

KATS PEDESTRIAN, GREENWAYS AND TRANSIT PLAN



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A group of cyclists explores the Portage Creek Greenway near Celery Flats

WHAT IS KATS MOVES?

Like many metropolitan regions in the United States, the Kalamazoo Area Transportation Study (KATS) Region has made advances in installing dedicated bicycle and pedestrian facilities throughout the area and is working toward constructing a larger network. In the Fall of 2016, KATS initiated the KATS Moves Pedestrian, Greenways and Transit Plan to identify new linkages between the existing transit network and the non-motorized infrastructure in the region. KATS Moves is intended to be a continuation of the recently adopted 2045 Metropolitan Transportation Plan and will attempt to meet the following goals:

- Increase the transit, bicycle and pedestrian mode share through planning for an integrated network of facilities
- Identify greenway corridors that can best protect natural resources while providing regional transportation connections
- Define and prioritize greenway projects while determining their financial feasibility

This plan lays out a prioritization and implementation guide for KATS and the region's municipalities to use for improving the bicycle and pedestrian network in the region. The public will be able to use the KATS Moves plan to understand where and when new non-motorized projects will be constructed in the future.

Currently, the Region has just over 250 miles of non-motorized facilities, many of which are dedicated shoulders. The Region has over 70 miles of off-road, shared-use paths, like the Kalamazoo River Valley Trail (KRVT), the Eliason Nature Reserve Trail and the trails through Portage Creek Park. Nearly 55 miles of bike lanes currently exist in the KATS Region.

An additional 275 miles of potential new bicycle facilities have been identified throughout the region as a part of KATS Moves. The majority of the planned facilities in this study come in the form of shared-use paths and dedicated on-street facilities. Shared-use paths are typically paved, oversized paths that exist off of the street, like a trail. On-street facilities exist in the street right-of-way and are demarcated from vehicle lanes with paint and/or additional materials like bollards.

Some of the key potential shared-use paths would extend from the ends of the KRVT, connect the Portage Creek Greenway to Kalamazoo, connect Vicksburg to Portage, and connect to and expand upon the KMetro transit system. If all planning efforts come to fruition, the KATS Region could have nearly 525 miles of non-motorized infrastructure.



A cyclist rides along the Kalamazoo River Valley Trail near the Riverview Launch community space

PLANNED NETWORK AND BENEFITS



IDENTIFICATION PROCESS

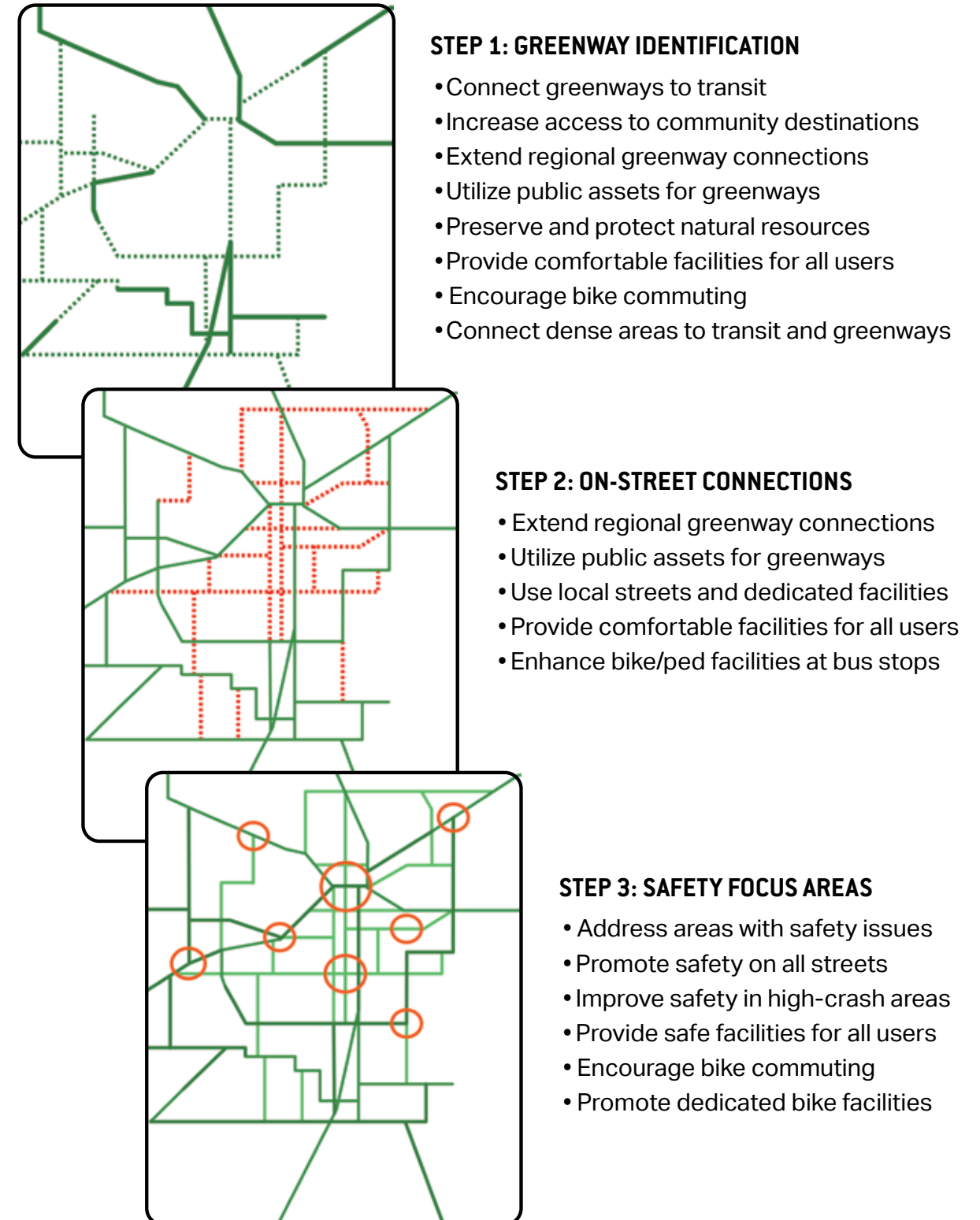
KATS Moves is specifically focused on identifying new non-motorized corridors that will help connect and enhance the existing and planned bicycle, pedestrian and transit network. The process started with the existing facility network as a base and additional connections, both previously planned for and unplanned, were added with the goal of creating seamless connections between the non-motorized and transit networks. A three step process was used to identify new non-motorized facilities and improvements; greenway identification, on-street connections, and safety focus areas. The graphic to the right shows a simplified version of how new network facilities were delineated.

Using the project's goals, a framework was developed to simplify the process of identifying greenways and non-motorized facilities. Since the study encompasses a large geographic area, it was important to keep recommendations high level and focus more on regional needs. The first step was to identify corridors where true greenways or shared use paths would be appropriate and connect them to the existing non-motorized and transit network, creating a base network that allows for longer, safer, and more comfortable trips. On-street facilities were identified next and used to fill in shorter gaps in the network.

Finally, areas with high amounts of bicycle and pedestrian crashes were located and specific improvements were recommended for these "Safety Focus Areas." Discussion of the areas identified and detailed recommendations for each Safety Focus Area are located in this document starting on page 9.

KATS Moves Project Goals

- Integrate non-motorized and transit networks to increase the share of trips made by these modes within the KATS planning area
- Identify new corridors for greenways and other non-motorized facilities
- Define and prioritize future non-motorized projects to maximize positive regional impact



PUBLIC INVOLVEMENT

KATS Moves incorporated three rounds of in-person public involvement and ongoing online public engagement to better understand the needs of citizens in the KMetro region. The first of the public meetings was held on February 7th, 2017 at the Kalamazoo Metro Transit offices in Downtown Kalamazoo. 48 People attended the meeting and voiced their opinion about their preference for specific bicycle infrastructure, where they live, work, and travel each day, their top priorities for future investments, and their concerns regarding walkability, bikeability, and transit ridership in the KATS Region. The results from this meeting were used to help develop the goals and objectives for the project, which helped determine the potential new greenways and on-street facilities that are presented.

A follow up public meeting took place on April 24th, 2017 at Kalamazoo College. This meeting was used to present the initial findings of the identification process and attendees were asked to identify any corridors that were missed in the initial brainstorming session. Meeting attendees were also asked about how to improve connections between modes of travel, which projects should be implemented first, and which "Safety Focus Areas" should be prioritized.

A final meeting was held on September 12th, 2017 at the KMetro Offices to present the final recommendations from the plan. Attendees were able to give input on the final list of projects, scoring methodology, phasing plan, and any other plan details. These comments were incorporated into the Final Plan document.

Overall, 75 people attended the public meetings and nearly 520 people interacted with the project using the online engagement tool, Community Remarks. The project website and Facebook page also had good engagement. The comments and feedback received from the public was incorporated into the final recommendations for the KATS Moves Plan.

KATS Moves also had strong support from community stakeholders in the form of the Project Steering Committee. The members of the Steering Committee helped review project recommendations, offered guidance on technical deliverables, and served as a liaison between the project team and the various communities and organizations involved. The Steering Committee included the following members:

- Bill Rose - Kalamazoo Nature Center
- Roger Buell - City of Portage
- Jason Latham - MDOT
- Denise Smith - MDOT
- Rebekah Kik - City of Kalamazoo
- Jim Hoekstra - City of Kalamazoo
- Andrew Haan - Downtown Kalamazoo Inc.
- David Rachowicz - Kalamazoo County Parks
- Lotta Jarnefelt - Kalamazoo County Planning
- Larry Nielsen - Village of Paw Paw
- Kathy Schultz - KMetro
- Sean McBride - KMetro
- Karen High - Oshtemo Township
- Steve Stepek - KATS
- Ryan Minkus - Kalamazoo County Road Commission

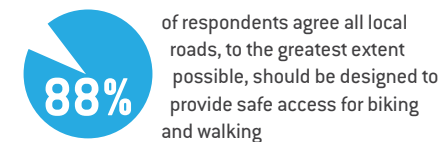
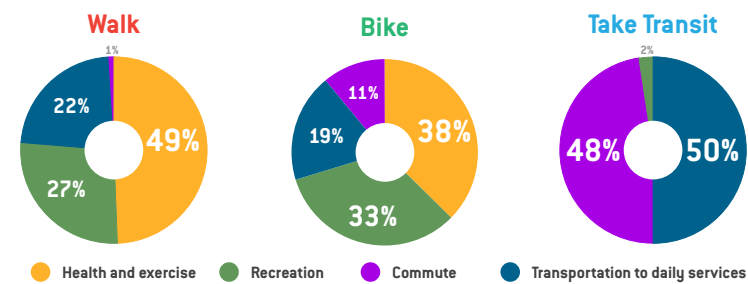
Top Priorities >> identifying priorities for future non-motorized investments

- 1 Address areas with safety issues
- 2 Connect to major employment centers and regional destinations
- 3 Provide equitable access to low income and minority communities as well as seniors and children
- 4 Serve areas of high population density
- 5 Connect to highly utilized transit stops
- 6 Make use of existing public right of way and public lands
- 7 Enhance and promote planned development

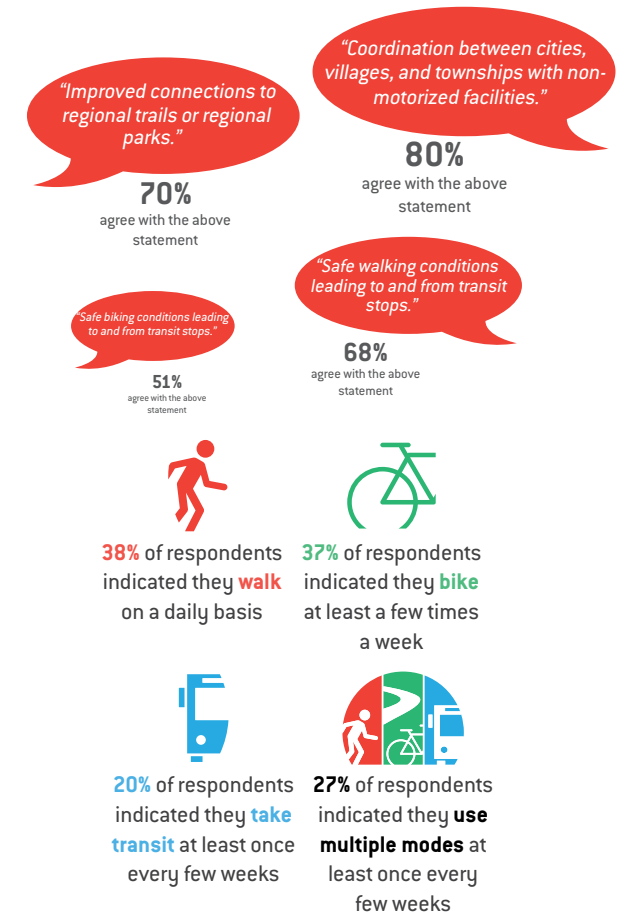
Top 3 concerns regarding...

