



City of Rochester  
Comprehensive Access and Mobility Plan

## Bikeable City Report



Cover photo from patrickashley via wikimedia

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# 1 Biking in Rochester: Snapshot

## The Bicycle Network Today

The vast majority of Rochester residents (75%) live within a 10-minute bike ride of a commercial activity center. Accordingly, development of quality bike facilities could make short trips like these more attractive to take by bike. In the past decade, Rochester has conducted multiple studies to create a more welcoming bicycling network, including the 2011 Rochester Bicycle Master Plan, which identified a key network for on-street biking connectivity and the 2015 Bicycle Boulevard Master Plan, which outlines a network of low-volume, low-stress streets where bicycle travel can be prioritized.

Since the Bicycle Master Plan was completed in 2011, the City has installed over 60 miles of bike lanes and cycle tracks and has added bike boxes at six signalized intersections. Rochester's extensive trail system offers bicyclists access to 35 miles of recreational trails connecting all corners of the city. The City also offers a range of end-of-trip amenities for bicyclists, including indoor bike lockers and sheltered bike racks at six City-owned parking garages,<sup>1</sup> four bicycle repair stations in city parks,<sup>2</sup> and hundreds of curbside bike racks throughout the city.<sup>3</sup> The City recently opened its first bike corral, a type of bike rack installed in place of a single on-street parking space to provide bicycle parking where existing sidewalk space cannot accommodate it.

The Bicycle Boulevard Master Plan found that 65% of Rochester's streets carry less than 5,000 cars a day, which makes much of Rochester's street network a great candidate for the development of a lower-stress biking network, which would build on the City's momentum to make Rochester a city more welcoming to people of all ages, incomes and abilities. The City has installed **X** miles of Bicycle Boulevards to-date. See Page 5-8 of the State of the City Transportation System Factbook.

In 2016, the City received the a Bicycle Friendly Community Bronze level award from the League of American Bicyclists for its commitment to improving cycling conditions through investments in cycling promotion, education programs, infrastructure, and

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<sup>1</sup> These garages include the High Falls Garage, Sister Cities Garage, Court Street Garage, South Avenue Garage, Washington Square Garage and East End Garage.

<sup>2</sup> Bicycle repair station locations include Sister Cities Parking Garage, Genesee Valley Sports Complex, Maplewood Park, and High Falls.

<sup>3</sup> Over 100 new bike racks were installed in 2011 and 2012, according to the City.  
<http://www.cityofrochester.gov/bikerochester/>

pro-bicycling policies. To achieve a Silver level award, the City would need to make the following changes:<sup>4</sup>

- Increase the percentage of high-speed roads with bike facilities
- Increase the bicycle network mileage as a percentage of overall roadway network mileage.
- Increase the share of the City's transportation budget spent on bicycling
- Specify mode share and safety goals.
- Create an official Bicycle & Pedestrian Advisory Committee (BPAC) to create a systematic method of gathering public feedback into the development of important policies, plans, and projects.
- Create a comprehensive safety plan or broader Vision Zero policy to support engineering, education, and enforcement strategies that reduce traffic crashes and fatalities.
- Conduct a Level of Traffic Stress analysis to better understand the ability of the bicycle network to connect traveler origins and destinations.
- Ensure that the Pace bikeshare system is complemented by strategic infrastructure and wayfinding improvements.

In 2018, the City was ranked 2.8 stars out of 5 by Places for Bikes, a national active transportation advocacy group. This rating aggregates mobility indicators such as safety, demographic and gender gaps in biking, bike ridership, bike network completeness, and the growth in bike facilities and events.<sup>5</sup> The City's best score (3.7 out of 5) was in its growth in bike facilities and events, while its worst score was in overall ridership (1.6 out of 5). Overall, Rochester ranks 22<sup>nd</sup> out of the 484 cities that Places for Bikes evaluated, within the top 5% alongside peers such as Atlanta, GA, and Alexandria, VA.

The City launched a partnership with Zagster to provide bicycle sharing services in July 2017. With 340 bikes spread across 46 stations, the average ride lasted 25 minutes during its first season of implementation (the service runs from April to November). Nearly 52,000 rides were taken during the first year of operation. Now known as Pace, the system was modified and expanded in 2018. Early trials of the

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<sup>4</sup> League of American Bicyclists. 2016. Rochester, NY Rankings.  
[https://bikeleague.org/sites/default/files/bfareportcards/BFC\\_Fall\\_2016\\_ReportCard\\_Rochester\\_NY.pdf](https://bikeleague.org/sites/default/files/bfareportcards/BFC_Fall_2016_ReportCard_Rochester_NY.pdf)

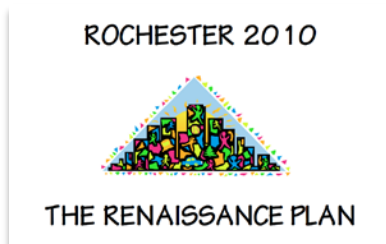
<sup>5</sup> Places for Bikes. 2018. "Rochester, NY | City Scorecard."  
<https://cityratings.peopleforbikes.org/wp-content/uploads/2018/04/rochesterNY.pdf>

new system, which combines dock-based and dockless bikes, showed 6-7 times the ridership of other Zagster programs in other mid-sized cities.<sup>6</sup>

## Policy and Planning Context

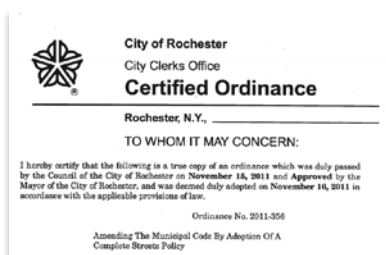
Previous land use, transportation, and corridor planning efforts in Rochester help set the stage for the Bikeable City Report. The report builds on past work to direct Rochester toward a more bikeable future. The following excerpts provide brief descriptions of select city plans and policies, focused on the ways each addresses biking or connecting to the biking network.

### Rochester 2010: The Renaissance Plan (2000)



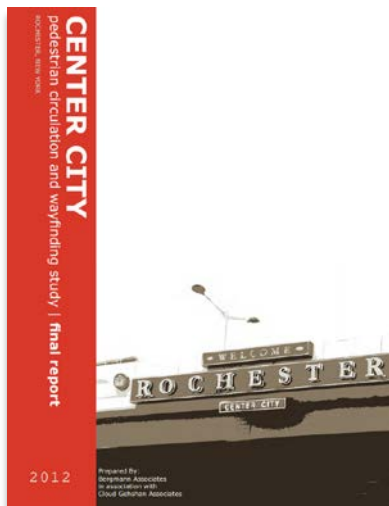
- Outlines the City's goals, principles, and implementation actions related to subject areas including economic development, environmental management, infrastructure, land use/zoning, and mobility/transportation, among others
- Outlines that Rochester is not an especially safe city for people walking and biking, with relatively few on-street bike lanes, or off-street paths connecting major destinations.
- Outlines a Vital Urban Village concept containing a network of accessible bicycle paths connecting major open spaces and parks, and streetscape amenities, including bicycle racks

### Complete Streets Policy – Adopted 2011



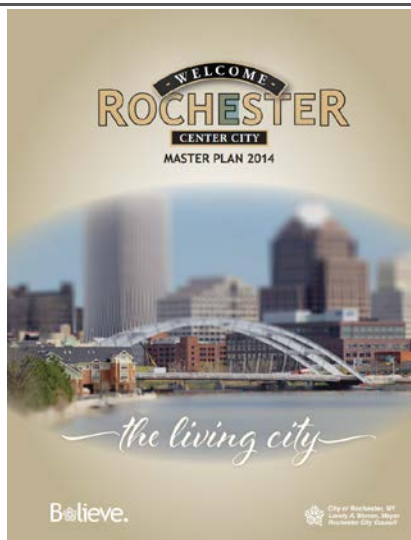
- Ensures that all future street design efforts will fully consider the needs of pedestrians, bicyclists, transit users and persons with disabilities.
- Helps to improve public safety by installing bike lanes, as well as lowering motor vehicle travel speeds and improving sight distances.

<sup>6</sup> Sisson, Patrick. 2017. "New Bike-Share System Promises 'dockless without the Drawbacks.'" Curbed. November 30, 2017. <https://www.curbed.com/2017/11/30/16720066/bike-share-dockless-pace-cities-cycling>.



### Center City Pedestrian Circulation and Wayfinding Study – 2012

- Attempts to improve the visitor wayfinding experience within Rochester's Center City
- Recommends enhancement and connection of existing wayfinding systems
- Puts forth an organizing system and style recommendations for cyclist wayfinding



### Center City Master Plan Update (2014)

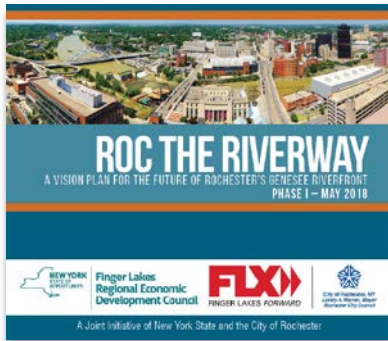
- Helps the City measure progress on key mobility indicators, identify further research and analysis, prioritize multimodal transportation projects, and secure funding for implementation.
- Prioritizes key Center City projects such as street and sidewalk improvements, redevelopment of vacant lots and surface parking, and enhancements to trails and off-street paths.

### Bicycle Master Plan (2011)



- The plan's recommendations serve as a framework for the city's future investment in bicycle infrastructure.
- The network-wide bicycle facility recommendations were divided into four priority groups, based on required implementation effort. Additional bicycle facilities and treatments such as sharrows and bike boulevards were also included.





