CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

City of Kingston

PEDESTRIAN & BICYCLE MASTER PLAN

June 6, 2023

ACKNOWLEDGMENTS

This Pedestrian & Bicycle Master Plan was made possible through the collaboration and generous support of several organizations and individuals. The Kingston community was also integral to the completion and success of this project by offering their valuable insight and feedback at several stages throughout the process. In particular, the City of Kingston would like to thank the following entities:

Steve Noble, Mayor

COMMON COUNCIL

Andrea Shaut, Alderman at Large

Barbara Hill, First Ward Alderman

Carl Frankel, Second Ward Alderman

Reynolds Scott-Childress, Third Ward Alderman

Rita Worthington, Fourth Ward Alderman & Majority Leader

Naimah Muhammad, Fifth Ward Alderman

Tony Davis, Sixth Ward Alderman

Michael Olivieri, Seventh Ward Alderman

Steven Schabot, Eighth Ward Alderman

Michele Hirsch, Ninth Ward Alderman

PROJECT ADVISORY COMMITTEE

Emily Flynn, Director of Health & Wellness

Amanda Stromoski, Owner, Rough Draft Bar & Books

Claudette Ford, Chairwoman, The Resource Center for Accessible Living

Kevin McEvoy, Kingston Land Trust, Board of Directors, Kingston Heritage Area Commission, Kingston Conservation Advisory Council, Climate Smart Kingston Commission

Paula Wisneski, Office Administrator, People's Place

Brian Slack, Ulster County Transportation Council

David Stass, Ulster County Transportation Council

Robert Dennison, Retired, New York State Department of Transportation (NYSDOT) Chief Engineer

Tom Polk, Bicycle Educator, YMCA of Kingston & Ulster County, Bicycle Commuter

Tait Simpson, Head Brewer, Kingston Standard Brewing Company, Bicycle Commuter

Brian Donahoe, Business Owner, Facets Of Earth, Rondout District

Kristen Wilson, RUPCO

FUNDING DISTRIBUTION

This project has been funded in part by the Climate Smart Community Grant Program, Title 15 of the Environmental Protection Fund through the New York State Department of Environmental Conservation. Additional funding is from the Creating Healthy Schools and Communities (CHSC) Grant. The City of Kingston received this 5-year grant from the New York State Department of Health starting in 2021 to implement projects that support policy, system, and environmental changes to help make the healthy choice the easy choice in Kingston.

REPORT PREPARED BY:

Barton & Loguidice

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

CITY OF KINGSTON PEDESTRIAN & BICYCLE MASTER PLAN

EXECUTIVE SUMMARY

The City of Kingston Pedestrian & Bicycle Master Plan (PBMP) is intended to provide the City of Kingston and its partners with a roadmap for implementing improvements to pedestrian and bicycle facilities so that residents and visitors have access to safe, accessible routes from origin to destination. The PBMP provides an overview of the City's existing active transportation network (including the numerous recent and ongoing active transportation projects), identifies key challenges and opportunities, and offers recommendations for strengthening and expanding the network. Recommendations provided in this PBMP were developed based on the guidance of City of Kingston staff, a Project Advisory Committee, the concerns and preferences of the Kingston community, and the professional expertise of the community planning, landscape architecture, and engineering Consultant Team.

Key active transportation challenges identified and addressed in this PBMP include:

- *Establishing City-wide connections*
- *Integrating wayfinding and signage*
- *Balancing community character with accessibility*
- *Navigating steep slopes*
- *Additional considerations for railroad & rail trail crossings*
- *Maximizing narrow right-of-ways*

In order to overcome these challenges, a series of recommendations were developed, including specific facility improvements (i.e. changes to intersections and corridors) and opportunities for outreach and education programming. Sources of funding to implement these recommendations were identified, and immediate next steps to be undertaken were outlined. The framework for how all components of this PBMP's recommendations (Chapters 4-9) relate to one another and are to be interpreted is depicted at right.

Alternatives Toolkit

Evaluate various types of pedestrian and bicycle facilities and tools

Facility Design Guidance

Identify best practices for the design of pedestrian and bicycle facilities

Outreach & Education

Identify partnerships and activities that could support public participation in active transportation and the implementation of this PBMP

Facility Recommendations

Identify priority intersections and corridors throughout the City and - based on the Alternatives Toolkit and Facility Design Guidance - propose specific pedestrian and bicycle improvements

Funding & Implementation Strategy

Identify sources of funding that could finance this PBMP's Facility Recommendations and Outreach & Education components

Follow On Activities

Establish next steps that should be undertaken immediately to advance the implementation of this PBMP's Facility Recommendations and Outreach & Education components

It is important to note that this PBMP is only the beginning of the process, the first step towards establishing a robust, accessible active transportation network throughout the City. As recommended in Chapter 7, it is essential that the appropriate City committees and departments continue to serve as champions of this PBMP by building on recent and ongoing active transporation initiatives, advocating for further studies, pursuing implementation funding, raising public awareness and support, and regularly updating this document as community conditions evolve over time.

CHAPTER 1: INTRODUCTION

Project Overview

PURPOSE

This PBMP summarizes the analysis, planning, and design efforts involved in the creation of the City of Kingston's Pedestrian & Bicycle Master Plan ("PBMP"). This PBMP shows the City's commitment to accommodating active transportation by providing a community-based, data-driven framework for guiding future decisions and investment regarding pedestrian and bicycle infrastructure. The PBMP contains recommendations regarding sidewalk networks, on-road bicycle facilities, and off-road trails that will improve the safety and ease of moving around the City by walking, biking, and other forms of active transportation. This PBMP will aid the City in becoming a more walkable and bike-friendly community, and enhance the perception of the City as an attractive, vibrant community that is a great place to live, work, and play.

> ***"Active transportation" is a means of travel that is powered by human energy, primarily walking and bicycling. The term "active transportation" expresses the key connection between healthy, active living and our transportation choices.***

STUDY AREA

The City of Kingston is the County Seat of Ulster County, located where the Hudson River and Rondout Creek meet (Figures 1 & 2). The City is accessible from Exit 19 on the New York State Thruway (I-87). Kingston is 8.8 square miles, and is surrounded by water to the east, south, and partially to the north.

As a waterfront community with a rich history - including serving as New York State's first capital - Kingston has a unique character and a well-developed sense of place. In addition, the City has a traditional road network that is laid out in a grid-like pattern that lends itself to walking and biking activity. These characteristics, along with larger cultural shifts away from car-centric communities, make Kingston an ideal setting for an active transportation planning initiative.

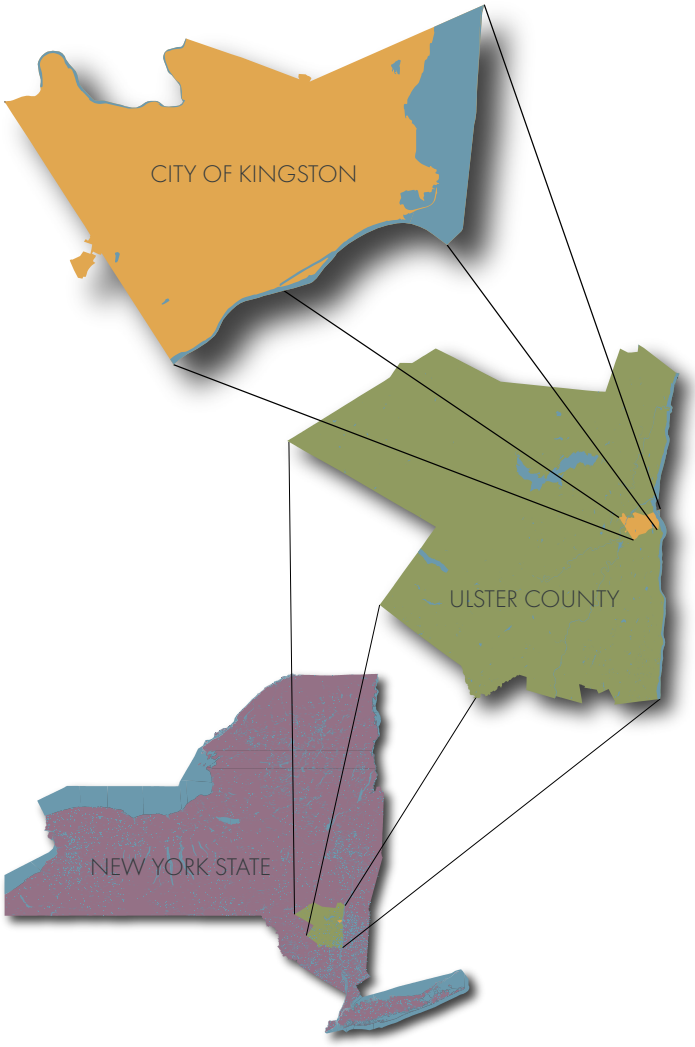


FIGURE 1: GEOGRAPHIC CONTEXT

Note(s):

- See the Appendix for the NYS DOT's functional class definitions and the Local Highway Inventory.
- The City's updated zoning code may classify roadways utilizing different parameters. See the Citywide Rezoning project webpage for more information: https://engagekingston.com/kingston-forward
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.
- Current roadway layouts may differ from this map as the City continues to grow and develop infrastructure and circulation improvements.

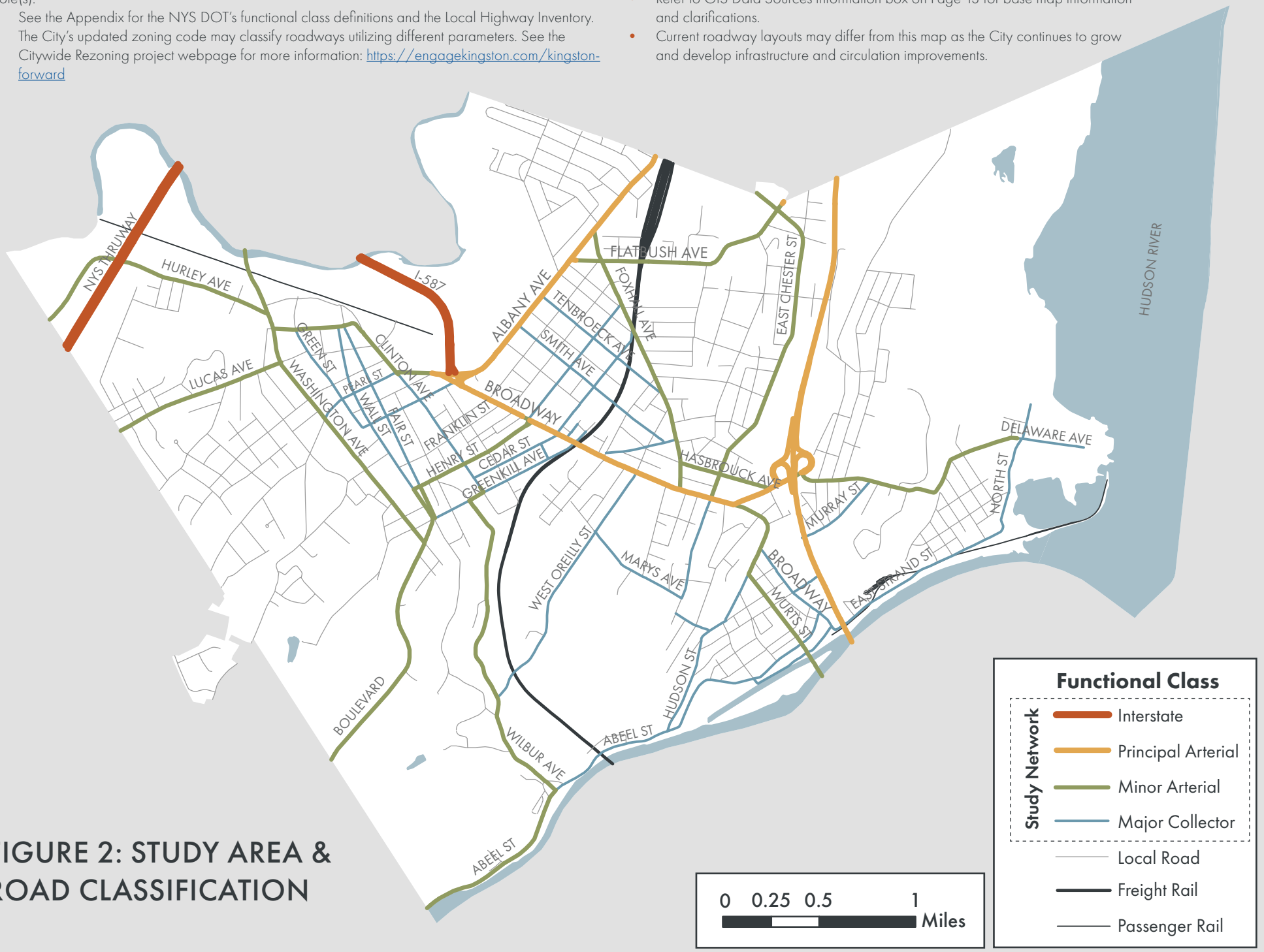


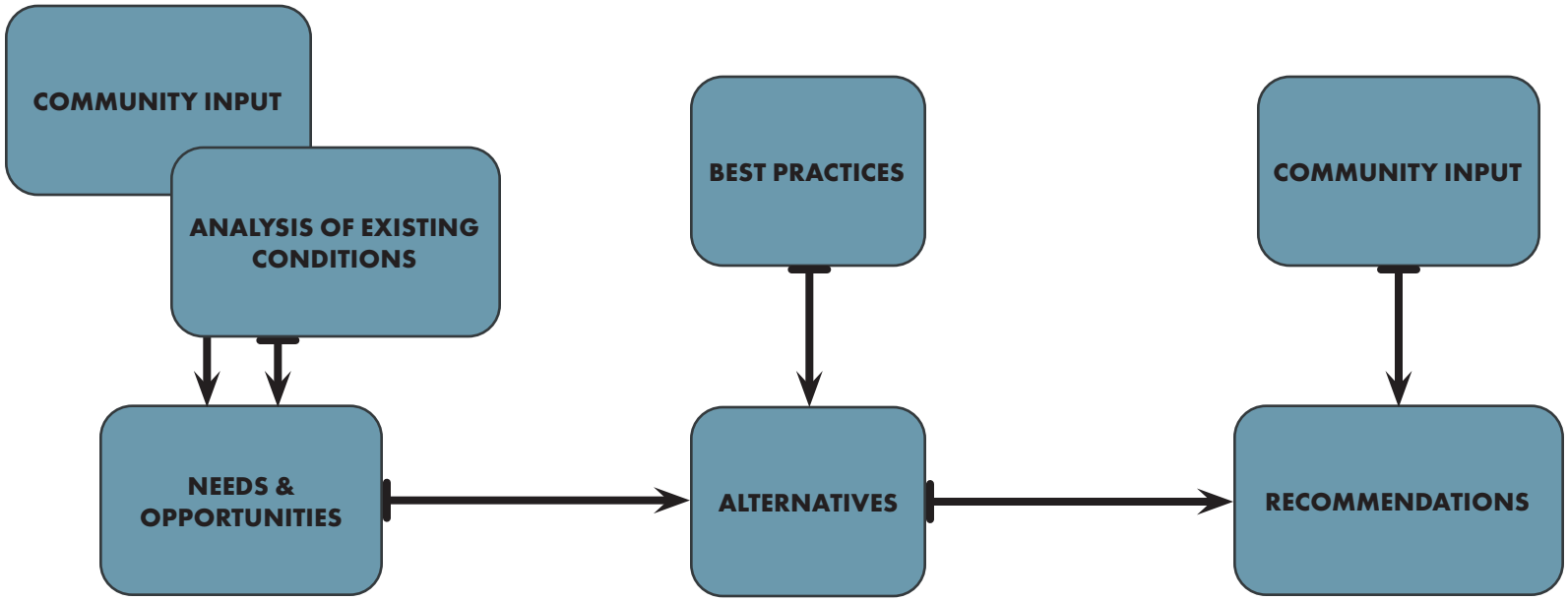
FIGURE 2: STUDY AREA & ROAD CLASSIFICATION

Project Approach

This project approaches active transportation planning through a comprehensive lens, recognizing the importance of creating physical, social, and regulatory frameworks to generate a more connected, equitable, and accessible community. The recommendations within this PBMP have accordingly been developed through an extensive process that has included multi-faceted community engagement, a detailed inventory of existing conditions, and an application of national and local best practices. In general, the recommendations seek to balance short-term, highly feasible projects with larger, longer-term projects that will require more extensive coordination to implement.

Residents and stakeholders were solicited as a part of this process in order to determine the key issues and opportunities within the City for improving pedestrian and bicycle accessibility. In addition to community surveying activities, eight meetings were held as a part of this process to help determine what infrastructure improvements are most crucial to Kingston's success as a walkable and bike-friendly community. The public input process was crucial to the success of this study. Allowing civic leaders, business owners, and residents to have true input on the parameters and outputs of this study, provides ownership of the PBMP to the community. The combination of public support and civic initiative will allow the recommendations of this PBMP to come to fruition and have transformative results.

DATE	MEETING/ EVENT	PURPOSE
October 4, 2021	Project Kick-Off	Convene City and Consultant Team and officially kick off the project
October 13-14, 2021	PAC Meeting #1	Convene PAC and introduce/initiate the project
January 4, 2022	PAC Meeting #2	Conduct walking and biking tour of Kingston to observe existing conditions
January 18, 2022	Public Meeting #1	Introduce project to public and solicit input on Kingston's needs and priorities related to walking and biking
March 15, 2022	PAC Meeting #3	Review existing conditions inventory
March 1, 2023	PAC Meeting #4	Review draft PBMP
March 1, 2023	Complete Streets Training	Educate the community on the benefits of Complete Streets
March 21, 2023	Public Meeting #2	Introduce draft PBMP to public and solicit feedback



Relevant Plans & Studies

This PBMP builds upon previous planning initiatives completed both locally in the City of Kingston and at a regional level. Several past plans and studies related to active transportation were reviewed to ensure that this PBMP's recommendations reflected other ongoing community planning efforts. Specifically, the following six documents were reviewed in detail:

KINGSTON GREENLINE CONCEPTUAL PLAN

The Kingston Greenline is a joint initiative between the City of Kingston, Ulster County, and Kingston Land Trust to establish a system of trails, linear parks, and Complete Streets through the City. The "spine" of the trail system is a historic rail corridor; the Kingston Greenline also comprises a segment of the Empire State Trail. The Concept Plan was completed in 2014 and, since then, several segments of the Kingston Greenline have been constructed. The overall network of the Kingston Greenline, in addition to the continued implementation of remaining trail segments, was incorporated into the recommendations presented in this PBMP.

CITY OF KINGSTON COMPREHENSIVE PLAN

Kingston's Comprehensive Plan, "Kingston 2025," was completed in 2016 and aims to identify the community's future vision and establish a framework for achieving the City's goals and objectives. One of the Comprehensive Plan's Guiding Principals is:

> ***"Kingston's streets must be accessible to non-motorized modes of transportation and respect all ages and mobility levels including cyclists, pedestrians, and wheelchair-bound persons (complete streets)"***

At a finer scale, the Comprehensive Plan's Transportation and Mobility section includes several objectives that are specific to active transportation:

- **Objective 5.1:** Improve the street system's ability to achieve the dual goals of moving people and goods safely and efficiently while maximizing the value of streets as public spaces.
- **Objective 5.2:** Transform all city streets into "Complete Streets" inclusive of pedestrians, cyclists and on-street parking, prioritizing key connections, such as Safe Routes to Schools, access from neighborhoods to commercial areas, and linking together existing and future multi-use trails and parks/recreation facilities.
- **Objective 5.3:** Develop and implement a long-range plan for a comprehensive and effective active transportation network for residents and visitors.
- **Objective 5.4:** Improve the actual and perceived safety of roadways, sidewalks, and paths/trails within the City for all users.

The Comprehensive Plan also included specific streets improvement and trail recommendations for Midtown, Uptown, and the Rondout Core Area and the Hudson River Waterfront. These objectives and recommendations have been considered during the development of this PBMP.

CITY OF KINGSTON DOWNTOWN REVITALIZATION INITIATIVE (DRI)

The City's DRI Strategic Investment Plan, completed in 2018, addresses the Uptown Stockade Business District. One of the four goals for this area is to "improve access and mobility for pedestrians, bicyclists, and other modes of transportation to better connect the [Stockade Business District] with adjacent neighborhoods and the region." The DRI Strategic Investment Plan emphasizes following a Complete Streets strategy, improving connections between Kingston Plaza and the Stockade Historic District, and improving pedestrian and bicycle connections through the Uptown and Midtown linear parks.

CITY OF KINGSTON PARKS & RECREATION MASTER PLAN

The City of Kingston's 2013 Parks & Recreation Master Plan includes a section on greenways and linear parks. The Parks & Recreation Master Plan recommended utilizing a connected greenway network to establish non-motorized trails throughout the City. The map of potential greenways was a valuable resource during the development of this PBMP.

CITY OF KINGSTON CLIMATE ACTION PLAN

The City of Kingston's Climate Action Plan, completed in 2011, outlines several transportation goals related to active transportation, including:

- Capitalize on existing compact development and promote various modes of transportation and efficiency in providing public services and infrastructure.
- Reduce travel demand specifically that of single-occupancy private vehicles, reducing vehicle miles traveled in the City of Kingston.
- Improve existing sidewalk network to promote safe walking.
- Promote consistency and coordination between land use and transportation policies, improvements strategies and decision making.
- Protect and enhance the environment, promote energy conservation, improve the quality of life.

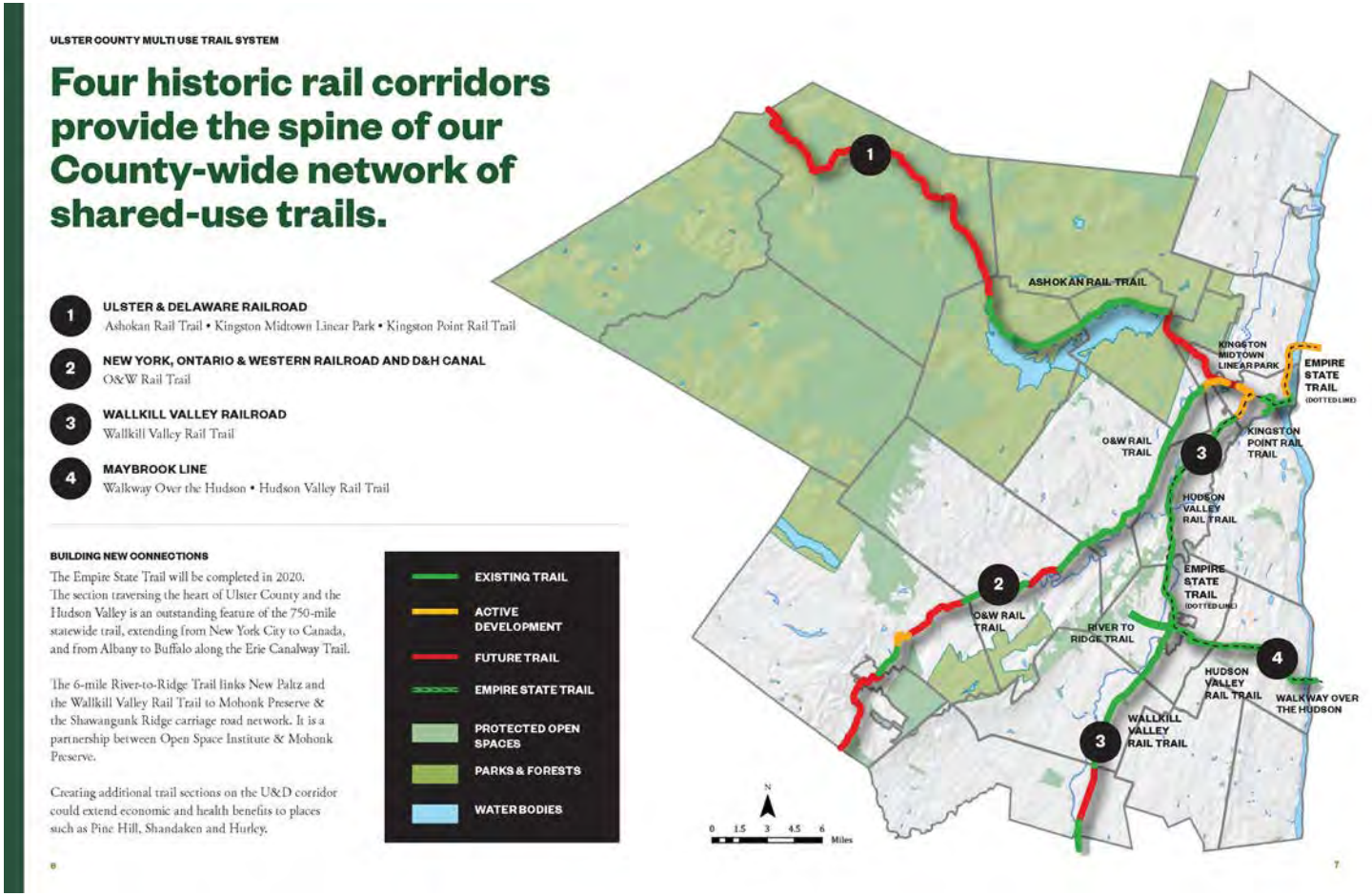
ULSTER COUNTY LONG RANGE TRANSPORTATION PLAN

Along with establishing overall transportation goals for the County, the 2020 Ulster County Long Range Transportation Plan identified specific active transportation projects within the City of Kingston. These included, but were not limited to:

- Kingston Rail Trail: Preserve, Improve O&W Railroad
- Route 32 Klingberg Ave to Amy Kay Pkwy Sidewalks
- Abeel St Stage 1
- Midtown Linear Park from Cornell St to Westbrook Ln
- Henry St Pedestrian Improvements
- Hudson Landing Trail
- Broadway Streetscape Project

Many of the goals in the Ulster County Long Range Transportation Plan are supported by another document relevant to this project: the Ulster County Nonmotorized Transportation Plan of 2008. Some of the projects outlined for the City of Kingston have yet to be completed, and may be referenced in conjunction with the recommendations of this PBMP.

The Ulster County network of shared-use trails from the 2045 Long Range Transportation Plan and the 2020 State of the Trails report created by the Ulster County Trails Advisory Committee.



Public surveys were available at the Kingston Library.

Public Engagement

THE PUBLIC ADVISORY COMMITTEE

A Public Advisory Committee (PAC) was formed with 11 participants who met at four meetings and gave direction and feedback for the life of the project. They also joined the consultants on walking and biking tours of the City to kick-off the project and share local knowledge among the project team. Members of the PAC were former or current members of local community groups, government staff, business owners, and residents, including:

- NYS Department of Transportation
- Ulster County Transportation Council
- City of Kingston
- Kingston Land Trust
- Kingston Heritage Area Commission
- Kingston Conservation Advisory Council
- Climate Smart Kingston Commission
- YMCA of Kingston & Ulster County
- People's Place
- Facets of Earth
- The Resource Center for Accessible Living
- Rough Draft Bar & Books
- Kingston Standard Brewing Company

Several members of the PAC were also walkers and bicyclists with first-hand experience with the City's active transportation network.

THE PUBLIC ENGAGEMENT STRATEGY

Soliciting and interpreting public input was an integral component of this PBMP. Despite the fact that the COVID-19 pandemic limited opportunities for public outreach, especially at indoor events during cold weather months, the use of online tools and other innovative outreach methods still allowed for a robust public engagement strategy. Several opportunities were offered to the community to participate throughout the development of this PBMP, including a Community Survey, a Crowdsourcing Map, and two Public Information Meetings. Public Information Meeting #1 was held virtually on January 18, 2022 and Public Information Meeting #2 was held in-person on March 21, 2023.

Both the Community Survey and Crowdsourcing Map were hosted on engagekingston.com, the City's online public engagement platform. The Community Survey was available online from October 2021 to May 2022. Hard copy versions in English and Spanish were also available in multiple community locations, including the Kingston Library, Rough Draft, People's Place, Samadhi, and two houses of worship. The Crowdsourcing Map was available online from November 2021 to May 2022.

In order to inform the community about this project and to encourage public participation, multiple forms of community outreach were implemented. First, the input tools were advertised at the Kingston Farmer's Market, the YMCA Farm Project Harvest Festival, The Tour de Kingston, a Rondout Garden event, Kingston Uptown Snowflake Festival, the YWCA's Spring Well event, and a YMCA bicycle repair event. On February 11th and for the following two weeks, Facebook advertisements were placed for people of all ages and genders within a three-mile radius of the City. These advertisements reached 5,346 people. The City's Spanish-speaking Clerk was listed in Spanish on the outreach materials, and she was available to assist users with the Crowdsourcing Map.

Looking forward, the consultant team will facilitate a Complete Streets Training for elected officials, City Commission members, staff, and the general public. During this session, the basic principles of Complete Streets and active transportation will be presented to provide a foundation for the PBMP.

THE NUMBERS

217 Survey Responses

292 Map Comments

- ***104*** ***Pedestrian Concerns***
- ***83*** ***Bicycle Concerns***
- ***3*** ***Transit Concerns***
- ***102*** ***Destinations***

37 Public Information Meeting #1 Polling Participants

10 Public Information Meeting #2 Participants (In-Person)

****74 viewed the YouTube video***

Screenshot of Public Information Meeting #2 *engagekingston.com*

Note: All polling responses, Community Survey results, Crowdsourcing Map comments, and comments on the draft report are available in the Appendix.

PUBLIC INFORMATION MEETING #1

Public Information Meeting (PIM) #1 was held on January 18, 2022 as a live webinar in both English and Spanish. The purpose of this public meeting was to provide a project overview to date outlining the purpose and objectives of the PBMP and the intention and format for continued public outreach. The presentation focused on the inventory and analysis to date collected from a community survey, a crowdsourcing map and the use of time lapse cameras. At Public Information Meeting #1, attendees were invited to participate in a real-time polling session and answer several questions. When asked what they felt was the most effective way the City could support walking and biking in Kingston, they responded with installing new infrastructure (67%), repairing existing infrastructure (19%), education and outreach programs (7%), and local regulations, policies, and enforcement (7%).

Live Spanish interpreters participated in Public Information Meeting #1. After the Meeting concluded, video recordings of the Meeting in both English and Spanish were made available to view on engagekingston.com and the City's YouTube channel.

PUBLIC INFORMATION MEETING #2

The second Public Information Meeting was held on March 21st, 2023, after the original date of March 13th was canceled because of a snowstorm. The meeting was advertised in the mayor's newsletter, a press release was sent out, an article was published in the Daily Freeman, a Facebook event was created, and a graphic was distributed. It was presented in English and had live Spanish interpretation via Zoom in a second conference room. There were around 10 attendees in-person. The meeting was live-streamed and posted to YouTube and has 74 views as of April 28th, 2023. Feedback about the draft plan was requested and received at the meeting and via an on-line survey that was advertised to be open for a month but was left open for seven weeks. There were 40 separate responses, with a few that included many suggestions. Comments and responses from the meeting and the survey are listed in the Appendix.

COMMUNITY SURVEY

The Community Survey included a few multiple choice questions that asked survey takers why they do or don't walk/bike in Kingston, the types of walking/biking improvements they feel are important, and why they would like to be able to walk/bike in Kingston. Key findings are described below.

1. The top three reasons survey takers are walking outside are to exercise or go to the park, go shopping or to eat, or run errands. Survey takers are primarily bicycling for the same top three reasons, however, running errands was rated higher than going shopping or to eat. Survey takers agreed that, if it were safe

and convenient, they would choose to complete these three activities by walking or bicycling.

2. The least common reason for walking outside was to go to school. While this reason was also voted low for bicycling, the least common reason for bicycling among survey takers was to get to and from a transit stop.
3. When asked why they don't walk more frequently, survey takers cited poor sidewalk conditions, unsafe intersections, and bad driver behaviors as their top reasons. Bad driver behaviors, unsafe intersections, and lack of bike lanes were the top reasons why survey takers did not bicycle more frequently. Finally, they indicated that exercise, environmental benefits, and saving money would be their top three reasons for choosing to walk or bike in Kingston.

CROWDSOURCING MAP

A key task for this project was to measure and analyze pedestrian and cyclist demand and travel behavior in Kingston. A customized ,GIS-based crowdsourcing application was one method used to accomplish this. This web-based crowdsourcing app, using a custom-built ESRI ArcGIS online map, was accessible by mobile device and desktop computers or tablets. With this interactive app, information was collected from the public specifically related to bicycle and pedestrian circulation and infrastructure.

The online Crowdsourcing Map invited community members to place a pin on a map of the City of Kingston to denote where they walk/bike to, or where they have identified a pedestrian, bicycle, or transit concern. In regards to walking and bicycling destinations, responses were clustered around the intersections of Hurley Ave and Washington St, Clinton Ave and North Front Ave, Elizabeth St and Wall St, and the Boulevard/Rte 32 and Boulevard Ct (Figure 3). Pedestrian concerns were located throughout the entire City; most concerns were related to the lack of sidewalks (21%), poor crossing conditions (16%), and sidewalk conditions (13%). While bicycling concerns were also identified throughout the City, there were concentrations along roads classified as arterials and collectors, such as Broadway, Albany Ave, Abeel St, Lucas Ave, Boulevard, Cedar St, and Hurley Ave. Schwenk Dr also received several pins, despite being a local road. Comments related to bicycle concerns largely revolved around the lack of a bike lane (24%) or feeling unsafe (23%). Only three pins were dropped for transit concerns, two on Broadway - related to the lack of amenities and insufficient scheduling - and one on Fair St, which explained that the partial abandonment of Fair St Extension threatens the Stockade District's bus access.

Crowdsourcing Map

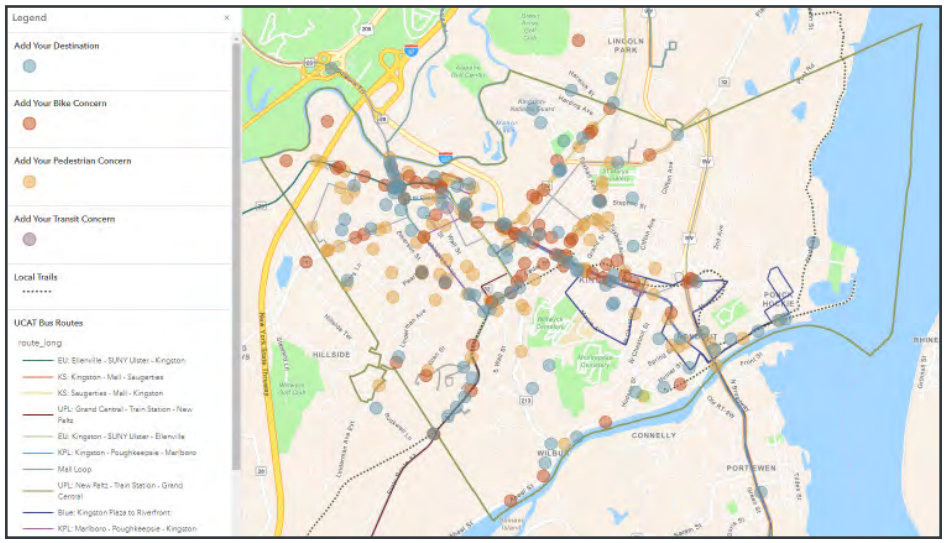
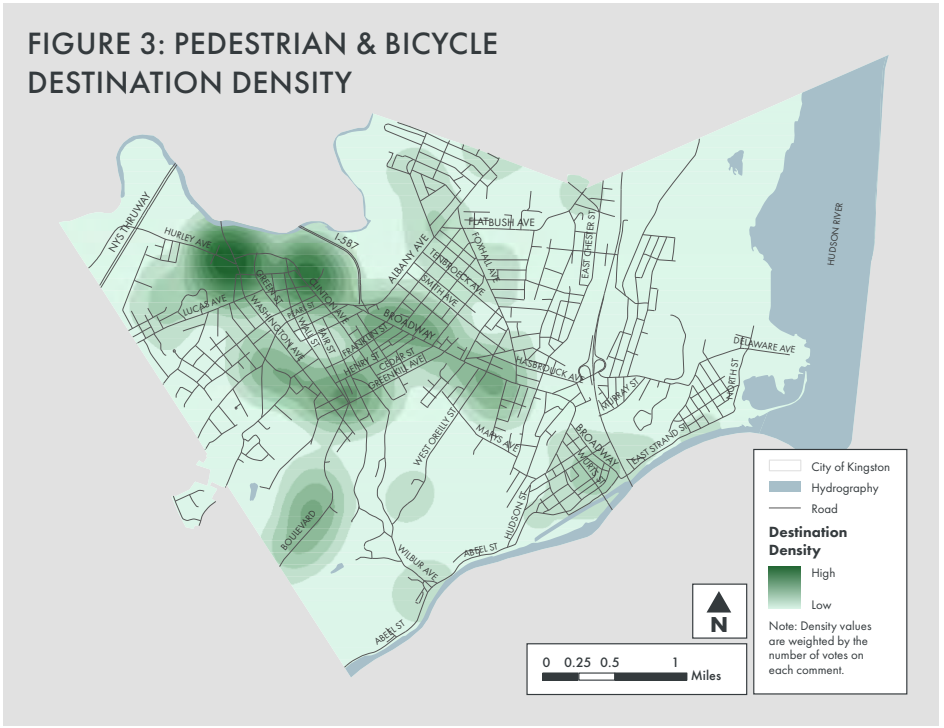


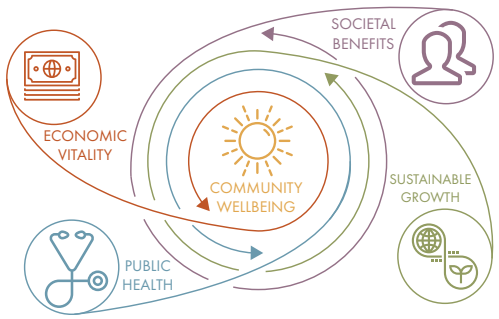
FIGURE 3: PEDESTRIAN & BICYCLE DESTINATION DENSITY



CITY OF KINGSTON PEDESTRIAN & BICYCLE MASTER PLAN

CHAPTER 2: ACTIVE TRANSPORTATION BENEFITS

This PBMP aims to increase the viability of biking and walking as transportation and recreation options for residents and visitors of Kingston. The PBMP has a forward-thinking approach, considering not only the needs of residents and visitors of today, but more importantly the necessary improvements for the active transportation needs of future residents and visitors. The increased interest in active transportation over the past several decades in part stems from a need to develop alternative travel options from the privately-owned vehicle (POV) due to rising costs of fuel prices, environmental issues, as well as human health concerns related to inactivity. This PBMP will help ensure that the City is making progressive choices in regards to its transportation system, and will help catalyze systematic change that will enhance the long-term economic, environmental, health, and social benefits of active transportation in the community.



Transportation accounts for nearly 30% of greenhouse gas emissions in the United States (EPA, 2019). Although this percentage has declined moderately over the past decade, POVs remain the dominant form of transportation in the United States. However, biking and walking are alternative transportation options that provide a cost effective, sustainable, and healthy way of going about daily activities. Promoting and enhancing these options helps contribute to the overall well-being of the Kingston community, including distinct **health, environmental, social, and economic benefits**.

HEALTH BENEFITS

Health benefits are some of the most obvious benefits of active transportation, as it involves people undertaking physical activity to get to their destinations, or as a part of their leisure time. However, the importance of these benefits cannot be understated. Heart disease, respiratory disease, and diabetes are some of the leading causes of death in the United States; all of which are heavily influenced by the amount of physical activity an individual undertakes (CDC, 2017; 2019).

Shifts in technology over the past two centuries have allowed for Americans to become increasingly sedentary. For instance, the rise of the automobile allowed decision-makers in American cities to create low-density development that resulted in many trips being infeasible via foot or bike; as a result, many Americans do not get physical activity as a result of daily tasks. Incorporating exercise into daily activities is an effective way of reaching the recommended weekly level of physical activity (150-300 minutes of moderate-intensity aerobic physical activity per week) (CDC, 2018).

According to the Center of Disease Control and Prevention (CDC), **chronic diseases such as heart disease and diabetes effect more than half of American adults**, and are the leading drivers of the nation's $3.5 trillion in annual health care costs (CDC, 2022). This connection between public health and the built environment (i.e. man-made structures) is of particular importance today given that the chronic illnesses associated with poor physical environments are also tied to a higher likelihood of hospitalization due to COVID-19 infection. The City of Kingston generally has higher prevalence of chronic disease and associated behavioral risk factors as compared to Ulster County and New York State.

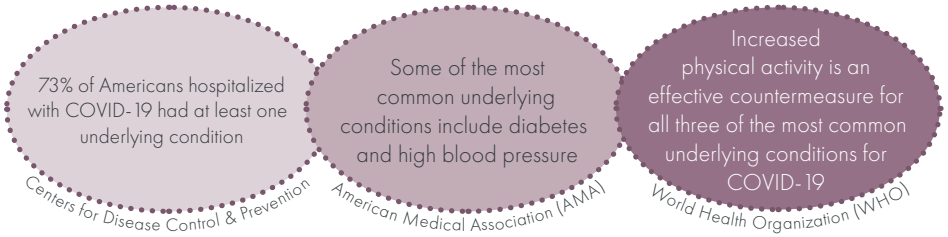
Furthermore, the residents of Census Tract 9520 (bordered by Broadway, Albany Ave, Flatbush Ave, and the rail line), which is located in one of the City's potential Environmental Justice (EJ) Areas, have even higher rates of such chronic disease indicators. In urban areas, potential EJ Areas are those where at least 52.42% of the population are members of a minority group or at least 22.82% of the population has a household income below the federal poverty level; these are areas where disproportionate adverse environmental impacts may be experienced and where projects/programs that advance environmental justice may be recommended.

	New York	Ulster County	Kingston	Census Tract 9520
Diabetes	11.0%	11.3%	11.6%	12.7%
Asthma	10.1%	10.9%	11.8%	12.8%
High Blood Pressure	29.5%	34.5%	34.9%	38.4%
Physical Inactivity	23.4%	24.8%	27.9%	33.2%

In regards to mental health, increased levels of active transportation also can help reduce stress levels. Research shows that both being outdoors and performing physical activity can help **reduce stress** by reducing levels of the body's stress hormones such as

adrenaline and cortisol, while stimulating endorphins (Harvard Health, 2018;Harvard Health, 2018).

In recent years, the COVID-19 pandemic in particular has highlighted the importance of active transportation for public health, social equity, and community resilience. By improving the built environment to facilitate walking and biking, the City is promoting increased physical health by providing opportunities for residents and visitors to reduce sedentary behavior and live a healthier lifestyle



ENVIRONMENTAL BENEFITS

In addition to being beneficial for humans, active transportation is also beneficial for the environment in which we live. Active transportation is one effective tool for reducing greenhouse gas emissions and the impacts of climate change. **One of the most important things individuals can do to reduce climate change is to use alternatives to cars for frequent, short distance trips**. Short car trips pollute more per mile because car engines are less efficient during the first few minutes of operation. Substituting walking and bicycling for short car trips provides relatively large energy savings and greenhouse gas reduction. Reducing the burning of fossil fuels for transport will reduce the rate of climate change and the severity climate change impacts on Kingston.

Transportation choices also impact the water quality of Rondout Creek and the Hudson River. Short distance car trips generate particulate air pollutants that deposit in natural water bodies, and cars contribute pollutants that move across impervious surface into lakes and streams as run-off. The graphic below depicts several categories of pollutants found in urban stormwater runoff. Active transportation can help reduce pollutants generated by our transportation infrastructure, and improve the resilience of the City.

SOCIAL BENEFITS

The benefits of active transportation from a societal point-of-view are numerous. An estimated 9% of American households and 15% of City of Kingston households do not have access to a vehicle (US Census Bureau). These households must rely on alternative modes of transportation, such as walking, biking, and transit. By investing in infrastructure to help facilitate these modes of transportation, the City is increasing non-car owners' mobility and access to employment and services. Overall, active transportation facilities, when strategically planned and implemented, can work towards equitable outcomes by increasing marginalized communities' access to goods, services, and employment opportunities.

Increasing active transportation facilities in Kingston will also help increase safety on the roadways, as all users will have more dedicated space, thus reducing the potential for collisions between walkers, bicyclists, and drivers, as an example. This can be supported through the USDOT's Safe System Approach, as described on page 116.

Lastly, active transportation can help **increase levels of social capital**. Social capital can be defined as "social networks and interactions that inspire trust and reciprocity among citizens" (Leyden, 2003). By spending time in the public sphere, moving along at a much slower pace than one would in a private vehicle, there is an increased potential for social interaction, fostering community cohesion. Active transportation reduces isolation, which in turn fosters social capital, which creates a more welcoming, attractive environment to live in.

ECONOMIC BENEFITS

There are also economic benefits to promoting active transportation. Individuals who walk or bike to commute or perform daily errands **reduce their cost of ownership of a vehicle**, including fuel costs, maintenance, and car insurance. In addition, such individuals are also improving their health; **reducing the need for expensive health care costs** for health issues related to inactivity. At the community-level, increased access to pedestrian and bicycle infrastructure and public transportation may also result in reduced property and construction costs. Reliance on active transportation facilities reduces the need for parking lots and driveways, which often limit a property's amount of buildable and productive area.

An environment more amenable to bicycling and walking will also **increase access to retail, service, and entertainment destinations**. If residents and visitors can easily walk or bike, they will be more likely to patronize more businesses than they would have had they parked their car, walked directly into a business, and got back into their cars immediately after. In addition, the number of people biking can be a good indicator of a community's livability and desirability, attracting new residents, businesses, and visitors that will help sustain the City's economy. By encouraging active transportation, Kingston's economy would capture these potential savings and keep visitors and residents centrally located, resulting in increased community investment.

CITY OF KINGSTON PEDESTRIAN & BICYCLE MASTER PLAN

CHAPTER 3: INVENTORY & ANALYSIS

COMMUNITY CHARACTERISTICS

HISTORY

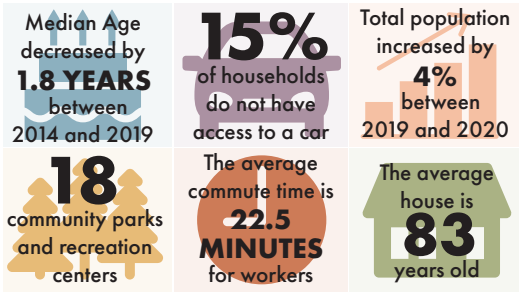
Kingston was the site of one of the first Dutch settlements in NYS in the early 1600's, and for many centuries before that was the territory of the Esopus tribe of the Lenape Native Americans. The City's legacy as a pre-revolutionary settlement resulted in many radial streets, but development prior to the advent of the commercially available automobile resulted in a dense street network with many areas of gridded street patterns. The majority of Kingston is urban or suburban in character, with several areas of undeveloped land, such as in the southwest corner and along the Hudson River shoreline.

DEMOGRAPHICS

According to the 2020 Census, there are 24,069 residents in the City; up 4% since 2019. In the late- to mid-20th Century, the City saw population decline, but has seen a resurgence in recent years. This resurgence can mainly be attributed to individuals and households leaving New York City for a more affordable lifestyle - a trend that was exacerbated during the COVID-19 pandemic as well.

As of 2019, the median age in the City was 37.3; 1.5 years younger than NYS and 2.8 years younger than the City's median age five years prior. This suggests that the City is attracting younger individuals, and does not reflect the aging population of the US.

The average travel time to work for City residents was 22.5 minutes; and over 50% of worker's commutes are less than 20 minutes. 71% of workers drove alone to work -- only 4% of workers take public transportation; 6% walk, and just 1% bike to work. 15% of households in the City do not have access to a vehicle.



LAND USE

The architectural character of the City varies significantly. Over 50% of homes in the City were built prior to 1939, and there are many structures throughout the City that pre-date the Revolutionary War. However, there are also a significant amount of suburban-style homes that were developed between 1950 and 1999, which account for approximately 38% of the houses in the City. The presence of the Rondout Creek and the Hudson River and the history of Kingston as the eastern terminus of the Delaware and Hudson Canal contribute to the maritime character of the City. Kingston's rich history as an industrial and shipping hub to support development in New York City also has a significant influence on the character of the City.