- | | |
|--|--|
| <p>Walkability</p> <ol style="list-style-type: none"> 1. Health, safety, and security 2. Easy access to locations 3. Effective connections to destinations | <p>Bikeability</p> <ol style="list-style-type: none"> 1. Health, safety, and security 2. Effective connections to destinations 3. Easy access to locations |
| <p>Transit</p> <ol style="list-style-type: none"> 1. Effective connections to destinations 2. Reliability and consistency 3. Health, safety, and security | |

Primary reason you would...



What opportunities exist for improving connections in the Kalamazoo metro region?



The stats above are the results of a survey taken by public meeting attendees and visitors to the project website

RECOMMENDED FACILITY TYPES

The recommended projects expand upon the network of existing non-motorized facilities, including some facility types which have not been implemented before in the region. Because a focus of the Plan is to recommend projects that would provide comfort and safety for a wide array of user types, certain existing bike facilities such as sharrows, paved shoulders, and unimproved bike routes were not considered as officially part of the network. The five facility types recommended as part of this study are detailed below.

Shared Use Path

Shared Use Paths are common around the KATS region, as these have been used for the many trails in the region. Shared use paths are fully separated, paved facilities that can be used by all forms of non-motorized transportation. These facilities are typically the safest and most comfortable for all types of cyclists.

Bike Lane

Bike lanes are another facility that can currently be found around the KATS Region, although in fewer quantities than Shared Use Paths. They are typically painted on the street and are between 4 feet and 6 feet wide. Of the facilities recommended, bike lanes provide the least amount of comfort and protection from vehicular traffic.

Buffered Bike Lane

Buffered bike lanes are similar in design to a standard bike lane but have a 3 - 4 foot area between the vehicle travel lane and the bike lane. The buffer is typically striped with hash marks to discourage cars from driving close to the bike lane. Buffered bike lanes provide a more comfortable place for cyclists, especially on busy streets.

Protected Bike Lane

Protected bike lanes are the most comfortable and safest of the on-street bicycle facilities. These facilities use bollards, curbs, parked cars, or planters to form a barrier between vehicular traffic and cyclists. Protected bike lanes should be used on busy streets with high bike traffic. The City of Kalamazoo is currently constructing a curbed protected bike lane Downtown along Michigan Avenue.

Bicycle Boulevard

Bicycle boulevards are a good option for providing connections through neighborhoods and along low speed streets. These facilities use easy to read wayfinding signage, pavement markings, and speed and traffic deterrents to reduce vehicular traffic and give cyclists an comfortable place to ride. Bicycle boulevards are great for providing an alternate route away from a street too busy for most cyclists or one that lacks space for a dedicated facility.

SHARED USE PATH



Shared Use Path along Riverview Dr in Kalamazoo



Shared Use Path along Shaver Rd in Portage

BIKE LANE



Bike Lane along Park Dr in Parchment



Bike Lane along Vine St in Kalamazoo

BUFFERED BIKE LANE



Buffered Bike Lane in Austin, TX



Buffered Bike Lane in Detroit, MI

PROTECTED BIKE LANE



Protected Bike Lane along Michigan Ave in Kalamazoo



Protected Bike Lane in Los Angeles, CA

BIKE BOULEVARD



Bicycle Boulevard with chicanes in Berkeley, CA



Bicycle Boulevard with traffic diverters in Portland, OR

GREENWAY NETWORK

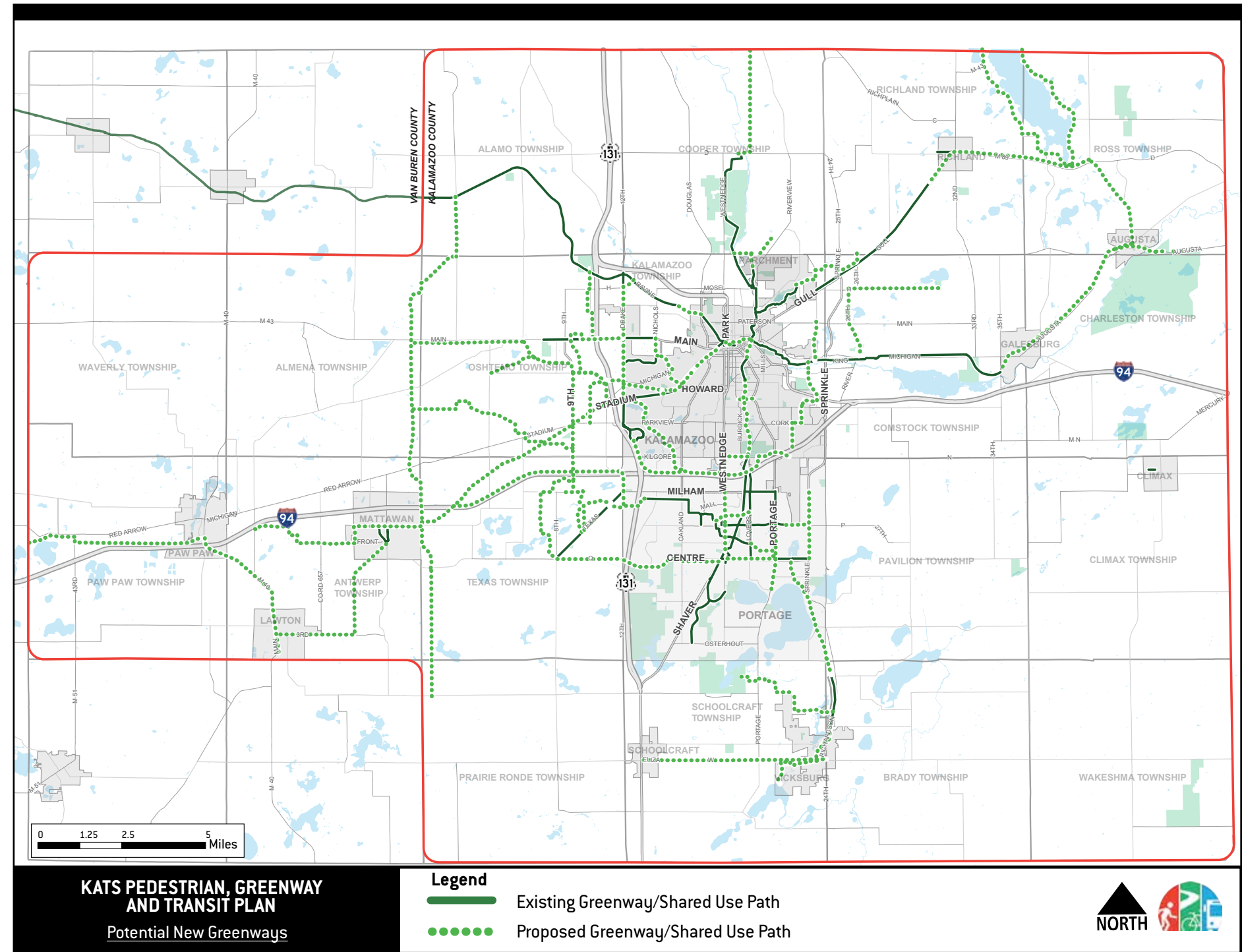
A number of new potential greenways had already been identified in the KATS 2045 Metropolitan Transportation Plan (MTP), as well as in many of the local planning documents. An initial set of greenways was identified in a series of brainstorming sessions with the project team as logical connections or extensions from the existing network. The identification process yielded a number of new corridors, independent of previous plans, which provide additional mobility options for bicyclists and pedestrians. These facilities use a variety of different land, including public green space, road right-of-way, utility easements, and large private parcels. Those facilities that provided a necessary connection but faced obvious obstacles to implementation due to a lack of available space or that could function as an on-street facility were considered in the next step. The project advisory committee and the public also suggested specific projects that were missed in the initial brainstorming process.

The potential new greenways identified here are conceptual and represent a corridor level view of potential bicycle and pedestrian facilities (precise routing is not determined). These newly identified projects fill in gaps between existing greenways and link to the transit system and were not identified previously. These facilities were proposed using the public's input and have not been evaluated for technical feasibility or potential installation. Those not identified in an existing plan would be subject to additional technical and fiscal review and approval by the local jurisdiction(s).

A full list of the identified greenways can be found in Appendix B.



The existing KRVT greenway in northwest Kalamazoo



The potential new greenways stretch throughout the KATS Region and provide connections to the denser areas of the region

ON-STREET NETWORK

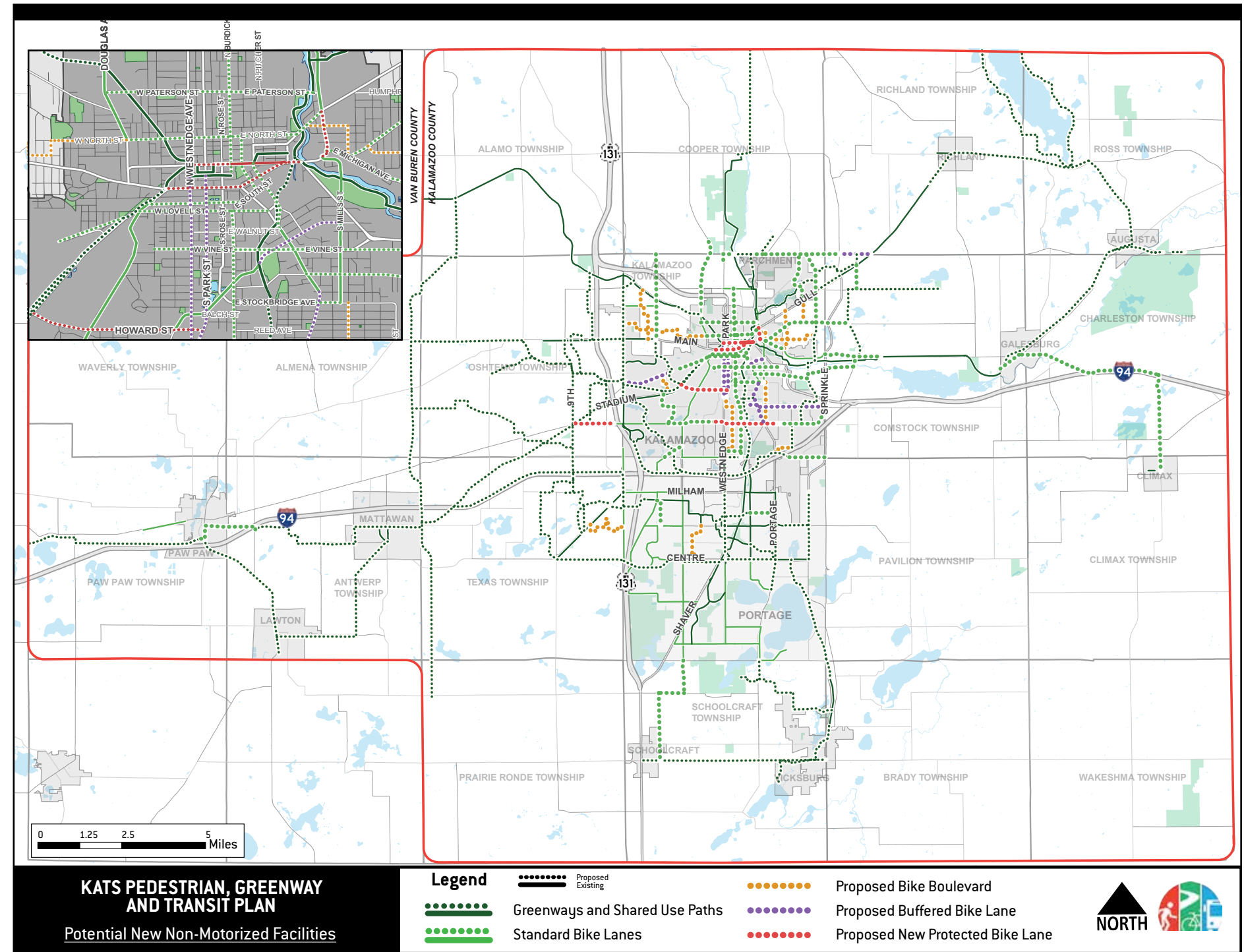
Not all of the goals of KATS Moves can be accomplished exclusively with greenways and trail facilities, especially in the more densely populated areas of the KATS region. These areas lack contiguous open spaces that are needed for dedicated, off-street non-motorized infrastructure. In most cases, there is less road right-of-way and buildings are spaced closer together. This makes installing a greenway more difficult. Many of the on-street connections identified take advantage of low traffic corridors to provide connections within the network using bike boulevards and standard bike lanes. Along busier, more stressful roads, buffered and protected facilities are recommended.