### Roc the Riverway (2018)

- Produces seamless and accessible pedestrian and bicycle connections along both sides of the river via the Genesee Riverway Trail and neighborhood linkages to the trail
- Will reinvest in pedestrian and bicycle bridges, separate pedestrian and bicycle traffic as a part of trail upgrades, and create improved streetscape experiences where streets bisect the river

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### Bicycle Boulevard Master Plan (2015)

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- Outlines a network of low-volume, low-stress streets where bicycle travel is prioritized. The ideal bike boulevards have low traffic volumes (under 3,000 AADT), complete gaps in the bike network, connect key destinations, and have low speed limits (25 mph or less).
- Proposes a 50-mile-long network, to be implemented over several years.
- Recommends street enhancements to corridors selected as bicycle boulevards, including signs and pavement markings, traffic calming strategies, intersection treatments, and marketing.

## 2 Vision and Goals

Rochester's transportation system improves quality of life for Rochesterians by enabling safe, convenient, and comfortable access to work, life, and play, and enabling connectivity between neighborhoods. The system works for users of all ages and abilities whether they walk, bike, drive or take public transportation, and supports Rochester businesses by enabling the movement of goods and personnel. The system activates transit and pedestrian oriented design to create a city of short distances, and is clear and user-friendly, with the highest standards of sustainability, design, and maintenance. The system works proactively and strategically to advance mobility improvements for all road users, rather than a piecemeal approach that prioritizes projects around the needs of roadway maintenance.

### **Make Cycling More Attractive to a Wider Demographic**

The 2012 GTC Rochester Area Transportation Study (Household Travel Survey) found that men are twice as likely as women to travel by bike in the Rochester Transportation Management Area, which consists of Monroe County and adjacent portions of Livingston, Ontario, and Wayne Counties. This survey also indicated that residents with incomes less than \$50,000 a year are more likely to choose options other than driving to get to work and that people of color account for 17% of all walking and biking trips in the Rochester region, despite comprising only 8% of the region's population. Providing expanded, well-connected bike infrastructure – particularly protected facilities – will be paramount to transforming Rochester into a safer and more welcoming bicycling city for riders of all ages, backgrounds, and abilities. The City should continue to track demographic trends as they relate to cycling to measure success in making Rochester more bikeable for people of all backgrounds.

### **Reduce Greenhouse Gas Footprint by Inviting More Multimodal Trips**

The 2016 Rochester Climate Action Plan cites a goal of reducing greenhouse gas emissions by 20 percent from its 2010 levels by 2020 and by 40 percent from its 2010 levels by 2040. Among other actions, the Plan calls for a 1 percent annual reduction in VMT through 2040. To achieve this, the plan promotes increasing multimodal trips through the development of complete streets and implementation of the Bicycle Master Plan as key ways to reduce the transportation impact of emissions and improving first-last mile connections. Bicycling alone can help the City achieve significant greenhouse gas reductions. A study by the Institute for Transportation and Development Policy (ITDP) found that by increasing bicycling mode share to 11% by

2030 14% by 2050 - both ambitious targets – would alone reduce transportation-related greenhouse gas emissions by 11%.<sup>7</sup>

## **Expand the Low-Stress Bike Network**

Rochester aspires to complement its extensive off-street path system with growth in its on-street network, especially in the development of low-stress bicycle facilities such as protected lanes and bicycle boulevards. Streets with vehicular travel volumes below 3,000 cars a day and speeds below 25 miles per hour present the ideal conditions for bicycle travel. These streets should continue to be prioritized in the proposed network to build connected bicycle boulevards, provided they connect with key employment centers and other regional destinations. Implementing the neighborhood traffic calming proposed in the 2011 Bicycle Master Plan will also serve to reduce cycling stress on Rochester streets.

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<sup>7</sup> Institute for Transportation & Development Policy. 2015. A Global High Shift Cycling Scenario: The Potential for Dramatically Increasing Bicycle and E-bike Use in Cities Around the World, with Estimated Energy, CO<sub>2</sub>, and Cost Impacts. <https://www.itdp.org/2015/11/12/a-global-high-shift-cycling-scenario/>

## 3 Needs Assessment

### Connecting Demand to Destinations

Rochester is located within a region well-known for its off-street paths but is less known for its on-street facilities. While trails provide excellent public health and recreational opportunities, they do not typically provide adequate direct transportation connections that might cause a casual cyclist to choose biking as a commute or personal business option. 2016 American Community Survey data presented in the State of the City Transportation System Factbook (pages 1-5, 2-4, and 2-5) shows that only 1% of Rochester commutes by bike, despite an average commute length of 4.1 miles, a distance that is considered conducive to bike commuting, as well as favorable topography. Rochester possesses little terrain variation aside from some steep areas along the river north of Downtown and a series of hills near its south-east border.

Since the completion of the 2011 Bicycle Master Plan, the City has installed over 60 lane miles of on-street bicycle facilities and an additional 140 miles are planned. However, gaps remain in the network and the nature of some existing bike facilities still make it challenging for certain prospective cyclists to bike around the city.

Areas of Rochester that would be expected to have high levels of pedestrian activity are opportunities for more efficient trip-making through cycling. Spatial representations of this active transportation trip demand and the location of activity centers and parks show where important bicycle facility gaps remain.

While motorized and transit network users take for granted that their networks are continuous and can focus on other aspects to improve them, such as the speeds or headways, the main focus for cyclists continues to be user safety. Users perceive discontinuous non-motorized networks to be unsafe and unattractive. Therefore, priority for bicycle network improvements should be to fill-in gaps along the most frequent routes between already existing bicycle facilities. Subsequently, the network should be completed using key links that create more direct access to key destinations as well as the trail system.

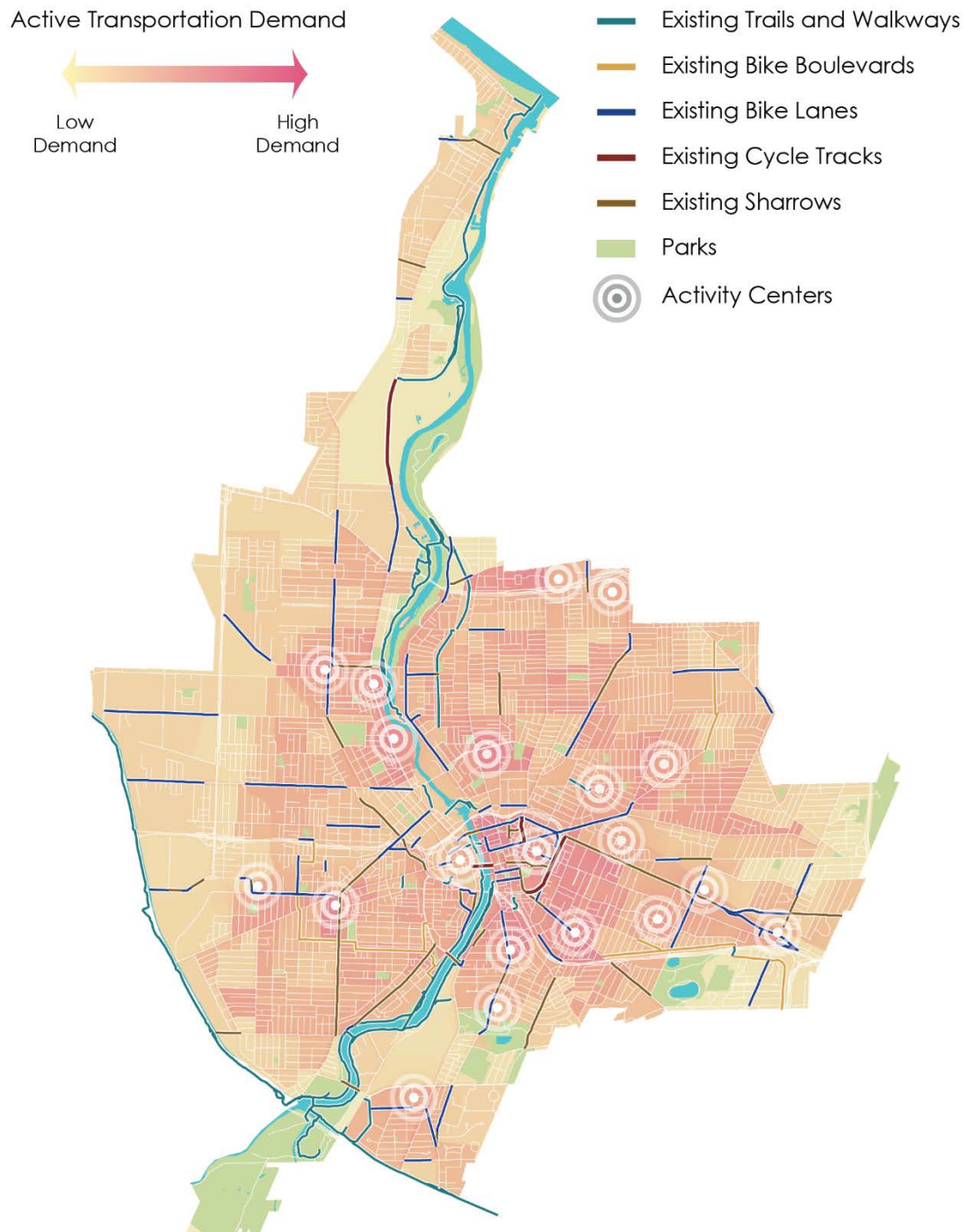
### Analysis

Active transportation demand in Rochester, as measured by population density, zero-vehicle households, low-income households, employment density, transit ridership, and proximity to activity centers, is shown in Figure 1. This map is a broad indicator of where people are most likely to walk and bike under current network conditions, overlaid with existing bike facilities. The following figures, Figure 2 and Figure 3, use this analysis as the basis for a gap assessment that evaluates which streets have the greatest potential to facilitate the greatest number of bike trips on street segments that currently have no bike facilities. This gap assessment is this

study's primary means of prioritizing bike facility investments that serve the greatest number of potential bike trips.

