physical separation from vehicular traffic will be installed on all roads in the network with higher vehicle speeds and volumes. These facilities provide vertical and horizontal separation between people biking and people driving. The specific type of physical separation or barrier may vary, but it may include raised concrete or granite curbs, bollards, flexible delineators, parked cars, and bike lanes at sidewalk level.

Protected bikeways offer the maximum comfort for people biking and have the widest appeal to riders of all ages and abilities. The different possible configuration of these lanes (one-way directional, one-way contraflow, or two-way directional) will require careful design at conflict zones, such as driveways, intersections, and bus stops, to ensure that they remain safe and comfortable to use.

In all applications, contextually-appropriate intersection treatments (markings, signals, barriers) will be applied to help people biking safely navigate intersections.

PARKING PROTECTED

A parking-protected bike lane places the bike lane along the curb with vehicle parking on the outside edge, allowing parked cars to serve as physical barriers between the people biking and motor vehicle traffic.

TWO-WAY, BARRIER-PROTECTED

A two-way protected bikeway separates cyclists traveling in both directions within a protected space on one side of or in the center of the street.

SIDEWALK LEVEL

Sidewalk level bikeways are placed at the same grade as the sidewalk.

Neighborways

Neighborways are the second major bicycle street type in the Network Vision. They are walk-and-bike friendly streets that create low-stress bicycle experiences on residential streets. Neighborways will always provide a two-way connection for people biking even if the street is a one-way for vehicular traffic (in this case the street is a contra-flow for bicycle traffic).

Speed limits on Neighborways should be less than 20mph, on average car volumes should be less than 2,000 per day and less then 50 per hour during peak hour in peak direction. Many of the streets designated as Neighborways currently do not fulfill these speed and volume requirements and they will have to be redesigned to meet these requirements. Some of the tools for achieving a safe ride Neighborways are traffic calming measures such as speed humps, and narrowing the entrance to the streets to slow people driving and provide a safe entrance and exit for people on bicycles. With proper traffic analysis, traffic directions on Neighborways and surrounding streets may also change to prevent cut through traffic and reduce vehicle volumes.

Shared Streets

Shared streets are another network street type where all modes share the road but are designed to give people walking, wheeling, rolling and biking the priority. A shared street both creates usable public space and provides safe access for multiple transportation modes at very low speeds. Curbless and a non-linear path for vehicular traffic are design elements to clearly indicate for drivers to slow down and pay attention to people. Sometimes vehicular through traffic is not permitted, however these designs maintain access for accessible passenger loading and commercial deliveries, which is critical for commercial areas and public spaces.

Off-Street Path

The street type that is completely separate from vehicular traffic is the Off-Street Path. Somerville has an off-street option - the Community Path - that provides a safe east west connection all the way through the City.

Off-street paths and trails are part of an urban and regional bike network. They provide the safest and most pleasurable riding experience for people biking of all ages and abilities. They are physically separated from motorized vehicular traffic by landscaping, open space, or barriers.

4.3 ONE-WAY PROTECTED BICYCLE LANES

Somerville's main streets have to fulfill many functions; allow for safe and pleasurable pedestrian experience, support business operations, provide for safe bicycle riding, accommodate public transportation, and meet parking needs.

The width of many of our high volume and high speed streets cannot accommodate all these functions simultaneously in all locations. In a multi-modal environment, some streets might be prioritized for riding bicycles while others will prioritize public transportation. The overall traffic flow might require vehicular flow in both directions. Parking and loading activities must be accomodated in some way to serve persons with disabilities as well as commercial services. Examples for possible street layouts for protected bicycle lanes on typical Somerville street sections when parking and/or two-way traffic is required are demonstrated in Figures 4.1 to 4.3.

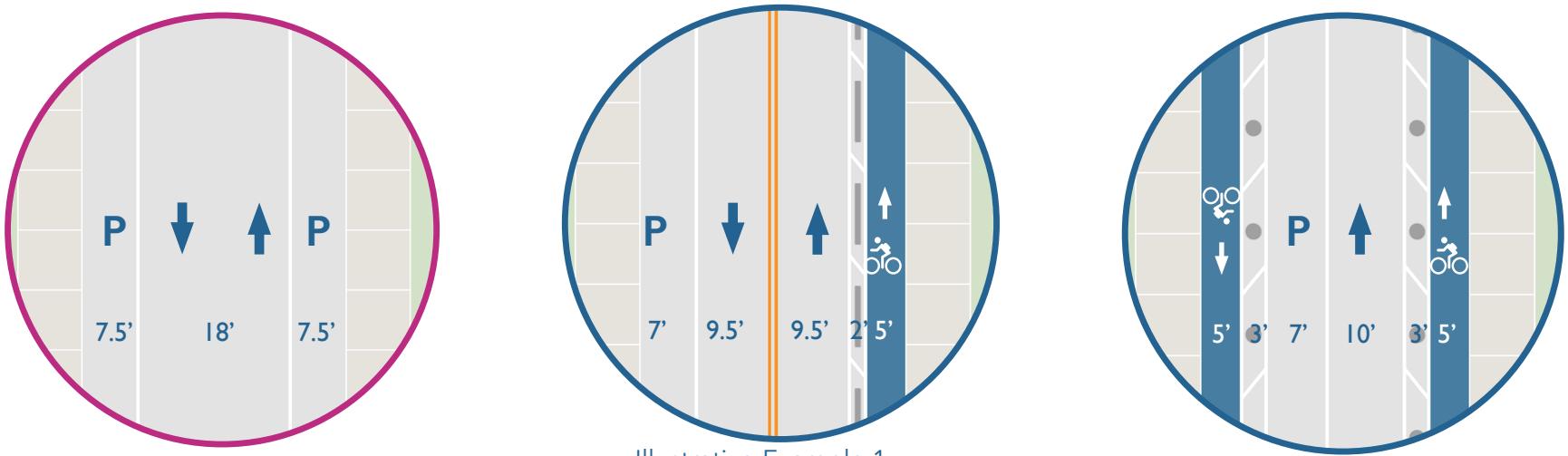
The combination of the multi-modal approach and the limited street width results in some streets on the network to be dedicated for one-way only protected bicycle lanes and in some cases also changing the street from two-way to one-way vehicular traffic. When implementing these changes, street circulation analyses and public feedback will help determine the ideal direction of travel both for people driving and biking. Where one-way protected bike lanes are provided, safe and comfortable bicycle travel in the 'non-protected' direction will be possible on alternative routes that require no more than five minutes of additional travel time (measured at a relatively slow speed of 8 mph). Please see more detail in Appendix B, which includes diagrams of alternate routes and estimated travel times.