The facilities shown at right are the on-street bike facilities identified by this process and build on previous planning work. About half of the projects had been identified in various plans by KATS and other municipalities in the region, while the remainder came out of the identification and input process. Some of the previously planned bike lanes may benefit from additional protection when implemented (adding a buffer zone or protection) based on the stress level of the street.

The new potential facilities range in intensity from bike boulevards with small infrastructure investments on neighborhood streets to protected bike lanes with more intense infrastructure investments on busy arterial roads, and result in varying cost levels for implementation. Connections using signed routes through neighborhood streets are inexpensive and easier to implement. Traditional and buffered bike lanes require only paint and excess road space and are fairly inexpensive. Protected bike lanes require the most road space, and in many cases have design and infrastructure components associated with them. These are the most expensive but can still be implemented for less than a traditional shared use path.

The potential on-street facilities identified are conceptual and represent a corridor level view of bicycle and pedestrian facilities. These projects fill in gaps between the greenway network and the transit system and may have not been identified previously. The facilities not identified in a previous planning study were developed using the public's input and have not been evaluated for technical feasibility or potential installation. Those not identified in an existing plan would be subject to additional technical and fiscal review and approval by the local jurisdiction(s).

The complete list of identified on-street facilities can be found in Appendix B.



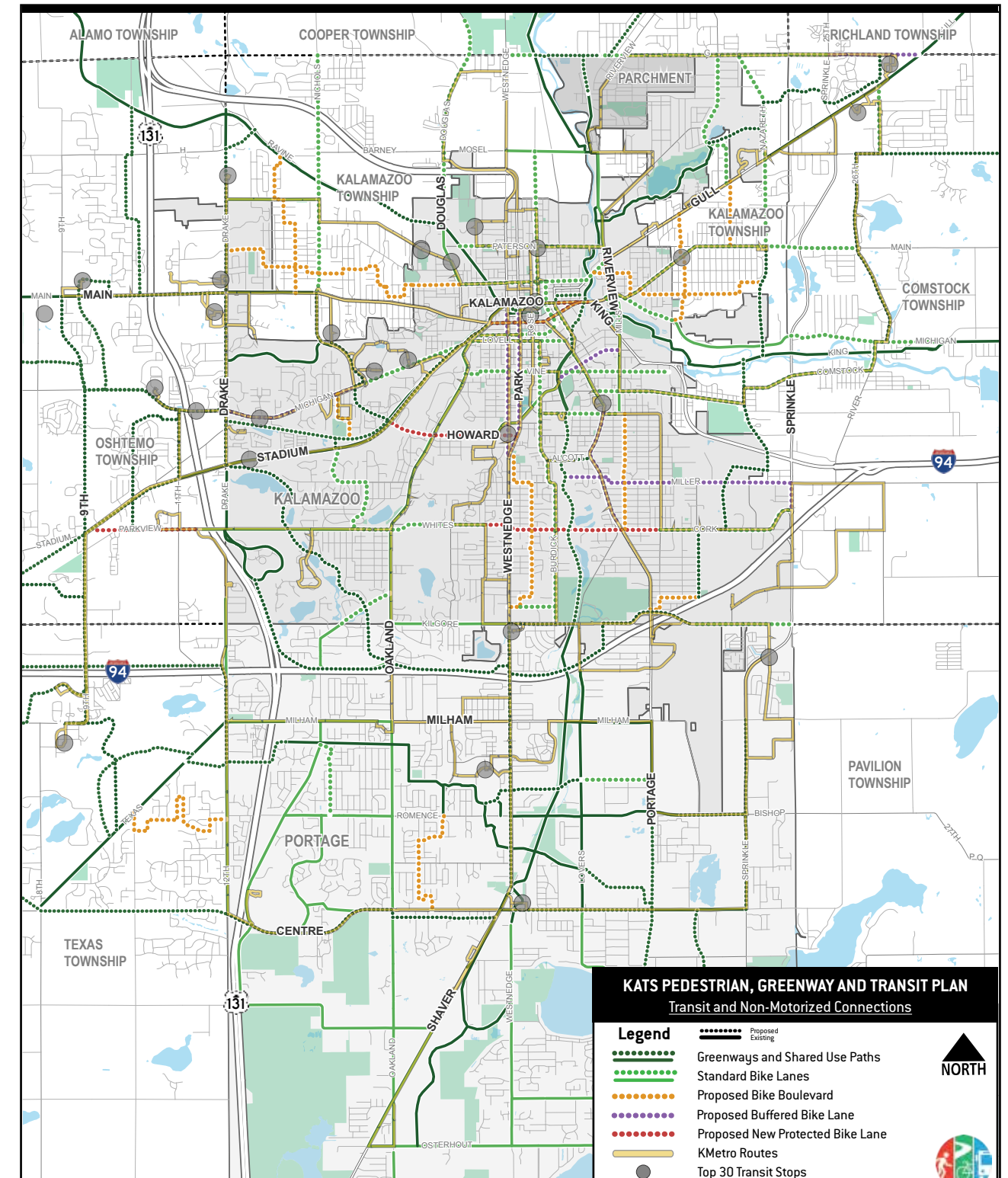
The potential new on-street facilities provide connections between the existing and planned greenway network

TRANSIT & NON-MOTORIZED CONNECTIVITY

An overarching goal of the KATS Moves project was to better connect and integrate the fixed route transit system, KMetro, with the non-motorized network. Currently there is little overlap between the two networks and last mile connections can be difficult for riders on foot or on bikes, especially near the outskirts of the KMetro service area. The buses currently have bike racks, making a transition between cycling trips and transit trips fairly easy. Many of the proposed non-motorized facilities connect to the nearest transit route while also connecting transit routes to each other. As a result of this plan, all of the high ridership routes (those serving over 175,000 annual riders) and 90% of the high ridership transit stops would be connected to one or more non-motorized facility.

Better integrating the non-motorized and transit network serves a number of purposes. First, it creates additional and more comfortable last mile connections for KMetro riders. The addition of the proposed facilities will create more routes to and from transit stops for a greater share of the regional population. Creating more connections between the transit network and non-motorized networks may also encourage residents to commute via an alternative travel mode. A bike commuter may choose to use the bus for part of their trip or a bus rider might try their bike for a quicker trip to their final destination. The integration of the two networks will help users of both modes feel more comfortable and will give commuters additional options when traveling to and from work.