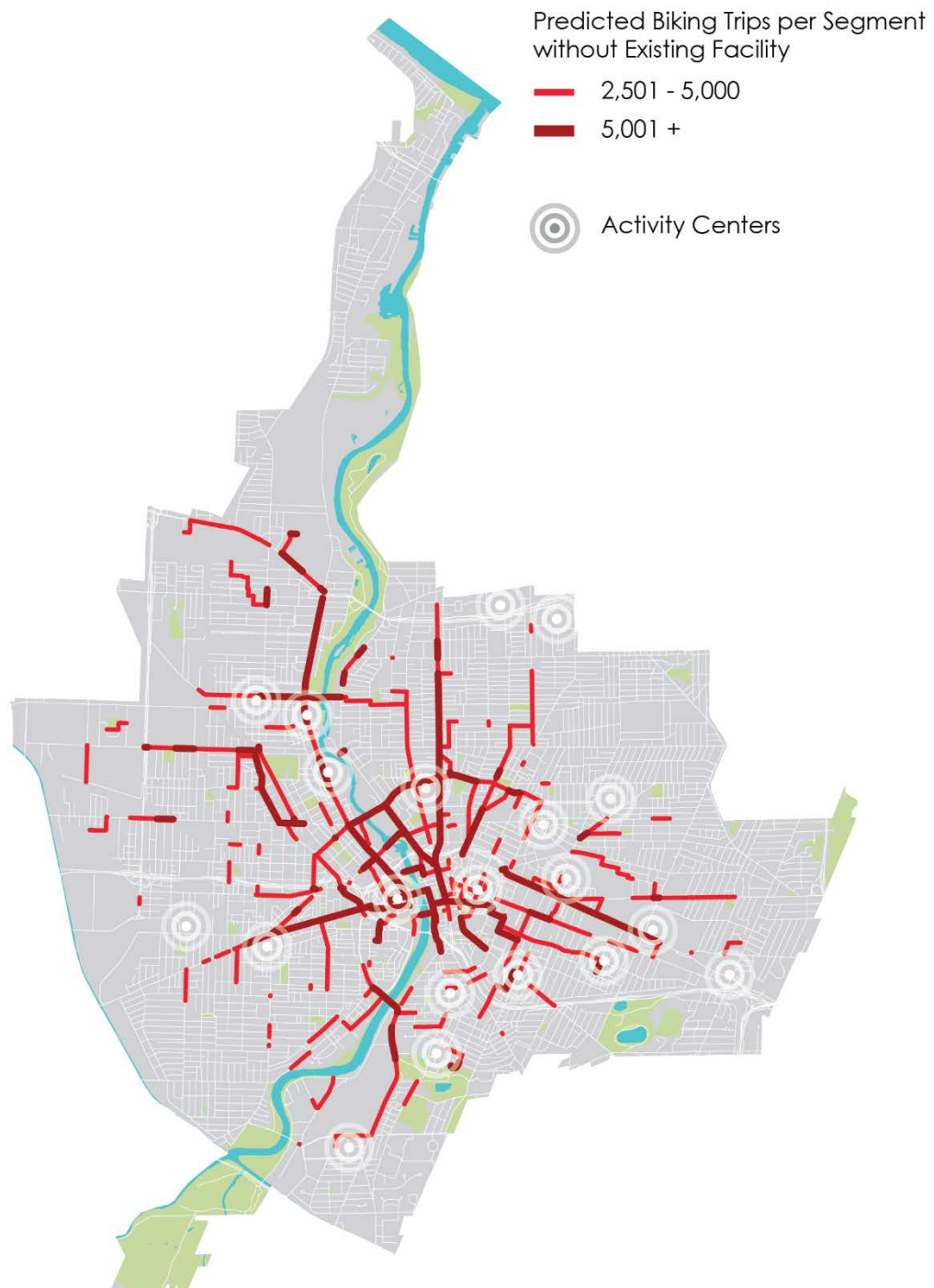
This analysis uses the RTC's Regional Travel Demand Model to estimate which street segments would see the highest bike volumes under the assumption that all short trips under five miles in length were made by bike. While not all short trips are expected to be made by bike outside of this exercise, short vehicle trips are more likely to shift to bike trips than trips longer than five miles because short bike trips typically feature travel times more competitive with vehicular trips of the same distance. Figure 2 spatially displays the assigned short trips, representing the desire lines of potential cyclists in an effort to identify network segments with high potential bike demand that do not currently feature bicycle-only facilities.

Segments colored in red show lack of bike facility, and the bike demand is represented with the segment thickness. Thicker dark red segments are those that would serve a higher number of potential bicycle trips, but where there is no existing bike facility. These corridors are considered the highest priority for bike improvements in general. Segments shown in blue already have a bike facility, although the thickest lines shown in blue are forecast to carry the highest bike volumes and may therefore be good candidates for protected lanes. Bike facilities are defined as existing trails, walkways, bike boulevards, bike lanes, and cycle tracks. Note that sharrows are not included as part of the bike network, and thus streets such as University Ave are colored in red.

**Figure 1 Active Transportation Demand and Existing Bicycle Facilities**

Sources: American Community Survey 2016, LEHD 2015, Google API, Genesee Transportation Council, City of Rochester

Figure 2 Predicted Bicycle Trip Flows and Activity Centers



Sources: Genesee Transportation Council, City of Rochester, Google API



A bike network designed to accommodate all-purpose trips shorter than 5 miles has been estimated at 636 miles. 11% of this network already has some type of facility (excluding sharrows), as shown in Figure 2. Using the Regional Travel Demand Model,<sup>8</sup> these shorter trips were assigned to the shortest possible paths in the non-motorized network defined as all streets and trails excluding limited access expressways. This assignment indicates locations that would attract increases in cyclist volumes related to potential mode share shifts.

Figure 3 lists links without dedicated bicycle facilities where expected demand would be highest if all trips under five miles were made by bicycle. On Lyell Avenue, adding 0.6 miles of bicycle facilities to what already exists would extend the network for almost 7,000 potential trips. Likewise, conversion of 1.5 miles of sharrows on University Avenue to bike lanes could more comfortably accommodate an even greater number of potential short trips.

**Figure 3 Road Segment with Highest Potential Bicycle Demand**

	Miles – No Bike Facility	Miles – with Bike Facility	Average Assigned Trips
State Street	1.1		10,322
Bausch Street	0.0		9,982
Andrews Street	0.1	0.5	9,726
University Avenue	1.5	1.1	9,293
West Main Street	1.1	0.2	8,242
East Broad Street	0.6	0.2	7,866
Genesee River Ped Bridge (Plymouth)		0.6	7,518
St Paul Street	1.4	2.0	7,284
Driving Park Avenue	1.2	0.6	7,259
Bittner Street	0.1		7,240
Avenue E	0.4		7,201
Lyell Avenue	0.6	2.1	6,867

The existing trail network plays a key role in handling potential biking trips, as trails provide an alternate route for some higher vehicular traffic routes without bicycle facilities. As an example, the Genesee Riverway Trail compensates for gaps on Lake

<sup>8</sup> The Regional Travel Demand Model is maintained by the GTC and consists of a four-step model that includes trip generation, trip distribution, mode choice, and vehicle assignment. More details about the model's data sources, structure, validation process, and outputs are available here: <https://www.gtcmpo.org/sites/default/files/pdf/2010/GTCModelDocumentation.pdf>



Avenue, but it should be recognized that the sections of the Riverway Trail that follow the river gorge feature significant elevation changes and can be daunting for non-advanced cyclists.

