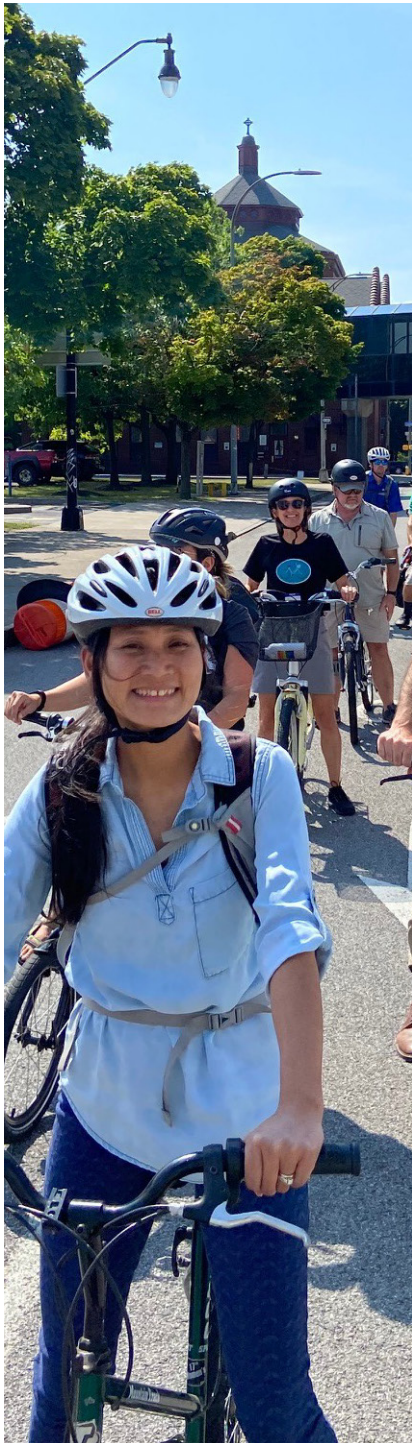
Monroe County, NY

Countywide Active Transportation Plan

DRAFT **JUNE 2023**



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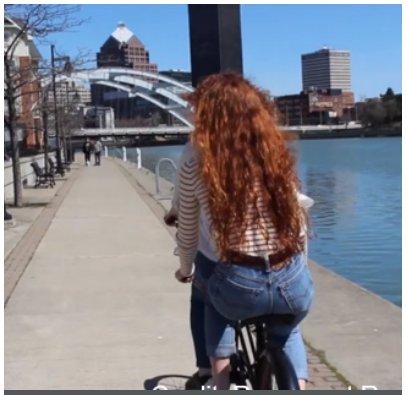
Contents

Chapter 1: Introduction

1.1 Plan purpose and background

What is Active Transportation?

Active transportation emphasizes the role of physically active forms of travel in getting from one place to another. It reinforces that bicycling, walking, scooters, wheelchairs, and many more mobility devices are valid forms of transportation, not just forms of recreation, and it is a more inclusive term that reflects the use of mobility devices, such as wheelchairs and scooters. Active transportation also implies a more comprehensive approach to the transportation system which recognizes the importance of accessing public transit by walking and biking.



Bicylist on Genesee River Trail.

Active transportation is all about making connections. Sidewalks and bike lanes connect us to the places we need to go and trails connect us with the natural world, and everyday destinations. They serve as a serene and quiet place and as a backdrop for adventure and discovery for some; for others, they are the ways to go to school, shopping, to work, and to appointments. People in Monroe County enjoy walking and biking and want more opportunities for safe, comfortable, and convenient active transportation. This change takes work, including planning, goal setting, and investment in infrastructure and policies that support walking and biking, as well as people using scooters, wheelchairs, and other mobility aids.

The public identified more than 400 opportunities to improve bicycle and pedestrian connections throughout Monroe County, with almost 5,000 up-votes supporting those ideas.

Why do we need an active transportation plan?

Monroe County and its partners have embraced this challenge by developing the first Countywide Active Transportation Plan (CATP). This effort marks the culmination of many years of active transportation planning and project implementation. Monroe County, the Genesee Transportation Council (GTC), the New Yok State Department of Transportation (NYSDOT), the City of Rochester, and other local municipalities have made considerable progress over the past decade, beginning with the completion of the Rochester Bicycle Master Plan in 2011. In the years following, GTC placed an emphasis on completing active transportation plans for the inner ring suburbs that would connect to Rochester and create a network of bicycle and pedestrian facilities linking multiple communities. Community-wide active transportation plans were supported by numerous multi-use trail feasibility studies, corridor plans, and traffic-calming studies. Local active transportation plans emphasized connectivity to Monroe County parks and trails, as well as integrating pedestrian and bicycle mobility with the public transit system. A common thread woven throughout the existing plans is as emphasis on enhancing inter-municipal corridors that allow safe passage within and between communities in Monroe County.

The CATP provides an evidence-based platform that brings together existing data and planning initiatives to advance the function, equity, and resilience of the countywide active transportation network. It establishes a clear vision for a safe, comfortable, and connected active transportation network for the County, identifies opportunities for network expansion, and presents implementation strategies to advance active transportation improvements across Monroe County. The CATP guides the ongoing implementation of a countywide network of bicycling and pedestrian facilities, programs, and policies so that residents of every ability can move between destinations safely, efficiently, affordably, and in a way that can benefit their health and the environment.

It is important to note that many people in Monroe County already walk and bike regularly. It is incumbent upon local, county, and state leaders to promote infrastructure, programs, and policies that increase safety for both current and future vulnerable road users.

Principles and Vision

The following vision for active transportation in Monroe County was developed based on the priorities of the Project Advisory Committee — a diverse group of stakeholders including nonprofit organizations and a variety of governmental agencies — as well as public input from the CATP's engagement activities, and feedback from County staff. The Vision is informed by three priority topics: Equity, Climate Change, and Public Health.

Vision Statement

Upon the completion of the CATP's active transportation network:

- **People walking and biking in Monroe County, regardless of age, ability, income, or race/ethnicity, will travel safely and comfortably in and between communities.**
- **There will be frequent and seamless opportunities for travelers to transition between transit and active transportation.**
- **The built environment will encourage multimodal travel, reducing emissions from private vehicle trips and improving public health.**
- **More residents and visitors walk or bike instead of driving for short trips, which reduces congestion and road maintenance needs.**

Equity

People of color people with low incomes, and immigrants experience far more transportation barriers and are far more likely to be injured or killed while biking and walking.[1] This is a result of historic and ongoing injustices and inequities such as housing segregation and disparities in investment. To begin addressing these disparities through the CATP, Monroe County intentionally engaged with stakeholders of color, identified potential policy and program actions to increase equitable access to transportation networks, and developed a framework for prioritizing investments equitably.

Climate Change

Climate change threatens the homes, livelihoods, and cultural and community assets of Monroe County residents. These losses will be felt more acutely by communities of color and low-income communities, who bear a disproportionate burden of climate change-related impacts.

The CATP emphasizes the importance of active transportation in addressing the climate crisis, as the transportation sector generates the largest share of greenhouse gas (GHG) emission. The CATP emphasizes the importance of active transportation in addressing the climate crisis. Monroe County is in the process of developing a communitywide climate action plan at the time of this writing, and the City of Rochester and Town of Brighton have or are completing climate action plans.

Public Health

Research has shown that regular, moderate physical activity, such as walking and biking, is associated with a host of positive individual health benefits, including reduced risks of heart disease, obesity, high blood pressure, diabetes, and depression. The development of the CATP also aims to create an environment that is safe and convenient for people of all ages and abilities to engage in non-motorized activities for everyday transportation and recreation. This is a great way to build routine physical activity into daily life.

1 Pedestrian Traffic Fatalities by State: 2020 Preliminary Data. Governors Highway Safety Association (https://www.ghsa.org/resources/Pedestrians21)

1.2 Key Plan Elements

Key plan elements and next steps are summarized below. To move these forward, it will be critical for Monroe County's partners to review these recommendations and implement them to the extent that they align with local priorities.

- The CATP's centerpiece is a 150-mile conceptual active transportation network. The network will provide a critical framework for bicycle travel in Monroe County.[2] Each segment will be prioritized for implementation, recognizing that some may take longer to develop due to their complexity.
- Pedestrian network recommendations are focused on three case studies included in the Pedestrian Accessibility Scan. These areas represent different place types throughout the county, so infrastructure recommendations developed for each case study can be used as a starting point for similar locations. The municipalities where these case studies are located will take the lead in implementing recommendations for their communities. Monroe County and GTC will then identify opportunities to prioritize these recommendations for funding.
- The facility toolkit provides additional guidance for both bicycle and pedestrian accommodations; the toolkit should be the starting point for Monroe County and its partners to determine the most appropriate treatment for a given location.
- This CATP also includes a set of policy and program initiatives to support the vision and goals outlined above. Monroe County, together with municipal governments and stakeholders, will take a lead role in implementing these initiatives.

The CATP outlines an ambitious vision, targeted goals, and specific pedestrian and bicycle-related projects, policies, and initiatives. Working together and toward this shared vision, Monroe County and its partners will make walking, rolling, bicycling and public transit a safe and convenient daily option for people of all ages and abilities.

1.3 Supporting Documents

The CATP provides an overview of walking and bicycling conditions in Monroe County, identifies gaps and barriers, and recommends infrastructure and program/policy improvements to achieve the plan's vision. Toole Design prepared a series of technical memoranda and supporting documents provide more detail for each plan element. They are available on Monroe County's website and linked throughout this document.

1. Public Engagement Plan
2. Stakeholder Interviews Summary
3. Plan Review – Existing Studies and Policies
4. Program and Campaign Review
5. Bicycle and Pedestrian Crash Analysis
6. Trip Potential Analysis
7. Bicycle Traffic Stress and Network Analysis
8. Pedestrian Accessibility Scan Fieldwork Plan
9. Pedestrian Accessibility Scan Site Visits Summary
10. Network Development
11. Facility Toolkit
12. Program and Policy Recommendations
13. Implementation Strategies

2 Planning for walking at the countywide scale requires a different approach than for bicycling. The conceptual network focuses primarily on accommodating bicycle travel, as walking trips tend to be short distances. However, as both pedestrians and cyclists are vulnerable road users, it is important to ensure that low-stress bicycle corridors are similarly accessible for pedestrians and equipped with ADA-compliant surfaces, sidewalks, and crossing treatments. Additional resources for pedestrian network planning are available via the following links:

- FHWA Small Town and Rural Design Guide
- FHWA Achieving Multimodal Networks
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

Chapter 2: Public Engagement

Historically, genuine and effective public engagement in transportation plans and projects has been difficult to achieve. In recent years, the industry has undergone a shift from simple public outreach, where the public is notified of decisions that have already been made, to more collaborative and empowering engagement strategies. Monroe County sought to emulate this approach in the development of the CATP using the strategies described in this chapter.

2.1 Project Advisory Committee

Monroe County convened a Project Advisory Committee (PAC) to guide decisions and outcomes of each task during plan development. The PAC helped expand stakeholder engagement with Monroe County communities, offered technical expertise and local knowledge to guide the plan development process, and provided extensive feedback on major deliverables, particularly network development and implementation strategies.

The PAC included representatives from the following organizations:

- Black Girls Do Bike: Rochester
- Center for Disability Rights
- City of Rochester
- Common Ground Health
- Genesee Transportation Council
- Monroe County Department of Parks
- Monroe County Department of Planning and Development
- Monroe County Department of Transportation
- New York State Department of Transportation
- New York State Office of Parks, Recreation and Historic Preservation
- Reconnect Rochester
- Regional Transit Service
- Rochester Accessible Adventures
- Rochester-Monroe County Aging Alliance
- Town of Brighton
- Town of Greece
- Town of Henrietta
- Village of Brockport

The PAC met virtually four times over the course of CATP development:

Kick off / Overview

March 23, 2022

Project overview and committee responsibilities, project scope and schedule, draft public engagement plan, draft project website, visioning and goalsetting activity.

Existing Conditions and Need Assessment

June 22, 2022

Analysis and engagement updates, discussion.

Network Improvement and Policy Recommendations

October 25, 2022

Preliminary network and scenario development, discussion.

Implementation Strategies

February 28, 2023

Engagement updates and implementation strategies, discussion.

2.2 Listening Sessions

The project team conducted listening sessions with nine stakeholder focus groups during the summer of 2022 to gain insight on what needs and opportunities exist in Monroe County regarding active transportation, and how varying interest groups and entities perceive active transportation and its benefits. The focus groups interviewed included:

1. **6/6**: New York State Department of Transportation (NYSDOT)
2. **6/10**: Monroe County Parks Department and New York State Parks
3. **6/13**: Monroe County Department of Transportation (MCDOT)
4. **6/15**: Local municipalities (Town of Pittsford and Town of Penfield)
5. **6/24**: The aging community (Lifespan Rochester, United Way Rochester, Monroe County Office for the Aging, and the Aging Alliance)
6. **6/28**: Colleges and universities (University of Rochester and Monroe Community College)
7. **6/28**: Transit and micro-mobility providers (Regional Transit Service and HOPR)
8. **8/9**: The disability community (Catalyst Consulting)
9. **8/16**: Bicycle advocacy groups representing people of color (Black Girls Do Bike Rochester and ROC Freedom Riders)

See Summary Task 3.4 for more details.

Major takeaways from these discussions are summarized below:

- An equitable active transportation network must prioritize maintenance, and Complete Streets policies should include complete maintenance.
- Snow and ice removal is an essential component of an accessible multimodal transportation system in Monroe County.
- Elderly residents not only rely on smooth surfaces for safe walking paths, but also resting areas and access to emergency services.
- Transit must be considered in active transportation planning, including outside of Rochester in development centers.
- Realistic expectations of driver behavior, including traveling speed, are more conducive to pedestrian safety.
- It would be helpful for Monroe County to develop its own guidance surrounding e-bike usage that municipalities can rely on or alter.
- Monroe County can act as a leader for municipalities by creating guidance for emerging trends such as e-bikes and bike share.
- Compliance with ADA standards does not always equate to comfortable and easy travel for all users.
- It is important to consider the impacts of police interaction with cyclists of color.[3]

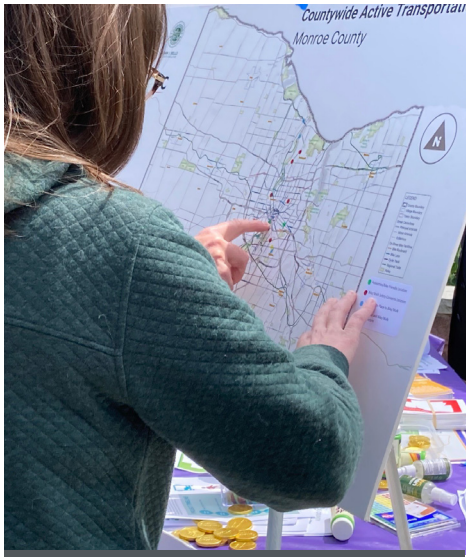
3 Police harassment and racial profiling of people walking and bicycling is a systemic problem in communities across the country. Aggressive police tactics are a major fear for people of color who use active modes of transportation. See the Program and Policy Recommendations Memorandum for more information.

2.3 Pop up Events

The project team and County staff conducted 25 pop up sessions across the County between May 2022 and January 2023. The purpose of the pop-ups was to employ a "go-to-them" strategy, and attend existing community events to reach out to County residents that do not attend the dedicated public workshops for this project. The intent of each pop up was to provide an informal setting for individuals and families to learn more about the project and to solicit feedback on what is needed in Monroe County to facilitate a better active transportation environment in the community. The project team and County staff attended a wide range of events such as major festivals, targeted neighborhood or interest group events, and municipal gatherings.

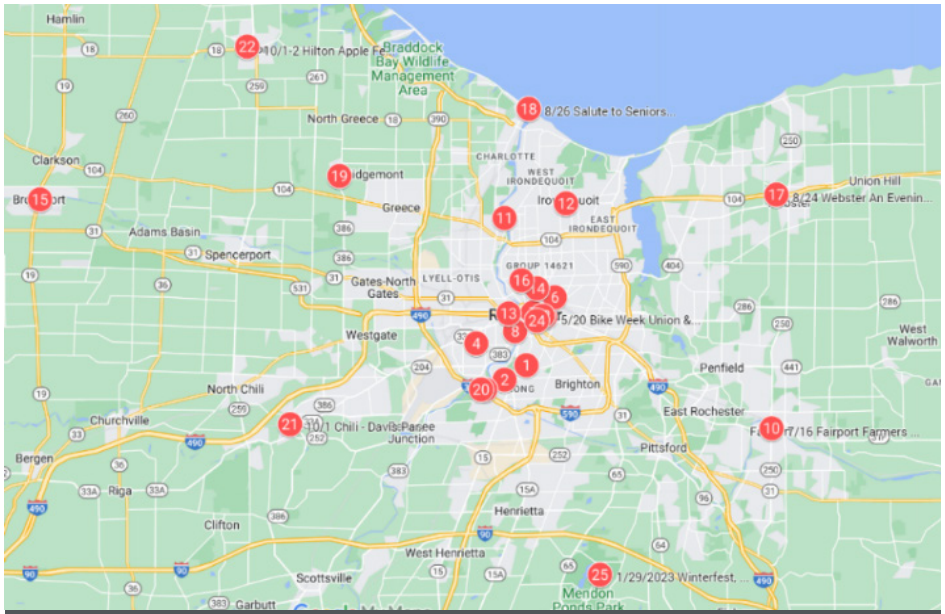
Pop Up Events

1. **5/7 & 5/8** – Lilac Festival
2. **5/17** – Bike Week UR Pit Stop
3. **5/20** – Bike Week Union & East Pit Stop
4. **5/21** – Arnett Bike Clinic
5. **6/16** – Rochester Street Film
6. **6/18** – Rochester Public Market
7. **6/20** – Jazz Festival Liberty Pole
8. **7/9** – Corn Hill Festival
9. **7/10** – Pride Picnic Genesee Valley Park
10. **7/16** – Fairport Farmers Market
11. **7/22** – ZooBrew at Seneca Park Zoo
12. **8/11** – Irondequoit Farmers Market
13. **8/5** – Puerto Rican Festival
14. **8/6** – Jordan's Front Porch Festival
15. **8/13** – Brockport Arts Festival
16. **8/21** – The International Plaza
17. **8/24** – Webster - An Evening in the Park
18. **8/26** – Salute to Seniors - Senior Picnic
19. **8/27** – Greece - Back to School Bash
20. **9/24** – Rochester Cyclocross
21. **10/1** – Chili Davis Park Chili's Bicentennial
22. **10/1-2** – Hilton Apple Fest
23. **10/19** – Street Film #2
24. **12/11** – ROC Holiday Village
25. **1/29** – Mendon Ponds Park Winterfest



Lilac Festival


Pride Picnic



Pop up event locations

2.4 Public Workshops

Public Workshop #1

A joint public workshop for the CATP and Plan Forward – the County's Comprehensive Plan Update – was held on Wednesday, June 29, 2022 at the Olmsted Lodge in Highland Park in Rochester. The purpose of the workshop was to inform attendees about and solicit input on both projects. For the purposes of the CATP, attendees were asked to share their thoughts on the following:

- Where they enjoy cycling, walking, and using other modes of active transportation in the County
- Where it is challenging to bike, walk, and use other modes of active transportation in the County
- Describe active transportation now and their vision for the future of active transportation in the County
- What types of active transportation facilities and amenities they enjoy using and think are important
- Why they enjoy walking and biking to places

The project team captured responses through a series of interactive presentation boards, as well as the online interactive mapping application, which was available on a set of tablets for attendees to use. Approximately 50 people were in attendance for the event, alongside County staff and members of the consultant teams for both Plan Forward and the CATP. A full summary of the results of this workshop is available in Appendix X.

First public workshop

First public workshop

Public Workshop #2

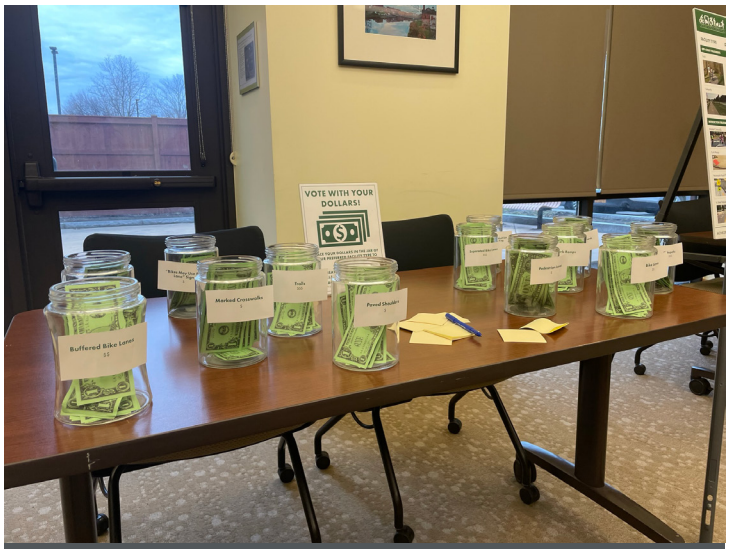
A second public workshop for the CATP was held on March 22, 2023. The event was an open-house style meeting at the Regional Transit Service Board Room in Rochester. Approximately 50 individuals were in attendance. The intent of the workshop was to summarize the draft plan and solicit feedback on the recommendations and other plan components prior to the development of a final plan document. The open house format allowed attendees to visit at their own convenience and have informal conversations with County staff and the project team to ask questions and learn about the plan.

Twelve presentation boards summarized the plan's components. Interactive elements were spread across the boards to help identify community priorities – including a money spending activity that involved community members using fake money to "vote with their dollars" for the preferred facility types proposed for the facility toolkit. The table below displays the results of the spending exercise.

Facility	Cost	Total Spent
"Bikes May Use Full Lane" Sign	$1	$5
In Street Pedestrian Crossing Sign	$1	$6
Paved Shoulders	$1	$7
RRFBs	$2	$11
Pedestrian Lanes	$1	$12
Marked Crosswalks	$1	$13
Curb Ramps	$1	$15
Bike Boulevards	$2	$18
Bike Lanes	$2	$19
Trails	$3	$20
Buffered Bike Lanes	$2	$24
Sidepaths	$3	$38
Separated Bike Lanes	$3	$105

Results of the vote with dollars activity

Participants at the second public workshop



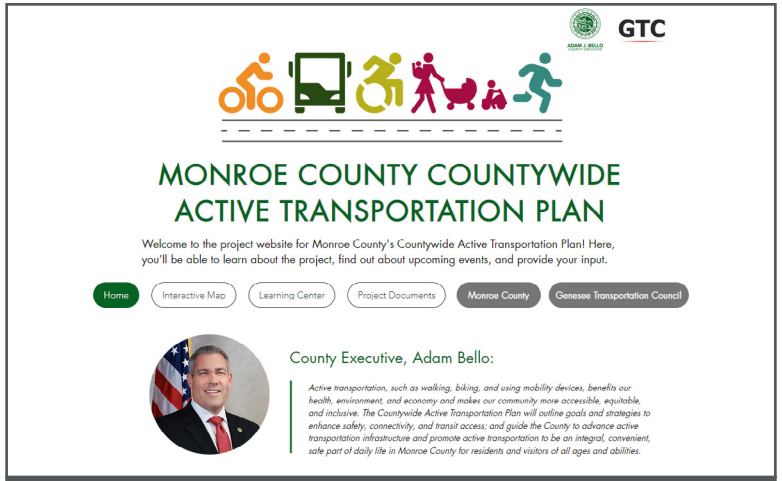
Vote with dollars activity at second public workshop

2.5 Online Materials

In addition to the in-person events conducted throughout the planning process, a project website was hosted throughout the duration of the project, which served as a virtual information hub and an opportunity for Monroe County residents to provide input. The website provided an overview of the project, resources for learning more about active transportation, an events calendar for upcoming and past engagement opportunities, and a project documents section where users could find summaries of past meetings and other project documents as they became available.