There are three prominent neighborhoods within the City: the Uptown Stockade Area, Midtown, and the Rondout District. Uptown is one of the most historic areas of the City, and is home to many restaurants, shops, galleries, and other community assets that make it a thriving and dynamic neighborhood and center of commercial activity. Midtown developed further on in the mid-19th Century, and is another commercial node within the City with a diverse mix of commercial and civic uses. The Rondout district has a robust legacy as a shipping port along the Hudson River, and it is the City's major waterfront destination for shopping, recreation, and other tourist activities.

There are many parks within the City; many of which are along the waterfront. Hasbrouck Park is one of the most significant parks in the City, as well as Kingston Point, which includes a public beach on the Hudson River. There are also several shared use path systems that go through the City; which are described in further detail on the next page.

CITY TRANSPORTATION AT A GLANCE....

94 miles of roads
8 miles state-owned road
30 MPH City speed limit
77 miles of sidewalk
6 miles of off-road shared use paths

GIS Data Sources

This PBMP uses GIS data from the following sources:

- **NYS Office of Information Technology GIS Program Office:** Government boundaries
- **NYS Office of Cyber Security:** Hydrography
- **NYS Department of Transportation:** Roads (incl. functional class, owning jurisdiction, AADT, speed limit), railroads
- **City of Kingston:** Trails, sidewalks (incl. accessibility, bluestone), curb ramps
- **NYS Empire State Trail:** Empire State Trail
- **Ulster County Transportation Council:** Bus routes, sidewalks (incl. accessibility, bluestone)
- **National Highway Traffic Safety Administration:** Crashes
- **Strava Metro:** Bicycle trips

LIMITATIONS

Data obtained from outside sources may be outdated or include inaccuracies. Particularly important to note is that several roadways in the City differ from data provided by the NYS DOT, including:

- The access route around the National Guard facility is not a road
- The Broadway and Albany Ave intersection has been reconfigured
- The Broadway and Pine Grove Ave intersection has been reconfigured
- The Delaware Ave bridge over Rte 9W is State-owned
- North St extends northward to the Empire State Trail
- The access route around Forsyth Nature Center is not a road
- The access route around Hasbrouck Park is not a road
- Condie St extends southeast to Albert St
- Mason Hill Rd extends south off of Chapel St

In order to maintain the integrity of underlying data, the original road linework was not manipulated. However, the City may consider coordinating with NYS DOT to update the NYS Roadway Inventory database accordingly.

TRANSPORTATION NETWORK

ROADWAY CLASSIFICATIONS

As illustrated by Figure 2, the majority of the studied roadways are Minor Arterials or Major Collectors. There are three Principal Arterials in the City: Broadway, Albany Ave, and Route 9W. Two small segments of Interstates cross through the northern portion of the City: the New York State Thruway (I-87) and I-587.

ROADWAY JURISDICTION

As shown in Figure 4, the vast amount of roadway miles within Kingston are under the jurisdiction of the City itself. Albany Ave, Route 9W, I-587, I-87, and the segment of Washington Ave north of Hurley Ave are owned and operated by NYSDOT and, therefore, beyond the City's ability to change the infrastructure. The remaining roadways are City owned and maintained; with a few roads on the borders that are owned by adjacent towns.

TRAFFIC VOLUMES

The most heavily trafficked roadway within the City is the NYS Thruway, which sees over 40,000 vehicles per day on average. Following the Thruway, The exit ramps from I-587 to the roundabout at Albany Ave & Broadway are the second most heavily trafficked roadway segments, with approximately 30,000 vehicles per day. Washington Ave between the City line and Hurley Ave accommodates over 20,000 vehicles per day as well. Following these roadways, the top five busiest roadway segments are as follows (Figure 5):

1. Albany Ave (13,000 - 18,000 Average Annual Daily Traffic (AADT))
2. Broadway (10,000 - 17,500 AADT)
3. I-587 (~17,000 AADT)
4. Route 9W (15,000 - 16,000 AADT)
5. Schwenk Dr (~12,000 AADT)

MUNICIPAL PARKING LOTS

The City of Kingston offers 11 municipal parking lots, concentrated around Front St, Broadway, and Strand St, and one of the lots at the beach on Delaware Ave (Figure 6). The lots range in size from 8 to 140 spaces, with a median count of 64 spaces. Some of the lots provide parking free of charge, while others include a fee.

Converted rail beds are a significant pedestrian and bicycle transportation system in the City. See more in the Trails Inventory section on page 17 and Figure 11 for the Shared Use Path and Bicycle Network.

Note(s):

- This map's data was created before the roundabout finished construction. The roundabout at I-587 is in the State's jurisdiction.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

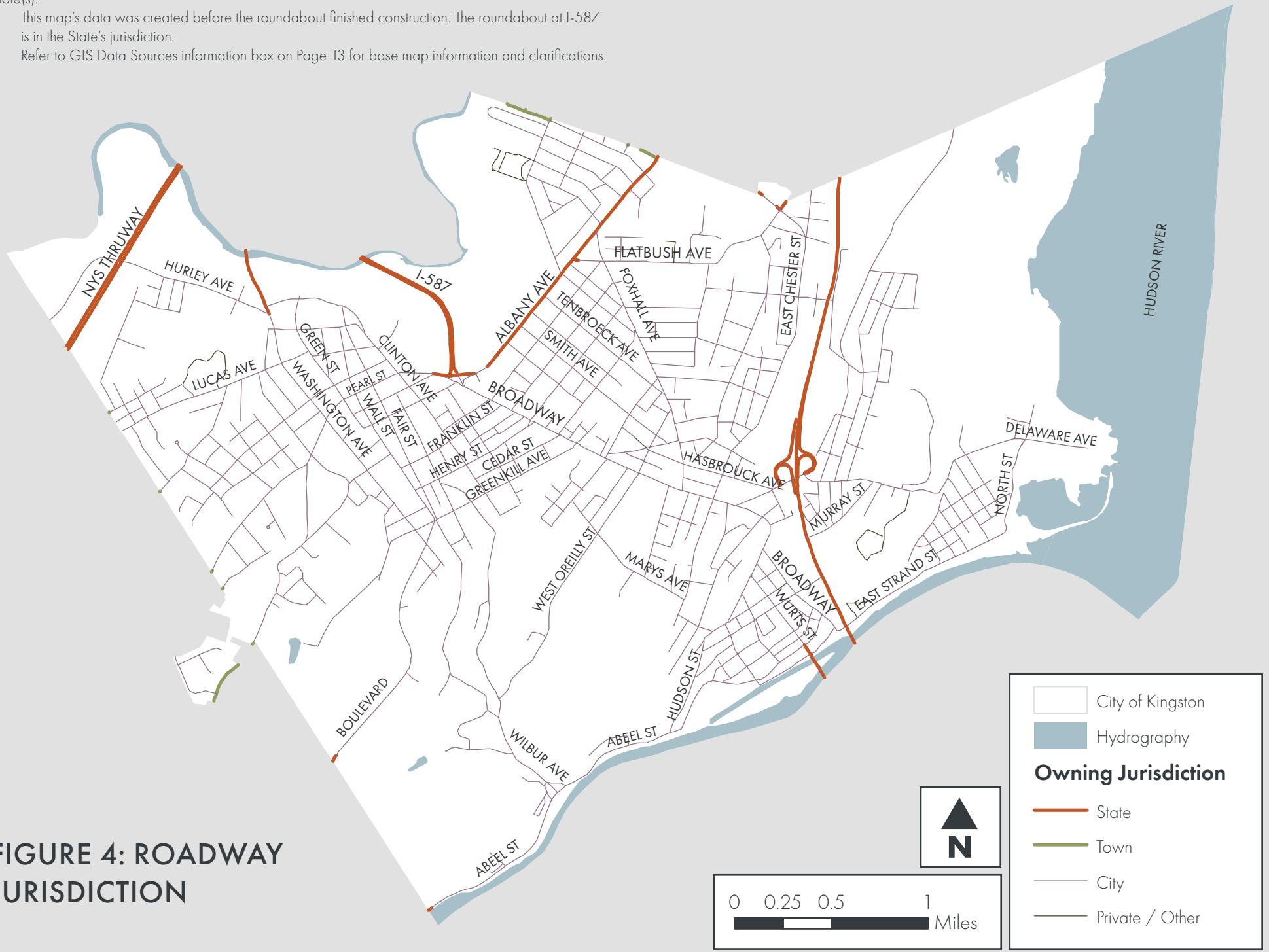


FIGURE 4: ROADWAY JURISDICTION

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

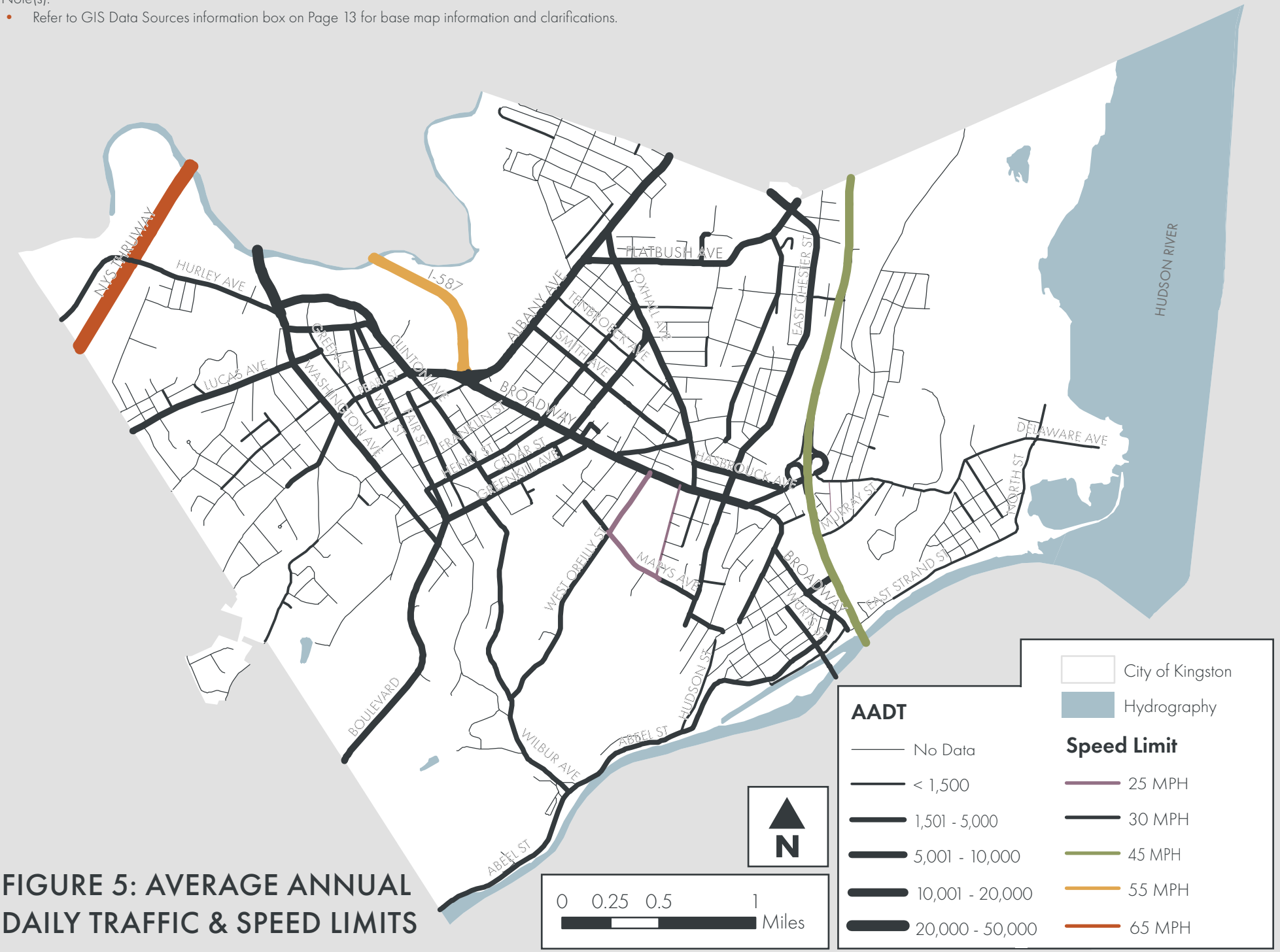


FIGURE 5: AVERAGE ANNUAL DAILY TRAFFIC & SPEED LIMITS

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

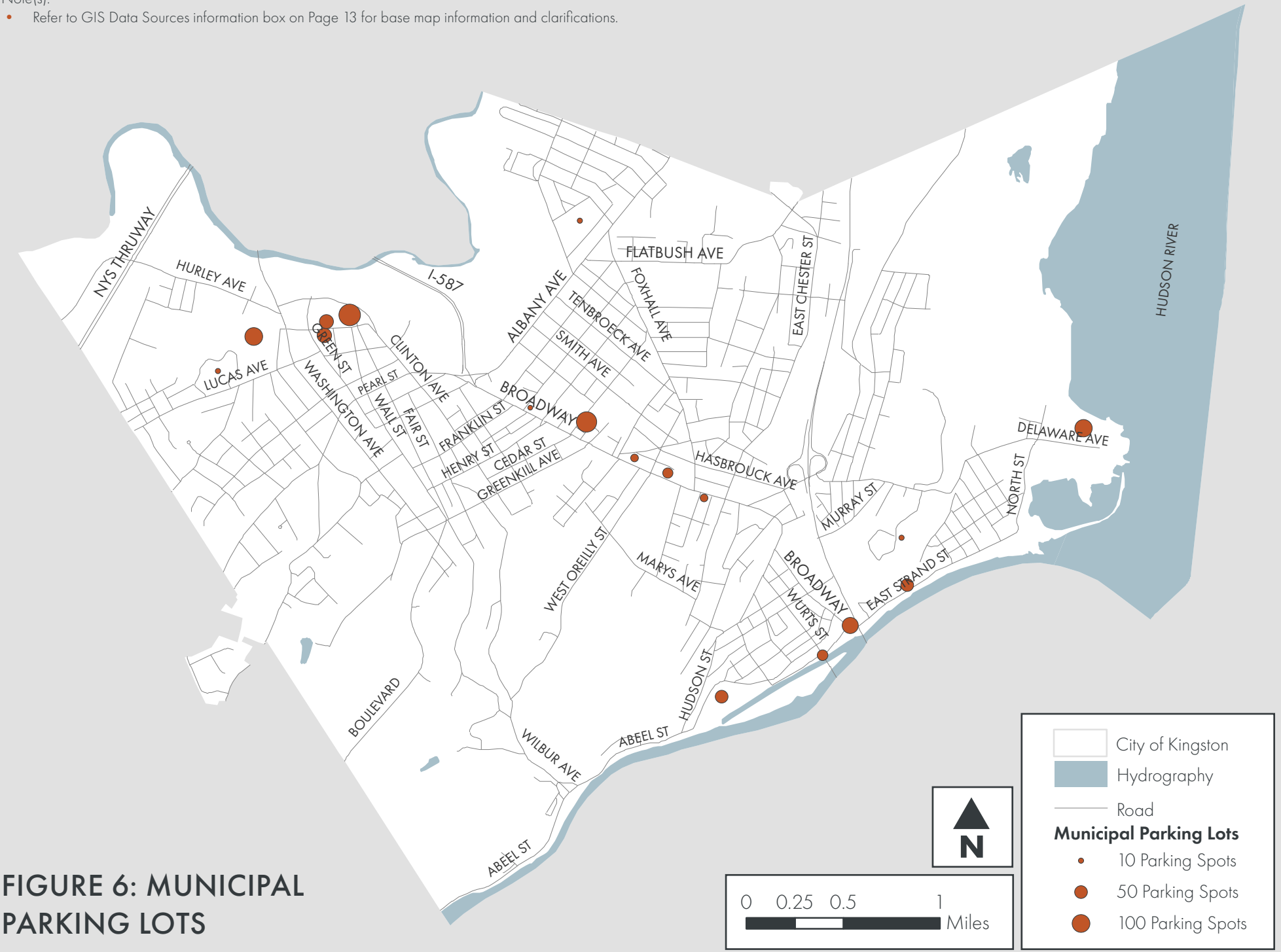


FIGURE 6: MUNICIPAL PARKING LOTS

PUBLIC TRANSPORTATION

At the time of drafting this plan, Fall 2022, public transportation services are provided by Ulster County Area Transit (UCAT), which has eight bus routes that serve the City, both locally and regionally (Figure 7). The yellow, red, and blue routes provide bus service throughout the City, and the other five routes provide access to nearby municipalities, including Ellenville, Saugerties, Poughkeepsie, New Paltz and Woodstock. The UCAT buses are currently free to use by the public. Paratransit and senior medical transportation is also provided. In August 2022, the County eliminated fares for the foreseeable future. After this draft was created, the Red route was incorporated into the Yellow route. In the spring of 2022, Ulster County targeted a planning grant award from the NYS Energy Research & Development Authority to complete Phase 1 of the County's Ulster Connect proposal. While this initial implementation proposal was ultimately not awarded by NYSERDA, the UCTC and UCAT will explore other opportunities for implementing a demand-response public transit service in near future.

Aside from UCAT, several other agencies provide transportation services as noted in the 2017 Ulster County Coordinated Public Transit-Human Services Transportation Plan, including Kingston Citibus (which merged with UCAT in 2019), Always There Home Care, the Arc of Ulster-Greene, Family of Woodstock, Inc., Gateway Industries, Jewish Family Services of Ulster County, Ulster County Department of Social Services - Early Intervention & Preschool Services, Ulster County Office for the Aging, and Ulster County Veterans Services Agency.

SIDEWALK INVENTORY

An Inventory of the City of Kingston's sidewalks was conducted as part of a previous study by UCTC. The presence of sidewalks along a vehicular right-of-way greatly enhances the ability for individuals to choose walking as their mode of travel, due to safety and comfort concerns. Increased pedestrian activity from the presence of sidewalks also contributes to the quality of life within a community through social cohesion and outdoor activity. Maps of sidewalk accessibility, bluestone sidewalks, and curb ramp accessibility illustrate the extent and condition of the City's sidewalk network, and help to identify gaps in the network (Figures 8-10). Maps of planned curb ramp improvements are provided in the Appendix. Large portions of the City's residential and commercial areas have sidewalks, however because of the City's use of historic bluestone sidewalks in many areas a large portion of City sidewalks are not fully accessible. The sidewalk accessibility survey, PLOS survey, and resident input have helped to identify significant gaps in the City's pedestrian transit network.

BICYCLE INFRASTRUCTURE

The City of Kingston currently has a five covered bicycle shelters and a few miles of bicycle lanes and shared roadways (i.e. road segments with sharrow markings). These bicycle facilities are segmented and many of the covered bicycle shelters are not connected to a bike lane or shared roadway (Figure 11).

Implementing bicycle infrastructure, like protected bicycle lanes, has found to be a challenge in the City of Kingston due to its many traditional, narrow right-of-ways that offer little room for reconfiguration. Despite this, Kingston has several on-road and off-road shared use path opportunities for bicyclists to traverse the City, and continues to make improvements to planned networks like the Empire State Trail and NYS Bike Routes (Figure 12). Based on data provided by Strava Metro, portions of Hurley Ave, Wall St, Greenkill Ave, and Abeel St experienced the highest amount of bicycle trips in 2020 (Figure 13). This data should be referenced when planning future bicycle infrastructure improvements.

TRAILS INVENTORY

Pedestrians and bicyclists in the City of Kingston currently have access to a number of off-road shared use paths as transportation options (Figures 11 and 12), many of which are part of the Kingston Greenline network, which totals around 20 miles. The Ulster County-owned Kingston Rail Trail, a segment of the O&W Rail Trail, takes pedestrians from northwest Kingston into neighboring Hurley, and beyond, into Marbletown. The newly opened Midtown Linear Park provides pedestrians with an off-road path between the Kingston Plaza and Midtown. On the foundation of the Ulster and Delaware (U&D) railroad corridor, the Kingston Point Rail Trail begins in Midtown and runs south to the waterfront, then east to the Hudson River, then north to join with the Hudson Brickyards Trail and continue on towards East Kingston and the Town of Ulster. The Wallkill Valley Rail Trail forks off of NYS Route 32 at Rockwell Lane and takes pedestrians south. Also of important note is that the City of Kingston is home to nine miles of the larger Empire State trail system. These trails continue past the City boundary and the study area for this project. Ulster County has studies that look at the larger connections, including the Ulster County Long Range Transportation Plan and the Ulster County State of the Trails (2020).

RAILROADS

Within the City limits are two passenger rail lines - the Catskill Mountain Railroad and the NY Trolley Museum Railroad - and one freight rail line owned by CSX. Three rail lines have also been converted into multi-use rail trails - the O&W Rail Trail, Ulster and Delaware (U&D), and the Wallkill Valley Rail Trail (Figure 14). Special considerations for pedestrian and bicycle safety need to be made where these active rail lines and rail trails cross roadways.

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

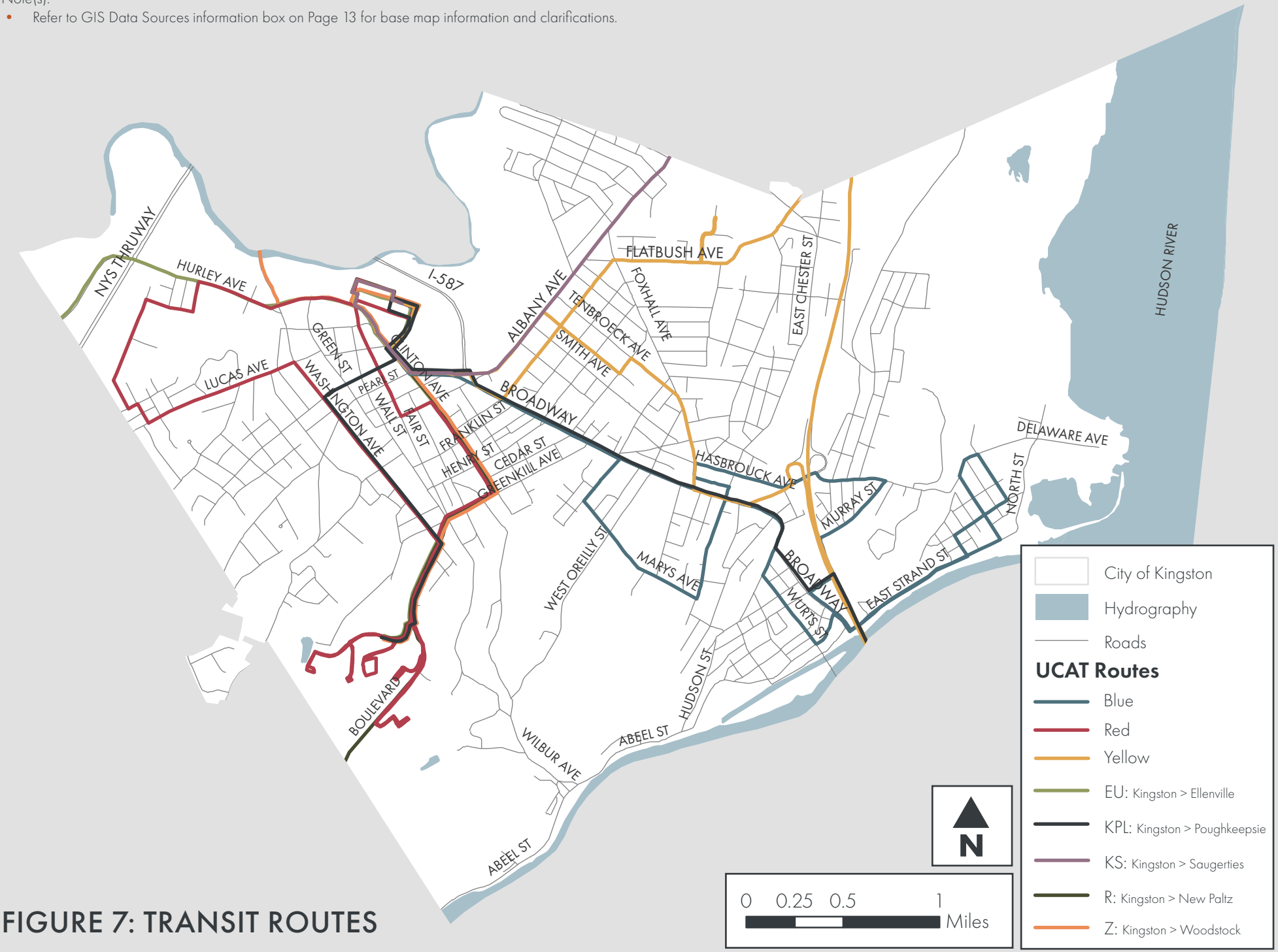


FIGURE 7: TRANSIT ROUTES

Note(s):

- Temporary obstacles present at the time of data collection, such as construction debris, may impact the accessibility score of a sidewalk segment. This data is also available online through Ulster County's ArcGIS Online profile, and may be referenced for updated evaluations.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

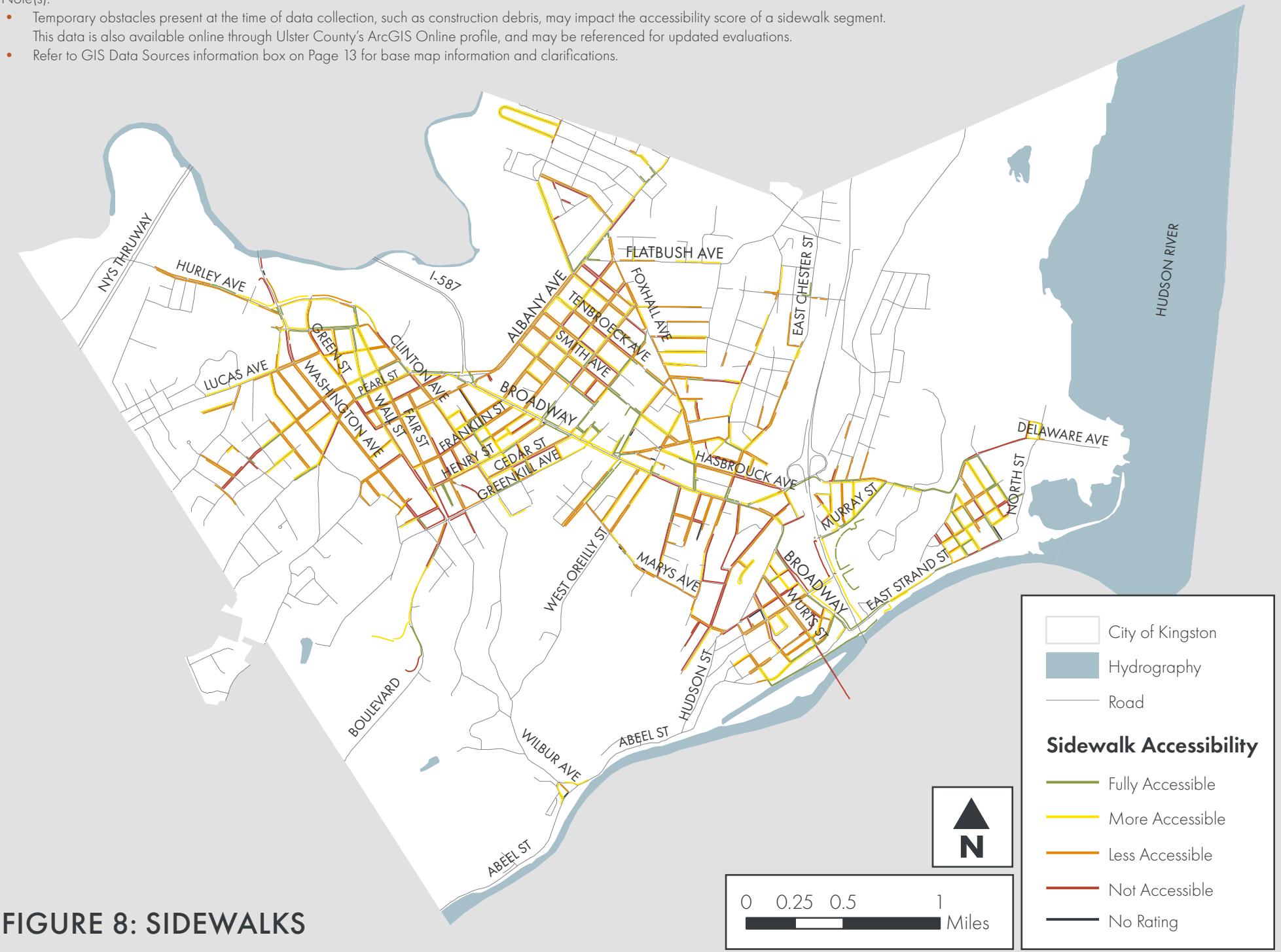


FIGURE 8: SIDEWALKS

Note(s):

- This data is also available online through the City of Kingston's ArcGIS Online profile.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

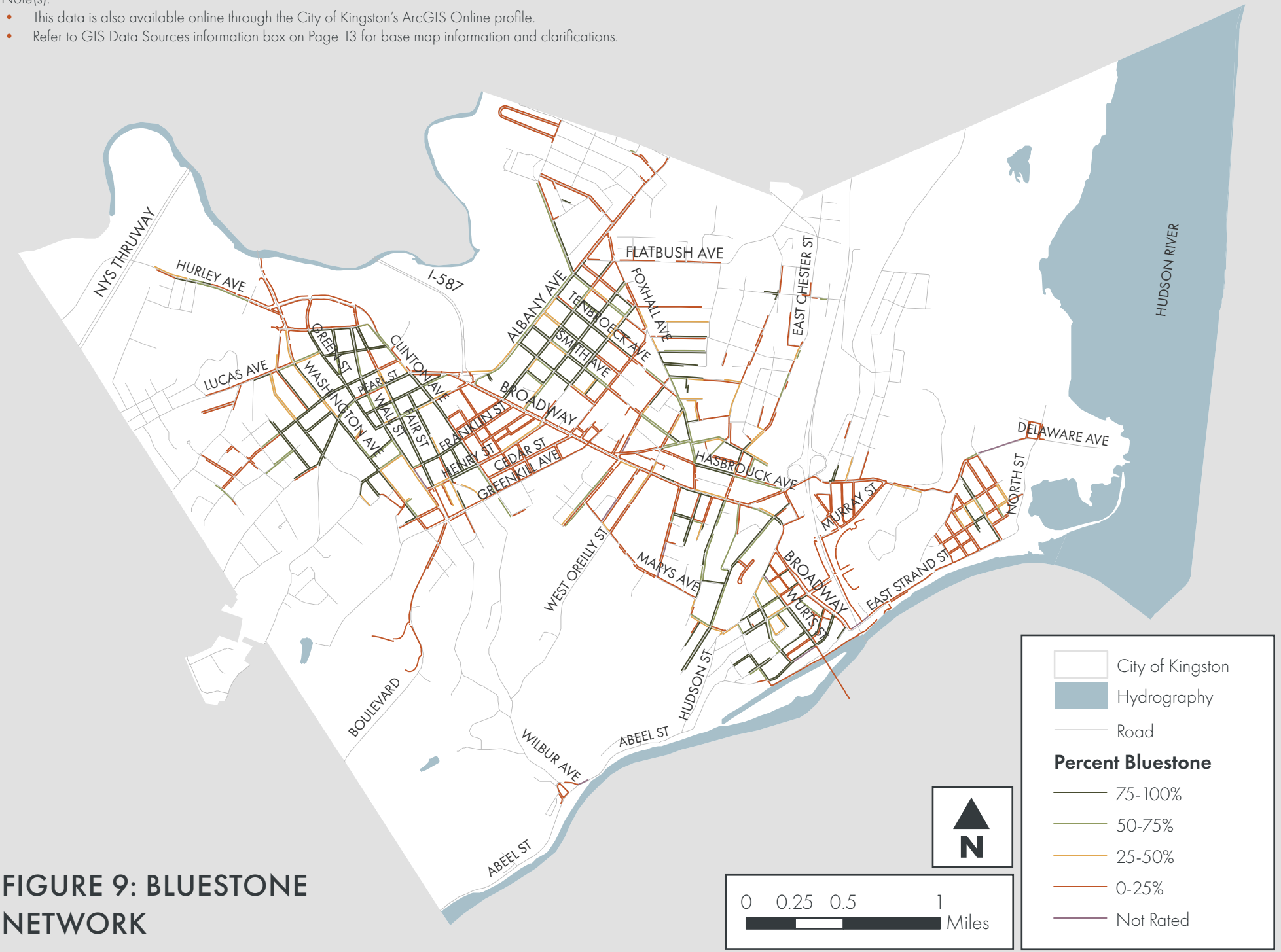


FIGURE 9: BLUESTONE NETWORK

Note(s):

- This data is also available online through Ulster County's ArcGIS Online profile.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

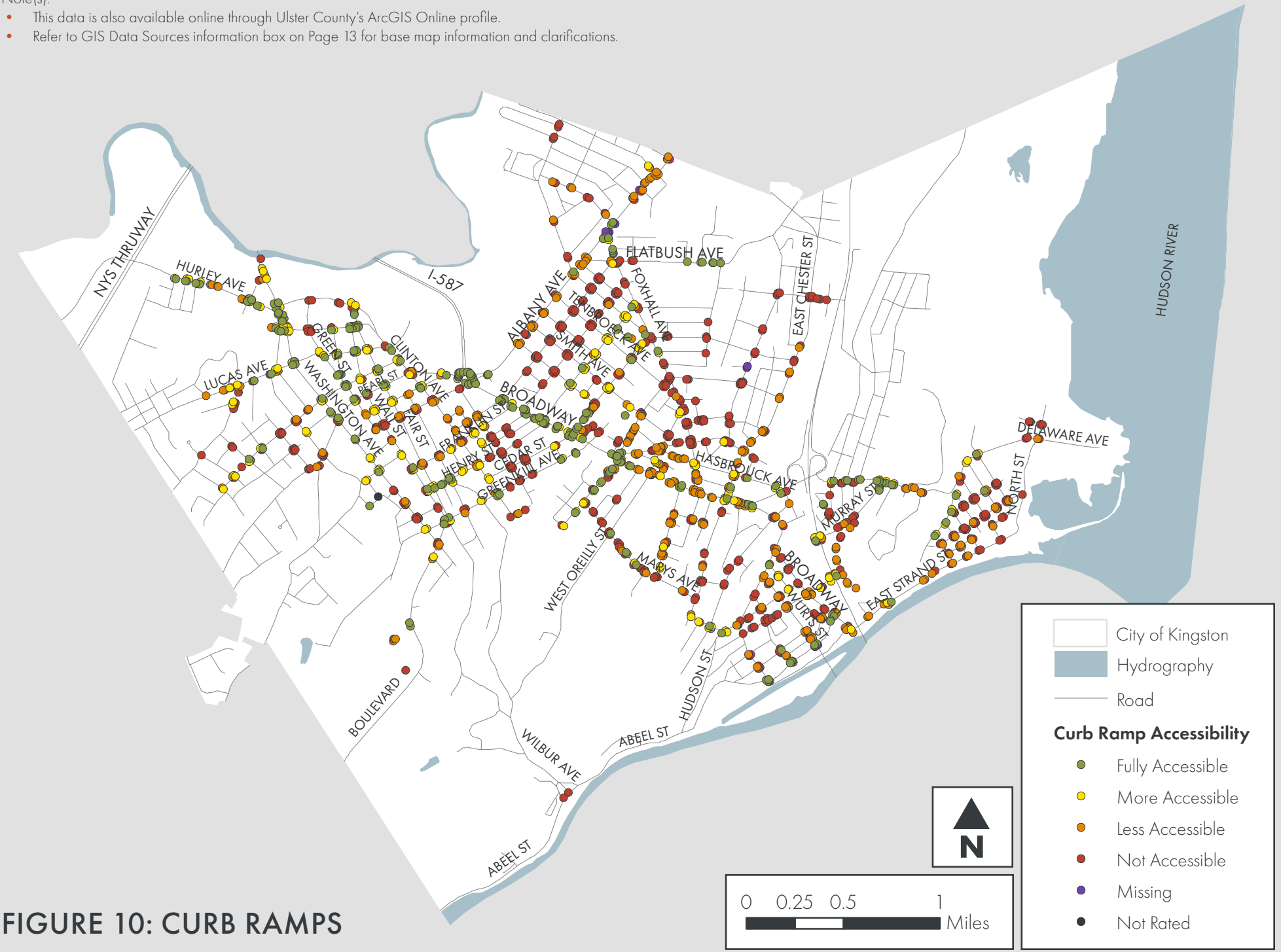


FIGURE 10: CURB RAMPS

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

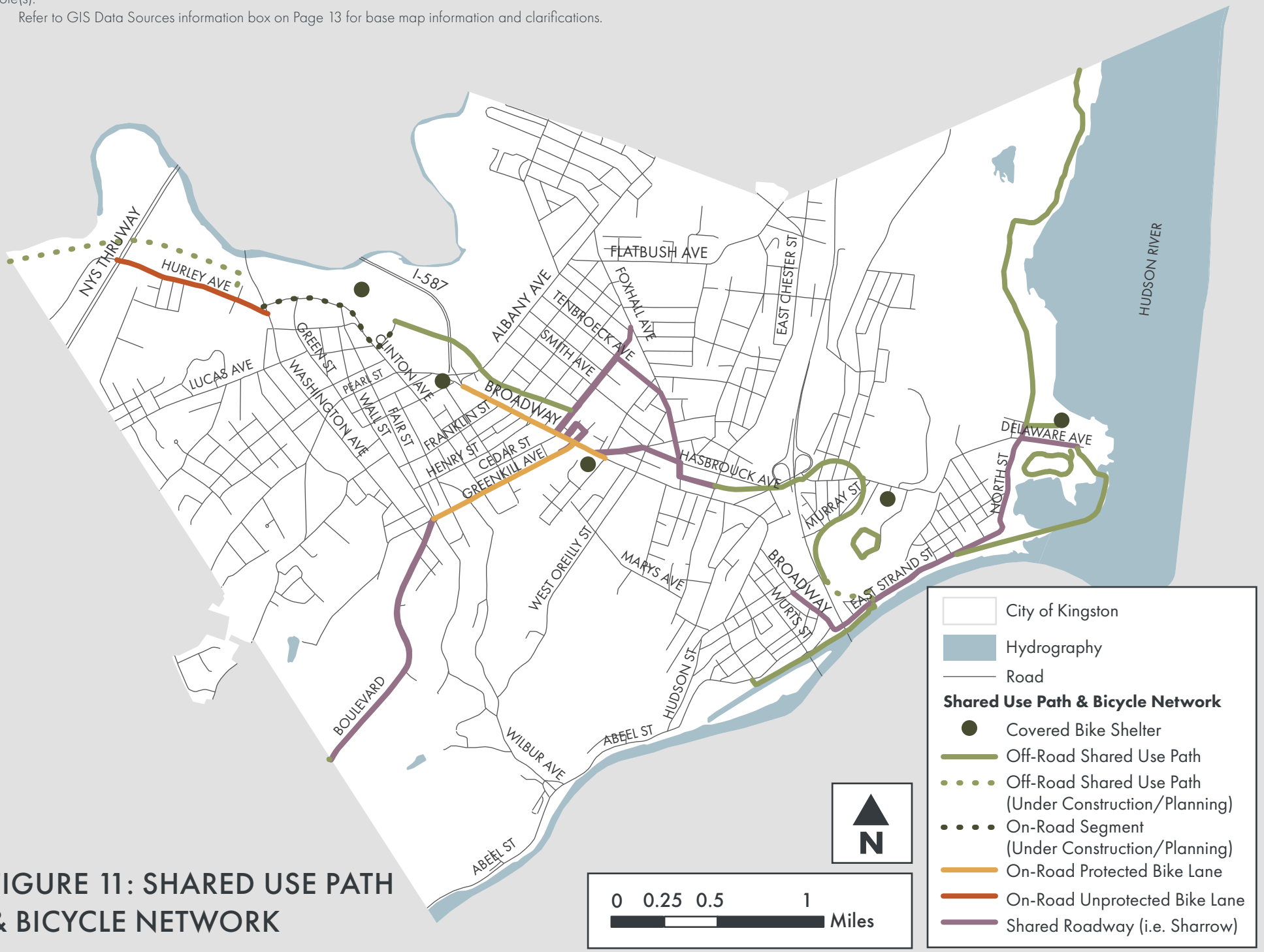


FIGURE 11: SHARED USE PATH & BICYCLE NETWORK

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

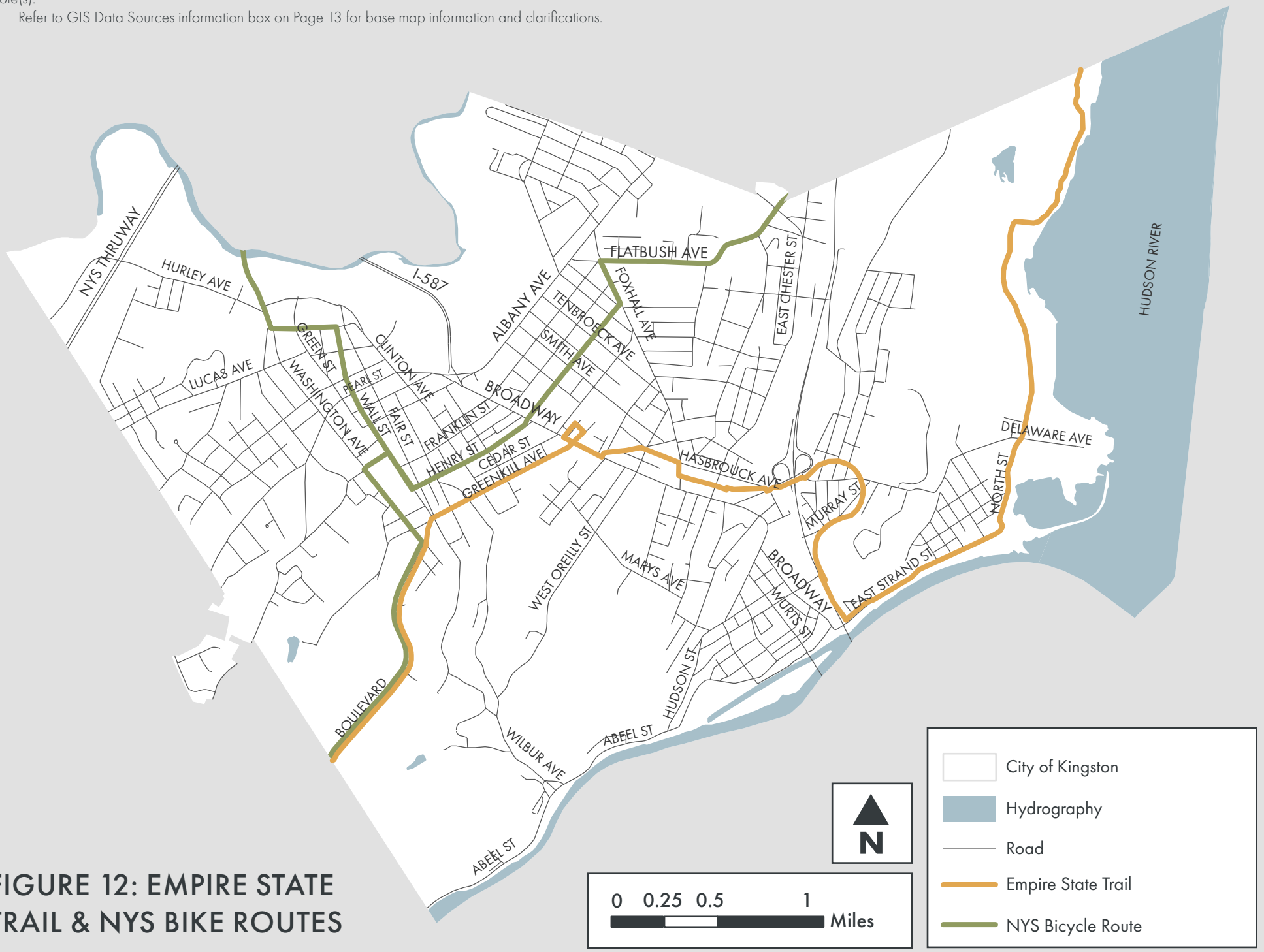


FIGURE 12: EMPIRE STATE TRAIL & NYS BIKE ROUTES

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

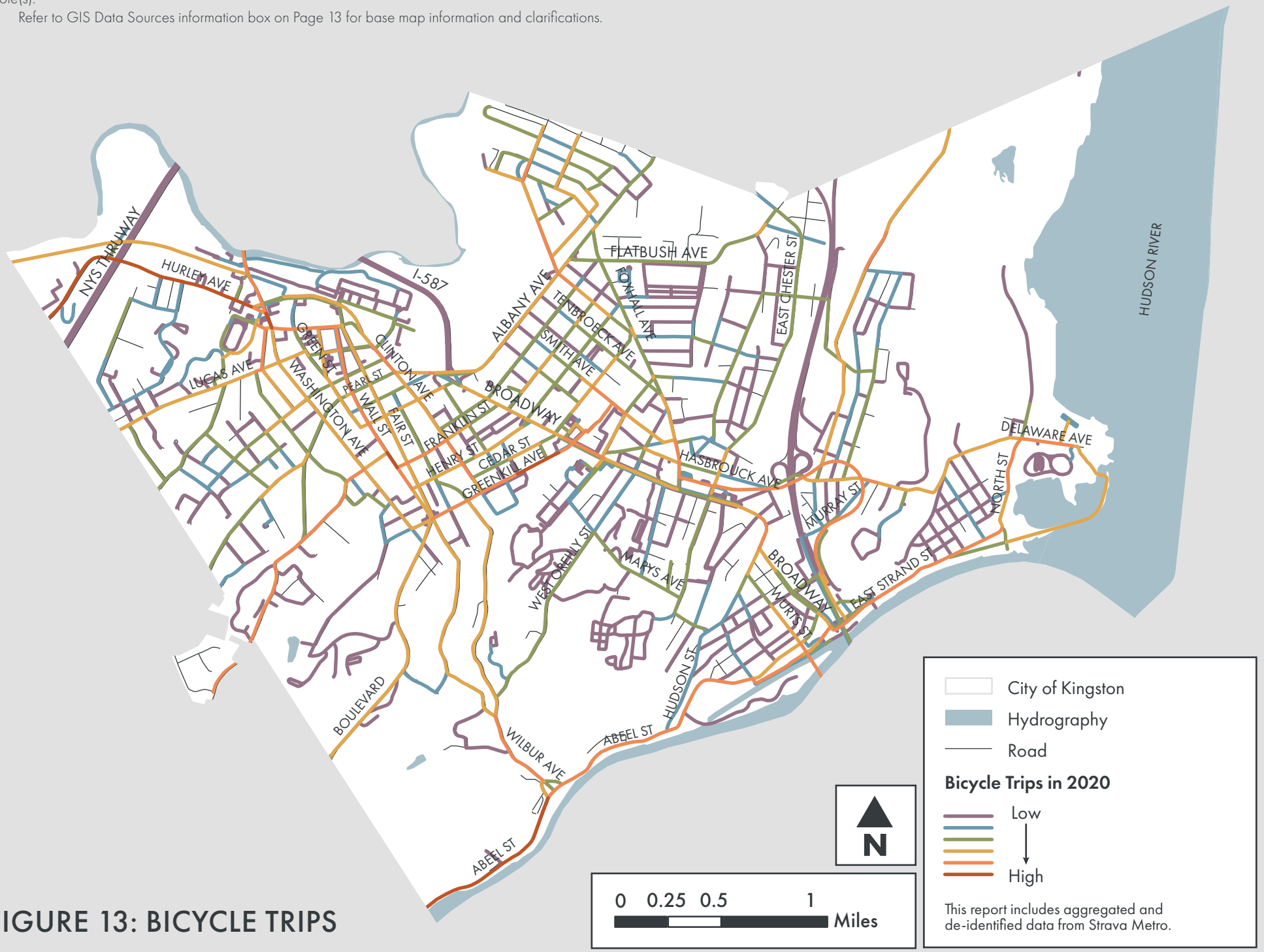


FIGURE 13: BICYCLE TRIPS

Note(s):