Existing

Illustrative Example 1
(Parking Remains, One Way Travel for Cars, One Way Bike Lane)

Illustrative Example 2
(Parking Removed, Two Way Travel for Cars, One Way Bike Lane)

Figure 4.1: Street Layouts for a Common Somerville Street Width of 26 Feet

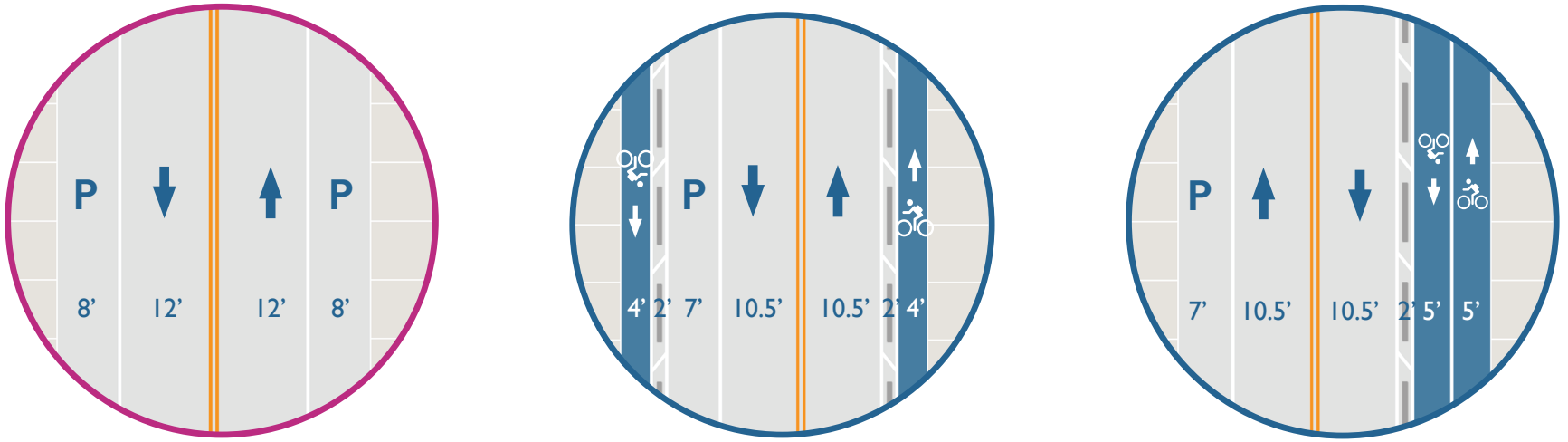


Existing

Illustrative Example 1
(One Parking Lane Remains, Two-Way Travel for Cars, One-Way Bike Lane)

Illustrative Example 2
(One Parking Lane Remains, One-Way Travel for Cars, One-Way Bike Lane Both Directions)

Figure 4.2: Street Layouts for a Common Somerville Street Width of 33 Feet



Existing

Illustrative Example 1
(One Parking Lane Remains, One-Way Travel for Cars, One-Way Bike Lane Both Sides of the Street)

Illustrative Example 2
(One Parking Lane Remains, One-Way Travel for Cars, Two-Way Bike Lane)

Figure 4.3: Street Layouts for a Common Somerville Street Width of 40 Feet

4.4 CITYWIDE NETWORK

Of the 30.1 miles of existing bicycle infrastructure in Somerville, 9.7 miles are considered to be adequate for riders of all ages and abilities - 5.9 miles of permanent or quick-build protected bicycle lanes and 3.8 miles of Off-Street paths. The remaining existing bicycle infrastructure, such as basic bicycle lanes, are not suitable for all abilities and ages and will need to be upgraded as a part of the implementation of this plan.

The citywide bicycle network vision will expand the existing bicycle facilities to a total of **88.1 miles of** connected streets that are designated as **protected bike lanes, Neighborways, Off-Street Paths, or Shared Streets.** Protected bike lanes will include existing facilities, upgrades to existing lanes, and newly installed separated bicycle lanes. The set of Neighborways in the network will include upgrades to existing streets and new streets all designed and implemented to reduce speeds and volumes. Approximately 1.2 miles of existing facilities will remain as non-protected bicycle lanes, but will not be considered part of the all ages and abilties network. For a full breakdown of facilities see Appendix B.

Once the proposed citywide network is installed, Somerville will increase the length of installed bicycle infrastructure by 58 miles, close to tripling the total miles of bicycle facilities. Some type of bikeway will be found on about 54% of Somerville's street network, with additional facilities found on off-street paths.