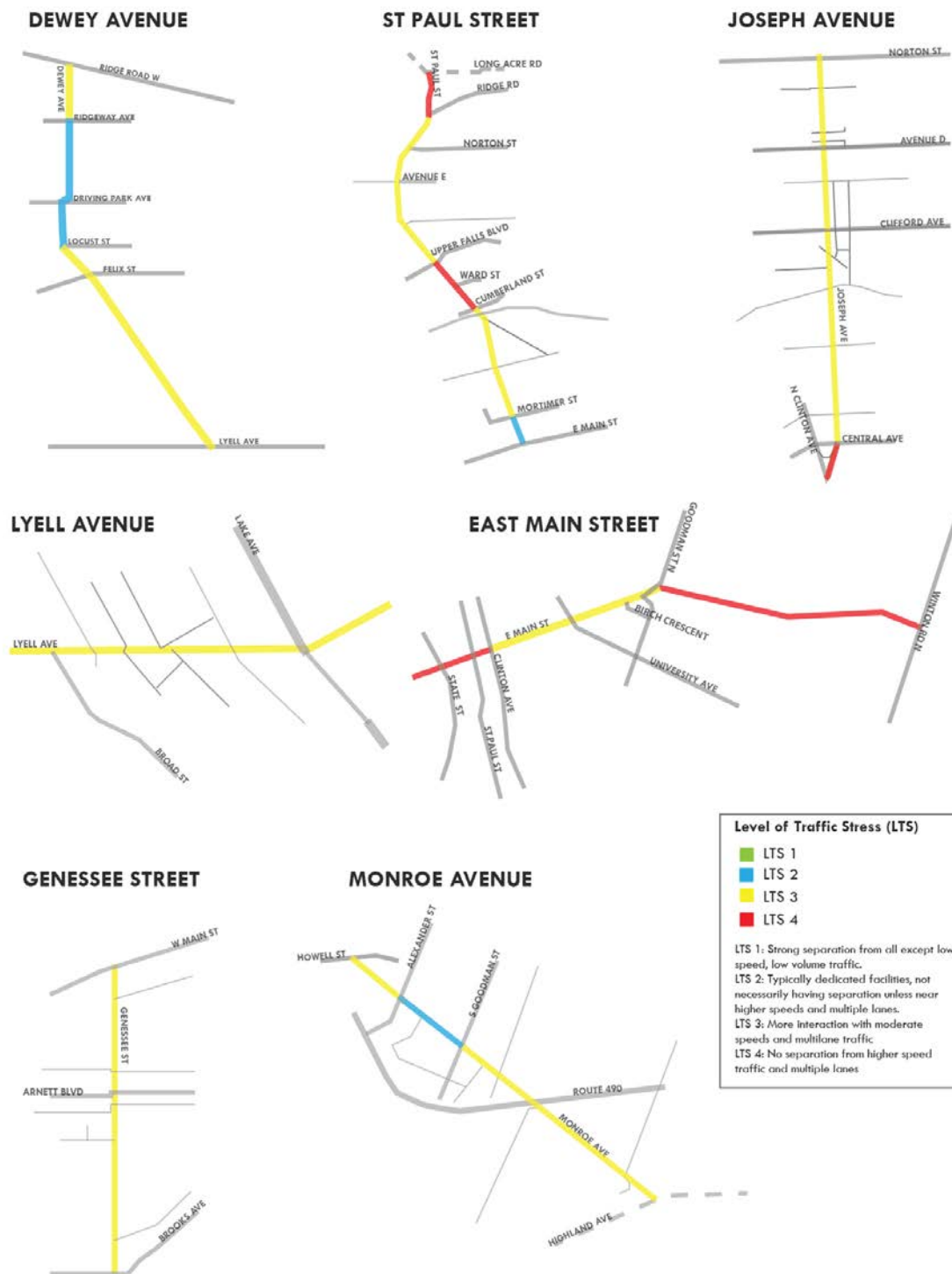
As indicated in Figure 3, the streets connecting downtown with the rest of the city generally accumulate the highest demand of potential bike trips, including State Street, University Avenue, West Main Street, and St. Paul Street. East-west connections such as Driving Park Avenue, Avenue E, and Lyell Avenue would act as useful feeders to this radial network and would help create a continuous and more attractive network.

## Network Quality

### Bike Level of Stress

The study team modeled the relative comfort of cyclists, identified in terms of “Level of Stress,” for some of the city’s most important direct transportation corridors (Figure 4). In general, low traffic and low speed local streets are more comfortable for people of all ages and abilities to ride a bicycle. Low stress routes show up as green on the map to indicate the higher level of comfort perceived while cycling. Red and orange streets do not feel comfortable for the majority of bicycle users. These streets typically have higher traffic speeds and/or little physical distance separating bicyclists from motorized traffic. Traffic volumes, number of lanes, the presence and nature of bike facilities all go into the perceived stress and comfort of using any bicycle facility. Appendix A includes the methodology used to calculate the bicycle Level of Stress.

Figure 4 Bicycle Level of Stress – Select Corridors



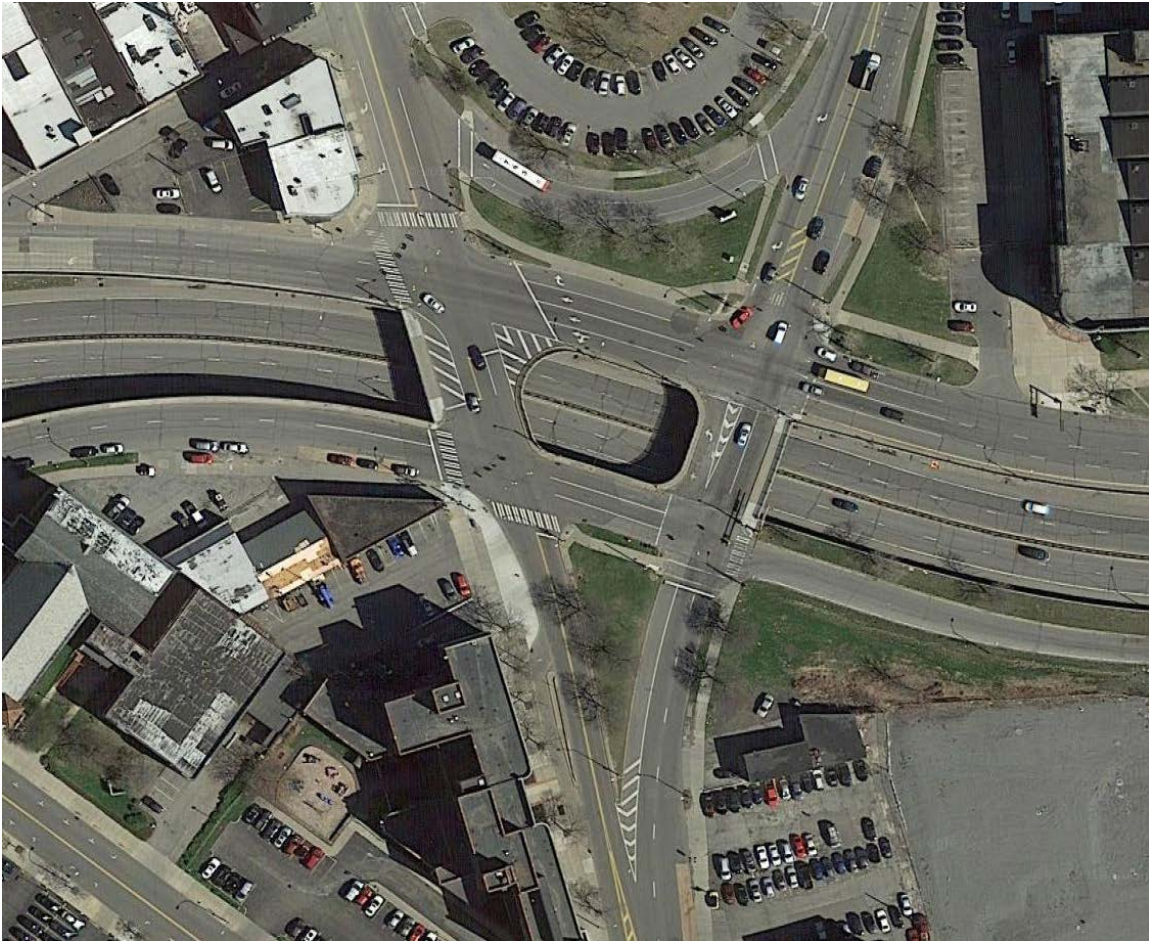
## Key Conflict Areas

Bicyclists in Rochester encounter the following major conflicts:

- Intersections with multiple lanes of traffic in each direction, particularly with high traffic volumes
- Lack of safe bicycle crossings or bike-friendly intersection treatments, particularly on high-volume, high-speed streets.
- Narrow railroad underpasses with poor lighting and lane striping, particularly connecting Downtown and the north side neighborhoods
- Gaps in the existing network
- Wide, high-speed arterials with non-existing or unprotected bike lanes
- Sharrow-designated network segments with high traffic volumes (Figure 6)

Figure 5 displays an intersection that should be a gateway into and from downtown, especially due to its proximity to intercity transportation stations, but that exhibits a low level of cycling comfort due to high volumes, multiple crossings, and lack of bike infrastructure.