- The Ulster and Delaware (U&D) railroad corridor between Cornell St and E Chester St has been built upon. This section of the Greenline is navigated on roads.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

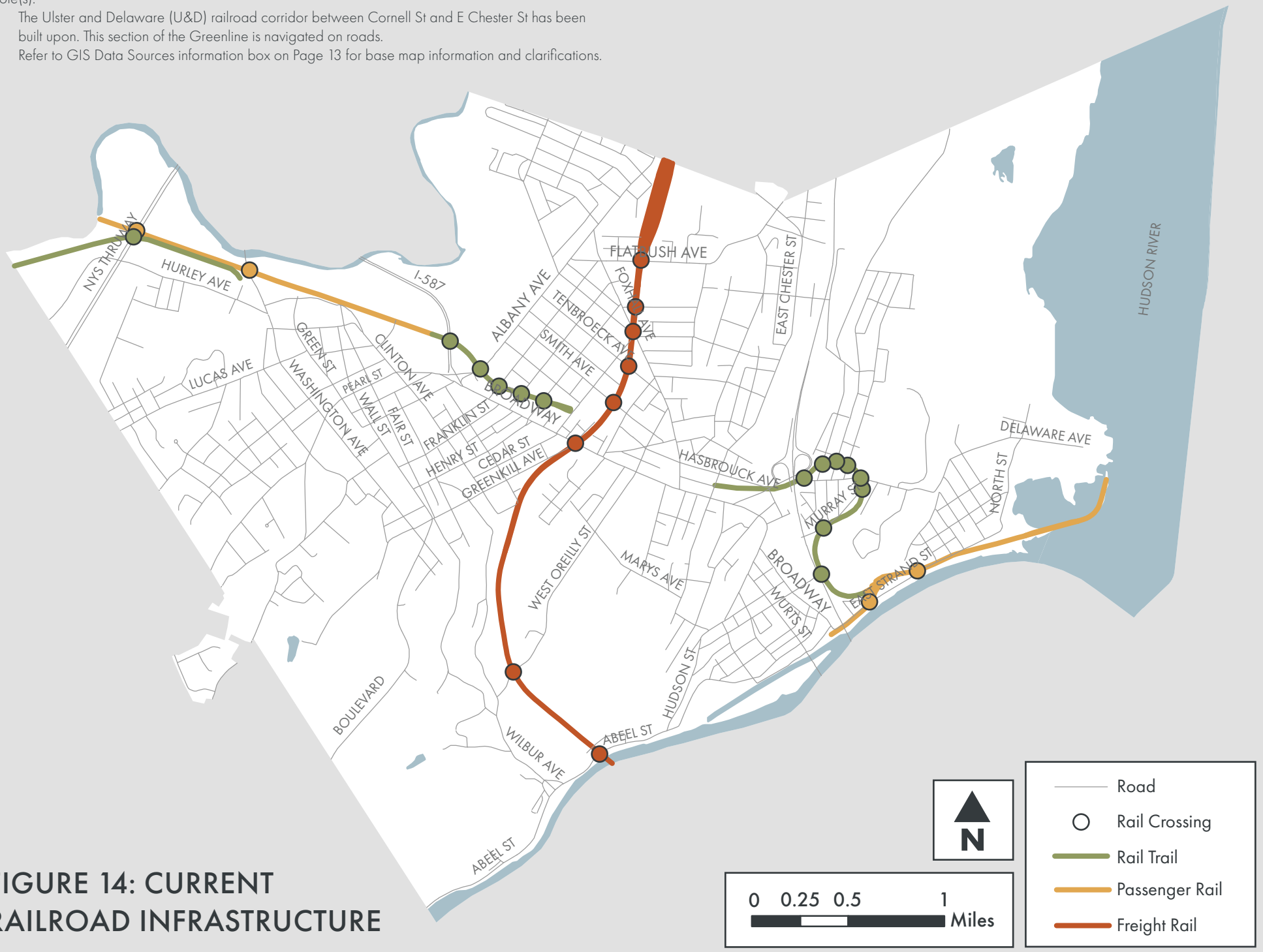
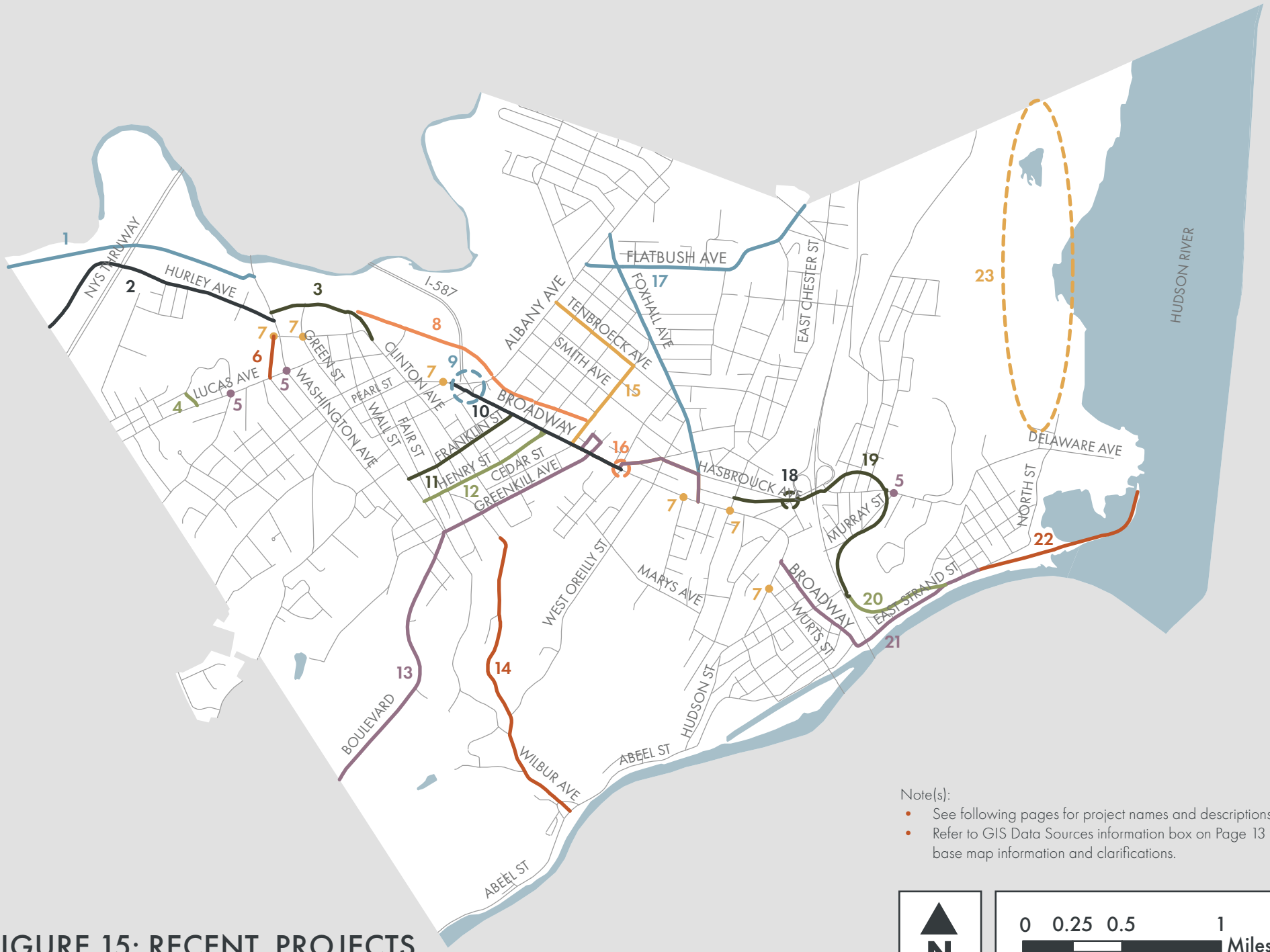


FIGURE 14: CURRENT RAILROAD INFRASTRUCTURE



Note(s):

- See following pages for project names and descriptions.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

N

0 0.25 0.5 1 Miles

FIGURE 15: RECENT PROJECTS

Recent Projects

The City of Kingston and its partners at the Ulster County government have already demonstrated a commitment to improving its active transport facilities with a variety of improvement projects in various stages of completion. It is important to note that several roadway and active transportation projects were planned, ongoing, or recently completed at the time that this PBMP was developed. The anticipated/realized impacts of these projects may not be fully represented within this Inventory & Analysis. Moreover, some priority areas were omitted from this PBMP's recommendations as improvements were underway at the time of writing. The status of these projects may have changed, please visit EngageKingston.com for updates. A list of all known improvement projects in the City that were recently completed and ongoing during the course of this project is included below and depicted in Figure 15.

COMPLETED IMPROVEMENTS PROJECTS

2. Hurley Ave Revitalization Project

- 16 ADA-compliant curb ramps were installed along Hurley Ave and the roadway was restriped.
- Bike lanes were installed between Washington Ave and the Thruway overpass, while the shoulder was widened between the Thruway overpass and City line in order to improve bicyclist safety.
- Construction of this project was completed in spring 2020.

4. Burhans Blvd Safe Routes to School (SRTS)

- New sidewalks were installed on Burhans Blvd to improve the safety of walking routes leading to nearby schools.
- The installation was completed in 2017.

5. Safe Routes to School (SRTS) Pedestrian Signals

- New pedestrian signals were installed at the intersections of Lucas Ave and Washington Ave, Lucas Ave and Millers Ln, and Murray St and Delaware Ave to improve the safety of walking routes leading to nearby schools.
- The installations were completed in 2017.

6. Joys Ln Safe Routes to School (SRTS) Speed Humps

- Speed humps were installed on Joys Ln to improve the safety of walking routes leading to nearby schools.
- The installations were completed in 2017.

7. Pedestrian Safety Action Plan Improvements

- The goal of the project was to improve pedestrian safety at several intersections: Joys Ln and Municipal Stadium Rd, Broadway and McEntee St, Yosman Towers, Delaware Ave and Andrew St, North Front St and Crown St, and Albany Ave and Maiden Ln.
- Improvements included ADA-compliant curb ramps/extensions, high-visibility crosswalks, and pedestrian signal updates (e.g. countdown timers, signal timing).
- Construction was completed Fall of 2022.

9. I-587 Intersection Project

- The intersection of Albany Ave, I-587, and Broadway was converted to a roundabout to improve vehicle, pedestrian, and bicyclist movement.
- A final design was completed in 2018. Construction at the intersection began in November of 2019 and was completed in August of 2021.

10. Broadway Streetscape Project

- This project was a redesign of Broadway between St. James St and Grand St to include new, improved bicycle and pedestrian facilities.
- Conceptual plans were completed in 2015 and developed to a final design by 2019. Construction began in 2020 and was completed in 2022.

11. Franklin St Complete Streets

- The project included street trees, new sidewalks, and ADA-compliant curb ramps, bicycle infrastructure, and crosswalks along the length of Franklin St.
- A preliminary design concept was completed in 2021 and construction was completed in late 2022.

13. NYSDOT Empire State Trail Project

- This work included shoulder bicycle lanes on Route 32, a cycle track on the southern portion of Greenkill Ave, a shared us path on the northern portion of Greenkill Ave, shared roadways connecting Greenkill Ave to the cycle track on Broadway, shared roadways on Prince St, Jansen Ave, and Hasbrouck Ave, and wayfinding signage to connect the Wallkill Valley Rail Trail to the Kingston Point Rail Trail.
- Final plans were completed in 2019. Construction began in February of 2020 and was completed in November of 2020.

14. Wilbur Ave Repaving

- Wilbur Ave was repaved and restriped with a 3-foot shoulder, slightly improving conditions for bicyclists along this corridor.
- Construction was completed in 2022.

15. Midtown Shared Streets

- This project included the installation of shared roadway markings and signage on Cornell St, Ten Broeck Ave, Foxhall Ave, and Jansen Ave to connect Midtown Kingston to the Kingston Point Rail Trail.
- The final design was completed in 2016 and implemented in 2016 and 2017.
- This project also included bicycle parking and ADA facilities on Cornell St.

16. Broadway and Grand Intersection Improvements

- This project was a realignment of the intersection of Broadway, Grand St, Prince St, and Pine Grove Ave to make the intersection safer for motorists, pedestrians, and bicyclists.

19. Kingston Point Rail Trail, Phase 1

- This paved, off-road trail connects Midtown Kingston to the Rondout District with trailheads at Jansen Ave (Midtown) and Garraghan Dr (Rondout).
- NYSDOT approved a design and construction began in 2018. Construction was completed and the trail was opened to the public in September of 2019.
- This trail was included in a 2023 RAISE application for the Weaving the Waterfront Transportation Project.

22. Kingston Point Rail Trail, Trolley Section

- Construction was completed and the trail was opened to the public in 2019.
- The stone dust trail connects East Strand St in the Rondout District to Kingston Point.
- Shoreline stabilization efforts are ongoing as the trail is challenged by active shoreline erosion.
- This trail was included in a 2023 RAISE application for the Weaving the Waterfront Transportation Project.

23. Hudson River Brickyards Trail

- Construction began in 2019 and was completed December 2020 and the trail was opened to the public January 1, 2021.
- The paved riverfront trail connects Kingston Point to East Kingston.
- This area was included in a 2023 RAISE application for the Weaving the Waterfront Transportation Project.

ONGOING IMPROVEMENT PROJECTS

1. Kingston Rail Trail Project

- Ulster County created a final design report for a trail connecting Uptown Kingston at Washington Ave to the neighboring Town of Hurley.
- The project will commence in 2023, with completion anticipated in 2024.

3. Uptown Transportation Improvements

- This DRI-funded project proposes Complete Streets facilities along with traffic and pedestrian improvements along parts of Clinton Ave.
- Conceptual plans have been developed and construction of the Clinton Ave portion of the project is scheduled for Summer 2023.

8. Ulster County Midtown Linear Park

- This trail connects the Kingston Plaza to Midtown Kingston at Cornell St.
- The trail was completed in 2022. Final staircase to Elmendorf will be completed Spring 2023.
- While this is a County-led project on a County-owned right-of-way, the City of Kingston will be assuming maintenance of this right-of-way in 2023.

12. Henry St Safe Routes to School

- This project proposes repaving and striping Henry St for two lanes of shared bicycle and motor vehicle traffic and on-street parking on both sides of the street, as well as installing new, ADA-compliant sidewalks and curb ramps.
- A design concept was developed in 2021 and construction is scheduled to begin in Spring 2023.

17. Safe and Accessible Flatbush and Foxhall

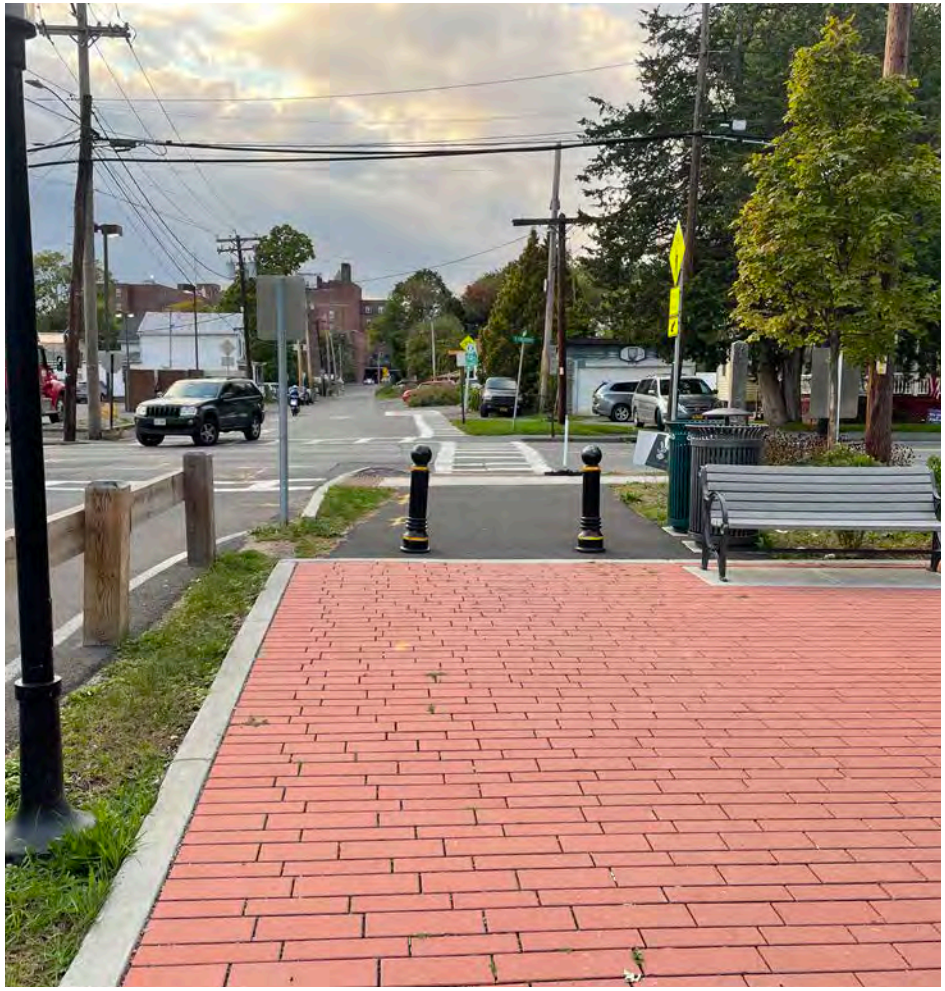
- This project proposes to connect the Colonial Gardens Apartments on Flatbush Ave and the residential areas along Foxhall Ave to Midtown by rehabilitating existing sidewalks, installing new sidewalks, installing bicycle accommodations, and improving crosswalks and curb ramps at crossings along the Foxhall Ave and parts of the Flatbush Ave corridors.
- Construction drawings have been developed and the City hopes to begin construction on this project in 2024 and 2025.

18. Hasbrouck Delaware Parklet

- This project aims to complete a pocket park at the corner of Hasbrouck Ave and Delaware Ave that will provide access to the Kingston Point Rail Trail via stairs.
- Hardscape for the parklet was completed in late 2018. Installation of the proposed staircase and landscaping features have not yet occurred.

20. Kingston Point Rail Trail, Phase 2

- This proposed section of trail will connect the Kingston Point Rail Trail's first phase to the Kingston Point Rail Trail Trolley Section.
- Conceptual drawings were created in November of 2019, but the project is on hold indefinitely as the City seeks further funding.
- This trail was included in a 2023 RAISE application for the Weaving the Waterfront Transportation Project.



E Chester St Trailhead for the Kingston Point Rail Trail, Phase 1

21. Waterfront Shared Streets

- A shared streets design was completed in 2016 and sharrows and signage were installed on waterfront streets in the Rondout District in 2017.
- Additional Complete Streets facilities related to this project are being considered as part of the ongoing Rondout Riverport Shoreline Stabilization and Public Access Project. A contract for this work was awarded in 2018.
- The segment east of Broadway was included in a 2023 RAISE application for the Weaving the Waterfront Transportation Project.

SAFETY ANALYSIS

LONGITUDINAL ROAD GRADE ANALYSIS

The longitudinal grade, or slope, of every road within the City was calculated in order to determine areas of concern for bicyclists. The higher the road grade, the more difficult it is for bicyclists to maintain control of their speed and stop while traveling downhill. The graphic to the right describes the impact of various road grades on bicyclists and implications for bicyclists of varying skill levels and capabilities.

Based on the longitudinal road grade analysis, the majority of roads within the City of Kingston are relatively easy for all riders, not particularly challenging, or manageable for all riders over short periods (Figure 16). Approximately 72.7% of road segments in the City are within the 0-5% slope range and only 6.6% exceed a 10% slope. Road segments that do have a steep slope are typically short in length.

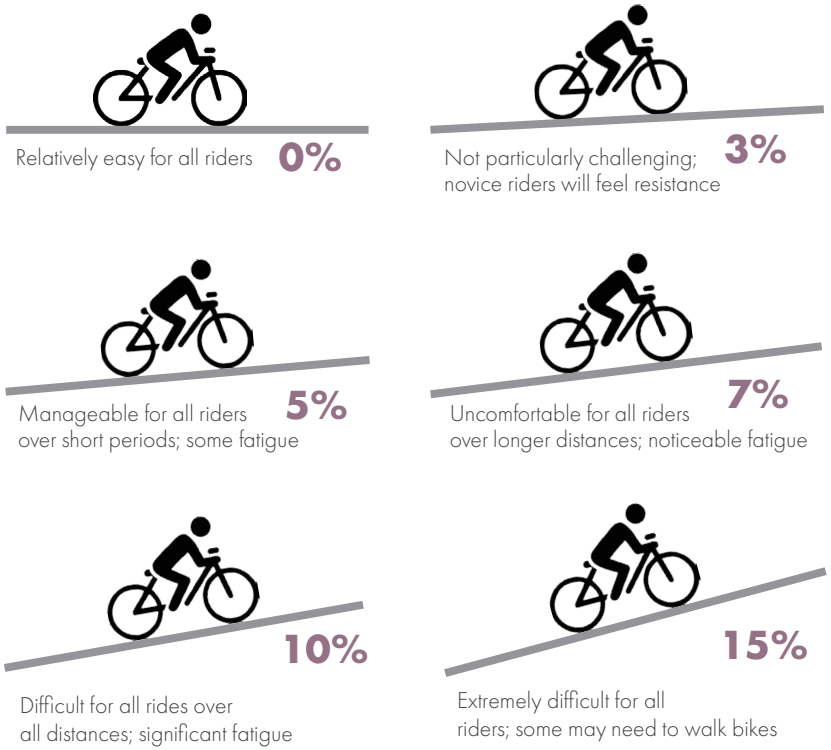
CRASH ANALYSIS

The Ulster County Transportation Council (UCTC) provided the City with 10-year (February 2012-September 2021) crash data from the Accident Location Information System (ALIS). All crashes, regardless of the type of incident were mapped, and a kernel density analysis was performed to determine where the "hot spots" were located in terms of crash density. It is important to note that these crash numbers are from reported crashes only, and do not account for pedestrian and bicyclist incidents that were not reported to the police, or were "close-calls," but not actual collisions. It is also important to note that the crash density analysis only reflects volume of crashes, and is not an indicator of road design or engineering deficiency - further analyses would be needed to understand the reasons for crash "hot spots."

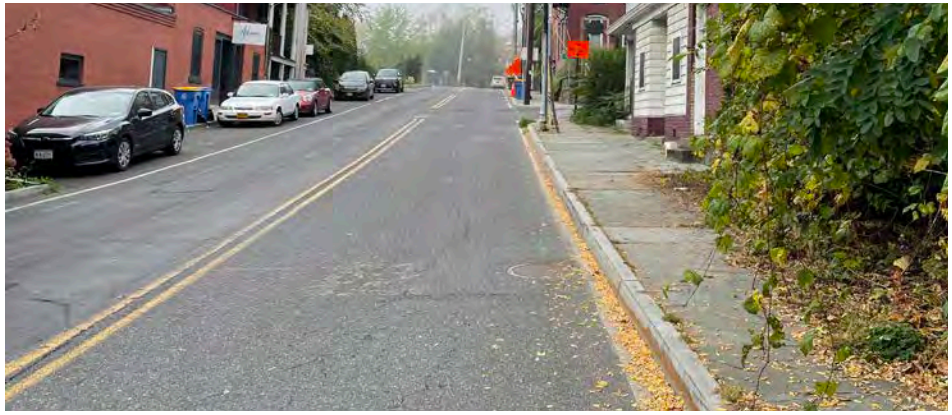
As seen in Figure 17, the concentration of crashes is located primarily along the Broadway Corridor. This is to be expected, as this is the central artery of the City and there is a high level of activity. In addition, due to recent extensive work on Broadway, crash experience prior to 2021 is not a good predictor of future crash rates in this corridor. It is recommended that the City continue to review the collected crash data from the UCTC over the coming years, particularly to analyze and understand the Broadway corridor and the impacts of the recent improvements to determine if further adjustments are required.

While the Figure 17 data from the UCTC only captures crashes until mid September 2021, the City of Kingston has seen an increase in pedestrian and bicycle fatalities in the years since 2020. This matches national trends as described by Smart Growth America in their Dangerous by Design report which states "Driving went down in 2020, but deaths of people walking increase 4.7%, and 2021 will likely represent a

BICYCLISTS & ROAD SLOPE



This segment of Abeel St between Broadway and Wurts St is an example of a road segment with a slope of approximately 5.7%.



Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

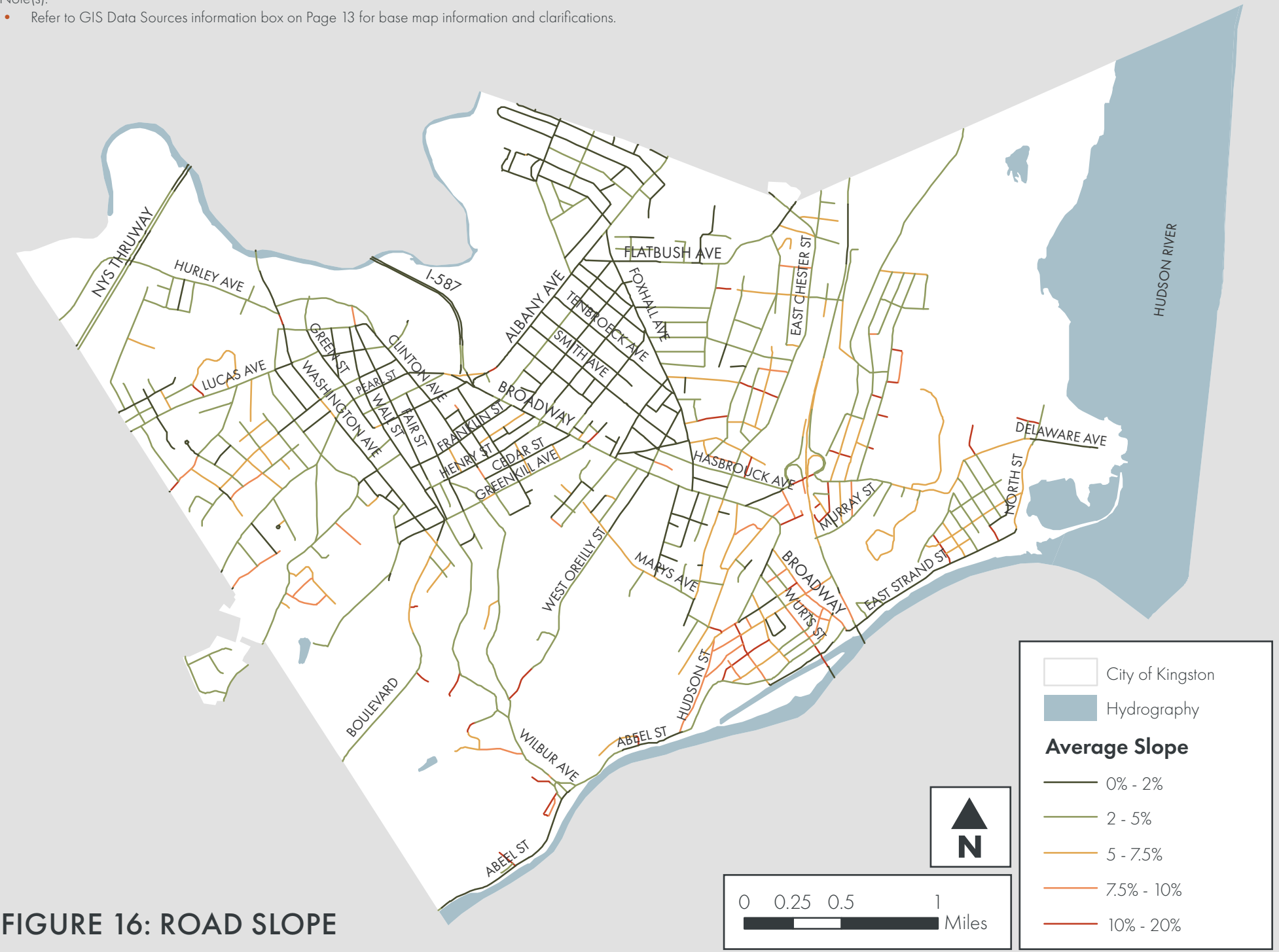


FIGURE 16: ROAD SLOPE

Note(s):

- Data shown here was collected before the reconstruction of Broadway, from I-587 to Prince/Pine Grove.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

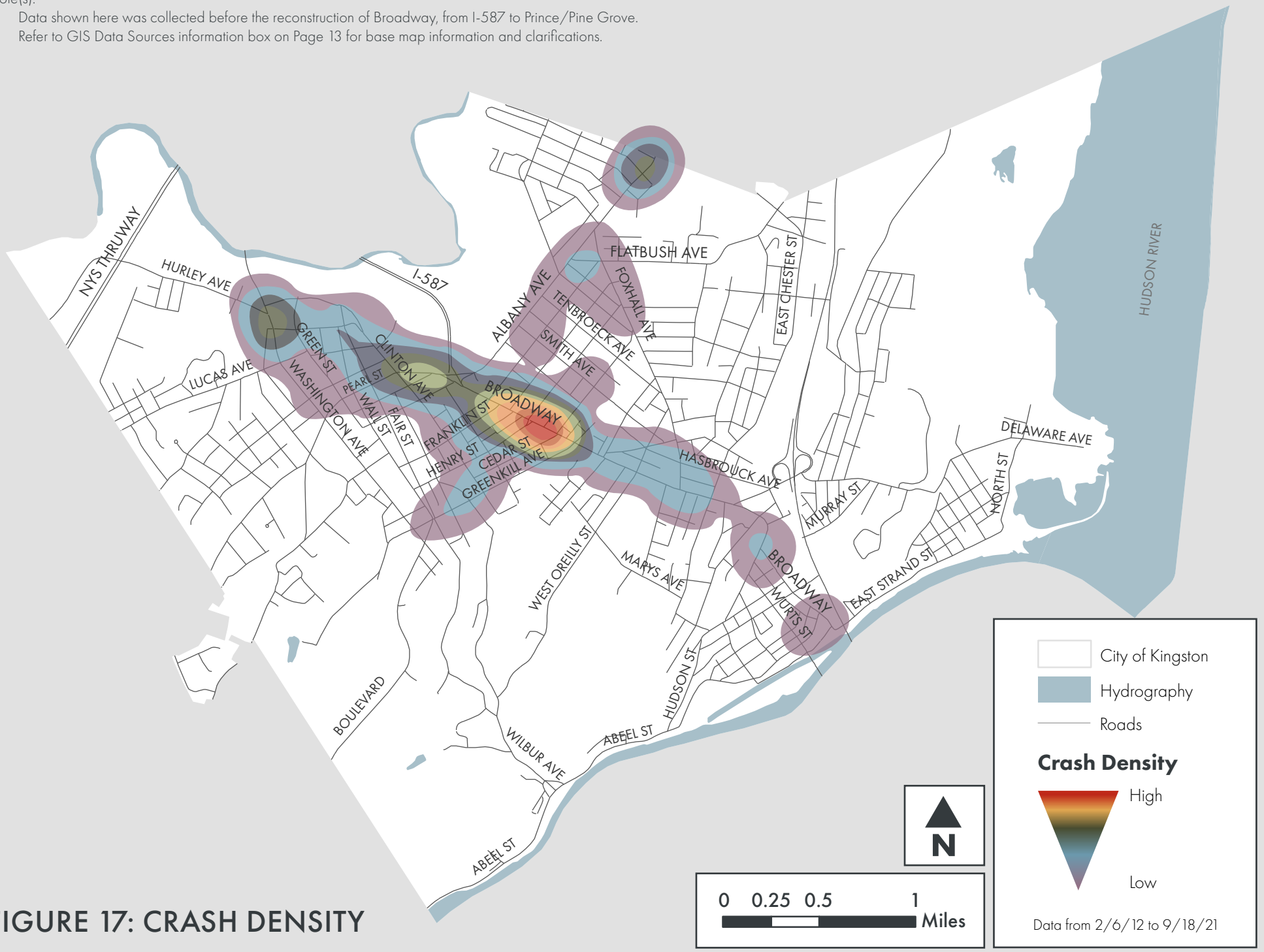


FIGURE 17: CRASH DENSITY

historic one-year increase." Bicyclists' deaths happened on Greenkill Ave, Broadway at the Roundabout, Pine Grove, and Washington Ave, and a pedestrian was killed on Wurts and Spring Streets.

EXISTING BICYCLING & PEDESTRIAN CONDITIONS

An important element of any pedestrian and bicycle planning initiative is to gauge how well the area's roadways accommodate users of the transportation system. While qualitative characterizations can be made by expert observation or received through public or stakeholder input, an objective and defensible system-wide evaluation is also useful in setting the stage for identifying and prioritizing facility improvements.

An evaluation of existing bicycling and pedestrian conditions was conducted for a study network of arterial and collector roads in the City. This network is comprised of approximately 169 directional segments totaling about 19 centerline miles (with 36 miles of directional analysis) and is depicted in the map in Figure 18.

The analyses used are the Bicycle & Pedestrian Level of Service Models, based on data collected in December 2021. These models, which have been applied on hundreds of thousands of miles of roads throughout the United States, are fundamental performance measures and design tools in the Highway Capacity Manual (HCM 2010). The following sections provide background information and data descriptions for these evaluation tools.

As described in the following section, the analysis results indicate fair to poor bicycling and walking conditions for many of the study area segments, with only approximately 36% of roadways being rated as good or excellent for biking and 28% for walking.

BICYCLE & PEDESTRIAN LEVEL OF SERVICE

The Bicycle Level of Service (BLOS) Model and Pedestrian Level of Service (PLOS) Model are objective measures of bicycling and walking conditions of a roadway which provide a modeled approximation of a typical user's perceived safety and comfort with respect to motor vehicle traffic and roadway conditions. Based off research documented in *Transportation Research Record 1578* (published in 1997), these nationally adopted and widely used (the NYSDOT refers to LOS models in Chapter 5 of the *Highway Design Manual*) methodologies quantify the quality of accommodation (or "level of service") for bicyclists and pedestrians. A benefit of incorporating the BLOS and PLOS is the indication they provide regarding which network segments have the greatest needs. They use the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. These methods are not limited to assessing conditions; results can be used to provide a snapshot of existing bicycling and walking conditions, identify roadways that are candidates for reconfiguration for pedestrian and bicycle facility improvements, conduct a benefits comparison among proposed facilities and roadway cross-sections, and to prioritize and program roadways for such improvements.

The BLOS Model is statistically robust and clearly reflects the effect on bicycling suitability or "compatibility" due to:

- Average daily traffic,
- Percent of heavy vehicles (trucks),
- Posted speed limit,
- Number of traffic lanes,
- Width of pavement outside of edge line,
- On-street occupied parking,
- Pavement condition, and
- Presence of designated bike lane.

In a similar manner, the PLOS Model incorporates:

- Average daily traffic,
- Percent of heavy vehicles (trucks),
- Posted speed limit,
- Number of traffic lanes,
- Width of pavement outside of white line,
- On-street occupied parking,
- Presence of street trees, and
- Presence and width of sidewalk.

The level of service analysis produces, for each study network segment, an objective score and "grade" which measures accommodation on that section of roadway, described in the tables at right.

LOS Analysis is an objective quantification of a roadway's cross-sectional properties. The LOS grade is a representation of how well a given transportation corridor provides

physically separate lanes of travel for pedestrians, bicycles, and automobiles. Important yet often overlooked factors that contribute to a good LOS grade, or whose absence can lead to a poor LOS grade, include vertical barriers between pedestrians and automobiles (such as consistently-spaced tree plantings in the sidewalk buffer area), wide shoulders that allow for greater horizontal spacing between automobiles and pedestrians/bicyclists, and both the availability and use of on-street parking spaces (which, when occupied, provide an additional barrier between street and off-road pedestrian/bicyclist traffic).

The current LOS Model used in this study has been calibrated through application to more than 100,000 miles of roads throughout North America, and is meant to be objective. The LOS grades present an accurate picture of a transportation corridor's safety for pedestrians and bicyclists in the context of the LOS Model's variables. However, this picture is incomplete as it excludes some factors that greatly affect user perception because they cannot be effectively measured. User perception and overall accessibility of a corridor's LOS can differ from the calculated LOS score due to factors like:

- Driver behaviors (e.g. speeding motorists, distracted driving)
- Visual obstructions (e.g. roadway geometry, vegetation, structures)
- Overgrown vegetation
- Tight turns
- Steep grades
- Sidewalk condition (e.g. presence of tripping hazards)
- Right-of-way striping condition
- Curb-ramp accessibility
- Intersection crossing signage/signalization
- Other hazards or accessibility features that cannot be represented in the current LOS Model

Therefore, the LOS Analysis on its own does not comprise a full transportation network study. Rather, the LOS Analysis works in concert with the subjective components of a study and is best used to substantiate perception-based claims of unsafe roadways and to draw attention to unsafe corridors that may not have been identified by public input.

Level of Service	Description
A	Excellent; optimal conditions
B	Good, small number of factors impeding pedestrian safety and comfort
C	Fair; provides basic accommodation
D	Poor; uncomfortable for new users
E	Very Poor; unsuitable for bicyclists/pedestrians
F	Failing

Note(s):

- Fair St between N Front St and Schwenk Dr was included in the LOS study network, but is planned for removal as part of the Kingstonian development.
- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

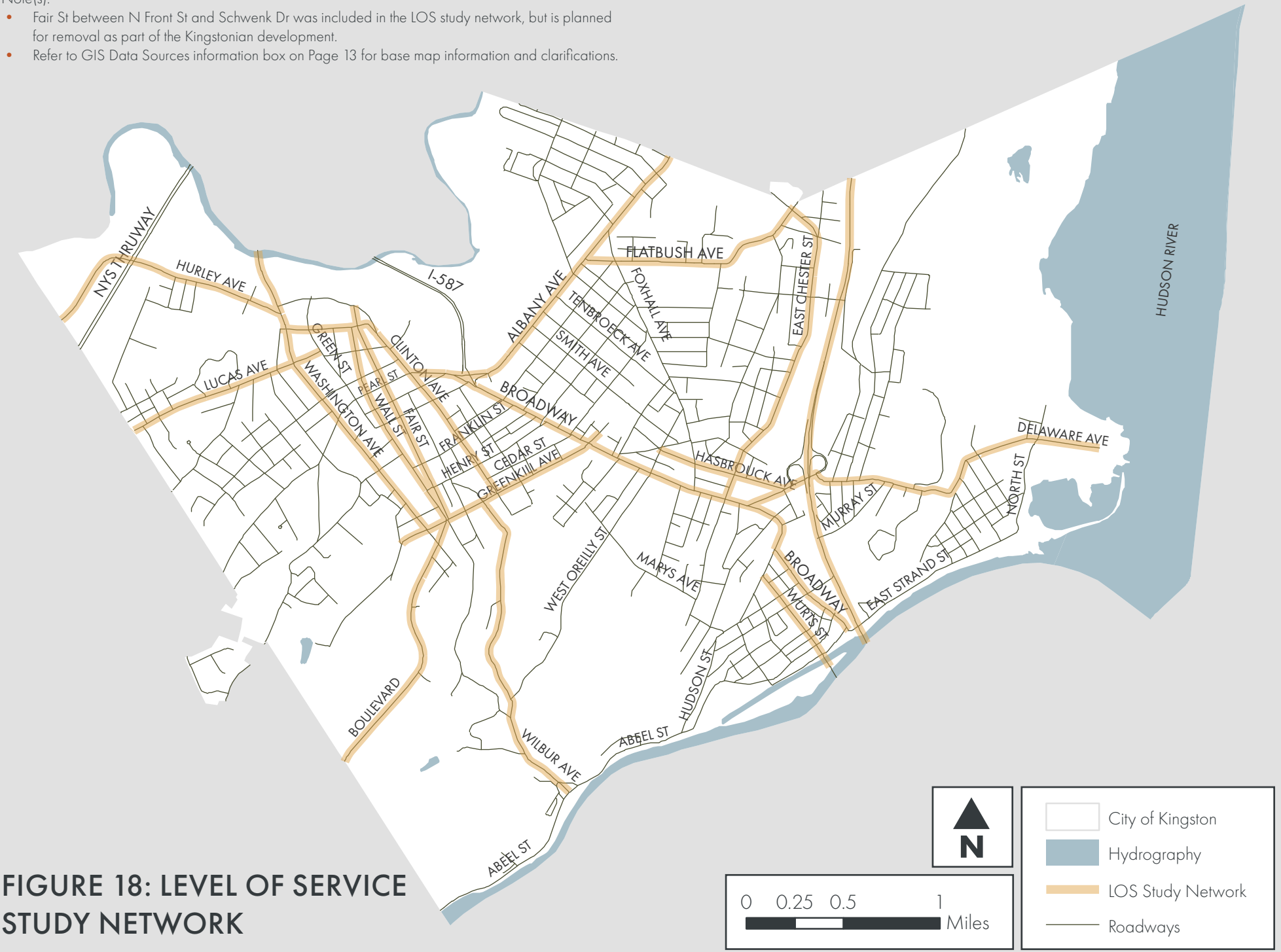
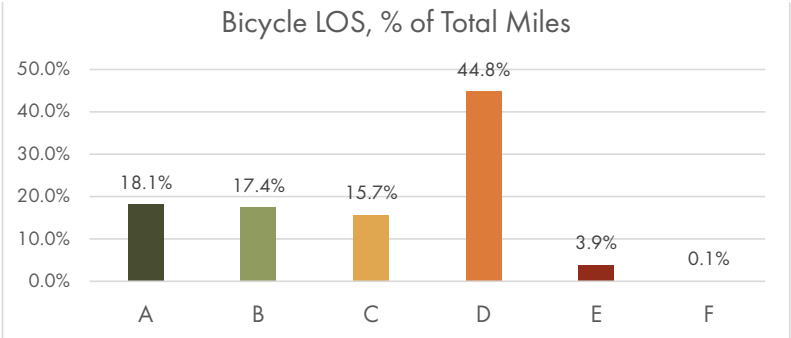


FIGURE 18: LEVEL OF SERVICE STUDY NETWORK

BICYCLE LEVEL OF SERVICE (BLOS)

Bicycling conditions analyses were performed for approximately 169 directional network segments (each with two distinct directional data rows), totaling about 36 miles in length. In other words, the data collection and analysis process took into account the fact that most road segments can be traversed by bicycle in two directions. Based on the collected network data the average BLOS grade in the City of Kingston was found to be a "C", indicating only a "fair" level of safety and comfort for bicyclists throughout the City. The wide roadway and one-directional vehicle traffic on Fair St made it the highest-rated corridor for bicycle travel. No other corridor received high marks along its entire length due to inconsistencies in the roadway conditions. However, identifiable segments of other corridors did receive high BLOS scores. Delaware Ave between the Route 9W ramp and Hasbrouck Park received similarly high scores thanks to the wide roadway and limited use of on-street parking. The portions of Wall St that are limited to one-directional vehicle traffic also scored highly. The recently installed bike lanes on Broadway, Greenkill Ave, and Hurley Ave yielded high scores along their lengths, but these corridors had average or below average scores where bike lanes had not been installed. Moreover, variation in annual average daily traffic along Broadway resulted in variable BLOS scores.

Most corridors in Kingston received a "C" or "D" BLOS score. No corridor in Kingston scored below an "E" grade. Many corridor segments received poor marks ("D" or "E"), often due to a lack of a shoulder or, where there was no roadway striping, due to on-street parking narrowing the roadway. The worst segment identified was the intersection of North Front St and Washington Ave where a wide roadway with a high AADT, no shoulders, and poor pavement conditions received the lowest score of the study. The distribution of bicycle level of service grades is shown in the graph below. These results are mapped in Figure 19. The Appendix provides additional information about the BLOS Model and the BLOS data sheets for all roadways that were analyzed in the course of the study.



Note: This graph is based on the BLOS score of each directional network segment.

BETTER GRADE	FACTOR	WORSE GRADE
Less Traffic	*Average Daily Traffic*	More Traffic
Less Trucks	*Percent of Heavy Vehicles (Trucks)*	More Trucks
Lower Speeds	*Posted Speed Limit*	Higher Speeds
Fewer Lanes	*Number of Traffic Lanes*	More Lanes
Wider Shoulder	*Width of Pavement outside of Edge Line*	Smaller Shoulder
Less Parking	*On-Street Occupied Parking*	More Parking
Better Pavement	*Pavement Condition*	Worse Pavement
Bike Lane	*Presence of Designated Bike Lane*	No Bike Lane

BLOS - A: *Greenkill Ave between Wilbur Ave and Clinton Ave*

BLOS - A: *Broadway between Albany Ave and Liberty St*

BLOS - E: *Washington between North Front St and Severyn St*

BLOS - D: *North Front St between Crown St and Wall St*

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.
- This map represents the average BLOS score for each network segment.