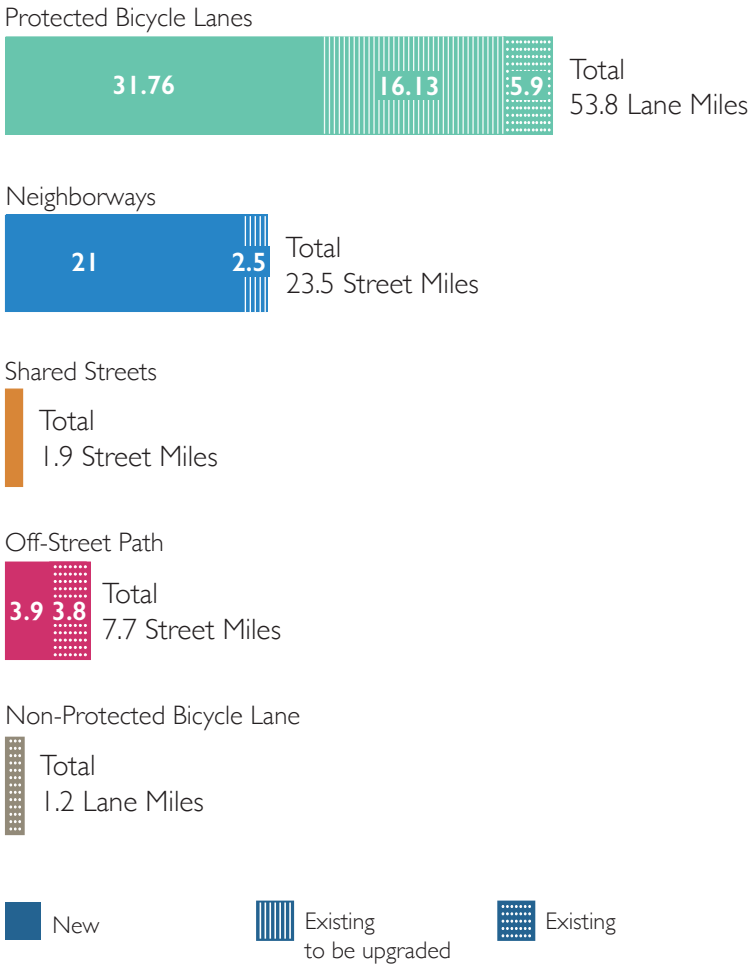


Figure 4.4: Network Vision - Distribution of Miles

Figure 4.5: Network Vision Map
The proposed citywide network takes Somerville's bicycle facilities from 30.1 miles to a total of 88.1 miles, an increase of 58 miles.

4.5 NETWORK ELEMENTS

A successful network of streets for bicycling requires additional supporting infrastructure such as signage, signal improvements, and bicycle parking.

Signage

A bicycle wayfinding system consists of signage and/or pavement markings to guide people biking to their destinations. Signage can be placed along the bicycle routes at key intersections to guide people to local destinations or offer clarity along the route.

Wayfinding signs help familiarize riders with the network and to identify the best route to their destination. Additionally, wayfinding signs have the benefit of lowering the barrier to entry for people new to biking, as they can gain confidence by riding on clearly delineated bicycle routes. Dedicated signage also creates a visual signal to people driving that they are traveling along a bicycle route and should expect to drive with extra caution.

Signs also serve to show dedicated bikeway turns. They can display destinations, distances, and travel times to help riders understand the best route to take. Pavement markings can be used in conjunction with wayfinding signage to create stronger route identification and branding.

As Somerville builds out the bicycle network, a uniform, citywide bicycle wayfinding system defined in a **Wayfinding Guide** needs to be implemented. As was clear from community feedback, this will be especially important along the City's emerging Neighborway network, where bendy routes with many turns will need particular attention paid to route branding and navigation.

Signals

A bike signal is a dedicated traffic light that improves the biking experience by providing a dedicated crossing phase for people biking to travel through intersections, helping to reduce vehicular conflicts and decrease levels of traffic stress. Traditionally, bicycle signals have three lenses, with green, yellow, and red bicycle stenciled lenses. Signals are especially useful on two-way protected bikeways, which include more potential turning conflicts, especially at major intersections.

Where bicycle signals are not feasible or appropriate, Leading Pedestrian Intervals (LPI) signals may also be used, as they provide a similar protected portion of time that people biking may use to get a head start through the intersection. LPI signals adjust the walk signal for a pedestrian to show before the green light for car traffic, allowing people to enter the crosswalk before cars.

This helps increase pedestrian visibility and reduce conflicts with turning vehicles. By allowing bicycles to cross with the leading pedestrian interval, the same safety benefits can be achieved.

Another way to improve safety for bicycle riders is adjusting signal timing to progress at the average speed of people biking (~12mph). This keeps vehicular speeds down and allows for a 'green wave' that reduces the need to frequently start and stop. Green waves can incentivize people to ride at a certain speed, increasing the likelihood that groups of bike riders will end up riding together without the need to stop at intersections. This grouping helps reduce conflicts with motor vehicles as bike riders become more visible and more predictable in their on-street movements.

The forthcoming Bicycle Design Guide will outline the use of signals as a key tool for safe navigation of the bicycle network.

Bicycle Parking

Secure, accessible, and convenient bicycle parking facilities are essential pieces of infrastructure for a well-functioning bicycle network. Providing high quality bike parking options allows people to feel confident they will have a safe place to store their bicycle at their destination, which can encourage more people to use bikes for transportation. It can also reduce the locking of bicycles to inappropriate fixtures such as benches and trees.

The existing standard and most common bicycle rack on Somerville sidewalks is an inverted "U" style rack in black.

Requirements for all bike racks are that they must:

- Be a fixed-in-place stand that is securely anchored to the ground.
- Provide support to the bicycle frame, allowing for both wheels to rest upon a stable surface and for the bicycle to stand upright and not fall over.
- Be configured not to block handlebars and baskets, and to provide two points of contact for locking the frame and at least one wheel.
- Be constructed of materials that resist cutting, rusting, bending, or deformation.
- Be arranged in rows (with bicycles parked side-by-side) or in alignment (with bicycles parked end-to-end).