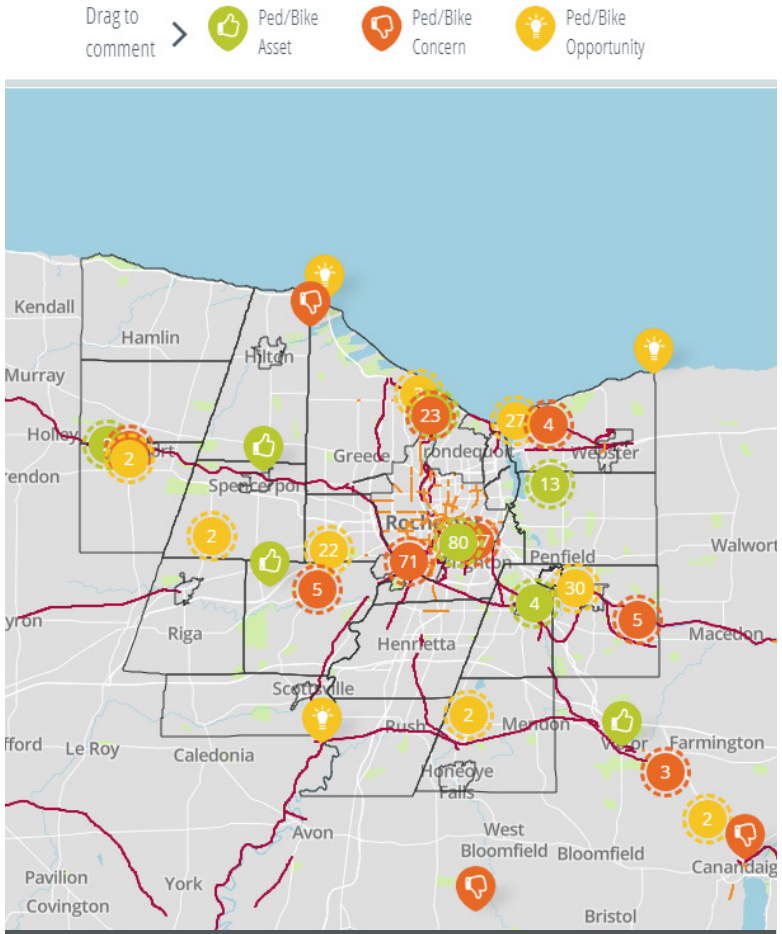
In addition to these components, an interactive map was presented on the project website, which allowed residents and stakeholders to identify active transportation assets, concerns, and opportunities by placing pins on the map. Users could provide comments on each location, as well as upload photos. Up-voting and down-voting of existing comments was also accommodated. A total of 1,065 comments were received, categorized as follows:

- Bicyclist / Pedestrian Assets: 127
- Bicyclist / Pedestrian Concerns: 500
- Bicyclist / Pedestrian Opportunities: 438



Project website landing page

Additionally, there were 4,833 up-votes and 94 down-votes of existing comments. Of the 4,833 upvotes, the comments that received the highest number of upvotes (between 40-50 upvotes) all pertained to improvements in the county's trail systems – particularly those surrounding Irondequoit Bay. While there were significantly less downvotes, some of the comments with the highest number of downvotes (between 5-25 downvotes) were those that overtly did not support increased active transportation facilities in the county.



Interactive webmap showing public feedback

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Chapter 3: Existing Conditions & Needs Assessment

This chapter describes several elements of Monroe County's active transportation system and general travel environment: how people get from place to place, how safe the roads are, and how the transportation system impacts quality of life. It also examines the history of active transportation planning in Monroe County to ensure that the CATP builds upon previous efforts. This understanding, as well as the data-driven analyses completed for the CATP, helped inform how Monroe County engaged with the public and key stakeholders, as described in Chapter 2, and how the project team crafted infrastructure and policy recommendations for the CATP, in Chapter 4.

Chapter 3 includes the following sections:

- Plan Review
- Program and Campaign Review
- Crash Analysis
- Trip Potential Analysis
- Bicycle Traffic Stress and Network Analysis
- Pedestrian Accessibility Scan

Genesee River Bridge

Intersection of East & Union, City of Rochester

3.1 Plan Review

This review draws on some of the critical active transportation planning work completed within the county, identifies overlaps in objectives across various planning efforts, and determines what gaps remain to be filled through the CATP. The project team reviewed 28 documents as part of this task.[4] For a complete analysis of all documents listed, refer to the Plan Review Memorandum.

Key Findings - Plan Review

Most of the documents reviewed recognize the benefits of active transportation. The most significant difference between the various studies is the degree to which they equip agencies to use best practices for making active transportation comfortable and useful for all people. Older studies advocated for bike lanes but did not consider creating quality places that people want to bike and walk to. Many of the studies did not consider the impacts of environmental injustices (EJ) on active transportation infrastructure development. Some of the older documents were completed before the updated American Association of State Highway and Transportation Officials (AASHTO) and National Association of City Transportation Officials (NACTO) design guides were released and do not align with current best practices.

While the contexts differed across each of the documents reviewed, there is overall consistency in active transportation related goals and recommendations among the documents that address walking and bicycling. Collectively, there was a strong focus on making people safer, safer places, safer roads, healthier environments, and strong economies.

List of Documents

1. Three-Foot Safe Passing Law
2. Transportation and Poverty in Monroe County
3. Creating a Community for a Lifetime – An Action Plan for an Age-friendly/Livable Rochester and Monroe County
4. Active Transportation Recommendations
5. Active Transportation Response to Towns
6. Highway Geometric Design Standards
7. Monroe County Complete Streets Checklist
8. Monroe County Complete Streets Policy
9. Accessible Pedestrian Signal Devices Project Construction List
10. Bike Walk Brighton: A Comprehensive Pedestrian and Bicycle Master Plan
11. Pittsford Active Transportation Plan: The Town and Village Moving Together
12. Town of Chili - Bicycle & Pedestrian Master Plan
13. Town of Greece - Bicycle and Pedestrian Master Plan
14. Town of Henrietta - Active Transportation Plan
15. Town of Irondequoit - Active Transportation Plan
16. Town of Penfield - Bicycle Facilities Master Plan
17. Town of Perinton - Pedestrian and Bicycle Master Plan
18. Village of Brockport - Active Transportation Plan
19. Black Creek Trail Feasibility Study
20. Highland Park/Canalway Trail Planning and Concept Design
21. Hojack Trail Feasibility Study
22. I-590 Bicycle + Pedestrian Bypass Feasibility Study
23. Irondequoit Creek Valley Multi-Use Trail Feasibility Assessment and Design Recommendations
24. Irondequoit Seneca Trail Feasibility Study
25. JOSANA Rail-to-Trail Feasibility Study
26. Lehigh Valley Trail Feasibility Study: Corridor Acquisition and Rail-to-Trail Conversion
27. Urban Trail Linkages: Genesee Riverway & Eastman Trails
28. Genesee Valley Greenway State Park Action Plan

4 Plans and policies related to the City of Rochester were reviewed as part of the concurrent Rochester Active Transportation Master Plan.

Data

Most of the documents highlighted the extent to which local jurisdictions incorporated data-driven methodologies into their active transportation plans (ATPs) throughout the region. For instance, the documents referenced several emerging data-driven methodologies such as demand models, bicycle and pedestrian level of service models, and more traditional methods such as crash analyses, field investigations, stakeholder and community outreach, walkability workshops, and prioritization matrixes.

Equity

There was, however, inconsistency and a lack of commitment to remove systemic transportation barriers for traditionally underserved and under resourced communities, particularly regarding allocating and prioritizing funding and investments in active transportation infrastructure at the level needed to overcome historic and contemporary injustices and inequities. Only 28 percent of the documents addressed environmental justice (EJ), and many of these instances are high-level goals and recommendations rather than detailed analyses of how to remove systemic transportation barriers for under-resourced communities within Monroe County. Most jurisdictions with local ATPs or other related documents reviewed during this task are home to some EJ communities, such as people of color, people with low incomes, people who are unemployed, or non-native English speakers. Monroe County should partner with these communities to focus more efforts and resources on supporting EJ populations and centering their needs during future active transportation planning processes.

Climate Change

There is a strong link between environmental justice, climate change, and active transportation because lower income and Black, indigenous, and communities of color rely more heavily on public transit, walking, and bicycling as a means of transportation. Heavy rainfall, extreme heat and cold, and other climate change-induced events put these groups at increased risk and inconvenience. For example, rising temperatures can cause heat stroke and exhaustion and exacerbate preexisting conditions like asthma and heart disease in populations that already face health inequities. Likewise, ponding, flooding, and icing in sidewalks and bike lanes pose a greater hazard to people who rely on them for transportation. Since environmental justice communities are more likely to depend on walking and biking, investment in active transportation systems in areas where they live and work will support better transportation options for people who need it most.

By reducing carbon emissions, active transportation and transit are critical in the fight against climate change. Designing safe and resilient transportation systems for the most vulnerable users should be a key consideration during plan implementation. The City of Rochester has completed a climate action plan, and Monroe County and the Town of Brighton have climate action plans underway, at the time of this writing. Climate-related funding sources, such as the New York State Climate Smart Communities grants, can be used to fund active transportation projects.

Most local ATPs make a clear, high-level, link between active transportation and the environment, identifying the environmental benefits of active transportation, including reduction of greenhouse gas emissions. The Henrietta plan provided additional details, including a green benefits analysis that calculated the reduction of greenhouse gases that would result from implementation of the recommended active transportation improvements (see Chapter 5 for further information).

Funding

Lastly, with a few exceptions, the overwhelming majority of local agencies are adept in identifying project funding mechanisms via philanthropic, local, regional, state, and federal sources. However, what is not known is the extent to which local agencies have been successful in procuring funding for the implementation of active transportation-related projects, particularly in EJ communities and traditionally underserved communities. Therefore, the procurement of active transportation-related funding should be a priority in the CATP.

Summary of the documents

Figures 1-5 provide summary information on the documents reviewed, such as the study area, document type, year written, and whether the document includes recommendations that aim to remove systemic transportation barriers for Environmental Justice (EJ) communities within Monroe County.

- **Figure 1 Study Area**: Half of the reports focused on local municipalities, while a third focused on the county as a whole.
- **Figure 2 Document Type**: A third of the documents reviewed were trail studies, while another third was dedicated to active transportation plans. The remaining third consisted of laws and policies, as well as other documents.
- **Figure 3 Year Written**: There is a relatively even split between reports written before 2013 and between 2014- 2018 and 2018-2021. Each category makes up roughly a third of the reports reviewed.
- **Figure 4 Addresses Environmental Justice**: Environmental justice communities consist of those who have been systematically subjected to an undue burden of environmental harm. Just over a quarter of the reports reviewed focus on the transportation needs of EJ communities.
- **Figure 5 Contains Helpful data**: Of the documents reviewed, almost 80%, or four out of five contain data that can be useful in the development of a countywide active transportation plan.

Bike ride group

Figure 1: Study Area

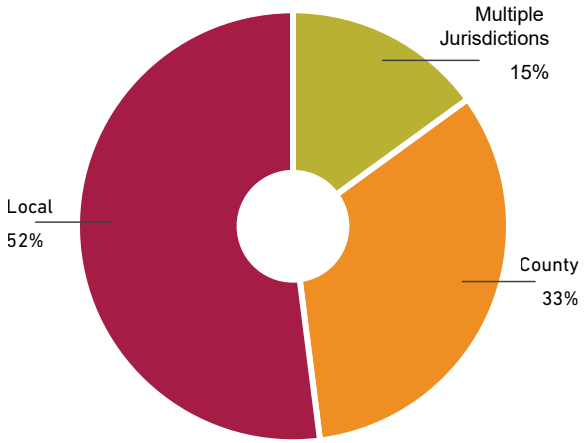


Figure 2: Document Type

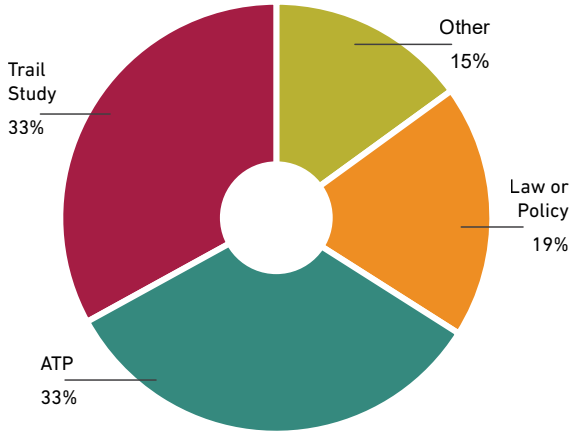


Figure 3: Year Written

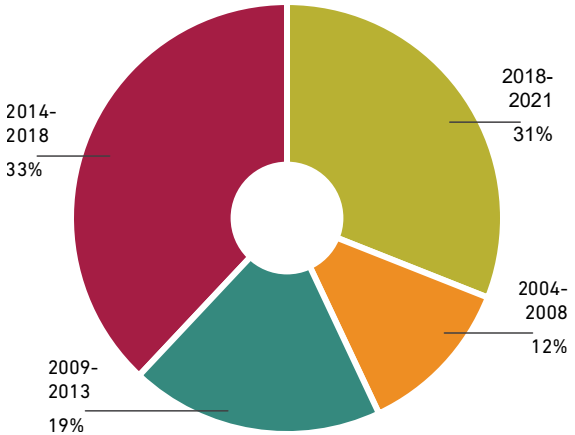


Figure 4: Addresses EJ

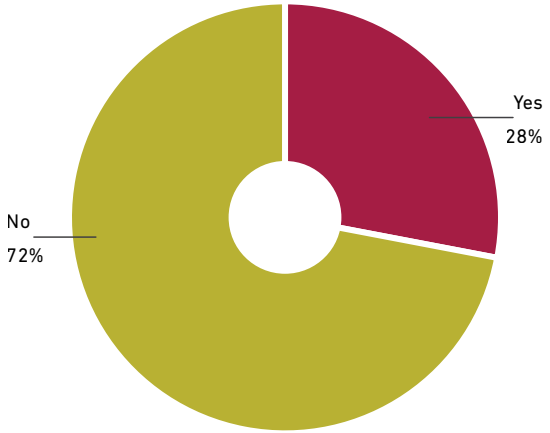
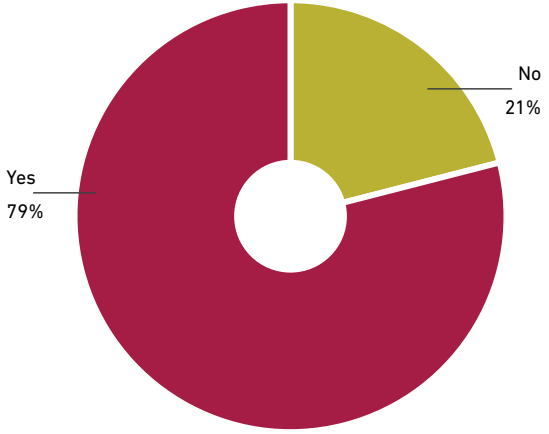


Figure 5: Contains Helpful Data



3.2 Program and Campaign Review

The project team conducted an inventory of existing education and outreach programs and campaigns in Monroe County to identify successes and gaps in active transportation encouragement efforts. The Program and Campaign Review Memorandum identifies current and past initiatives, as well as regional examples that may serve as best practices for the County moving forward. Each initiative is categorized into one of the following program types:

- **Incentives and Giveaways** – Encouraging biking and walking can include monetary incentives or material giveaways. This may include employer incentives, such as waiving parking fees, or directly paying employees to bike/walk to work. Alternatively, giveaways, such as bikes, helmets, or safety gear can also help promote biking activity in a community.
- **Educational Programming** – Educational opportunities can provide new riders with the awareness and confidence to start biking, whether for recreational purposes, physical exercise, commuting, or daily errands. Additionally, education programs can target existing riders to promote increased bike safety, expanded knowledge on bike repair, and other topics. While the specific topics may vary, the overall purpose of educational programming is to promote awareness of active transportation and support safe travel behavior.
- **Advocacy** – Advocacy typically involves championing policies for active transportation funding, encouraging better infrastructure, and growing political support for walking and biking. Advocacy can occur at the local, state, or national level. Activities may include contacting local and/or state representatives, attending local public meetings, signing petitions, and championing laws and ordinances that support active transportation.
- **Supportive Services** – Supportive services seek to reduce barriers to walking and biking providing services or amenities that encourage active transportation. Such services may include the development of walk and/or bike-friendly maps, trip planning assistance, providing information for beginner users, organized rides, and bike repair services.

Bike Lane in Downtown Rochester

Table 1 lists all programs reviewed in the memorandum. The Program and Campaign Review also included a survey of programs from other communities in the Northeast, which revealed the following takeaways:

- There are very few Traffic Demand Management (TDM) programs available currently in Monroe County. Monroe County could work with local partners, such as Reconnect Rochester, to glean best practices from the GO Buffalo Niagara TDM Program.
- Monroe County could benefit from community liaisons such as the Bike Walk Tompkins mentor program that could help with data collection, outreach at local community events, and training workshops.
- Given the rising popularity of e-bikes in Monroe County, an e-bike lending library would allow for local community members to test out various models of e-bikes, and learn more about the regulations and safety operations of using one. This idea was also popular among listening session participants.

Table 1: Program and Campaign Review Summary

Program / Organization	Active?	Incentives and Giveaways	Educational Programming	Advocacy	Supportive Services
Local Programs					
Black Girls Do Bike	Yes		X		X
Common Ground Health	Yes		X	X	X
Conkey Cruisers	No	X	X		X
Greater Rochester Off-Road Cyclists	Yes	X		X	X
R Community Bikes	Yes	X			X
Reconnect Rochester	Yes		X	X	X
Rochester Bicycling Club	Yes		X	X	X
Rochester Bike Week	Yes				X
Walk! Bike! Brockport!	Yes			X	X
Regional Programs					
GoBIKE Buffalo	Yes	X	X	X	X
Bike Walk Tompkins	Yes		X	X	X
Local Motion	Yes		X	X	X

3.3 Crash Analysis

Making streets safer for people walking and bicycling is a key goal of any ATP. Evaluating crash trends and patterns helps identify recommended projects that have the greatest likelihood of improving safety for active transportation users. This section summarizes the results of Monroe County's crash analysis. The aim of this analysis is to understand the patterns of bicycle and pedestrian crashes in the County and identify the risks that active transportation users face. Subsequent sections of this plan determine how to mitigate these risks with improved infrastructure and policies. For a detailed description of crash analysis methodology and results, refer to the Bicycle and Pedestrian Crash Analysis Memorandum.

Key Findings - Crash Analysis

- There were a total of 5,477 crashes in Monroe County between 2012 and 2021 involving nonmotorized users for which injury severity information is available. Crash data is divided into two primary categories based on injury severity:
  - » Killed or Seriously Injured (KSI)
  - » Non-KSI crashes
- The City of Rochester has a disproportionately high number of pedestrian crashes compared to the county overall. This trend holds for the share of KSI crashes as well. Urban areas generally tend to have more people walking compared to suburban and rural areas, which could lead to a higher-level exposure to crash risk.

- Pedestrian crashes in rural parts of Monroe County have a higher likelihood of resulting in a severe injury. This finding could indicate that higher speeds in rural areas cause more severe injuries. The result of the Pedestrian crash analysis also suggests that although a higher proportion of crashes occurred in urban areas, a crash is more likely to be severe in rural areas. The share of crashes by injury severity for different land use contexts is shown in Figure 6.
- Bicyclist crashes follow a similar trend as pedestrian crashes, with urban areas seeing a disproportionately high number of crashes. The share of crashes by injury severity for different land use contexts is shown in Figure 7.

Figure 6: Pedestrian Crashes by Severity and Land Use

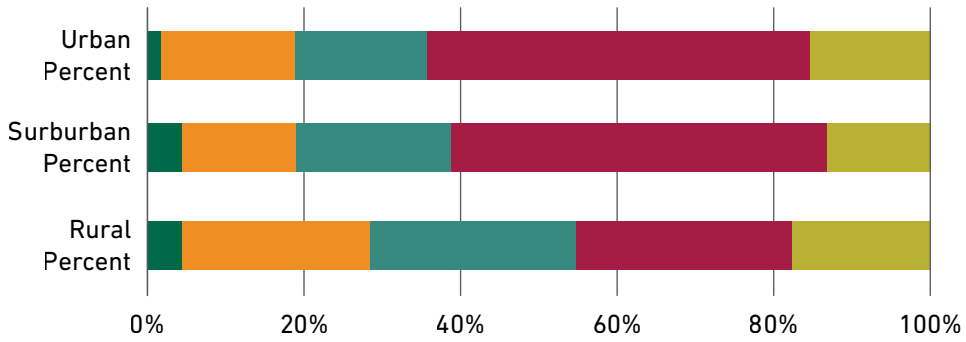
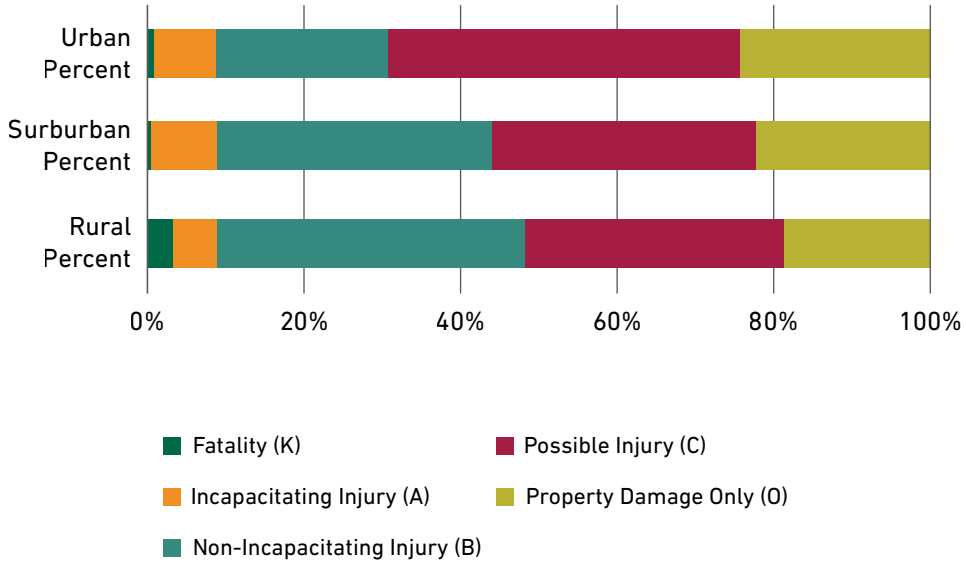


Figure 7: Bicyclist Crashes by Severity and Land Use



Crash Density Analysis

Crash Density Analysis generalizes counting crashes along corridors that tend to share similar characteristics (in this case name and functional class). A specified length (0.5 mi) of roadway section (window segment) is moved along the roadway alignment in increments of smaller steps (0.1 mi). Crashes occurring within 15 meters of these window segments are then counted and summarized by mode and severity. This method allows calculating crash density along a street corridor without being impacted by how the network is split at intersections and other locations.

Figure 8 and Figure 9 show the results of the crash scores from the crash density analysis. Segments with higher scores (represented by thicker and darker lines) represent portions of the roadway network that have a higher concentration of overall crashes and KSI crashes.

The Crash Density Analysis shows that the most dangerous corridors for people walking and biking are concentrated in Rochester. Greece, Irondequoit, and Brighton also experience higher crash densities than the rest of the county, although not as severe as Rochester. The Rochester Active Transportation Plan includes a separate crash analysis that offers more detailed findings and recommendations for improving pedestrian and bicyclist safety in city limits.

The lists of the top corridors with the highest pedestrian and Bicyclist crash score for each of the urban, suburban, and rural areas are available in the Crash Analysis Memo.

Figure 8: Pedestrian Crash Density Analysis

Segments with thicker and darker lines represent a higher concentration of overall pedestrian crashes and Killed or Seriously Injured pedestrian crashes.