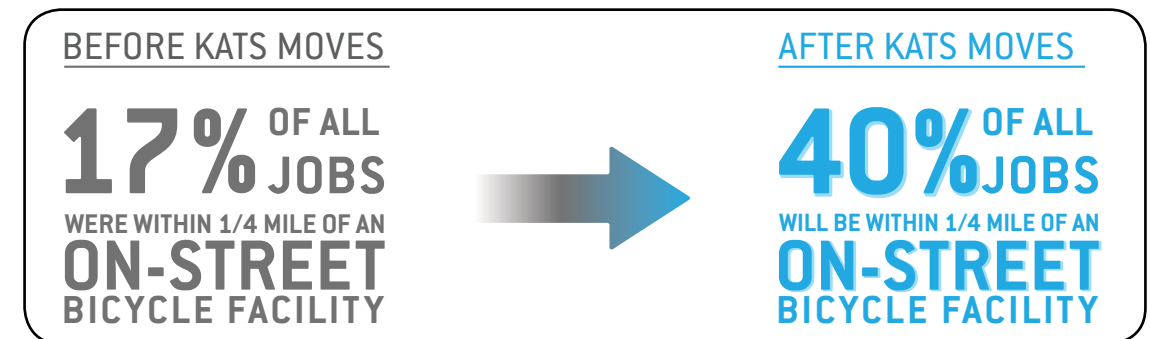
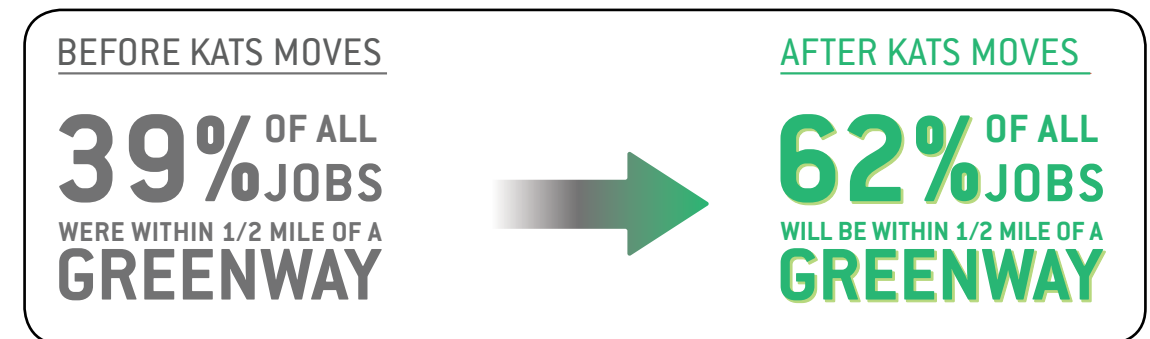
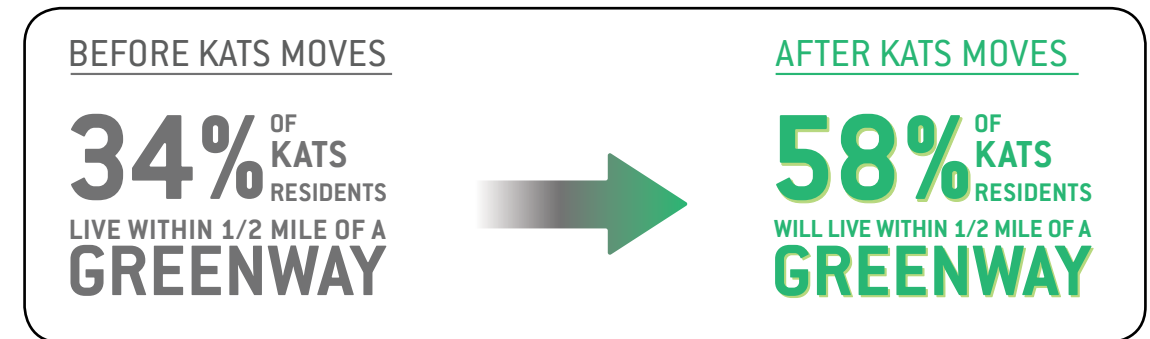
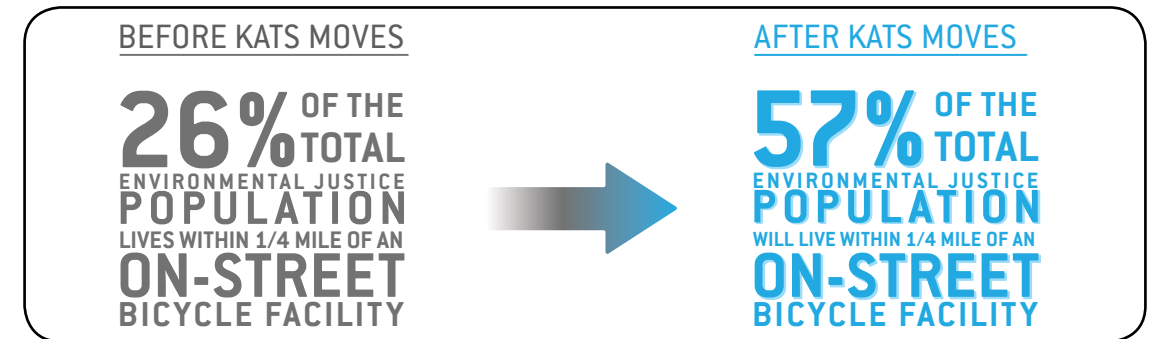
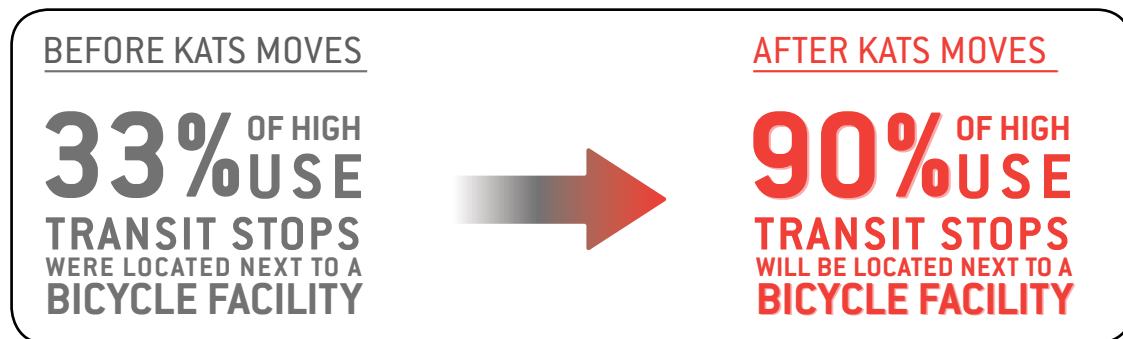
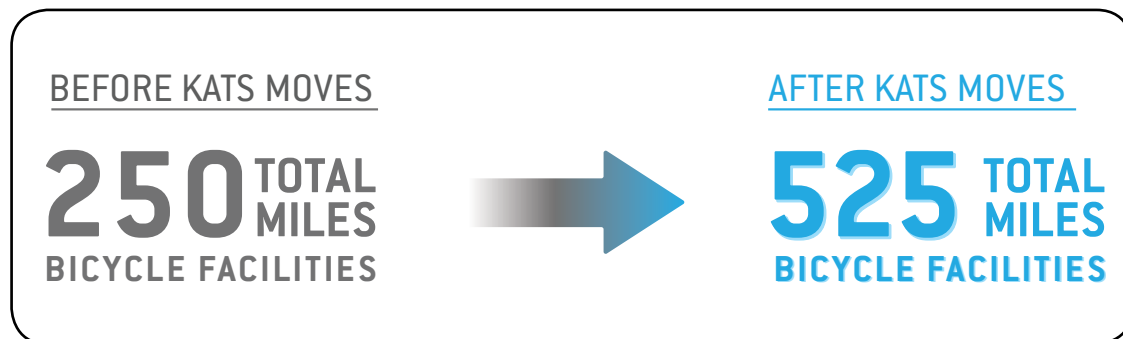
In order to further increase the connectivity between the bicyclists, pedestrians, and transit riders, KATS and KMetro should work to install wayfinding signage at the intersection points of trails/on-street bike facilities and high ridership bus routes to direct users to destinations in the area. These signs can also alert cyclists and pedestrians to nearby bus stops. Bicycle racks, bike storage lockers, and repair stands can be installed at specific transit stops to encourage trip-making via both modes. A new system map should also be created showing the KMetro transit system with the non-motorized network. As new projects are constructed, they should be added to the system map to alert users to the changes.



POSITIVE CHANGES TO THE REGION

The optimal result of identifying new potential non-motorized facilities in the KATS Region is that many more residents will be able to easily access the Region's greenways and bike lanes when implemented. Currently, less than half of the residents and jobs are located near a greenway or an on-street bicycle facility. If all of the projects identified in the KATS Moves study are implemented, these figures are set to increase dramatically. The number of jobs within 1/4 mile of an on-street bicycle facility, for example, would more than double.

These data points show that the facilities recommended by this study will have a positive benefit to the entire region. If all of the potential facilities are implemented, most residents of the KATS Region will see a new non-motorized facility near their home or work. The region will be able to boast, following full implementation of the plan, that the majority of people in the region live within a 5 minute bike ride of a dedicated non-motorized facility.



SAFETY FOCUS AREAS



SAFETY FOCUS AREAS

Advancing projects that address existing safety issues emerged as the highest priority from the initial public engagement efforts for this study, and while completing a network of trail and shared-use paths would provide safer options for many, they will not necessarily improve safety in the high-activity, high-incident zones that currently exist. Bicycle and pedestrian crash patterns were reviewed for the years 2010 – 2015, and the resulting trends show pockets of high crash locations throughout the KATS Region that deserve priority for facility improvements.

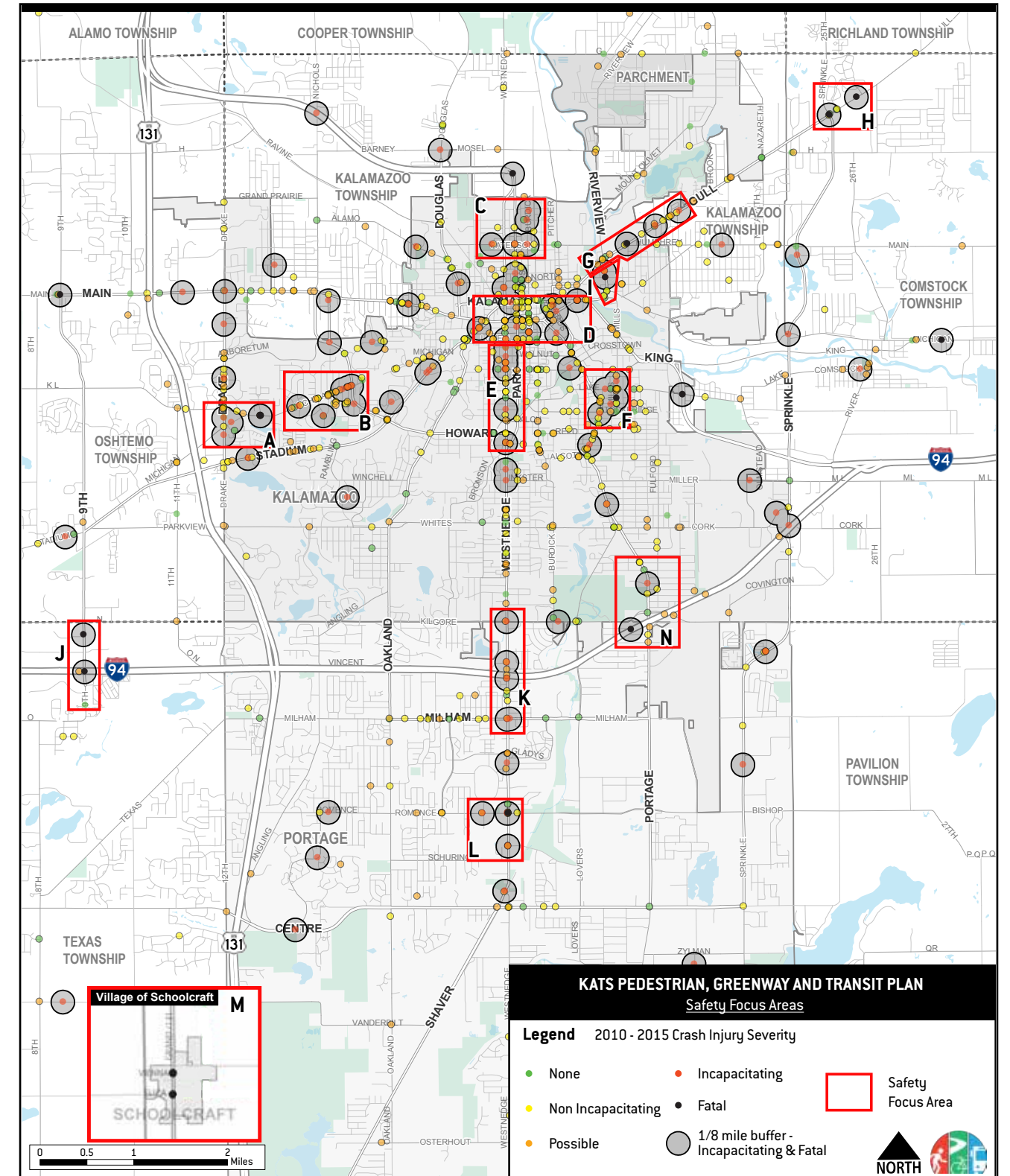
Pedestrian and bicyclist crash data was obtained through the Michigan Traffic Crash Facts website, which aggregates and hosts detailed data about reported crashes. This data was compiled and mapped to locate the densest areas of crash activity. The densest sites became "Safety Focus Areas" and are listed below:

- | | |
|---|--|
| A - Michigan Avenue & Drake Road | H - Gull Road & Sprinkle Road |
| B - Michigan Avenue & Howard Street | I - Riverview Drive & Michigan Avenue |
| C - Paterson Street and Burdick Road | J - 9th Street & I-94 |
| D - Downtown Kalamazoo | K - Westnedge Avenue from Kilgore Road to Milham Avenue |
| E - Westnedge Avenue from Cedar Street to Maple Street | L - Westnedge Avenue & Romence Road |
| F - Stockbridge Avenue to Vine Street | M - N Grand Street & Eliza Street |
| G - Gull Road from Riverview Drive to Inverness Lane | N - Portage Road & I-94 |

The majority of bicyclist crashes, 63%, occurred in the City of Kalamazoo followed by the City of Portage at 15% and Kalamazoo Township with 8%. The remaining municipalities each account for fewer than 3% of region-wide bicyclist crashes. Most crashes occurred on smaller, lower speed roads (68%).

The majority of pedestrian crashes, 68%, occurred in the City of Kalamazoo followed by the City of Portage at 8% and Kalamazoo Township at 6%. The remaining municipalities each account for fewer than 4% of region-wide bicyclist crashes. The majority crashes occurred on smaller, lower speed roads (67%). Overall, high bicycle and pedestrian crash areas tend to be located in areas where cycling and walking are more popular, like Downtown Kalamazoo and near Western Michigan University

A more detailed analysis of the Safety Focus Areas can be found in Tech Memo 3.



SAFETY COUNTERMEASURES

Safety countermeasures were adapted into eight categories from the Federal Highway Administration's (FHWA) "Pedestrian and Bicycle Safety Guide and Countermeasure Selection System"¹, as well as the National Association of City Transportation Officials' "Urban Street Design Guide"². Other sources were also consulted, such as the Institute of Transportation Engineers "Designing Walkable Urban Thoroughfares" guide.

The effectiveness of each countermeasure on bicycle and pedestrian crashes and safety has been documented in two separate reports: "Evaluation of Bicycle-Related Roadway Measures: A Summary of Available Research"³ and "Evaluation of Pedestrian-Related Roadway Measures: A Summary of Available Research", both from the Pedestrian and Bicycle Information Center.