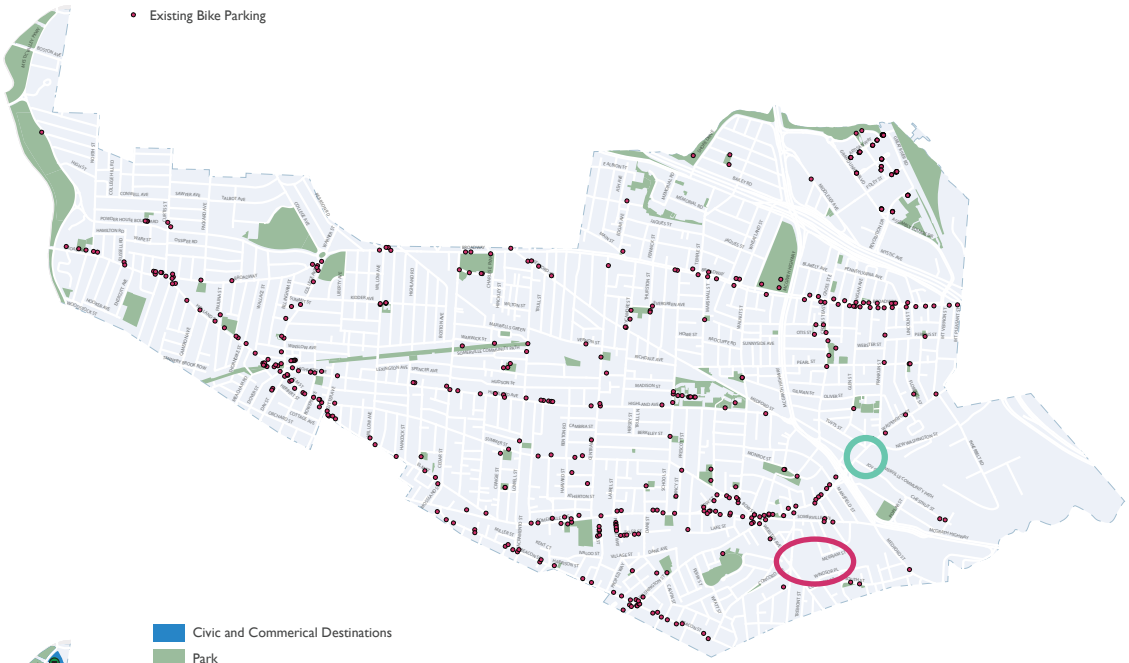
Further guidance and additional requirements are detailed in the Somerville Zoning Ordinance (https://www.somervillezoning.com) and the Mobility Division's Bicycle Parking Guide. These documents have information regarding bike rack placement and installation, size of spaces, additional standards for short term (<2 hour stays) and long term (> two hour stays) bicycle parking locations, and the required number of spaces for different types of new development.

Figure 4.6 shows a map with the locations of currently installed bicycle racks throughout Somerville and an additional map identifying areas where bike parking is needed. On each map an area around East Somerville and Union Square Green Line stations is called out to demonstrate new needs for bike parking. The implementation of the Bicycle Network, the addition of new Green Line stations, and new commercial districts requires the installation of more bicycle racks. The two maps show where the availability of bicycle parking is not keeping up with the changing land use and additional stations.

In addition, the existing Bicycle Parking Guide needs to be updated to reflect future demand both in numbers, locations, and type of bike parking facilities.

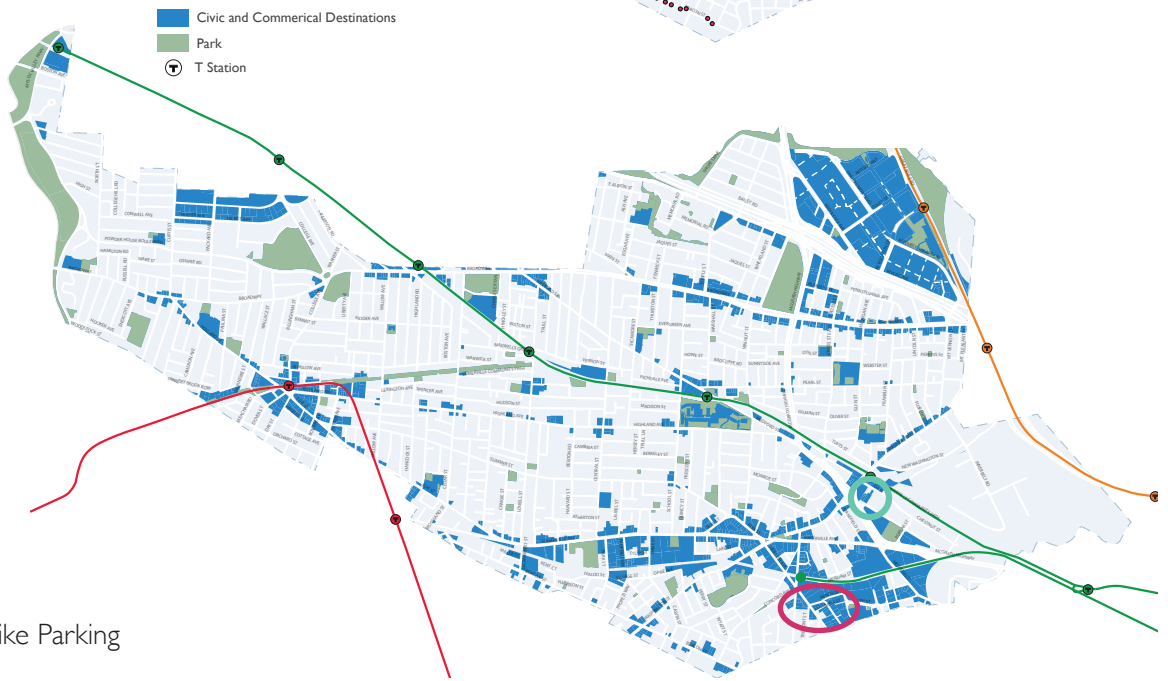
Existing Bike Parking

The map details the existing inventory of bike racks locations on public property in Somerville. Additional racks will be installed at all new Green Line stations. The MBTA will provide outside bicycle parking and spaces within an accessible covered bike room.



Areas in Need of Bike Parking

The map shows important destinations such as T-stations, parks, schools, commercial areas where adequate bicycle parking - both quantity and type - are important.



East Somerville Green Line Station

Union Square Green Line Station and Boynton Yard

Figure 4.6: Existing Bike Parking and Areas in Need of Bike Parking

5. Implementation

This chapter will lay the framework for how to realize the ambitious goals of the Bicyle Network Plan to increase ridership and provide safe bicycle routes for everybody.

"Please keep kids and our vulnerable users in mind when making decisions. We need to have routes and streets safe to ride on for all ages and abilities"

Photo by Manny [illegible]bries

How are we going to realize the ambitious goals set forth in this Bicycle Network Plan to increase ridership and provide equal access to bicycle facilities for all ages and abilities?

It will take years to upgrade existing facilities and implement new bicycle infrastructure on Somerville's streets. The actions needed to complete this work fall into two general categories: physical implementation of the network and the establishment of supporting guides and programs. Figure 5.8 outlines an approximate timeline for each proposed action.

Section 5.1 and 5.2 describe how the City intends to realize the network vision. Section 5.3 outlines the necessary supporting guides and programs.