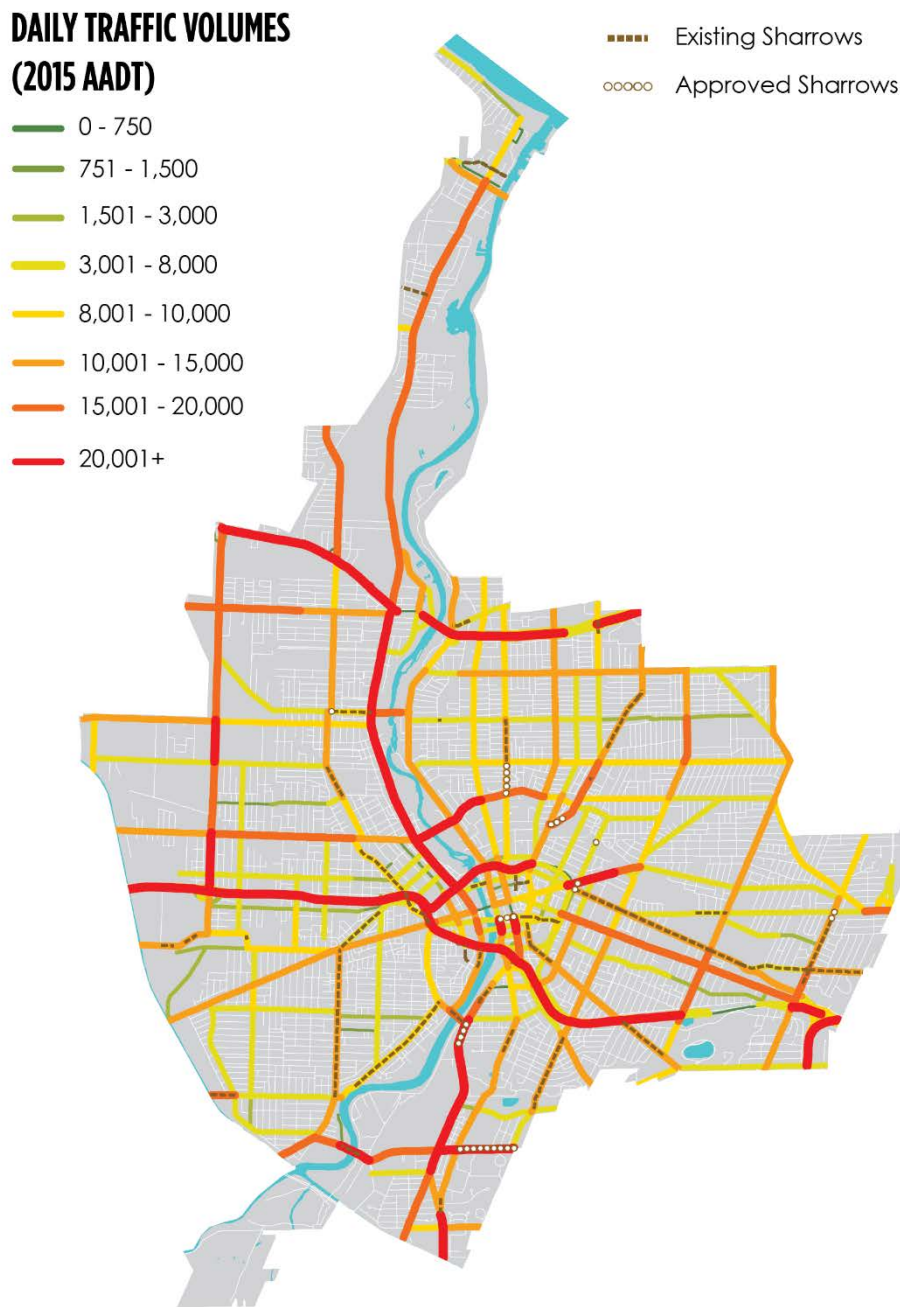
Figure 5 Cumberland St-Joseph Ave-Clinton Ave intersection



Source: Google

Figure 6 shows how most designated sharrows are found in road segments with greater average daily traffic than 8,000 vehicles per day, far higher than the 4,000-6,000 vehicle range, which is the recommended level of vehicle traffic for implementing this type of bicycle facility. In addition, sharrows are recommended in locations that experience lower vehicular traffic speed. Examples of where sharrows currently exist in Rochester include portions of University Avenue and Genesee Street, which both carry over 10,000 vehicles per day.

Figure 6 Conflict Areas: Sharrows on High Vehicular Traffic Streets



Sources: New York State Department of Transportation, City of Rochester

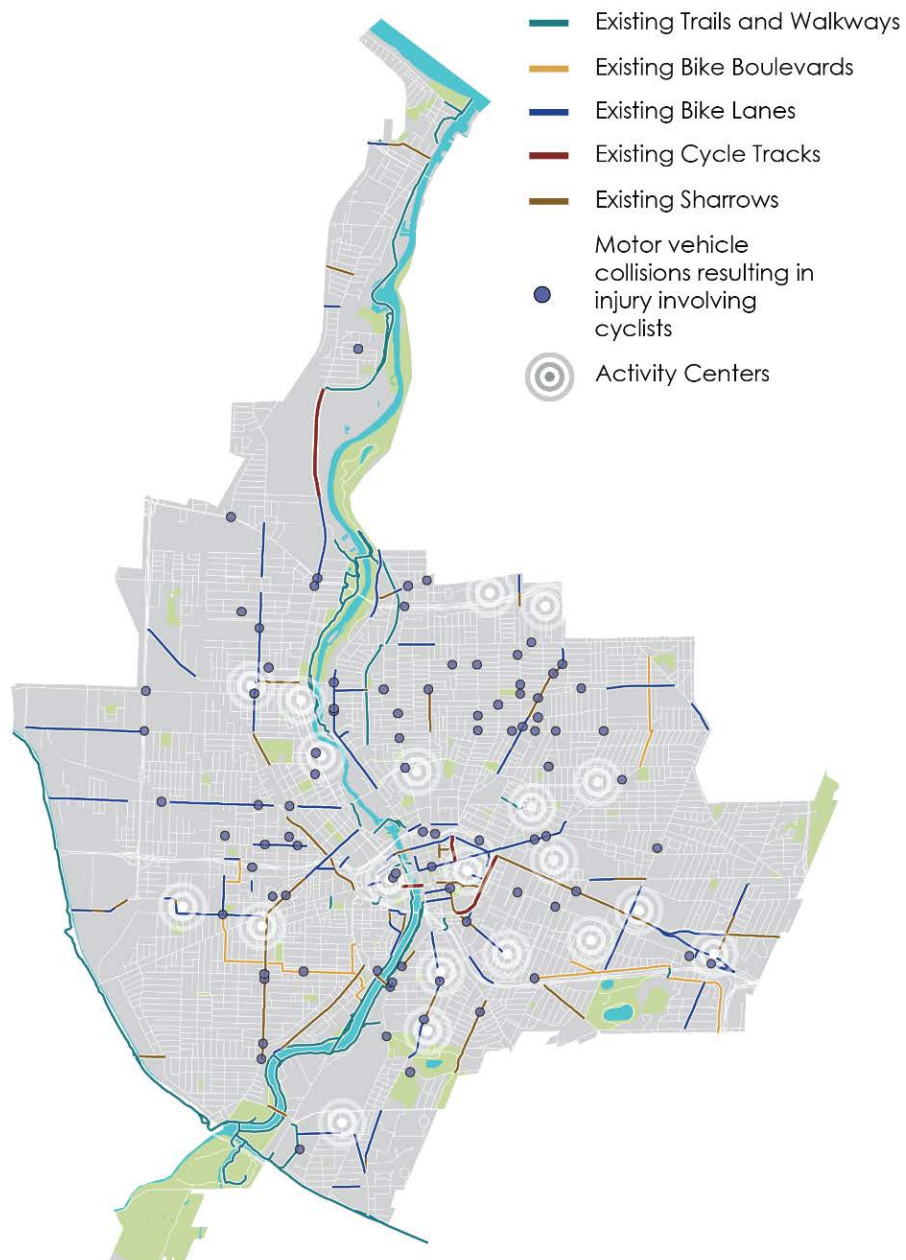
## Vehicle-Bicycle Collision Location

There is a noticeable trend of crashes involving bicyclists occurring on the major roadways in Rochester, including all types of arterials, but other lower speed local



streets also experience bicycle-related collisions. Bicycle crashes occur on streets with and without dedicated bicycle facilities, though more often on the latter. While few exceptions exist to the citywide 30 miles per hour speed limit, roadway design can encourage excessive speeds, increasing the risk of collision with other vehicles.

**Figure 7 Motor Vehicle Collisions Involving Cyclists (2017)**



Sources: Genesee Transportation Council, City of Rochester, NYSDOT Accident Location Information System, 2017

## 4 Community Survey

The public engagement events provided residents an opportunity to provide feedback and to participate in an online survey to better understand conditions, travel patterns, and the community's interest in biking.

The online survey was accessible through the project website. In total 339 people provided input on existing and desired bicycle conditions. Although this survey represents only a small portion of the Rochester population, the responses identify some common trends in travel behavior, issues and challenges, and future priorities for biking around the city.

The balance of gender and age of people responding to the survey may be an indication that people of all ages and abilities ride in Rochester. Typically, a community that has more women and older people identifying as bicycle riders, has a network where people feel safe and comfortable.

Key Findings from the survey indicate that bicycling is a popular mode choice among these survey respondents to go around the city (10%), close to transit and over walking (7%). Safety is a major concern for bicycling. While the majority of participants stated they felt biking in Rochester was moderately safe, there is still room for improvement.

### Safety and Perception

There is an overwhelming desire to bike more and to prioritize bicycle facilities within the city. For the 36% of respondents who said they would like to bike more, the most frequent cited obstacle was "safety concerns" which was cited by 46% of respondents. The next most frequent obstacles cited were "lack of bike infrastructure" at 26%, "hostile/uneducated drivers" at 18%, "disconnected bike Infrastructure" at 13%, and "heavy traffic" also at 13%.

The results indicate that perceived lack of safety was a key obstacle to respondents' biking more than they do now. Respondents indicated they want more bike infrastructure to increase their safety, but also indicated that sharing space with cars is dangerous, not only because of speeds and volume, but also due to perceived dangerous driving behavior. The responses suggest that separating bikes and cars with a physical barrier is likely to be supported by this population.

Aside from safety, respondents choose not to bike due to the weather, travel distances, a lack of places to store their bike, not having the time to bike, a need to transport people and things, no place to shower at work, and snow plowed into bike lanes.

## Big Ideas for Rochester

At pop-up events and in a survey, respondents were asked about what their big idea would be to make the following vision come to reality, *“Rochester’s transportation system...works for users of all ages and abilities whether they walk, bike, drive or take public transportation”*. Regarding biking in Rochester, people want to be able to bike comfortably. Some suggested the city focus more on people who bike and walk when they develop roads. Many of the respondents’ suggestions focused on the right of way, suggesting widening sidewalks, reducing parking, and adding bike lanes, cycle tracks, seating, bus lanes, speed bumps, traffic-calming measures, more stop signs, and fixing and adding pedestrian signals. Trails, road diets and the elimination of parking requirements, better pedestrian connectivity, and more frequent bus service were also proposed.