FHWA countermeasures for bicycles fall into the following categories:

- Shared Roadway
- On-Road Bike Facilities
- Intersection Treatments
- Maintenance
- Traffic Calming
- Trails and Shared-Use Paths
- Markings, Signs, Signals
- Other Measures

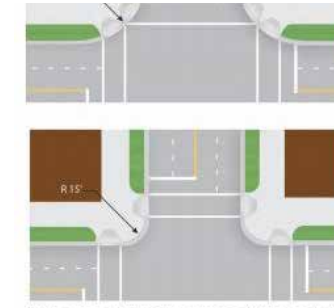
FHWA countermeasures for pedestrian fall into the following categories:

- Along the Roadway
- At Crossing Locations
- Transit
- Roadway Design
- Intersection Design
- Traffic Calming
- Traffic Management
- Signals and Signs
- Other Measures

The countermeasure categories for both bicycles and pedestrians were combined into the eight categories at right. The Safety Focus Area maps in the following pages demonstrate site-specific applications of the suggested counter-measures that address crash trends over the six year period.

¹ <http://pedbikesafe.org>
² <https://nacto.org>
³ <http://www.pedbikeinfo.org>

1. Intersection Treatments and Design



Tighter corner radii reduce crossing distance and slow turning traffic (Credit: Michele Weisbart)

Curb radius reduction is a common recommendation to slow traffic approaches and turns Source: Michael Hintze; Michele Weisbart

2. Crossing Areas



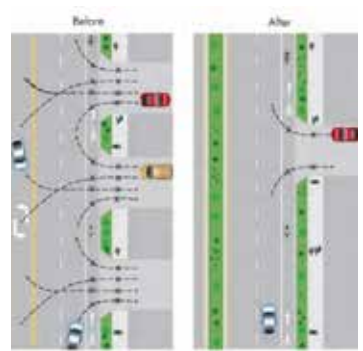
A marked crosswalk with a yield sign and refuge island (left); a raised pedestrian crossing (right) Source: pedbikesafe.org

3. Sidewalks and Shoulders



Trees and furnishing enhances walking environment (left); landscaping buffer and complete sidewalk (right) Source: La Citta Vita-Flickr; Gina Coffman

4. Roadway Design



An improved driveway (left); example driveway access management (right) Source: Dan Burden; Living Streets-Michele Weisbart

5. Markings, Signs and Signals



Marked bicycle conflicts at intersections (left); Rectangular rapid flashing beacon (right). Source: <http://sf.streetsblog.org>; Steven Vance-Flickr

6. Traffic Calming



Mini-roundabout (left); Gateway treatment to neighborhood calms traffic (right) Source: NACTO; Dan Burden

7. Shared Roadway Treatments



School zone improvements (left); Railroad crossing improvements (right) Source: Donald Lee Pardue; Michael Hintze

8. Transit Access



Appropriate crosswalk placement behind bus stop (left); bus bulb (right) Source: pedbikesafe.org; Michael Hintze

FOCUS AREA MICHIGAN & DRAKE

Crash Characteristics

15 total crashes occurred in this area between 2010 and 2015. Incapacitating and fatal incidents only affected pedestrians, with four of these of crashes, versus zero severe crashes for bicyclists. However, bicyclists were most affected by intersection crashes (5) compared with pedestrians (3). Over half of all crashes occurred near intersections.

Crashes occurred on wider streets (four or five lanes) where crossing distances are roughly between 60 and 85 feet. Annual Average Daily Traffic (AADT) along W. Michigan Avenue east of Drake Road in this area remained steady at about 24,000. The continuation of Michigan Avenue onto KL Avenue changed slightly, from 14,500 to 24,000. S. Drake Road AADT levels remained steady, at around 27,000. The speed limit in the focus area generally ranges from 35 to 45 mph.

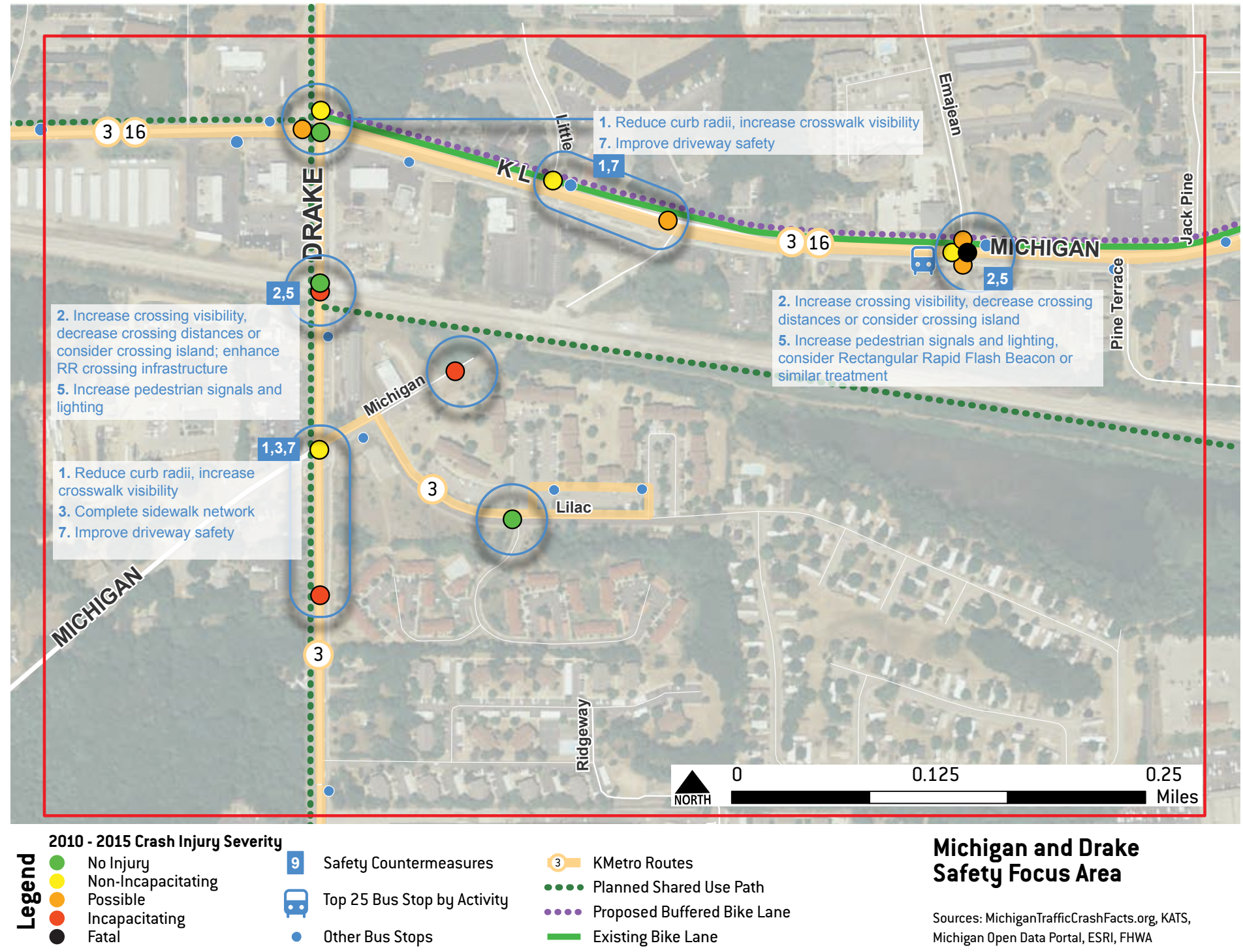
Safety Improvements

Improvements to this area include completing pedestrian facilities along Drake Road with a Shared Use Path, buffering the existing bike lane on KL/ Michigan for better bicyclist visibility and introducing new shared use paths on KL west of Drake and south of Michigan on the existing high speed rail route.

Increasing safety at crossing areas and near driveways and curbs is important in this area, as well as some traffic calming along Route 3 near Lilac Street.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA MICHIGAN & HOWARD

Crash Characteristics

40 total crashes occurred in this section over the study period. 29 of the 40 crashes were pedestrian related and six incapacitating crashes in this area were also pedestrian related, though there were no fatalities. Intersection crashes accounted for 55% of all incidents, and equally affected bicyclists (11) and pedestrians (11).

Crashes occurred on streets with between two and five lanes. Michigan at the west approach to the Howard/Michigan intersection is six lanes across. East of Howard Street, Michigan Avenue is five lanes with a median. Howard Street ranges from five to six lanes across the intersection. Crossing distances at this intersection range from 85 feet to over 100 feet. AADT was lowest on Howard north of Michigan, at roughly 13,000. South of Michigan Avenue the Howard Street AADT was 22,000. Michigan Avenue AADT remained steady at just under 24,000. A small segment of Michigan near the west approach to the intersection with Howard was 22,000. The speed limit in the focus area is generally 35 mph.

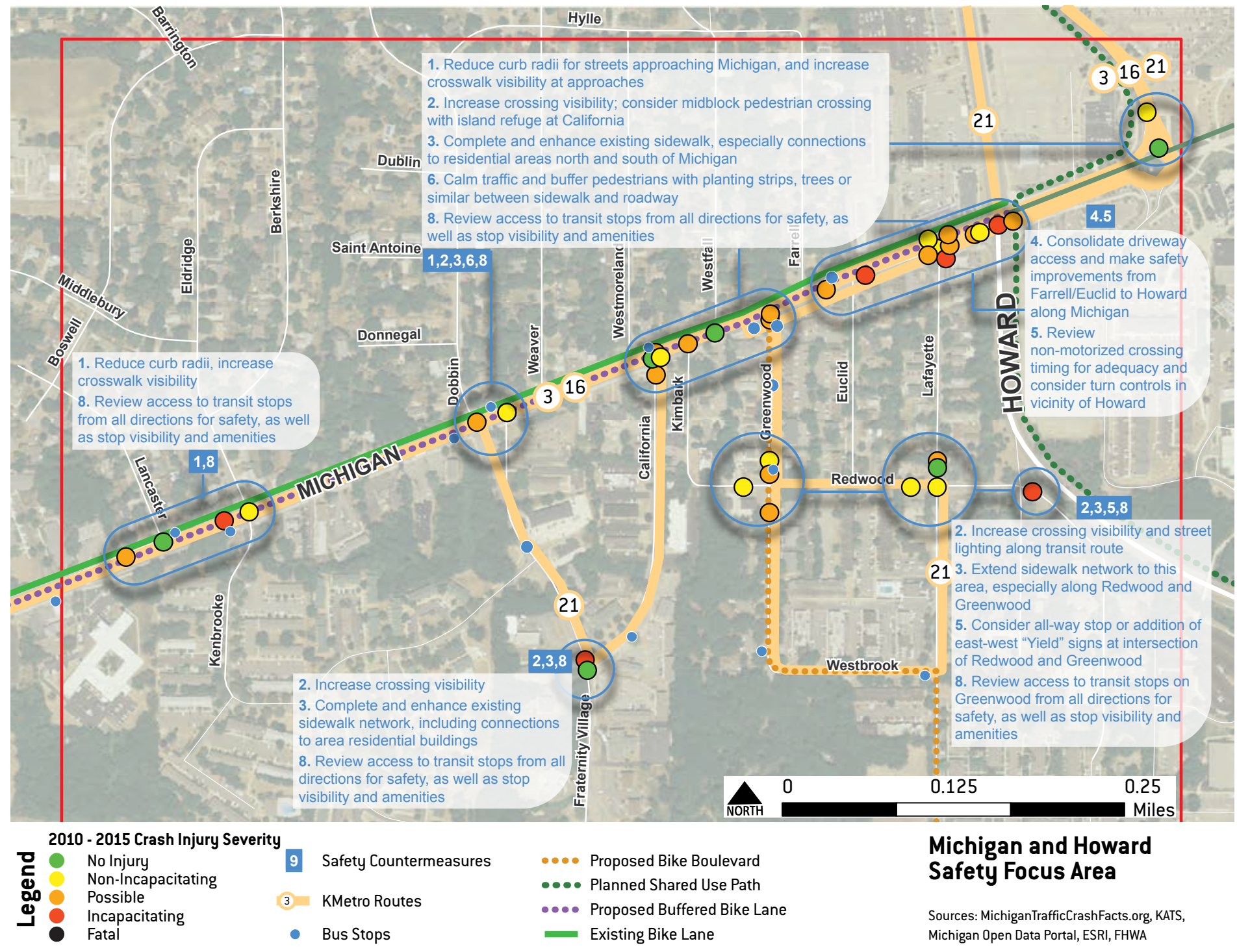
Safety Improvements

Improvements to this area include buffering the existing bike lane on Michigan for better bicyclist visibility and introducing new shared use paths from Howard to the north side of Michigan along Routes 3, 16 and 21.