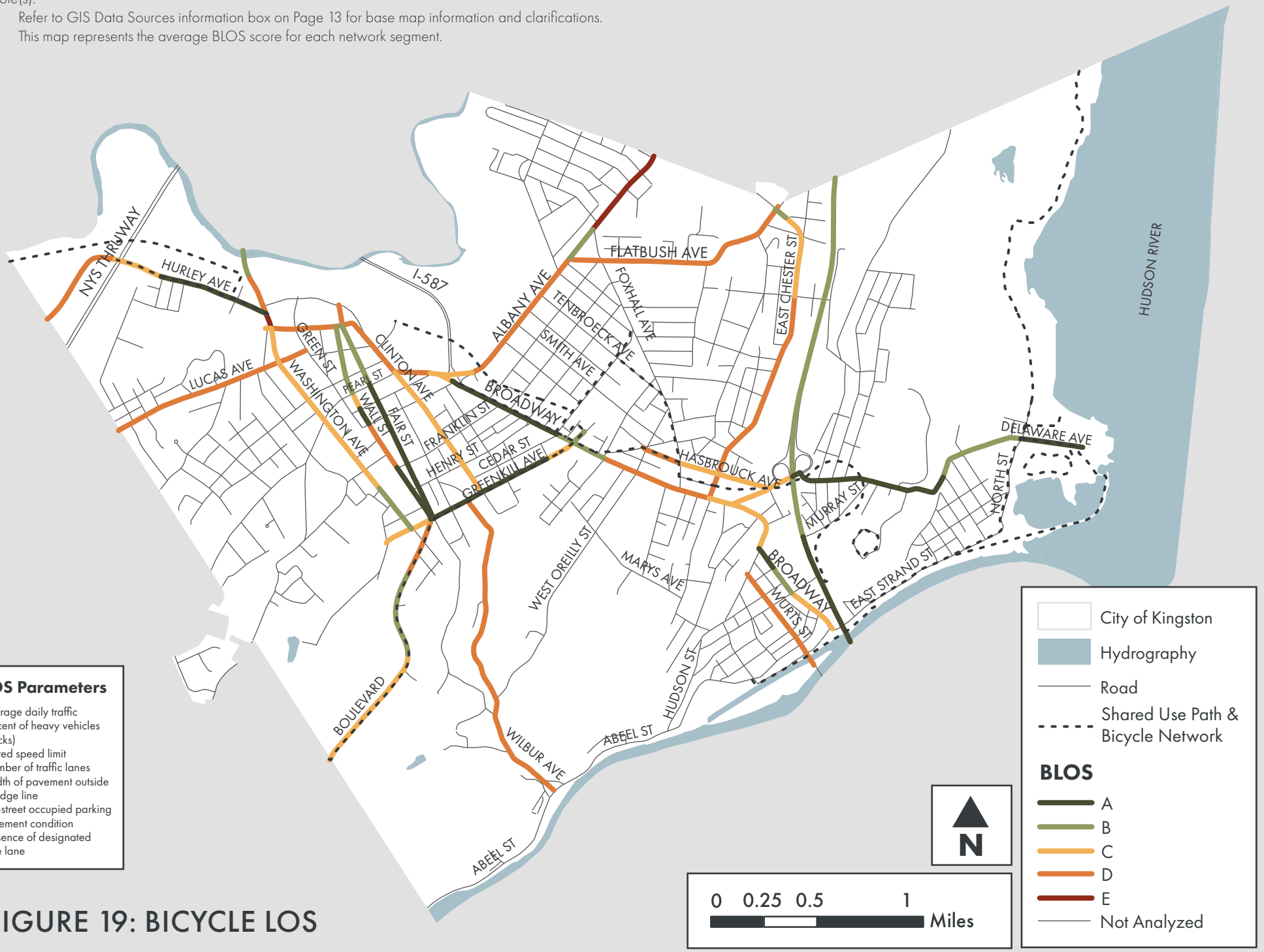
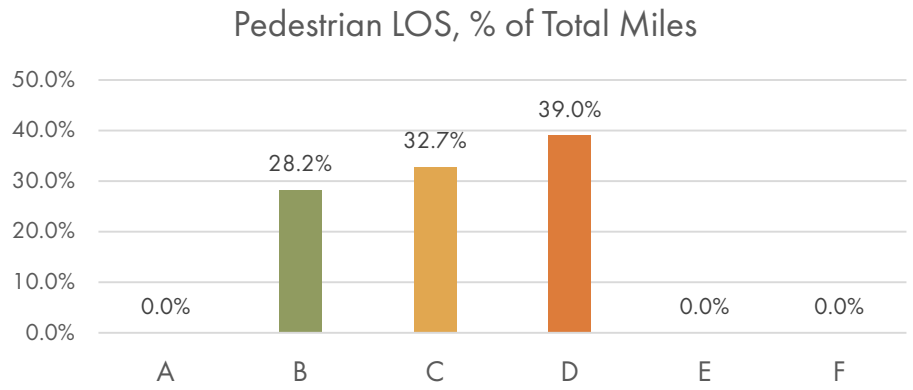


FIGURE 19: BICYCLE LOS

PEDESTRIAN LEVEL OF SERVICE (PLOS)

Pedestrian conditions were evaluated for the same study network. The distribution of pedestrian level of service grades is shown in the chart below. The average PLOS Level was a "C," meaning there are basic accommodation for pedestrians in the majority of the study network. Several corridors in the City scored a "B", however no full corridor scored an "A". Clinton Ave, Fair St, North Front St, Wall St, and Wurts St all received high marks, particularly where sidewalks were wide and continuous. These corridors failed to achieve "A" grades because the widths and conditions of their sidewalks were inconsistent. Kingston's historic bluestone sidewalks are broken and uneven, hampering the City's PLOS grades. Broadway, on the other hand, did not receive a consistently high PLOS grade due to the high levels of annual average daily traffic present along certain segments. In order to receive a higher PLOS grade, more street trees and a wider buffer would be needed. NYS Route 9W and Flatbush Ave received the lowest PLOS scores. With a high speed limit, high AADT, limited access, and no pedestrian facilities, NYS Route 9W is not a corridor for pedestrian use. Flatbush Ave can be accessed by pedestrian traffic, but has narrow shoulders, poor pavement conditions, and almost no sidewalks. While Wilbur Ave may be perceived by pedestrians as an unsafe route, the low posted speed limit and relatively low annual average daily traffic along this corridor prevented it from receiving an E grade. On the other hand, Albany Ave may be perceived as a relatively safe route for pedestrians due to the positive crossing conditions, but limited buffers between sidewalks and the roadway and inconsistent placement of street trees reduced this corridor's PLOS grade. It is important to note that crossing conditions are not a factor in the PLOS model and do not impact PLOS grades. These results are mapped in Figure 20. The Appendix provides additional information about the PLOS Model and the PLOS data sheets for all roadways that were analyzed in the course of the study.



Note: This graph is based on the PLOS score of each directional network segment.

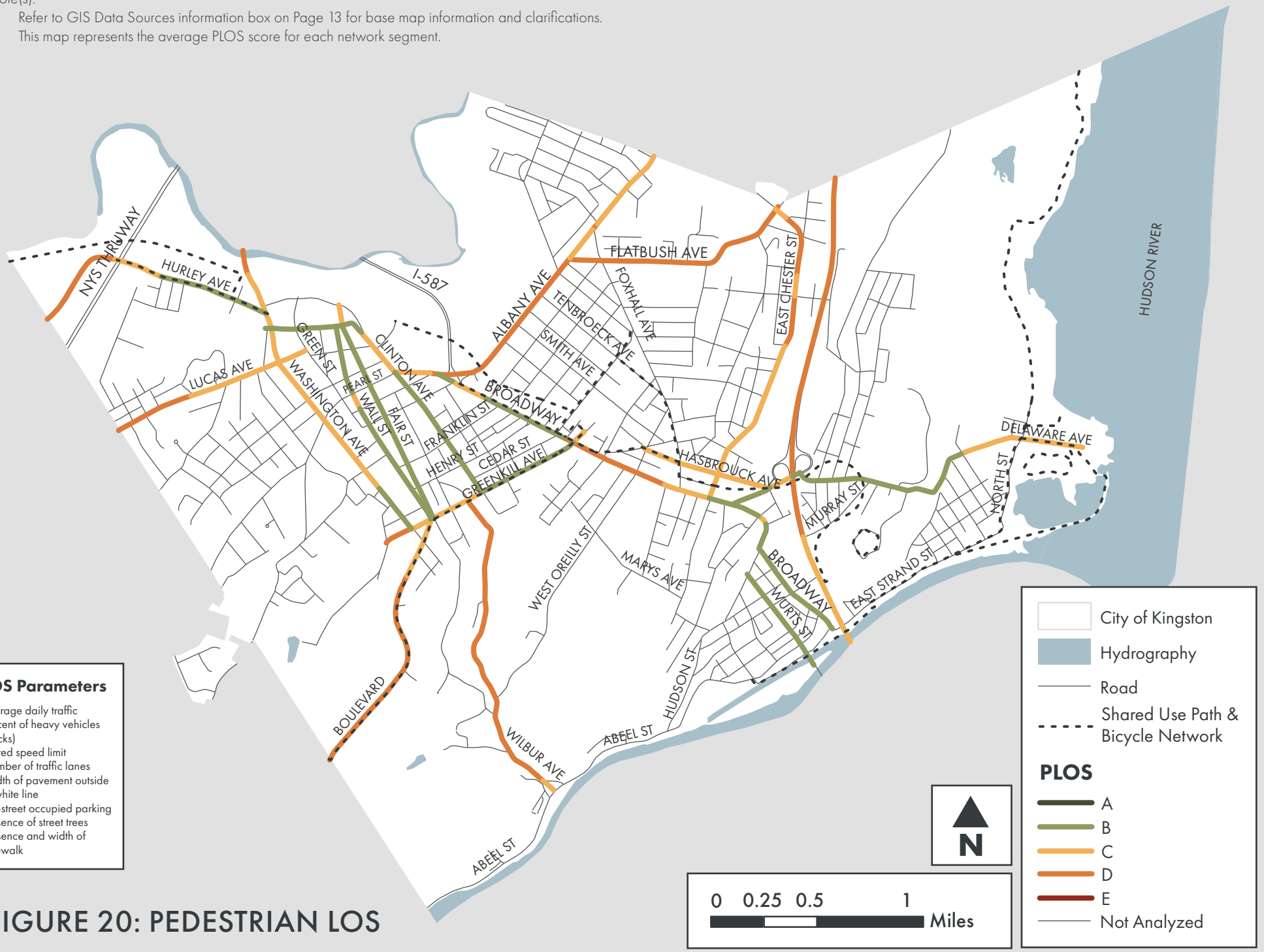
BETTER GRADE	FACTOR	WORSE GRADE
Less Traffic	*Average Daily Traffic*	More Traffic
Less Trucks	*Percent of Heavy Vehicles (Trucks)*	More Trucks
Lower Speeds	*Posted Speed Limit*	Higher Speeds
Fewer Lanes	*Number of Traffic Lanes*	More Lanes
More Shoulder	*Width of Pavement outside of White Line*	Less Shoulder
Less Parking	*On-Street Occupied Parking*	More Parking
Street Trees	*Presence of Street Trees*	No Street Trees
Wide Sidewalk	*Presence & Width of Sidewalk*	No Sidewalk

Note: Street trees and even sidewalks were identified as a tripping hazard in the Kingston Street Tree report. This issue can be mitigated by restricting the planting of street trees to appropriate species.

PLOS - B: *Fair St between John St and Main St*

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.
- This map represents the average PLOS score for each network segment.



PLOS Parameters

- Average daily traffic
- Percent of heavy vehicles (trucks)
- Posted speed limit
- Number of traffic lanes
- Width of pavement outside of white line
- On-street occupied parking
- Presence of street trees
- Presence and width of sidewalk

FIGURE 20: PEDESTRIAN LOS

LAND USE & DEVELOPMENT REGULATIONS

Zoning regulations have several implications for active transportation initiatives. The Kingston Forward: City-Wide Rezoning Project, which aims to ensure that the zoning matches the City's 2025 Comprehensive Plan, was underway during the development of this PBMP. Upon completion, the revised zoning should be reviewed through the lens of this PBMP to understand how it may support future active transportation initiatives.

Both the Kingston Forward: City-Wide Rezoning Project and the PBMP have recommendations to encourage bicycling and walking. They both provide the City with options and tools to design transportation routes with active transportation users in mind. Neither dictates specific implementations but includes standards for any new streets and guidelines for the retrofitting of existing streets. The City of Kingston's Department of Public Works with assistance from the Engineering Office is responsible for designing and managing construction projects for roads, sewers, and drainage structures. They have the knowledge to make specific decisions about which street treatments are appropriate and affordable in real-world applications with the tools provided in these two projects.

ARTICLE XIV: DEPARTMENT OF PUBLIC WORKS

Article XIV establishes the Department of Public works and declares that it shall have the care and control of, among other things, the streets, sewers, and lighting. Any sidewalk change or repair needs to be approved by the DPW and they have the power to change or repair the sidewalks and charge the property owner.

CHAPTER 264: HISTORIC AND ARCHITECTURAL DESIGN DISTRICTS

The Stockade Area Historic and Architectural Design District has specific site design and maintenance guidelines that ensure that the Stockade Area's cultural resources are preserved. For example, bluestone, slate, or brick materials may be prescribed for sidewalks within the Stockade Area.

CHAPTER 310: PARKS AND RECREATION FACILITIES

Some of the City's parks and recreational facilities have additional regulations that may influence the experience of those engaging in active transportation. For example, all City park and recreation facilities are closed between dusk and 7:00 am, which limits travel through City parks is to the daytime only. Furthermore, bicycles are prohibited from April 15 to November 15 in T.R. Gallo West Strand Park.

CHAPTER 346: SIDEWALK CAFES

Upon the approval of a license from the City, sidewalk cafes may be permitted in the right-of-way. As part of the license process, applicants must submit a site plan. There are several requirements when operating a sidewalk cafe, including setting up a barrier between the seating area and pedestrian traffic and ensuring that seating will not interfere with any public service facility.

CHAPTER 355: STREETS AND SIDEWALKS

Chapter 355 of the City Code has several Articles that are relevant to the development of pedestrian and bicycle infrastructure:

- Article I: Sidewalk Excavations and Barriers
- Article II: Street Openings
- Article III: Obstructions
- Article IV: Cleaning of Sidewalks and Gutters
- Article XII: Deposit of Snow and Ice on Streets
- Article XIII: Procedures for Disposing of Certain Streets

CHAPTER 358: SIDEWALK STANDARDS

Chapter 358 of the City Code provides general guidelines for City sidewalks. Foremost, sidewalks should be provided whenever recommended by the Municipality or regional MPO (Ulster County Transportation Council). The City of Kingston Comprehensive Plan, Capital Projects Complete Streets Checklist, and the City of Kingston Planning Department and/or Special Board should be referenced when planning and implementing new sidewalks. The Comprehensive Plan's Complete Streets guidelines should be reviewed for potential implementation during new sidewalk construction or renovations of 50% or more of existing sidewalk along a property. In addition to these guidelines, Chapter 358 also includes standards for the design, construction, maintenance, and use of City sidewalks, as described in:

- §358-3: Sidewalk Types
- §358-4: Construction of sidewalks
- §358-5: Material and design specifications
- §358-6: Sidewalk Excavations and Barriers
- §358-7: Street Openings
- §358-8: Permissible Use
- §358-9: Projections and obstructions
- §358-10: Maintenance

It should also be noted that several areas of the City, particularly historic districts and landmarks, have bluestone sidewalk. Sidewalk regulations in §358-3B and §358-5A acknowledge the historic significance of bluestone sidewalk and encourage its continued use in order to protect the City's community character.

CHAPTER 374: TREES, STREET

This Chapter of the City Code requires street trees to be installed and maintained in a manner that supports the health of the trees, promotes pedestrian travel, and minimizes deterioration of sidewalks.

SELECT INTERSECTION CAMERA ANALYSIS

By enabling a day's worth of data to be analyzed in matter of hours, time-lapse cameras are an important tool for understanding current active transportation patterns on a site-specific level. They provide quantitative and qualitative information, which can be developed into visuals that detail pedestrian, jogger, and bicyclist movements and usage trends. These findings highlight needs and illustrate potential recommendations to improve the active transportation infrastructure and facilities.

Time-lapse cameras were set up at five intersections selected based on anecdotal evidence of pedestrian and bicyclist concerns: Albany Ave and Wrentham St, Broadway and Abeel St, Cornell St and Smith Ave, Washington Ave and a private drive, and Washington Ave and Marius St. They recorded images at 3-second intervals during peak times: 7:00am - 9:00 am, 11:00 am - 1:00 pm, and 4:00 pm - 6:00 pm. Time-lapse camera data was analyzed for Sunday, October 31 and Monday, November 1, 2021, in order to capture travel on both a weekend and weekday. Over these 60 hours of analyzed time-lapse camera data, a total of 1,377 pedestrians and 158 bicyclists passed through the five intersections.

It should be noted that the time lapse cameras collected data on Halloween weekend, which may have impacted some pedestrian, bicyclist, and vehicular activity.

5 LOCATIONS

2 DIFFERENT DAYS

60 HOURS ANALYZED

1,377 PEDESTRIANS

158 BICYCLISTS

SUMMARIES

Albany Ave & Wrentham St

- Albany Ave is one of the largest transit corridors in Kingston.
- Several businesses in the vicinity attract significant pedestrian traffic.
- Speed has led to pedestrian complaints.
- There are no shoulders, dedicated bicycling facilities, or sharrows on this portion of Albany Ave.
- Sidewalks are wide and continuous and crossings have markings and lights.

Broadway & Abeel St

- This portion of Broadway is a very popular pedestrian area.
- The businesses in the area and the waterfront farmers market attract substantial bicyclist and pedestrian traffic.
- Sidewalks are wide and continuous. Cameras recorded many mid-street crossings of Broadway.
- Sharrows in roadway. Cameras captured some bicyclists choosing to use sidewalks instead.

Cornell St & Smith Ave

- Location of the Kingston Post Office.
- Post Office draws high pedestrian and bicycle traffic, particularly on weekdays during its hours of operation.
- Most pedestrian traffic in this area was directed to the post office and used the crosswalks with the exception of a few scattered diagonal crossings.
- Bike traffic was predominately through traffic. A less significant portion of bicyclists were going to the post office.

Washington Ave & Marius St

- Location of rear entrance to George Washington Elementary & commercial businesses at 55 Washington Ave.
- School zone sees moderate pedestrian/bike traffic. Pizza restaurant, which closed after this analysis, attracted significant pedestrian traffic at night.
- Pedestrian traffic predominately used sidewalks and crosswalks with some mid-street or diagonal crossings.
- There are no pavement markings for bicycles on Washington Ave, but it is a wide roadway and most bicyclists appeared able to share the road.

Washington Ave & Private Drive (Dutch Village Apartments)

- Site of a recent bicyclist fatality.
- A common location for mid-block crossing, possibly due to the entrance to the O&W Rail Trail.
- Very fast traffic entering the City from the Thruway exit nearby, wide roadways, and poor pedestrian facilities and lighting make this a very dangerous area for bike and pedestrian traffic.
- With no markings for pedestrians or bicyclists, crossings in this area are haphazard.

CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

Time Lapse Camera Data

INTERSECTION 1: ALBANY AVE & WRENTHAM ST

Dates Observed:
Sunday, 10/31/21 & Monday, 11/1/21

Time Periods Observed:
AM Peak: 7:00 AM - 9:00 AM
Midday Peak: 11:00 AM - 1:00 PM
PM Peak: 4:00 PM - 6:00 PM

Weather:
10/31: 50-54°F, Mostly Cloudy
11/1: 48-55°F, Fair

During the analysis periods....

119
total pedestrians used this intersection

48
total bicyclists used this intersection

36%
of pedestrians traveled during the weekend PM peak

42%
of bicyclists traveled during the weekday AM or PM peak

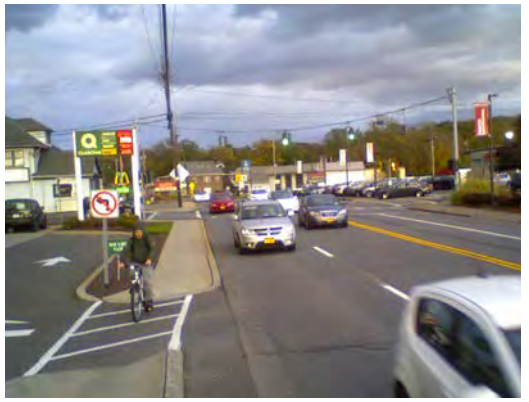
Pedestrian activity was
38%
higher on the weekend compared to the weekday.

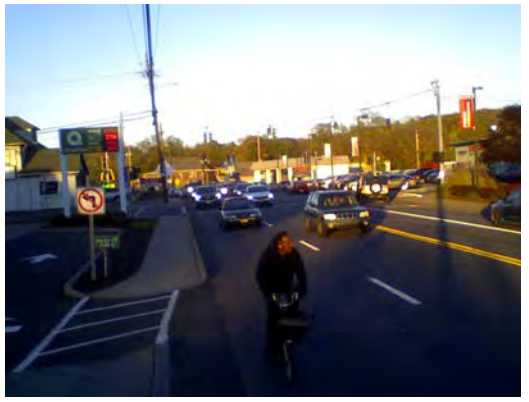
Bicyclist activity was
17%
higher on the weekday compared to the weekend.

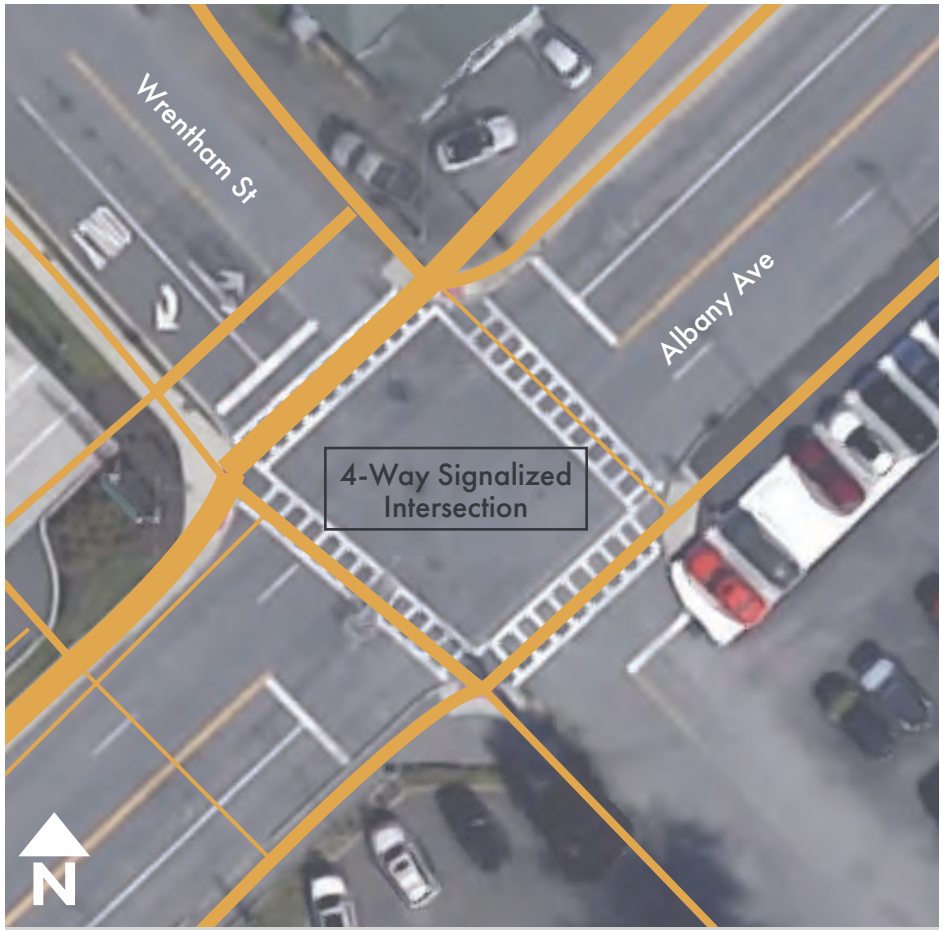
Summary

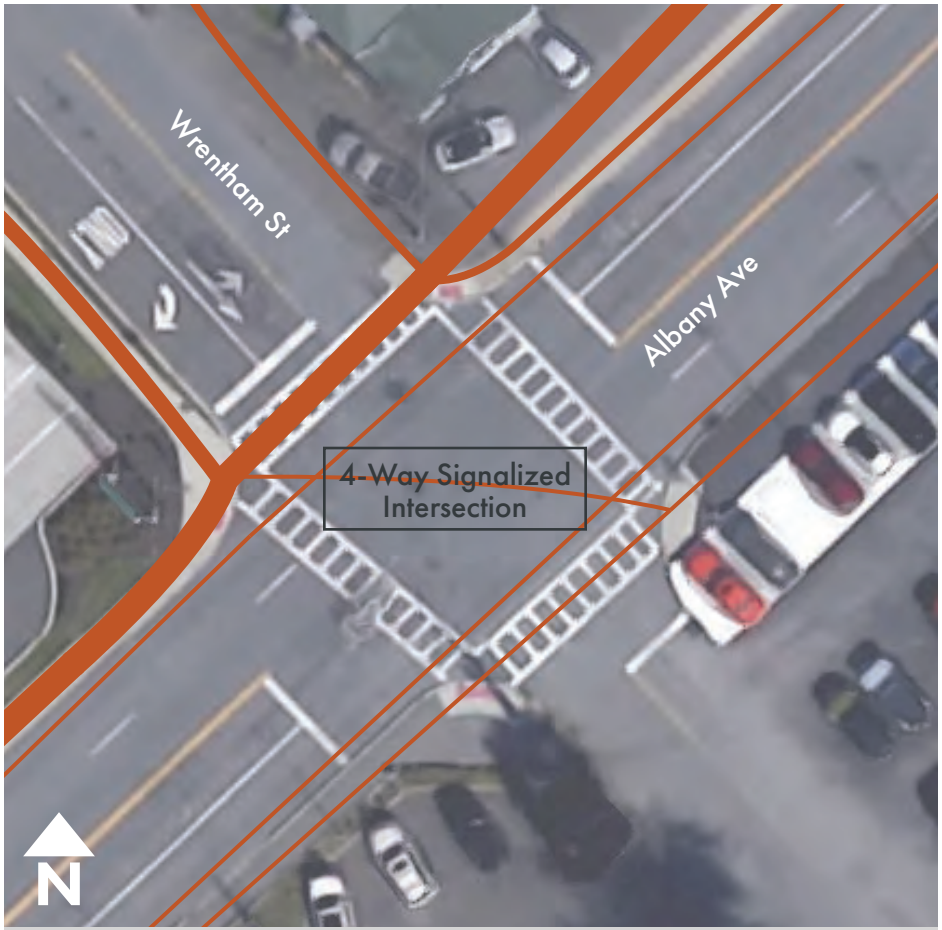
The Albany and Wrentham St intersection is located at the northern City limit, as indicated on the map above. Albany Ave is one of the City's three principal arterials, and Harding Ave is an intersecting residential street. The three-way intersection is surrounded by auto-centric development on all three sides, including car sales, retail stores with parking fronting the street, and a gas station.

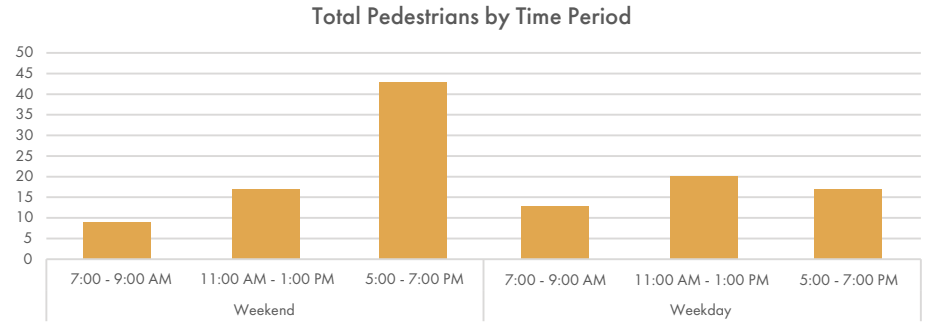
The most active time period was during the weekend PM peak (4-6 PM) for pedestrians, and the weekday AM and PM peaks (7-9 AM & 4-6 PM) for bicyclists. The majority of bicyclists used the sidewalk to travel through the intersection given the lack of roadway shoulder and high traffic volumes. Pedestrians typically traveled alone or with one other individual. Several runners were observed; particularly during the AM and PM time periods. It should also be noted that the time lapse camera collected data on Halloween weekend, which may have impacted some pedestrian, bicyclist, and vehicular activity.

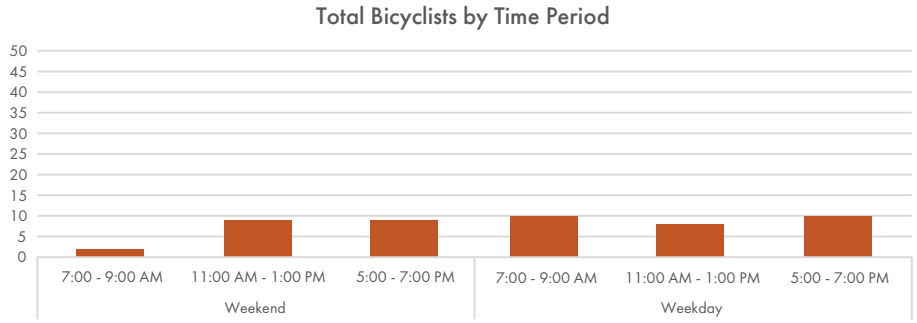





Wrentham St
Albany Ave
4-Way Signalized Intersection
N
45 +
10-44
5-9
1-4
The thickness of the line corresponds to the number of pedestrians who walked each path


Wrentham St
Albany Ave
4-Way Signalized Intersection
N
30 +
10-29
5-9
1-2
The thickness of the line corresponds to the number of bicyclists who rode each path


Total Pedestrians by Time Period
50
45
40
35
30
25
20
15
10
5
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday


Total Bicyclists by Time Period
50
45
40
35
30
25
20
15
10
5
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday

CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

Time Lapse Camera Data

INTERSECTION 2: BROADWAY & ABEEL STREET

Dates Observed:
Sunday, 10/31/21 & Monday, 11/1/21

Time Periods Observed:
AM Peak: 7:00 AM - 9:00 AM
Midday Peak: 11:00 AM - 1:00 PM
PM Peak: 4:00 PM - 6:00 PM

Weather:
10/31: 50-54°F, Mostly Cloudy
11/1: 48-55°F, Fair

During the analysis periods....

376
total pedestrians used this intersection

10
total bicyclists used this intersection

33%
of pedestrians traveled during the weekend PM peak

40%
of bicyclists traveled during the weekday AM peak

Pedestrian activity was only
4%
higher on the weekend compared to the weekday.

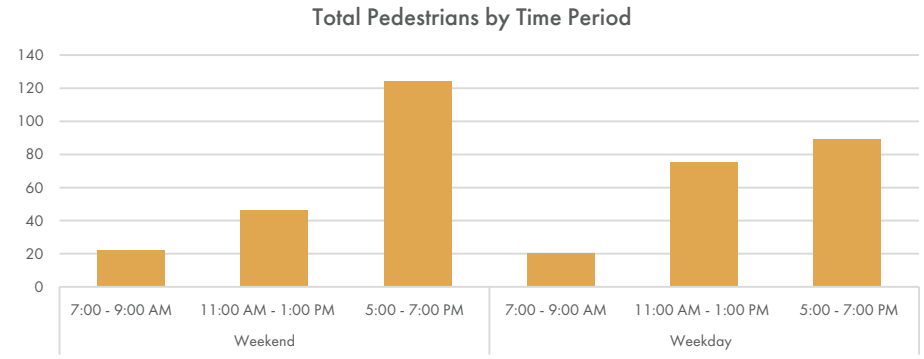
Bicyclist activity was
0%
higher on the weekday compared to the weekend.

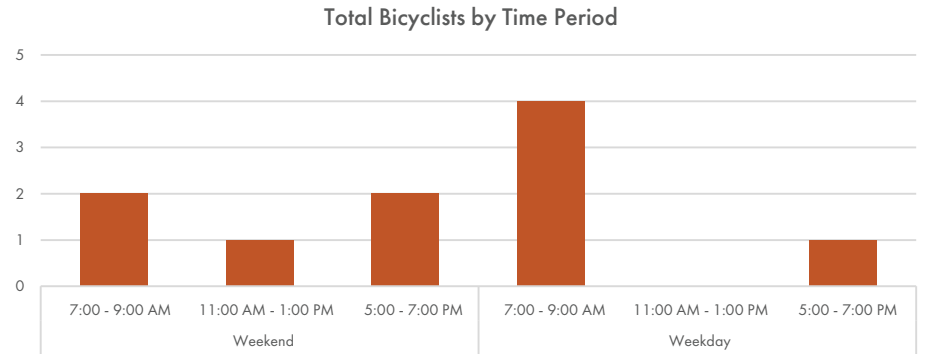
Summary

Broadway & Abeel St is located in the Rondout District on the south side of the City and has a mid-block crossing. Broadway acts as the primary connector between the Rondout District and Midtown. Abeel St is a primarily residential roadway near the intersection of Broadway, but continues west along the Rondout Creek, providing a connection to the Town of Ulster and Esopus. The most active period for pedestrians was the PM weekend peak; although it should be noted that it was Halloween weekend, which may have increased the amount of activity and impacted pedestrian, bicyclist, and vehicular travel. The most significant crossing pattern to note is that many pedestrians crossed Broadway either directly at the southeast side of the intersection, or slightly further down Broadway (across the median, as shown in the photo at right). There was limited morning activity at this location, as well as very limited bicyclist activity, which may be due to the elevation change on Broadway.


Broadway
No Signalization
Stop Sign
Abeel St
N
100 +
30-99
5-29
1-4
The thickness of the line corresponds to the number of pedestrians who walked each path


Broadway
No Signalization
Stop Sign
Abeel St
N
4
3
2
1
The thickness of the line corresponds to the number of bicyclists who rode each path


Total Pedestrians by Time Period
140
120
100
80
60
40
20
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekday


Total Bicyclists by Time Period
5
4
3
2
1
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekday

CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

Time Lapse Camera Data

INTERSECTION 3: CORNELL STREET & SMITH AVE

Dates Observed:
Sunday, 10/31/21 & Monday, 11/1/21

Time Periods Observed:
AM Peak: 7:00 AM - 9:00 AM
Midday Peak: 11:00 AM - 1:00 PM
PM Peak: 4:00 PM - 6:00 PM

Weather:
10/31: 50-54°F, Mostly Cloudy
11/1: 48-55°F, Fair

During the analysis periods....

511
total pedestrians used this intersection

56
total bicyclists used this intersection

38%
of pedestrians traveled during the weekday midday peak

34%
of bicyclists traveled during the weekend midday peak

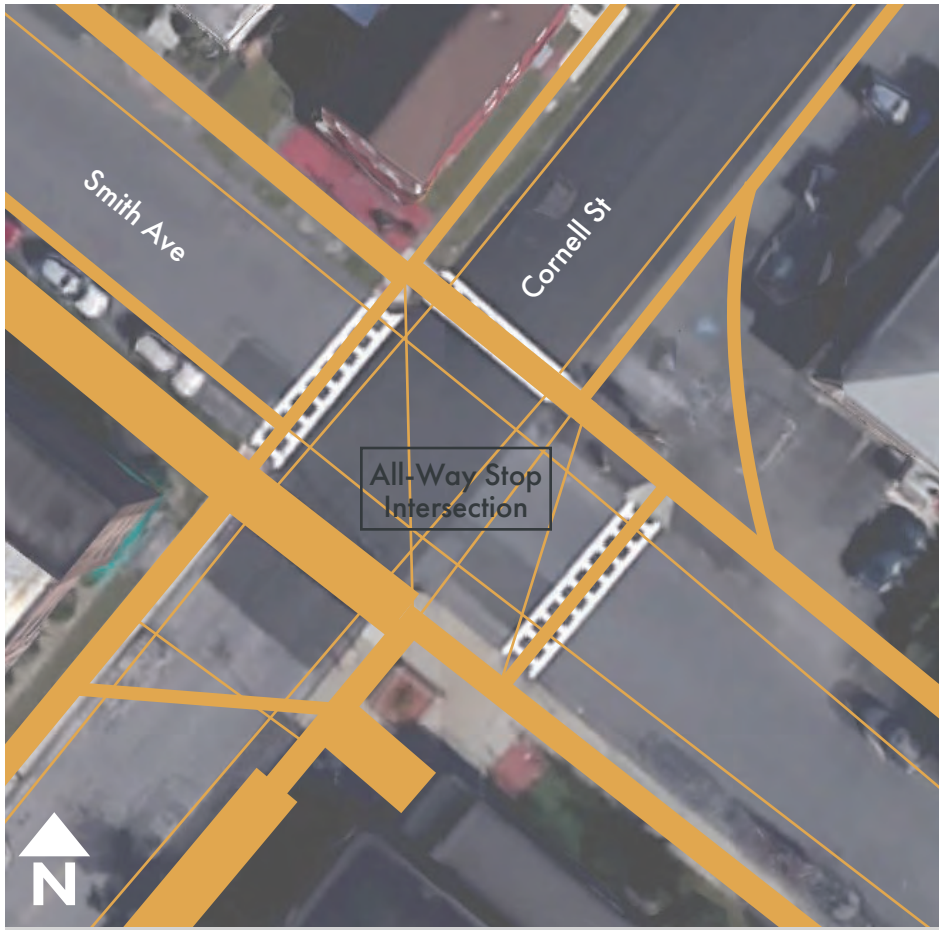
Pedestrian activity was
185%
higher on the weekday compared to the weekend

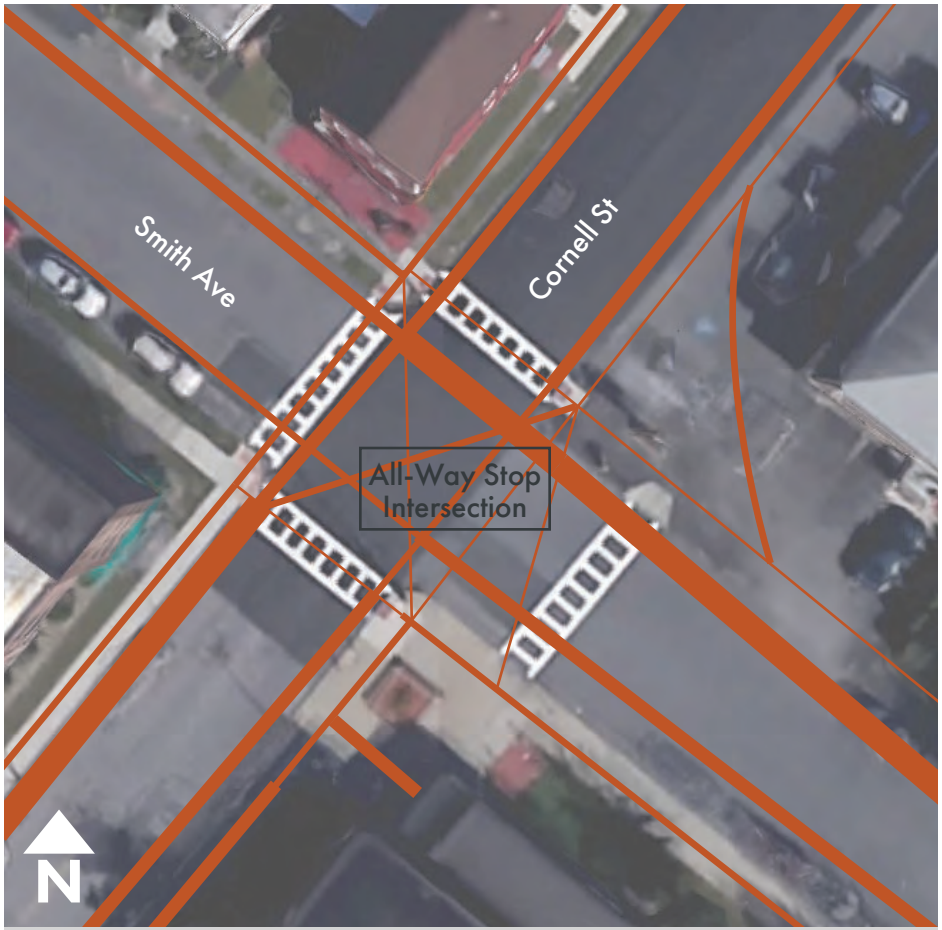
Bicyclist activity was
7%
higher on the weekday compared to the weekend.

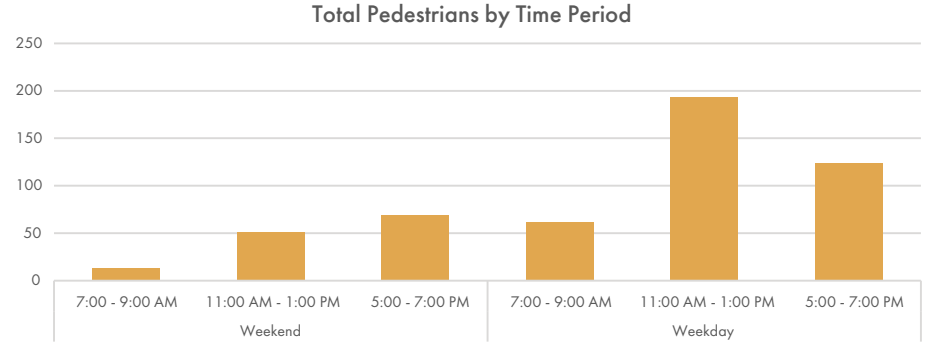
Summary

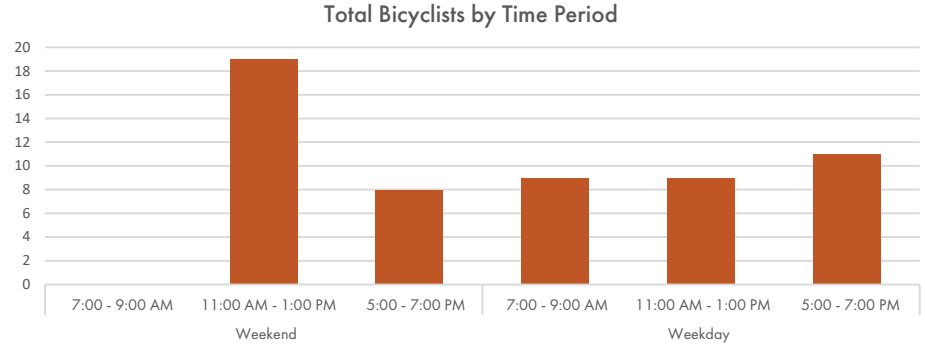
The Cornell St and Smith Ave intersection is located in Midtown, nearby where the Ulster County Midtown Linear Park terminates and is an all-way stop intersection. Located at the intersection is the Post Office, the Shirt Factory (a mixed use artist and creators space), and retail buildings. The most active period for pedestrians was midday during a weekday. This activity was largely driven from pedestrians walking to and from the post office.

A large volume of vehicles parked along Cornell St for a short period of time to access the Post Office. This activity poses potential safety issues including "dooring" for bicyclists traveling northeast along Cornell St. Bicyclists typically used the roadway to travel through this intersection, although some bicyclists used the sidewalk. The most active period for cycling activity was midday during the weekend. Notably, pedestrian activity was almost three times higher during the weekday as opposed to the weekend, but bicyclist activity remained similar for both days. It should also be noted that the time lapse camera collected data on Halloween weekend, which may have impacted some pedestrian, bicyclist, and vehicular activity.


Smith Ave
Cornell St
All-Way Stop Intersection
N
100 +
50-99
10-49
1-9
The thickness of the line corresponds to the number of pedestrians who walked each path


Smith Ave
Cornell St
All-Way Stop Intersection
N
10 +
6-9
3-5
1-2
The thickness of the line corresponds to the number of bicyclists who rode each path


Total Pedestrians by Time Period
250
200
150
100
50
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday


Total Bicyclists by Time Period
20
18
16
14
12
10
8
6
4
2
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday

CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

Time Lapse Camera Data

INTERSECTION 4: WASHINGTON AVE & PRIVATE DRIVE

Dates Observed:
Sunday, 10/31/21 & Monday, 11/1/21

Time Periods Observed:
AM Peak: 7:00 AM - 9:00 AM
Midday Peak: 11:00 AM - 1:00 PM
PM Peak: 4:00 PM - 6:00 PM

Weather:
10/31: 50-54°F, Mostly Cloudy
11/1: 48-55°F, Fair

During the analysis periods....

119
total pedestrians used this intersection

19
total bicyclists used this intersection

25%
of pedestrians traveled during the weekend PM peak

32%
of bicyclists traveled during the weekday midday peak

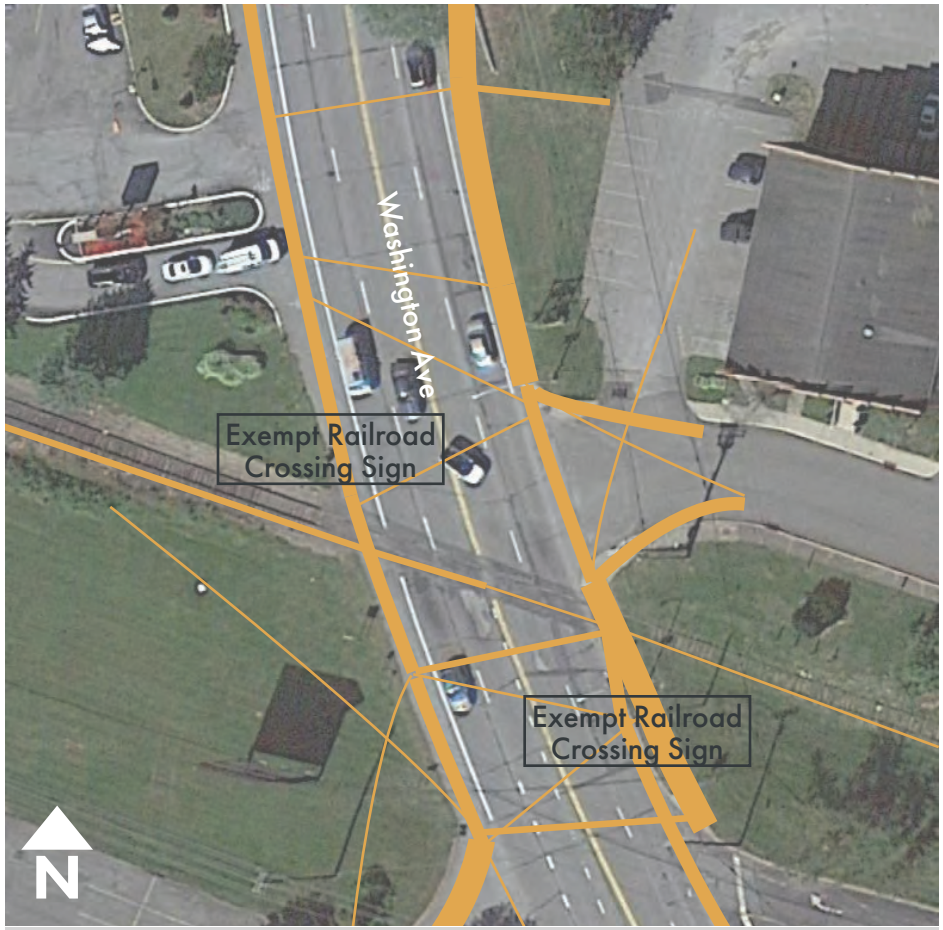
Pedestrian activity was
2%
higher on the weekend compared to the weekay

Bicyclist activity was
38%
higher on the weekday compared to the weekend.

Summary

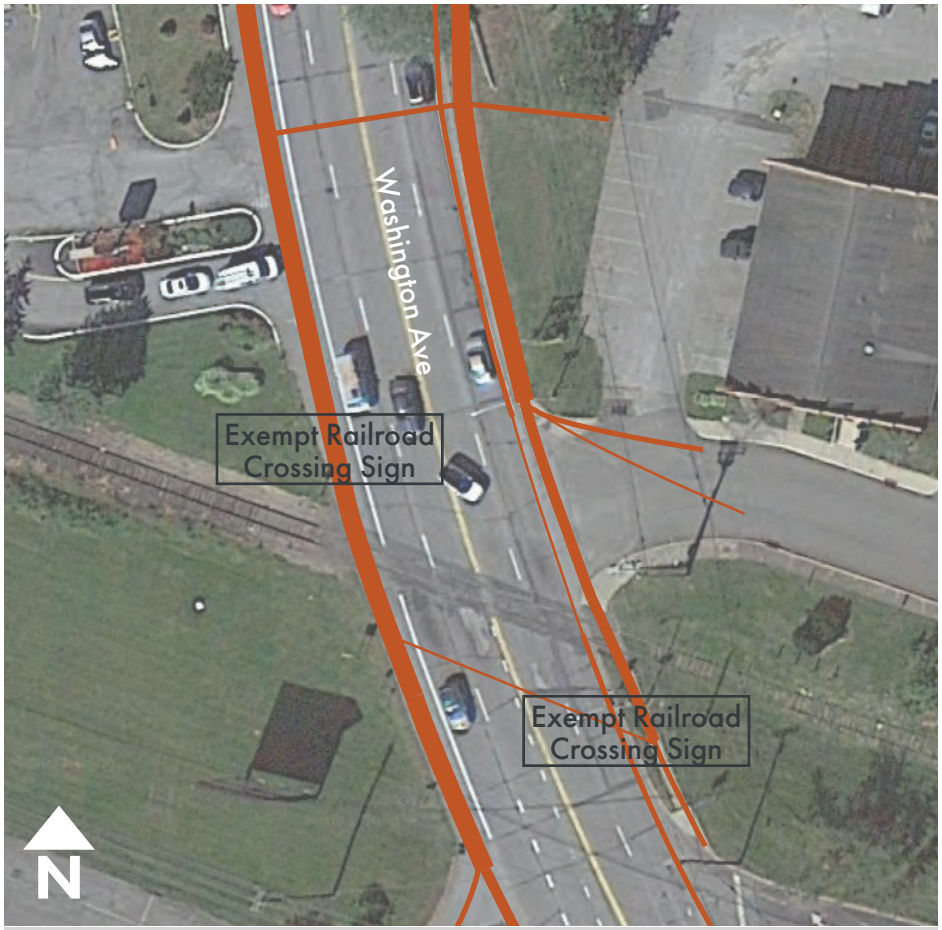
Washington Ave north of Schwenk Dr, near the Dutch Village Apartments, is a major commercial corridor and gateway into the City of Kingston and is an uncontrolled intersection. Traffic is coming from higher-speed facilities and the roadway type changes. There are limited to no pedestrian facilities on a connector to many destinations including food and housing accommodations. There is a concentration of commercial activity and over 20,000 vehicles on average use this roadway segment on a daily basis (ADT). The majority of development is auto-centric; with large swaths of surface-level parking and no non-motorist facilities. The O&W Rail Trail is located to the west of Washington Ave in this location.