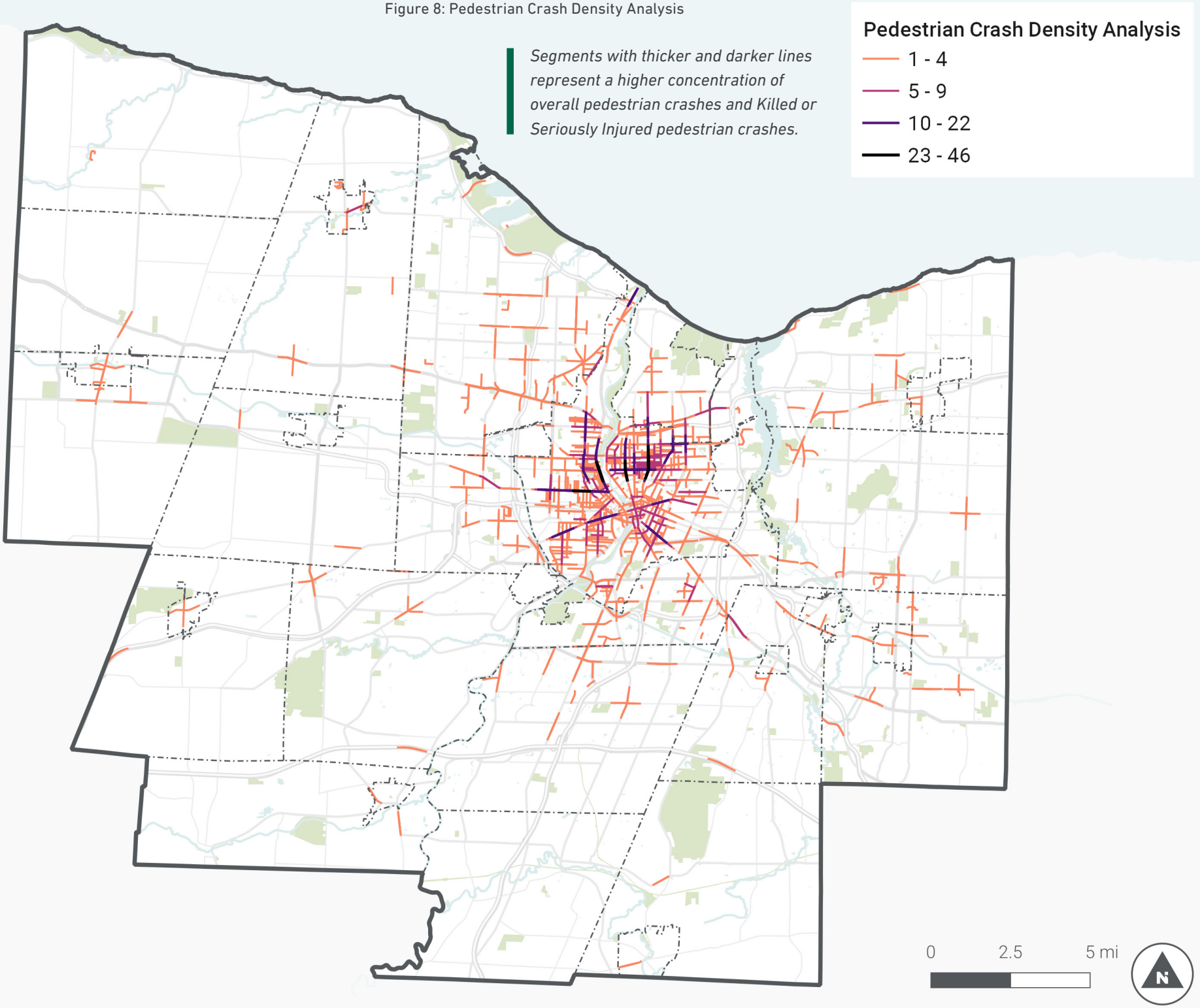
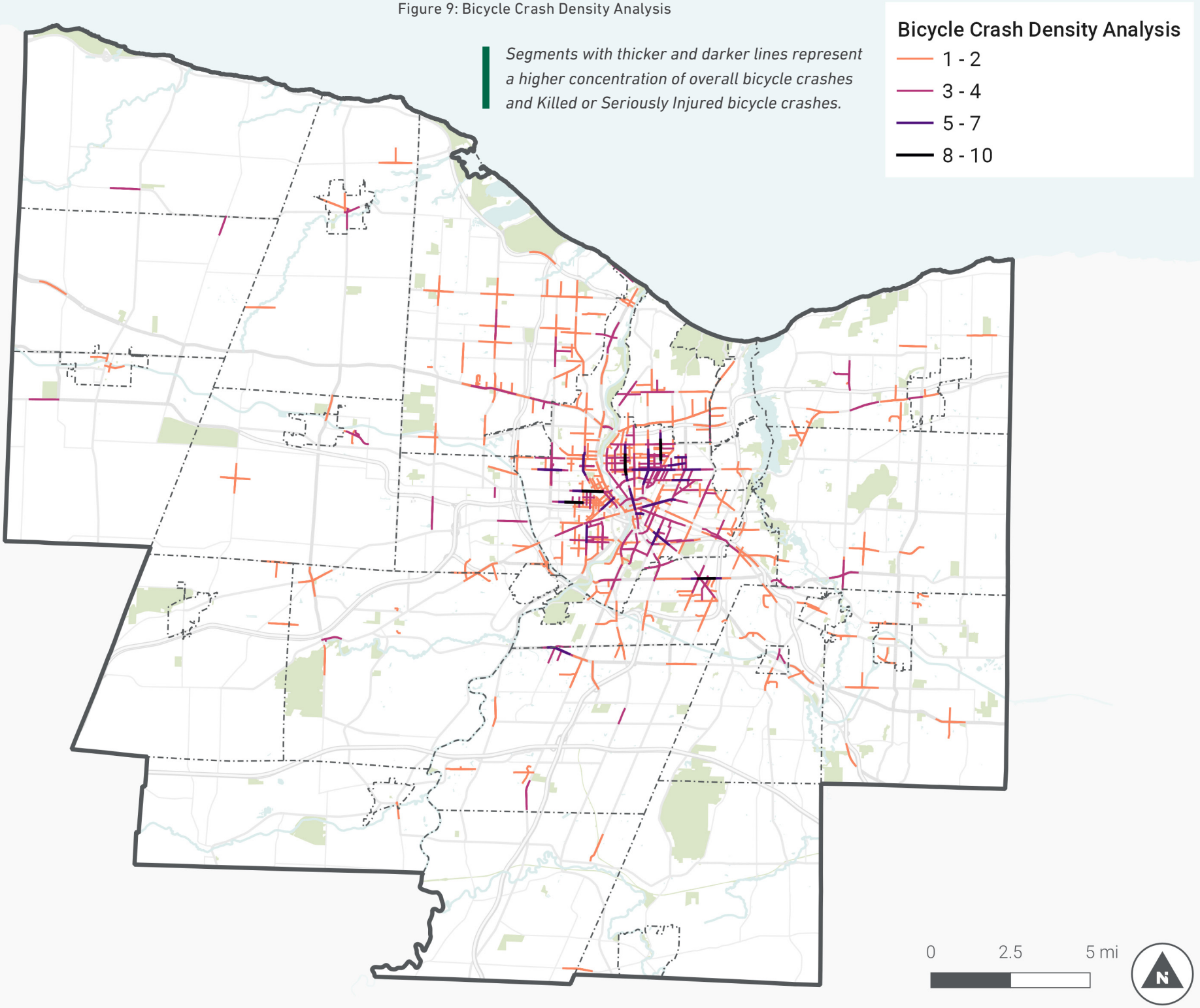


Figure 9: Bicycle Crash Density Analysis

Segments with thicker and darker lines represent a higher concentration of overall bicycle crashes and Killed or Seriously Injured bicycle crashes.



3.4 Trip Potential Analysis

The Trip Potential analysis represents the areas of Monroe County where people would be most likely to walk and bike. The analysis uses factors that impact walk and bike trip attraction or generation to estimate where people would walk or bike, assuming it is convenient and comfortable to do so uniformly across the County. As it measures the potential access and not current access, the existing walking and biking facilities are not considered in the trip potential analysis. The results of this analysis highlight areas where enhanced pedestrian and bicycle infrastructure may potentially serve more users. The project team considered the following factors with associated weightings, as presented in Table 2 for walking trips and Table 3 for biking trips.

Walk Trip Potential

People choose walking and biking based on trip type, distance, carrying capacity, and destination type, so walking and biking trip potentials are calculated separately. Walk Trip Potential (Figure 10) calculates the density of potential trips to destinations most suited for walking based on a 300-meter hexagonal grid laid across Monroe County. Information on this analysis, including variables and weighting, can be found in the Trip Potential Analysis Memorandum.

Table 2: Variables for Walk Trip Potential Analysis

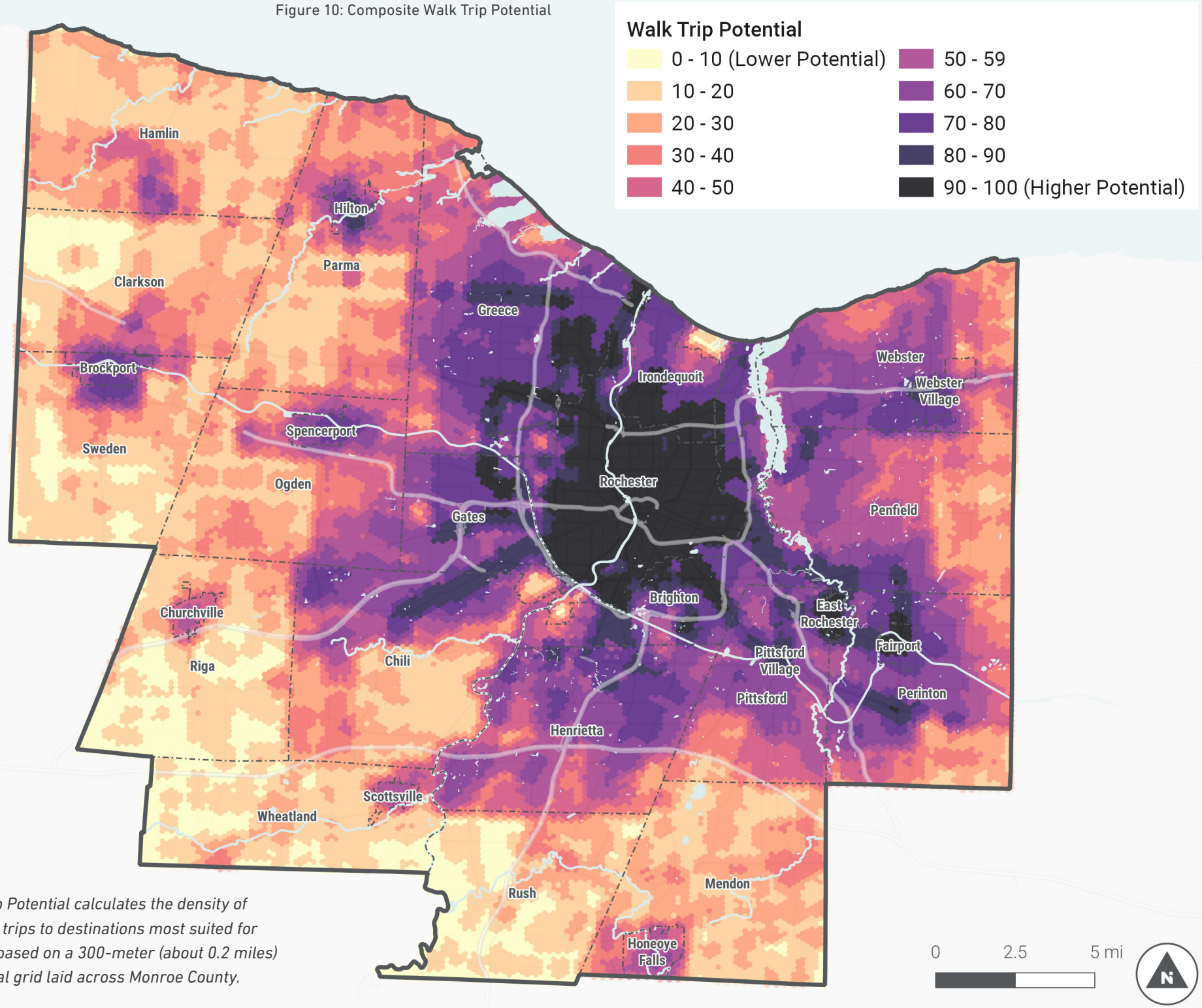
Variable	Measure	Weight
Intersection Density	Intersections per square mile (0.25 mile)	20%
Population Density	Population per square mile (0.25 mile)	30%
Lower-Income Families	Families with household income below 300% of federal poverty level per square mile (0.25 mile)	20%
Employment Density	Jobs per square mile (0.25 mile)	15%
Transit Service	Transit stops within 0.25 mile	15%

5 Measuring Network Connectivity for Bicycling and Walking. J Dill - 82nd Annual Meeting of the Transportation Research Board, 2003

6 Predicting Transit Ridership at the Stop Level: The Role of Service and Urban Form. J Dill, M Schlossberg, L Ma, C Meyer - 92nd Annual Meeting of the Transportation Research Board, 2013

7 Comparing Transit Oriented Developments Based on Walkability Indicators. Schlossberg, L Ma, Brown, Na - 82nd Annual Meeting of the Transportation Research Board, 2003

Figure 10: Composite Walk Trip Potential



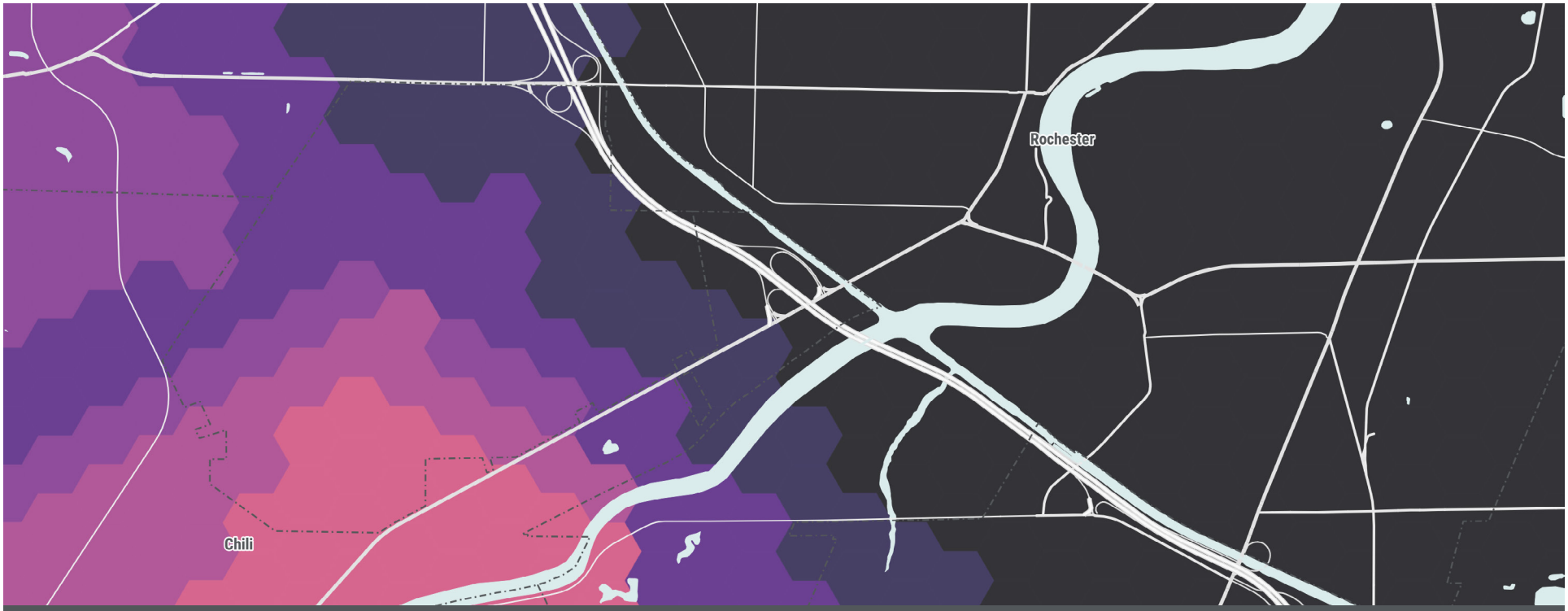
Walk Trip Potential calculates the density of potential trips to destinations most suited for walking based on a 300-meter (about 0.2 miles) hexagonal grid laid across Monroe County.

Bike Trip Potential

The Bike Trip Potential (Figure 11) uses the same 300-meter hexagonal grid to calculate the density of potential biking trips to destinations throughout the County.[8]

Table 3: Variables for Bike Trip Potential Analysis

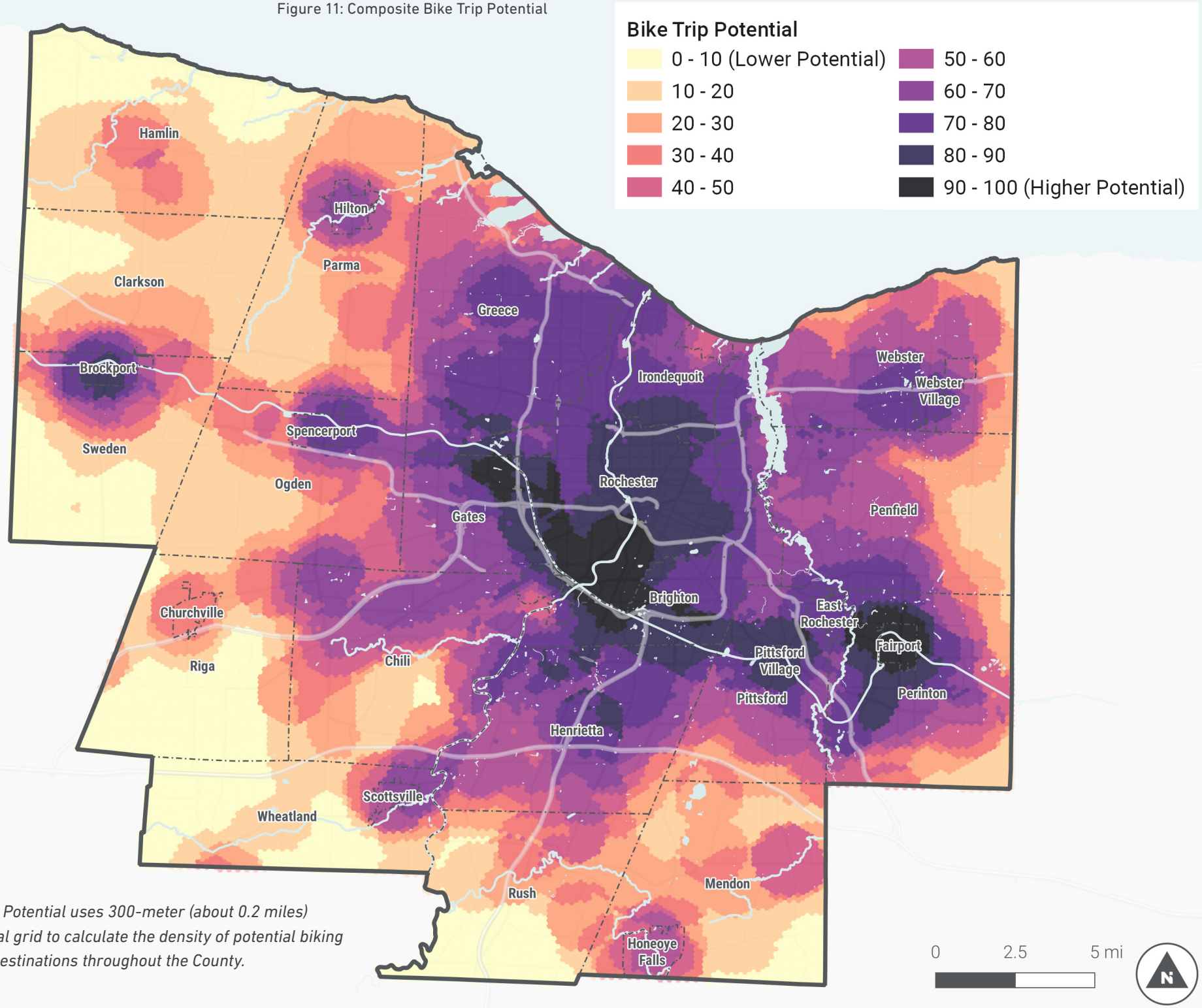
Variable	Measure	Weight
Population Density	Population per square mile (1 mile)	30%
Lower-Income Families	Families with household income below 300% of federal poverty level per square mile (1 mile)	15%
Employment Density	Jobs per square mile (1 mile)	15%
Destination Density	Destinations per square mile (1 mile)	25%
Multi-Use Trails	Within 1 mile of a trailhead or trail access point	15%



A close-up view of the hexagonal grid laid across Monroe County to measure walk and bike trip potential

8 Predicting Transit Ridership at the Stop Level: The Role of Service and Urban Form. J Dill, M Schlossberg, L Ma, C Meyer - 92nd Annual Meeting of the Transportation Research Board, 2013

Figure 11: Composite Bike Trip Potential



Bike Trip Potential uses 300-meter (about 0.2 miles) hexagonal grid to calculate the density of potential biking trips to destinations throughout the County.

3.5 Bicycle Traffic Stress and Network Analysis

The Bicycle Traffic Stress and Network Analysis (BNA) measures how well the low-stress street and path network connects people to their everyday destinations. Table 4 shows BNA destinations. Each block is scored by how well-connected the people living there are to their neighbors, job and education opportunities, core services, recreation, retail, and transit along the low-stress network.

Table 4: BNA Destinations

Category	Category Weight	Category Destinations	Destination Weight
People	15	Population - Block level	N/A
Opportunity	25	Jobs - Block level	35
		Schools	35
		Colleges	10
		Universities	20
Core Services	25	Doctors	20
		Dentists	10
		Hospitals	20
		Pharmacies	10
		Supermarkets	25
		Social Services	15
Recreation	10	Parks	60
		Community Centers	40
Retail	15	Retail Locations from OSM	N/A
Transit	10	Bus stops and stations from OSM	N/A

This low-stress network is determined by finding the bicycle level of traffic stress (LTS) for each street and path segment in the county. The LTS is the likely amount of stress a bicycle faces due to roadway and traffic conditions, scored on a 1-4 scale. LTS scores 1 and 2 are considered low-stress routes and these segments create the high-comfort network that the BNA uses, while scores 3 and 4 are considered high-stress. Figure 12 shows a map of all segments in the County classified by LTS values. Many of the busier roads in the area are high-stress – unless they have a high-quality bike facility along them – which leads to a disconnected network, since low-stress residential roads do not form longer continuous routes across higher-stress roads. In addition to the traffic stress on roadway segments, the BNA also accounts for the stress people experience crossing high-stress streets.

The BNA (Figure 13) shows that much of the County's low-stress connectivity is limited.

Much of the southwest and northeast quadrants in the City of Rochester show low connectivity and much of the west side of Monroe County scores low on the BNA. Communities along the Canal Trail are an exception, with the Villages of Brockport and Spencerport and the Town of Ogden scoring higher than their surroundings.

The greatest low-stress connectivity in the region is across the river from the northwest quadrant of Rochester, in the southwest portion of Irondequoit. This area includes Ridge Road, Titus Avenue, St Paul Boulevard, and many smaller residential streets. The area mostly lacks bicycle infrastructure and the low-stress connectivity may be due to the number of destinations accessible within isolated blocks of low-stress connections.

BNA scores are high – though still disjointed – among suburban communities on the east and south sides of the City of Rochester.

Figure 12: Level of Traffic Stress Results

The map of all roadways in the County classified by level of traffic stress (LTS). Many of the busier roads in the area are high-stress – unless they have a high-quality bike facility along them.