Treatments to improve safety near driveways, especially near Howard and Michigan are recommended. Other recommendations include safe access to transit stops, improvements in residential areas along Route 21 south of Michigan and signal timing and safety at crossing areas.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

PATERSON & BURDICK

Crash Characteristics

The 21 total crashes reveal that bicyclists (9 crashes, 3 severe) and pedestrians (12 crashes, 2 severe) appear to be equally affected in the area. Just under half of crashes were intersection related. 13 crashes were spread out along smaller neighborhood streets in the area, such as Lulu, Prouty and Norway.

The street with the most crashes, Paterson Road, is a bi-directional two lane road ranging from 35 to 50 feet in width. Most other streets are bi-directional and do not have striped lanes. These latter streets measure around 25 feet from curb to curb. AADT for Paterson, Westnedge and Park ranged from 6,000 on Paterson to just over 10,500 on Westnedge Avenue and Park Street south of Paterson Road. AADT on Westnedge and Park north of Paterson was in the 6,000-7,000 range. Speed limits in the area generally range from 25 mph (Paterson) to 35 mph (N. Westnedge).

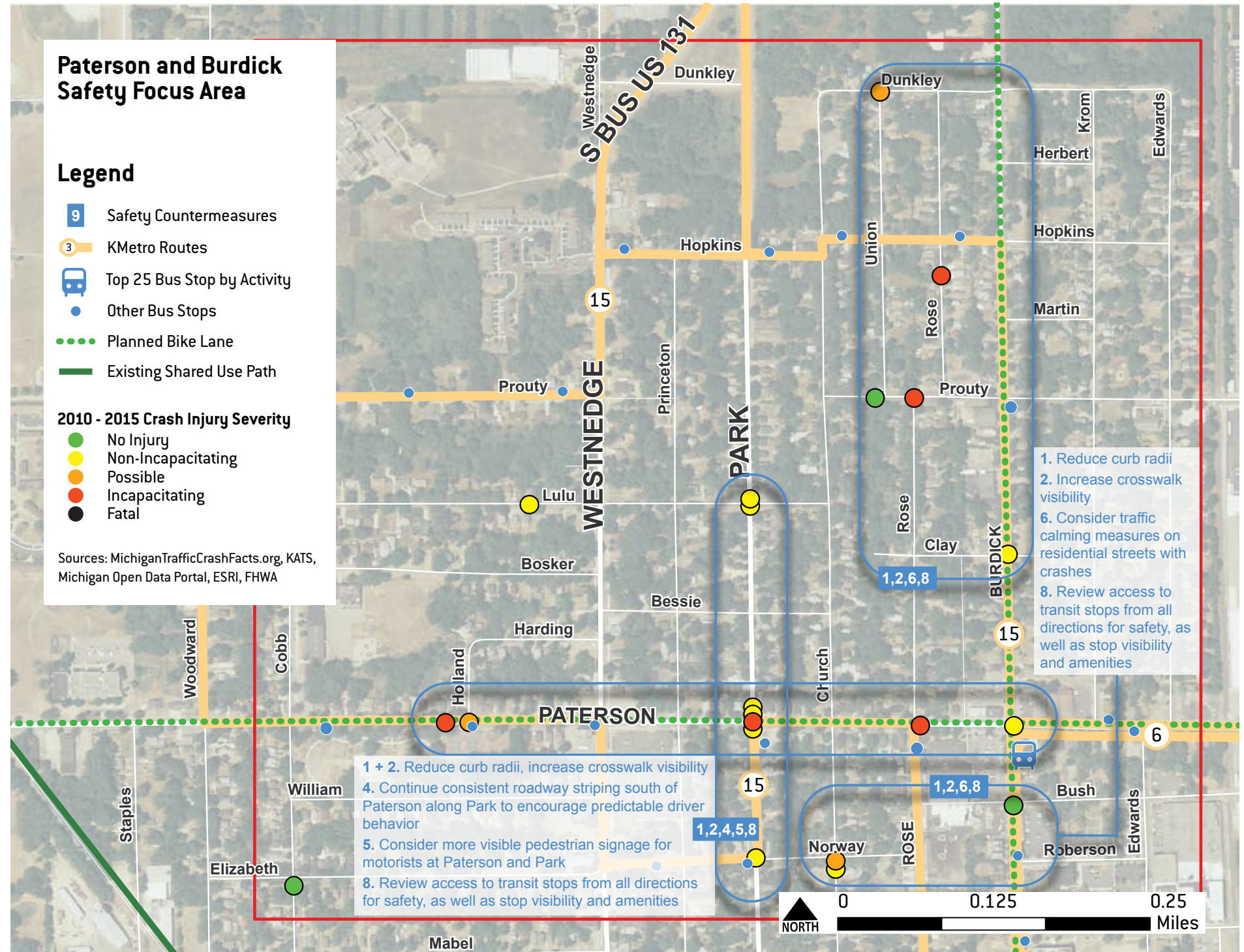
Safety Improvements

Bike Lanes are proposed to improve bicyclist visibility and safety along Paterson and Burdick, connecting to the nearby Kalamazoo River Valley Trail.

Safety improvements in this area include predictable striping on Park Street south of Paterson, safe access to transit stops and traffic calming moving north on Burdick in residential areas. Reducing curb radii is recommended throughout.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

DOWNTOWN KALAMAZOO

Crash Characteristics

Nearly 100 bicycle and pedestrian crash incidents have occurred in the Downtown area between 2010 and 2015, with the significant majority occurring at intersections. Most of the major intersections downtown have had at least one crash incident over the past six years.

In an area this large and varied, a variety of remedies to the safety issues are needed to reduce crashes, including dedicated bicycle facilities and upgraded pedestrian facilities. There also appears to be more total crashes and more crashes resulting in injury on the streets with higher volumes and speeds.

There are currently studies underway by the City of Kalamazoo and Michigan Department of Transportation that could potentially change the network of one-way streets traveling through the downtown, and safety improvements for major intersections could be given priority in those efforts.

Crossing distances, lane counts and speed limits vary widely throughout the downtown. AADT ranges from 1,500 to over 36,000.

Safety Improvements

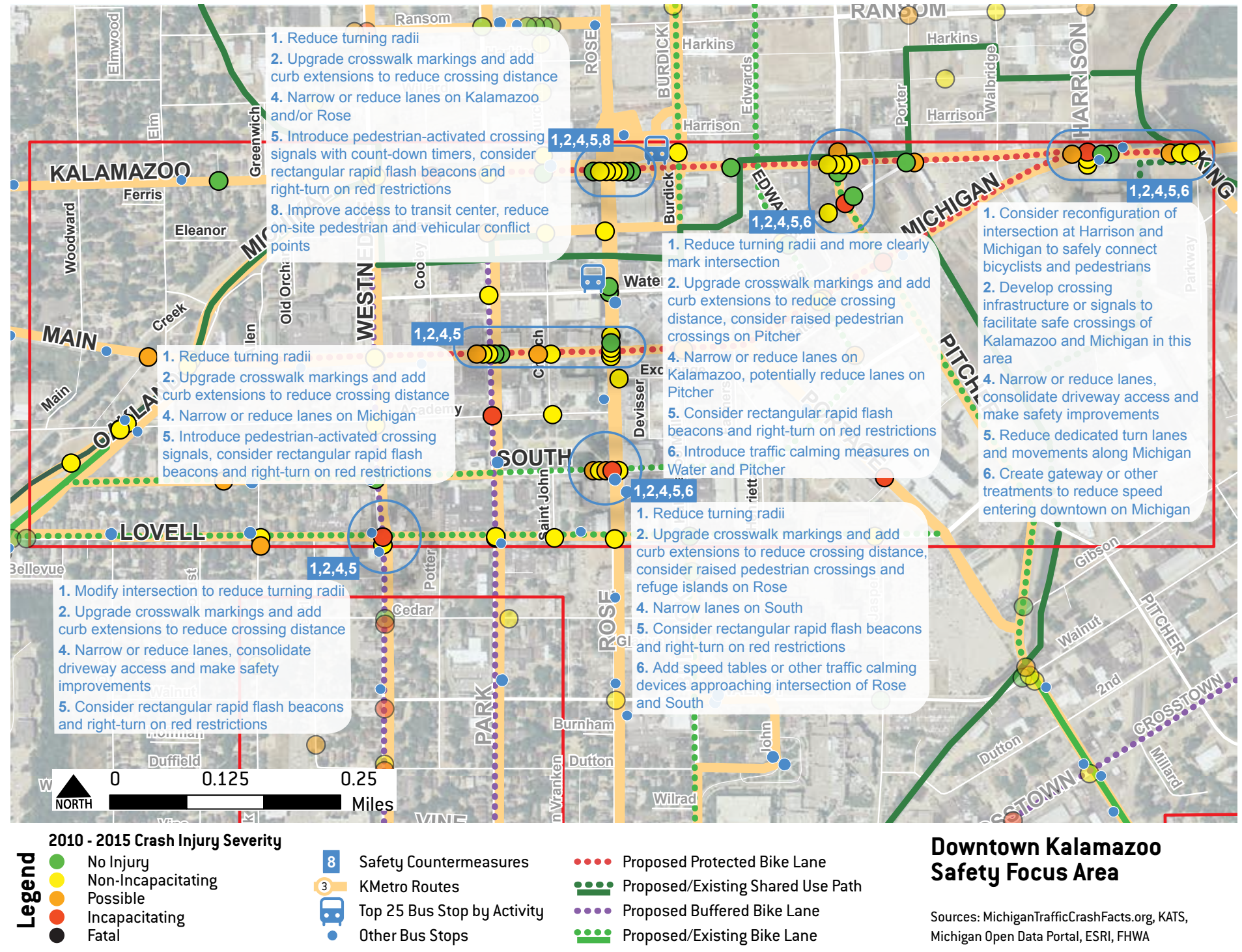
Downtown covers a large and diverse geography, however several intersections and portions of roadway stand out as requiring near term attention.

Areas suggested for priority improvement within downtown are shown at right, and potential treatments to consider include slowing cars through curb radius reduction, upgrading crosswalk visibility through road markings, curb extensions and signage. Add fully modernized traffic signals adding actuation, countdown pedestrian heads, and pedestrian crossing pushbuttons.

New facilities are suggested on the north-south streets of Westnedge, Park, Burdick, Edwards and Pitcher/Portage Creek, and on the east-west streets of Lovell, South, Main, Michigan and Kalamazoo.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

WESTNEDGE FROM CEDAR TO MAPLE

Crash Characteristics

In the study period, 36 crashes occurred in this area, with severe crashes equally affecting bicyclists (3) and pedestrians (3). However, a majority of crashes occurred at intersections – 72% – and these tended to affect bicyclists (16) more than pedestrians (10).

Westnedge is generally a three lane, one-way southbound road throughout this area. Some sections with neighborhood retail in the northern area of the segment have on-street parking on one or both sides of the street, or dedicated turn lanes; in these sections the lane count is reduced to two. The crossing distance is generally 40 feet from curb to curb.

AADT through this section of S. Westnedge ranged from about 11,000 to 13,700. The speed limit is generally 35 mph along this segment.