## 5 Challenges and Opportunities

Building on preliminary research, stakeholder input, and data analysis, there are three key challenge topics that impact bikeability in Rochester (see Figure 8). Each challenge presents an opportunity for the City to build on what's working well and to learn from the efforts of others. The opportunities are further explored in the Recommendations section, which presents the types of solutions that can be applied to the challenges facing Rochester.

This section lays out problem statements and matches them with potential solutions that have been used effectively in cities across the nation. These leading practices are meant to inspire and expand the tools available to make Rochester more bikeable. Many key activity centers are located along arterial corridors with high speeds and traffic volumes. Often these corridors are disconnected from residential trip origins, and the lack of a coherent street grid makes connecting these origins and destinations challenging. Rochester can prioritize adding new and upgrading existing bike facilities that connect key activity centers with adjacent residential corridors, particularly to existing and planned bike boulevards. Add intersection improvements for bikes along key arterial corridors (such as those shown in Figure 2) to facilitate riders' transitions from lower-volume/speed corridors to higher-volume/speed corridors.

The most appropriate bicycle facilities to implement on any given street depend highly on the local roadway context, such as the posted speed limit, motor vehicle volumes and roadway configuration (see Figure 9). Because very few streets in Rochester have posted speed limits below 30 mph, the range of bicycle facilities appropriate for all ages and abilities is limited in most cases: reducing speed limits through signage and traffic calming, shrinking multi-lane roadways to a single lane in each direction, or protected bicycle lanes. As shown in Figure 9, any implementation of bicycle boulevards, or of conventional or buffered bicycle lanes, requires first reducing vehicle speeds to 25 mph or less to be safe for all ages and abilities.

Figure 8 Key Challenges and Opportunities for Rochester

Topic	Challenge	Opportunity
Bicycling Environment	Three-quarters of Rochester residents are within a 10-minute ride to an activity center. However, public outreach results indicate that residents define the environment as hostile with uneducated drivers and high traffic.	Rochester can <b>add more traffic calming features along the bike network</b> as they add protected facilities, increase driver awareness regarding the presence of cyclists and their rights, and design bicycle facilities to improve the overall cyclist experience.
Connections and Modal Conflict	While the City has built many facilities, future priorities need to be focused on connecting infrastructure between home locations and activity centers to create a more useable network.	<b>Fill in the gaps</b> with high biking demand and in corridors where there are some existing bike facilities, prioritizing areas with low income, youth and zero-vehicle households.
Safety and Maintenance	Even portions of the bicycle network experience collisions resulting in injury. Bikers are discouraged from biking where they feel unsafe or where facilities are too narrow and/or unprotected near heavy and fast vehicular traffic flows.	Design bike facilities for all ages and abilities (Figure 9). <b>Upgrade current bike facilities to protected bike lanes</b> in high traffic volumes locations. <b>Extend the bike network across intersections.</b> Employ traffic calming within bike facility design.
Understanding Facility Comfort Level	While existing and expected facility type and location are included in GIS databases, a direct link to traffic volumes and roadway geometry is not yet part of the City's dataset. Comfort levels on existing streets, as well as the perceived comfort level and likelihood of use of a proposed on-street facility, are unknown.	Rochester can perform a citywide Level of Traffic Stress analysis to further help pinpoint priority investments in the network that ensure future facilities respond to the needs of all levels of cyclists.

Figure 9 Contextual Guidance for Selecting All Ages &amp; Abilities Bikeways

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed <sup>9</sup>	Target Max. Motor Vehicle Volume	Motor Vehicle Lanes	Key Operational Considerations <sup>10</sup>	
Any		Any	Any of the following: high curbside loading activity, frequent buses, motor vehicle congestion, or turning conflicts	Protected Bicycle Lane
< 25 mph	<500 – 1,500	No centerline, or single lane one-way	<50 motor vehicles per hour in peak direction at peak hour	Bicycle Boulevard
	<1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane
	<3,000 – 6,000			Buffered or Protected Bicycle Lane
	Greater than 6,000			Protected Bicycle Lane
	Any	Multiple lanes per direction		Protected Bicycle Lane
Greater than 26 mph <sup>11</sup>	<6,000	Single lane each direction	Low curbside activity, or low congestion pressure	Protected Bicycle Lane, or Reduce Speed
		Multiple lanes per direction		Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed
	Greater than 6,000	Any	Any	Protected Bicycle Lane, or Bicycle Path
High-speed, limited-access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Bike Path with Separate Walkway or Protected Bicycle Lane
			Low pedestrian volume	Shared-Use Path or Protected Bicycle Lane

Source: NACTO

<sup>9</sup> While posted or 85<sup>th</sup> percentile motor vehicle speed are commonly used design speed targets, 95<sup>th</sup> percentile speed captures high-end speeding, which causes greater stress to bicyclists and more frequent passing events. Setting target speed based on this threshold results in a higher level of bicycling comfort for the full range of riders.

<sup>10</sup> Operational factors that lead to bikeway conflicts are reasons to provide protected bike lanes regardless of motor vehicle speeds and volumes.

<sup>11</sup> Setting 25 mph as a motor vehicle speed threshold for providing protected bikeways is consistent with many cities' traffic safety and Vision Zero policies. However, some cities use a 30 mph posted speed limit as a threshold for protected bikeways, consistent with providing Level of Traffic Streest level 2 (LTS 2) that can effectively reduce stress and accommodate more types of riders.

## 6 Bikeable City Peer Review

As mentioned above, it is important for the City of Rochester to build on the success of what peer cities have been able to accomplish. The table below tabulates the recent progress made by Rochester's peer cities. The City's Bicycle Master Plan also includes a peer review with additional statistics that supplement those provided here.

**Figure 10 Bikeable City Peer Review**

	Pittsburgh, PA	Buffalo, NY	Richmond, VA	Salt Lake City, UT	Grand Rapids, MI	Akron, OH	Rochester NY
Bicycle Mode Share (Commute Trips)	2.9%	1.4%	2.4%	3.2%	1.3% bike	0.1% bike	1.3%
Miles of Bike Lanes	77	Approx. 25	20	150 including trails	111.6	25 current 16 planned	50 miles of bike lanes and cycle tracks 31 miles of trails 10 miles of bike boulevards
Protected Bike Lanes	2.2 Miles	Yes	13 Miles	Yes	25 Miles	-	4.6 Miles
Bike Education or Incentive Programs	Bike PGH provides education videos and live classes and promote biking through events.	GoBike Buffalo leads workshops and social bike promotion events.	Bikewalk RVA provides education and incentive programs.	BikeUtah leads educational workshops and programs to promote bicycling in Utah.	-	Akron MPO's "Switching Gears" program promotes biking and provides education and incentives.	The New York Bicycling Coalition now has an education coordinator in Rochester responsible for coordinating safe cycling classes and presentations.
Use of Traffic Calming Measures	High visibility crossings, Various traffic calming devices	Road Diets, Various traffic calming devices	Road Diets, various traffic calming devices	Bumpouts	Speed humps, Traffic calming pavement markings	Road Diets	Neighborhood Traffic Calming Program includes bumpouts, diverters, and neighborhood traffic circles.

## 7 Recommendations

### Performance Measures

A successful Rochester bicycle network should be measured by:

- An increase in bicycle mode share
- A decrease in per capita injury severity
- An overall improvement to public health

### Connect Network Gaps

The City should prioritize connecting infrastructure, expanding facilities between home locations and activity centers to create a more useable network. The City should identify ways to incrementally implement previously performed trail linkage planning in tandem with upgrading the on-street network. While the Genesee Riverway Trail serves most north-south trips, the current bike network lacks some of the east-west connections to feed it. See Figure 3.

Starting from a principle that streets are public spaces for people, street design must consider the needs of people walking, driving, cycling, and taking transit, all in a constrained space. Rochester should reassess streets currently marked with sharrows for conversion into protected bike lanes where average daily traffic volumes are greater than 6,000 vehicles per day and 85<sup>th</sup> percentile speeds are higher than 26 miles per hour.

The assessment needs to take into consideration curb-to-curb widths as a primary constraint, but also elements meant to promote pedestrian safety, transit loading, and other corridor access such as curb extensions and parking lanes. Figure 11 shows a minimum 36 feet wide cross-section to accommodate protected bike lanes. Unprotected bike lanes require a 32 feet wide cross-section.

Vehicle travel lanes should be 11' wide where significant heavy vehicles and/or transit occurs. Curbside lanes can accommodate several uses: parking lanes should be 7' side, while bike lanes should have a minimum width of 5' per direction and a buffer of a minimum of 1' to 3', depending on the adjacent traffic volumes, with physical protection if possible. A standard parking lane should be able to be converted into a bike lane and buffer wide enough to allow the installation of bollards.