Many mid-block crossings occurred during every time period analyzed. There were several locations that pedestrians chose to cross at. A majority of crossings were located between the rail crossing and the driveway just south of the crossing. At several times, staff from the Catskill Mountain Railroad entered the roadway to stop traffic for the train to cross. It should also be noted that the time lapse camera collected data on Halloween weekend, which may have impacted some pedestrian, bicyclist, and vehicular activity.



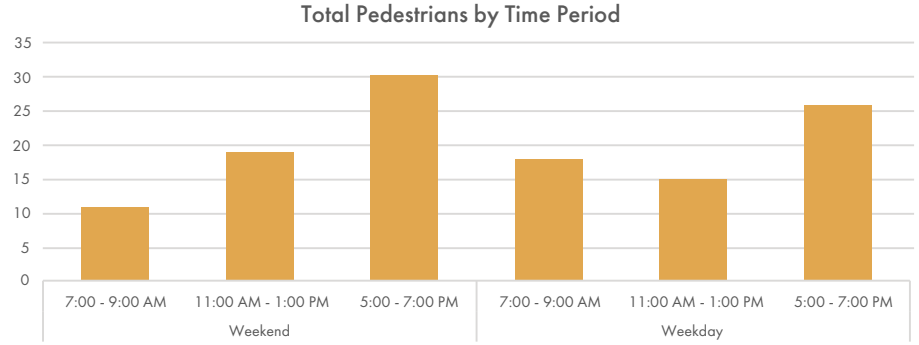
30 + 15-29 5-14 1-4

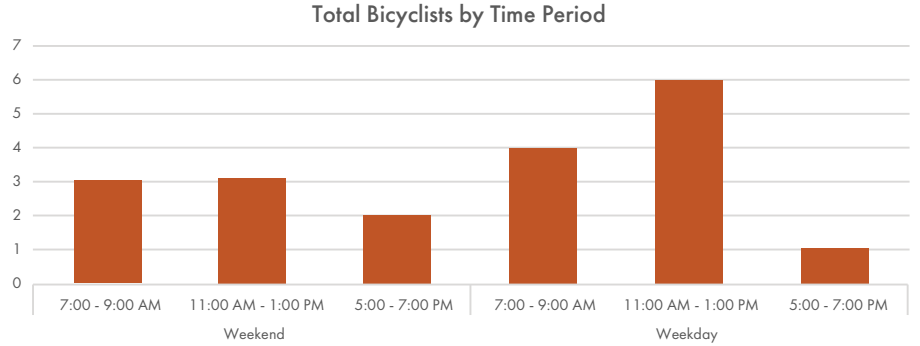
The thickness of the line corresponds to the number of pedestrians who walked each path



10 + 5-9 3-4 1-2

The thickness of the line corresponds to the number of bicyclists who rode each path





CITY OF KINGSTON PEDESTRIAN & BICYCLE MASTER PLAN

Time Lapse Camera Data

INTERSECTION 5: WASHINGTON AVE & MARIUS STREET

Dates Observed:
Sunday, 10/31/21 & Monday, 11/1/21

Time Periods Observed:
AM Peak: 7:00 AM - 9:00 AM
Midday Peak: 11:00 AM - 1:00 PM
PM Peak: 4:00 PM - 6:00 PM

Weather:
10/31: 50-54°F, Mostly Cloudy
11/1: 48-55°F, Fair

During the analysis periods....

252
total pedestrians used this intersection

25
total bicyclists used this intersection

38%
of pedestrians traveled during the weekend PM peak

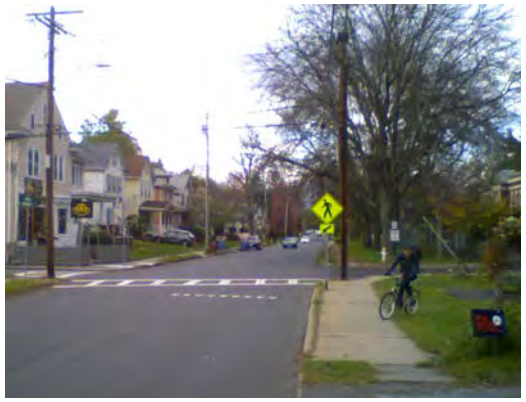
0%
of bicyclists traveled during the weekend AM peak

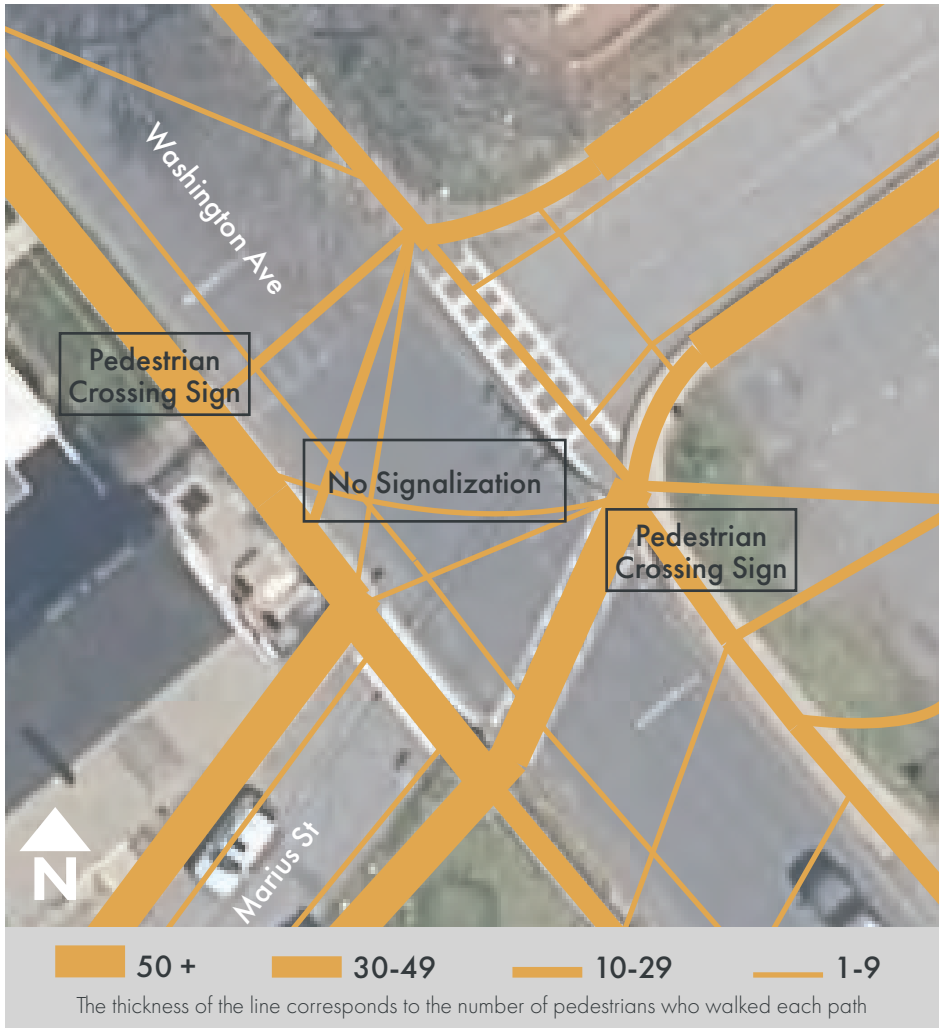
Pedestrian activity was
17%
higher on the weekday compared to the weekend

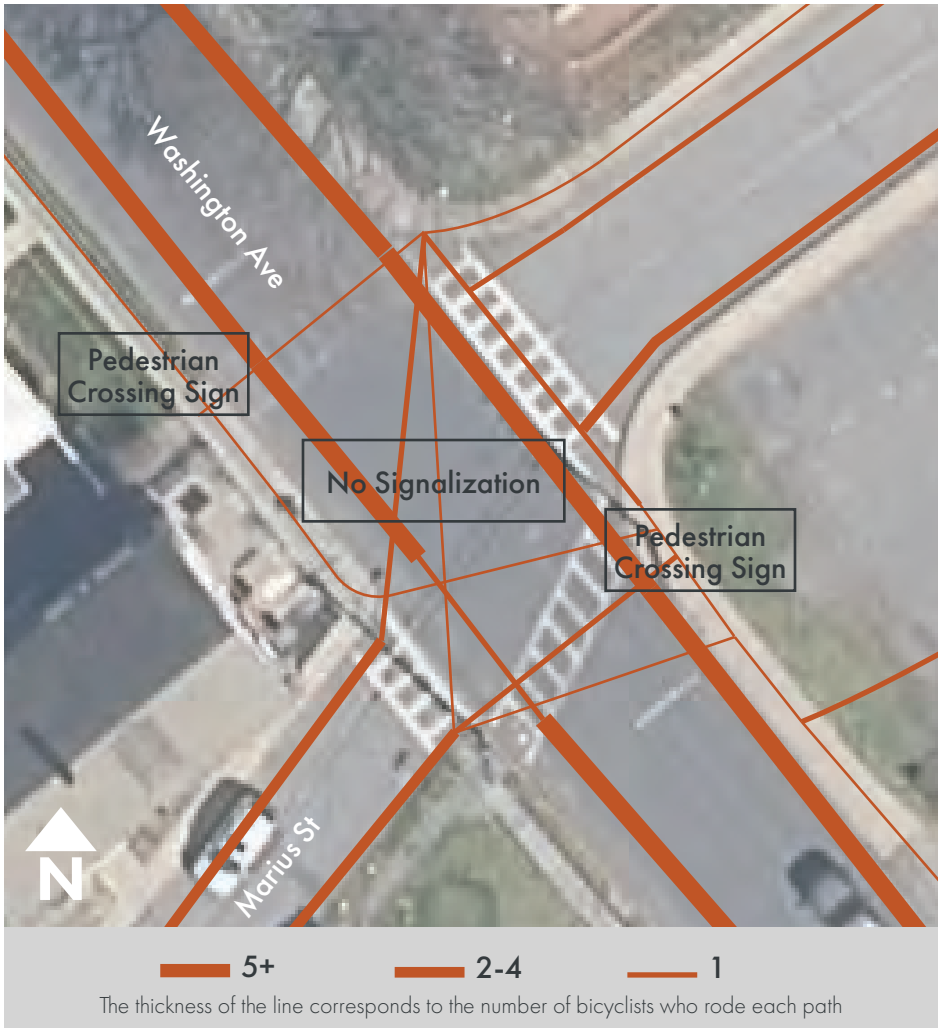
Bicyclist activity was
50%
higher on the weekday compared to the weekend.

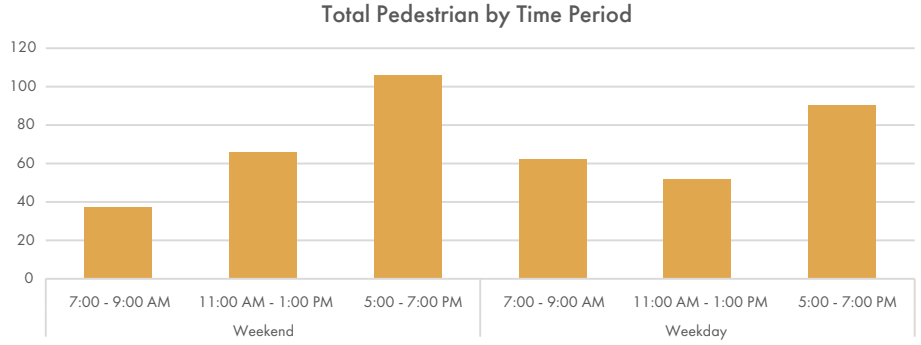
Summary

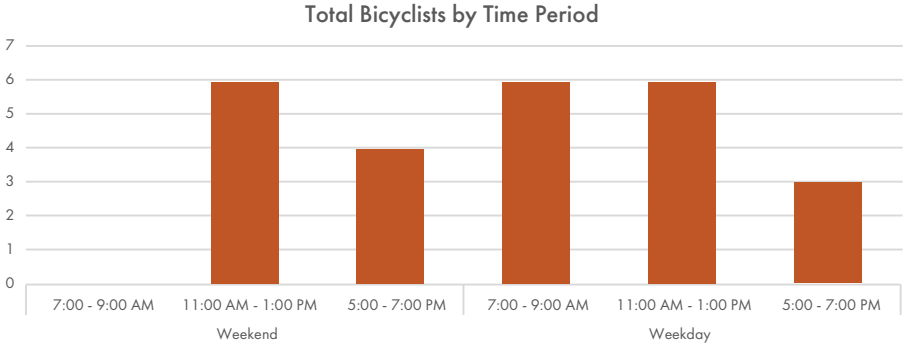
The intersection of Washington & Marius is located in a primarily residential neighborhood in the City. A driveway to George Washington Elementary is located across from Marius St; creating a four-way intersection. The busiest time period for pedestrians was during the weekend PM peak; however, it should be noted that - in addition to general pedestrian, bicyclist, and vehicular activity - the Halloween may have impacted the number of families walking around the neighborhood. The majority of PM activity for both days was largely driven by the pizza shop located at the southwest corner of the intersection. The weekend AM period was the least active period, with only twelve pedestrians passing through the cameras field of vision, and no bicyclists. The AM period during the weekday was also relatively quiet -- only seven families walked to school that day, and one family biked. Bicyclist activity was minimal throughout each time period, with no more than six bicyclists crossing the intersection during any of the six time periods. There is a bicycle rack for the George Washington Elementary School on the other side of the building, so nearby bicyclists may be taking a route not captured in the camera frame There appeared to be minimal conflicts between bicyclists, pedestrians, vehicles during the time periods observed.




Washington Ave
Pedestrian Crossing Sign
No Signalization
Pedestrian Crossing Sign
Marius St
N
50 +
30-49
10-29
1-9
The thickness of the line corresponds to the number of pedestrians who walked each path


Washington Ave
Pedestrian Crossing Sign
No Signalization
Pedestrian Crossing Sign
Marius St
N
5+
2-4
1
The thickness of the line corresponds to the number of bicyclists who rode each path


Total Pedestrian by Time Period
120
100
80
60
40
20
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday


Total Bicyclists by Time Period
7
6
5
4
3
2
1
0
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
7:00 - 9:00 AM
11:00 AM - 1:00 PM
5:00 - 7:00 PM
Weekend
Weekday

KEY IMPLICATIONS

Based on conditions assessed in the Inventory & Analysis, several key themes impact walkability and bikeability in the City of Kingston. These implications have influenced the recommendations shaped in this PBMP and may also provide insight for other City-wide planning initiatives.

KEEPING UP WITH STREETSCAPE IMPROVEMENTS

The City of Kingston has several recently completed right-of-way improvements, a handful still ongoing, and even more in the project planning stages (Figure 15). Due to rapid changes to the layout and operation of the City's streetscapes (and change in user types), public outreach is critical to ensure that community members are familiar with new right-of-way configurations and traffic patterns and aware of opportunities to engage in active transportation. Moreover, these planned streetscape improvements may be excellent opportunities for pre- and post-construction analyses, which can help the City identify which pedestrian and bicycle facilities are the most effective at increasing safety.

BALANCING COMMUNITY CHARACTER WITH ACCESSIBILITY

The City of Kingston's streetscapes are often defined by the use of bluestone sidewalks. This material helps to maintain the historic character of the City and strengthen the community's sense of place. However, the bluestone pathways are fragmented and, due to the deterioration of bluestone, reduce the overall accessibility of the City's sidewalk network (Figures 7 & 8). Looking forward to future sidewalk projects, it will be important for the City to gauge the community's overall attitude towards the bluestone sidewalks and identify the ideal balance between community character, cost, and accessibility.

NAVIGATING KINGSTON'S NATURAL TOPOGRAPHY

While the City's hilly terrain along the waterfront makes for scenic views and unique streetscapes, they also make walking and bicycling more challenging. Inexperienced bicyclists or individuals with mobility constraints may find it difficult to traverse this terrain by foot or bicycle. With this in mind, supporting a broad network of active transportation facilities that range in difficultly level will be critical to ensuring access to all. Innovative approaches to trail network planning may be necessary in order to effectively guide pedestrians and bicycles around steep slopes.

MAKING THE MOST OF THE RIGHT-OF-WAY

In addition to the bluestone sidewalks, narrow right-of-ways is a feature associated with the Kingston's historic legacy. Dating to the arrival of the Dutch in the 1650s, the City's roadways were not originally designed for the same purposes or user types that we have in mind today. Now, limited space is competed for by cars, buses, bicyclists, pedestrians, and others. While the implementation of Complete Streets in all areas would be ideal, it may not be feasible due to the physical constraints within the rights-of-way. Like the City's steep slopes, innovative approaches and/or a birds-eye, holistic approach to transportation network planning may be necessary to overcome this obstacle.

INCONSISTENT CONDITIONS AT THE CORRIDOR-LEVEL

Through the BLOS and PLOS analyses, it became clear that, while some street segments have high levels of service, there are limited areas where an entire corridor has a high level of service (Figures 19 and 20). In other words, a pedestrian or bicyclist traversing a large portion of a corridor (e.g. Broadway, Albany Ave, Wall St) may encounter a wide variety of right-of-way conditions. This reduces the overall navigability of the City, as pedestrians and bicyclist may choose or need to re-route or - if they have access to a vehicle - drive in order to avoid unpleasant or unsafe conditions. In an effort to improve the overall walkability and bikeability of the City, it will be important to consider entire lengths of corridors when implementing right-of-way improvements to ensure that it is comfortable and safe to walk or bike all the way from origin to destination.

ADDITIONAL CONSIDERATIONS FOR RAILROAD & RAIL TRAIL CROSSINGS

The City of Kingston is traversed by a freight train, two passenger trains, and a growing network of rail trails. Many of these rail and rail trail routes intersect with roadways at-grade. For active rail lines, this means that drivers, bicyclists, and pedestrians must be prepared to stop for passing trains. For rail trails, drivers must be prepared to yield to pedestrians and bicyclists, particularly where the rail trail crosses at midblock and not at a typical intersection. As the network of trails continues to grow through the Greenline project, it will become increasingly important to educate drivers on the location of trail crossings and how to approach them, implement adequate crossing signage, and utilize enforcement techniques to ensure pedestrian and bicyclist safety.

WAYFINDING

With an ever-evolving network of sidewalks, bike lanes, and off-road trails of varying degrees of accessibility, active transportation users may have difficulty finding the optimum route for their destination and level of mobility. Clear and consistent signage to help pedestrian and bicyclists navigate the City is particularly important as the City continues to expand upon its active transportation network. The City already has a signage and wayfinding plan, "Connecting Kingston," which should be applied, and expanded as needed, to all recently completed, ongoing, and future active transportation infrastructure improvement projects.

Bluestone sidewalk on Wall St

CHAPTER 4: ALTERNATIVES TOOLKIT

There are many potential strategies that the City of Kingston can utilize to help increase pedestrian and bicycle mobility. This section provides the City with a "toolkit" of widely used transportation tactics to address pedestrian and bicycle needs. This toolkit was used to consider potential design, program, and policy solutions for the City, and ultimately create the set of facility recommendations in the following section.

Each of the strategies addressed in the alternatives toolkit presented on the following pages vary in terms of intensity of implementation, and thus cost. Given that the City has a limited budget, and trade offs must occur between implementing different transportation strategies, it is important to consider the capital resources required to implement each of the recommended solutions.

In addition, each strategy has varying impacts to different user groups in the City. Each user group will have different expectations and each strategy will benefit some user groups, while potentially being detrimental to others. It is important to consider these trade offs when selecting the appropriate solutions for the City.

It is also crucial to consider the environmental impacts of each transportation solution presented. Given the increasing impact that climate change has on the built environment, it is more important than ever to analyze how any new facility, program, or policy will effect the sustainability and resiliency of the community. The toolkit contains information on the potential negative or positive sustainability and resiliency consequences of implementing each strategy.

It is important to carefully consider all of these attributes before selecting the appropriate solution for the City's active transportation challenges. The toolkit presents this information in tabular format that makes it easy to compare the varying impacts each strategy may have on the built environment and the many user groups it may influence. The following subsections describe the potential cost, user group, and sustainability impacts presented in the alternatives toolkit developed for the City.

Cost Impacts

Impact to the bottom-line is a key consideration for selecting an active transportation alternative for implementation. The cost of implementing alternatives can range depending on cost of material, labor and design. The alternatives toolkit provides a cost estimate range for each alternative considered. Cost estimates are grouped in the following three subcategories:

$	Low Cost	<$10,000
$$	Medium Cost	$10,000-$50,000
$$$	High Cost	>$50,000

User Impacts

As mentioned previously, the main user groups in the City will have varying needs and preferences for transportation facilities. A positive change for one user group may translate into a detrimental result for another. For instance, a refuge island, may improve safety for pedestrians or motorists, but may have a negative impact on bicyclists. The different user groups considered for each alternative include: pedestrians, bicyclists, motorists, neighbors, emergency vehicles, and the City's Department of Public Works. The different user preferences for active transportation alternative are listed below:

PEDESTRIAN PREFERENCES

- Buffering from moving vehicles
- Aesthetically pleasing surroundings and amenities
- Safe environment
- Shorter walking distances
- Access to community facilities and destinations

BICYCLIST PREFERENCES

- Well-connected network of bicycling facilities
- Safe travel routes
- Direct routes
- Access to community facilities
- Access to bicycle parking facilities

MOTORIST PREFERENCES

- Minimal traffic delay and conflicts
- Parking and access to businesses and community facilities
- Consistently designed facilities

NEIGHBOR PREFERENCES

- Neighborhood connectivity
- Neighborhood character
- To feel safe and secure
- Access to property, businesses, and community facilities

NOTE: Neighbors are individuals who live in close proximity to the transportation feature and my benefit from or be impacted by the feature.

EMERGENCY VEHICLE OPERATOR PREFERENCES

- Space to operate and maneuver vehicle
- Minimal conflicts and delays
- Safe travel routes
- Unobstructed access

DEPARTMENT OF PUBLIC WORKS PREFERENCES

The City of Kingston's Department of Public Works is at the direction of the Mayor and has the following responsibilities with respect to the maintenance and operations of all public works of the City, including the care, control, supervision, alterations, maintenance, repairs, and regulations of all matters related to:

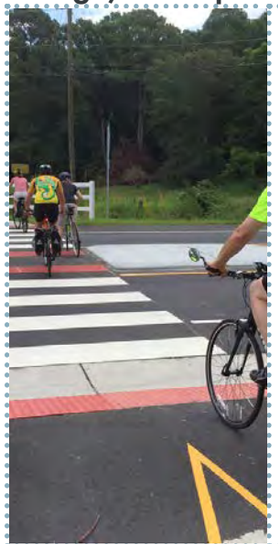
- City streets including paving, regrading, sweeping, sprinkling or oiling, snow and dirt removal
- City sidewalks, curbs, accessible ramps, and gutters including paving, regrading, cleaning of ice and snow (if not completed by property owner)
- City bridges
- City utilities including sewer system, gas, water, electric, and associated utility poles
- City public parks and squares
- City lighting
- City trees and plantings

The alternatives toolkit shows the review of each alternative's impact as follows:

+	Positive Impact
-	Negative Impact
+/-	Mixed Impact
N	No Impact

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
On Street Facilities													
Bicycle Boulevards	• Streets with low vehicle speeds and volumes • Typically residential roads with little through-traffic • Use of signage, markings, and speed management measures to create safe bicycle crossings • Give priority to bicyclists as through-going traffic		$	+	+	+	+	N	+/-	+	+	+	+
Bicycle Lanes	• Provides designated right-of-way for bicyclists on vehicular roads • Reduces confusion of motorists in sharing space with bicyclists • Can be created by reducing vehicular lane widths • Typically uses striping/painting to identify designated bicyclist lane • Should be provided on a smooth roadway surface • Should include appropriate MUTCD signage		$-$$$	+/-	+/-	+/-	+/-	+	+/-	+	+	+	+
Buffered Bicycle Lanes	• Bike lanes that are separated from vehicles by an additional buffer, such as additional striping or bollards • Creates more comfort and a greater perception of safety for both motorists and bicyclists • Provides greater space for bicyclists without making the actual bike lane wider, avoiding motorists using the lane for a vehicle parking or travel lane		$-$$$	+/-	+	+/-	+/-	+	-	+	+	+	+

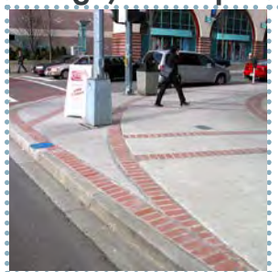
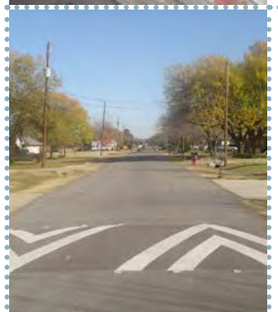
Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Cycle Tracks	• An exclusive bike facility that provides the on-street infrastructure of a typical bike lane with an off-street user experience • Physically separated from vehicular traffic, often by on-street parking or a median • Increases perception of safety and comfort for bicyclists • May be one-way or two-way in design		$$-$$$	+/-	+	+/-	+/-	+/-	-	+	+/-	+/-	+
Shared Lane Markings ("Sharrows")	• Markings that indicate that the roadway is intended to be shared by motor vehicles and bicycles • Most appropriate when there is bicycle activity along a roadway but insufficient shoulder/lane widths to accommodate a bicycle lane • Enforces the legitimacy of bicycle traffic on the street • MUTCD guidelines for sharrow markings are found in section 9C.07 • To only be used on narrow, slow streets where more complete measures are not possible		$	+	+/-	N	N	+/-	+/-	+	+	+	+
Signage	• Signage and pavement marking used to guide bicyclists along preferred routes and alert motorists of the presence of bicycles on a roadway • Include signage such as confirmation a designated bike route, information regarding distance and time, turning indicators, and "share the road" signage • Helps to passively market the local bicycle network		$-$$	+	+	N	N	N	+/-	+	+	+	+

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
High-Visibility Crosswalks	• Should be designed to offer maximum comfort and protection to pedestrians • Crossing distances should be kept as compact as possible, facilitating eye contact by placing pedestrians directly in the field of vision of motorists • High-visibility ladder, zebra, and continental crosswalk markings are preferable to standard parallel or dashed pavement markings • Street lighting should be provided at all crossings • Signage indicating motorists of the crossing should be placed in the street as well as at least 8 feet ahead of the crosswalk • Can include different paving materials and raised crosswalks to increase visibility of pedestrian crossings		$	+	+/-	+/-	+	+	+/-	+	+/-	N	+
Raised Crosswalks	• More effective than a painted-only crosswalk • Encourages reduced motor vehicle operating speeds • Should be used where the posted speed is 30 mph or less • Should raise up close to sidewalk height over an 8 ft distance, with gentle approaches and departures • Can include different paving materials and be paired with a high visibility crosswalk to increase the visibility of pedestrian crossings • Coordination with local fire, police, and ambulance services is recommended		$-$$	+	+/-	+/-	+/-	-	-	+/-	+/-	+/-	+

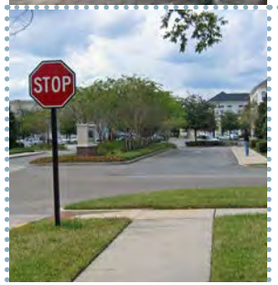
Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Raised Intersections	• Encourages reduced motor vehicle operating speeds • Should be flush with the adjacent sidewalks and keep the pedestrian crossing areas level • Should include bollards along each corner to prevent motorists from entering the pedestrian space • Can include different paving materials and be paired with a high visibility crosswalk to increase the visibility of pedestrian crossings • Due to cost, should be reserved for key, important or dangerous locations/crossings • Coordination with local fire, police, and ambulance services is recommended		$$- $$$	+	+/-	+/-	+/-	-	-	+/-	+/-	+/-	+
Pedestrian Bridge/Tunnel	• Provides an alternative route for pedestrians, and possibly bicyclists as well, to cross an roadway without interfering with traffic • Bridge and bridge access (ramps) should be ADA-compliant • To the extend possible, bridge design (fencing, lighting, materials, etc.) should be consistent with community design guidelines with respect to safety and aesthetics • If pedestrian crossings are properly designed at grade, bridges or tunnels should not be required		$$$	+/-	+/-	+	+/-	+	+/-	+	-	+/-	+/-

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Signalization	• Can help indicate crossings of roadways by bicyclists and pedestrians • Helps to clarify when bicyclists and pedestrians should enter an intersection, and restricts conflicting vehicle movements • Examples include rapid flash beacons, pedestrian crossing countdowns, leading pedestrian, user-actuated flashing warning lights and bicycle signal heads used in conjunction with traditional traffic signals • Helps to create a more predictable crossing environment		$-$$$	+	+	+/-	+	+/-	+/-	+	N	N	+
Curb Extensions	• Involves narrowing the roadway by extending curbing into the roadway • Creates shorter crossing distances for pedestrians • Increases the available space for street furnitures/amenities on the sidewalk • Can include treatments such as midblock curb extensions, chicanes, bus bulbs, and neckdowns • Help tighten curb radii, encouraging slower turning speeds • Can be implemented using low-cost, interim materials such as planters, bollards, or traffic cones for trial periods • Design and engineering must ensure that buses, trucks, and emergency vehicles can navigate the corner without driving on the curb and support ease of plowing and cleaning • Respect and design drainage patterns to ensure positive drainage towards drainage inlet structures		$$	+	+/-	+/-	+	+/-	-	+	+	+/-	N

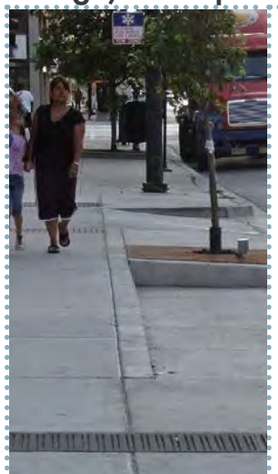
Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Refuge Islands/ Medians	• Reduces the exposure time experienced by a pedestrian in an intersection • Provides for an enhanced sense of safety for pedestrians • Typically implemented in locations where speeds and volumes make crossings prohibitive, or where there are several lanes that make pedestrians feel exposed or unsafe • Should be at least 6 feet wide preferably • It is preferable to have the crosswalk "cut-through" the median		$$	+	+/-	+	+/-	+/-	-	+	+/-	+/-	+
On Street Parking	• Provides parking along the roadway • Can shield pedestrians from moving traffic • Can pose potential hazard for bicyclists while passengers are opening doors • Reverse angle parking puts bicyclist in driver's sight line, but requires more space and buffering than parallel parking		$$- $$$	+	-	+/-	+	-	-	-	+/-	+/-	+/-
Raised Medians	• Curbed sections that occupy the center of a roadway • Can facilitate pedestrian crossing using a "cut-through" • Can help reduce motor vehicle speeds • Enhances streetscape design and community character • Must consider cross-streets to help facilitate turning movements		$$	+	+/-	+/-	+/-	+/-	-	+	+/-	+/-	+

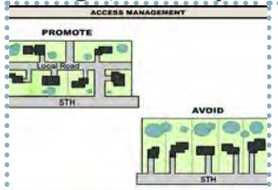
Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Small Turning Radii	• The measure of the curve at a street corner • Smaller radii result in more careful and slower turns by vehicles • Can help increase pedestrian visibility and reduce potential for conflicts • Must consider emergency vehicle access when determining curb radii		$$	+	+/-	+/-	+	-	-	+/-	+/-	+/-	+
Speed Humps	• Parabolic vertical traffic calming devices • Intended to slow traffic speeds on low volume, low speed roads • Typically 3-4 inches high and 12-14 feet wide with a ramp length of 3-6 feet • Reduce speeds to 15-20 MPH • Should not be placed in front of driveways or significant access areas		$$	+	+/-	+/-	+/-	-	-	+/-	+/-	+/-	+
Turn Lanes	• Reduces conflicts between vehicles by allowing through traffic to continue along the roadway, particularly for left turns • Often used in conjunction with a road diet (also known as a lane reduction) • Using separate turning phases for turn lanes at signalized intersections can help reduce delays		$-$$	-	+/-	+/-	+/-	+	+/-	+/-	-	N	+/-

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Roundabouts	• A circular intersection in which road traffic move in one direction around a central island • There are no stop signs or signals • Priority is given to the vehicle already in the roundabout, and entering drivers yield • Reduce the likelihood and severity of collisions at intersection • Increase efficiency of flow and reduces confusion at four way stops		$$-$$$	+/-	+/-	+	+	+/-	+/-	+	+/-	+	+
Off Street Facilities													
Bicycle Parking	• Bicycle users are more willing to ride when they know there is a safe and secure place to store their bicycle • Secure infrastructure that allows bicyclists to safely store their bicycles at key destinations • Needs to be accessible to surrounding land uses and located in key locations • Bike lockers are appropriate for long-term storage, whereas bike racks are suitable for short-term parking • Covered bicycle parking prevents bicycles from damage due to precipitation, and can be attractive street furniture that enhances the streetscape		$-$$	+	+	+	+/-	N	+/-	+	+	+	+

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Benches and Resting Points	• Provide locations for pedestrians to rest along walkable corridors • Should be placed at regular intervals • Promote walking for less-mobile populations, including those with disabilities and the elderly • Should be an adequate distance from the roadway to increase perception of safety		$	+	N	N	+	N	+/-	+	+/-	+	+
Buffer Areas	• Provides a space between pedestrian accommodations and vehicular lanes • Provides a space for street trees, bioswales, permeable pavers, and other facilities that reduce stormwater runoff • Helps provide a sense of comfort/safety • Provides a more attractive streetscape • Preferably 6'-8' in width for a planting strip or tree well to be implemented • Can reduce motorist speed		$-$$	+	+	+	+	N	+	+	+	+	+
Street Lighting	• Provides increased visibility for both pedestrians and motorists • Reduces potential conflicts for all transportation users • Should be implemented at a pedestrian scale, where appropriate/feasible		$$	+	+	+	+/-	+	+/-	-	-	+/-	+/-

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
New/ Improved Sidewalks	• Provides a separate pedestrian space away from vehicular travel lanes • Preferable implemented in conjunction with a buffer area • Should be at least 5 feet wide for two people to pass comfortably • Should be designed to comply with ADA requirements • There should be no obstructions in the sidewalk such as utility poles or street furniture • Sidewalk grade should be less than 5% to help facilitate ease of movement		$$	+	N	N	+	N	N	+	+/-	-	+
Pedestrian accommodations in off-street parking areas	• Large off-street parking areas should provide distinguished pedestrian avenues • Helps to reduce vehicular and pedestrian conflicts • Pedestrian accommodations can include sidewalks and pavement markings • Should lead directly to building entrances and connect to on-street pedestrian accommodations		$-$$	+	N	+	N	N	-	N	+/-	+/-	+
Sidewalk amenity zones	• Use where there are high pedestrian volumes • Help create an attractive streetscape • The pedestrian area between the sidewalk and roadway is recommended to be 8' in width • Appropriate amenities include street trees, street lights, benches, fountains, kiosks, and trash receptacles • Use pedestrian-scale lighting where possible		$-$$	+	N	+	+	N	-	+	+/-	+/-	+

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
ADA Compliant Curb Ramps	• Allow wheelchair, walker, and motorized scooter users to make use of sidewalk facilities by allowing them to access such facilities from the curb • ADA compliant curb ramps must have a minimum width of 3 feet • The maximum rise is thirty inches per ramp • The slope of the ramp can be no more than 8.33%, and must be uniform • Landings are required at the top of the curb ramp, and should be at least five feet long • Detectable warning systems are preferred to help indicate the location of curb ramps for visually impaired users		$$	+	+	N	+	+	+/-	N	+/-	N	+
Shared Use Paths	• Shared right-of-way for pedestrian and bicyclists away from the vehicular roadway • Use where high pedestrian volumes are likely and bicycle lanes are not possible • Should be 10' in width at minimum (in specific areas where space is limited, a minimum of 8' can be used) • Signage should be implemented to alert both pedestrian and bicyclists of the presence of both user groups		$$	+	+	+	+	-	+/-	+	-	+	+
Trail signage	• Helps to inform active transportation users of the location of trail heads • Can help market the existence of local trails • Should be created as part of a unified design scheme • Can be implemented along trails to help with wayfinding and alert users of distances/travel times/slopes		$	+	+	+	+	N	+/-	+	-	N	+

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Shared Access Driveways	• Property owners share one access point to parking area • Reduces the amount of driveway crossings that pedestrians encounter • Reduces amount of built environment dedicated to vehicle storage		$$	+	+	+	+/-	N	N	+	+	+	+
Street Trees	• Help to cool the environment and reduce urban heat islands • Help to provide shade for pedestrians • Can slow traffic by providing visual distractions from upcoming road • Create an attractive streetscape and enhance community character • Help reduce stormwater runoff • Provide habitat for birds and other wildlife • Help cool adjacent buildings, reducing cooling needs		$	+/-	+	+/-	+	-	-	+	N	+	+
Programming & Policies													
Zoning	• Adjust zoning code, site plan review, and subdivision language, standards, and guidance • Enhance accessibility and safety for bicyclists and pedestrians		$	+	+	+/-	+	N	+	+	+	+	+
Education & Outreach Campaign	• Develop educational programs for pedestrians, bicyclists, and motorists • Design programs to cater to different age groups		$-$$	+	+	+	+	+	+	+	N	N	+

Feature	Description	Image/Example	Estimated Costs	User Group Impacts						Environmental Impacts			
				Pedestrians	Bicyclists	Motorists	Neighbors	Emergency Vehicles	Department of Public Works	Reduces Energy Consumption	Reduces Consumption of Material Resources	Reduces Impacts to Environmental Resources	Supports Healthy Communities
Bicycle- and Walk -Friendly Community Designations	• Offers the opportunity to be recognized for achievements in supporting walking and biking for transportation and recreation • Also serves as a benchmark to identify improvements yet to be made in the community		$	+	+	+/-	+	N	+	+	+	+	+
Complete Streets Policy	• Part of the Complete Streets Act passed in 2011 by New York State • Commits the City to considering pedestrian and bicycle accommodations in new street construction and reconstruction • Shows support of active transportation from local officials • Advocates for better access to safe streets for all, improved individual health, improved overall air quality, equal opportunities, and decreased accidents		$	+	+	+	+	+/-	+/-	+	N	+	+
Maintenance Programs	• Monitor and maintain accessibility and safety features • Plow and sweep streets regularly • Engage residents and businesses to participate in clean-up days • Neighborhood plantings or gardens		$-$$	+	+	+	+	+	+/-	+	+	+	+
Enforcement Policies	• Increase police enforcement for dangerous motorist and bicyclist actions (e.g. speeding, traffic violations) • Utilize service style policing to educate community members on pedestrian and bicycle etiquette • Respond to special needs (such as seniors or school areas)		$-$$	+	+	+	+	+	+	N	N	N	+

CHAPTER 5: FACILITY RECOMMENDATIONS

Priority Intersection & Corridor Recommendations

Review and analysis of existing conditions, stakeholder involvement, and extensive public input collectively provide a broad picture of both general active transportation needs and specific projects that would most improve bicycle and pedestrian accommodation. Priority areas were identified through a combination of stakeholder input and corridor data. City, PAC, and public input comments all identified many perception-based areas of need within the City. County-provided crash data and bicycle trip counts and the Level of Service (LOS) analysis performed by B&L also identified data-based areas of need. Priority areas were identified wherever user perception and data were in agreement about the poor condition of the area. The priority areas included are the ones with multiple recommendations from City, PAC, and public input, higher crash rates, poor LOS grades, and high bicycle and pedestrian trip volume. In addition, a variety of intersections were selected for camera analysis so as to be referenced as templates. The Washington Avenue priority corridor, for example, contains a mid-block crossing identified as a study area by the City of Kingston and the PAC, was the subject of numerous public input comments, has low LOS grades along its length, has medium crash density on its north end, and sees medium to high levels of bike traffic. Being identified as a hazardous corridor by nearly all information sources for this project led to Washington Avenue's designation as a listed priority corridor. It should also be noted that the location of priority areas may change as the City's conditions and the community's perception of the transportation network evolve over time; for this reason, it is important to review this section and re-evaluate the City's priority areas on a regular basis.

The projects identified range from those that can be implemented quickly and at very low costs to those that would be long term and more costly because of the need for further study prior to design and implementation. Identification of these facilities in this PBMP significantly improves the likelihood of their implementation as opportunities arise. Recommended improvements may be tied to capital improvement schedules and specific opportunities. The Alternatives Toolkit provided in this PBMP should be referenced alongside the facility recommendations in this section to provide additional context on cost estimates and pros and cons to specific user groups.

The recommendations produced as a part of this planning process are broken into two categories: Priority Intersections and Priority Corridors (Figures 21 & 22). For the 12 Priority Intersections and 11 Priority Corridors, this section presents high-level design concepts and policy/programming recommendations for the City to consider, requiring further study and specific design development to determine the best approach and solution in any given situation. Recommendations for Priority Intersections and Priority Corridors are broken into four subcategories - on-street recommendations, off-street recommendations, proposed shared use path connections, and policy and program recommendations - which are described in more detail below.

Funding for implementation may be obtained through a wide variety of sources, as described in Chapter 8. In order to be flexible and opportunistic in the pursuit of funding and implementation of recommended projects, the City's Grants Management Office may continuously research and track active and newly released funding opportunities.

ON-STREET RECOMMENDATIONS

The on-street recommendations address strategies that would affect the on-road operations in the City, such as crosswalks, road re-striping, and speed limits. There are sixteen such recommendations; the majority of which entail some form of traffic calming. These recommendations are geared towards ensuring that both pedestrians and bicyclists can feel comfortable while interacting with the vehicular right-of-way, either through reducing vehicular speeds, or bringing increased awareness to drivers of the presence of non-motorized transportation users. It is important to mention that these recommendations do not address concept-level designs, and should be considered under a more extensive feasibility analysis prior to implementation.

OFF-STREET RECOMMENDATIONS

The off-street recommendations identified do not impact the existing roadways in the City, and include strategies such as sidewalks, trails, and shared use paths. The emphasis on considering shared-use paths is a result of the generally narrow right-of-ways that exist within the City. This means that there is not space for separate bicycle and pedestrian accommodations on many corridors identified as lacking infrastructure for both user groups. The consideration of shared-use paths will allow the City to dedicate a safe space for all non-motorized transportation users within a limited right-of-way. It is recommended that the City continue to develop an off-road, shared-use path network to the greatest extent possible throughout the City, striving to create continuous, safe, and accessible transportation and recreation opportunities separated from motor vehicle traffic. This will benefit the individuals using them and contribute to the economic development and sustainability goals of the City. As with the on-street recommendations, each recommendation would need further suitability analysis prior to implementation.

PROPOSED SHARED USE PATH RECOMMENDATIONS

Due to ongoing shared use path development initiatives, like the Kingston Greenline, new opportunities to enhance access to shared use paths and improve overall shared use path system connectivity are emerging. Recommendations titled "Proposed Shared Use Path" are indicative of areas where the implementation of signage, on-street facilities, and/or off-street facilities could facilitate the connection of key corridors to existing or proposed shared use paths. Figure 23 depicts the relationship between existing/planned shared use paths and bicycle infrastructure and the shared use paths proposed in this PBMP.

POLICY & PROGRAM RECOMMENDATIONS

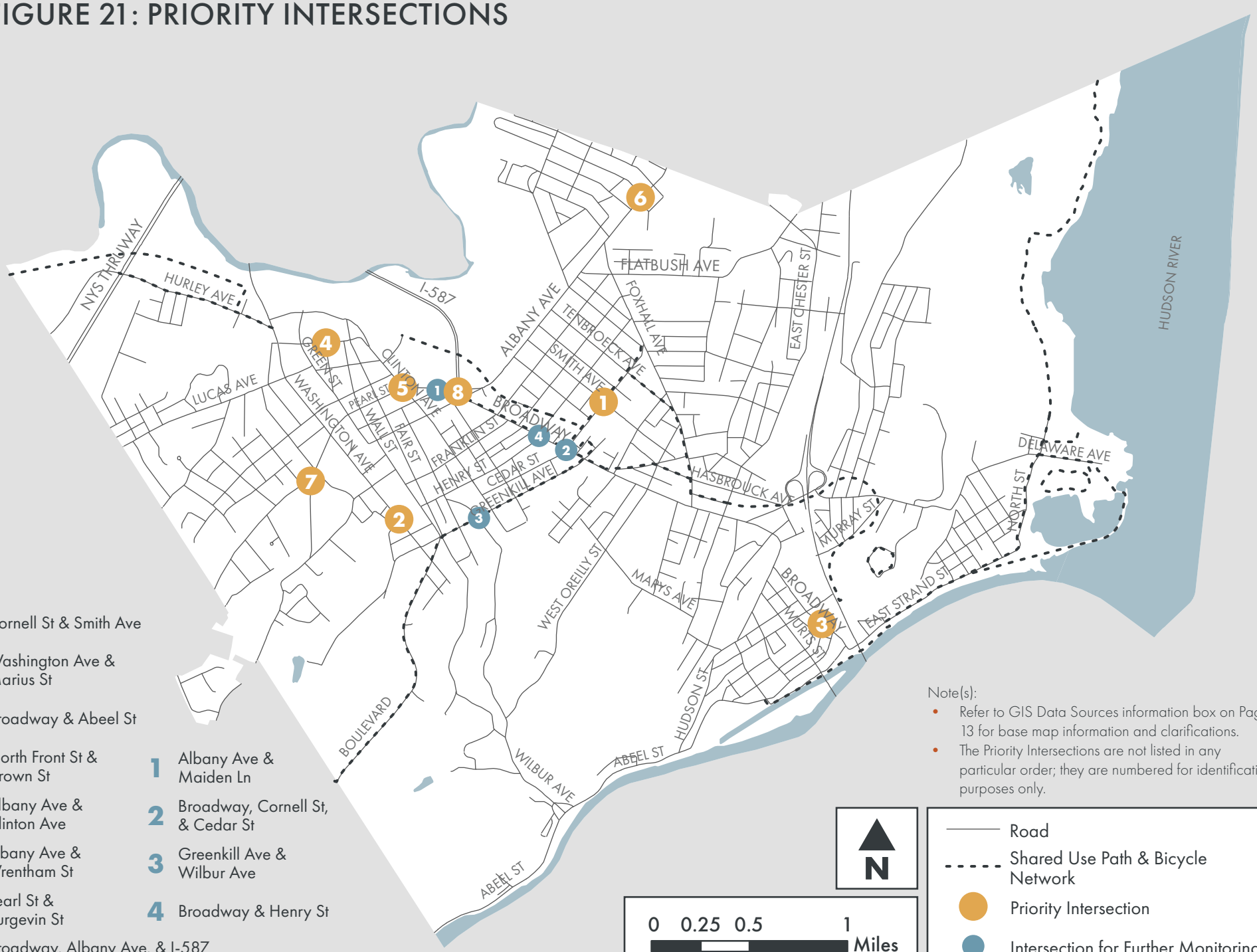
The policy and programs recommendations are not capital improvement projects, but rather a set of actions the City can take to help enhance and promote active transportation. These range from standard regulatory recommendations to more creative approaches the City can take, such as the implementation of a tactical urbanism project to help illustrate the benefits of certain pedestrian and bicycle accommodations prior to full implementation of any such project.

A general program recommendation across all Priority Intersection recommendations, Priority Corridor recommendations, and ongoing projects (as described in the Inventory & Analysis section), is that pre- and post- construction analysis be completed for all on-street and off-street facility improvements. This type of monitoring would provide a deeper level of understanding of the impact different on-street and off-street facility improvements have on pedestrian and bicyclist safety. With this information, the City of Kingston will be well-positioned to advocate for and pursue funding for continued on-street and off-street improvements with a track record of effectively improving safety. The Ulster County Transportation Council (UCTC) and Ulster County Transportation Safety Board (TSB) could be two potential partners in implementing these pre- and post-construction analyses.