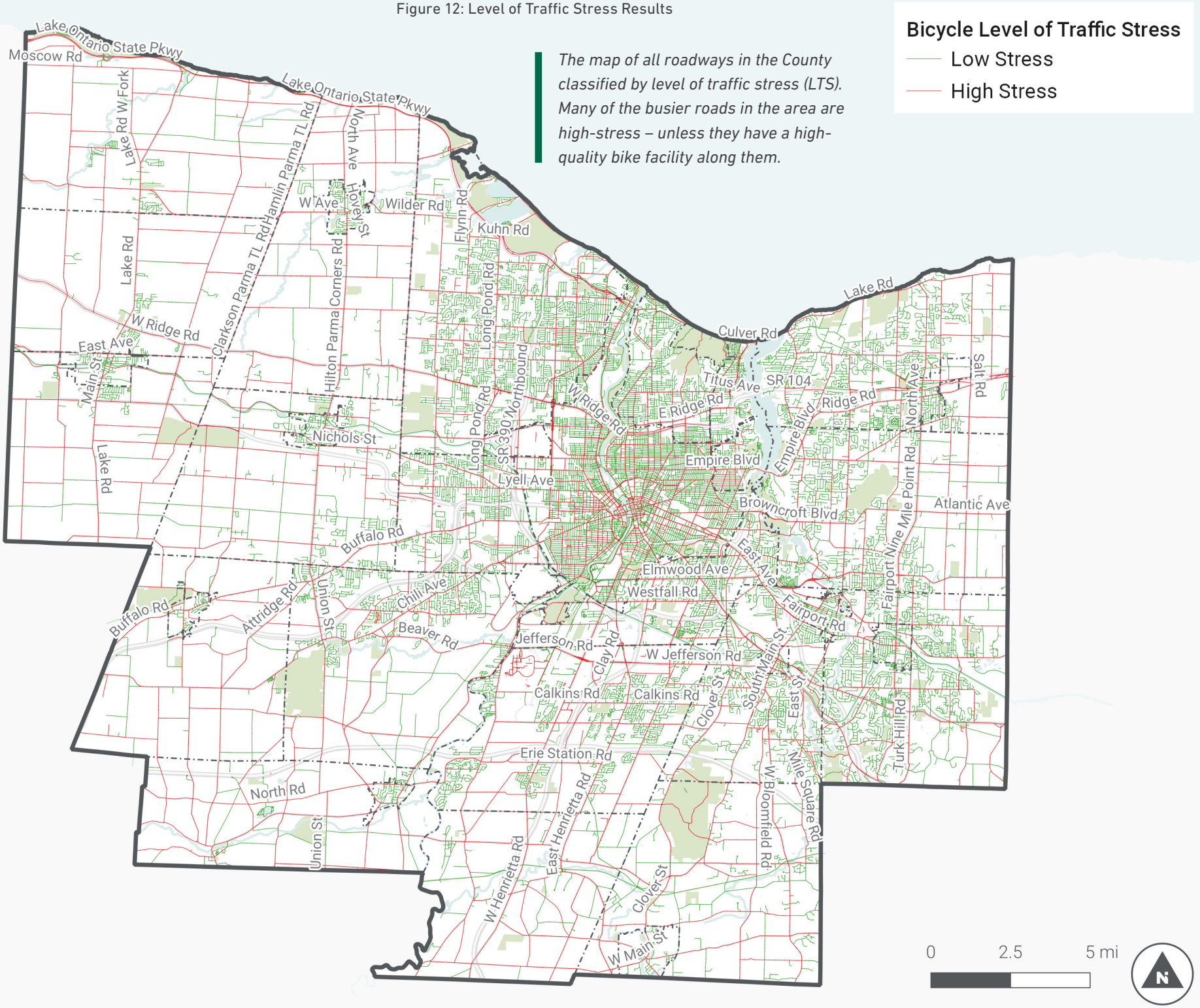
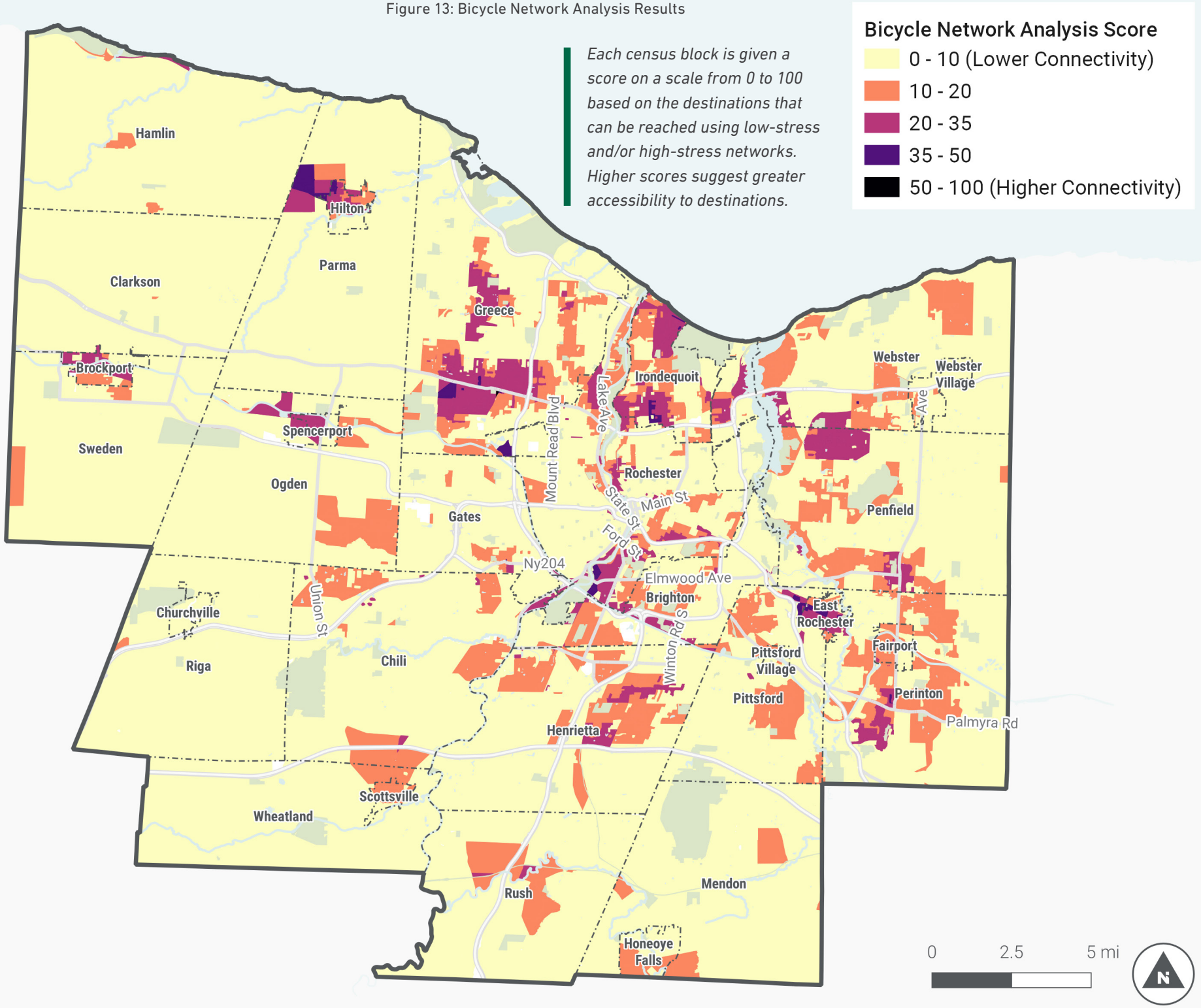


Figure 13: Bicycle Network Analysis Results

Each census block is given a score on a scale from 0 to 100 based on the destinations that can be reached using low-stress and/or high-stress networks. Higher scores suggest greater accessibility to destinations.



3.6 Pedestrian Accessibility Scan

Accessible sidewalks, trails, bikeways, bus stops, train stations, and other active transportation facilities benefit everyone, regardless of their ability status. An accessible transportation network is particularly important to people with disabilities, people without access to a vehicle, people who are not able or choose not to drive a car, older adults (those 65 years or older), and parents with young children. People with disabilities also experience significant health benefits from walking, rolling, bicycling, and taking transit. Planning for and including people with disabilities in active transportation planning and design processes leads to a more accessible, comfortable, and connected systems for the entire county.

Winter Accessibility

Pedestrian accessibility during winter is particularly important for Monroe County, which experiences inclement weather throughout much of the year. A considerable number of people walk and bike all winter long, whether they are going to work or school, accessing services, shopping, exercising, attending church, or participating in any number of other everyday activities.[9] Research has shown that more people would do the same if infrastructure were appropriately maintained. Well-maintained walkways and bikeways also strengthen community confidence in the multimodal network and provide more equal access to the transportation system.

As part of the Pedestrian Accessibility Scan, the project team visited three corridors after winter weather events to assess maintenance operations and their impact on pedestrian activity:

- Twelve Corners – Brighton
- Chili Avenue, Chili Town Center - Chili
- Empire Boulevard, west of NY 590 & Baytowne Plaza - Irondequoit, Penfield, and Webster

Bus stop and cleared sidewalk at Winton Road and Monroe Avenue (Twleve Corners).

Snow pile blocks access to pedestrian push button and curb ramp (Chili Avenue).

These areas represent different place types throughout the county. For complete findings from the site visits, refer to the Pedestrian Accessibility Scan Site Visits Memorandum.

9 Toole Design. (2019). Winter Maintenance Resource Guide.

Accessibility Recommendations

Even during fair weather, pedestrians may still face challenges in navigating inaccessible environments. The following list includes general recommendations to improve pedestrian accessibility throughout Monroe County and create continuous and comfortable routes for people of all ages and abilities.

- Coordinate signal timing for closely spaced traffic signals to reduce pedestrian crossing delay, and evaluate the need for leading pedestrian intervals (LPIs) and Accessible Pedestrian Signals (APS).
- Evaluate crossing times to ensure sufficient time is being provided.
- Improve accessibility by realigning and reconstructing curb ramps.
- Reduce driveway crossings as feasible and reduce sidewalk cross slopes.
- Reallocate unneeded travel lane width for on-street parking, bike accommodations, sidewalk expansions, or new sidewalks where there are gaps.
- Identify opportunities for traffic calming, such as curb bump outs or raised medians.
- Consider raised crosswalks in areas with a higher volume of vehicle turns (only feasible on certain roadway types).
- Evaluate pedestrian routes for the need for additional crossing locations. New locations should be designed with appropriate markings, signs and/or devices.

This list is a starting point. There are many other resources for improving pedestrian accessibility.[10] Local agencies considering improvements at specific locations should conduct further studies and analysis to determine the appropriate improvements.

Students walking to school in Brighton.


People walking along the Genesee Riverway Trail in Downtown Rochester.

10 FHWA Small Town and Rural Design Guide; FHWA Achieving Multimodal Networks; AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities

Chapter 4: Network and Policy Recommendations

4.1 Network Development

Monroe County's active transportation network is intended to both fill gaps in and expand the existing network. The project team developed the network based on information gathered from a series of sources and analyses, including:

- Existing Conditions
- Crash Analysis
- Bicycle Traffic Stress and Network Analysis (BNA)
- Trip Potential Analysis (TPA), and
- Input from Monroe County residents and stakeholders.

The project team then overlaid these analyses to manually develop the countywide active transportation network through city and town centers to ensure connectivity between communities as an essential part of this network.

The network, shown in Figure 14, is aspirational in scope, envisioning Monroe County's ideal active transportation system – unconstrained by fiscal and other limitations – and does not delve into the particulars of facility types and locations. The network also focuses on accommodating bicycle travel, acknowledging that walking trips tend to be short distances. However, as both pedestrians and bicyclists are vulnerable road users, it is important to ensure that low-stress bicycle corridors are similarly accessible for pedestrians and equipped with ADA-compliant surfaces, sidewalks, and crossing treatments. Pedestrian recommendations are included in other plan elements, such as the Pedestrian Accessibility Scan and non-infrastructure recommendations. Countywide bicycle routes are meant to serve people of all ages and abilities who bike for day-to-day needs like commuting or errands, as well as recreational bicyclists.

Bicylist on Genesee Riverway Trail

East & Union, City of Rochester

Overview of Conceptual Network

A high-level, conceptual active transportation network is the most useful starting point to expand walking and bicycling opportunities throughout the county. Because local jurisdictions are responsible for building and maintaining[11] active transportation infrastructure, Monroe County plays a limited role in the facility selection and design of individual routes. For example, the City of Rochester developed its own Active Transportation Master Plan concurrently with the Monroe County Countywide Active Transportation Plan, which provides more detailed analysis and recommendations for the expansion and improvement of active transportation infrastructure in the City of Rochester.

Rochester's Active Transportation Plan

The City of Rochester is developing its own Active Transportation Master Plan concurrently with the Monroe County Countywide Active Transportation Plan. Connecting the proposed networks from each plan is critical to the successful implementation of a cohesive network that provides a seamless experience for active transportation users traveling between the city and the county. The Rochester Outer Loop, comprised of NY-390/I-390 and NY-590/I-590, is a major barrier between Rochester and its inner ring suburbs, and the rest of Monroe County. Providing safe, convenient, and comfortable crossings over the Outer Loop is a key focal point of both the County and City plans; bridging that barrier will substantially increase connectivity between Rochester and the rest of the county. Potential crossings are highlighted in Figure 15, along with Rochester's proposed active transportation network.

Recommendations for the Monroe County Countywide Active Transportation Plan are not tied to particular facility types. Rather, the proposed network seeks to accomplish the following:

- Leverage the County's existing active transportation infrastructure by filling in gaps and making connections to regional trails that already serve as high quality facilities for pedestrians and cyclists – Genesee Riverway Trail, Erie Canalway Trail, Lehigh Valley Trail, Irondequoit Lakeside Trail, El Camino Trail, NYSDOT 390 Trail, Ridgeway Trail, and Hojack Trail.
- Connect town and village centers outside of Rochester to each other, with a special focus on high trip potential and low connectivity in rural and suburban communities – areas of high density that feature many core services and employment/education opportunities, and/or areas with high-stress routes and less bike/ped infrastructure that limit access to key destinations and services.
- Respond to potential barriers created by interstate highways in high trip potential and low connectivity areas through key transition points in/out of Rochester and surrounding communities.

Monroe County will work with local jurisdictions and other stakeholders to identify the most appropriate treatments as corridors are identified for future study and ultimate implementation. **This conceptual network also helps the County make the financial and political case for the type of local-level interventions that will be needed from one jurisdiction to the next. Building consensus around a shared vision for active transportation in Monroe County will lay the groundwork for productive conversations about facility selection and other implementation details in the future**.

11 Winter maintenance is an important component of creating a comfortable environment for walking and bicycling year-round. This area of practice is unique, requiring specific legal, technical, and design considerations to operate successfully. For detailed guidance on winter maintenance, refer to the Program and Policy Recommendations Memorandum.

Roads that parallel network corridors may be used as alternate low-stress routes if improvements are not feasible on roads identified in the CATP, and similar levels of connectivity to important destinations can be achieved. This flexibility in network implementation is indicated on the maps through a half-mile buffer around all network segments to show that nearby roads may be considered. Route 383 in Wheatland is a prime example. While the CATP identifies North Road as the preferred corridor in Wheatland for active transportation, Route 383 is a community-identified bike route through the Town's Master Plan trail initiative. Even though it is not included as a part of the county network, it is parallel to North Road, and could serve as an alternative or a supplement if feasible. Monroe County and its partners recognize that there will be opportunities in the future to better align the county network with local priorities.

Route 383 in Wheatland

Network Building Blocks

To envision a countywide network that connects communities to each other, the network went through three levels of development:

Level 1

The Project Team identified population centers and how the county's existing network connects to these areas. This led to a focus on the regional trail system (filling in gaps and expanding into abutting communities) and key connections into Rochester.

Level 2

The Trip Potential and Bicycle Network analyses were the most foundational in identifying how and where proposed segments should be adjusted to create a continuous countywide network, by highlighting areas of high trip potential for biking but low connectivity areas that require infrastructure improvements.

Level 3

Crash data and public feedback were considered, but were less critical than other inputs in network development. Crash history information can be challenging to work with and does not provide a comprehensive understanding of safety challenges, given the limited reliability of crash data. Also, the countywide nature of the proposed network requires a greater emphasis on corridors that create higher level connections, rather than granular, hyper-local connections through specific road segments. The public feedback provided important qualitative insight on existing conditions and opportunities, however, this data is also biased since it is largely associated with where people currently walk and bike.

Network Rationale

Connectivity

The network seeks to establish a balance between routes that connect surrounding cities, towns, and village centers to Rochester and routes that connect communities outside of Rochester to each other. Rochester is the economic hub of the county, so major active transportation corridors into the city will serve commuters and other users; however, connectivity outside of Rochester is also important. The network connects outlying communities to each other, especially on the west side of the county, which is farther from Rochester and where the road network is less dense. Due to the scale of this plan, the focus is on cross-county connectivity, rather than local routes within communities. Local jurisdictions are encouraged to develop or update their own ATPs to connect to the proposed countywide network.

As individual municipalities complete and update their own ATPs, connections between communities should be a central focus. According to the Level of Traffic Stress (LTS) Analysis, many of the proposed routes between communities are on high-stress roads that would need substantial improvements to convert them to low-stress routes that are comfortable for people of all ages and abilities. However, walk/bike potential does exist in these areas, and more suitable parallel routing could be explored, such as sidepaths, trails, and other separated facilities, as well as improved transit service for longer distance connections. In some cases, existing parallel low-stress routes could serve as main active transportation corridors, and would require fewer changes. Many areas of the county lack denser street grids, resulting in fewer alternative low-speed, continuous, and convenient routes that can connect users to destinations. For example, a bicyclist traveling between Rochester and Gates may not have any meaningful alternatives to Chili Avenue and Buffalo Road. However, areas with denser street grids could consider parallel routes which can better accommodate users of all ages and abilities.

Whenever feasible, proposed routes should take the form of shared use paths and trails that are comfortable for users of all ages and abilities, or separated facilities that follow existing roads – such as separated bike lanes, sidepaths, and sidewalks – and provide a high degree of comfort to users as well as direct access to important destinations. In cases where traffic volumes and speeds are low, paved shoulders or signed routes may provide enough accommodation for most riders. More details on facility selection and design users are available in the Facility Toolkit.[12]

The proposed network would dramatically expand Monroe County's active transportation accommodations. It would also connect to existing facilities and fill gaps in the county's current active transportation network, for example by connecting the Route 390 Trail and the Erie Canal Trail.

Trip Potential

As Trip Potential Analysis (TPA) results confirmed, city and town centers have the most demand for walking and biking trips due to a mix of destinations and land uses, and high population, employment, and intersection density. While high-stress routes still exist in these communities (especially in suburban and rural areas), they act as convergence points for various modes, users, and destinations. As a result, the proposed network seeks to connect these centers to each other.

Safety

As part of the Bicycle and Pedestrian Crash Analysis, the project team completed a crash density analysis. This exercise determines the number and severity of crashes in a half-mile "window" on a roadway and shifts that window along the roadway 1/10 mile at a time. The crash density analysis reveals that several segments with the highest crash densities and severities occur on streets that already have active transportation infrastructure.

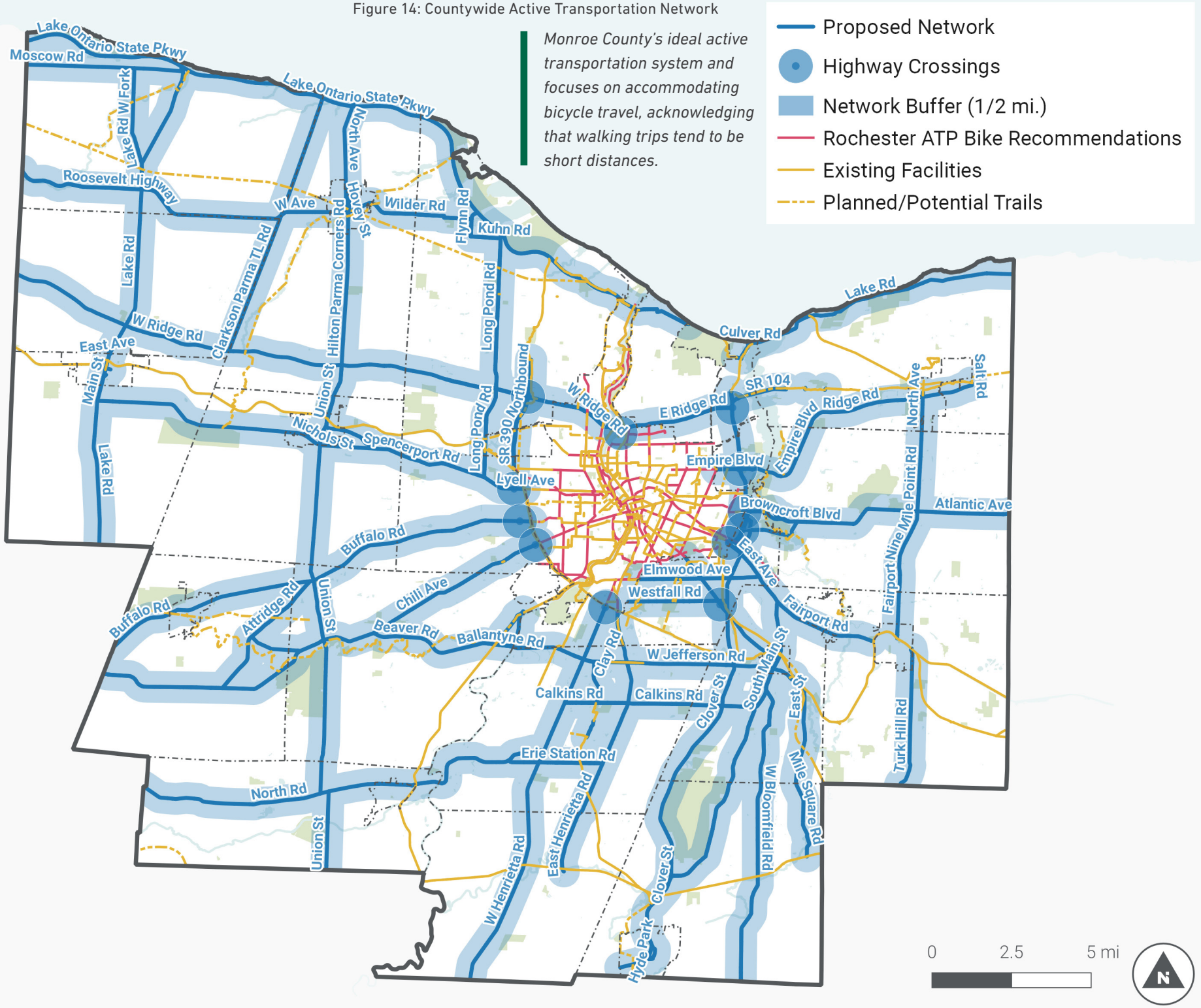
12 As discussed in the crash analysis, severe injuries among pedestrians and bicyclists are more likely in rural areas, due to higher vehicle speeds. Enhancing connections to the Genesee Valley Greenway, Empire State Trail, and other paths can help reduce crash frequency by separating vulnerable road users, but oftentimes the most direct and convenient route is on-street. For this reason, it is essential that Monroe County prioritize on-street separated facilitates whenever feasible, especially in locations where alternative trail routes are not available.

While the Bicycle and Pedestrian Crash Analysis provided important insight on crash trends, further analysis is required to determine contributing factors to crashes and whether infrastructure improvements are necessary. In some cases, active transportation infrastructure can increase crash rates because more users are expected at those locations. To mitigate this risk, public awareness campaigns, maintenance plans, and other program and policy initiatives should accompany new infrastructure projects. Regardless, well designed facilities still provide greater safety and comfort than no facilities at all.

Data Informing the Proposed Network

Figure 14: Countywide Active Transportation Network

Monroe County's ideal active transportation system and focuses on accommodating bicycle travel, acknowledging that walking trips tend to be short distances.



Network Development Process

The proposed countywide network aims to provide the backbone for inter-municipal connections. To this end, it is meant to supplement – not supersede – recommendations for active transportation infrastructure from local active transportation plans.

Additionally, the county should also consider routes that have wide rights-of-way that could accommodate high-comfort facilities through communities in Monroe County. When possible, priority routes with sufficient rights-of-way should be considered for sidewalks, shared use paths, separated bike lanes, low-stress bicycle boulevards, and other high-comfort treatments. Constrained rights-of-way often make multimodal transportation facilities more challenging to install. This issue can complicate networks in urban communities where dense built environments require creative approaches to reallocating space for active transportation, and in rural environments where topography, agricultural land use, and natural features may limit rights-of-way. In highly-constrained conditions where preferred accommodations or widths are not feasible, it is better to provide narrower facilities rather than none.

The findings from the following analyses were used as the building blocks for network development:

- Trip Potential Analysis
- Bicycle Level of Traffic Stress and Network Analysis
- Crash Severity and Density Analysis
- Public Input

Trip Potential Analysis

Toole Design performed a Trip Potential Analysis (TPA) to determine where people would be most likely to walk and bike in Monroe County, based on factors that are positively associated with active transportation trip attraction or generation. A combination of factors related to development patterns and socioeconomic characteristics were selected as the primary elements to estimate a location's trip potential.

- Population Density
- Lower-Income Families
- Employment Density
- Destination Density
- Multi-Use Trails

Figure 16 shows where biking trips are most likely to occur. Areas with higher population densities, more lower-income families, employment, bikeable destinations, and multi-use trails tend to have higher trip potential scores due to their development patterns that support bike travel.

Areas of high bike trip potential (scored 80 - 100) include most of Rochester, and parts of Gates, Brighton, and Perinton in addition to Pittsford Village, Fairport, and Brockport. Areas of relatively high bike trip potential (scored 50 – 80) include Hilton, Spencerport, Scottsville, Honeoye Falls, Webster Village, Irondequoit, the outskirt of Brockport, most parts of Greece, Webster Penfield, Perinton, Pittsford, Henrietta, and parts of Chili and Ogden. Low bike trip potential area are scattered across the peripheral of the County, including parts of Hamlin, Parma, Clarkson, Sweden, Ogden, Rush, Mendon, Perinton, Penfield and Webster, as well as most parts of Riga, and Wheatland.

The results of this analysis highlight areas where enhanced pedestrian and bicycle infrastructure may potentially serve more users. It identified populations centers as areas of high trip potential, but also highlighted areas in between these nodes where there are opportunities for active transportation infrastructure, particularly in suburban communities. This analysis may also assist Monroe County and partner agencies when prioritizing projects by identifying locations that have the greatest potential for increased walking and biking.

Bicycle Level of Traffic Stress and Network Analysis

The Bicycle Network Analysis (BNA) aims to capture the importance of the interconnectedness of bicycle routes by measuring access to destinations via low-stress routes. By analyzing census blocks throughout Monroe County, based on whether people can ride their bicycles to important destinations on comfortable bicycling facilities, the project team can identify areas where there is a high demand for bicycle infrastructure but poor low-stress access.