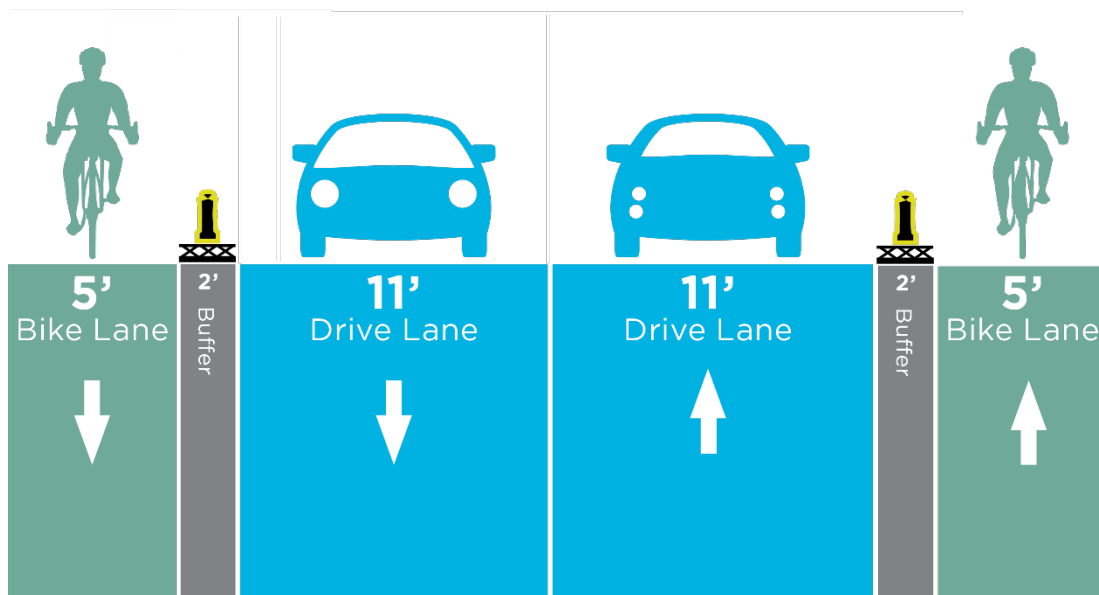
Following these guidelines, there are a number of potential conversion locations within the City of Rochester. Referring to Figure 2 to identify locations of high potential demand, and comparing to vehicular volumes and existing facility locations, protected bike lane installation locations can be prescribed. Examples include:

- University Avenue
- Plymouth Avenue
- Brown Street
- Broad Street between Smith and Allen Streets
- Genesee Street south of Melrose Street
- Portland Avenue between North Street and Central Park
- Monroe Avenue between Howell and Alexander Streets
- Monroe Avenue east of Goodman Street

Examples where curb extensions preclude full sharrow conversion include University Avenue, Plymouth Avenue, and Brown Street, all 28 feet wide from curb extension to opposite curb. The portion of Broad Street cited does not have enough room to accommodate protected bike lanes. Unprotected bike lanes are possible, but require the repurposing of the on-street parking on one side of the street.

Prioritization is required based on the emphasis for this or any constrained corridor that physically cannot provide facilities for all modes. Highlighted portions of Genesee Street, Portland Avenue, and Monroe Avenue meet physical requirements that may allow for the preservation on one parking lane while providing protected on-street bicycle facilities.

**Figure 11 Street Design Guidelines – Protected Bike Lanes**



### Design Context-Suited Facilities

Proper bicycle facility design is rooted in context. Streets with fast, heavy traffic require greater separation between bike riders and traffic lanes. Streets with very low

traffic speeds and volumes allow cars and bikes to share the same space. If Rochester is typical of national data, only about 1% of its residents would feel comfortable riding on typical city streets. Meanwhile, about 60% of residents would be interested in riding a bike, but only feel comfortable on separated bikeways or very low speed, low traffic volume streets (another 32% are not interested in cycling at all<sup>12</sup>).

Rochester should choose bicycle facilities that are suited to unique roadway and traffic conditions. Figure 9 provides identification guidelines. For more detail, see the NACTO Urban Bikeway Design Guide at [www.nacto.org](http://www.nacto.org).

## Fully Integrate the Network

To fully integrate bicycling as a mode of transportation into the existing street network, bike facilities need to take people to places they want to go in a direct way that is separated as much as possible from motor vehicle traffic.

The City should ensure that facilities also have crossing applications at intersections and driveways through stamped/colored applications, reinforcing the safety and visibility of the system in these areas. For several years, the City has experimented with different types of green markings to draw attention to bike facilities, particularly at intersections or where vehicles and bicycles have to cross travel lanes, such as a right-turn lane. The green markings are used either to highlight conventional or protected bicycle lanes that run through intersections or to create “bike boxes,” recessed stop areas at intersections where bicyclists can get a head start ahead of motor vehicles when stopped at red lights. The green markings contribute to cyclist comfort and keep them well-positioned in the bike lane through the intersection, while also reducing confusion for drivers. Below is a selection of intersections where the City has implemented green markings to improve safety and create a lower-stress bike network:

- Court Street & Clinton Avenue/Square
- Court Street & Chestnut Street
- Ford Street & Mount Hope Avenue
- University Avenue & East Main Street
- Monroe Avenue & Goodman Street
- Ames Street & West Avenue

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<sup>12</sup> Roger Geller, 2006



**Figure 12 High Visibility Bicycle Facility Intersection Treatments**



Source: NACTO

## Provide Best Practice Bike Parking

Bicycle Parking is a critical component of a bicycle network. It can take the form of bicycle racks on sidewalks, indoor-secure bike parking in parking garages, and/or parking “swaps” where bicycle parking takes the place of one or two car parking spaces. One other important feature in promoting bicycle commuting is secure indoor bicycle parking at major places of employment. The League of American Bicyclists and LEED ND both provide guidance on the supply of bike parking that should be provided by use. Many communities also look to the zoning code of Cambridge, MA as a best practice model of how much and what type of bike parking to require. Furthermore, the Association of Pedestrian and Bicycle Professionals (APBP) provides a comprehensive guide on what type of racks work best for securing bicycles in an efficient manner, with additional guidance on how they should be sited near buildings (<https://www.apbp.org/page/Publications>).

**Figure 13 U-Shaped Bike Rack**



Source: Nelson\Nygaard – Grand Rapids Vital Streets



Currently, the City requires new development to provide off-street bicycle parking equal to 10% of the vehicle parking requirements for the property (minimum two bicycle spaces), for all multifamily housing (over 10 units) as well as commercial and industrial uses. Additionally, the City allows applicants to petition for reductions in off-street motor vehicle parking if the proposed development provides bicycle parking or makes special accommodations for bicyclists.<sup>13</sup> Special accommodations may include bicycle lockers and employee shower and changing facilities.

## **Support Winter Maintenance Requirements**

To sustain a functioning bike system year-round in a climate like Rochester's, the City should plan for winter maintenance of bike facilities and for summer re-painting and repairs. The City should coordinate snow storage with other corridor needs to ensure snow is not stored within any bicycles facilities that are present.

As Rochester continues to build out its protected network, the City should procure and deploy adequate snow-clearing equipment capable of plowing cycletracks and paved trails. Priority should be given to plowing bike facilities on street segments that carry the highest potential bike volumes, such as segments shown in blue in Figure 2.

Given the wear and tear that comes with salt, snow, and plowing, some cities seek grant funding to re-paint their bike infrastructure every 1 – 2 years (example: Somerville, MA) and NACTO provides guidance on selecting and maintaining more durable materials.<sup>14</sup> Re-painting costs range from \$1.20-1.60/square foot for paint, \$8-11/square foot for durable liquid pavement markings, and \$10-14/square foot for thermoplastic. ()

## **Enforce Misuse of Bike Lanes**

In order to ensure adequate safety of bike travel where dedicated facilities exist, the City should educate the public regarding bicycle-only facilities and engage in active enforcement against parking and loading in those facilities. Cities like Portland, OR and Chicago, IL provide postcards and resources online that educate drivers on the preferred method of interaction with new facilities like protected lanes and bike boxes.

Rochester should consider deploying a system piloted by the Boston Department of New Urban Mechanics for enforcing illegal stopping and standing in curbside bike lanes as well as measuring the effectiveness of the pilot system. This system uses a

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<sup>13</sup> City of Rochester Municipal Code. § 120-173 C. (3) | Off Street Parking. <https://ecode360.com/8682809>

<sup>14</sup> NACTO. 2013. Urban Bikeway Design Guide. <https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/colored-pavement-material-guidance/>

bicycle police detail to flag illegally parked vehicles with a first-time warning notice, followed by a parking violation if the vehicle remains illegally parked on second inspection. Such issues are becoming an increasingly important priority with the increase in curbside pickup and drop-off of users of private Transportation Network Companies like Uber and Lyft.

### Expand Cyclist Focused Wayfinding

Knowing where you are going by bike is essential. Good wayfinding helps to combine a network of discrete bicycle facilities into a single continuous route that can connect people to destinations. Directional wayfinding signage accomplishes this by helping residents and visitors navigate the bikeway network by providing cues at key decision points. Wayfinding highlights key destinations and indicates the best bike routes to get people to their destinations. People traveling by bicycle who follow wayfinding signs and pavement markings benefit from riding on the designated bicycle facilities and experience the most comfortable crossings of major roadways.

Rochester should use a combination of MUTCD compliant signs, pavement markings, colors, and other symbols to differentiate bike routes from other streets. This “branding” of the bikeway network improves user’s ease of use and celebrates the act of bicycling. Wayfinding on the trail network, especially the Genesee Riverway Trail, is comprehensive. The on-street bike network would benefit from more frequent wayfinding signage and pavement markings.

**Figure 14 MUTCD Compliant Bicycle Boulevard Wayfinding**



## 8 Priority Projects

1. Design the bike network so that it is bikeable for all ages and abilities
  - a. Convert sharrows on streets with AADT higher than 4,000 into bike lanes or protected bike lanes where speeds are higher than 26 mph and AADT higher than 6,000. Considerations included.
    - i. Broad St between Smith and Allen – 32 feet wide, on-street parking present
    - ii. Genesee St south of Melrose – 43 feet wide, on-street parking present
    - iii. Portland Ave between North and Central Park – 43 feet wide, on-street parking present
    - iv. Monroe Ave between Howell and Alexander – 43 feet wide, on-street parking present
    - v. Monroe Avenue east of Goodman Street – 46 feet wide, on-street parking present
  - b. Convert bike lanes into protected bike lanes where speeds are higher than 26 mph and AADT higher than 6,000.
2. Prioritize corridors with few gaps, where providing new miles of bike facilities will provide a continuous network connecting key destinations. See Figure 2.
  - a. South Ave
  - b. Lyell Ave
  - c. Dewey Ave
  - d. Broad St
  - e. W Main St
  - f. Driving Park Ave-Ave E
  - g. Webster Ave
  - h. Chestnut St
  - i. Joseph Ave
  - j. Elmwood Ave
3. Prioritize the projects listed in points 1 and 2 when located in low income communities with low car ownership, a high youth or senior population percentage, and near activity centers.