It is important to note that the City of Kingston's zoning code was being revised at the same time as this PBMP was being developed. Therefore, the recommendations within this PBMP do not focus on regulatory changes to the zoning code. As the zoning code update is finalized, a review of both documents to identify areas of cohesion and dissonance will be critical to ensure effective implementation of PBMP recommendations.

Please note that the Priority Intersections and Priority Corridors are not listed in any particular order; they are numbered for identification purposes only.

FIGURE 21: PRIORITY INTERSECTIONS



Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.
- The Priority Intersections are not listed in any particular order; they are numbered for identification purposes only.

PRIORITY INTERSECTION 1: CORNELL ST & SMITH ST

Note: Time-lapse camera data was collected at this intersection (pg. 46-47).

This intersection is the location of Kingston's Post Office, and therefore was identified by the City of Kingston to have extremely high pedestrian traffic. Pedestrian traffic is well accommodated with accessible sidewalks and crosswalks on every side of the intersection. The only diagonal crossings by pedestrians were traveling from the North corner of Cornell and Smith (by Liquor Barn) to the South corner (by the Post Office). The diagonal crossing is attributed to the Southeastern crosswalk of Smith Ave is set back from the corner of the intersection, so many pedestrians shortcut this and walk corner-to-corner. Mid-block crossings are a problem at this intersection, but that is due mainly to motorists parking across the street from the Post Office and crossing the street directly from their vehicles.

Bicyclists traveling through this intersection via Cornell St generally obey traffic rules, are respected by motorists, and seem to have little difficulty traversing the intersection. Analysis from trail camera data found bicyclists traveling on Smith Ave were riding against traffic or on sidewalks. This is likely because Smith Ave has no shared roadway markings like Cornell St does, meaning some bicyclists do not know they can share the road or may not feel comfortable doing so.

Finally, vehicle traffic through this area can be fast-moving and in some cases will not stop fully at stop signs, creating a hazardous condition for bicyclists traversing the intersection and pedestrians crossing the street. According to the crash data provided in the Inventory & Analysis section, there is a history of some crashes in this area.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Relocate the Smith Ave Southeast crosswalk to the intersection corner like the other crosswalks.
- Add sharrow markings to all intersection approaches and restore any existing markings that have faded so both bicyclists and motorists know to expect bikes to move through the intersection obeying on-street traffic rules.
- Install raised crosswalks or design a raised intersection at all arms of the intersection to control motorist approach speed and encourage stopping fully at stop signs.

Off-Street Recommendations

- Explore opportunities to implement shared off-street parking arrangements with nearby property owners.
- Install signage at the "lips" bicycle rack at the Post Office so that it will encourage and enable people to choose biking as their mode of transport to and from the Post Office and reduce the vehicle traffic.
- Currently there is only one street light at this intersection on the Southeast approach along Cornell St. Install intersection lighting to improve visibility and awareness for all modes of travel.
- Provide educational materials on the risks of jaywalking, while increasing enforcement of driving regulations related to pedestrian rights.

Program and Policy Recommendations

- The intersection would benefit from increased patrols and enforcement of traffic laws, specifically during peak Post Office hours of service.

PRIORITY INTERSECTION 2: WASHINGTON AVE & MARIUS ST

Note: Time-lapse camera data was collected at this intersection (pg. 50-51).

This is the rear entrance to George Washington Elementary (GW) through which children can access the school and playground. The City of Kingston identified this as a priority intersection for analysis given the sensitivity of its location. Public input comments indicated further issues with this intersection including the inconvenient crossing pattern and unsafe motorist behavior in the school zone. No bicyclist complaints were received for this intersection.

The Northwest crossing was not visible to motorists turning out of the GW driveway or Marius St and, for this reason, the crosswalk was recently eliminated. However, pedestrians are continuing to cross in its previous location between the park and the pizza restaurant, likely out of convenience, despite it now being unmarked. The intersection is configured with yield markings (but no yield signage) for traffic approaching the crosswalk on Washington Ave. A crossing guard was not present during the trail camera data collection period. The sparse signage and markings may contribute to motorists failing to yield to pedestrians in the crosswalk. There are no signs or markings for the GW driveway exit.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

Alternative 1, Off-Street

- Given the continued pedestrian use of the Northwest crossing despite the removal of the crosswalk, consideration could be taken to reestablish a crossing from the North to the West corner of the intersection. In addition, design and implement a new GW driveway configuration such that it aligns with Marius St

Alternative 2, On-Street

- Do not realign GW driveway, but still establish a diagonal crosswalk from the North to the West corner of the intersection.
- Install signage prohibiting parking within 15' of the west corner of Washington Ave and Marius St to improve visibility for pedestrians in the Marius St crosswalk.

On-Street Recommendations

- Install rectangular rapid-flashing beacons (RRFB) on Washington Ave (in both the northbound and southbound directions) to raise driver awareness of the pedestrian crossing and encourage higher pedestrian yield rates.
- Install raised crosswalks or design a raised intersection approaching crossing on Washington Ave to ensure school zone speed limit is obeyed.
- Review school zone signage and striping to ensure compliance with standards.

Off-Street Recommendations

- Install ADA-compliant curb ramps at each crosswalk entrance.
- Re-establish crosswalk across GW driveway with ADA curb ramps; currently, there is no accessible route from the sidewalk on the South side of the driveway to the playground or school.

Program & Policy Recommendations

- This would be a good location for increased patrols and enforcement, specifically during peak morning and afternoon school hours.
- This intersection would benefit from the placement of a crossing guard during peak hours of school drop off and pickup times.
- In times when a crossing guard or patrols are not available, temporary cones and/or flags could be used to alert drivers to the pedestrian traffic in this area.

PRIORITY INTERSECTION 3:
BROADWAY & ABEEL ST

Note: Time-lapse camera data was collected at this intersection (pg. 44-45).

The City of Kingston identified this as a priority intersection for camera analysis due to its high level of pedestrian traffic and frequency of mid-street crossings. Camera analysis confirmed this. The intersection currently has crosswalks on its Northwest (uphill), northeast, and Southwest sides. It was observed that pedestrians preferred to cross mid-block rather than the crosswalk to access the Southern end of Broadway. There is currently only a stop sign on Abeel St approaching the intersection.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Conduct an engineering study to evaluate the feasibility of implementing an all-way stop controlled intersection with advance warning signage on the Northwestern approach coming down Broadway.
- Install a fourth crosswalk on the Southeast side of the intersection.
- Extend curbs at the intersection corners into Broadway to shorten the crossing distance for pedestrians and act as traffic calming measure.
- Install refuge islands for both proposed Broadway crossings as extensions of the existing medians.

Off-Street Recommendations

- Install ADA compliant curb ramps at the North and East corners of the intersection. The curb ramps here are currently rated "not accessible" and "less accessible," respectively.

Program & Policy Recommendations

- Enhance the visibility of pedestrians, bicyclists, and moving vehicles by enforcing NYS Vehicle & Traffic Law's prohibition of parking within 20 ft of an intersection crosswalk.

On Abeel St looking north to the intersection with Broadway
Google Street View

PRIORITY INTERSECTION 4:
NORTH FRONT ST & CROWN ST

This intersection received multiple public input complaints and was identified as an intersection of interest during field walkthroughs. Despite the ADA-compliant sidewalk ramps installed as part of the Pedestrian Safety Action Plan Intersection Project, there are still issues resulting in reduced pedestrian comfort. There is no signalization and limited signage. Pedestrian complaints note that motorists on North Front St speed and do not yield to pedestrians in the crosswalk. Often delivery vehicles parked illegally on North Front St reduce driver visibility at this intersection, making crossing even more difficult. The crossing distance is long (over 40 feet) and lacks refuge, causing pedestrians to report feeling very exposed and unprotected while in the crosswalk. The City of Kingston has also recently provided construction flags at each side of the crossing for pedestrians to gain the attention of motorists when attempting to cross. This has been met with dissatisfaction from pedestrians who find it ineffective at increasing the safety of this crossing.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Extend the North Front St curbs on either side of the crossing to the outer limits of the on-street parking to reduce the crossing distance, slow traffic approaching the crosswalk, and increase the visibility of pedestrians entering the crosswalk.
- Install a high-visibility, raised crosswalk spanning North Front St.

Off-Street Recommendations

- Install an ADA compliant curb ramp at the North side of the crossing.

On Crown St looking north to intersection with North Front St
Google Street View

PRIORITY INTERSECTION 5:
ALBANY AVE & CLINTON AVE

This intersection is of interest due to the higher frequency of vehicle crashes reported by UCTC in this area and a number of bicyclist complaints about interacting with traffic in the intersection. Bicyclists who were continuing straight heading Westbound indicated having difficulty merging with traffic in the left lane while waiting for the light.

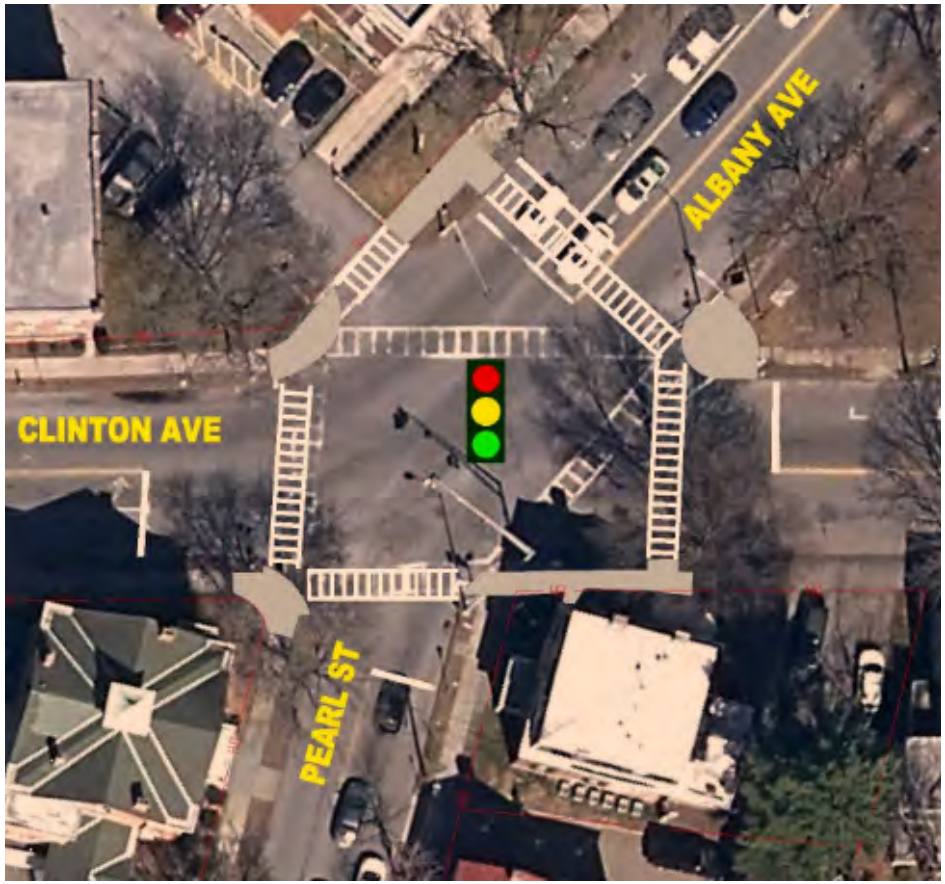
The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

Off-Street Recommendations

- Replace all 5 curb ramps in this intersection with ADA compliant curb ramps.

On-Street Recommendations

- Bicycle traffic approaching the intersection from the East on Albany Ave traverses the nearby I-587/Albany/Broadway roundabout via off-street paths and rejoins the flow of traffic on the West side of the roundabout. The following recommendations will alert motorists to the presence of bicyclists and enable both user groups to approach and traverse the Albany Ave and Clinton Ave intersection safely.
  - Add shared lane markings to Albany Ave on the East side of the intersection for both directions of travel.
  - Add signage to the West of the roundabout warning motorists exiting the roundabout to be aware of bicyclists rejoining the flow of traffic.
- Follow the City's Downtown Revitalization Initiative's (DRI) recommendation for signalizing the intersection and reconfiguring the crosswalks (depicted below).



https://engagekingston.com/dri-uptown-transportation-improvements

PRIORITY INTERSECTION 6:
ALBANY AVE & WRENTHAM ST

Note: Time-lapse camera data was collected at this intersection (pg. 42-43).

This intersection was identified as a priority intersection by the City of Kingston. It is the last intersection on Albany Ave before crossing the City line into the Town of Ulster and sees very high AADT. It is a 4-way signalized intersection with pedestrian crossing lights. The crosswalk markings at this intersection are badly faded and all four curb ramps were rated "less accessible." Pedestrian facilities at this specific intersection received few complaints, however conditions at the intersection are consistent with complaints and LOS issues along the entirety of Albany Ave. Albany Ave is a densely trafficked, high-speed corridor with no shoulder. Bicyclists opt to use the sidewalk instead of trying to navigate the traffic in this corridor. Pedestrians have no separation or physical buffer from the high speed traffic. Many of the improvements required at this intersection are representative of improvements required of all the intersections along the Albany Ave corridor.

The NYSDOT recently upgraded the signals and ADA accessibility at this intersection. Verification of field conditions with respect to this recently proejct is required to determine if improvements in addition to those listed below would be recommended.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Replace existing, faded crosswalk markings with new, high-visibility crosswalks.

Off-Street Recommendations

- Install improved street lighting so crosswalks are more easily visible to drivers at nighttime. The intersection currently is lit only by one dim streetlight placed at the Northern corner that does little to increase visibility in the area.

On Wrentham St looking north to intersection with Albany Ave
Google Street View

PRIORITY INTERSECTION 7:
PEARL ST & BURGEVIN ST

The City recently installed radar speed signs on Pearl St due to a high volume of public complaints of speeding vehicles.

Although not designated as a priority intersection by the City of Kingston, this intersection received the most public input complaints. One popular comment suggested realigning the intersection of Burgevin and Pearl to be more perpendicular and reduce the feeling that it was a "highway on-ramp." The City Police Department reported cars rolling through the stop sign on Burgevin St and entering Pearl St at high speeds, cars rounding the corner on Pearl St at high speeds in both directions, and inaccessible sidewalks in the area. Field investigations confirmed these reports. The sidewalks on the East side of Pearl, North of Burgevin, were rated "Less Accessible" in the sidewalk accessibility survey. The sidewalks on the South side of Pearl, South of Burgevin, are in good condition, but were rated "Not Accessible" because they are not continuous. The two curb ramps at the Burgevin crossing are rated "Less Accessible" (West) and "Not Accessible" (East). No stop bar or crossing markings are present.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Re-align the Burgevin St. approach to Pearl St to create a typical perpendicular T-intersection. This will also reduce the crossing distance across Burgevin St for pedestrians.
- Install a high-visibility crosswalk and painted stop bar across Burgevin St.
- Install a stop sign ahead and/or T-intersection ahead sign on Burgevin St to alert drivers to the approaching stop and T-intersection.
- Perform traffic study to determine feasibility of creating a three-way stop at this T-intersection.

Off-Street Recommendations

- Install ADA compliant curb ramps on each both sides of the Burgevin St crossing.

On Pearl St looking north to intersection with Burgevin St
Google Street View

PRIORITY INTERSECTION 8:
BROADWAY, ALBANY AVE, & I-587 ROUNDABOUT

Despite recently being reconstructed as a roundabout, this intersection still received a high number of public input complaints. Vehicles are reportedly not yielding to bicyclists and pedestrians in the crosswalks. There is also a lack of clarity as to how bicyclists should traverse the intersection. There is vehicular signage indicating bikes may be in the crosswalks, but nothing directing bicyclists to the crosswalks and sidewalks from the Broadway cycle track or the other approaching traffic lanes.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study. Moreover, because this roadway is owned by NYS, any future improvements would need to be approved by and completed in collaboration with the NYS DOT.

On-Street Recommendations

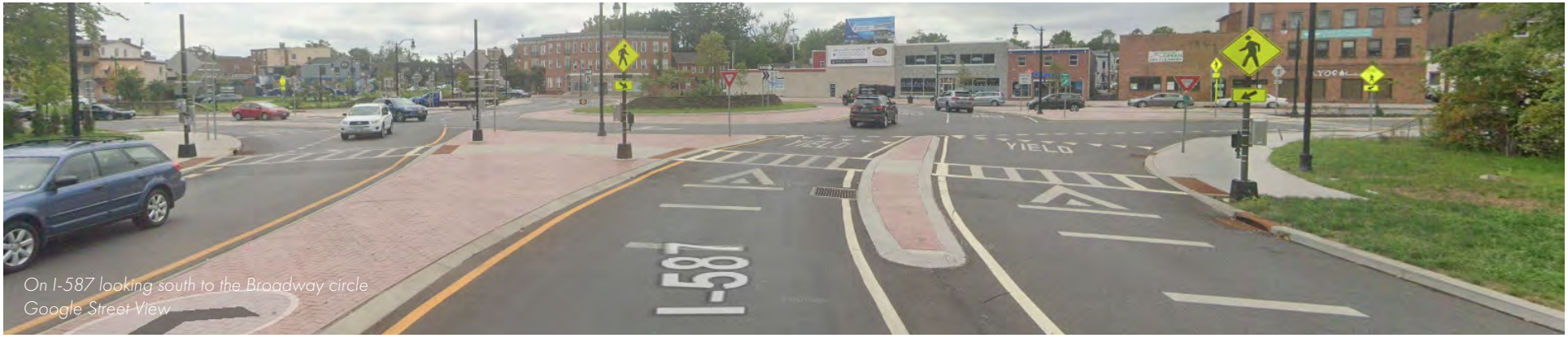
- Provide signage (both on- and off-road) directing cyclists through the traffic roundabout indicating their circulation throughout.

Off-Street Recommendations

- Provide markings and signage where bicyclists are using off-street facilities to alert both user groups to the other's presence in areas of a designated shared use path.

Program & Policy Recommendations

- Increased enforcement of NYS Vehicle & Traffic Laws.
- Perform a traffic study and/or collect use data to determine functionality of the new traffic patterns through this roundabout to determine possible futher recommendations in the future.



On I-587 looking south to the Broadway circle
Google Street View

INTERSECTION FOR FURTHER MONITORING 1: ALBANY AVE & MAIDEN LN

This intersection was selected for further monitoring due to the recent installation of sidewalk ramps. In addition, the crash frequency map provided by UCTC indicated this was one of the highest frequency vehicle crash areas in the City of Kingston.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

Off-Street Recommendations

- Install an ADA compliant curb ramp at the Southwestern corner of the intersection.
- The new curb extension at the Southeastern corner of the intersection would be a good spot to install a bench as a resting point for pedestrians that bridges the gap between Academy Green Park and the new benches on Broadway.

Since this data was collected, the intersection has been rehabilitated as part of the Pedestrian Safety Action Plan Intersection Project; verification of field conditions with respect recently completed construction is required to determine if additional improvements would be recommended.

INTERSECTION FOR FURTHER MONITORING 2: BROADWAY, CORNELL, & CEDAR ST

This intersection is one of the highest-frequency intersections for motor vehicle crashes in the City of Kingston. Public input reflected the dangerous nature of this intersection with comments concerning the size and signalization of the intersection as well as driver behavior, particularly that of motorists turning right on red.

Construction has been ongoing while public surveys were open. Verification of field conditions regarding the flow of traffic and signalization is required prior to recommendations.

It is recommended that the City perform a traffic study and/or collect use data to determine functionality of the new traffic patterns and intersection improvements to determine possible recommendations.

INTERSECTION FOR FURTHER MONITORING 3: GREENKILL AVE & WILBUR AVE

This intersection was the site of a recent bicyclist fatality, along with many public input complaints. While improvements were made here recently by replacing signals with stop signs and installing a cycle track, user perception is that this is still is an unsafe intersection. Users have also complained about the confusing stop signs on Wilbur, indicating it was unclear how they should interact with traffic when traversing the intersection.

Construction has been ongoing while public surveys were open. Verification of field conditions with respect to those described in complaints is required prior to recommendations.

It is recommended that the City perform a traffic study and/or collect use data to determine functionality of the new traffic patterns and intersection improvements to determine possible recommendations.

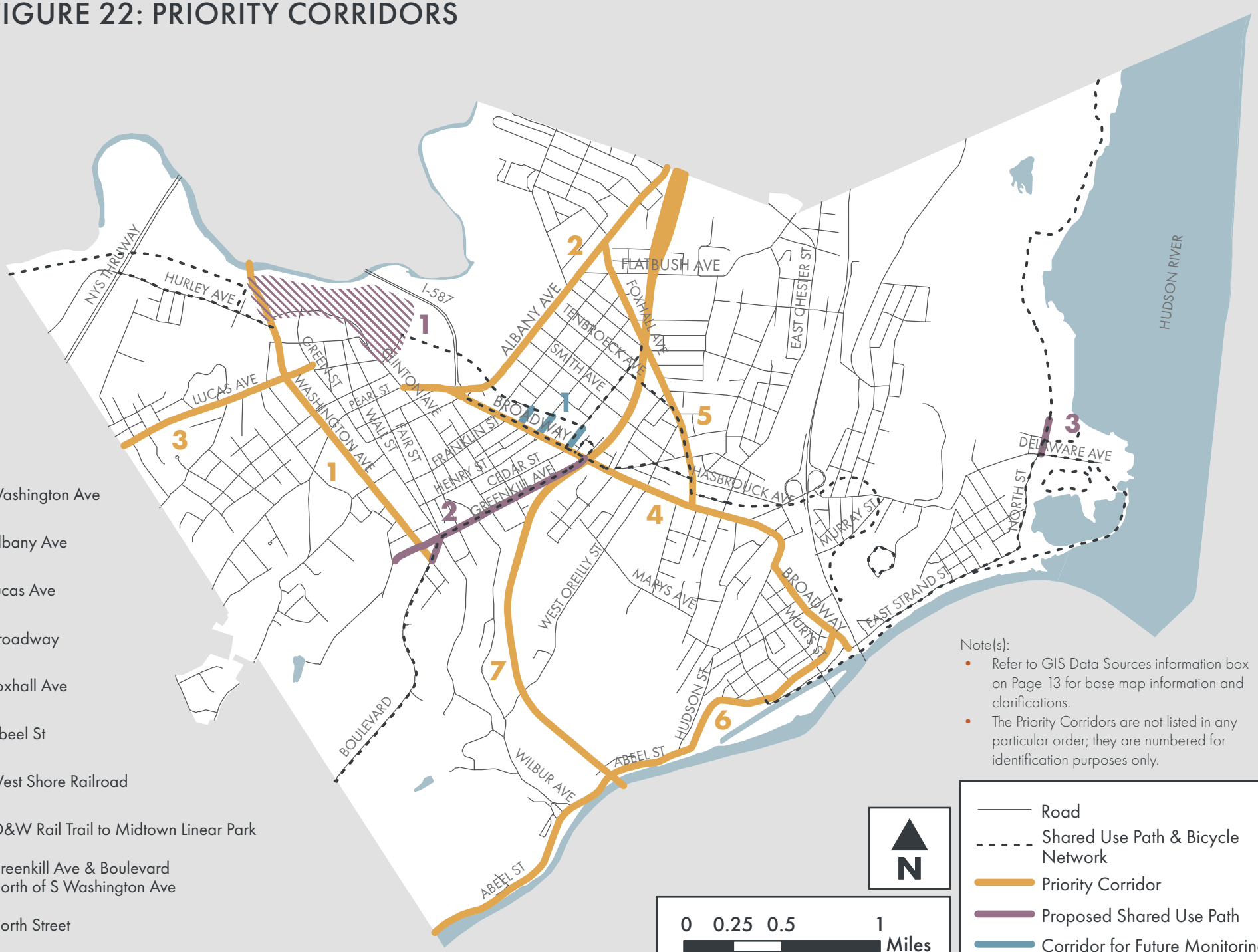
INTERSECTION FOR FURTHER MONITORING 4: BROADWAY & HENRY ST

This intersection was identified as a priority intersection because, according to UCTC crash data, it has the highest vehicle crash frequency in the City of Kingston. It received few public input complaints and they seem to be addressed in the completed renovation of Broadway.

Verification of field conditions with respect recently completed construction is required to determine if additional improvements would be recommended.

It is recommended that the City perform a traffic study and/or collect use data to determine functionality of the new traffic patterns and intersection improvements to determine possible recommendations.

FIGURE 22: PRIORITY CORRIDORS



PRIORITY CORRIDOR 1:
WASHINGTON AVE (CITY-OWNED)

Washington Ave was identified as a very common pedestrian corridor in the City. Cyclists and pedestrians entering Kingston from the north have had many complaints about the conditions there. This is also the preferred route by which residents of the neighborhood southwest of Washington and Uptown Kingston access G.W. Elementary, the medical facilities along NYS Rte. 32, Forsyth Park, and businesses in Uptown Kingston; usually by foot though some notable cycling use was reported as well. Public input complaints are substantiated by the collected LOS data which shows the worst cycling conditions City-wide at Washington Ave's north end and below-average pedestrian facilities along almost its entire length.

Some segments of the Washington Ave right-of-way are wide enough to incorporate several active transportation facilities. Therefore, a Complete Streets approach should be utilized when considering improvements to the Washington Ave corridor. In segments where the right-of-way is not wide enough to implement a Complete Street, the City may consider collaborating with adjacent property owners to explore opportunities to widen the right-of-way.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Complete an LOS impact study to consider realigning roadway striping such that bike lanes are established in the shoulders of Washington Ave, connecting the eastern end of O&W Rail Trail to the northern city limit.
- Designate Fair St and Wall St as bike routes that are an alternative to Washington Ave and provide signage to this effect along both these corridors, Washington Ave, and connecting streets so bicyclists are aware that alternate routes to Washington Ave exist.
  - Wall St is a one-way northbound corridor with high BLOS grades for most of its length. The BLOS grade is poor only between St James Ct. and Franklin St, where 2-way traffic is allowed.
  - Fair St is a one-way southbound corridor with high BLOS grades along its full length.

Off-Street Recommendations

- A sidewalk buffer exists for most of Washington Ave between North Front St and Greenkill Ave. Wherever buffer width allows, consider planting street trees.
- Extend sidewalks along S Washington Ave from Greenkill Ave to NYS Rte. 32 to provide continuous, off street pedestrian access to the new pedestrian facilities on NY-32.
- Address barriers to accessibility as noted in the Active Transportation Accessibility Plan.

On Washington Ave looking north to intersection with Greenkill Ave
Google Street View

PRIORITY CORRIDOR 1: WASHINGTON AVE (NYS-OWNED)

Note: Time-lapse camera data was collected at this crossing (pg. 48-49).

This is already an important pedestrian and bicycle connection area and will only become more so once construction on the O&W Rail Trail and the Uptown Transportation Improvements Project are complete (plans have been completed for both projects, but implementation is pending). Based on the high density of historical crashes - as mapped in the Inventory & Analysis section - the area where the Catskill Mountain Railroad crosses Washington Ave has been identified as one of the most dangerous in the City of Kingston. Data from a trail camera installed at this railroad crossing indicated that approximately 1/3 of the pedestrians in this area jaywalked, likely as a result of the lack of nearby crossing facilities. A number of bicyclists also crossed mid-block here, which resulted in a bicyclist fatality not long before the camera study was conducted.

Public input indicated high pedestrian and bicycle usage through this area and identified many issues with the region including:

- Inaccessible pedestrian facilities (sidewalks are discontinuous and, where present, have significant vertical heaving).
- Absence of any crossing facilities.
- Fear of interacting with high-speed traffic approaching Kingston from the Thruway, especially when trying to cross the street.
- Poor lighting that makes the limited facilities even more limited due to visibility concerns at night.
- A lack of separation from the roadway for pedestrians and bicyclists.
    - When the sidewalk ends abruptly on either side of Washington Ave, pedestrians are left to walk within the road's shoulder.
    - This is a designated bike route, yet has no markings. Bicyclists have to share a tight roadway with high speed traffic coming from/approaching the Thruway.

Public requests included a signalized crossing at the O&W Rail Trail entrance, accessible pedestrian facilities with a buffer from the high speed motor traffic, designated bike lanes, and a pedestrian/bicycle bridge to cross Washington Ave without having to interact with motorists.

Recommended alternatives include the following two alternatives. The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study. This section of Washington Ave is a State roadway so all design development and proposed improvements would have to be coordinated and approved by the NYS DOT.

Alternative 1, On-Street (Road Diet)

- Following the completion of an LOS impact study, consider dedicating the shoulders of the corridor north of the O&W Rail Trail's end point solely to bicycle facilities and creating a separate pedestrian crossing over the Esopus Creek on the East side of the existing bridge.
- Add signage, including radar speed sign, on Esopus Creek Bridge indicating reduced speed limit entering City of Kingston.
- Explore the option of converting eastern most lane on south side of Washington-Schwenk intersection to be right turn only onto Schwenk Dr, then eliminate this outer lane north of the intersection and convert to a cycle track connecting the O&W Rail Trail to the proposed facilities on Schwenk Dr; prior to implementing this road diet, an LOS impact study should be completed to understand the full implications of such a change to right-of-way configuration.

- Provide adequate, ADA-compliant pedestrian facilities extending from the Schwenk Dr intersection along Washington Ave to the City line.
  - Rehabilitate existing sidewalks on both sides of Washington Ave to meet ADA standards.
  - Provide crosswalks and signage at Super 8, Ulster Savings, Dutch Village Apartments, and Picnic Pizza entrances.
  - Build sidewalks where absent in front of the O&W Rail Trail entrance and Picnic Pizza.
- If the road diet were to be implemented, install a high-visibility crosswalk between the O&W Rail Trail to the west and the proposed cycle track to the east.
  - Improve street lighting in the area between the Esopus Creek Bridge and Schwenk Dr.
  - Install flashing warning signs/lights at the pedestrian crossing.
  - Shorten the lane transition to the southbound left turn lane and reconfigure lanes to establish a median shelter island for pedestrian/bicyclist crossing.
- Establish a paved connection to the O&W Rail Trail to the west.
- To the East, explore the possibility of an easement agreement with Ulster Savings to expand pedestrian and bicycle facilities away from the roadway to ultimately connect to the proposed facilities on Schwenk Dr.

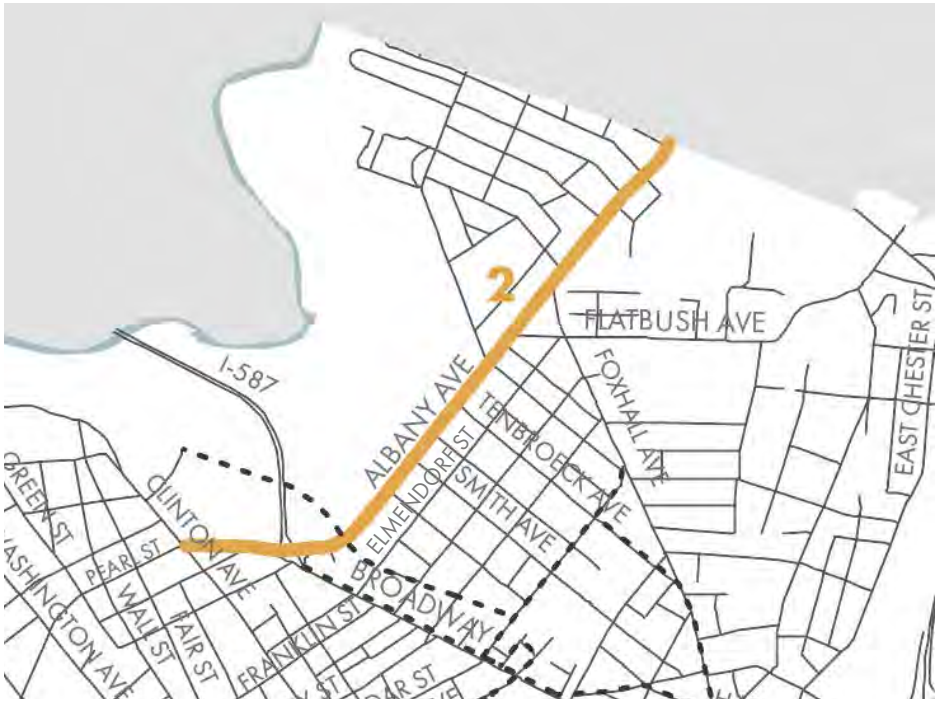
Alternative 2, Off-Street (Pedestrian Bridge)

- Construct a bicycle/pedestrian bridge across Washington Ave just south of the Catskill Mountain Railroad crossing.

While a pedestrian bridge was discussed as an off-street alternative, this is not recommended. The safety of a pedestrian in a street is principally a function of driver behavior, specifically vehicle speed and the opportunity for refuge depending on the width of the street. If a road is properly designed, there should be no deterrent to pedestrian crossing at grade.

Due to the varying right-of-way conditions, roadway ownership, and potential improvement alternatives along Washington Ave, it is recommended that a study of the entire corridor be completed. This process would result in a greater understanding of challenges and opportunities along the entire length of Washington Ave and result in a more comprehensive approach to bicycle and pedestrian improvements.

On Washington Ave looking north to the Catskill Mountain Railroad crossing
Google Street View



PRIORITY CORRIDOR 2:

ALBANY AVE

Albany Ave was found by public input to be a moderately traveled pedestrian and bicycle corridor. In addition to those reporting unsafe conditions while traveling Albany Ave, many public input comments expressed a desire for safe facilities on or an alternative to Albany Ave that would allow them to access the Town of Ulster to the North. Collaboration with the Town of Ulster would be advantageous to implementing a consistently safe and accessible pedestrian and bicycle route between the two municipalities.

Albany Ave south of Foxhall Ave is a 2-lane roadway with wide shoulders that are often occupied by on-street parking, preventing their use by bicyclists. Pedestrian facilities in this area are a mix of bluestone, asphalt, and concrete, much of which is in poor condition.

North of Foxhall Ave, Albany Ave widens to 4 lanes and has little to no shoulder. Traffic begins to move faster approaching the Town of Ulster. Sidewalks here are in better condition, but have no buffer from the busy, high-speed roadway.

Because the Albany Ave right-of-way is wide enough to incorporate several active transportation facilities, a Complete Streets approach should be utilized when considering improvements to the Albany Ave corridor.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- If Elmendorf St has sufficiently low AADT, it can be converted into a bicycle boulevard stretching between Broadway and Foxhall Ave, allowing bicyclists to circumvent the southern portion of Albany Ave.
  - Provide adequate crossing facilities and signage Broadway, Foxhall Ave, and all cross streets between the two to indicate that Elmendorf is a safer alternative to Albany Ave for bicyclists.
- Complete a corridor study to understand the feasibility and potential impacts of implementing a road diet and creating a Complete Street along Albany Ave north of Foxhall Ave. This would include reducing to a two-lane roadway with a center turning lane, giving bicyclists and pedestrians adequate space to commute safely.
  - Eliminate one lane on Albany Ave and realign roadway to consist of one travel lane in each direction, a bike lane in each shoulder, and a center turning lane for vehicles.
- Many crosswalks along the southern portion of Albany Ave have advance warning signage already. Ensure all crossings along the corridor have warning signage and high-visibility markings to allow pedestrians to cross safely and to allow bicyclists to safely access Elmendorf St as an alternative route.
- An additional alternative route for bicycles is through the Manor Ave neighborhood west of Albany Ave. North Manor Ave, Charlotte St, Savoy St, Wrentham St, and Plainfield St could be marked and signed as bicycle boulevards to provide bicyclists with a safe route into the Town of Ulster that does not require traveling on Albany Ave.
  - This would present an opportunity to build a shared use path connection between the Midtown Linear Park and the proposed system of bicycle boulevards via North Manor Ave. Consider conducting a feasibility study concerning the development of a shared use path through the undeveloped, privately-owned properties between Albany Ave and the Esopus Creek. This would be an excellent way to provide a safe pedestrian and bicycle alternative to the lower portion of Albany Ave.

Off-Street Recommendations

- Address barriers to accessibility as noted in the Active Transportation Accessibility Plan.
- Where sidewalk buffers exist along Albany Ave, consider planting street trees.

At intersection of Lucas Ave and Green St looking west down Lucas Ave
Google Street View

PRIORITY CORRIDOR 3:
LUCAS AVE

Lucas Ave is a heavily trafficked pedestrian corridor and a moderately trafficked bicycle corridor that received many public input complaints concerning traffic speeds, inconsistent bicycle and pedestrian facilities, and poor pavement conditions. Lucas Ave is the primary corridor used by residents of Uptown Kingston and the surrounding neighborhoods to access Forsyth Park, Bailey Middle School, Edson Elementary School, and the religious facilities and businesses farther west along the corridor.

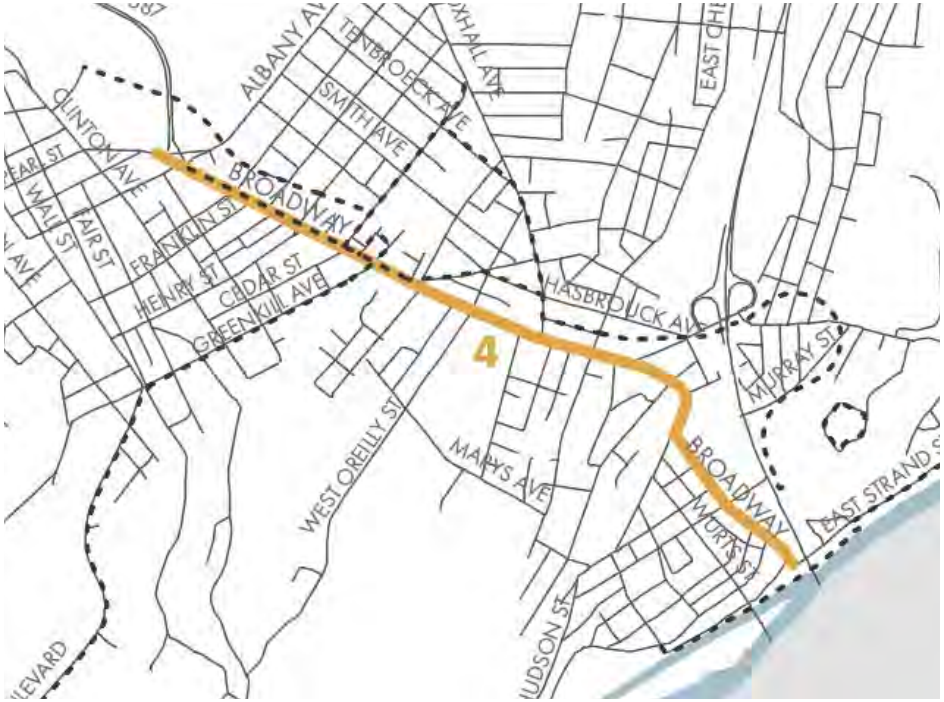
The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Install bike lane markings west of the Millers Lane intersection.
  - Due to the westbound left turn lane there is not sufficient space to develop two bike lanes approaching the traffic light at Millers Lane. To account for this, the westbound bike lane can be taken off-road where Forsyth Park begins ~150 feet east of the Millers Lane intersection. There is sufficient space to develop a small bike path or shared use path across the front of the park, spanning from the east end of the park to beyond the park's western driveway, where the road once again becomes wide enough for two shoulder bike lanes.
- East of Millers Lane, replace a row of on-street parking with a cycle track.
- Raise the crosswalks at Vorhees Ave and Dunneman Ave and install advance warning signage to slow motorists and ake them aware of pedestrians. Pedestrians have complained that speeding motorists on Lucas Ave are not respecting these crosswalks, creating dangerous crossing conditions.

Off-Street Recommendations

- Installing bicycle parking adjacent to key destinations along and around this corridor will enable residents to more easily access shopping and recreation in Uptown Kingston via active transportation.
- Extend sidewalks from Burhans Blvd west to the City boundary.
- Address barriers to accessibility as noted in the Active Transportation Accessibility Plan.



PRIORITY CORRIDOR 4: BROADWAY

Broadway is a minor arterial corridor for vehicle traffic in the City of Kingston. The Western portion of this street recently underwent renovations to realign the road, add a cycle track on its Northern side, and improve pedestrian facilities. These improvements are connected to the construction of a new roundabout at Broadway's Northwestern end and extend east along the corridor, terminating at the intersection of Broadway, Prince St, and Pine Grove Ave (approximately the middle of the corridor). Public input data identified it as one of the most heavily used cycling corridors in the City and also collected many complaints about the implementation of the new bicycling infrastructure. Public input data also reflected moderate pedestrian use. Few complaints were received about the new pedestrian infrastructure. Both pedestrians and bicyclists expressed a desire for the improved facilities to be extended farther east along Broadway to service the Midtown Neighborhood Center, Kingston High School, Kingston Hospital, Walgreens, and numerous local businesses. Level of service data supports what is being reported by pedestrians and bicyclists along this corridor.

Bicyclists expressed confusion regarding the best way to cross Broadway in a North-South direction to access the southern side streets from the cycle track and vice-versa. Comments indicated that not all traffic lights on the recently updated portion of Broadway are configured to accommodate bicycles. This requires further field investigation to confirm.

Pedestrians and bicyclists alike expressed concerns about the condition of Broadway's intersection with Prince St and Pine Grove Ave. This is where the bicycle facilities and pedestrian improvements along Broadway cease and it creates confusing conditions for the associated user groups. However, the public input survey was open while construction at this intersection was ongoing. Verification of field conditions to confirm that completed construction has rectified the common user issues reported for this area is required prior to recommendations.

Because the Broadway right-of-way is wide enough to incorporate several active transportation facilities, a Complete Streets approach should continue to be utilized when considering improvements to the Broadway corridor.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Provide connections to existing bicycle infrastructure. Efforts should be made to connect all parts of the Broadway corridor, including to the east of Pine Grove Ave, to the bicycle infrastructure on Jansen Ave established as part of the Empire State Trail.
  - Stripe W O'Reilly St and Andrew St north of Marys Ave and add shared roadway markings.
  - Add Shared Roadway markings along E O'Reilly St from Broadway to the Empire State Trail.
  - Install signage on W O'Reilly, E O'Reilly, Andrew, Foxhall, and E Chester directing bicycle traffic off of Broadway towards the Empire State Trail to avoid this area with very low BLOS grades.
  - As part of the proposed improvements on Foxhall Ave consider providing a connection to Kingston High School via Andrew St
    - Eliminate parking spaces on the South side of Broadway between Andrew St and Foxhall Ave (2 spaces) and install a short cycle track.
    - Provide a high visibility crosswalk and separate signalization allowing users of the cycle track to safely cross Broadway north to the proposed bicycle facilities on Foxhall Ave

- Extend curbs to narrow roadway between W Chester St and Delaware Ave and create safer walking conditions for pedestrians in the area of the Orchard St bus stop. This will also help to slow traffic approaching Delaware Ave This intersection was recently realigned, but is still receiving complaints regarding drivers traveling south on Broadway and turning left onto Delaware.
  - The curb extension on the South side should extend east past Stewart's
- Install high visibility crosswalks on either side of the Delaware Ave intersection. Relocate crosswalks as necessary to correlate to locations of proposed curb extensions.
- Extend curbs across Broadway at McEntee St and upgrade crosswalk signal.

Off-Street Recommendations

- Install bicycle parking at key destinations along Broadway and/or at key intersections along the Empire State Trail (EST) near areas of Broadway that do not have cycle track. This will allow bicyclists to travel via existing bicycle facilities, park their bicycles along the EST, and walk onto Broadway to access stores, the high school, the neighborhood center, etc. without having to try and maneuver through an area of Broadway with low BLOS grades and many public input complaints.
  - Consider bike parking at the following locations:
    - Intersection of Prince St & Grand St
    - Intersection of Hasbrouck Ave, Prince St, and E O'Reilly St; Southwest corner
    - Jansen Ave Municipal Parking Lot
- Install benches or other resting points in conjunction with the proposed curb extensions near Delaware Ave Given the proximity to Yosman Towers this will provide residents of the retirement community a resting place when accessing public transit or businesses on Broadway.
- Significant buffer space exists along the existing sidewalks on Broadway from Pine Grove/Prince to Andrew, however this space is mostly empty. Consider planting street trees as was done on the west side of Broadway to create a barrier between pedestrian and street traffic.
- Address barriers to accessibility as noted in the Active Transportation Accessibility Plan.

Policy & Program Recommendations

- Field survey of accessible facilities in Kingston found many of the newly installed ADA curb ramps on Broadway did not receive full accessibility ratings due to buildup of roadside debris covering the tactile warning strip. Public input comments also noted that the new planting beds are not being maintained. But it should be mentioned that the City didn't have jurisdiction to maintain at the time of the public input because it was still under control of the construction contractor. City staff has been allocated to maintain the new plantings. A program to encourage the participation of local businesses should be considered.
- Many public input comments reported motorists on Broadway parking and standing in the new cycle track. It is important for law enforcement to make efforts to prevent this behavior. If it is allowed to continue it will render the expensive bicycling improvements to Broadway completely obsolete.

At intersection of Broadway and W Chester St looking north up Broadway
Google Street View

PRIORITY CORRIDOR 5:

FOXHALL AVE

According to public input data, Foxhall Ave sees a significant level of use from both pedestrians and bicyclists. The corridor contains a railroad crossing as well as multiple intersections with unusual geometry and poor pedestrian crossing facilities. Pedestrians report vehicle speeds that feel in excess of the posted speed limit.

The corridor is anticipated to undergo construction in the near future, with construction plans already having been developed. Following construction, when conditions along the corridor have been changed significantly, a follow-up study should be conducted to ensure pedestrian and bicycle facilities have been adequately improved and the barriers to accessibility noted in the Active Transportation Accessibility Plan have been fixed.

PRIORITY CORRIDOR 6: ABEEL ST

Abeel St is a corridor running from the Rondout District to the City's southwest corner. The corridor has many tight turns and very narrow roadways with little to no shoulder. Traffic on the road is reported as moving faster than the posted speed limit. A portion of Abeel St was renovated several year ago, but the second phase of the project was never implemented and there still are no pedestrian facilities west of Ravine St. Because of these conditions, it sees low to moderate use at present, but a large number of public input comments expressed a desire for this street to be made accessible to bicyclists and pedestrians. Pedestrians requested facilities east of Wilbur Ave to connect Wilbur Ave, Block Park, and the existing pedestrian facilities in the Rondout District. Bicyclists mostly requested facilities west of Wilbur Ave to provide a safe connection to Route 213, Route 32, and Dewitt Mills Rd (to access the Wallkill Valley Rail Trail).

Potential improvements to Abeel St are constrained by a narrow right-of-way, rock outcroppings and steep slopes bordering the roadway, and built-out private properties. Due to the corridor's complexity, no improvements can be recommended without further investigation devoted to the limitations and opportunities along the corridor. It is recommended to conduct a feasibility study regarding development of pedestrian and bicycle infrastructure along the sides of the existing roadway on Abeel St.

PRIORITY CORRIDOR 7: WEST SHORE RAILROAD

The West Shore Railroad has several at-grade crossings - at Flatbush Ave, Gage St, Foxhall Ave, Ten Broeck Ave, and Smith Ave - that are cause for concern for pedestrian and bicyclist safety. In particular, public input identified Greenkill Ave as a difficult location for bicyclists and pedestrians, as there is no overpass over the railroad tracks

On-Street Recommendations

- The UCTC plans to initiate (in 2023) a corridor study along the West Shore Railroad to determine the optimum signage, signalizing, and crossing patterns at each at-grade crossing. Recommendations from this corridor study should be reviewed and considered for implementation.

Off-Street Recommendations

- Consider a feasibility study to connect the intersection of Greenkill and Fashion Ln, through private parking lots, to Smith Ave.

PROPOSED SHARED USE PATH 1: O&W RAIL TRAIL TO MIDTOWN LINEAR PARK

No clear connection currently exists between the end of the O&W Rail Trail at Washington Ave and the start of the Midtown Linear Park (MLP) in the Kingston Plaza, however, several nearby projects and structures suggest there are opportunities, but also complications, related to providing a more safe, accessible connection between these two pedestrian/bicycle amenities. Nearby Schwenk Dr has had conceptual planning conducted for a Complete Streets project, which would have provided bicycle facilities connecting to the MLP, but funding has not been secured to progress the project forward. The planned Higginsville Station Project will provide access to the O&W Rail Trail from Hurley Ave. Also, the Catskill Mountain Railroad also intends to install gates and lights at the Washington Ave railroad crossing, which may complicate any future plans for signalization in this area.