Many of the busier roads in Monroe County are high-stress – unless they have a high-quality bike facility along them – which leads to a disconnected network, since low-stress residential roads do not form longer continuous routes across the county. The BNA examined the number of destinations that could be reached by low- and high-stress networks at the census block level, then filtered for any block without overall network access to a given destination type. This measure is a useful way to combine the effect of both the low-stress network and proximity to destinations. As a result, destination-rich areas get higher scores than the outlying areas if those destinations are accessible using the low-stress network.

Students biking to school in Brighton

Because the BNA factored for the number of destinations that are accessible within census blocks via low-stress routes, the results highlight areas that are in need of better bicycling connectivity so that people can bike to schools, shops, workplaces, medical care, and other important destinations. More specifically, the BNA reveals the following for Monroe County:

- The least connected areas (0-10) are located outside of city and town centers where density (population, intersection, land use, etc.) is likely to be lower.
- In urban and suburban communities, where density tends to be higher, there are larger (spatially) and more areas of connectivity in and around population centers, but there are still major gaps in connectivity.

In conceptualizing a county network, major corridors are better positioned to form a continuous network that provides coverage throughout and across the county. **By leveraging existing infrastructure, the proposed network focuses on these corridors as links between high connectivity areas in urban, suburban, and rural communities.**

Crash Severity and Density Analysis

The aim of the crash analysis was to understand the patterns of bicycle and pedestrian crashes in Monroe County. Crash data is derived from police crash data, which is known to have issues with underreporting. Within the last 10 years (2012-2021) in Monroe County, 58% of total crashes in the dataset involved people walking, and 42% involved people on bicycles. However, the total number of overall crashes seems to be on a downward trend in the last ten years. While the City of Rochester, an urban setting with a larger population, has a higher number of countywide crashes involving pedestrians, the probability of crashes resulting in severe injuries or fatalities are higher in the rural areas of Monroe County, likely due to higher vehicle speeds on rural roads. The crash density analysis for bicycles shows similar results, where the highest density of crashes are located in Rochester, but with additional segments in Henrietta and Brighton. Overall, suburban areas had a higher share of crashes involving people on bicycles than crashes involving people walking.

While helpful in a number of ways, there are limits to this analysis. First, because so much of the data in the crash analysis focuses on Rochester, the ensuing "masking" effect makes it difficult to observe crash patterns in other communities in the county. Secondly, crash history can be a challenge because the crash inputs used were historic and provided limited insight. Third, crash data is much more granular in detail than the proposed network since the latter focuses on longer corridors – and not specific intersections – for active transportation infrastructure.

Public Input

There were three categories of comments submitted via the public input webmap: assets, concerns, and opportunities. The overwhelming majority of comments are located in Rochester, particularly around the downtown area.

Outside of Rochester, comments are concentrated along north-south corridors leading into the city: Mount Hope Avenue/Henrietta Road, Monroe Avenue, East Avenue, Culver Road and the Genesee River Trail – and along some east-west corridors: Elmwood Avenue, Westfall Road, Brighton/Henrietta Town Line Road, Browncroft Boulevard, and Empire Boulevard. Many of the proposed routes follow these roads, in response to public demand for safer active transportation facilities (Figure 17).

4.2 Scenario Planning

Scenario planning allows the public to indicate their priorities in a fiscally constrained future, as opposed to the network, which represents Monroe County's ideal active transportation system and is unconstrained by fiscal limitations. Scenario development builds on the proposed network by identifying which corridors and routes should be prioritized based on two identified goals:

1. High Coverage - Build a network that serves the broadest cross section of the population possible
2. High Need - Emphasize connections to priority populations that rely on active transportation

High Coverage Network

The project team developed the High Coverage Network through visual inspection of maps and datasets, seeking to connect large and mid-sized communities to each other and to important regional destinations. This scenario focuses on cross-county corridors linking every corner of the county to provide a network that reaches the most people possible. It also completes the loop of trails surrounding Rochester and fills in connections to existing multi-use trails.

The High Coverage Network (Figure 18) is guided by:

1. Connections between Rochester and the rest of the county.
2. Linkages to existing multi-use trails, including Erie Canalway Trail (part of Empire State Trail), Lehigh Valley Trail, Genesee Riverway, Genesee Valley Greenway, Auburn Trail, and Hojack Trail.
3. Key connections to/from the Erie Canalway Trail on the east and west sides of the county into nearby towns and villages.
4. North/south and east/west connections that begin to connect population centers, especially in more rural areas of Monroe County.

High Need Segments

The High Need Segments scenario (Figure 19) highlights segments with high trip potential and low connectivity scores while prioritizing underserved populations based on race, poverty, and vehicle access. The base network for this scenario is the same as the one used for the High Coverage Network scenario. To identify the High Need segments, the project team calculated the following attributes for all proposed network segments:

1. **BNA score** – The Bicycle Traffic Stress and Network Analysis (BNA) aims to capture the importance of the interconnectedness of bicycle routes by measuring access to destinations via low-stress routes. The High Need Segments scenario takes the average BNA value of census blocks that are within 50 meters of a given segment. This value is scaled value between zero and one based on the percentile of average BNA measure in decreasing order (i.e., the highest BNA value gets a percentile value of zero, lowest BNA value gets a percentile of one, and median BNA values gets a percentile value of 0.5).

Figure 15: High Coverage Network Scenario

High Coverage Network focuses on cross-county corridors linking every corner of the county to provide a network that reaches the most people.

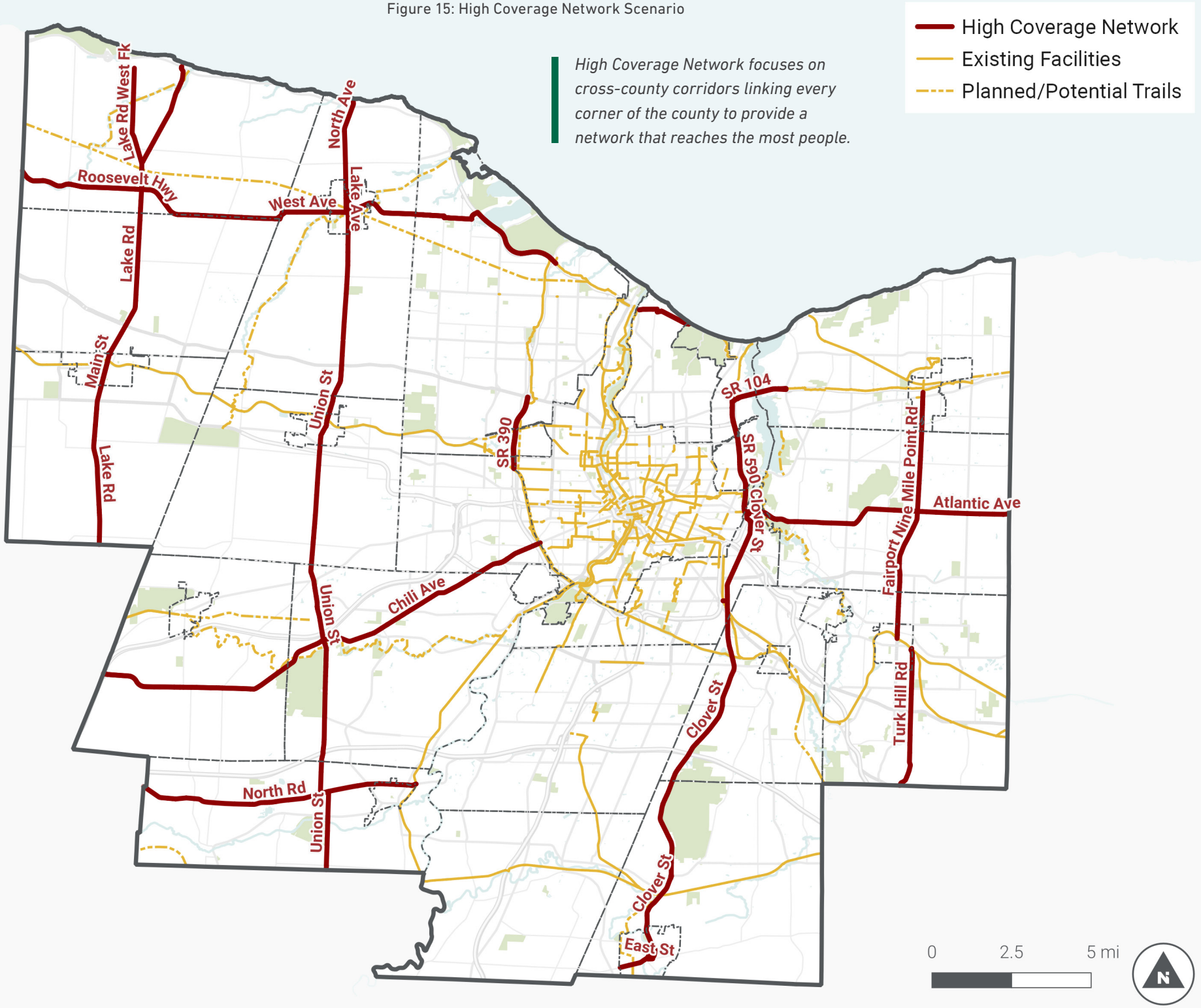


Figure 16: High Need Segments Scenario

The High Need Segments scenario prioritizes underserved populations based on race, poverty, and vehicle access.

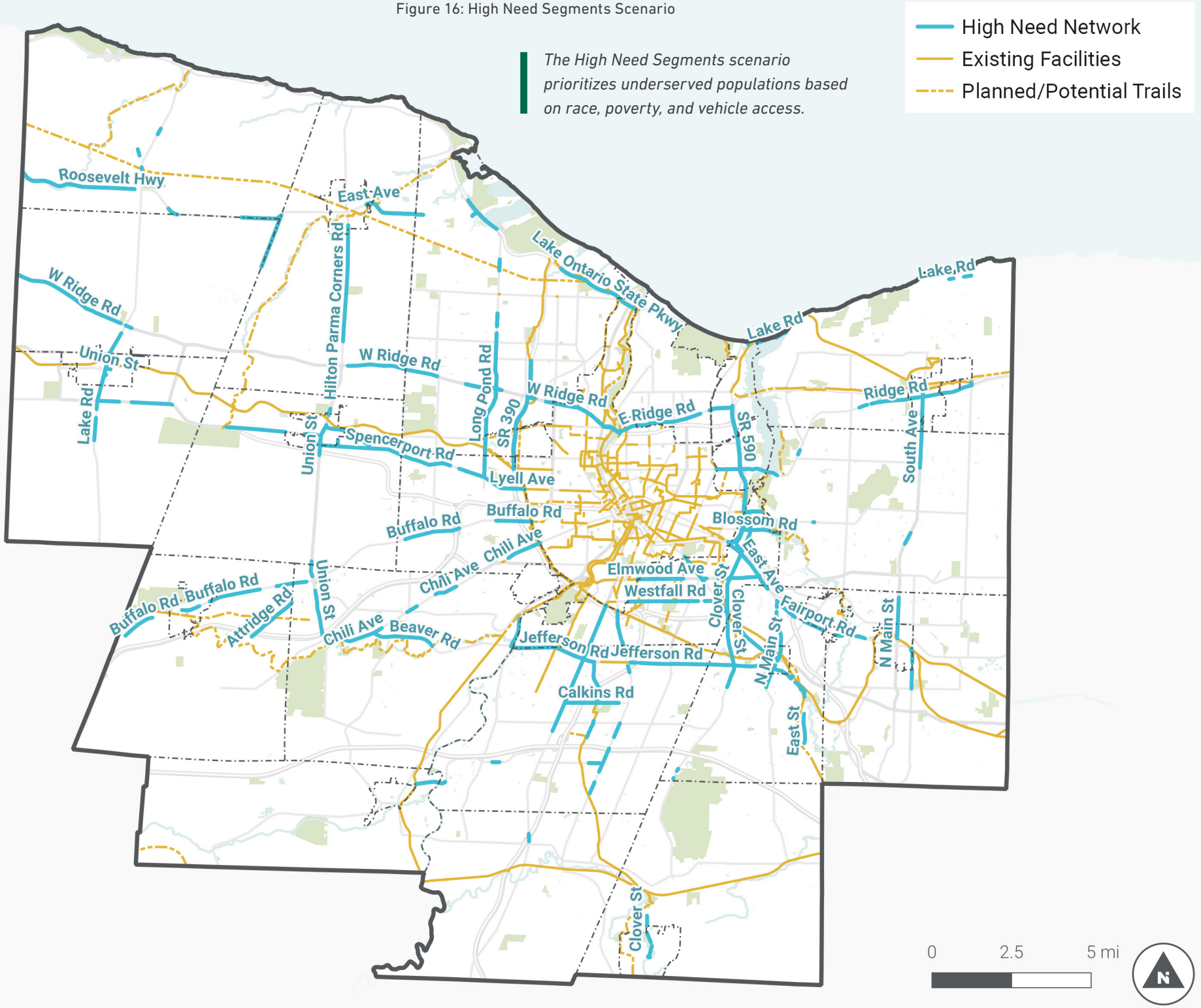
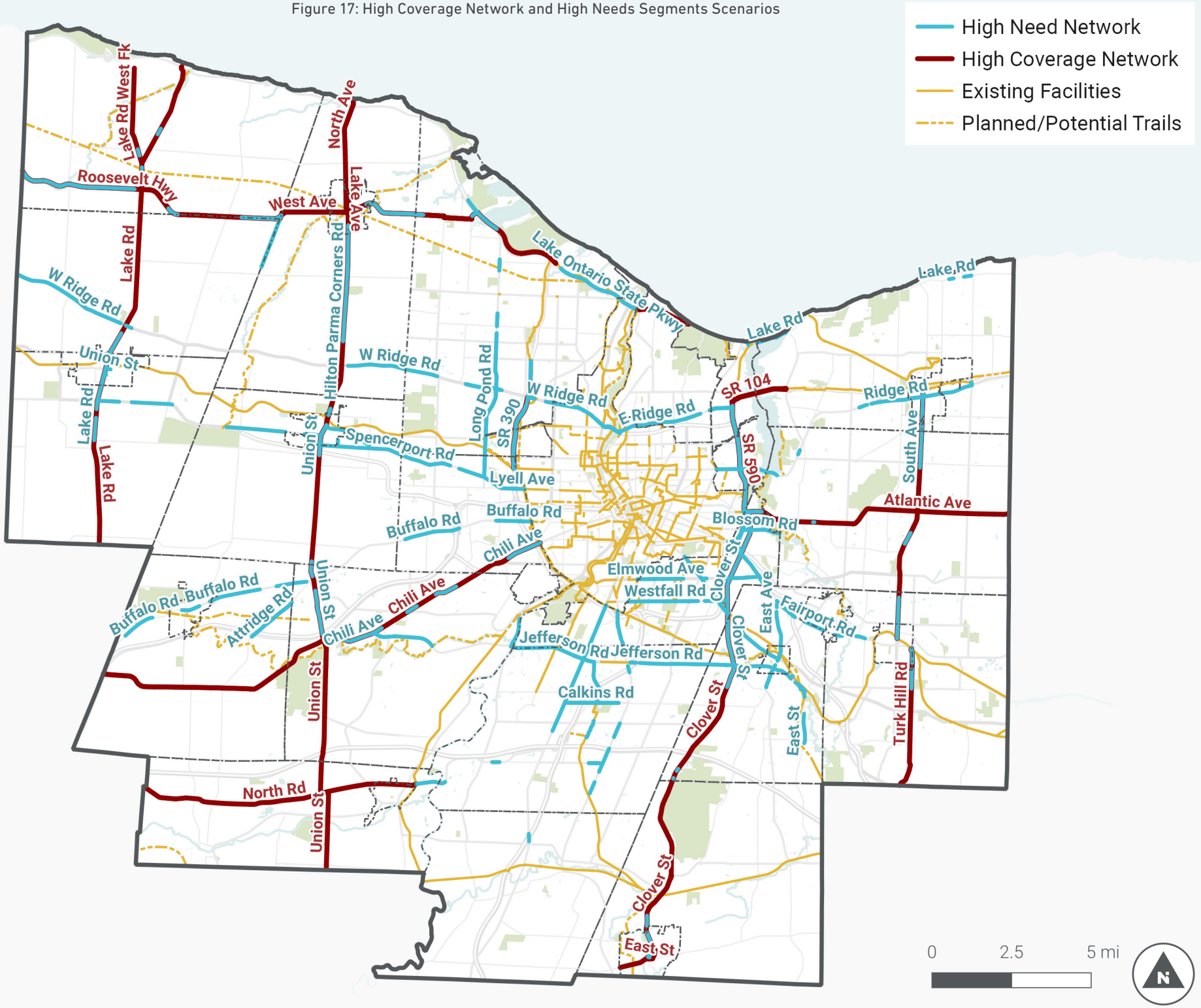


Figure 17: High Coverage Network and High Needs Segments Scenarios



2. **Trip potential score** – The average bicycle trip potential value from the trip potential hex cells that intersect with the segment. This value is scaled based on the percentile of average trip potential (i.e., the lowest trip potential value gets a percentile value of zero, highest trip potential value gets a percentile of one, and median trip potential values gets a percentile value of 0.5).
3. **Equity score** – The average values of percentage of BIPOC population, percentage of households below poverty, and percentage of households without vehicle access. Each of these equity measures is scaled between zero and one based on their percentile values like that of trip potential score. The final equity score is calculated as the average of the three percentile scaled equity measures.

The final High Need Segments scenario score was calculated for each segment by adding the BNA, trip potential, and equity scores calculated as described above. The final score can be a value between zero and three. Higher final scores indicate a greater need for active transportation facilities, based on the factors mentioned above. To compare High Coverage Network and High Need Segments, the project team selected highest scoring segments for the second scenario until the total mileage for that scenario was roughly equivalent to the total mileage for the High Coverage Network scenario.

Network Scenario Cost Estimates[13]

Once the project team created the High Coverage Network and High Needs Segments scenarios, they then assigned cost estimates to each scenario. This involved three steps, each of which are described in detail below:

1. Estimate network mileage by facility type
2. Apply unit costs to facility types
3. Develop network-level cost estimates

Estimate network mileage by facility type

The CATP focuses on identifying network corridors but does not assign facility types to individual network segments; instead, the County will work with local jurisdictions and other stakeholders to identify the most appropriate treatments as projects are selected for funding and implementation. However, general estimates of network mileage by facility type are needed to compute network cost estimates. There is no rule-of-thumb guidance on what proportion of a network consists of trails versus on-street bikeways, signage, etc. In lieu of this information, the project team used several inputs to develop a rough estimation of facility types for each scenario, and applied those estimates to develop costs. More information is available in the Implementation Strategies Memorandum.

13 Opinions of probable cost were developed by identifying major pay items and establishing rough quantities to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Cost opinions do not include easement and right-of-way acquisition; permitting, inspection, or construction management; engineering, surveying, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. Toole Design Group, LLC makes no guarantees or warranties regarding the cost estimate herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

Apply unit costs to facility types

Unit costs were based on a query in Bid Express, a platform that sources costs by geography based on historical bid prices for over 40 transportation agencies in the United States and Canada. The project team filtered the costs to show NYSDOT historical bid data and unit costs by county in New York for greater accuracy, where available. Table 5 shows estimated unit cost by facility type.

Table 5: Estimated average facility type cost per mile

Facility Type	Unit Costs (per mile)
Bike Lane	$60,000
Separated bike lane	$100,000
Shoulder widening	$105,000
Sidepath, rural	$1,000,000
Sidepath, suburban	$1,300,000
Signage*	$7,000

**Signage may include a number of MUTCD warning, regulatory, and guide signs; specific signage requirements and recommended practices vary based on roadway context. Common bike route signage includes:*

- *Bicycle Regulatory Signs, particularly BIKES MAY USE FULL LANE (R4-11)*
- *Bicycle Warning and Combined Bicycle/Pedestrian Signs (W11-1 and W11-15)*
- *Bike Route Guide (D11-1) signs*

Please note that the estimated costs listed above do not include additional ongoing maintenance costs. Local support and continuous commitment are also needed.

Develop Network-level Cost Estimates

The overall estimated cost of the High Coverage Network scenario is $87 million, and the High Needs Segments scenario estimated cost is $74 million. Table 6 shows mileage broken out by facility type for each scenario, rounded to the nearest five miles for estimating purposes. Several rounding steps were involved in developing network-level cost estimates: mileage values are rounded to the nearest five miles; average cost per mile is rounded to the nearest $10,000; and total scenario cost is rounded to the nearest $100,000.

Table 6: Scenario cost estimates by facility type

	High Needs Segments		High Coverage Network	
Facility Type	Mileage*	Estimated Cost	Mileage	Estimated Cost
Bike lane	10	$600,000	5	$300,000
Separated bike lane	80	$8,000,000	20	$2,000,000
Shoulder widening	30	$3,150,000	90	$9,450,000
Sidepath rural	15	$15,000,000	10	$10,000,000
Sidepath suburban	30	$39,000,000	45	$58,500,000
Signage	5	$35,000	5	$35,000
Unknown	20	$390,000	15	$460,000
Average cost/mile**	-	$390,000	-	$460,000
Extrapolated cost ***	-	$74,100,000	-	$87,400,000
Unknown treatment mileage %	-	10.53%	-	7.89%

**Mileage values are rounded to the nearest five miles.*

*** Estimated cost per mile for unknown facility type is based on the average cost per mile of the known facility types for the scenario. Average cost per mile is rounded to the nearest $10,000.*

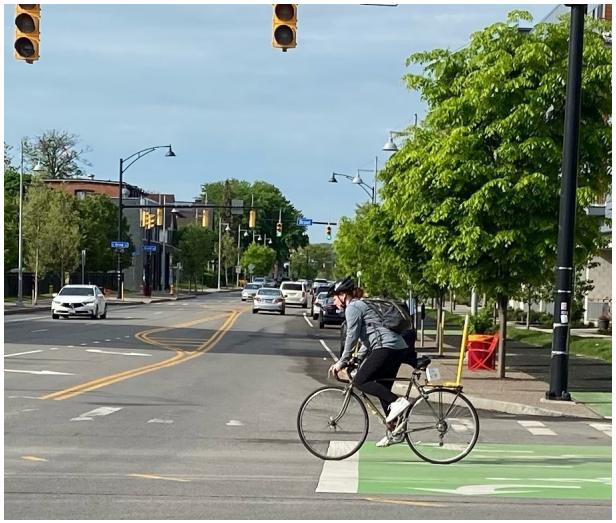
****Total scenario cost is rounded to the nearest $100,000.*

The resulting cost estimates show some clear differences between the two scenarios. Notably, the High Coverage Network scenario, being more rural in nature, would require far more shoulders and slightly more sidepaths than the High Needs Segments scenario. Conversely, the High Needs Segments scenario relies more on separated bike lanes due to its urban geography. There is an 18 percent difference in estimated network cost between the two scenarios, with the High Coverage Network costing approximately $13 million more than the High Needs Segments.

These numbers are not definitive and should be revisited as plan implementation occurs. Monroe County and its partners will use this information as a thought exercise to understand the benefits and tradeoffs of prioritizing distinct types of projects as the countywide active transportation network expands.

Please note that the estimated costs listed above do not include additional ongoing maintenance costs. Local support and continuous commitment are also needed.

Trail users in Irondequoit



4.3 Facility Toolkit

The purpose of Facility Toolkit is to provide high-level descriptions, design considerations, and guidance for physical interventions in support of safe and comfortable active transportation infrastructure for users of all ages and abilities. The Facility Toolkit Memorandum provides additional information, including guidance for proposed bicycle and pedestrian facility types that can enhance and expand Monroe County's active transportation network. These facilities have been placed in three treatment categories: off-street, on-street, and intersection treatments.

At the county level, routes traverse a much larger geography, which provide opportunities for long-distance bicycle connections between communities, and also facilitate local pedestrian and bicycle trips in communities along those routes. As a result, this toolkit describes how various treatments can be applied throughout Monroe County and in what geographic contexts. It is not meant to replace local engineering investigations, feasibility evaluation, and design, which will always be subject to engineering judgment, context-sensitive design (such as land uses and primary user groups), and supported by community engagement.

Design Users

There are several important factors to consider during bicycle facility selection, but the final decision depends in large part on the types of bicyclists that are expected on a particular route. Understanding which types of bicyclists feel comfortable using a given facility is critical to building a safe, convenient, and well-used network. This section discusses three types of bicyclists and how their confidence levels inform facility selection.

Research shows that the provision of low-stress, connected bicycle networks improves bicyclist safety and encourages bicycling for a broader range of user types. The most common characteristics used to classify bicyclists are comfort level, bicycling skill and experience, age, and trip purpose. These characteristics can be used to develop generalized profiles of various bicycle users and trips, also known as "design users," which inform bicycle facility design. However, people may not fit into a single user profile, and a bicyclist's profile may change in a single day; for example, a commuter bicyclist who is comfortable bicycling within a bicycle lane when traveling alone may prefer to bicycle on a sidewalk or shared use path when traveling with children. The following sections examine how comfort, skill, and age may affect bicyclist behavior and preference for different types of bicycle facilities.