5.1 NETWORK STREET IMPLEMENTATION

Several factors influence the City's project selection process for building out the bicycle network. Decisions on which and how many bicycle infrastructure projects to implement over what time frame depend on multiple factors. The following sections introduce the different types of implementation used to make changes to our streets, explain how streets were prioritized in this plan, and establish an implementation strategy based on project type and priority. Cost and resource aspects are introduced to set the stage for what projects could be implemented in the short- and long-term.

Quick-Build Implementation

Streets are complex three dimensional systems with utility structures underground and overhead, sidewalk elements like fire hydrants and trees, curb uses including parking and loading, and vehicle operations like bus transit. Changing the location of street elements such as curbs and utilities to accommodate safe bicycle infrastructure is a process that is costly and can take many years from project inception to completion.

Recognizing the need to implement safer streets for biking in an expedited manner, the City will often begin street transformations with the design and installation of interim bicycle infrastructure using moveable and lower cost materials such as flexible delineators and paint rather than permanent concrete and curbs. These projects are referred to as Quick-Build projects.

Quick-Build construction emphasizes movable and changeable materials. When compared to full scale reconstruction, projects are faster and cheaper to implement, amd retain flexibility for future changes.

Quick-build requires substantial time and effort on design and outreach. Experience with other projects over the last few years indicates that it takes approximately 12 months from start to finish of Quick-Build installation, with an additional two months for initial post-installation evaluation. Figure 5.1 shows this typical workflow.

Quick-build projects allow for an evaluation of how well a design works before it becomes permanent. Residents can give input as they use a new facility, the Fire Department can give feedback on impacts to turning movements and response times, and DPW can share their experiences with street sweeping and snow removal. This can allow for changes in procedures and equipment or updates to street dimensions and designs when a quick-build project changes to a permanent implementation.

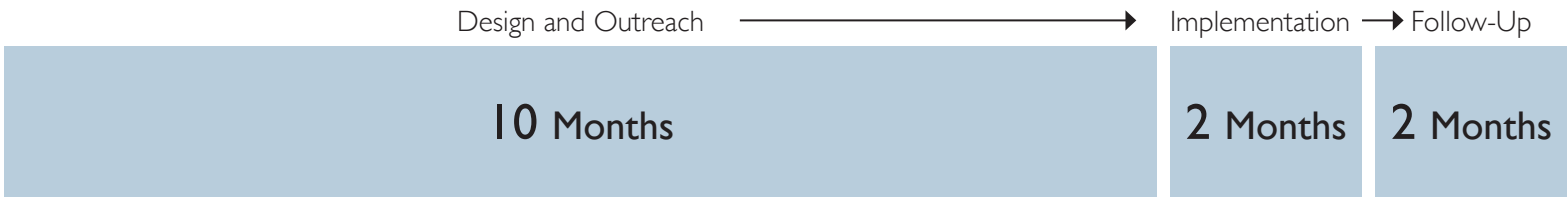


Figure 5.1: Quick-Build Design and Installation Time Frame
Average of 12 Months

Permanent Implementation

Unlike a Quick-Build project, a permanent street reconstruction project can include changing curb locations to accommodate new dimensions for sidewalks, bicycle lanes, and travel lanes. It can include new or relocated street elements such as trees, benches, and bus stops. It might introduce new surface materials to the street. All intersections – signalized or non-signalized – are evaluated for design improvements to ensure safe travel for all modes of transportation.

Citywide projects that include permanent bicycle infrastructure - both for protected bicycle lanes and Neighborways treatments - are implemented as part of the Pavement & Sidewalk Resurfacing Program, a Full Street Reconstruction Project, or a Private Development project. Each of these project types is described in more detail here.

Pavement & Sidewalk Resurfacing Program

Each year, the City aims to repave a select number of streets and sidewalks to mitigate wear and tear and rectify unacceptable surface conditions. These projects are not full depth street reconstructions but allow for some limited curb alignment changes, additional traffic calming elements, select intersection improvements, and new protected bicycle lanes. The Holland Street and College Avenue Mobility Projects are examples of these type of projects. Projects are selected primarily based on the condition of streets and sidewalks and their importance to the street network.

Full Street Reconstruction Projects

Full Street Reconstruction Projects are driven primarily by necessary utility upgrades below the surface of the street. However, these projects are also an opportunity for more major changes in street design, becuase the full right-of-way is completely reconstructed from the ground up. An example of this type of construction is the Somerville Avenue Utility and Streetscape Improvements project that made major upgrades to underground stormwater management sysem while also adding protected bicycle lanes, improved crosswalks, new trees, and completely realigned curbs.

Private Development Projects

Development projects, especially large scale ones like in Boynton Yards, Union Square, and Assembly Square, are often required to include improvements to sidewalks and streets. Permanant Bicycle infrastructure as designated in the Bicycle Network Plan will be included in the design and construction of these private projects.

Prioritization

The yearly selection of projects to be implemented will be guided by a prioritization of the streets designated as part of the Bicycle Network. This prioritization evaluates the importance of different bikeways to the citywide network based soley on their current physical characteristics and locations. It does not attempt to take into account other important considerations like available resources, the city's long term capital street construction plan, or expansion opportunties from private development projects. It includes two scoring matrices, one to rank protected bike lanes and another to rank Neighborway routes.