Due to the complexity of this area and the several opportunities for connecting the O&W Rail Trail to the MLP, a phased approach may be utilized to achieve this objective. The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

Short-Term: Install signage where the O&W Rail Trail terminates at the parking lot off Washington Ave to direct pedestrians to the signalized intersection on Schwenk Dr via the existing sidewalk network. For cyclists who are accessing Uptown, Kingston Plaza, and/or the MLP, install signage along the O&W Rail Trail that directs them to Hurley Ave, which recently underwent bicycle improvements, and then Schwenk Dr. Access from the O&W Rail Trail to Hurley Ave can be provided either just west of NYS Thruway underpass or through the parking lot where the O&W Rail Trail currently terminates. Appropriate bicycle markings along Schwenk Dr would be necessary.

Long-Term: Signalize the driveways out of the current Ulster Savings and Ulster Insurance Services facility to enable safer operations for both vehicles and pedestrians; coordination with the planned gates and lights at the Catskill Mountain Railroad crossing will be necessary. To ensure safe travel for cyclists as well, implement improvements along Washington Ave to the selected connection to Uptown, Kingston Plaza, and the MLP. Alternatives for this connection include:

- Preferred: Directing bicyclists and pedestrians to use the existing signal-controlled intersection of Hurley Ave, Washington Ave, and Schwenk Dr and providing bicycle facilities on Schwenk Dr.
    - If an agreement cannot be reached with the owners of the Kingston Plaza to allow construction of bicycle facilities through their property to connect to the MLP, the bicycle facilities would need to continue through the intersection of Schwenk Dr and Clinton Ave, then down Westbrook Ln to the entrance of the MLP.
    - Connect to the existing levee trail behind the Dutch Village Apartments to access the Kingston Plaza from the rear and establish a path through the back of the plaza to the MLP.
    - Utilize the existing driveway through the Dutch Village Apartments, which accesses the Kingston Plaza parking lot and provide bike facilities through the lot to connect to the MLP.
    - Create a trail along the edge of Ulster Savings' property that meets Schwenk Dr East of the intersection with Frog Alley. From there, a bicycle connection could be established through the Kingston Plaza or along the rest of Schwenk Dr to Clinton Ave and down Westbrook Ln to the start of the MLP.
- Not preferred: While not recommended due to safety concerns, another alternative would be a midblock crossing, a pedestrian/bicyclist-operated stop light with crosswalk, at the exit from the O&W Rail Trail. From this point, if agreements are reached with the appropriate private property owners, a trail could connect to Uptown, Kingston Plaza, and the MLP as noted in the options above.

Because a portion on Washington Ave is owned by NYS, any improvements to Washington Ave would need to be coordinated with and approved by the NYSDOT.

WESTBROOK LN

Westbrook Ln is a main connection to the Kingston Plaza that houses a hardware store, health services, a full-service grocery store, a transportation hub, and other businesses. In addition, it provides access to a trailhead for the MLP and a tourist railroad and - as identified in the Kingston Greenline initiative - could serve as a segment of the connection between the MLP and the O&W Rail Trail. Westbrook Ln is already heavily used by pedestrians and cyclists.

On-Street Recommendations

- Create a road diet to narrow travel lanes. Remove the right turning lane from Westbrook Ln to Clinton Ave. If the lane widths will accommodate, consider bike lanes on either side.

Off-Street Recommendations

- Construct sidewalks on the west side and in-fill sidewalks on the east side.

At intersection of Clinton Ave and Westbrook Ln looking northeast up Westbrook Ln. Google Street View

PROPOSED SHARED USE PATH 2:

GREENKILL AVE & BOULEVARD NORTH OF S WASHINGTON AVE

Greenkill Ave was recently incorporated into the Empire State Trail. The corridor now has a cycle track on its southern side. For the eastern portion of the corridor, this cycle track moves away from the road and becomes a shared use path. The corridor's inclusion in the Empire State Trail has resulted in a high rate of usage, and complaints, by local bicyclists. The corridor also has three public transit stops along its western end that contribute to significant levels of pedestrian traffic.

The following recommendations are schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

On-Street Recommendations

- Add signage beginning at the bridge at the east end of the corridor to provide a clear route for connection between the Empire State Trail and the Broadway cycle track.
- Add signage and roadway markings as necessary to clearly indicate how bicyclists should move between Route 32 and Greenkill Ave for continuous use of the Empire State Trail. Bicyclists have reported difficulty locating the path of the Empire State Trail through this intersection.
- At the intersection of Greenkill, Fair, Wall, South Wall, and Route 32; consider extending curbs at crossings, installing a median island between Fair St and Wall St, and restoring crosswalks as necessary to increase visibility. Crossing distances here are long and lack refuge, but are frequently used by pedestrians to access public transit stops. Consider recommendations from the Uptown Stockade Area Transportation Plan, 2009, including changing the direction of travel on Fair St and Wall St, and a roundabout at the Wall St/Fair St and NY 32 intersection.
- The shared use path along the corridor terminates suddenly and pedestrians must cross the road before accessing the bridge over Broadway. Consider a curb cut on Greenkill for cyclists to cross at Iwo Jima. There have been several complaints that motorists speed past this crosswalk and do not yield to crossing pedestrians. Consider raising this crosswalk to decrease vehicle speeds through the area.

Off-Street Recommendations

- Establish a continuous, well-defined, and protected shared use path along the length of Greenkill Ave from Broadway to Marius St and extending down Boulevard to S Washington Ave; this process may require reconfiguring existing utility and stormwater infrastructure.
- Consider providing street lighting to improve safety for nighttime users of the shared use path.
- Address barriers to accessibility as noted in the Active Transportation Accessibility Plan.
- Provide bicycle parking near key destinations. For example, consider bicycle parking at both ends of the shared use path to support access to RUPCO housing and nearby businesses at the eastern end and public transit at the western end.
- Consider the off-road trail recommendations in the Wallkill Valley Rail Trail Extension Feasibility Report.

On Greenkill Ave looking east to intersection with Wall St, Fair St, and S Wall St
Google Street View

PROPOSED SHARED USE PATH 3: NORTH ST

In 2021, the City of Kingston submitted an application for a Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant to connect the waterfront business district to the start of the Hudson River Brickyard Trail. One of the segments included in the grant application was North St between Delaware Ave to Hutton Brick Yard. In alignment with this previously conceptualized project, the following is recommended:

The following recommendation is schematic in nature only and would require a full feasibility study and design to be completed, including a traffic study.

Off-Street Recommendations

- Install a 10 ft shared use path along North St, providing a safer and more comfortable passageway for pedestrians and bicyclists on the Empire State Trail.
- Either route the shared use path around the existing gate or implement an alternative to the gate that allows passage by pedestrians and bicyclists (e.g. bollards).

CORRIDOR FOR FUTURE MONITORING 1: MIDTOWN LINEAR PARK TO BROADWAY CYCLE TRACK

After crossing under Albany Ave and Elmendorf St, the Midtown Linear Park intersects Downs St and O'Neil St before terminating at Cornell St. The areas connecting the Midtown Linear Park and the cycle track on Broadway have few bicycle facilities, if any, and many of their sidewalks received poor accessibility ratings in the field survey. Public input complaints also indicate poor crossing conditions where the Midtown Linear Park intersects City streets.

This area is currently being addressed through a City project at the municipal lot. Verification of field conditions to confirm that the completed project has rectified the common user issues reported for this area is required prior to recommendations.

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

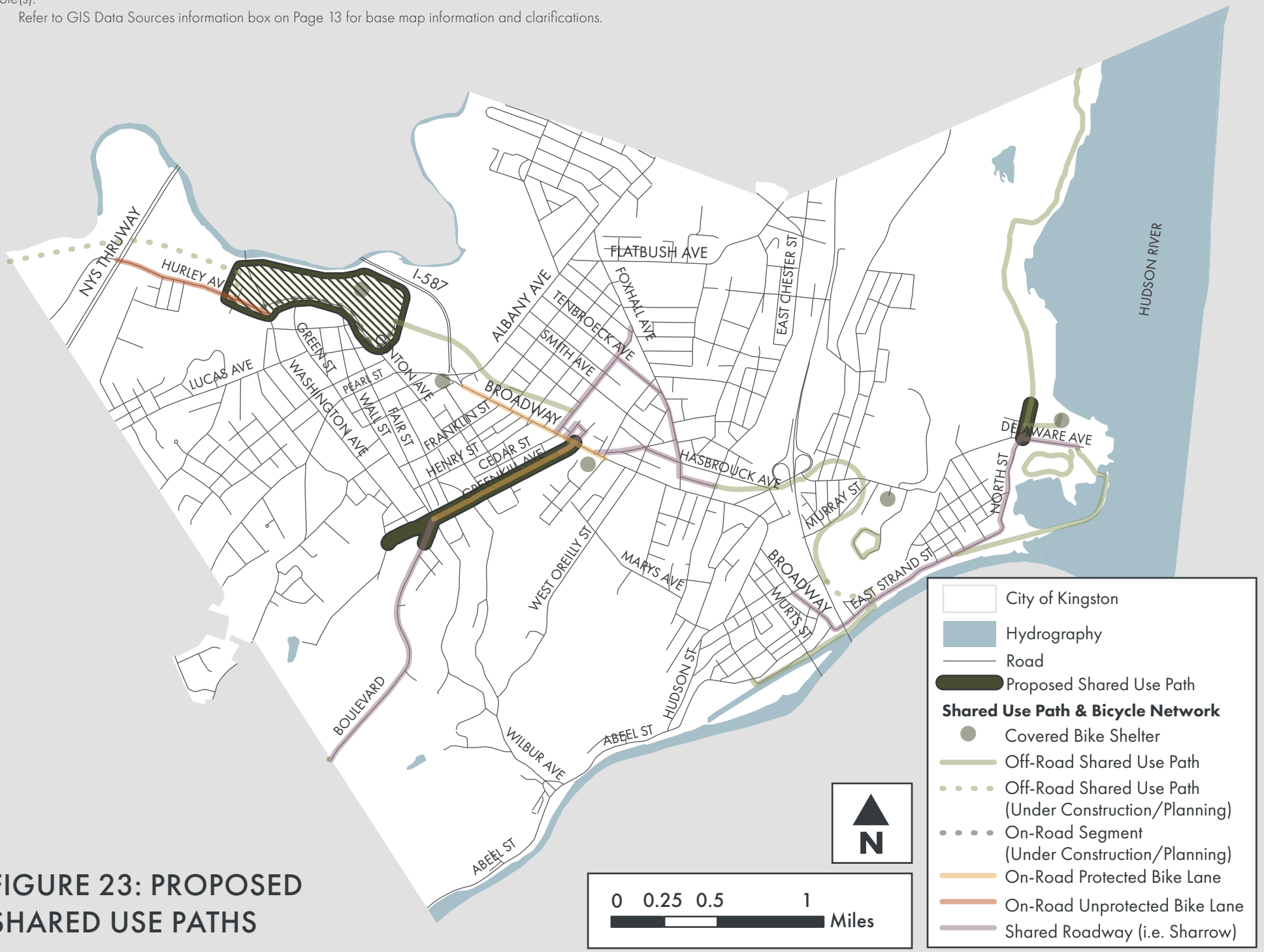


FIGURE 23: PROPOSED SHARED USE PATHS

Other Policy & Program Recommendations

SIDEWALK ACCESSIBILITY IMPROVEMENT AREAS (FIGURE 24)

While sidewalk accessibility improvements are recommended throughout the Priority Intersections & Priority Corridors, it is also important to plan enhancements to pedestrian facilities at a birds-eye view and support the implementation of upgrades in an organized and informed manner. This approach will support the implementation of accessible sidewalk facilities where there is the most demand or need. Therefore, it is recommended that the City and its partners utilize a prioritation system to plan sidewalk accessibility improvements, with the following three priority areas:

- **1st Tier Priority:** This area covers the City's main, high traffic corridors (exclusive of 9W and the NYS Thruway).
- **2nd Tier Priority:** This area largely encompasses commercial areas and public facilities.
- **3rd Tier Priority:** This area focuses on densely populated residential neighborhoods.

To reduce the segmentation of accessible routes - and, instead, promote continuous accessible route development - new sidewalk facilities should be connected to existing facilities. The City may also consider implementing a system in which residents in need of ADA-compliant sidewalk facilities can request connections between their homes and existing accessible routes.

BLUESTONE PRIORITY AREAS (FIGURE 25)

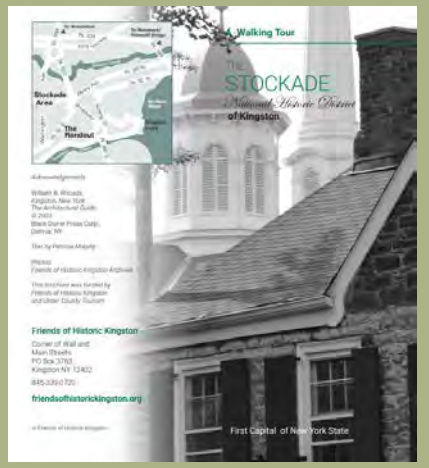
The City of Kingston's bluestone sidewalks are a cornerstone of its historic character. However, they pose accessibility concerns due to their tendency to need more frequent repair and maintenance. Bluestone is also more expensive than concrete and some other traditional sidewalk materials, hindering property owners' ability to address all repair and maintenance needs without additional burdens to economically disadvantaged property owners. Therefore, it is recommended that the City utilize bluestone preservation/restoration priority areas to inform the long-term maintenance of the City's bluestone network. These priority areas are organized into two tiers:

- **1st Tier Priority:** This area encompasses areas of substantial existing bluestone presence and the Friends of Historic Kingston's self-guided walking tours, which traverse sections of the Rondout Historic District, Fair St Historic District, and Stockade Historic District.
- **2nd Tier Priority:** This area covers the two proposed historic districts, which are generally locate at the intersection of Abeel St and Wilbur Ave and the neighborhood bounded by Yeoman St, Delaware Ave, North St, and East Strand St.

By focusing bluestone preservation and rehabilitation within a limited section of the City that is already historically designated and leveraged as a resident and tourist attraction (1st Tier Priority), it will be more economically feasible to maintain bluestone in an accessible condition. The 2nd Tier Priority areas, which include proposed historic districts, may be considered for bluestone preservation and rehabilitation when ADA-compliance is being maintained within Tier 1 and excess resources for implementation and maintenance are readily available for use in Tier 2. For areas outside of the bluestone preservation/restoration areas, it is recommended that the City consider utilizing more durable, ADA-compliant sidewalk materials that will support the overall walkability of the entire City.

It is important to note that, at the time of the development of this PBMP, the City's zoning code included regulations regarding the placement of bluestone sidewalks (§358-3B and §358-5A) and was concurrently undergoing an update. The bluestone priority areas do not align precisely with the existing zoning regulations and should be compared to the updated zoning code upon completion.

The Friends of Historic Kingston offer community members and visitors brochures for self-guided tours in the Stockade Historic District and Rondout Historic District. An audio clip is also available for the Stockade Historic District Walking Tour. These materials introduce users to the history and significance of several of the City's historic structures.



Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

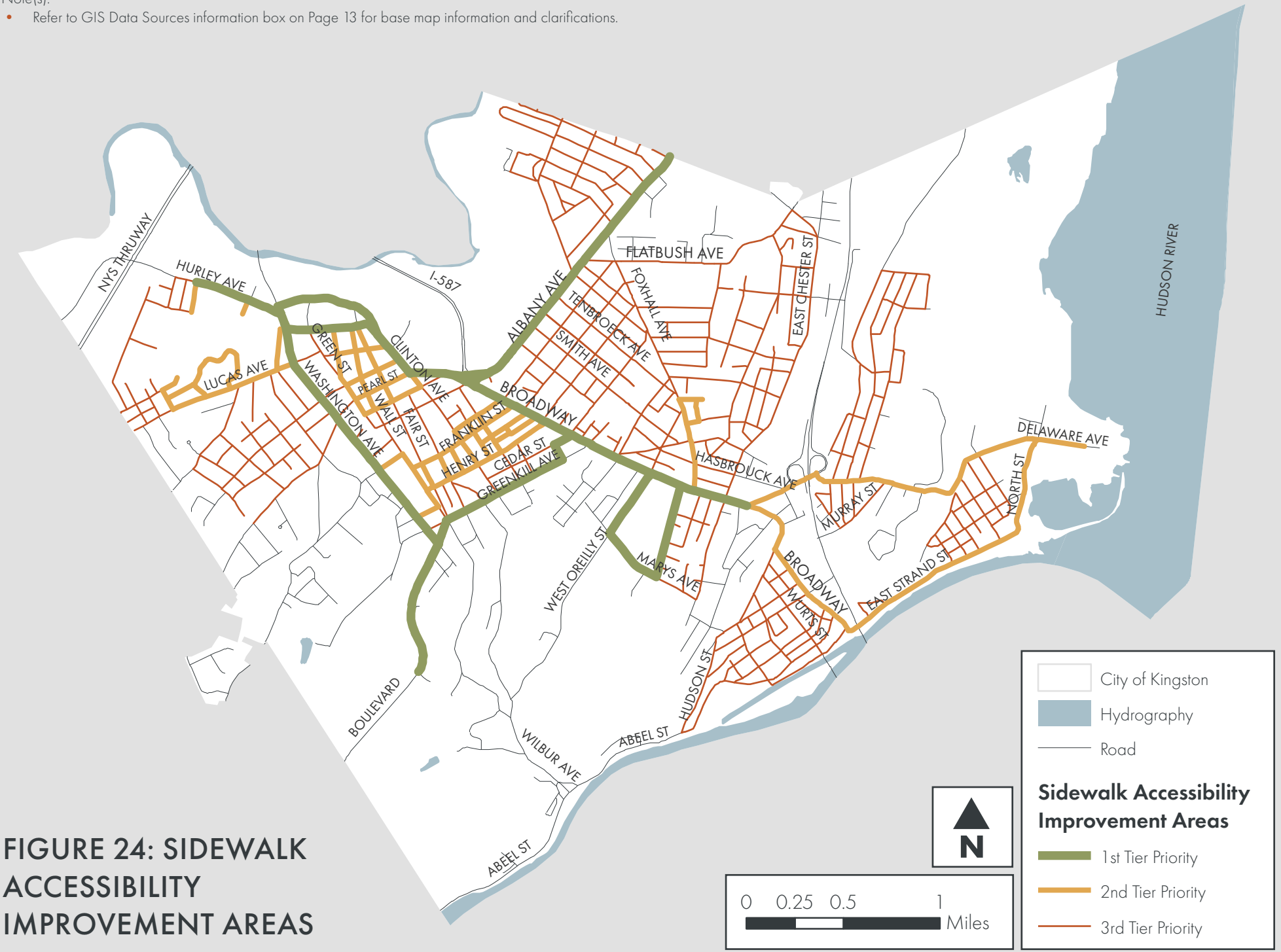


FIGURE 24: SIDEWALK ACCESSIBILITY IMPROVEMENT AREAS

Note(s):

- Refer to GIS Data Sources information box on Page 13 for base map information and clarifications.

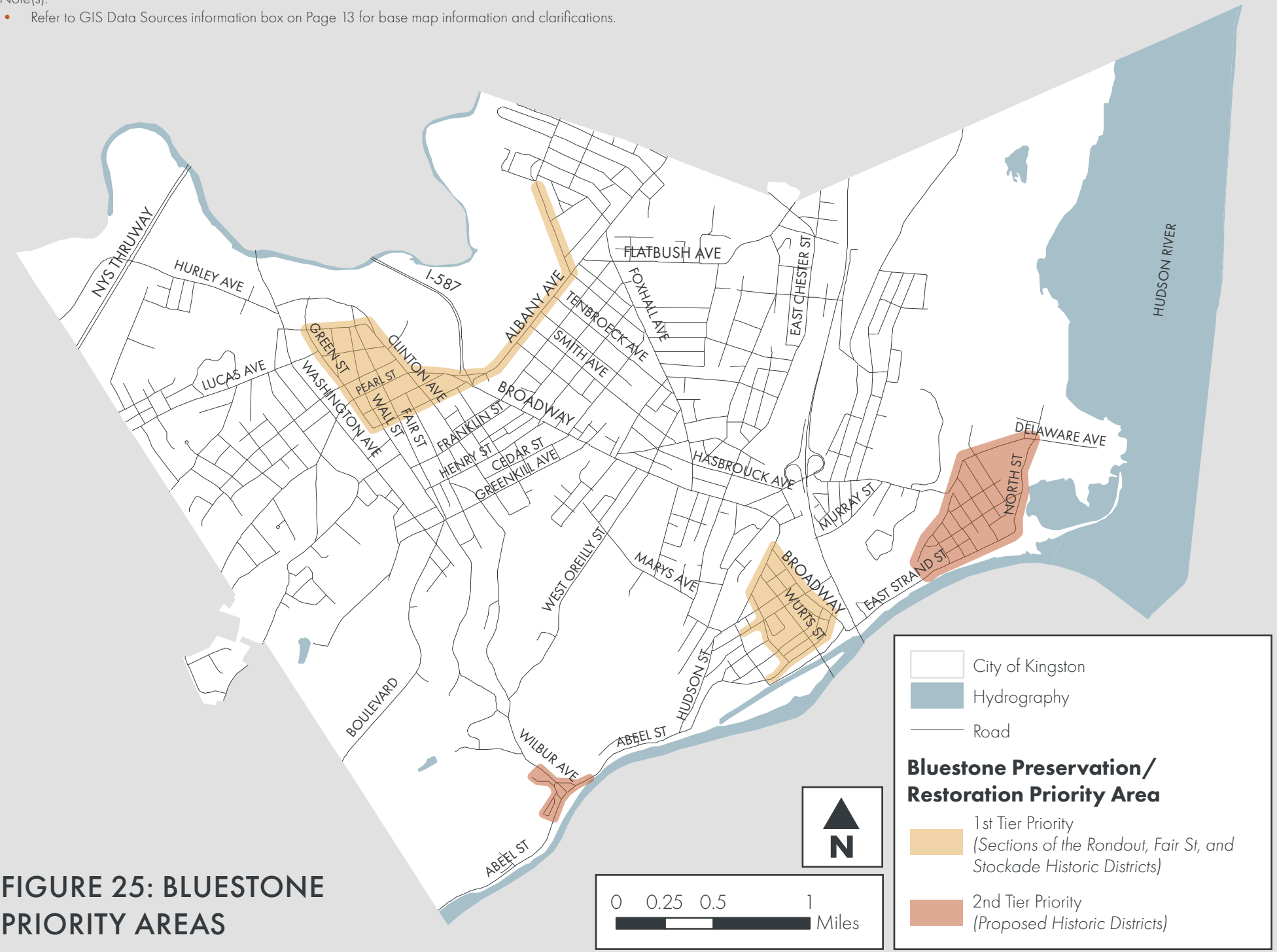
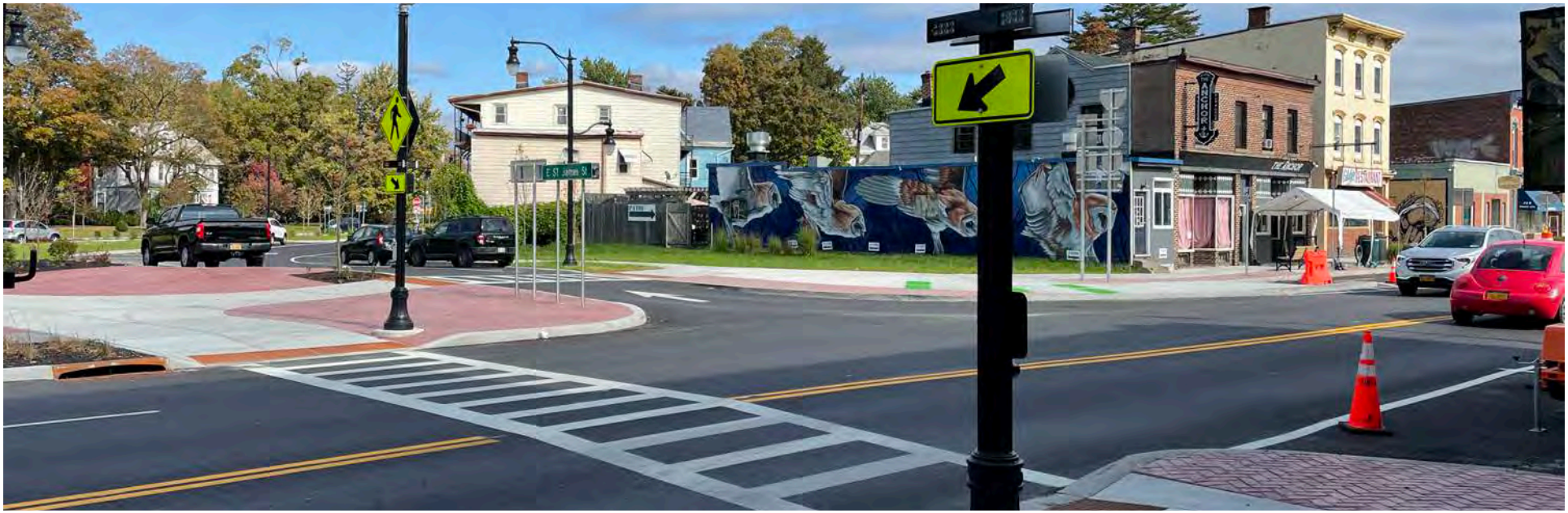


FIGURE 25: BLUESTONE PRIORITY AREAS

CHAPTER 6: FACILITY DESIGN GUIDANCE



The previous section identifies numerous recommended infrastructure improvements that are comprised of a variety of facility types. The design guidelines contained in this section are intended to support the recommendations presented in this PBMP, and to serve as an ongoing reference for the Kingston community. They are not intended as comprehensive design standards. Rather, they reference existing design standards and provide clarification or supplemental information as necessary. There are several primary sources of bicycle and pedestrian facility design information that were used to develop the guidelines provided in this section.

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities

This document is intended to present information on how to accommodate bicycle travel and operations in most riding environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for bicycle design.

AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities

This document is intended to present information on how to accommodate pedestrian travel and operations in (primarily) roadway environments. It is the design guidance upon which most state and local design guidelines are based. In many jurisdictions this document is considered to set the minimum values for pedestrian design.

NY Department of Transportation Highway Design Manual Chapter 17 Bicycle Facilities Design

This document provides guidance for bicycle facilities that are included in Department of Transportation designs. Because of the scope of this document, its design criteria, while they are relevant to local projects, are not required to be met for local projects unless Federal Transportation Funds are used.

NY Department of Transportation Highway Design Manual Chapter 18 Pedestrian Facilities Design

This document provides guidance for pedestrian facilities that are included in Department of Transportation designs. Because of the scope of this document, its design criteria, while they are relevant to local projects, are not required to be met for local projects unless Federal Transportation Funds are used.

Institute of Transportation Engineers Designing Walkable Urban Thoroughfares: A Context Sensitive Approach

This document's development was supported by the Federal Highway Administration (FHWA). Designing Walkable Thoroughfares helps designers understand the flexibility for roadway design that is inherent in the AASHTO guide A Policy on the Geometric Design of Highways and Streets with a focus on balancing the needs of all users.

Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD)

The MUTCD is the national standard for signing, markings, signals, and other traffic control devices. New York State has also adopted a supplement to the MUTCD that provides New York specific standards.

Federal Highway Administration Separated Bike Lane Planning and Design Guidance

Outlines planning considerations for separated bike lanes (also sometimes called "cycle tracks" or "protected bike lanes") and provides a menu of design options covering typical one-way and two-way scenarios. To encourage continued development and refinement of techniques, the guide identifies specific data elements to collect before and after implementation to enable future analysis across facilities in different communities. It identifies potential future research, highlights the importance of ongoing peer exchange and capacity building, and emphasizes the need to create holistic ways to evaluate the performance of a separated bike lane.

National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide

FHWA has issued a memo supporting the use of this document to further develop non-motorized transportation networks, particularly in urban areas. Many of the designs in this document have been used successfully in urban areas. However, care should be exercised when applying the treatments described in this document to suburban or rural areas. Due to the differences in building and population density, some of these treatments may not be necessary or appropriate when considering low-density areas of the City.

The following pages contain design best practices and guidelines for the following facility types:

- Bike lanes
- Multi-use paved shoulders
- Shared lane markings
- Bike routes
- Bike boulevards
- Bike parking facilities
- Sidewalks
- Shared use paths
- Curb ramps
- Midblock crossings
- Complete Streets
- Speed Limits
- Wayfinding

The City should utilize the information contained in this section when developing design concepts for the recommendations included in this PBMP to ensure that the facilities implemented are consistent with national standards.

Bike Lanes

A bike lane is a portion of the roadway that has been designated for preferential or exclusive use by bicyclists by striping, signing and pavement markings (the MUTCD does not require signs, but in New York the legal definition of a bike lane requires signs). Bike lanes are intended for one-way travel, usually in the same direction as the adjacent travel lane. Bike lanes should be designed for the operation of bicycles as vehicles, encouraging bicyclists and motorists to interact in a safe, legal manner. Bike lanes should be designated with bike lane markings, arrows, and bike lane signs.

WIDTH

The AASHTO Guide for the Development of Bicycle Facilities provides guidance on the width of bike lanes. The following points summarize this guidance:

- Under most circumstances the minimum recommended width for bike lanes is 5 feet;
- For roadways with no curb and gutter and no on-street parking, the minimum width of a bike lane is 4 feet;
- Along sections of roadway with curb and gutter, a usable width of 4 feet measured from the longitudinal joint to the center of the bike lane line is recommended (this means that 4 feet of pavement is sufficient when coupled with the gutter pan; it is also conceivable to interpret the guidance as meaning that even narrower pavement can be used as long as a total of 5 feet of ride-able surface is maintained);
- Additional width is desirable on higher speed roadways.

INTERSECTIONS

At intersections, bike lanes must be designed to encourage legal movements at the intersection; this includes proper positioning of bicyclists and motorists. Bike lane stripes should be dashed on the approaches to intersections without right turn lanes. Where there are right-turn lanes, through bike lanes must be placed to the left of the right turn lane. Right-turn only lanes should be as short as possible in order to limit the speed of cars in the right turn lane. Fast moving traffic on both sides can be uncomfortable for bicyclists (NACTO). Section 4.8 of the AASHTO Guide for the Development of Bicycle Facilities (2012) provides numerous graphics illustrating bike lane markings at intersections. Bike lanes should be continuous through intersections. For example, if a bike lane is provided to the intersection, a receiving bike lane should be provided on the departure side of the intersection.

BUFFERED BIKE LANES

A buffered bike lane is a bike lane that is separated from adjacent through lanes by a striped out buffer area. In some locations it may be desirable to use less than the full space available for a bike lane. Such locations include sections of roadway where a wide bike lane might be perceived as on-street parking or another travel lane. In these locations a buffered bike lane may be considered. A buffered bike lane may also be considered where a bike lane of six or more feet is being provided to meet a minimum level of accommodation. At mid-block locations the buffered bike lane is separated from the travel lanes by a chevroned buffer. The width of the buffer will vary depending upon such conditions as motor vehicle speed, percent heavy vehicles, roadway cross slopes, and desired level of accommodation of bicycles. At intersections, buffered bike lanes must be striped to allow for right turning motorists. Typically this is done by eliminating the buffer on the approach to intersections and striping the area as one would a regular bike lane.

Conventional bike lane

Buffered bike lane

Multi-Use Paved Shoulders

In terms of Bicycle Level of Service, simply providing delineated space that can be used by bicyclists is secondary to designating bike lanes. Roads with paved shoulders where no other active transportation facilities exist are shared by more than one type of user (bicyclists, pedestrians, in-line skaters and vehicles for emergency use). Design of new or retrofit of existing paved shoulders should comply with AASHTO standards; "on uncurbed cross sections with no vertical obstructions immediately adjacent to the roadway, paved shoulders should be at least 4 ft. wide to accommodate bicycle traffic. Shoulder width of 5 ft. is recommended from the face of a guardrail, curb, or other roadside barrier to provide additional operating width..." Areas with expected higher bicycle use should have increased shoulder widths as necessary in addition to areas where motor vehicle speeds exceed 50 mph or are used by trucks and buses.

SIGNING ROADWAYS WITH PAVED SHOULDERS

The Bicycle Warning sign (W11-1)

Kingston may want to sign some roadways with paved shoulders to either guide bicyclists to destination or to alert motorists to the presence of bicyclists. The sign would be supplemental to simply provide space for bicyclists within the shoulder. If the subject roadway is along a designated bicycle route, then bike route guidance signs can be used to alert bicyclists to the presence of the interregional or state route. If the City, or others based on the jurisdiction of the road, determines it is appropriate to warn motorists of the potential presence of bicyclists along a section of roadway with paved shoulders, then special signing, if approved by NYSDOT, would be required. The Bicycle Warning sign (W11-1) alone could be used as it is to alert road users to locations where unexpected entries into the roadway by bicyclists could be expected. The NYSDOT MUTCD section 1A.03 Design of Traffic Control Devices states:

Option 03A

Highway agencies may develop word message signs to notify road users of special regulations or to warn road users of a situation that might not be readily apparent. Unlike symbol signs and colors, new word message signs may be used without the need for experimentation.

Standard 03B

Any change to a word message sign that can be considered more than a minor modification see next Option) shall be approved by the New York State Department of Transportation before it is implemented.

Option 03C

With the exception of symbols and colors, minor modifications in the specific design elements of a device may be made provided the essential appearance characteristics are preserved. Such minor revisions may include making a word plural or singular; changing the hours listed on a sign; word deviations such as "road" for "street" on a sign; etc. Although the standard design of symbol signs cannot be modified, it may be appropriate to change the orientation of the symbol to better reflect the direction of travel.

Bike Routes

Bike routes are not an actual facility type. A bike route is a designation of a facility, or collection of facilities, that links origins and destinations that have been improved for, or are considered preferable for, bicycle travel. Bike routes include a system of route signs that provide at least the following basic information: destination of the route, distance to the route's destination, and direction of the route.

Bike routes can be designated in two ways: General Routes and Number Routes. General Routes are links tying specific origins to specific destinations. Number Routes form a network of bike routes that do not necessarily connect specific destinations, but serve as general travel routes through an area. General Routes connect users to destinations within a community. Typical destinations include the following:

- Attraction Areas (i.e. libraries, parks, etc.)
- Neighborhood Areas (i.e. historic neighborhoods, etc.)
- Trail Networks or Trailheads (i.e. O&W Rail Trail, Kingston Point Rail Trail, etc.).

There are two State Bike Routes within the City of Kingston:

1. **State Bike Route 28**
2. **State Bike Route 32**

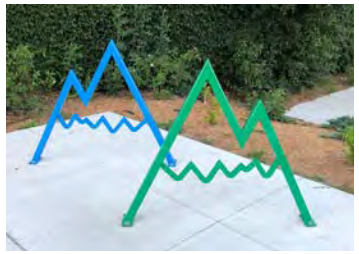
With continued bicycle infrastructure enhancements to these corridors, the presence of these two State Bike Routes may make the City of Kingston a destination for bicyclists.

Bicycle Guide (the D11 series in the MUTCD) states that signs may be provided along designated bicycle routes to inform bicycle route direction changes and to confirm route direction, distance, and destination. Typical signs that convey the basic way-finding information for general routes can be designed for Kingston. The MUTCD provides a number of different types of signs that can be used to provide guidance along bike routes. Some communities implement bike routes with unique designations (numbers or names). These routes should be designated using Bike Route signs. Shared use paths have design criteria for many of the same parameters as roadways. These include widths, horizontal clearances, design speed, horizontal alignment, stopping sight distance, cross slopes, grades, vertical clearance, drainage, and lighting. The AASHTO Guide for the Development of Bicycle Facilities should be consulted for design values.

Bike Boulevards

A bike boulevard is a local street or series of contiguous street segments that have been modified to provide enhanced accommodation as a through street for bicyclists while discouraging through automobile travel. Bike boulevards usually make use of low volume, very low speed local streets. Often, streets are made more accommodating for bicyclists by significantly keeping motorists' speeds and volumes low. Often bike boulevards include bicycle friendly traffic calming treatments (speed cushions, mini traffic circles, chicanes with bike bypass lanes, etc.) to reduce speeds of motor vehicles along the roadway. While local motor vehicle traffic is maintained along the bike boulevard, motor vehicle traffic diverters may be installed at intersections to prevent through motor vehicle travel while having bypasses for bicyclists to continue on along the bike boulevard. Bike boulevards can be facilitated by connecting the ends of cul-de-sac roadways with shared use paths. At intersections the bicycle boulevard should be given priority over side streets. Because of low motor vehicle speeds and volumes, bike lane markings are often not necessary along bike boulevards. Shared Lane Marking (SLM) may be used along bike boulevards. Alternatively, larger than normal bike symbols supplemented with the text BIKE BLVD have been used to designate bike boulevards. In some communities, bike boulevard networks begin as a "one-off" system of bike ways. When a primary arterial roadway cannot be improved to a point where most cyclists feels safe and comfortable using the facility, a parallel roadway - often one street off the main road (or "one-off") - may be improved with bicycle facilities and traffic calming features to provide an enhanced cycling street. By paralleling the main road, the "oneoff" network provides access to the businesses along the arterial using a pleasant cycling roadway. A "oneoff" roadway can be improved in stages: initially with signage and shared lane markings and then into a bike boulevard by instituting more substantial features such as traffic calming and diverters. Since bike boulevards typically serve as bike routes, wayfinding signage should be provided. This signage should include destination, direction, and distance (or travel time) information to attractors. Wayfinding adds to the utility of bike boulevards because it educates cyclists that there are safe, comfortable ways of accessing Kingston by bike.

Bike Parking Facilities



It is recommended that bicycle parking is provided at major destinations throughout Kingston. Bicycle parking, at its most basic level, encourages people to ride. Bicycle parking should be provided on a firm stable surface with convenient connections that are ADA accessible. Well designed and properly executed bicycle parking can provide the benefits below.

- Bicycle parking not only invites cyclists in, but shows the business values sustainability, which is an increasingly important factor in the decisions of consumers.
- Good bike parking benefits the disabled. By providing adequate, well-planned bike parking, business owners or property managers can ensure that hand rails and ramps intended for accessibility purposes are not clogged with bicycles looking for a bike parking spot.
- Pedestrians also benefit when orderly and aesthetic bike parking is provided. Not only does it improve the appearance of the area, it ensures that sidewalks and benches intended for pedestrians are not cluttered by bikes that do not have a designated parking space.
- In this way, bike parking can also prevent damage to other street furniture like garbage cans, posts, benches and trees.
- Covered shelters: provide protection from weather, promoting year round use.

Bike Parking can also act as public art in the City, contributing community character and City branding.

Bicycle Stairways, Wheeling Ramps, or Runnels

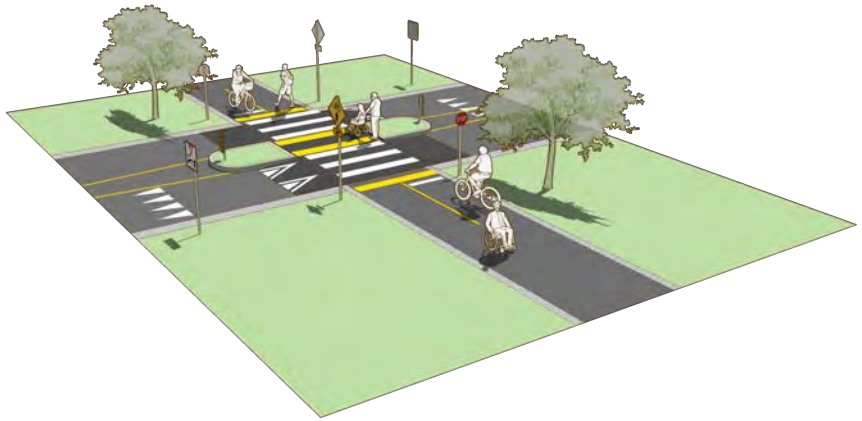
Stairways can include a channel to guide a variety of bicycle tires where the stairs do not turn and are relatively short. This can work when a handrail is down the middle of a staircase allowing room for the channel to be on the edge.

Shared Use Paths

Shared use paths are facilities separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or an independent right-of-way. They are open to many different user types and are often used by bicyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Motor vehicles are not allowed on shared use paths except for maintenance and emergency vehicles in specific circumstances. Most shared use paths are two-way facilities. Shared use paths have design criteria for many of the same parameters as roadways. These include widths, horizontal clearances, design speed, horizontal alignment, stopping sight distance, cross slopes, grades, vertical clearance, drainage, and lighting. The AASHTO Guide for the Development of Bicycle Facilities should be consulted for design values. The MUTCD provides the standards for signing, striping, and markings shared use paths. In most cases, the signs and markings use on shared use paths are smaller versions of those used on roadways. Many shared use paths are separated from the roadway network. Consequently, street name signs should be provided at intersecting roadways to help users orient themselves to the roadway network. Wayfinding signs should be used on paths and to potential destinations along the path such as locations where users can access water fountains and restrooms. At trailheads and rest areas, the distance and direction to the next trail head should be posted. Most shared use path projects will be paved. Asphalt and Portland cement concrete are the two most common surfaces for shared use paths. In areas where path use is expected to be primarily recreational, unpaved surfaces may be acceptable for shared use paths. Materials should be chosen to ensure the ADA requirements for a firm, stable, slip resistant surface are met. Even when meeting ADA criteria, some users such as in-line skaters, kick scooters, and skateboarders may be unable to use unpaved shared use paths. The geometric and operational design of shared use paths is quite similar to that of roadways. However, additional considerations such as aesthetics, rest areas, amenities, and personal security are also important to ensure the maximum number of potential users are encouraged to use the path for both utilitarian and recreational purposes. Sometimes local resistance to implementing shared use paths and other trail facilities exists because of perceived potential negative impacts to neighboring communities, usually in terms of property values and crime or vandalism. A valuable resource in discussions of these matters is a summary of national research conducted for a state department of transportation. The studies cited collectively suggest that property values frequently increase following the construction of shared use paths while crime rates are sometimes found to decrease.

See Figure 23 for a map of existing, planned, and proposed shared use paths within the City of Kingston.

There should be adequate warning for motorists and non-motorists alike when shared use paths cross vehicular right-of-ways.



Sidewalks

For the purposes of design, the term sidewalk means a smooth, paved, stable and slip-resistant, exterior pathway intended for pedestrian use along a vehicular way. All sidewalks constructed within the City should be compliant with the Americans with Disabilities Act (enacted on July 26, 1990 and updated September 15, 2010) and the US Access Board's Public Right-of-Way Accessibility Guidelines (PROWAG). Sidewalks should be provided on both sides of all public roadways.

SIDEWALK WIDTH

The preferred minimum sidewalk width is 5 feet. AASHTO's A Policy on the Geometric Design of Highways and Streets and the AASHTO Guide for the Planning, Design, and Operations of Pedestrian Facilities recommend sidewalks at the back of curb be at least 6 feet wide.

LOCATION OF SIDEWALKS

On roadways with curb and gutter, sidewalks should be located six feet from the back of curb when feasible. This minimizes the encroachment of curb ramps and driveway cuts into the sidewalk width. On roadways without curb and gutter sidewalks should be separated from the roadway as shown by the following criteria, which are given in

a sequence of desirability:

- At or near the right-of-way line (ideally, 3 feet of width should be provided behind the sidewalk for access, construction, and maintenance),
- Outside of the minimum required roadway clear zone, or
- As far from the edge of the driving lane as practical.

Sidewalk alignments, which are set back from the roadway, should taper for alignment closer to the roadway at intersections. This will allow for coordinated placement of crosswalks and stop bars.

SIDEWALK SLOPES

The maximum cross slope on a sidewalk is 2%. This maximum cross slope must be maintained across driveways and crosswalks. Sidewalks may follow the grade of the adjacent roadway. However, on new structures the grade of the sidewalk cannot exceed 5%. If a grade of more than 5% is required on a new structure, an ADA compliant ramp must be provided.

In conjunction with sidewalk installation, the City should consider implementing tree lawns and street furniture to create a more comfortable and aesthetically pleasing environment for pedestrians.

Curb Ramps

A curb ramp is a ramp that cuts through or is built up to the curb. A blended transition is a relatively flat area where a sidewalk meets a roadway. Curb ramps and blended transitions are primarily used where a sidewalk meets a roadway or driveway at a pedestrian crossing location. Blended transitions include raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing that have a grade of 5%or less. Accessibility requirements for blended transitions serve two primary functions. First, they must alert pedestrians that have vision impairments to the fact that they are entering, or exiting, the vehicular area. Second, they must provide an accessible route for those using wheelchairs or other assistive devices. Ideally, a separate ramp should be provided for each crossing of the roadway.

Midblock Crossings

Controlled intersections are the best and most direct place for pedestrians to cross a roadway and are the most common pedestrian crossing locations. Still, more than 70 percent of pedestrian fatalities occur away from controlled intersections, so it is critical to design midblock crossings that both increase drivers' awareness of the crossing and expectation of encountering pedestrians and encourage pedestrians to cross in the designated location. While drivers may not expect to encounter pedestrians at midblock locations as much as they do at intersections, midblock crossings have fewer conflict points between vehicles and pedestrians. This is an important safety factor to consider in comparison to crossings at intersections. Midblock crossings are different from intersection crossings in three important ways: there are many more potential crossing locations at midblock than at intersections, motorists are less likely to expect pedestrians crossing at midblock, and pedestrians with visual impairments have fewer audible clues for determining the best time to cross. Each of these differences leads to important design considerations for midblock crossings:

- **Make the crossing location convenient for pedestrians** - Midblock crossings are provided in locations where crossings at intersections are not available or are inconvenient for pedestrians to use. Midblock crossings must be placed in convenient locations to encourage pedestrians to use them rather than other, more convenient, unmarked midblock locations.
- **Make pedestrians aware of the opportunity to cross** - Provide aids for pedestrians with visual impairments to recognize the presence of a midblock crossing and the best opportunities for crossing. Auditory and tactile information should be provided for pedestrians with visual impairments since clues present at

an intersection crossing are not always available at a midblock crossing (such as the sound of traffic stopping and starting).

- **Make drivers and pedestrians aware of their responsibilities and obligations at the crossing and provide opportunities to meet these responsibilities/obligations** - Use MUTCD guidance to establish a legal crossing. Vehicle approach, pedestrian approach, and traffic control design should provide pedestrians with clear messages about when to cross and drivers about where to yield. Where necessary, a refuge area should be provided for pedestrians to complete the crossing in stages. Traffic control devices can be used to create gaps in traffic for pedestrians to cross.
- **Make drivers aware of the crossing as they approach it** - Drivers should be warned of the pedestrian crossing in advance of the crossing location, and the midblock crossing should be highly visible to approaching drivers. Drivers should have clear lines of sight to the crossing so that pedestrians at the crossing are visible. The approach to the crossing should encourage drivers to reduce their speeds prior to the crossing. Drivers should be given plenty of time to recognize the presence of a pedestrian and stop in advance of the crossing.

It is important to note that midblock crossings may not be appropriate in all locations. This type of facility is best suited where there are long distances between intersections, a high level of pedestrian activity (e.g. hospitals, schools), and ample sight distance in both directions. Without these conditions, the preferred location of crossings is at an intersection where drivers are more likely to anticipate the presence of pedestrians in the roadway.