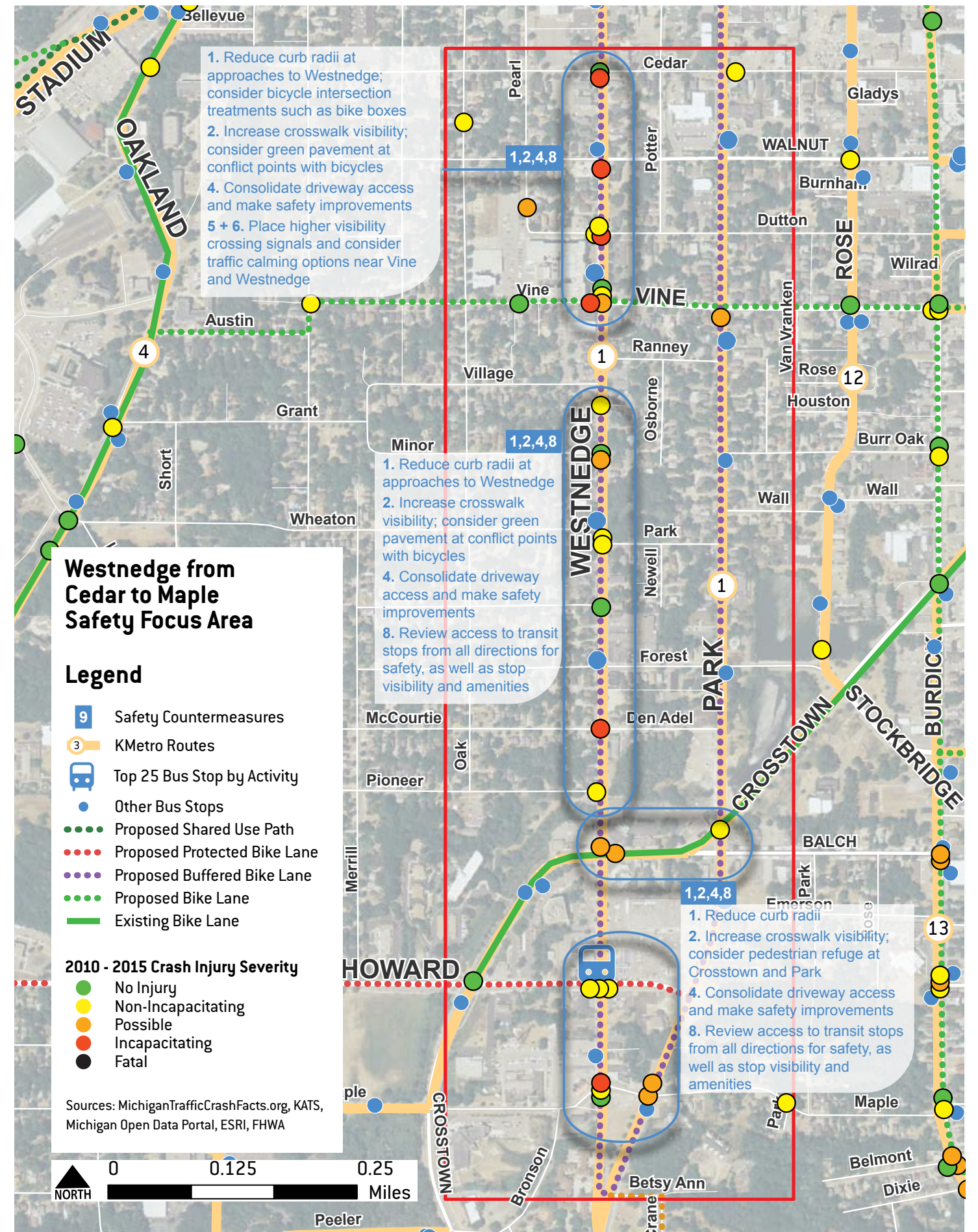
Safety Improvements

Buffered bike lanes are proposed for the main north-south thoroughfares in this focus area, Westnedge and Park, along with a new bike lane on Vine and a protected bike lane on Howard near a top 25 bus stop for the KMetro system on Route 1.

Safety strategies include tightening curb radii to slow approaches at intersections along Westnedge, and also crosswalk and driveway improvements. At Vine and Westnedge traffic calming and increased pedestrian signalization is recommended, while a potential crossing refuge is suggested for the intersection of Crosstown and Park.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA STOCKBRIDGE TO VINE

Crash Characteristics

35 crashes occurred in this area over the study period, with most affecting pedestrians (22). All incapacitating and fatal crashes in this area involved pedestrians. 57% of crashes occurred at intersections. Significant clusters of crashes occurred around the junctions of Lake and Mills (9) and Stockbridge and Portage (4). Of streets in the area, Mills had the most crashes overall (16), followed by Lake (13) and Portage (8).

Portage Street is three lanes with bike lanes from Vine Street to Washington Avenue. South of Washington Avenue, Portage Street varies between three and four lanes with no bike lanes. Mills Street is three lanes with bike lanes from Stockbridge Avenue to King Hwy. Vine Street, Lake Street and Stockbridge Avenue are bi-directional two-lane roads.

Crossing distances range from 45 to 50 feet. AADT values were available for Stockbridge, Portage, Vine and a portion of Mills. Area AADT ranged from a low of approximately 3,000 on Vine and 5,000 on Stockbridge to a high of close to 14,500 on Portage Street. Speed limits generally range from 25 to 35 mph.

Safety Improvements

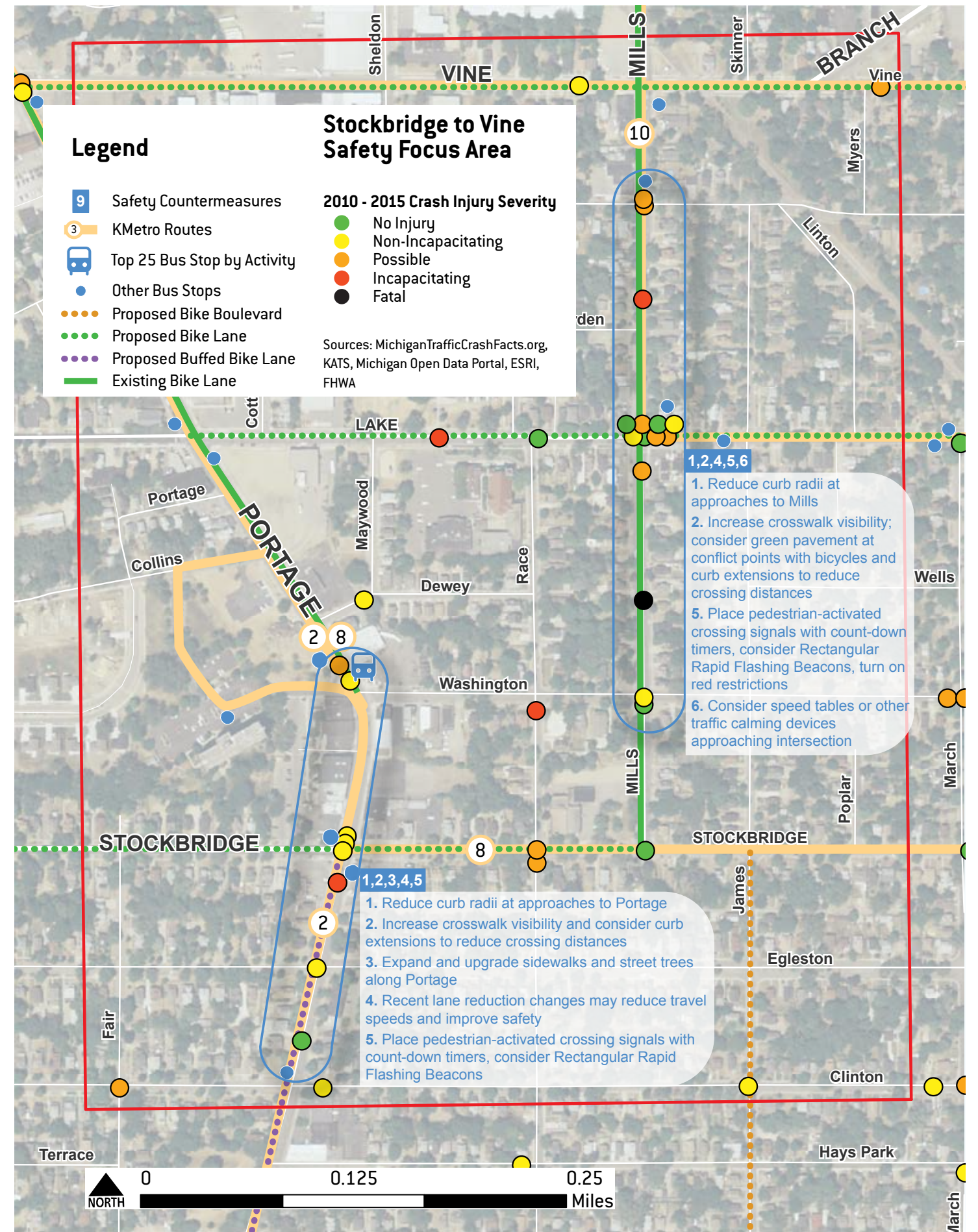
Proposals for facility improvements to this area, located southeast of Downtown Kalamazoo, include additional bike lanes on Lake, Stockbridge and Vine.

Reducing intersection conflicts through curb radius reduction, increased striping and visibility near crossing areas, and signalization upgrades are all recommended.

Rectangular Rapid Flashing Beacons may provide extra visibility near crash hotspots along Portage and Mills.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

GULL AND RIVERVIEW

Crash Characteristics

19 total crashes occurred in this stretch between 2010 and 2015 (12 were bicycle related and 7 were pedestrian related). All three severe crashes along this segment were pedestrian related (2 incapacitating; 1 fatal). Half of all crashes occurred at intersections, affecting bicyclists (6) and pedestrians (3). Severe crashes occurred throughout the focus area.

Crossing distances range from approximately 60 to 80 feet from the intersection with Riverview Drive to Inverness Lane. The speed limit on Gull Road is generally 40 mph, with two lanes in either direction and a center turn lane. AADT in this section of Gull ranges from roughly 16,000 to 26,000.

Safety Improvements

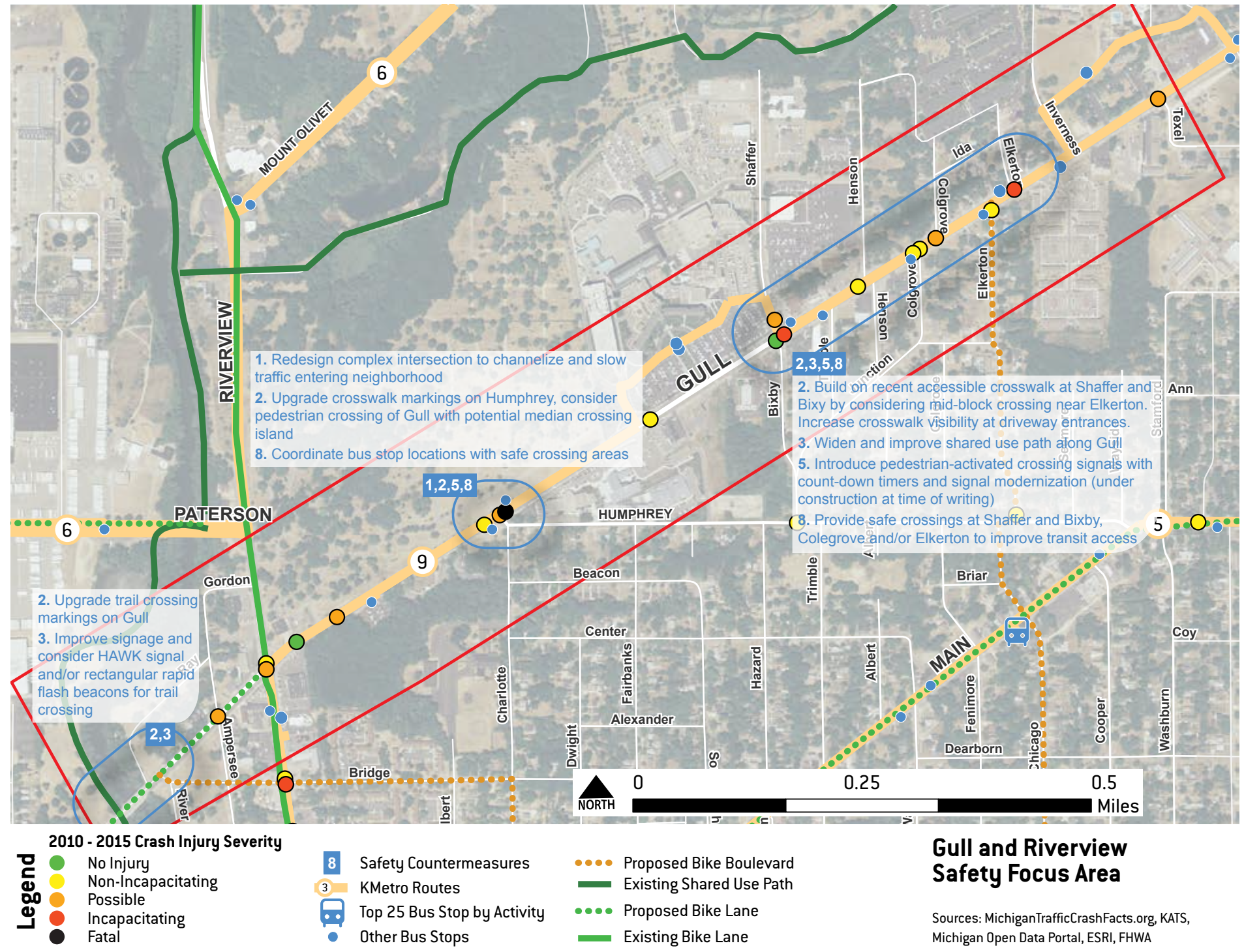
Adding connecting bike lanes and bike boulevards to existing bike lanes and the Kalamazoo River Valley Trail is suggested for this area just east of Downtown Kalamazoo. Along Gull, the existing shared use path is proposed to be widened and improved.