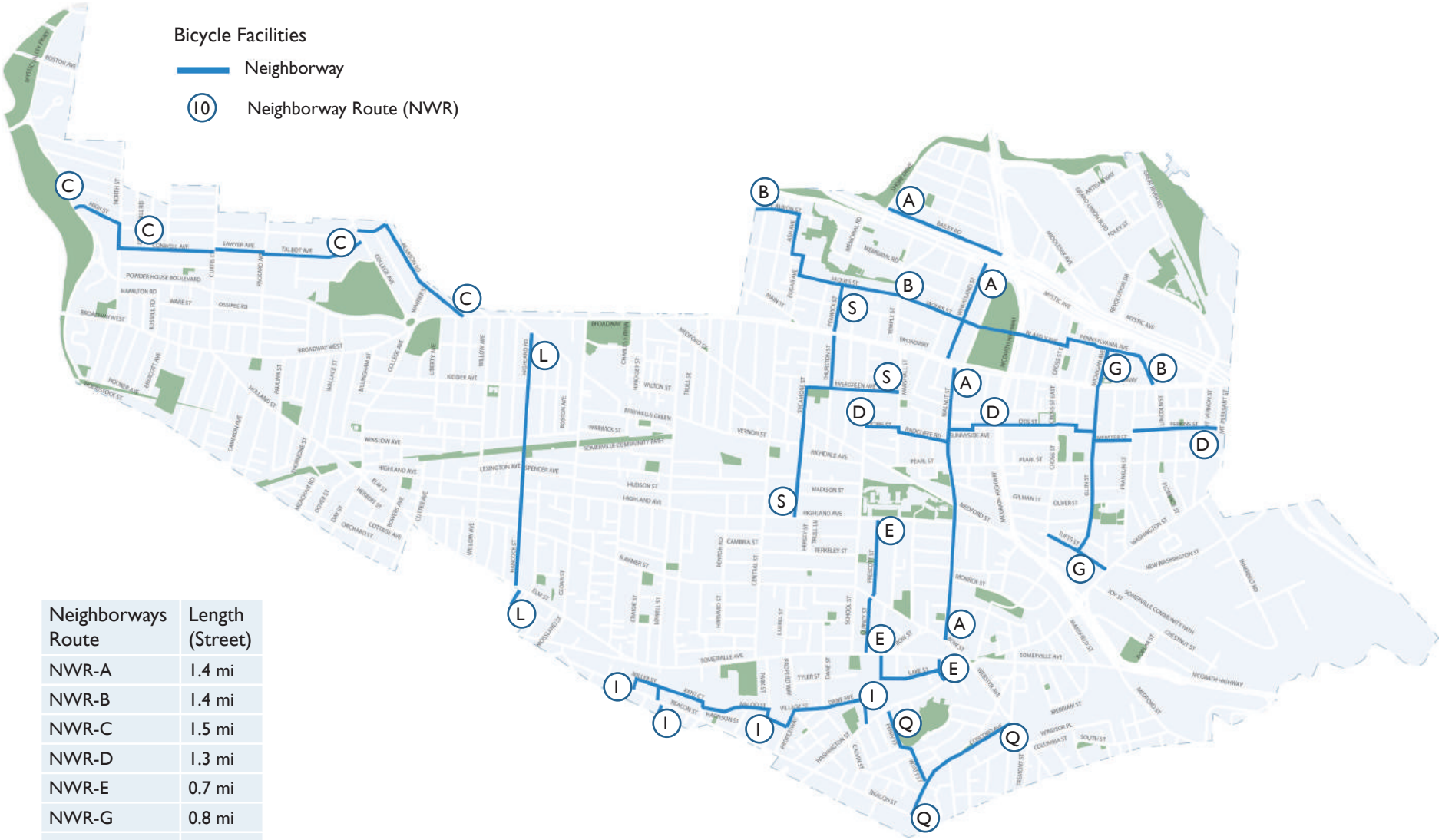
Street segments are evaluated by applying a set of criteria and then awarded points, with higher scores indicating a higher priority for implementation. The following is a list of Criteria that were used in the prioritization:

- **Equity:** higher score if a street is partially or fully within a City of Somerville Community of Concern
- **Connectivity:** higher score for streets that connect or intersect with a greater number of other bicycle network streets
- **Destinations:** higher score for streets that reach more key destinations
- **Topography:** higher score for streets that are steeper for protected bike lanes and more points for streets that are flatter for Neighborways
- **Safety/Crash Rate:** the prioritization focused on all crashes rather than just bike crashes to capture streets that may see low bike crash data due to lower bike ridership because of unsafe current conditions. For arterials, points are awarded to all streets on the High Crash Network, with more points for those with more crashes per mile. Since Neighborways are primarily on residential streets that do not generally appear on the High Crash Network, points are awarded to any Neighborway that intersects with the High Crash Network.
- **Public Input (only for Protected Bike Lanes):** since the public provided feedback in plan development primarily on arterial streets dedicated for protected bike lanes, the criteria for public input was only applied to these streets. Points were awarded for more mentions during the outreach and engagement process.
- **Tree Density (only for Neighborways):** a comfortable and shady riding experience on residential streets is of high value for Neighborways. More points were awarded for streets with more tree cover.
- **Alternative Route (only for Neighborways):** points were awarded only for Neighborways based on their utility as a more tranquil alternative to a high traffic arterial by measuring the distance that they parallel arterial streets.

Neighborway streets are grouped into connected routes that create a viable section of the network to avoid piecemeal implementation of disconnected streets. For streets with protected bicycle lanes, some longer arterials are separated into smaller sections to reflect varying characteristics.

Figure 5.2 shows the ten highest scoring Neighborway groupings and Figure 5.3 shows the 20 highest scoring streets designated for protected bicycle lanes. We consider this entire group of streets to be a higher priority when compared to the overall bike network vision. For a full list of all network streets and their scoring, and a more detailed explanation of the points system, please refer to Appendix C.

Shared Streets and Off-Street Paths were not scored since implementation is often part of major City infrastructure projects, or state agency or developer projects.



Neighborways Route	Length (Street)
NWR-A	1.4 mi
NWR-B	1.4 mi
NWR-C	1.5 mi
NWR-D	1.3 mi
NWR-E	0.7 mi
NWR-G	0.8 mi
NWR-I	1.2 mi
NWR-L	0.7 mi
NWR-Q	0.5 mi
NWR-S	0.9 mi

Figure 5.2: Top 10 Ranking Neighborway Routes

	Street	Length (Lane)
PBL-A	Broadway West	2.2 mi
PBL-B	Broadway Center	2.8 mi
PBL-C	Broadway East	1.2 mi
PBL-D	Central St	1.6 mi
PBL-E	College Ave	1.4 mi
PBL-F	Cross St	0.5 mi
PBL-G	Curtis St	0.5 mi
PBL-H	Elm St	1.5 mi
PBL-I	Foley St	0.6 mi
PBL-J	Franklin St	0.5 mi
PBL-K	Highland Ave	3.6 mi
PBL-L	Lowell St	0.9 mi
PBL-M	McGrath Hwy	4.1 mi
PBL-N	Pearl St-Gilman Sq	0.6 mi
PBL-O	School St	1.1 mi
PBL-P	Somerville Ave	3.5 mi
PBL-Q	Temple St	0.6 mi
PBL-R	Washington West	1.1 mi
PBL-S	Washington Center	0.4 mi
PBL-T	Washington East	1.1 mi

Figure 5.3: Top 20 Ranking Network Streets Designated for Protected Bicycle Lanes

Implementation Strategy

The Somerville Bicycle Network Plan uses the following assumptions for implementation:

- Focus on installation of top priority protected bike lanes and Neighborways.
- Install quick-build projects first, followed by conversion to permanent implementation of bicycle infrastructure both for Neighborways and streets designated for Protected Bicycle Lanes.
- Set annual mileage targets based on available resources and citywide infrastructure, state, and developer led bicyle facility implementation.