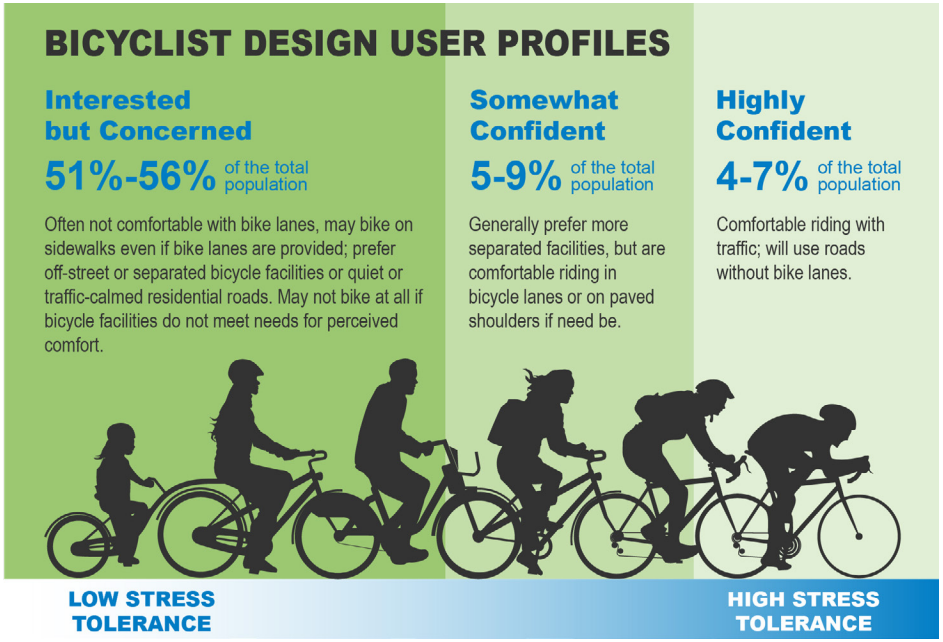
Many people are interested in bicycling for transportation, but are dissuaded by the potential

for stressful interactions with motor vehicles. Of adults who have stated an interest in bicycling, research has identified three types of potential and existing bicyclists,[14] which are explained below and shown in Figure 20. Children were not included in the research and require special consideration in the design of bicycle facilities.

Interested but Concerned Bicyclist

Interested but Concerned Bicyclists are the largest group identified by the research and have the lowest tolerance for traffic stress. As such, they are generally the default design user. Bicycling by this group is suppressed in many communities, as those who fit into the group avoid bicycling except where they have access to networks of separated bikeways or very low-volume streets with safe roadway crossings. This group tends to bicycle for recreation but not transportation. To maximize the potential for bicycling as a viable transportation option, it is important to design bicycle facilities to meet the needs of the Interested but Concerned Bicyclist category.

Figure 18: Bicyclist Design User Profiles



14 . Dill, D. and N. McNeil. (2016). Revisiting the Four Types of Cyclists. In Transportation Research Record 2587. TRB, National Research Council, Washington, DC.

Somewhat Confident Bicyclist

Somewhat Confident Bicyclists are the next-smallest group. They generally bicycle more than Highly Confident Bicyclists, and are comfortable on most types of bicycle facilities. They have a lower tolerance for traffic stress than the Highly Confident Bicyclist and generally prefer striped or separated bike lanes on major streets and low-volume residential streets, but they are willing to tolerate higher levels of traffic stress for short distances.

Highly Confident Bicyclist

Highly Confident Bicyclists are the smallest group identified by research. While some of these individuals bicycle less frequently, when they do, they prefer direct routes and do not avoid operating in mixed traffic, even on roadways with higher motor vehicle operating speeds and volumes. Many also enjoy bikeways separated from traffic. Similarly, they may avoid bikeways which they perceive to be less safe, too crowded with pedestrians or other slower moving bicyclists, or require deviation from their preferred route.

E-bikes and other modes

In recent years, many personal transportation options have emerged that provide alternatives to walking and bicycling. These novel forms of transportation, such as electric scooters, bicycles, and skateboards; Segway personal transporters; and monowheels are blurring the lines between active and motorized transportation and are not clearly defined under existing laws.

Electric bicycles, or e-bikes, have grown more popular in recent years. An analysis from Bicycle Retailer found that e-bike sales "increased 83 percent between May of 2017 and May of 2018, and e-bikes made up 10 percent of overall bikes sales in the U.S. for that time period.[15] E-bikes offer the same health benefits as conventional bicycles. By assisting riders on hills and other obstacles, they help conserve energy and extend bicyclists' range. They also attract novice bicyclists and expand bicycling as a viable form of transportation for people who are unable to use conventional bicycles. Bikeshare systems in the United States have embraced e-bikes and they are an increasingly common sight in communities across the country, including Monroe County.

E-bike regulations vary across jurisdictions. As part of CATP implementation, Monroe County will seek to lead a unified approach to regulating safety, operational, and other considerations for e-bikes and other modes list above. This coordination will ensure that people know where to ride, and what rights and responsibilities they have when operating these devices.

Pedestrians

It is important to design and implement connected pedestrian networks that are safe and comfortable for all ages and abilities, since most people are pedestrians in some way or form on any given day. The transportation network should accommodate pedestrians with a variety of needs, abilities, and possible impairments (see Figure 19). While age may be a major indicator, there is no one universal approach to pedestrian needs. Other categories that could be used to describe different types of pedestrians include activity, social use, trip purpose, and ability. Comfort is largely subject to individual preferences and personal experiences, but there are important pedestrian characteristics to consider when designing a network for a wide variety of people, such as pedestrian volumes, age, ability, and micromobility.

Facility Selection Methodology

Bicycle networks should be continuous, connect seamlessly across jurisdictional boundaries, and provide access to destinations. Anywhere a person would want to drive to for utilitarian purposes, such as commuting or running errands, is a potential destination for bicycling. As such, planning connected low-stress bicycle networks is not achieved by simply avoiding motor vehicle traffic. Rather, planners should identify solutions for lowering stress along higher traffic corridors so that bicycling can be a viable transportation option for the majority of the population.

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15 Carpiet, L. E-bikes, gravel bikes, push dollar business up for suppliers through first half. Bicycle Retailer. August 15, 2018. Retrieved from: http://read.dmtmag.com/i/1012247-august-15-2018/8?m4=&utm_source=Digital+Edition&utm_campaign=b544417272-EMAIL_CAMPAIGN_2018_08_01_09_46_COPY_01&utm_medium=email&utm_term=0_850bfb6c35-b544417272-28945013; Shinkle, D. State Electric Bicycle Laws: A Legislative Primer. National Conference of State Legislatures. December 18, 2018. Retrieved from: http://www.ncsl.org/research/transportation/state-electric-bicycle-laws-a-legislative-primer.aspx

Various methodologies can be used to select the appropriate bicycle facility based on roadway width, traffic volumes, speeds, and other considerations. Figures 20 and 21 provide some guidance on how to select the appropriate facilities based on traffic volume and speed. These matrices include preferred and acceptable values for each facility type. Designers should utilize forecast traffic volumes if available. Additionally, designers should default to selecting the preferred facility when possible. For more information, refer to the FHWA's Bikeway Selection Guide.[16]

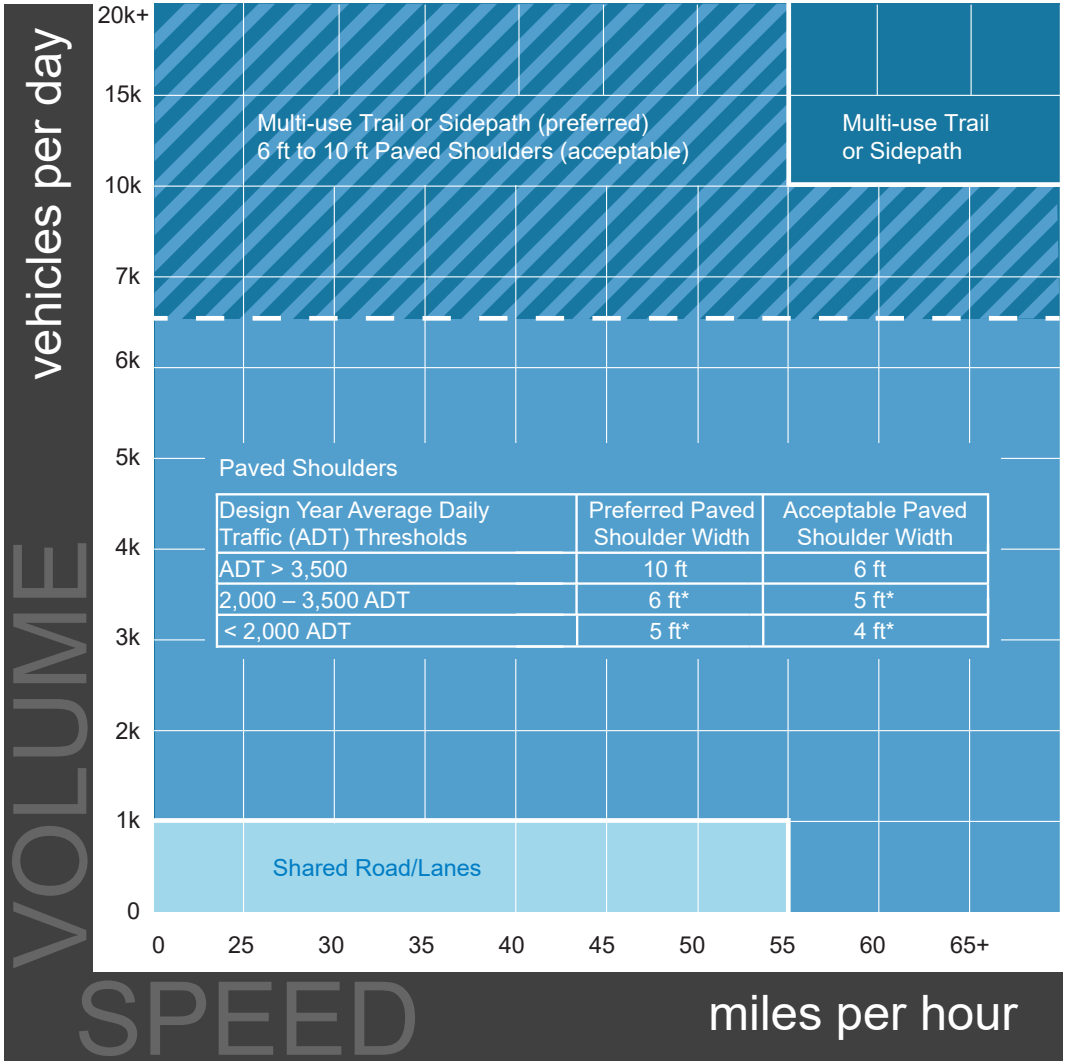
16 The Facility Toolkit Memorandum includes a rural pedestrian facility selection matrix that provides guidance to smaller communities seeking to improve their walking environments.

Figure 19: Pedestrian User Types

The typical bicyclist type on roadways in rural areas is the recreational bicyclist. Signed routes with shared lanes, paved shoulders, and shared use paths are appropriate bikeway types in rural areas. Shoulder width is an important consideration to accommodate these bicyclists based on traffic volumes and posted speeds in the rural context. It is often desirable to provide shared use paths along rural roads with higher speeds (45 miles per hour or greater). This is especially true for locations that attract larger volumes of recreational bicyclists or for routes that serve as key bicycle connections between destinations. Paths are also an important consideration for families and children making connections in rural areas. Shared use paths are also generally preferred on rural roads with Annual Average Daily Traffic above a certain threshold (e.g. above 6,000 or 7,000 ADT depending on context). In highly constrained conditions where sufficient shoulder width cannot be achieved, it is preferable to provide a narrow shoulder rather than no shoulder.

Urban areas in Monroe County may experience a mix of recreational riders and utility riders: those making short trips around town for commuting, running errands, etc. These riders may be less confident than the typical recreational rider, and should be accommodated accordingly.

Figure 20: Rural Bicycle Facility Selection Matrix

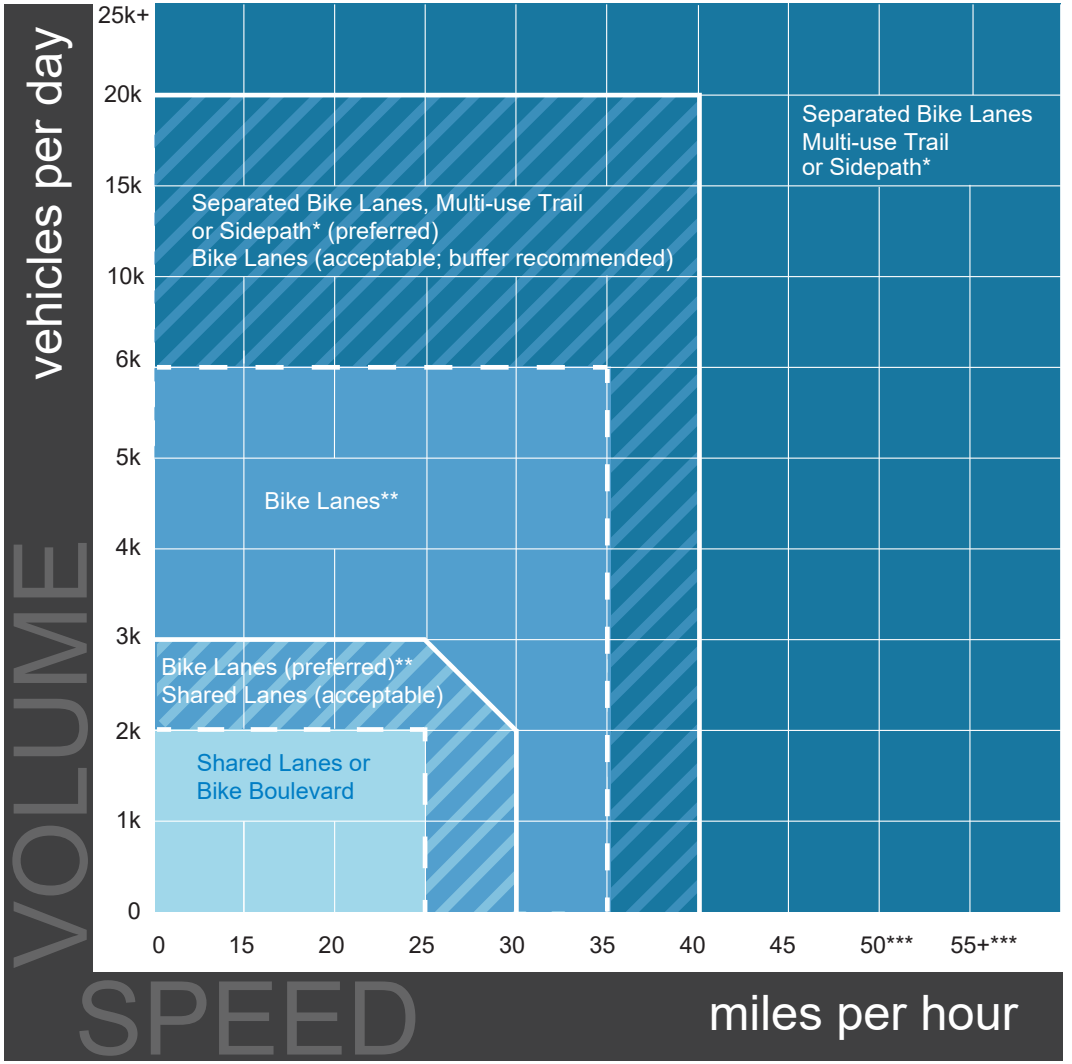


*Paved width exclusive of rumble strips.

Separated bike lane

Bike boulevard

Figure 21: Urban Bicycle Facility Selection Matrix



*To determine whether to provide a multi-use trail/sidepath or separated bike lane, consider pedestrian and bicycle volumes or, in the absence of volume, consider land use.
**Advisory bike lanes may be an option where traffic volume < 4,000 ADT.
***Speeds 50 mph or greater in urban areas are typically found in urban/rural transition areas.

Table 7: Pedestrian & Bicycle Facility Toolkit

Facility Type	Description + Design Considerations	Guidance
Off-Street Treatments		
Trails  	Shared use paths, also known as **trails**, include paved and unpaved paths that can be used by pedestrians and bicyclists. Shared use paths can follow streets for short distances but are typically located away from streets in natural and unsettled environments. Trail intersections should provide clear wayfinding to direct trail users. Where heavily utilized or around curves, a centerline can encourage users to stay to the right. Crossings at major streets should draw motorists' attention and encourage yielding. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » Urban: Any volume (typically 15,000 ADT or greater) » Rural: Any volume (typically 6,500 ADT or greater) **Posted Speed Limit** » Urban: Any speed (typically 30 mph or higher) » Rural: Any speed (typically 55 mph or higher)	Multi-use paths should be designed according to state and national standards. This process includes establishing a design speed (typically 18 mph) and designing path geometries accordingly. Maintenance responsibility depends on ownership, which most often rests with towns. **Minimizing user conflicts:** » Vertical objects close to the path edge can endanger users and reduce the comfortable usable width of the path. » Vertical objects should be set back at least 3' from the edge of the path, for a height of 8'. » 3' wide (minimum) shoulders provide space for users who step off the path to rest or to allow users to pass one another.
Sidepaths 	**Sidepaths** are paved paths that can be used by both pedestrians and bicyclists. They are typically located adjacent to streets and can provide connections to off-street trails. Crossings at intersections and driveways should draw motorists' attention and encourage yielding. Recessed crossings at driveways can improve interactions between bicyclists and motorists. **Settings:** Suburban and Rural **Motor Vehicle Traffic Volume** » Urban: Any volume (typically 15,000 ADT or greater) » Rural: Any volume (typically 6,500 ADT or greater) **Posted Speed Limit** » Urban: Any speed (typically 30 mph or higher) » Rural: Any speed (typically 55 mph or higher)	» Sidepaths should be at least 10' wide, and wider where higher bicycle and pedestrian traffic is expected (e.g. urban areas). » Special consideration must be given to the design of roadway crossings to increase visibility, clearly indicate right-of-way, and reduce crashes. » Alternative accommodations should be sought when there are many intersections and commercial driveway crossings per mile. » Maintenance responsibility depends on ownership, which most often rests with towns.

Facility Type	Description + Design Considerations	Guidance
On-Street Treatments		

Separated Bike Lanes
 
 
	Separated bike lanes dedicate spaces to people on bicycles that are physically separated from both motorists and pedestrians. Common vertical separators include planters, curbs, plastic delineators, and on-street parking. Separated bike lanes can be designed to accommodate one- or two-way travel.
	
	Bicycle signals, lateral offsets, signs, and markings can improve safety at intersections and driveways. Transitions to trails and other bicycle facilities should be clear, comfortable, and intuitive.
	
	Settings: Urban and Suburban
	
	Motor Vehicle Traffic Volume
	» Any volume (typically 15,000 ADT or greater)
	
	Posted Speed Limit
	» Any speed (typically 30 mph or higher)
		» Separated bike lanes can generally be considered on any road with one or more of the following characteristics:
		  » 3 or more traffic lanes
		  » Frequent turnover for on-street parking
		  » Frequent bike lane obstructions
		  » Streets that are designated as truck or bus routes
		  » Critical connections to key destinations/routes
		» Separated bike lanes are preferred over multi-use paths in higher density areas, commercial and mixed-use development, and near major transit stations or locations where pedestrian volumes are anticipated to exceed 200 people per hour on a multi-use path.
		» Parking removal may be required to construct separated bike lanes.

Buffered Bike Lanes 	**Buffered bike lanes** include a striped buffer area in addition to the bike lane, typically positioned between the bike lane and adjacent travel lane. In some cases, the buffer may be placed next to on-street parking to mitigate collisions with opening doors. Cross-hatched buffers, clearly communicate the buffer's function. Where pavement width allows and on-street parking exists, buffers can be provided on both sides of the bike lane. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » 9,000 or lower (preferred) **Posted Speed Limit** » 30 mph or lower	» The minimum width of a buffered bike lane adjacent to parking is 5', with a preferred width of 6'. » Buffers are to be broken where curbside parking is present to allow cars to cross the bike lane. » The minimum buffer width is 18". There is no maximum. Diagonal cross hatching should be used for buffers <3' in width. Chevron cross hatching should be used for buffers >3' in width.

Facility Type	Description + Design Considerations	Guidance
Bike Lanes 	Conventional **bike lanes** provide space within the street for exclusive bicycle travel. Signs and markings remind motorists that the bike lane is intended solely for bicyclist travel. Bike lanes should be striped at intersection approaches and through intersections if the need for clarity exists. Bike lanes should meet minimum width requirements exclusive of the gutter pan. **Settings:** Urban, Suburban, and Rural **Motor Vehicle Traffic Volume** » 6,000 ADT or lower (preferred) **Posted Speed Limit** » 30 mph or lower	» The minimum width of a bike lane adjacent to a curb is 5' exclusive of a gutter; a desirable width is 6'. » The minimum width of a bike lane adjacent to parking is 5', with a preferred width of 6'. » Parking T's or hatch marks can highlight the door zone on constrained corridors with high parking turnover to guide bicyclists away from doors.
Paved Shoulders 	**Paved shoulders** are primarily constructed to accommodate emergency stops, provide space for emergency vehicles, and extend pavement life. However, they can also be used by bicyclists. Paved shoulders can collect debris and should be swept to facilitate bicycle travel. Gaps should be provided in shoulder rumble strips to accommodate turning or merging bicyclists. Signage can remind motorists to expect bicyclists in paved shoulders. **Settings:** Rural and Urban Periphery **Motor Vehicle Traffic Volume** » 6,500 ADT or lower (preferred) » Any volume (acceptable) **Posted Speed Limit** » Any speed (typically 45 mph or higher)	» Generally, shoulders should be reserved for conditions where separated, higher comfort facilities are not feasible. » Shoulder width should be at least 4' if the roadway is curbless and there are no vertical obstructions. If curbs or vertical obstructions are present, shoulder width should be 5' minimum, exclusive of the gutter if present. » Shoulders should be wider on roads with high levels of bicycle traffic to accommodate passing and facilitate side-by-side bicycling. » When posted speed limits or 85th percentile speeds exceed 50 mph and/or if heavy vehicles frequently use the road, shoulders should exceed minimum widths to enhance bicyclist comfort. » Edge line rumble strips can provide additional bicyclist space on paved shoulders. The width of a shoulder with rumble strips should be measured from the rightmost side of the rumble strip to the edge of the roadway. Where rumble strips are present, gaps of at least 12' should be provided every 40'-60'.

Facility Type	Description + Design Considerations	Guidance
Bike Boulevards 	**Bike boulevards** optimize local streets for bicycle travel by reducing traffic volumes and speeds. Some measures can be implemented with roadway resurfacing and signage, while others require construction. Beyond signs and markings, bike boulevards generally include traffic calming features – such as speed humps, curb extensions, traffic circles, and traffic diversion treatments – and should be placed on local streets to discourage speeding and cut-through traffic. **Settings:** Urban and Suburban **Motor Vehicle Traffic Volume** » Up to 1,000 (preferred) » 3,000 ADT (maximum) **Posted Speed Limit** » 20 mph or lower	» Bicycle boulevards can range from 12'-22', apart from on-street parking, if present. » Wayfinding signage may be required to direct bicyclists. Additional traffic control at minor intersections may be considered to prioritize pedestrian and bicycle through travel. » The shared roadway design may be an opportunity for plantings, rain gardens, and green infrastructure.
Pedestrian Lanes 	**Pedestrian lanes** are designated spaces in the roadway that are exclusively for people walking. Lanes are designated with paint and other delineators. They provide a temporary pedestrian space – filling short gaps between higher quality pedestrian facilities – that is separated from vehicles where sidewalks may not be feasible due to constraints like drainage, topography, or cost. The lane can fill gaps between destinations or existing sidewalks. **Settings:** Suburban, Small Town, Rural **Motor Vehicle Traffic Volume** » 2,000 ADT (preferred) » 6,000 ADT (acceptable) **Motor Vehicle Operating Speed** » 20 mph or lower (preferred) » 30 mph or lower (acceptable)	» Pedestrians lanes can be 5'-8' wide (8' is preferred) with an additional 0'-4' wide buffer. Double white lines should be used to discourage encroachment by motor vehicles, particular at corners and intersections. » Because pedestrian lanes operate similar to sidewalks, state and local codes should be consulted during their design and application, especially in locations where no sidewalks or shoulders currently exist. » Surfaces should be slip resistant and stable, and the grade should not exceed that of the adjacent street.