## 9 Appendix

### Bicycle Level of Stress Methodology

Low-stress bicycle facilities are those that are specifically designed to provide a comfortable experience for bicyclists of all ages and abilities. Often this means dedicated space on- or off-street, with some kind of separation from vehicular traffic. However, facilities such as bicycle boulevards, which are simply low-speed, low-volume streets with markings for bicyclists can also be considered low-stress facilities, and can often provide critical links between other facilities in the overall network.

A 2012 study conducted by the Mineta Transportation Institute identified four different levels of traffic stress to help classify the comfort levels experienced using different bicycle facility types.

#### Level 1

Level 1 is a suitable environment for bicyclists of all ages and abilities, providing a relaxing experience with little traffic stress. Level 1 environments are often separated from vehicular traffic or on a street with slow speeds (25 mph or less) and low traffic volumes.

#### Level 2

Level 2 is a suitable environment for most adult bicyclists, but is slightly more stressful than level 1. Level 2 environments may include some separation from vehicular traffic, but often are directly adjacent to a slow speed (30 mph or less) travel lane.

#### Level 3

Level 3 is a suitable environment for experienced bicyclists, but is not up to the level of stress experienced riding in multi-lane traffic. Level 3 environments may offer dedicated space for bicycles adjacent to moderate speed (35 mph or less) vehicular traffic, but more often are simply shared spaces with vehicles on moderate speed streets.

#### Level 4

Level 4 is not a desirable environment for bicyclists, exhibiting high speeds (35 mph or more) and high volumes of traffic with no protection for bicyclists.

Figure 15 Level of Stress Assessment for Bicycle Facilities

	MORE COMFORTABLE		LESS COMFORTABLE	
	1	2	3	4
SHARED ON-STREET FACILITIES				
SPEED LIMIT <i>residential</i>	25 MPH or less	30 MPH	30 MPH	35+ MPH
SPEED LIMIT <i>non-residential</i>		25 MPH or less	30 MPH	35+ MPH
NUMBER OF LANES	2 Lanes	2-3 Lanes	2-3 Lanes	4+ Lanes
INTERSECTING STREETS	Narrow and Calm	Calm	Busy	Wide and Busy
DEDICATED BIKE LANES				
SPEED LIMIT	30 MPH or less	30 MPH	35 MPH	40+ MPH
LANES EACH DIRECTION <i>without median</i>	1 Lane	1 Lane	2+ Lanes	2+ Lanes
LANES EACH DIRECTION <i>with median</i>	1-2 Lanes	2 Lanes	3+ Lanes	3+ Lanes
BIKE LANE WIDTH	6 Feet	5-6 Feet	5 Feet	<5 Feet
INTERSECTION TREATMENTS	Continuous	Shared	Shared	Non-Continuous
SEPARATION	Separation moves a facility one comfort level to the left			
OFF-STREET FACILITIES				
CROSSING FREQUENCY	Rare	Infrequent	Moderate	Frequent
TYPE OF CROSSINGS	Narrow and Calm, or Controlled	Uncontrolled, but Narrow	Uncontrolled, Wide, or Fast	Uncontrolled, Wide, and Fast

Figure 16 Level of Traffic Stress (LTS) Analysis

CORRIDOR 1: ST PAUL STREET												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
ST PAUL ST	RIDGE RD E	N CITY LINE	11,863	ACTUAL	2015	739.6	4	30	50	6ft	No	4
ST PAUL ST	NORTON ST	RIDGE RD E	8,850	ACTUAL	2015	739.6	2	30	35	N/A	Yes	3
ST PAUL ST	AVE E	NORTON ST	13,651	FORECAST	2015	723.5	3	30	35	6ft	Yes, NB only	3
ST PAUL ST	UPPER FALLS BLVD	AVE E	14,903	FORECAST	2015	1,721.3	3	30	35	6ft	Yes, NB only	3
ST PAUL ST	N L WARD ST	UPPER FALLS BLVD	13,880	FORECAST	2015	529.0	4	30	35	N/A	No	4
ST PAUL ST	CUMBERLAND ST EB	N L WARD ST	12,704	FORECAST	2015	370.6	2	30	35	N/A	No	4
ST PAUL ST	MAIN ST E	CUMBERLAND ST EB	14,256	FORECAST	2015	482.4	3	30	35	N/A	Yes	3
ST PAUL ST	MAIN ST E	CUMBERLAND ST EB	14,256	FORECAST	2015	482.4	3	30	35	6ft	No	2
CORRIDOR 2: LYELL AVE												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
LYELL AVE	BROAD ST & LYELL AVE	LAKE AVE	12,254	FORECAST	2015	900.6	2	30	35	6ft	Yes	3
CORRIDOR 3: EAST MAIN STREET												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
MAIN ST WEST	MAIN ST	STATE ST	11318	FORECAST	2015	541.1	3	30	35	N/A	Yes	4
MAIN ST EAST	STATE ST	ST PAUL ST	0	NO DATA	2015	305.8	5	30	35	N/A	No	4
MAIN ST EAST	ST PAUL ST	CLINTON AVE	13282	FORECAST	2015	225.5	4	30	35	N/A	No	4
MAIN ST EAST	CLINTON AVE	UNIVERSITY AVE	8474	FORECAST	2015	869.1	4	30	35	6ft	Yes, EB only	3
MAIN ST EAST	UNIVERSITY AVE	BIRCH CRESCENT	20594	FORECAST	2015	692.1	5	30	35	6ft	Yes, EB only	3
MAIN ST EAST	BIRCH CRESCENT	GOODMAN ST N	17853	FORECAST	2015	386.4	5	30	35	N/A	No	4
MAIN ST EAST	GOODMAN ST N	WINTON RD N	7246	FORECAST	2015	2,929.5	3	30	35	N/A	Yes	4
MAIN ST EAST	GOODMAN ST N	WINTON RD N	7246	FORECAST	2015	2,929.5	2	30	35	N/A	Yes	4
CORRIDOR 4: MONROE AVENUE												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
31, MONROE AVE	ACC INNER LOOP MONROE AVE	RT 490I UNDER	11548	FORECAST	2015	1739.4	2	30	35	N/A	Yes	3

31, MONROE AVE	ACC INNER LOOP MONROE AVE	RT 490I UNDER	11549	FORECAST	2015	1739.4	2	30	35	5ft	Yes, NB only	2
31, MONROE AVE	ACC INNER LOOP MONROE AVE	RT 490I UNDER	11548	FORECAST	2015	1739.4	2	30	35	N/A	Yes	3
31, MONROE AVE	RT 490I UNDER	ROCHESTER CL	10398	FORECAST	2015	1079.0	2	30	35	N/A	Yes	3

CORRIDOR 5: DEWEY AVENUE												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
DEWEY AVE	RIDGEWAY AVE	RIDGE RD W	9,833	FORECAST	2015	699.2	3	30	35	N/A	Yes	3
DEWEY AVE	DRIVING PK AVE	RIDGEWAY AVE	14,505	FORECAST	2015	1447.2	3	30	35	6ft	Yes	2
DEWEY AVE	FELIX ST	DRIVING PK AVE	10,025	FORECAST	2015	1284.6	2	30	35	6ft	Yes	2
DEWEY AVE	FELIX ST	DRIVING PK AVE	10,025	FORECAST	2015	1284.6	2	30	35	N/A	No	3
DEWEY AVE	LYELL AVE	FELIX ST	9,126	ACTUAL	2015	666.6	2	30	35	N/A	Yes	3

CORRIDOR 6: GENESEE ST												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
GENESEE ST	BROOKS AVE	190S ARNETT BL	10645	FORECAST	2015	1206.1	2	30	35	N/A	Yes	3
GENESEE ST	190S ARNETT BL	MAIN ST WEST	13487	ACTUAL	2015	912.7	2	30	35	N/A	Yes	3

CORRIDOR 7: JOSEPH ST												
TDV_ROUTE	BEGINDESC	ENDDESC	AADT	AADT_TYPE	AADT_YEAR	Shape_Le_1	#_Lanes	City_SpeedLimit	Prevailing_Speed	Bike_Ln_Width	Has_Parking	LTS SCORE
JOSEPH AVE	S L AVE D	NORTON ST	9,868	ACTUAL	2015	658.9	2	30	35	N/A	Yes	3
JOSEPH AVE	S L CLIFFORD A	S L AVE D	10,791	FORECAST	2015	610.7	2	30	35	N/A	Yes	3
JOSEPH AVE	N HERMAN ST	S L CLIFFORD A	11,103	FORECAST	2015	433.8	2	30	35	N/A	Yes	3
JOSEPH AVE	CENTRAL AVE	N HERMAN ST	8,514	FORECAST	2015	932.1	2	30	35	N/A	Yes	3
JOSEPH AVE	CLINTON AVE NO	CENTRAL AVE	9,312	FORECAST	2015	305.4	4	30	35	N/A	No	4