Some Neighborways routes require crossing or connecting to a higher-volume street. In these cases, quick-build safety and wayfinding treatments on the higher-volume street crossing is required. This may influence project readiness.

Streets designated for Protected Bicycle Lanes will first have to be assessed for quick-build suitability. Not all sections of streets can be implemented with quick-build treatments due to elements like existing curb lines, locations of trees or the ability to integrate a safe design with existing signals at intersections. These street sections may require permanent rather than quick-build treatment.

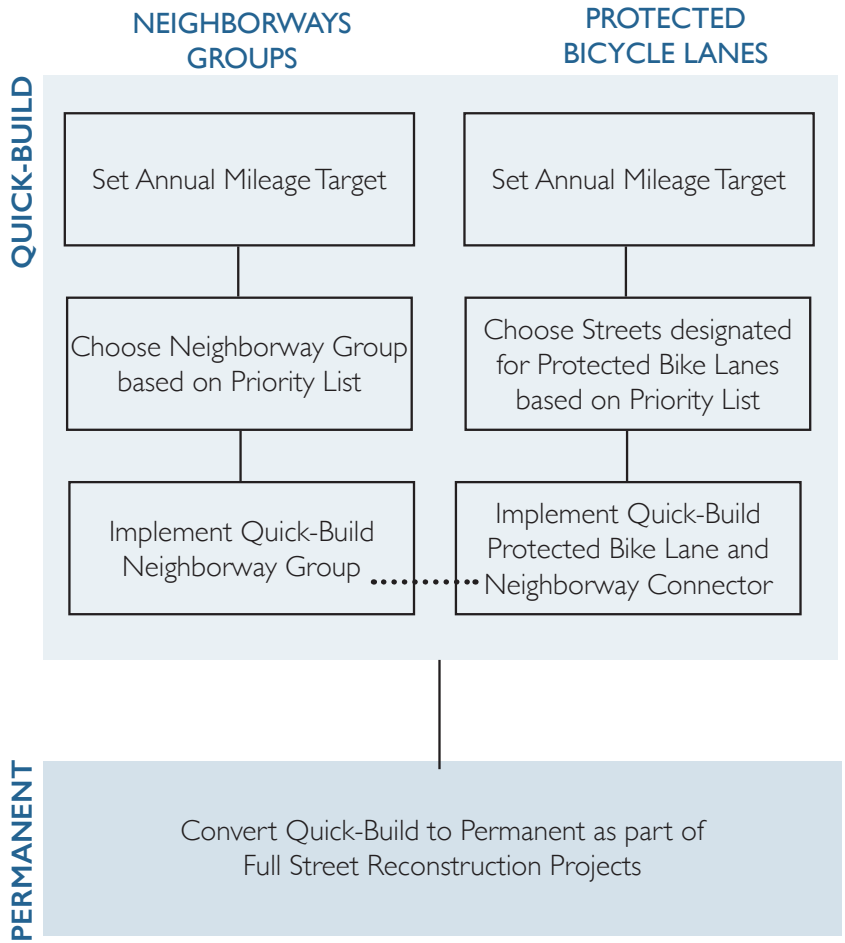


Figure 5.4: Implementation Strategy for Bicycle Network Vision

5.2 QUICK-BUILD PROJECT SELECTION

This plan aims to primarily use Quick-Build construction to speed up implementation of streets that were identified as high priority in this plan. A map of these streets is provided in Figure 5.6. Which streets and how many are selected for implementation each year will depend on available resources. This section estimates the resourced required to create protected bicycle lanes and Neighborways using quick-build construction.

The Plan anticipates a variety of planning, design, installation and maintenance costs associated with buildout of the citywide bicycle network. Most of the City's planning and design work is handled by City staff. The City has successfully grown staff resources over the past five years, adding positions in key departments including OSPCD Mobility, IAM Engineering, Parking, DPW, and Communications. Installation costs include a variety of material, supply, and labor costs. Labor costs include both staff resources and external contractor support. Similarly, operations and maintenance costs include a blend of internal and external resources. Figure 5.5 depicts a breakout of estimated costs.

	Neighborway Cost/ Street Mile	Protected Bike Lanes Cost/ Lane Mile
Design/Planning/Implementation		
Staff and Consultants (Mobility, Engineering)	$ 55,000	$ 25,000
Installation		
Material and Construction	$ 180,000	$ 125,000
Operations Maintenance		
Staff (DPW, Parking, Engineering)	$ 4,500	$ 13,000
Equipment (used for 5 miles)		$ 35,500
Material (Flex Post, Signs, ...)	$ 8,000	$ 7,500
Total per Quick-Build Mile	$247,500	$ 206,000

Figure 5.5: Quick Build Resources Needed per Mile (Order of Magnitude)

Total Miles of Priority Network	
Protected Bicycle	29.8 Lane Miles*
Neighborways	10.4 Street Miles

* A two-way protected bicycle lane equates to 2 Lane Miles (versus 1 Street Mile)

Figure 5.6: Top Priority Protected Bike Lanes and Neighborways

The City will focus on implementation of the top 20 ranking streets designated for protected bike lanes and the top 10 ranking Neighborway groups.

About one mile of protected bicycle lanes on the priority network is already installed. The current forecast through 2030 has approximately 6.8 miles scheduled to be installed by developers, the State, or Full Street Reconstruction Projects. The remaining 23 miles will be quick-build projects. An overview of resources needed for the design, outreach, and implementation of these 23 miles of protected facilities and the cost to operate and maintain the total 29.8 miles of additional protected bicycle lanes is provided in Figure 5.7.