Facility Type	Description + Design Considerations	Guidance

"Bikes May Use Full Lane" Sign
 
	The **"Bikes May Use Full Lane"** sign (MUTCD R4-11) is used on roadways where no bicycle lanes are present, where adjacent shoulders not usable by bicyclists, and where vehicular travel lanes are too narrow for bicyclists and motor vehicles to safely operate side by side. They more clearly inform road users of locations where bicyclists may choose to fully occupy travel lanes, discourage passing by motor vehicles, and also inform bicyclists that they can or may operate towards the center of the travel lane for safest operation.
	
	Settings: Urban
	
	Motor Vehicle Traffic Volume
	» 4,000 ADT or less (preferred)
	» 10,000 ADT (maximum)
	
	Motor Vehicle Operating Speed
	» 25 mph or lower (preferred)
	» 35 mph or lower (maximum)
		» Intended for use on travel lanes less than 13' wide.
		  » Signs should be placed at the beginning of sections of roadways with usable roadway widths travel lanes less than 13'
		  » This includes roadways where curbside parking or other encroachments narrow travel lanes to 13' or less
		  » They may also be placed in locations where existing bike facilities end, requiring shared use of travel lanes, or in sections of roadways where a significant number of left turns are expected
		» Depending on the length of the identified roadway, additional signs should be placed at appropriately designated intervals until the roadway widens to allow for the mandated 3-ft' passing clearance.
		» These signs may also be used on roadways to fill gaps in existing, continuous bicycle networks.

Intersection Treatments		

Marked Crosswalks
 
	Crosswalks facilitate pedestrian crossings at intersections and mid-block locations. In New Mexico, motorists are legally required to yield to pedestrians in any unsignalized crosswalk.
	
	On higher-volume, higher-speed, multi-lane streets, marked crosswalks should be accompanied by treatments to encourage motorist yielding and improve pedestrian safety, such as parking restrictions, nighttime lighting, yield signs and markings, median refuge islands, and pedestrian hybrid beacons.
	
	Settings: Urban, Suburban, and Rural
		» Crosswalk Placements:
		  » On all legs of signalized intersections in school zones and across streets with more than minimal levels of traffic
		  » A multi-use path or active trail that crosses a roadway
		  » Where a local sidewalk either changes sides or changes from both sides to only one side
		  » At locations where vehicular traffic might block pedestrian traffic when stopping for a stop sign or red signal
		  » To guide pedestrians crossing at uncontrolled midblock locations to cross at controlled locations
		» Crosswalks should be at least 10' wide or the width of the approaching sidewalk if it is greater.
		» In areas of heavy pedestrian volumes (such as transit station areas, school zones, and main streets) crosswalks can be up to 25' wide.
		» Stop lines at stop-controlled and signalized intersection approaches should be striped no less than 4' and no more than 30' from the edge of crosswalks.
		» Crosswalks should be oriented perpendicular to streets, minimizing crossing distances and therefore limiting the time that pedestrians are exposed.

Facility Type	Description + Design Considerations	Guidance
Curb Ramps 	**Curb ramps** provide smooth transitions from sidewalks to streets at intersections and crossings which serve pedestrians with mobility devices. Curb ramps can also serve people with strollers or people on bicycles. Curb ramp design and construction must comply with ADA requirements to ensure that they can be used by people with disabilities. ADA-compliant curb ramps typically include detectable surfaces to warn visually-impaired people of the bottom of the ramp. **Settings:** Urban, Suburban, and Rural	» Maximum slope: 1:12 (8.33%). » Maximum slope of side flares: 1:10 (10%). » Maximum cross-slope: 2% (1–2% with tight tolerances recommended). » Should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk. » Truncated domes (the only permitted detectable warning device) must be installed on all new curb ramps to alert pedestrians to the sidewalk and street edge.1
Rectangular Rapid Flashing Beacons 	**Rectangular rapid flashing beacons (RRFBs)** alert drivers to yield when pedestrians or bicyclists are crossing the road. They are typically used at mid- block crossings. Crosswalk users activate the beacon with a pushbutton. RRFBs increase driver yielding at mid-block crossings. RRFB warning signage and their bright, irregularly flashing LEDs, similar to emergency vehicle lights, are effective at getting the attention of motorists. **Settings:** Urban, Suburban, Rural Trail Crossings	» The design of RRFBs should be in accordance with FHWA's Interim Approval 21 for Operational Use of Pedestrian-Actuated Rectangular Rapid-Flashing Beacons at Uncontrolled Marked Crosswalks. » RRFBs should be used in conjunction with advance stop bars and signs. » RRFBs are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median on roadways with multi-lane approaches, an additional beacon should be installed in the median.
In-Street Pedestrian Crossing Sign 	**"Yield to Pedestrian"** signs (MUTCD R1-6) are placed in between opposing travel lanes to improve motorist awareness of pedestrians crossing. **In-street pedestrian crossing** signs reduce motor vehicle speeds and increase yielding at uncontrolled crosswalks. **Settings:** Urban and Suburban **Posted Speed Limit** » 30 mph or lower	» Place crossing sign on all approaches to the uncontrolled crosswalk. » Mark uncontrolled crossing with high-visibility crosswalk markings. » Install pedestrian warning signs (MUTCD W11-1, W11-2, W11-15, or S1-1). » Restrict parking within 20'-50' of the crosswalk to improve visibility. » Use markings in conjunction with an appropriate regulatory sign (e.g. Stop Here for Pedestrians MUTCD R1-5 series).

1. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG). (2011). Retrieved from: https://www.access-board.gov/prowag/

4.4 Program and Policy Recommendations

In addition to the network development and other infrastructure changes recommended in previous pages, policy and programmatic strategies and actions should play an influential role in the future of active transportation in Monroe County. The proposed network would significantly increase active transportation, but there are other opportunities for walking and bicycling in the county. The CATP recommended policy actions aim to maintain and encourage active transportation. Applying these recommendations now will ensure a strong policy framework as the county active transportation network expands. Certain actions may take effect immediately while others depend upon the successful implementation of this plan. The Program and Policy Recommendations Memorandum divides 29 program and policy actions into five categories:

1. Manage snow and ice for active transportation users.

- Design future shared use paths to accommodate existing maintenance vehicles.
- Manage precipitation before, during, and after weather events.
- Develop a snow removal priority network.
- Improve snow removal for bus stop access.
- Clear snow piles at corners with sidewalks.
- Clear shared use paths within 24 hours of snowfall.
- Implement snow and ice clearing assistance programs for priority populations.
- Address maintenance personnel and leadership concerns.
- Form a year-round maintenance task force.

2. Create and promote a culture of walking and rolling.

- Collaborate with partner agencies.
- Support demonstration projects to promote new infrastructure.
- Develop a transportation demand management program.
- Encourage participation in Safe Routes to Schools programs.
- Support shared micromobility programs.
- Increase active transportation awareness and resources.
- Provide education on how to switch modes.
- Use two-way public engagement to maintain the bicycle network.
- Regularly review and update the County's Complete Streets Policy.

3. Enhance roadway safety through policy and programs.

- Adopt and advocate for a Safe Systems Approach.
- Coordinate review of functional classifications and provide input to NYSDOT.
- Coordinate review of speed limits and roadway design to reduce operating speeds.
- Work with local agencies to identify potential "no turn on red" locations that would increase safety for pedestrians.
- Install signage to reinforce Monroe County's safe passing law.

4. Invest in bike and shared use path facilities.

- Coordinate state and regional bicycle facility maintenance.
- Maintain pavement markings for bicycle and shared use path infrastructure.
- Increase regional shared use path connectivity.

5. Increase equitable access to transportation networks.

- Reduce reliance on law enforcement to manage road safety.
- Promote removal of roadway-based laws to reduce racial profiling.
- Investigate complaints of bias-based policing.
- Increase engagement with BIPOC organizations.
- Host or amplify implicit bias and racial justice trainings.
- Prioritize investments in communities of concern.

The memo also identifies lead and support roles for the parties involved in implementation, as well as recommended timeframes for each action. By focusing on critical issues like maintenance, safety, equity, education, and encouragement, the Countywide Active Transportation Plan will help improve the cultural, regulatory, and political environment for active transportation in Monroe County.

Key Recommendations

The CATP has four key program and policy recommendations, described below along with accompanying case studies that highlight other communities' active transportation planning principles and best practices and may be applicable to Monroe County.

Recommendation 1: Support demonstration projects to promote new infrastructure

Many communities are starting to recognize the value of demonstration projects (also known as tactical urbanism) in promoting and implementing bicycle plans. Roadway design projects are sometimes met with resistance from the public or engineering leadership, often stemming from uncertainty over the safety of a proposed design. Temporary demonstrations provide a low-cost, low commitment option to test out new facility types. They also allow users to test a street design, simultaneously giving design engineers the opportunity to identify unforeseen issues and make adjustments before construction.

Small-scale, short-term, and low-cost demonstration projects use chalk, spray paint, planters, cones, and other inexpensive materials. Community buy-in and support for permanent changes is generated when residents can use these new facilities and understand their value. State, County, and local communities are encouraged to work on identifying a budget for demonstration projects on an annual basis.

Case Study: Southern California Association of Governments

The Southern California Association of Governments (SCAG) provides a Kit of Parts to member agencies, a lending library with pop-up materials to temporarily demonstrate potential and planned street design treatments and safety infrastructure to create safer and more inviting public spaces. The kit is made of lightweight materials to showcase five street treatments: a parklet, curb extension, median refuge island, artistic crosswalk, and separated bike lane. Additionally, SCAG offers the Kit of Parts Playbook, a guidebook for implementing a tactical urbanism activation event using the kit of parts. The guidebook offers a step-by-step guide to achieving event milestones like gathering a project team, setting event goals and objectives, planning and prepping for the event, working with SCAG and jurisdictional partners, coordinating day-of logistics, and more.

Recommendation 2: Adopt and advocate for a Safe Systems Approach

Vision Zero is the principle that even one death within our transportation system is unacceptable, and that achieving zero deaths is possible through shared road user responsibility, better design, slower speeds, and post-crash care. Applying the Safe System approach to achieve Vision Zero involves anticipating human mistakes by designing and managing road infrastructure to keep the risk of a mistake low and crash harm minimal. Potential elements of this include:

- Support development of municipal-level Vision Zero policies and action plans by providing training, technical assistance, and other resources.[17]
- Fund a public education and outreach campaign focused on the safety impacts of motor vehicle speeds and/or other critical issues impacting pedestrian and bicycle safety, such as impairment, distraction, failure to yield, non-compliance with traffic controls, and other risky pedestrian, bicyclist, and motor vehicle driver behaviors.
- Allocate more funding for education initiatives to encourage motorists in Monroe County to drive safer and be aware of vulnerable road users, and continue to support the Drive2Bbetter campaign.
- Provide technical assistance to municipalities regarding enforcement techniques that reduce risky travel behaviors, such as high-visibility enforcement of laws pertaining to impairment, cell phone use, crosswalk yielding, and compliance with traffic controls.

Case Study: Jersey City and Hoboken, NJ

Jersey City and Hoboken are two examples of effective Vision Zero strategies. While the state overall saw a spike in traffic fatalities after 2020, Jersey City went one full year (2022) without a single traffic fatality on city-owned roads. Jersey City was the first city in New Jersey to adopt Vision Zero and has largely used light-touch interventions like speed humps, crosswalks, and mini-roundabouts with tactical materials for quick solutions.

Hoboken, with the fourth-highest population density in the U.S., has reached zero traffic deaths for four years in a row. There is no other U.S. community of comparable size or land mass that has achieved that Vision Zero goal. The City's strategy has involved modest interventions like daylighting corners to improve visibility for drivers and curb extensions to shorten the crossing distances for pedestrians.

Recommendation 3: Prioritize investments in communities of concern

Prioritize active transportation investments in communities of concern and use the USDOT Justice40 objectives as a metric. Justice40 encourages local agencies to ensure a minimum 40 percent of investment of funds from transportation and other sources are made in communities of concern.

Case Study: Denver Regional Council of Governments

The Denver Regional Council of Governments developed the Community-Based Transportation Planning Pilot Program to identify and address mobility challenges for historically underserved communities. The goal of the program is to improve mobility options for communities facing transportation inequities, barriers, and challenges. DRCOG staff work in partnership with local governments, community-based organizations, and stakeholders to create community-based transportation plans. The plans identify specific transportation needs among historically underserved and marginalized communities, develop community-informed solutions, and determine a path to fund and implement recommendations. The program centers the perspectives of community members from the start and throughout the development of the plans.

17 Secure funding to support additional annual maintenance costs associated with Vision Zero improvements.

Recommendation 4: Develop a snow removal priority network

In winter climates, communities traditionally rely on property owners to clear sidewalks after snowfalls. Public agencies typically clear sidewalks bordering municipal properties, such as civic buildings and parks. Because private property owners are responsible for clearing the remaining sidewalk network, many segments are left untouched, due to property owners' lack of awareness or desire, physical inability, out of town status, and vacant properties.

Most communities do not have the resources to clear their entire sidewalk networks, so developing snow removal priority networks is a more feasible solution. Snow removal priority networks connect facilities that are critical to the community's walkability or bikeability.

Examples of priority routes include Safe Routes to School, high pedestrian traffic areas, transit routes, key shared-use paths, and park properties. Rochester, NY uses private contractors to clear 878 miles of sidewalks, including all sidewalks that are at least 5 feet wide.[18] Embellishment fees on property taxes are modest ($37 annually).

This strategy may seem more expensive than relying on property owners. While it does require more public funding, it reduces financial burdens on individual property owners. More importantly, municipal-led snow and ice clearance programs guarantee a reliable sidewalk network during winter. Include a list of priority routes in updated maintenance plans for countywide snow removal.

Case Study: Rochester, NY

Most communities do not have the resources to clear their entire sidewalk networks. Instead many of them are turning to snow removal priority networks as a more feasible solution. Snow removal priority networks connect facilities that are critical to the community's walkability. The City of Rochester offers one such example, by providing supplemental service to help property owners clear their sidewalks during a substantial winter storm. The City plows sidewalks when four inches of new snow has accumulated. Property owners are responsible to remove any remaining snow and ice. The City plows all sidewalks that are at least five feet in width, which includes more than 870 miles of sidewalks. These miles are divided into distinct sidewalk plow runs of approximately 15 miles. Each sidewalk plow run takes about five hours to complete. The City uses private contractors to plow sidewalks. Sidewalk plowing usually happens in the evening and early morning when pedestrian traffic is lowest, but this schedule is modified to respond to actual storm conditions. Sidewalk snow plowing is financed by an embellishment fee on property tax bills that is based on the property's front footage. The average property owner charge per year is $35.

18 https://www.cityofrochester.gov/sidewalkplowing/

Chapter 5: Implementation Strategies

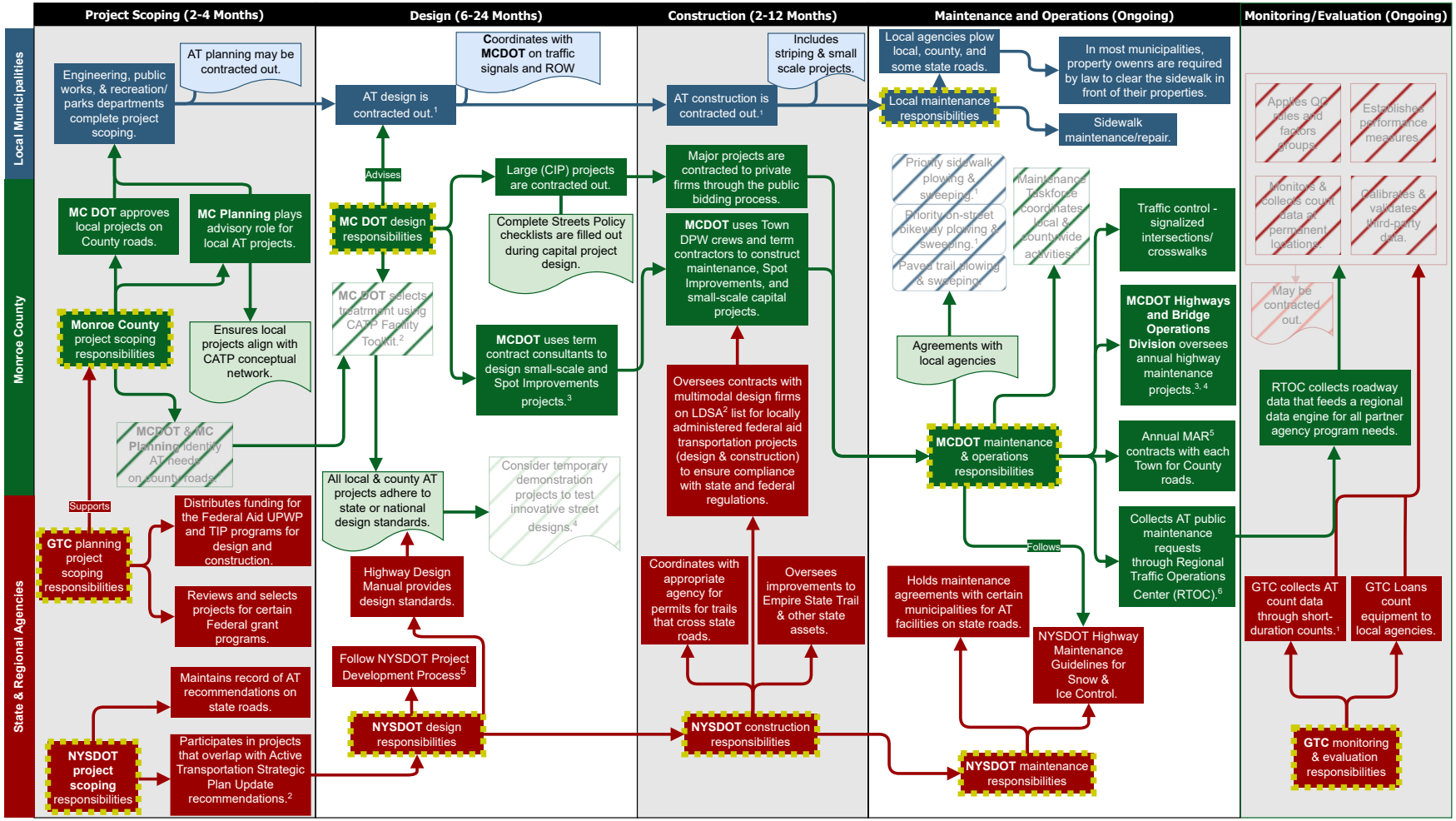
5.1 Roles and Responsibilities

A concerted effort in multijurisdictional collaboration is the first step towards successful implementation of the CATP. While Monroe County Departments of Planning & Development and Transportation will play leadership roles during implementation, many other organizations need to support this effort in order to achieve the successful implementation of the CATP.

Figure 23 identifies roles and responsibilities in different phases of active transportation implementation. The chart is meant to help local agencies get a general idea of how to implement active transportation infrastructure and understand the key components of the implementation process. It shows three stakeholder categories as part of the implementation process: Local Municipalities, Monroe County, and State and Regional Agencies (i.e., New York State Department of Transportation and Genesee Transportation Council). These stakeholders are collectively responsible for the planning/scoping, design, construction, maintenance, and monitoring/evaluation of the network. Solid colored boxes indicate current practices for active transportation project implementation; transparent boxes with hatch lines represent recommended practices that outlined in the CATP Policy & Program Recommendations and other materials developed as part of the countywide plan.

Please note that this flow chart is a reference for County staff and local agency partners to help facilitate coordination while implementing active transportation projects. It does not preempt or supersede any existing project development processes that Monroe County's partners currently follow.[19]

Figure 22: Roles & responsibilities for implementing active transportation projects



1. Based on local priorities, ped/bike/vehicle counts, CATP conceptual network, CATP trip potential analysis, CATP crash analysis, and CATP bicycle network analysis.
2. NYSDOT's Active Transportation Strategic Plan Update is anticipated to be completed in Fall 2024. During the next CATP update (timeline to be determined), the CATP will be updated to align with the NYSDOT's ATSP.

1. May be contracted to MC DOT or private firms.
2. CATP Facility Toolkit is the starting point for facility selection.
3. By default, AT facilities are included on Spot Improvement Projects that overlap with the CATP conceptual network, unless documented exceptions to the Monroe County Complete Streets Policy preclude them.
4. See Program and Policy Recommendation: Support demonstration projects to promote new infrastructure.
5. NYSDOT Project Development Manual

1. May be contracted to MC DOT or private firms.
2. Local Design Services Agreement.

1. See Program and Policy Recommendation: Develop a snow removal priority network.
2. See Program and Policy Recommendation: Form a year-round maintenance task force.
3. By default, on-street bike facilities are installed during milling/resurfacing/recycling projects that overlap with the CATP conceptual network, unless documented exceptions to the Monroe County Complete Streets Policy preclude them.
4. All work is completed by Town DPW crews and term contractors. Complete Streets Policy checklists are filled out during the planning and scoping of each highway maintenance project.
5. Mowing, Animal Removal, and Roadside Pickup. Many Towns have their own roadside pickup programs, which may include brush pickup, leaf pickup, and/or debris pickup.
6. For more information, refer to this page. See Program and Policy Recommendation:

1. For information on GTC's existing bicycle and pedestrian count program, refer to this page.

19 For more information on existing processes, refer to GTC's TIP Procedures Manual and NYSDOT's Project Development Manual.

5.2 Funding Sources

Governmental agencies across many sectors are facing a constrained fiscal environment. As a result, public works projects often rely on creative problem-solving and collaboration between public agencies to succeed.

Active transportation projects comprise a fraction of overall transportation network construction and maintenance. While they do not serve as many users as highways, bridges, and other critical infrastructure, they can have a substantial positive effect on local economies. For example, several studies have exposed the strong correlation between recreational trails and increased property values, tourism, and economic development, especially in rural communities through which major trails pass. Furthermore, providing opportunities for active living promotes public health and may reduce the burden on taxpayer-funded healthcare systems over time. In this light, active transportation infrastructure is a critical component of a complete transportation network and results in a positive return on investment for communities that fund such projects.

The Implementation Strategies Memorandum outlines potential funding sources for bicycle and pedestrian projects. For each funding source listed, there is a description of program goals, eligible activities, funding match requirements, and application deadlines, where applicable. Each funding source includes a description and the following information, where applicable:

- Administrating agency
- Total available funds or amount granted per project
- Purpose of program or source
- Eligible project types
- Eligible recipient types
- Matching requirements
- Other requirements as applicable
- Application cycle / timeline
- Link to more information

Contact information for individual programs is listed in the memo where available. GTC is the primary regional contact for all Federal Aid projects. NYSDOT Region 4 Program Development is the primary contact for all state funding sources:

Genesee Transportation Council

Alex Kone
akone@gtcmpo.org

NYSDOT Region 4 Program Development

Joel Kleinberg
Joel.Kleinberg@dot.ny.gov

Table 8 – the funding resource table - includes federal, regional, and state funding sources that Monroe County and its partners should consider for implementing active transportation projects. Projects need to meet program eligibility requirements and project sponsors should integrate the safety, accessibility, equity, and convenience of walking and bicycling into surface transportation projects. This table includes an extensive list of programs and its intent is to provide a starting point to locate eligible funding programs for active transportation projects.

For detailed notes and additional guidance, refer to the Implementation Strategies Memorandum.