PEDESTRIAN APPROACH

The pedestrian approach is the area near the crossing where pedestrians wait on the side of the roadway and away from traffic until they are able to cross. It is often part of the sidewalk, if the sidewalk is adjacent to the curb line, or an extension or spur of the sidewalk that provides a path from the sidewalk to the crossing, if the sidewalk is not immediately adjacent to the curb. The pedestrian approach design should accomplish the following:

- Encourage pedestrians to cross at the marked crossing. The approach design should discourage pedestrians from crossing away from the marked crossing. The path to the crossing should be as direct and easy to navigate as possible.
- Keep pedestrians visible to approaching drivers and oncoming vehicles visible to pedestrians. Pedestrian furniture, traffic control devices, planters, and other objects should be located so they do not block pedestrians from the sight of approaching drivers. Also, on-street parking should be restricted near the crossing so that parked vehicles do not limit sight lines.
- In areas with high volumes of pedestrians, there should be sufficient space for pedestrians to queue as they wait for an appropriate time to cross. Pedestrian storage should be designed to prevent crowds of pedestrians from spilling onto the roadway. Pedestrian storage area design can be especially important at bus stops, and care should be taken so that children can wait a safe distance from the roadway while waiting for a school bus.
- Midblock curb extensions are a common and effective treatment at midblock locations and have many benefits. Make pedestrians, especially those with visual impairments, aware of the crossing location. In complex pedestrian environments, wayfinding signs may be appropriate to guide people to their desired destination. Auditory and tactile cues can be provided with traffic control devices adjacent to and in the sidewalk to direct pedestrians toward the crossing.
- Direct pedestrians to the proper location to activate a pedestrian signal (if present) and wait for an appropriate time to cross. Pedestrian-activated traffic control devices should be accessible to pedestrians with visual impairments and those using wheelchairs, scooters, and walkers. The approach design should make clear where pedestrians should stand while waiting to cross.

MOTORIST APPROACH

As noted in the discussion about locating a midblock crossing, care should be taken to avoid locations where horizontal or vertical alignment of the roadway limit drivers' sight distance, view of the pedestrian approach to the crossing, or view of the crossing itself. Consideration should be given to how trees, shrubs, poles, signs, and other objects along the roadside might limit a driver's view of the crossing. On-street parking should be prohibited near the crossing using either signs and markings or physical barriers such as a curb extension, since a pedestrian who steps out into the road between parked cars can be blocked from the view of oncoming drivers. Signing and markings on and along the motor vehicle approach to a midblock crossing should be designed in such a way as to make drivers aware of the crossing in time to notice and react to the presence of a pedestrian, and to enhance the visibility of the crossing. Advanced warning signs should indicate any special traffic control used at the pedestrian crossing. Refer to the AASHTO Guide for the Development of Bicycle Facilities for examples of midblock control treatments for shared use paths. Traffic calming devices and other measures to prevent high vehicle speeds should be considered along routes with midblock pedestrian crossings. More than 80% of pedestrians die when struck by vehicles traveling at greater than 40 mph versus less than 10% when cars are traveling at 20 mph or slower. In addition, vehicles traveling at lower speeds require less distance to come to a complete stop when braking.

Graphic: Nacto

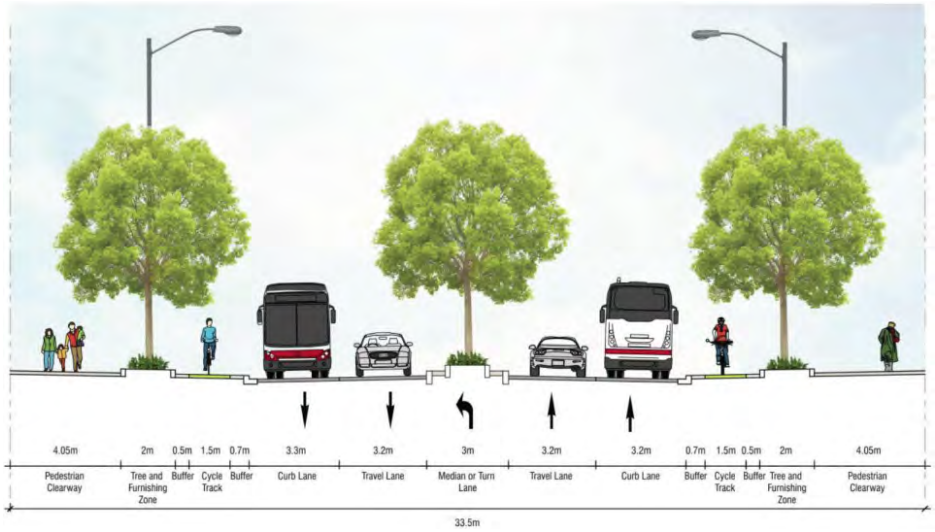
The City should consider using traffic calming elements, such as speed humps, to lower motorist speeds when approaching a crossing.

Complete Streets

According to the National Complete Streets Coalition (NCSC),Complete Streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users (NCSC, 2016). Pedestrians, bicyclists, motorists and public transport users of all ages and abilities are able to safely and comfortably move along and across a Complete Street. Complete Streets also create a sense of place, improve social interaction, and generally increase land values of adjacent properties. Complete Streets look different in different places. They must fit with their context and to the transportation modes expected (Laplante & McCann, 2008). Although no singular formula exists for a Complete Street, an effective one includes at least some of the following features:

- Sidewalks
- Bus pullouts
- Bike lanes
- Special bus lanes
- Wide shoulders
- Pedestrian scale lighting
- Raised crosswalks
- Plenty of crosswalks
- Audible pedestrian signals
- Refuge medians
- Sidewalk bump-outs (bulbouts)

These features make a street safer and more pleasant for pedestrians and vehicles. A Federal Highway Administration safety review found that designing a street for pedestrian travel by installing raised medians and redesigning intersections and sidewalks reduced pedestrian risk by 28% (NCSC, 2016). The practice of Complete Streets is not only about allocation of street space, but also about selecting a design speed that is appropriate to the street typology and location, and that allows for safe movements by all road users (Laplante & McCann, 2008).



The configuration of Complete Streets will vary based on existing right-of-way widths, but generally accommodate all transportation user groups using facilities such as sidewalks, cycle tracks, and ample crosswalks.

Shared Lane Markings (Sharrows)

In some cases, traffic lanes are too narrow to be shared side by side by bicyclists and passing motorists. Where parking is present, bicyclists wishing to stay out of the way of motorists often ride too close to parked cars and risk being struck by a suddenly opened car door (being "doored"). Where no parking is present bicyclists wishing to stay out of the way of motorists often ride too close to the roadway edge, where they run the risks of being run off the road, being clipped by motorists who do not see them off to the side or misjudge passing clearance, or encountering drainage structures, poor pavement, debris, and other hazards.

Riding further to the left avoids these problems, and is legally permitted where needed for safety (Consolidated Laws of New York, Vehicles and Traffic, § 1234 (a). However, this practice can run counter to motorist expectations. A Shared Lane Marking (SLM) sometimes called a "Sharrow", is a pavement symbol that indicates it is legal and appropriate for bicyclists to ride away from the right hand edge of the roadway, and cues motorists to pass with sufficient clearance. While Sharrows are an accepted approach to bicycle pavement markings and have a role to play, they are not the preferred method to accommodate bicycle traffic and should only be used as a cycling facility in the situations indicated here:

- Due to the insertion or existence of a turn lane or a pinch point in a road, a dedicated bike lane must disappear and cyclists must merge with drivers; and
- On narrow, slow streets to alert drivers that cyclists are expected.

Research suggests that SLMs:

- Alert motorists to the lateral location bicyclists are likely to occupy within the traveled way,
- Encourage safe passing of bicyclists by motorists,
- Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,
- Reduce the incidence of wrong-way bicycling, and
- Where on-street parking exists, to assist bicyclists with lateral positioning in a shared lane with on-street parallel parking to reduce the chances of a bicyclist impacting the open door of a parked vehicle.

SLMs are not to be used on shoulders or in designated bike lanes. MUTCD guidance suggests SLMs not be placed on roadways that have a speed limit above 35 mph.

SLMs encourage good lane positioning by bicyclists, and discourage them from riding too close to the pavement edge, curb, or parked cars. Riding away from the road edge allows bicyclists to avoid road edge hazards like drainage structures, poor pavement, and debris. It also places the bicyclist more directly in the motorist's field of vision which, along with proper SLM treatments, encourages the safe passing of bicyclists by motorists. According to the NYSDOT policy:

- SLMs should only be used to indicate the presence of a narrow lane; a narrow lane is a lane that is less than 14' wide... In a narrow lane, motorists and bicyclists must travel one after the other rather than side by side, and a motorist must leave the lane to safely pass the bicyclist.
- SLMs are sometimes used at the ends of bike lanes or shoulders to inform motorists that bicyclists no longer have a separate space and will be sharing the main travel lane.
- SLMs should be installed strategically and judiciously to ensure that their value is not reduced by overuse.

When used, SLMs should be placed after each intersection and then periodically spaced no more than 250 feet between markings. The previously referenced NYSDOT Shared Lane Marking (SLM) Policy includes a Narrow Lane sign assembly. It is a Bicycle Warning sign (W11-1) and an "In Lane" plaque (NYW5-32P). When used, the Narrow Lane assembly should be placed with the first SLM, then repeated as deemed appropriate within the section. It is neither necessary nor desirable to supplement every SLM with a sign assembly.

A Shared Lane Marking or "sharrow" on Jansen Ave.

Street Trees

The addition of street trees is a valuable asset to any city streetscape and is a key piece in improving walkability and urban vitality. Street trees go beyond being visually appealing and defining a space, and provide the following positive attribute to any city urbanscape:

- They protect sidewalks – mature trees form a barrier between vehicles and pedestrians walking on sidewalks;
- They reduce crashes;
- They draw people in – people like spaces that are well defined and have edges;
- They absorb stormwater – they assist in avoiding combined sewer and stormwater system overflows and flooding;
- They absorb UV rays and pollutants – especially airborne carbon dioxide emitted from adjacent vehicles;
- They improve property values;
- They improve retail viability; and
- They improve public health.

It is recommended that street trees be planted citywide wherever possible. Consider modifying City codes to require new development and streetscape improvement projects to include street trees and ensure that sufficient funding is allocated for tree plantings and maintenance.

Speed Limits

On August 12, 2022, Governor Hochul signed Legislation (A.1007-A/S.2021-A) authorizing municipalities to reduce speed limits to 25 miles per hour. By reducing the lowest allowable municipal speed limit from 30 to 25 miles per hour, the new law aims to enhance street safety and reduce traffic-related injuries and fatalities. The City of Kingston may benefit from reducing select street speed limits to 25 miles per hour, particularly where there is a concentration of pedestrian and bicycle crashes. When considering this transition, a cost analysis of replacing existing speed limit signage versus enforcing the speed limit should be conducted.

Wayfinding

The City of Kingston has a signage and wayfinding plan titled "Connecting Kingston." The Plan aims to establish a straightforward navigational system, market Downtown assets, unify City messaging, enhance pedestrian movement in Downtown, and provide guidance to visitors. The Plan provides signage and wayfinding recommendations for City gateways, districts, destinations, parking, and pedestrian paths. In implementing any of the recommendations of this PBMP, any new or upgraded signage should be in conformance with Connecting Kingston.

In addition to the recommendations made in Connecting Kingston, it is recommended that the City develop a signage and wayfinding variation for the Greenline Trail as well as including wayfinding markers and signage directing people biking and walking to designated bike routes and off-road trail systems throughout the City. As an extensive City-wide trail system, it is important that users are aware of trail destinations and level of difficulty. The length of the Trail could be augmented with periodic trail markers, either on stakes or pavement medallions, that note upcoming destinations and the distance to such locations.

Mapping of the City's bike routes and off-road trail systems should also be created and posted at key areas throughout the City as well as be provided on the City's website.

CHAPTER 7: OUTREACH & EDUCATION

A successful bicycle and pedestrian network allows users to safely, appropriately and frequently utilize the network. To assist in creating an effective, safe bicycle and pedestrian network, outreach and education will be necessary to promote the use of non-motorized transportation options and to inform residents and stakeholders of the appropriate manner to operate within the City's active transportation facilities. Educating roadway users (bicyclists, pedestrians and motorists) about the rules of the road and safe bicycling and walking behavior is essential, while at the same time, encouraging more people to get outside and walk and ride their bikes. The goals of the outreach and education recommendations in this section are to increase the number of bicyclists and pedestrians while improving safe and appropriate behavior by bicyclists, motorists, and pedestrians. The network will attract users of different skill levels and ages, as well as provide opportunities for interaction with motorists and pedestrians. Education and outreach programs must consider all of these different user groups.

The 1999 version of AASHTO's Guide for the Development of Bicycle Facilities recommended that an education plan address the following four groups:

- Young bicyclists;
- Adult bicyclists;
- Parents of young bicyclists; and
- Motorists.

This PBMP recommends that the following groups be addressed as well:

- Senior pedestrians and bicyclists;
- Low income pedestrians and bicyclists;
- Visiting pedestrians and bicyclists; and
- School-age pedestrians and bicyclists.

Informational Material Elements

It is important to make sure each group is addressed in multiple and suitable ways. For example, programs for young bicyclists should use age-appropriate curriculum and age-friendly language to explain concepts and issues. In addition, language barriers should be considered as educational materials are developed. The City should ensure that all parts of Kingston not only geographically, but also demographically, have equal access to active transportation information and facilities.

One of the key things to keep in mind when planning outreach and education efforts is not to "reinvent the wheel". Many successful programs, campaigns and resources are available. There are many national resources, such as materials provided by FHWA and the League of American Bicyclists. Other communities throughout the U.S. and Canada have also already developed tools that can be adapted and modified for the City. This adaptation is important in order to effectively localize the educational campaigns. Locally created campaigns that include materials with a local feel have been shown to have a more noticeable influence on motorist and bicyclist behaviors than generic FHWA-produced materials.

Bike and pedestrian education and outreach are vitally important in light of the growing number of distractions that motorists, pedestrians, and bicyclists face while traveling. The use of cell phones while operating a vehicle, bicycling, and driving has often been recognized as just as dangerous of an activity as drunk driving (Strayer et al, 2006). Fortunately, the number of fatal distracted-affected crashes has decreased between 2015-2016, but distraction-affected crashes still account for 9% of total fatal crashes in the US (NHTSA, 2019). Current trends, such as this, are important factors in designing bicycle/pedestrian safety, education and outreach programs. The framework for these recommendations was crafted with all this in mind.

Develop Partnerships and Leverage Existing Resources

Connect partners to maximize the effectiveness of existing resources, programs, and materials. A list of potential partners has been developed, and their existing programs and partnerships have been inventoried to identify opportunities for new partnerships and enhanced use of resources. Some of these partners are already working together, but there are new partnerships that can be nurtured and developed, and new ways for existing educational materials to be used. Not all of the potential partners are specifically focused on bicycle/pedestrian-related issues, but may still be a useful partner for their ability to communicate with a certain segment of the population. Some examples of education and outreach programs are suggested here:

Continue coordination with different organizations to see ways they can support each other and maximize existing resources. Organizations include the YMCA of Kingston and Ulster, Live Well Kingston, Bike Friendly Kingston, the Cornell Cooperative Extension of Ulster County, the Ulster County Department of Health and Sheriffs Department, the Ulster County Traffic Safety Board, and others.

Continue creating bicycling events, identify volunteers for bicycle rodeos and bicycle repair programs, and distribute information about bicycling to young adults in the region in coordination with regional organizations.

Bike Friendly Kingston has been the umbrella bicycling advocacy group in the City of Kingston since around 2013. As volunteers moved on to other things the group has struggled to stay active. At its height there were two meet-ups a month, weekly bicycle "Slow Rides," youth bicycle rodeos done in connection with SUNY Ulster's Mid-Hudson Health and Safety Institute, bicycle "valet" parking at the O+ Festival, an annual Bike-to-Work competition, a "Feast on Two Wheels" fundraiser, and direct

advocacy at public meetings for improved bicycle infrastructure. The free bicycle repairs continue today with support from the YMCA Bicycle Programming.

Coordinate with the ***Kingston City School District*** on projects such as bike safety and maintenance workshops, bike fix-it stations at schools, or field trips related to active transportation.

Create additional ***Walking School Bus Program's*** like one at the Everette Hodge Community Center. A Walking School Bus is a parent guided walking route with specific stops at specific times. Walking School Bus routes help families who live nearby to feel confident about letting their kids walk to school.

Learn from successful outreach and education examples in other active transportation-friendly communities. Many successful programs, campaigns and resources are already available. Other communities throughout the U.S. and Canada have already developed tools that can be adapted and modified for use by the City of Kingston.

Recognize those who commute by bike and encourage people to become new bicycle commuters or increase their trips by bike during the season when the weather is improving through ***National Bike Month in May***. This program features a month long calendar of events offering organized rides for different ages and abilities, bike-handling skills and maintenance workshops, and a Bike to Work Day Commuter Challenge. The program is most successful when led by a community based organization with financial support from local government and the greater business community.

Create a team of at least two ***bicyclist ambassadors*** to encourage an increase in bicycling by engaging the general public to answer questions about bicycling and teaching bicycle skills and rules of the road. Ambassadors attend community-based events throughout peak cycling season to offer helmet fits, route planning, bike rodeos and commuting 101 workshops. Community members also may request an appearance by a team of ambassadors at businesses, schools or a conflict zone location along the bikeway system.

Create a ***bike light campaign***. Given the shortening days, fall is a good time of year to remind cyclists that proper equipment is required when riding at night. A bike light campaign also offers the opportunity to introduce cyclists to bicycle shops and strengthen partnerships between the community and retailers. This program could offer discounts on bicycle headlights and rear red reflectors and lights. It is recommended that the campaign be rolled out in September with the return of students to school. The campaign should expire before peak holiday season when bike shops are busy and less interested in offering discounts.

Become a ***Bicycle Friendly Community***. The Bicycle Friendly Community (BFC) program created by the League of American Bicyclists (LAB) offers the opportunity to be recognized for achievements in supporting bicycling for transportation and recreation. It also serves as a benchmark to identify improvements yet to be made.

Apply for League ***Certified Instructor training course scholarships***. The League of American Bicyclists offers certification courses to train those interested in teaching others to ride their bike safely and legally as a form of transportation. League Certified Instructors (LCIs) are a valuable asset to the community and can offer a variety of workshops for adults lacking confidence to ride in traffic as well as children learning to ride for the first time. LCI training courses require a two and a half day commitment and are offered through the LAB. To facilitate a cadre of cyclists to become LCIs, this program coordinates with the LAB to schedule training course offerings in the community and provide scholarships.

Continue to support the YMCA of Kingston and Ulster Bicycle Programs which have been an anchor for bicycle education and encouragement in the City of Kingston since 2010. Programs have included: the Lend-A-Wheel bicycle donation and reuse program, the Bike It! youth bicycle education programs, the Midtown Mechanics bike repair class, The annual Tour de Kingston and Ulster, adult Smart Cycling bike safety class, learn to ride private bicycle education lessons, school and summer camp bicycle education programs, monthly free bicycle repair with free lights and bells distributions, and more.

YMCA of Kingston and Ulster Bicycle Programs




Expand the ***Safe Routes to School (SRTS) program***. SRTS is a national program that addresses barriers that inhibit students from walking and biking to school. The Ulster County Transportation Council provides a SRTS toolbox online at www.uctcsrts.com. The City should work with the Kingston City School District and consider how the program could be used to assess barriers at all local schools. Increasing the number of children that can safely walk and bicycle to school as well as protecting the safety of those that already do so requires a holistic approach.

Conduct public safety announcements on following the rules of the road. For motorists, this campaign could address the need to look left prior to turning right, and provide clear passing space. For bicyclists, this campaign could address bicycle lights and lack of visibility when not riding in the road. For pedestrians, this campaign could address crossing at designated crossing facilities, and walking on the sidewalk in all seasons.

Become a ***Walk Friendly Community***. Walk Friendly Communities is a national recognition program developed to encourage towns and cities across the U.S. to establish or recommit to a high priority for supporting safer walking environments. The WFC program will recognize communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort.

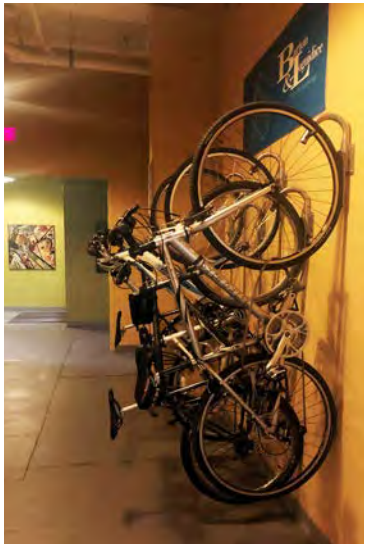
Create an ***active transportation wayfinding program*** that includes identification of routes and signing plans (destination, distance, direction) as well as assessments of potential improvements along the proposed routes.

Adapt Oregon program "***Bike Wheels to Steering Wheels***." The program helps youth better understand the relationship between bicycle/pedestrian safety and motion, and ultimately gives students a better understanding of safety when traveling by all modes of transportation, in which the laws of physics are applied without exception. The concepts are learned through normal math, science, or physics curriculum in schools.

Institute a "***Sunday Parkways***" ride once per month involving closing select road segments on weekends and holidays for traffic-free biking and walking on a network of selected streets.

Create a ***Commuter of the Year Contest***. This contest recognizes those who choose to bike, walk, or ride transit. An aim is to encourage others to reduce their drive alone motor vehicle trips. Nominated by their peers, contestants may be employees, residents, or students in the community and could be asked to provide an inspirational story about their transportation choice and habits. Based on nominations, categories could recognize Youth, Student, Senior, and Family Commuters. Winners also should be encouraged to serve as role models and participate in events throughout the year to mentor others and help them set goals to reduce their drive alone trips.

Support the creation of a ***Business Pool Bike Program***. Offering employees the opportunity to check out and ride a bike to meetings, lunch or run errands is a great benefit. Pool bikes are a form of bike sharing where an employer manages a fleet of bikes for this purpose. This program offers subsidies for the purchase and on-going



maintenance of bikes as part of an agreement to track use and achieve the goal of reducing vehicle miles traveled and greenhouse gases. Employees sign up, make reservations and log their trips using a web-based management tool.

Continue to conduct ***pedestrian and bicycle counts*** on a seasonal basis to track whether there is an increase in pedestrian and bicycle activity, exploring new methods as suggested by the public, FHWA, and the League of American Bicyclists. The City's Health & Wellness Department has been conducting annual counts at 4 locations along Broadway for 5 years.

Continue to use, and replicate SUNY Ulster's Mid-Hudson Health and Safety Institute ***Bicycle Rodeo trailer***, now operated by the YMCA. Children learning to ride should be confident with their bike-handling skills before riding in traffic. A Bike Rodeo is an interactive and controlled environment where cyclists practice a new skill at a series of stations. The number and difficulty of skills can be tailored based on attendance and number of instructors available to staff the event. This initiative will create a self-service bicycle rodeo kit that can be reserved by League Cycling Instructors (LCIs), Bike Ambassadors and community members. It contains instructions, diagrams and props necessary to host a bike rodeo. A programmatic collaboration with the Ulster County Sheriffs Office should be explored.

Attend ***Active Transportation Conferences and Workshops***. Participate in local conferences and events pertaining to active transportation planning to share best practices with other local professionals and learn current trends and opportunities in the active transportation realm.

Utilize the ***AARP Network of Age-Friendly Communities Toolkit***. This toolkit can be adapted by municipal and local governments, non-profit organizations, community partners and volunteers to guide and support age-friendly initiatives that make 'Livable Communities" great places for all ages.

Explore partnership opportunities to establish a ***bike share program*** in the City of Kingston. For example, Rochester and its surrounding communities are serviced by HOPR stations, Albany is serviced by CDPHP Cycle, Buffalo and Niagara Falls are serviced by Reddy Bikeshare, and New York City is serviced by Citi Bike. Some bikeshare programs may even offer electric bicycle rentals, which would be particularly advantageous on the steep roads in the eastern portion of the City of Kingston. In early 2023, the City of Kingston drafted guidance legislation for an e-bicycle share program. If passed, it will define how and where e-bicycles can be used, and authorize the City to establish a citywide bike-share program in the future.

Vision Zero is a strategic approach to traffic safety aimed at eliminating all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has proved successful across Europe and is now gaining momentum in major American cities; New York City being one of them. The ***Vision Zero Network*** is a collaborative campaign to help communities reach their goals of Vision Zero — eliminating all traffic fatalities and severe injuries — while increasing safe, healthy, equitable mobility for all. The Vision Zero Network helps communities across the nation recognize this public health crisis and mobilize for positive change, offering support and resources for all communities committing to Vision Zero.

Support City Departments & Committees

The City of Kingston adopted a Complete Streets policy in 2010 and established the ***Complete Streets Advisory Council*** which is tasked with advising the Common Council on policy and programs for creating safer streets for all users.

Continue to fund the ***City's Health and Wellness department***. Established in late 2017, the department has grown and been awarded additional grants. The department and the ***Live Well Kingston Commission*** give the City added capacity to manage active transportation projects including this PBMP, the Be a Road Hero transportation education campaign, annual bike and pedestrian counts and trail counters, Complete Streets Advisory Council support, bicycle rack and shelters installation management, and Greenline network of trails outreach and grant writing.

Live Well Kingston, a health commission for the City of Kingston, supports policy, environment, and systems change, with 6 Focus Teams (as of 2022): Age Well, Eat Well, Grow Well, Heal Well, Play Well, and Travel Well. ***Travel Well*** brings together representatives from the Complete Streets Advisory Council, the Kingston Greenline Committee, and Bike Friendly Kingston to coordinate transportation priorities.

These groups should consider the following goals:

- Promote safe routes to school, greenways and connected corridors with adjacent

towns,

- Publish and maintain cycling and walking maps,
- Review proposed development for active transportation considerations,
- Recommend amenities to enhance safe walking and cycling.

A common obstacle to project implementation is the sustained interest of committee members, particularly those that are operating on a volunteer basis. A few strategies that can help maintain the involvement and effectiveness of committees include:

- Utilize a Memorandum of Understanding (MOU) to officialize the committee and make clear the requirements and expectations of committee members
- Increase visibility and public awareness of the committee by building a webpage on the City website that identifies the committees and lists committee members' names and roles
- Plan and facilitate gratitude events that acknowledge and thank the efforts of committee members

The various City departments can also play a critical role in progressing bicycle and pedestrian improvements by sharing information about planned projects and identifying opportunities to progess multiple projects at once, rather than undergoing multiple rounds of construction. It is recommended that the City develop an asset management system through which City staff can coordinate such infrastructure projects.

Create a Public Information Campaign

In 2022, the City of Kingston hired a marketing firm to develop a transportation marketing campaign called "Be a Road Hero." It focused on the main categories of road users and targeted messages directly to them. Drivers were asked to think of the other road users as their friends and family. Cyclists were reminded that they are safer when they follow traffic laws. And Pedestrians were reminded to use new infrastructure and that they should never assume a motorist sees them. These messages were put out in a variety of locations in both English and Spanish: 60 yard signs, the City's Facebook page, public service messages on radio stations, signs on Ulster County Transit buses, and a direct mailer to every postal address. In addition, a citation educational flyer was created for the Kingston Police Department to distribute as a warning.

Continue coordinating an ongoing public information and enforcement campaign regarding safe sharing of the roadways for pedestrians, bicyclists and motorists.

Pedestrians: Law enforcement departments can take a leading role in improving public awareness of existing traffic laws and ordinances for motorists (e.g. obeying speed limits, yielding to pedestrians when turning, traffic signal compliance, and obeying drunk-driving laws) and pedestrians (e.g. crossing the street at legal crossings and obeying pedestrian signals). Many local law enforcement agencies have instituted annual pedestrian awareness weeks when they issue tickets to motorists who disregard pedestrian laws and warn pedestrians to follow the laws as well.

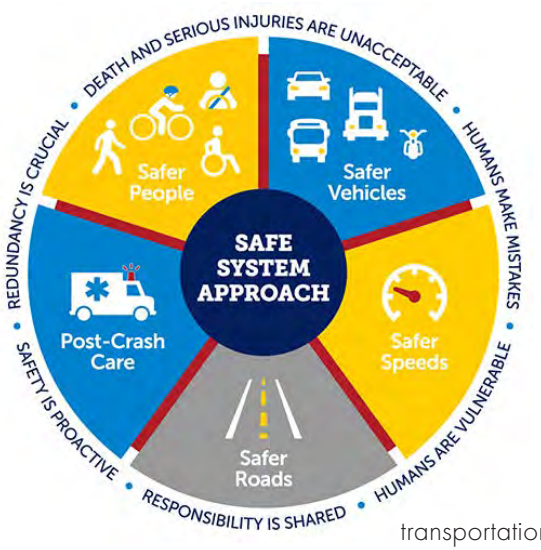
Bicyclists: A campaign should be designed keeping in mind the League of American Bicyclists' recommendation that communities make connections between the bicycling community and law enforcement. Sporadic enforcement will not result in significant improvements to bicyclist behavior and will likely result in resentment of law enforcement personnel. Those behaviors to be targeted should be determined at the outset of the law enforcement campaign. The following behaviors should be targeted consistently:

- Riding at night without lights;
- Violating traffic signals;
- Riding on sidewalks; and
- Riding against traffic on the roadway.

These four behaviors were chosen for two reasons. First, they represent particularly hazardous behaviors which result in many crashes. Secondly, and very importantly, the enforcement of these behaviors is easy to justify to the public. When coupled with (and in fact preceded by) a large-scale education campaign, the public will understand the importance of the campaign and consequently will accept the enforcement activity.

Drivers: While it's important that pedestrians and bicyclists behave appropriately and predictably when present in the right-of-way, it is is critical that drivers are aware of and follow driving regulations that aim to make the right-of-way a safe space for all users. Therefore, it is recommended that the City follow the USDOT's Safe System Approach, as described in the graphic below. Drivers can be encouraged to practice safer driving practices by establishing a public notification system for roadway reconfigurations, utilizing a phased signage strategy at the site of roadway projects, and including additional enforcement measures during and after roadway improvements to ensure drivers are responding appropriately to new signs, marking, signals, etc.

In the planning and implementation of these public information campaigns, and transportation system improvements, it is essential to reflect the unique needs of vulnerable road users. According to the 1998 report, *Safety of Vulnerable Road Users*, by the Organisation for Economic Co-operation and Development, "'***Vulnerable road users***' is a term applied to those most at risk in traffic. Thus, vulnerable road users are mainly those unprotected by an outside shield, namely pedestrians and two-wheelers, as they sustain a greater risk of injury in any collision against a vehicle and are therefore highly in need of protection against such collisions." Vulnerable road users may include the older adults, children, persons with disabilities, and others.



transportation.gov

Create a Maintenance & Improvement Schedule

Schedule regular maintenance and facility improvements to keep bike lanes and walkways well-marked and free of snow and debris. The availability of bicycle and pedestrian facilities is one of the components that can lead to increased riding and walking in a community. However, facility improvements do not end at construction; facilities also need to be maintained to be useful. Maintenance needs require planning and budgeting. Sample maintenance activities include keeping roadways and bike lanes clean and free of debris, identifying and correcting roadway surface hazards, keeping signs and pavement markings in good condition, maintaining adequate sight distance, and keeping shared-use trails in good condition. Maintenance is an area where planning and attention can provide significant benefits for bicyclists and pedestrians at relatively modest additional cost.

Identification of maintenance needs for active transportation facilities, and institutionalization of good maintenance practices are key elements in providing safe facilities for bicyclists and pedestrians. Winter snow removal and year-round debris removal will be key maintenance concerns in the City. The importance of good planning and initial design cannot be overstated with respect to long-term maintenance needs. It is easier to obtain outside funding for facilities construction than for on-going maintenance, so planning and building correctly at the outset will reduce future maintenance problems and expense. Residents and businesses can be engaged in clean-up days, or help with snow removal.

PROGRAM EFFECTIVENESS MEASURES

Program effectiveness measures can be used to determine if the recommended strategies meet their objectives, discover any areas that need change, justify funding, and provide guidance for similar programs. Baseline data is required prior to implementing recommendations. The City could observe the outcomes or contract with a consultant to measure effectiveness on their behalf. Observable outcomes include: number of crashes, injuries, and fatalities; behaviors; number of citations issued; number of people walking or bicycling; knowledge, opinions and attitudes; changes in organizational activity; traffic volumes; and traffic speeds.

The effort to enforce the traffic laws as they relate to bicycle and pedestrian safety should be addressed in an overall, county-wide, coordinated enforcement campaign. Targeted enforcement initiatives result in everyone following the rules of the road.

CHAPTER 8: FUNDING & IMPLEMENTATION STRATEGY

Those responsible for implementing this PBMP's recommendations should monitor capital improvement plans to identify specific opportunities, coordinate the available outreach and education programs identified in the previous section, coordinate improvements with adjoining municipalities, and identify and follow through on relevant grant opportunities. This effort can be supported by the City of Kingston's Office of Grants Management, which applies for and manages grant awards that fund a variety of initiatives, including street design and transportation projects. In general, the costs associated with constructing the bicycle and pedestrian facilities recommended in this PBMP exceed available City resources. To help alleviate this deficiency, this section identifies and discusses the numerous sources which can be used to provide monetary assistance for bicycle and pedestrian facilities and programs. Many of these funding sources are available on the federal level, as dictated in the new transportation legislation, Fixing America's Surface Transportation Act, or the "FAST" Act. Many of these federal programs are administered by the New York State Department of Transportation (NYSDOT). Additionally, there are other state and regional funding sources which can be used to help achieve the goals and objectives of this PBMP. Finally, a number of private funding sources exist which can be used by local governments to implement bicycle and pedestrian-related programs.

Federal Funding

INFRASTRUCTURE INVESTMENT & JOBS ACT (IIJA)/ BIPARTISAN INFRASTRUCTURE LAW (BIL)

The Bipartisan Infrastructure Law (BIL), passed in November 2021, replaces the Fixing America's Surface Transportation (FAST) Act. While the BIL continues many of the elements of the FAST Act, it also contains new objectives and and increased funding pool. In fact, the BIL is the largest long-term investment in US infrastucture with a total of $550 billion from 2022-2026. BIL funds are separated into two categories: (1) authorizations and formula programs and (2) competitive grant programs. There are a total of 23 competitive grant programs, many of which include pedestrian and bicycle infrastructure projects, such as Rebuilding American Infrastructure with Sustainability and Equity (RAISE) and Safe Streets & Roads for All.

NATIONAL HIGHWAY PERFORMANCE PROGRAM

Funds may be used to construct bicycle transportation facilities and pedestrian walkways on land adjacent to any highway in the National Highway System, including Interstate highways. Essentially, 9W and Albany Ave are the only facilities in the City of Kingston that would be eligible for this program. Highway Safety Improvement Program Funds may be used for bicycle- and pedestrian-related highway safety improvement projects on a public road that are consistent with a State strategic highway safety plan.

TRANSPORTATION ALTERNATIVES (TA)

The FAST Act eliminates the MAP-21 Transportation Alternatives Program (TAP) and replaces it with a set-aside of Surface Transportation Block Grant (STBG) program funding for transportation alternatives (TA). These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

RECREATIONAL TRAILS PROGRAM

The Regional Trails Program (RTP) funded under the TA umbrella, is administered separately by the NYS Office of Parks, Recreation and Historic Preservation. Funds may be used for all kinds of trail projects. Of the funds apportioned to a state, 30 percent must be used for motorized trail uses, 30 percent for non-motorized trail uses, and 40 percent for diverse trail uses (any combination). Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.

HIGHWAY SAFETY SECTION 402 GRANTS

A State is eligible for these Section 402 grants by submitting a Performance Plan (establishing goals and performance measures for improving highway safety) and a Highway Safety Plan (describing activities to achieve those goals). Research, development, demonstrations, and training to improve highway safety (including

bicycle and pedestrian safety) are carried out under the Highway Safety Research and Development (Section 403) Program. While this is a federally-funded program, it is administered by the NYSDOT.

HIGHWAY SAFETY SECTION 405 GRANTS

Under this new NHTSA program, states in which more than 15% of traffic fatalities are bicyclists and pedestrians (including New York) are eligible for non-motorized safety funding. Eligible activities include safety education and awareness activities and programs, safety enforcement (including police patrols), and training for law enforcement on pedestrian- and bicycle related safety laws. While this is a federally-funded program, it is administered by the NYSDOT.

BETTER UTILIZING INVESTMENTS TO LEVERAGE DEVELOPMENT (BUILD)

The highly competitive BUILD grant program replaced the Transportation Investment Generating Economic Recovery (TIGER) grants and has funds numerous multi-modal and multi-jurisdictional projects. This is an annually administered discretionary grant program distinct from the FAST Act and typically provides grants to projects difficult to fund through traditional federal programs. Awards focus on capital projects that generate economic development and improve access to reliable, safe and affordable transportation for communities, both urban and rural.

TITLE 49 USC

Title 49 USC allows the Urbanized Area Formula Grants (Section 5307), Capital Investment Grants and Loans (Section 5309), and Formula Program for Other than Urbanized Area (Section 5311) transit funds to be used for improving bicycle and pedestrian access to transit facilities and vehicles. Eligible activities include investments in "pedestrian and bicycle access to a mass transportation facility" that establishes or enhances coordination between mass transportation and other transportation.

Note: See the Ulster County Transportation Improvement Program (TIP) on the next page for more information on the administration of federal funds for transportation improvements.

Other Federally-Funded Programs

COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG)

Through the U.S. Department of Housing and Urban Development (HUD), the CDBG program provides eligible metropolitan cities and urban counties (called "entitlement communities") with annual direct grants that they can use to revitalize neighborhoods, expand affordable housing and economic opportunities, and/or improve community facilities and services, principally to benefit low- and moderate-income persons. Eligible activities include building public facilities and improvements, such as streets, sidewalks, sewers, water systems, community and senior citizen centers, and recreational facilities. Several communities have used HUD funds to develop greenways.

NATIONAL PARK SERVICE LAND AND WATER CONSERVATION FUND (LWCF) GRANTS

This federal funding source was established in 1965 to provide "close-to-home" parks and recreation opportunities to residents throughout the United States. Money for the fund comes from the sale or lease of nonrenewable resources, primarily federal offshore oil and gas leases, and surplus federal land sales. LWCF grants can be used by communities to build a variety of parks and recreation facilities, including trails and greenways. LWCF funds are distributed by the National Park Service to the states annually. Communities must match LWCF grants with 50 percent of the local project costs through in-kind services or cash. All projects funded by LWCF grants must be used exclusively for recreation purposes, in perpetuity. Projects must be in accordance with each State's Comprehensive Outdoor Recreation Plan.

State & Regional Funding

CHIPS (CONSOLIDATED LOCAL, STATE, AND HIGHWAY IMPROVEMENT PROGRAM)

Funds are administered by NYSDOT for local infrastructure projects. Eligible project activities include bike lanes and wide curb lanes (highway resurfacing category); sidewalks, shared use paths, and bike paths within highway right-of-way (highway reconstruction category), and traffic calming installations (traffic control devices category). CHIPS funds can be used for TAP grant program local match requirements.

While this program could be utilized for pedestrian and bicycle improvement projects, there are a few limitations to consider. Because project activities must take place in the highway right-of-way, few places within the City of Kingston would be eligible for these funds. Moreover, this program is the City's primary source of funds for repaving, so the use of this program for other projects (like pedestrian and bicycle infrastructure) could limit the capacity for necessary surface maintenance. A more efficient use of this program's funds could be facilitated by integrating pedestrian and bicycle facilities into repaving projects.

NEW YORK STATE CONSOLIDATED FUNDING APPLICATION (CFA)

The CFA is a streamlined resource through which applicants can access multiple financial assistance programs made available through various state agencies. The CFA offers the opportunity for local governments (and other eligible applicants) to submit a single grant application to state agencies that may have resources available to help finance a given proposal. All submitted CFAs are also reviewed by the applicant's Regional Economic Development Council, which may elect to endorse the proposal as a regional priority project. Several grant resources have been made available that may be appropriate funding opportunities for implementation of active transportation efforts, including the following:

- Environmental Protection Fund Grant Program for Parks, Preservation and Heritage (EPF) - Parks Program
- EPF Recreational Trails Program
- Department of State's Local Waterfront Revitalization Program
- Environmental Facilities Corporation's Green Innovation Grant Program
- NYS DEC Climate Smart Communities Program

ULSTER COUNTY TRANSPORTATION IMPROVEMENT PROGRAM (TIP)

As a Metropolitan Planning Organization, the UCTC is responsible, along with the NYSDOT, for administering and programming federal funds for transportation projects. The TIP is a five-year capital program for allocating such federal funds. Municipalities within the geographic reach of the UCTC - including the City of Kingston - are notified when funds become available with instructions on how to apply. Funds are awarded to projects through a competitive, needs-based evaluation process.

Private Funding

There are a number of for and non-profit businesses that offer programs that can be used to fund bicycle and pedestrian related programs and projects. Nationally, groups like Bikes Belong fund projects ranging from facilities to safety programs.

PEOPLEFORBIKES

The PeopleForBikes Community Grant Program strives to put more people on bicycles more often by funding important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. Most of the grants awarded to government agencies are for trail projects. The program encourages government agencies to team with a local bicycle advocacy group for the application. Applications for accepted bi-annually for grants of up to $10,000 each (with potential local matches).

AMERICAN HIKING SOCIETY NATIONAL TRAILS FUND

The American Hiking Society's National Trails Fund is the only privately funded national grants program dedicated solely to hiking trails. National Trails Fund grants have been used for land acquisition, constituency building campaigns, and traditional trail work projects. Since the late 1990s, the American Hiking Society has granted nearly $200,000 to 42 different organizations across the US. Applications are accepted annually with a summer deadline.

THE ROBERT WOOD JOHNSON FOUNDATION

The Robert Wood Johnson Foundation seeks to improve the health and health care of all Americans. One of the primary goals of the Foundation is to "promote healthy communities and lifestyles." Specifically, the Foundation has an ongoing "Active Living by Design" grant program that promotes the principles of active living, including non-motorized transportation. Other related calls for grant proposals are issued as developed, and multiple communities nationwide have received grants related to promotion of trails and other non-motorized facilities.

CONSERVATION ALLIANCE

The Conservation Alliance is a group of outdoor businesses that supports efforts to protect specific wild places for their habitat and recreation values. Before applying for funding, an organization must first be nominated by a member company. Members nominate organizations by completing and submitting a nomination form. Each nominated organization is then sent a request for proposal (RFP) instructing them how to submit a full request. Proposals from organizations that are not first nominated will not be accepted. The Conservation Alliance conducts two funding cycles annually. Grant requests should not exceed $35,000 annually.

Local Funds

In addition to Federal, State, and County programming and funds, the City of Kingston could also finance pedestrian and bicycle improvement projects at the local level. This may be facilitated through capital improvement planning, municipal budgeting, or as part of the grant application planning process (as many programs will require a local match). Local funds for pedestrian and bicycle improvements could also be achieved - if supported by the community - through mechanisms such as a sidewalk district fee.

CHAPTER 9: FOLLOW ON ACTIVITIES

Follow On Activities

This PBMP helps chart a course toward a fully inclusive and accessible active transportation system for the community. The project was driven by a consistent and comprehensive flow of input from residents and stakeholders.

The PBMP highlights a wide range of needed improvements that were identified by residents. Follow-on activities are future endeavors that will help advance the overall objectives of the Kingston PBMP.

Follow-on activities can be placed into 3 general categories:

- Next steps to advance infrastructure improvements recommended in the PBMP;
- On-going coordination and communication to support Active Transportation; and
- Additional plans and studies to advance community objectives.

The Kingston PBMP does not identify all of the specifics needed to construct every recommended project. Some work still remains to be done. This includes, but is not limited to:

- Additional study and operational analysis is required for each recommended project prior to implementation.
- Consultation with - and agreement from - facility owners is required prior to implementation.
- Access agreements from landowners and/or property acquisition are necessary prior to implementation.
- Detailed corridor studies are needed in order to provide shared use facilities in select corridors.
- Design development and construction documentation will be necessary for any construction related projects, such as trails, sidewalks, and other infrastructure improvements.
- Regulatory approvals and permitting will be necessary for many of the recommended projects.
- Environmental permits will be required for trail projects. Some of the program and policy recommendations do not require regulatory approvals. However, changes to City code will need review and approval by the appropriate municipal boards and would be subject to the SEQR process.

During the planning process, several possible projects emerged that would be beneficial follow-on activities:

PARKING ANALYSIS

A result of discussion with stakeholders, site visits, and internal analysis, it is recommended that the City take on a comprehensive analysis of existing and future parking demands in Kingston, as compared to the existing supply of parking. Such an analysis would help the City better understand if there is a lack of supply that needs to be addressed through further provision of parking, or if there is excess space in the City dedicated to parking that could be re-purposed for active transportation use.

TACTICAL URBANISM DEMONSTRATIONS

As highlighted in the policy/program recommendations, the City should consider implementing tactical urbanism installations in key locations within the City's transportation network. Tactical urbanism can generally be described as low-cost, temporary interventions that improve local neighborhoods or demonstrate potential future improvements to the built environment. These interventions can be highly successful in introducing active transportation concepts to residents and business owners, as well as foster support for permanent installation of new transportation facilities.

WAYFINDING

Implement the Connecting Kingston wayfinding plan to help improve mobility for both motorized and non-motorized transportation users, as well as contribute to the character of the City by using a consistent and attractive branding scheme. Installation of wayfinding signage and historic/cultural interpretation panels that follow Connecting Kingston's design guidelines should be considered for the City's growing pedestrian and bicycle network.

CONTINUE PEDESTRIAN AND BICYCLIST COUNTS

Continue collecting reliable data on pedestrian and bicycle usage and travel patterns based on protocols provided by the National Bicycle and Pedestrian Documentation Project (NBPD). The data is an important tool for advancing active transportation in Kingston. Without accurate and consistent demand and usage figures, it is difficult to measure the positive benefits of investments in these modes, especially when compared to the other transportation modes such as the private automobile. A good follow-on project would be to expand the collection points and interpret the data for communications.

BLUESTONE NETWORK STUDY

While the locations of bluestone paths were mapped as part of this PBMP, more information is needed in order to make informed decisions about the repair, removal, maintenance, replacement, and new construction of bluestone paths. Many of the bluestone paths are in poor condition and/or broken into small, segmented sections. Moreover, bluestone paths often do not meet ADA-standards, meaning that they are less accessible than other sidewalk material alternatives. It is recommended that a study be completed that weighs the advantages of repairing, maintaining, and expanding the bluestone network (historical significance, aesthetic appeal, etc.) against the advantages of replacing or removing sections of the bluestone network (repair costs, limited accessibility, etc.). This type of study would assist the City in making informed decisions when completing streetscape and sidewalk improvement projects.

SIDEWALK DISTRICT FORMATION STUDY

In addition to a bluestone network study, the completion of a sidewalk district formation study would assist the City in increasing the effectiveness of sidewalk improvement projects. The use of sidewalk districts would allow sidewalk improvements to be completed in a more context-sensitive manner and also - potentially - provide a source of revenue for the completion of sidewalk improvements. This study would evaluate various approaches to sidewalk district formation and garner a better understanding of community support/opposition to these approaches.

DOCUMENTING BICYCLE INFRASTRUCTURE

While this PBMP included the mapping of on-road and off-road bicycle facilities (including covered bicycle shelters) and shared use paths, a more in-depth investigation of the type and condition of these facilities would support the City in maintaining and implementing upgrades in a more efficient manner. Including the location of bicycle racks throughout the City would help to generate a more holistic understanding of the state of the City's bicycle network and opportunities for enhancements. Mapped bicycling infrastructure should then be made available to the public to support community members in finding safe, direct routes between destinations.

Abeel St

ENFORCEMENT

Enforcement of traffic safety laws, particularly in areas with evidence of pedestrian/bicyclist hazards and discomfort, is critical to the long-term effectiveness of active transportation improvements. Therefore, it is recommended that a workshop with the local police department be facilitated in order to impart the key findings and implications from this PBMP. This may include: areas with a high density of pedestrian and/or bicyclist crashes, locations where public input identified prevalent traffic violations, and recent/ongoing streetscape improvement projects where right-of-way alterations may require driver education. A helpful reference for the City in planning and facilitating enforcement initiatives may be the 2023 Highway Safety Strategic Plan, developed by NYS Governor's Traffic Safety Committee.

CITY OF KINGSTON
PEDESTRIAN & BICYCLE MASTER PLAN

END OF PLAN

City of Kingston

PEDESTRIAN & BICYCLE MASTER PLAN

June 6, 2023