Figure 5.7 also lists the resources needed for the 10 miles of Quick-Build Neighborways including design, outreach, installation, and operations and maintenance.

		Protected Bicycle Lanes	Neighborways
Miles			
	Already implemented	1.0 miles	
	Scheduled to be implemented by others	5.8 miles	
	Quick-Build to be funded by City	23 miles	10 miles
Total		29.8 miles	10 miles
Design + Outreach + Implementation Cost for Quick Build			
	Staff	$ 700,000	$ 535,000
	Material	$ 3,500,000	$1,800,000
Operations and Maintenance Cost for Quick Build			
	Staff	$1,600,000	$ 215,000
	Material	$ 240,000	$ 700,000
	Equipment	$ 250,000	
Total Cost		$6,290,000	$3,250,000

Figure 5.7: Order of Magnitude Resources for Quick-Build Installation to Complete Top Priority Protected Bike Lanes and Neighborways

5.3 SUPPORTING GUIDES AND ACTIONS

Bicycle Design Guide

One of the first supplemental supporting guides needed to move towards implementing the Bicycle Network Plan is a Bicycle Design Guide. The Bicycle Design Guide will provide detailed standards and specifications for the construction of both Quick-Build and Permanent projects bike facilities. The guide will include preferred dimensions and surface treatments for protected bicycle lanes, requirements for acceptable traffic calming and volume reducing strategies for Neighborways, and standard details for off-street shared-use paths and multimodal shared streets.

Wayfinding Guide

As we heard often from our residents, Somerville's sometimes confusing street layout means that Neighborways can only be implemented successfully if they include a robust and easy to understand Wayfinding system. A Wayfinding Guide will be established that includes the preferred locations, designs, and cost for wayfinding signage. Funding for setting up this system will need to be included in the resources necessary to implement Neighborways projects.

Operations and Maintenance Manual

Street improvements can only work if City staff can keep it functioning properly over time. City departments have started to work closely together to establish operations and maintenance procedures for bicycle infrastructure. Formalizing these in an Operations and Maintenance Manual is another important action item for the first few years.

Bicycle Parking Guide

If Somerville residents, employees, and visitors are encouraged to switch to using bicycles as regular transportation, they will need safe and convenient parking locations at trip origins and destinations. An update to the Mobility Division's existing Bicycle Parking Guide will further develop the City's approach to providing bicycle parking.

Community Engagement Guide

City staff, transportation advocates, residents, workers, businesspersons, and visitors must work together to achieve successful implementation of the City's goals for bicycle riding. Sharing regular updates and information on where the network stands and what projects to expect next is imperative to keeping all community members engaged. The City will establish an easy to navigate Bicycle Network Plan website that includes a dedicated Community Engagement Guide that will outline approaches and strategies to engage and conduct outreach to community members for bicycle facility projects.

Evaluation Guide

Our world is constantly changing. New technologies are emerging, the needs of Somerville residents are changing, and City departments continue to evolve. Thus, a yearly evaluation of where we are is necessary to make adjustments when needed and keep this plan a living and viable document. An Evaluation Guide will define what and how we are planning to measure progress, how successful outreach and education have been, and how new bicycle infrastructure is working. Especially for Neighborways, analysis of speeds and volumes before and after implementation, and evaluation of behavior will be important to ensure successful implementation of the Network.

Education Guide

In addition to building bicycle safe and friendly streets, the City needs to ensure that everybody in Somerville has convenient and affordable access to bicycles, and understands how a bike can be safely used as transportation for daily routines. A Bicycle Education Guide will provide a framework for how to develop educational programming and accomplish this important work.

Action	2023	2024	2030	>2030
Supplemental Documents/Procedures/Elements				
Bicycle Design Guide	■			
Wayfinding Guide	■			
Operations/Maintenance Guide	■			
Bicycle Parking Guide	■			
Network Street Implementation				
Quick Build - Priority Network	■	■	■	
Quick Build - Full Network	■	■	■	■
Outreach and Communications				
Website	■			
Community Engagement Guide	■	■		
Yearly Reporting	■	■	■	■
Evaluation				
Evaluation Guide	■	■		
Education				
Education Guide		■		

Figure 5.8: Time Frame for Implementation

5.4 SUMMARY

The Biycle Network Plan lays out the roadmap for the next 20 years to give people who live in, work in, or visit Somerville the option to get around safely and enjoyable using the bicycle.

The majority of the work ahead is in installing a citywide connected set of streets of 88.1 miles with bicycle infrastructure - the Bicycle Network Vision. Somerville has made important progress toward a safe, inclusive bicycle network in recent years, and our residents and elected officials have called for an accelerated pace of change in the coming years. Looking at protected biycle lanes alone, the vision calls for 53.8 miles of which only 5.9 are installed.

To meet these goals, this Plan outlines a priority list of streets assessed based on safety concerns, equity, connectivity, and topography, to focus on developing quick-build facilities. This includes quick-build installation of 29.8 protected biycle lanes and 10 miles of Neighborways. With an increasing yearly quick-build installation based on available staffing and resources the City will be able to achieve this high priority network goal by 2030.

Continuing at this rate the majority of protected bike lanes will installed in two decades. The expectation is that these predictions are conservative, since additional miles will be built as part of citywide capital improvement projects, resurfacing projects, and developer built street improvements. Citywide projects might also add biycle infrastructure on streets that are outside of the proposed network and might not be connected to network streets but nevertheless add to making Somerville a better and safer place to traverse by bike.

To evaluate the success of this plan, yearly reporting will keep track of the network implementation progress and status of supplemental supporting guides. When new data becomes available, the Plan will be updated to refine resource numbers, and adjust network priorities.

Thank you to everybody who has helped with the creation of Somerville's first Bicycle Network Plan. We are on our way to providing safe and comfortable biking options for all and we hope you continue to join the City in its effort to reach goals set by Somerville Vision 2040, Climate Forward, and Vision Zero.

STAY INVOLVED	
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Email	transportation@somervillema.gov
Subsribe to the Mobility Newsletter	somervillema.gov/departments/ospcd/mobility#newsletter-sign