Table 8: Summary of all funding sources

Activity or Project Type	FEDERAL							REGIONAL								
	Office of the Secretary of Tranportation Programs							Federal Transit				National Highway Traffic Safety Administration		Federal Highway Administration		
	RAISE	INFRA	RCP	SS4A	Thrive	RRIF	TIFIA	FTA	ATI	TOD	AoPP	402	405	BFP BIP BRR	CRP	CMAQ
Access enhancements to public transportation (benches, bus pads)	●	●	●	●	▲	■	■	●	●	▲	■	▲	▲	▲	●	●
Americans with Disabilities Act (ADA) / 504 Self Evaluation / Transition Plan	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	●	▲
Barrier removal for ADA compliance	●	●	●	●	▲	■	■	●	●	■	■	▲	▲	●	●	▲
Bicycle plans	▲	▲	■	●	▲	▲	▲	●	▲	●	●	▲	▲	▲	●	▲
Bicycle helmets (project or training related)	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	●	▲	▲	▲	▲
Bicycle helmets (safety promotion)	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Bicycle lanes on road	■	■	●	●	▲	■	■	●	●	▲	■	▲	▲	▲	●	●
Bicycle parking (see Bicycle Parking Solutions)	■	■	●	●	▲	■	●	●	●	▲	■	▲	▲	▲	●	●
Bike racks on transit	■	▲	●	■	▲	▲	■	●	●	▲	■	▲	▲	▲	●	●
Bicycle repair station (air pump, simple tools)	■	▲	●	■	▲	■	■	●	●	▲	▲	▲	▲	▲	●	▲
Bicycle share (capital and equipment; not operations)	■	■	●	■	▲	■	■	●	●	▲	▲	▲	▲	▲	●	●
Bicycle storage or service centers (example: at transit hubs)	■	▲	●	■	▲	■	●	●	●	▲	▲	▲	▲	▲	●	●
Bridges / overcrossings for pedestrians and/or bicyclists	●	●	●	●	▲	■	■	●	●	▲	▲	▲	▲	●	●	●
Bus shelters and benches	●	●	●	■	▲	■	■	●	●	▲	▲	▲	▲	▲	●	●
Coordinator positions (State or local) (limits on CMAQ and STBG)	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	●	▲	▲	▲	▲	●
Community Capacity Building (develop organizational skills/processes)	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲
Crosswalks for pedestrians, pedestrian refuge islands (new or retrofit)	●	●	●	●	▲	■	■	●	●	▲	▲	▲	▲	▲	●	■
Curb ramps	●	●	●	●	▲	■	■	●	●	▲	▲	▲	▲	●	●	■
Counting equipment	▲	●	●	●	▲	▲	■	●	●	▲	▲	▲	▲	▲	▲	▲

KEY: ● = Activity may be eligible. Restrictions may apply, see program notes and guidance.
■ = Eligible, but not competitive unless part of a larger project.
▲ = Not eligible

Activity or Project Type	STATE																		
	Federal Highway Administration													State					
	HSIP	RHCP	NHPP	PROTECT	STBG	TA	RTP	SRTS	PLAN	NSBP	FLTTP	TTP	TTPSF	DRI/ NYF	STIP	TAP	HSIP	CMAQ	RTGP
Access enhancements to public transportation (benches, bus pads)	▲	▲	●	●	●	●	▲	▲	▲	●	●	●	▲	▲	▲	▲	▲	●	▲
Americans with Disabilities Act (ADA) / 504 Self Evaluation / Transition Plan	▲	▲	▲	▲	●	●	●	▲	●	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Barrier removal for ADA compliance	▲	▲	●	●	●	●	●	●		●	●	●	▲	▲	▲	▲	▲	▲	▲
Bicycle plans	▲	▲	▲	●	●	●	▲	●	●	▲	●	●	●	▲	▲	▲	▲	▲	▲
Bicycle helmets (project or training related)	▲	▲	▲	▲	●	●	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Bicycle helmets (safety promotion)	▲	▲	▲	▲	●	▲	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Bicycle lanes on road	●	●	●	●	●	●	▲	●	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲
Bicycle parking (see Bicycle Parking Solutions)	▲	▲	●	▲	●	●	●	●	▲	●	●	●	▲	▲	●	●	▲	●	▲
Bike racks on transit	▲	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	●	▲
Bicycle repair station (air pump, simple tools)	▲	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Bicycle share (capital and equipment; not operations)	▲	▲	●	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	●	▲
Bicycle storage or service centers (example: at transit hubs)	▲	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	●	▲
Bridges / overcrossings for pedestrians and/or bicyclists	●	●	●	●	●	●	●	●	▲	▲	●	●	●	▲	●	●	▲	●	▲
Bus shelters and benches	▲	▲	●	●	●	●	▲	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲	▲
Coordinator positions (State or local) (limits on CMAQ and STBG)	▲	▲	▲	▲	●	●	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Community Capacity Building (develop organizational skills/processes)	▲	▲	▲	▲	▲	▲	▲	▲	●	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Crosswalks for pedestrians, pedestrian refuge islands (new or retrofit)	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Curb ramps	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Counting equipment	●	▲	●	▲	●	●	●	●	●	▲	●	●	●	▲	▲	▲	▲	▲	▲

Activity or Project Type	FEDERAL							REGIONAL								
	Office of the Secretary of Tranportation Programs							Federal Transit				National Highway Traffic Safety Administration		Federal Highway Administration		
	RAISE	INFRA	RCP	SS4A	Thrive	RRIF	TIFIA	FTA	ATI	TOD	AoPP	402	405	BFP BIP BRR	CRP	CMAQ
Data collection and monitoring for pedestrians and/or bicyclists	●	●	●	●	▲	▲	■	●	●	●	●	▲	▲	▲	●	▲
Emergency and evacuation routes for pedestrians and/or bicyclists	●	●	●	■	▲	▲	●	●	●	■	■	▲	▲	▲	●	▲
Historic preservation (pedestrian and bicycle and transit facilities)	■	▲	■	■	▲	■	■	●	●	▲	■	▲	▲	▲	●	▲
Landscaping, streetscaping (pedestrian/bicycle route; transit access); related amenities (benches, water fountains); usually part of larger project	■	■	■	■	▲	■	■	●	●	■	■	▲	▲	▲	●	▲
Lighting (pedestrian and bicyclist scale associated with pedestrian/ bicyclist project)	●	●	●	●	▲	■	■	●	●	▲	■	▲	▲	▲	●	■
Maps (for pedestrians and/or bicyclists)	▲	▲	▲	●	▲	▲	▲	●	●	●	■	▲	▲	▲	●	●
Micromobility projects (including scooter share)	●	▲	●	■	▲	■	■	▲	▲	▲	■	▲	▲	▲	●	●
Paved shoulders for pedestrian and/ or bicyclist use	●	■	■	■	▲	■	■	▲	▲	▲	▲	▲	▲	●	●	●
Pedestrian plans	●	■	■	●	▲	▲	●	▲	▲	●	●	▲	▲	▲	●	▲
Rail at-grade crossings	●	●	●	■	▲	●	●	●	●	▲	▲	▲	▲	▲	●	▲
Recreational trails	●	▲	●	■	▲	▲	■	▲	▲	▲	▲	▲	▲	▲	▲	▲
Resilience Improvements for pedestrians and bicyclists	●	●	●	■	▲	■	■	▲	▲	●	■	▲	▲	■	■	■
Road Diets (pedestrian and bicycle portions)	●	●	●	●	▲	■	●	▲	▲	▲	▲	▲	▲	▲	▲	●
Road Safety Assessment for pedestrians and bicyclists	▲	▲	●	●	●	▲	■	▲	▲	▲	■	▲	▲	▲	▲	▲
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike traffic safety laws	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	■	●	●	▲	▲	▲
Safety education positions	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	■	●	▲	▲	▲	▲
Safety enforcement (including police patrols)	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲	●	●	▲	▲	▲

KEY: ● = Activity may be eligible. Restrictions may apply, see program notes and guidance.
■ = Eligible, but not competitive unless part of a larger project.
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Activity or Project Type	STATE																		
	Federal Highway Administration													State					
	HSIP	RHCP	NHPP	PROTECT	STBG	TA	RTP	SRTS	PLAN	NSBP	FLTTP	TTP	TTPSF	DRI/ NYF	STIP	TAP	HSIP	CMAQ	RTGP
Data collection and monitoring for pedestrians and/or bicyclists	●	▲	●	▲	●	●	●	●	●	▲	●	●	●	▲	▲	▲	▲	▲	▲
Emergency and evacuation routes for pedestrians and/or bicyclists	▲	▲	●	●	●	●	●	●	▲	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Historic preservation (pedestrian and bicycle and transit facilities)	▲	▲	▲	▲	●	●	▲	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲	▲
Landscaping, streetscaping (pedestrian/bicycle route; transit access); related amenities (benches, water fountains); usually part of larger project	▲	▲	■	●	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Lighting (pedestrian and bicyclist scale associated with pedestrian/ bicyclist project)	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	●	●	▲	●	▲
Maps (for pedestrians and/or bicyclists)	▲	▲	▲	▲	●	●	▲	●	●	●	▲	●	▲	▲	▲	▲	▲	▲	▲
Micromobility projects (including scooter share)	▲	▲	▲	▲	●	●	▲	▲	▲	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Paved shoulders for pedestrian and/ or bicyclist use	●	●	●	●	●	●	▲	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Pedestrian plans	▲	▲	▲	●	●	●	▲	●	●	▲	●	●	●	▲	▲	▲	▲	▲	▲
Rail at-grade crossings	●	●	●	●	●	●	●	●	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲
Recreational trails	▲	▲	▲	●	●	●	●	▲	▲	●	●	●	▲	▲	▲	●	▲	▲	●
Resilience Improvements for pedestrians and bicyclists	▲	▲	●	●	●	●	●	●	▲	●	●	●	▲	▲	▲	▲	▲	▲	▲
Road Diets (pedestrian and bicycle portions)	●	●	▲	●	●	●	●	▲	●	▲	▲	●	●	●	▲	▲	▲	▲	▲
Road Safety Assessment for pedestrians and bicyclists	●	●	▲	▲	●	●	▲	▲	●	▲	●	●	●	▲	▲	▲	▲	▲	▲
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike traffic safety laws	●	▲	▲	▲	▲	▲	▲	●	●	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Safety education positions	▲	▲	▲	▲	●	●	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Safety enforcement (including police patrols)	●	▲	▲	▲	●	●	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲

Activity or Project Type	FEDERAL							REGIONAL								
	Office of the Secretary of Tranportation Programs							Federal Transit				National Highway Traffic Safety Administration		Federal Highway Administration		
	RAISE	INFRA	RCP	SS4A	Thrive	RRIF	TIFIA	FTA	ATI	TOD	AoPP	402	405	BFP BIP BRR	CRP	CMAQ
Safety program technical assessment (for peds/bicyclists)	▲	▲	●	■	●	▲	▲	▲	▲	▲	■	●	▲	▲	▲	▲
Separated bicycle lanes	●	●	●	●	▲	■	■	●	●	▲	▲	■	▲	●	●	●
Shared use paths / transportation trails	●	●	●	●	▲	■	■	●	●	▲	■	▲	▲	▲	●	●
Sidewalks (new or retrofit)	●	●	●	●	▲	■	■	●	●	■	■	▲	▲	●	●	●
Signs, signals, signal improvements (incl accessible pedestrian signals) see note	●	●	●	●	▲	■	■	●	●	■	■	▲	▲	▲	●	●
Signing for pedestrian or bicycle routes	●	●	●	●	▲	■	■	●	●	▲	■	▲	▲	▲	●	●
Spot improvement programs (for pedestrian and bicycle facilities)	●	●	▲	●	▲	■	■	●	▲	▲	■	▲	▲	▲	●	▲
Stormwater impacts related to pedestrian and bicycle project impacts	●	●	●	■	▲	■	■	●	●	▲	▲	▲	▲	▲	▲	▲
Traffic calming	●	●	●	●	▲	■	■	●	▲	▲	▲	▲	▲	▲	●	▲
Trail bridges	●	●	●	■	▲	■	●	▲	▲	▲	▲	▲	▲	▲	●	■
Trail construction and maintenance equipment	▲	▲	▲	■	▲	■	■	▲	▲	▲	▲	▲	▲	▲	●	▲
Trail/highway crossings and intersections	●	●	●	●	▲	■	■	▲	▲	▲	▲	▲	▲	●	●	■
Trailside/trailhead facilities (restrooms, water, not general park amenities)	■	▲	▲	▲	▲	■	■	▲	▲	▲	▲	▲	▲	▲	■	▲
Training	▲	▲	▲	●	●	▲	▲	▲	▲	▲	■	●	▲	▲	▲	●
Training for law enforcement on ped/ bicyclist safety laws	▲	▲	▲	■	▲	▲	▲	▲	▲	▲	▲	●	●	▲	▲	■
Tunnels / underpasses for pedestrians and/or bicyclists	●	●	●	●	▲	●	●	●	●	▲	▲	▲	▲	▲	●	●
Vulnerable Road User Safety Assessment	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲

KEY: ● = Activity may be eligible. Restrictions may apply, see program notes and guidance.
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Activity or Project Type	STATE																		
	Federal Highway Administration													State					
	HSIP	RHCP	NHPP	PROTECT	STBG	TA	RTP	SRTS	PLAN	NSBP	FLTTP	TTP	TTPSF	DRI/ NYF	STIP	TAP	HSIP	CMAQ	RTGP
Safety program technical assessment (for peds/bicyclists)	●	▲	▲	▲	●	●	▲	●	●	▲	●	●	▲	▲	▲	▲	▲	▲	▲
Separated bicycle lanes	●	●	●	●	●	●	▲	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Shared use paths / transportation trails	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Sidewalks (new or retrofit)	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Signs, signals, signal improvements (incl accessible pedestrian signals) see note	●	●	●	●	●	●	▲	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Signing for pedestrian or bicycle routes	●	▲	●	●	●	●	▲	●	▲	●	●	●	●	▲	▲	▲	▲	▲	▲
Spot improvement programs (for pedestrian and bicycle facilities)	●	●	●	▲	●	●	●	●	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲
Stormwater impacts related to pedestrian and bicycle project impacts	●	●	●	●	●	●	●	●	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲
Traffic calming	●	▲	●	●	●	●	▲	●	▲	▲	●	●	●	▲	▲	▲	▲	▲	▲
Trail bridges	●	●	●	●	●	●	●	●	▲	▲	●	●	●	▲	▲	●	▲	▲	●
Trail construction and maintenance equipment	▲	▲	▲	▲	●	●	●	▲	▲	▲	■	■	■	▲	▲	●	▲	▲	●
Trail/highway crossings and intersections	●	●	●	●	●	●	●	●	▲	●	●	●	●	▲	▲	●	▲	▲	●
Trailside/trailhead facilities (restrooms, water, not general park amenities)	▲	▲	▲	▲	●	●	●	▲	▲	●	●	●	▲	▲	▲	●	▲	▲	●
Training	●	▲	▲	▲	●	●	●	●	●	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Training for law enforcement on ped/ bicyclist safety laws	●	▲	▲	▲	●	●	▲	●	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲
Tunnels / underpasses for pedestrians and/or bicyclists	●	●	●	●	●	●	●	●	▲	▲	●	●	●	▲	●	▲	▲	▲	▲
Vulnerable Road User Safety Assessment	●	▲	▲	▲	●	●	▲	●	●	▲	▲	●	●	▲	▲	●	▲	▲	▲

5.3 Performance Measures

Measuring the performance of active transportation networks is essential to ongoing success. Bicycle and pedestrian crash counts, crash records, and other data contribute to a business case for continued improvement of and investment in multimodal infrastructure. As recommendations in the CATP are constructed and programs are started, Monroe County must be able to measure whether these investments are paying active transportation dividends (i.e., more people walking and bicycling). An affirmative answer reinforces the Plan's legitimacy, and provides evidence that future investments will also yield positive results.

Ongoing data collection is critical for a successful performance measures program. Monroe County and its partners have a strong foundation to build upon when it comes to nonmotorized data collection. Monroe County already uses third party platforms, such as Miovision, to collect active transportation data at intersections.20 In 2017, GTC started counting bicyclists and pedestrians on 300 miles of trails using pneumatic tubes, cameras, and other technology. The Regional Traffic Operations Center (RTOC) is also a valuable data source and opportunity for collaboration, as it is jointly operated by NYSDOT, Monroe County, and other agencies.

Many resources provide guidance for pedestrian and bicycle data collection, including:

- New York State Traffic Monitoring Standards for Non-Motorized Short Count Data Collection
- Federal Highway Administration (FHWA) Traffic Monitoring Guide (TMG)
- National Cooperative Highway Research Program (NCHRP) Report 797 Guidebook on Pedestrian and Bicycle Data Collection

There are two types of performance measures:

1. Inventory measures evaluate specific implementation of recommended improvements. For example, they may include the number of miles of bike lanes, the number of enhanced crossings with a pedestrian refuge, the number of pedestrian activated signalized crossings, the number of miles of wide sidewalks, and the percentage of the population within a given distance of a bike facility. These inventory measures may also include the percentage increase in these improvements across a jurisdiction in a given year.
2. Outcome measures evaluate the effectiveness of active transportation in changing and shifting travel modes and reducing greenhouse gas emissions, providing viable alternative transportation choices, and improving quality of life and health. As an example, outcome measures could assess reductions in crash rates and increases in rates of bicycle, transit, or pedestrian travel on streets with active transportation improvements.

Bike Tour at 2019 Active Transportation Summit

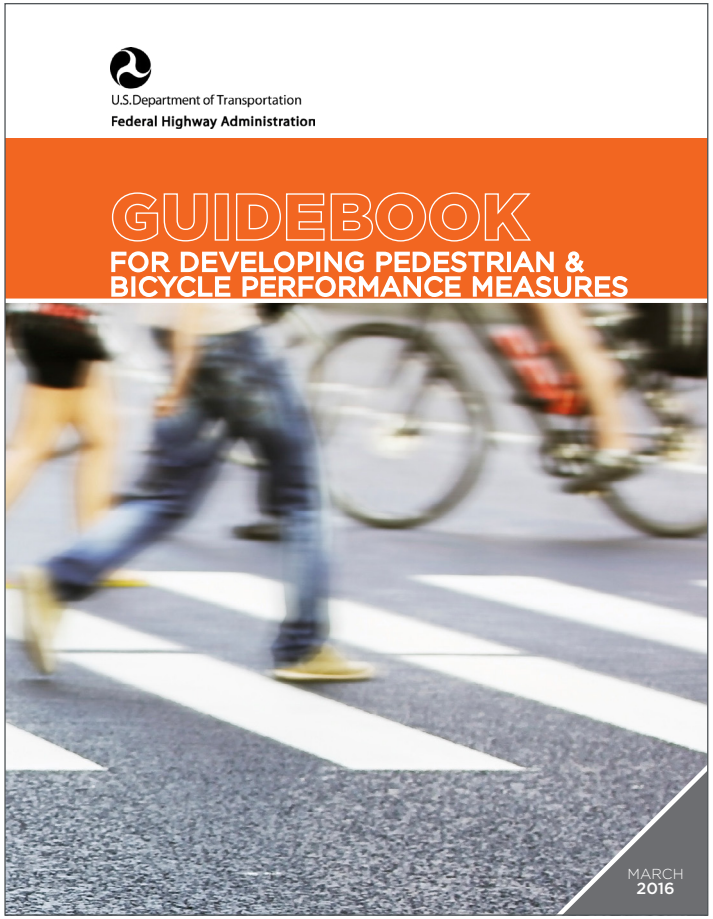
20 Other data sources (e.g., Streetlight, Streetlytics, Sidewalk Labs) collect data passively from smartphone devices.

The performance measures in Table 9 includes both types of measures, and provides a framework for how Monroe County can begin charting its progress towards a safer, more connected, and more comfortable active transportation network. The table includes the following information:

- Plan Goal – The table sorts recommended performance measures based on the most important plan goals identified by the Project Advisory Committee (listed in order of importance).[21]
- Performance Measure – The metric to be recorded for tracking changes.
- Unit of measurement – The quantifiable value of each performance measure.
- Example Target – Where available, example targets from other communities are included for reference. Monroe County will develop its own targets once baseline measurements are recorded for each category, and revisit them as new plans and priorities occur.

This CATP includes some ideas for the performance measures and recommends Monroe County commit more time to a robust performance measures program.[22] This includes establishing baseline measurements,[23] performance targets, data collection frequency, and data collection and analysis responsibility. Local MPO -Genesee Transportation Council (GTC) could provide technical assistance in data collection. Measurements also could be added to the project work plan and have a dedicated budget during the project scoping phase.

Federal Highway Administration also provides active transportation performance measure guidance: Guidebook for Developing Pedestrian and Bicycle Performance Measures.



21 Refer to Mentimeter results from PAC Meeting #1.

22 Monroe County will consider factoring in data collection responsibility while soliciting design consultants in the bidding process.

23 Baseline data are pivotal in selecting and designing active transportation facilities. These data should be collected before active transportation projects are installed to capture existing walking/biking volumes, crash rates, etc.

Table 9: Sample Performance Measures

Identified Plan Goal	Performance Measure	Unit of Measurement	Example Target
Network Connectivity[31]	Increase miles of bicycle network built annually	X% increase per year.	5% annual growth of miles of county roadways with shoulder widths greater than 4 feet.
	Increase miles of pedestrian network built annually[32]	X% increase per year.	N/A
	Route directness	Calculate the ratio of the shortest path route distance to straight-line distance for two selected points. The lowest number achievable would be 1.0, although unlikely, and lower results indicate strong, connected networks with little out-of-direction travel.[33]	N/A
Safety	Pedestrian and bicyclist injury rate	# of crashes per X miles traveled on network segment.	10% reduction over two years
		Ratio of reported crashes to pedestrian and bicycle trips.	
	Vehicular speeds	80th percentile speed.	Depends on existing conditions
Equity	Gender equity	% of female bicyclists.	N/A
	Age equity	% of children and seniors.	N/A
	Coverage	Proximity to vulnerable populations.	% low-income, minority, or other disadvantaged population within ¼ mile of project
	Crash distribution equity	Distribution of bicycle KSI by race/poverty rate over time.	% low-income/minority KSI is comparable to share of population

24 See also Network Completeness and Connectivity Index in FHWA's Guidebook For Developing Pedestrian & Bicycle Performance Measures.

25 Municipalities are responsible for sidewalks and trails (exclusive of parks).

26 Refer to FHWA's Guidebook For Developing Pedestrian & Bicycle Performance Measures for more information.

Identified Plan Goal	Performance Measure	Unit of Measurement	Example Target
Accessibility	Access to community Destinations[34]	Proportion of residences within a ½-mile walking distance or 2-mile biking distance to specific key destinations, such as parks or elementary schools.	N/A
		Proportion of residences within ½-mile walking distance or 2-mile biking distance to specific key destinations along a completed pedestrian or bicycle facility.	N/A
		Proportion of residences with access to a predefined set of "community destinations" within a 20-minute walk or 20-minute bike ride.	90%
		Percent of the network complete for pedestrians and bicyclists within ½ mile and 2 miles respectively of each designated destination.	N/A
		Number of destinations that can be accessed within a ½ mile along a walking network from a given point on the network.	N/A
		Number of destinations within 3 miles along a bicycling network from a given point on the network.	N/A
	Access to jobs[35]	Total # of jobs that may be accessed in less than 30 or 45 minutes using active transportation.	N/A
	Adherence to accessibility laws[36]	» Percent of total street crossings that meet accessibility standards (e.g. curb ramps, crosswalk grade and cross slope, and no median barriers). » Percent of total sidewalk miles that meet accessibility standards (e.g. slopes, obstructions, protruding objects, changes in levels, etc.). » Percent of total pedestrian signals that have Accessible Pedestrian Signal (APS) technology. » Percent of total bus stops that are connected to streets, sidewalks or pedestrian paths by an accessible route and that have accessible boarding and alighting areas. » Percent of total shared use paths that are accessible.	N/A

27 Ibid

Identified Plan Goal	Performance Measure	Unit of Measurement	Example Target
Network Utilization	Annual average daily pedestrian traffic (AADPT) and annual average daily bicycle traffic (AADBT)	Conduct pre-/post-construction AADBT and AADPT estimates on TIP projects.[37]	N/A
Livability	User perceptions	Bicycle level of traffic stress (LTS).	80% of important destinations connected via low-stress network (LTS 1 or 2).
		Pedestrian LTS analysis at intersections or mid-block crossings.	N/A
		On-site user surveys that assess user comfort and perception of safety under various scenarios	N/A
	Physical activity and health	» Average minutes of physical activity per day per capita. » Average minutes of physical activity attributable to active transportation per day. » Portion of people regularly using active transportation modes. » Portion of population that is inactive or active.	N/A

28 Ibid

29 Ibid

30 Selecting locations to best represent the different patterns, levels, and types of walking and bicycling behaviors within a counting area allows agencies to generate annual average daily pedestrian traffic (AADPT) and annual average daily bicycle traffic (AADBT) that most accurately reflect current levels.

Plan Outcome

The CATP is comprised of four recommendation elements: the countywide bicycle network, the pedestrian accessibility scan, the facility toolkit, and the program and policy recommendations.

1. The CATP's centerpiece is a 150-mile conceptual active transportation network. The network will provide a critical framework for bicycle travel in Monroe County.1 Each segment will be prioritized for implementation, recognizing that some may take longer to develop due to their complexity.
2. A set of general pedestrian accessibility recommendations provides basic guidance to improve pedestrian accessibility throughout Monroe County
3. The Facility Toolkit provides additional guidance for both bicycle and pedestrian accommodations; the toolkit should be the starting point for Monroe County and its partners to determine the most appropriate treatment for a given location.
4. This CATP also includes a set of Program and Policy Recommendations to support the vision and goals outlined above. Monroe County, together with municipal governments, and stakeholders will take a lead role in implementing these initiatives.

Next Steps:

- Prioritize key network connections and identify projects for short-term implementation
- Use Facility Toolkit as design guidance for priority projects
- Coordinate with appropriate jurisdictions and other key stakeholders on implementing priority projects
- Acquire funding for priority projects
- Engage the public, businesses, institutions, and other organizations to support active transportation infrastructure and plan implementation.

Monroe County, NY

Countywide Active Transportation Plan

DRAFT **JUNE 2023**