At the junction with the River Valley Trail, a HAWK signal or Rectangular Rapid Flashing Beacon is suggested to increase visibility of trail users.

Simplifying and calming intersections with Gull and enhancing pedestrian safety near the Route 9 transit stops is suggested for this focus area. To reduce crossing distance across Gull, a mid-block crossing is proposed near Elkerton, which also corresponds to a proposed bike boulevard. Increased visibility of crosswalks at driveway locations using different color pavement is also recommended.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



Gull and Riverview Safety Focus Area

Sources: MichiganTrafficCrashFacts.org, KATS, Michigan Open Data Portal, ESRI, FHWA

FOCUS AREA GULL AND SPRINKLE

Crash Characteristics

Of the six crashes occurring in the study period, five were bicycle related. Two of the bicycle crashes were also fatal. One fatal crash occurred at the intersection of N. Sprinkle and Gull Roads in 2015; the other occurred a block southeast of Gull and Gull Run Drive in 2013.

Gull Road is generally five lanes: two lanes in either direction with a center turn lane. Occasionally slip turn lanes widen the road to six or seven lanes. Crossing distances range from 70 to 90 feet. AADT on Gull ranges from roughly 23,500 to 27,000; AADT on Sprinkle Road ranges from almost 18,000 to almost 12,000. Area speeds range from 45 to 55 mph.

Safety Improvements

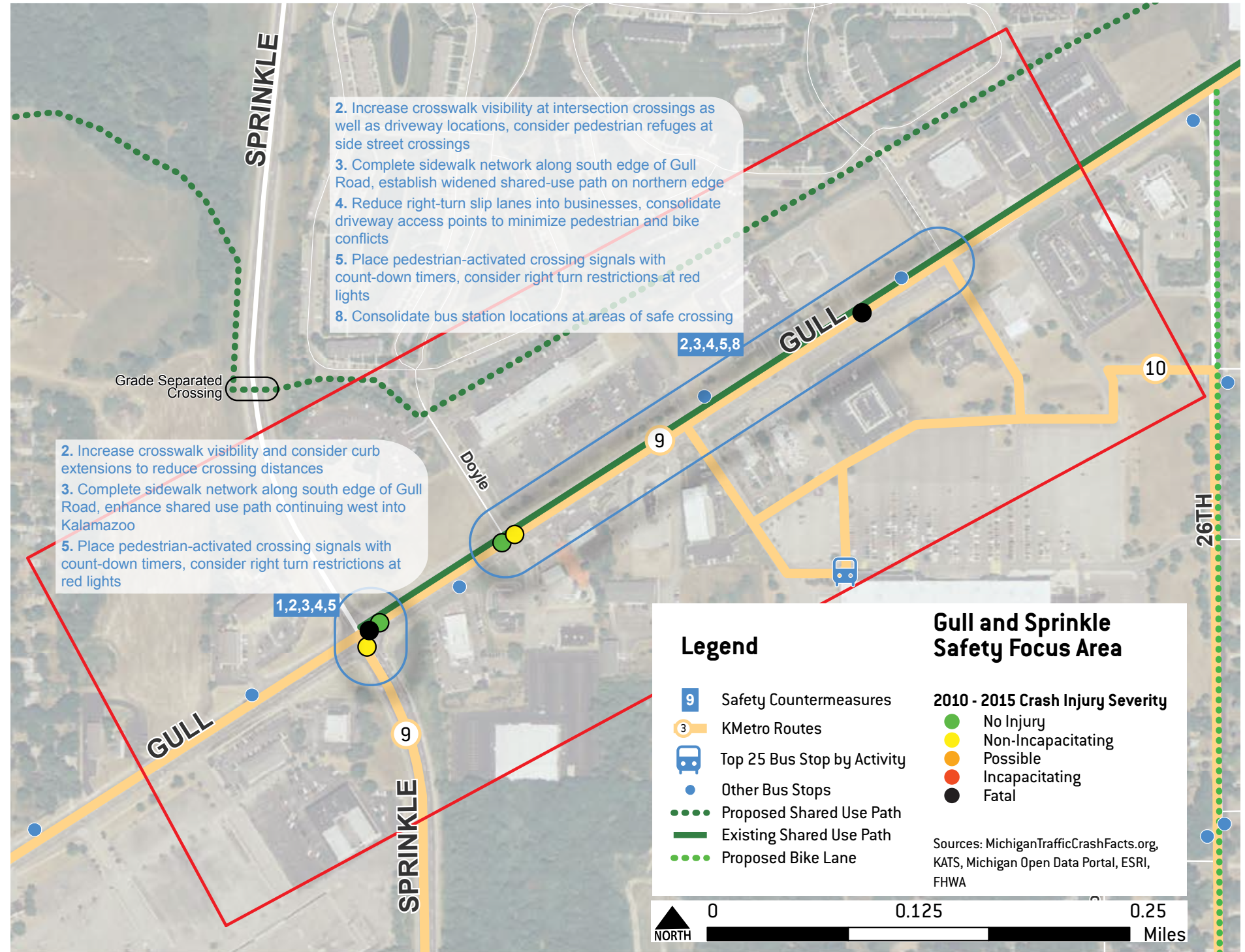
As in Focus Area 7, the existing shared use path on Gull is proposed to be widened and improved. A parallel shared use path is proposed for north of Gull, and a new bike lane is proposed on 26th Street.

On Gull, improving the pedestrian interface with driveways is suggested by managing slip lanes and access points and by increasing the visibility of crosswalks by using different colored pavement. Ensuring safe access to bus stops by consolidating at areas of safe crossing is also proposed.

Increased crossing visibility at intersections is suggested with more visible markings, potential curb extensions and signal upgrades among others improvements.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA RIVERVIEW DRIVE

Crash Characteristics

Nine total crashes occurred in this stretch between 2010 and 2015 (four bicycle related and five pedestrian related). Of three severe incidents, two pedestrian related crashes were incapacitating and one bicycle crash was fatal. Three bicycle crashes and two pedestrian crashes occurred at intersections.

Riverview is relatively narrow, measuring approximately 40 feet across with two lanes in either direction. The speed limit in this area of Riverview is generally 35 mph. AADT values range from approximately 14,000 to 21,000.

Safety Improvements

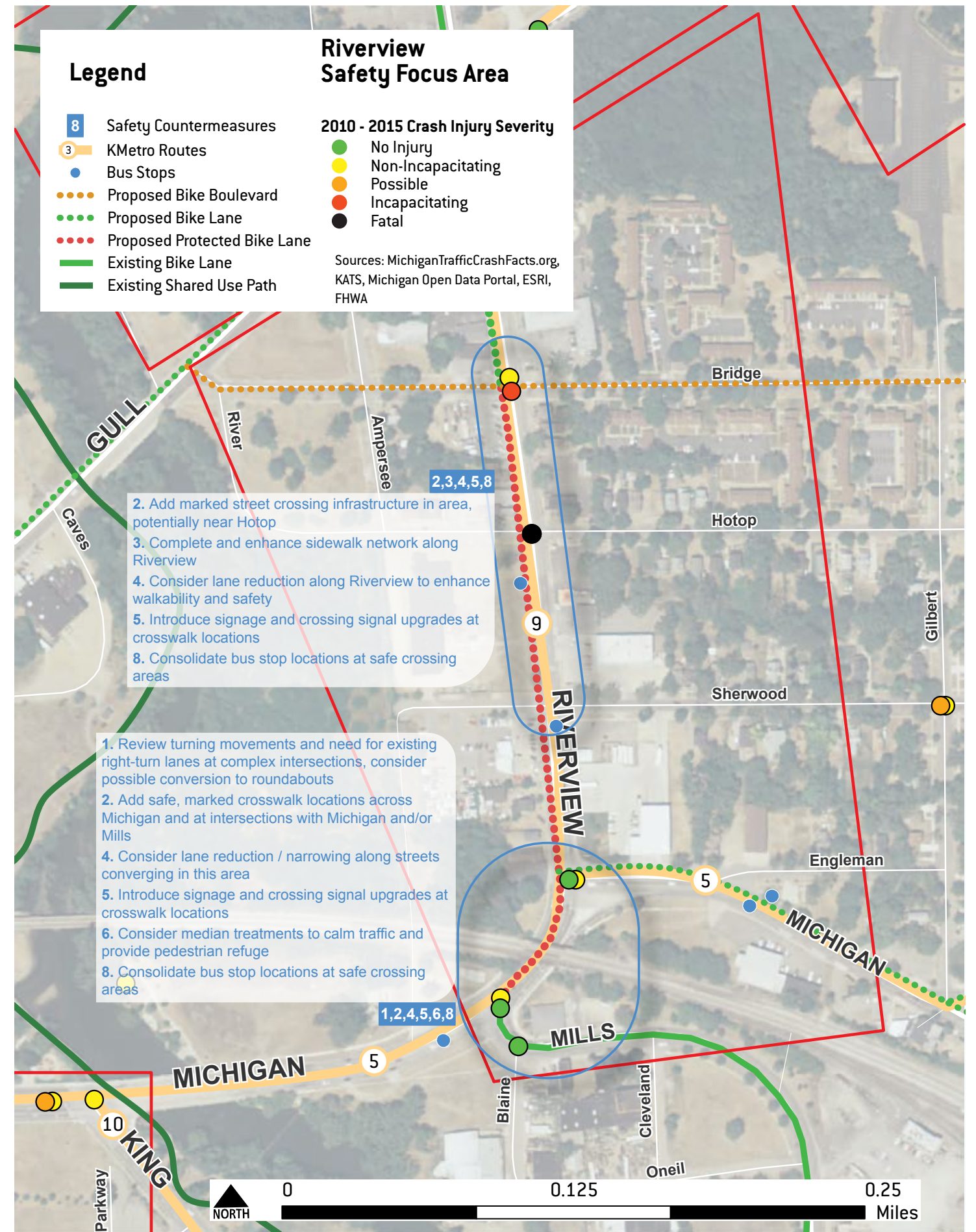
Adding connecting bike lanes and bike boulevards to existing bike lanes and the Kalamazoo River Valley Trail is suggested for this area just east of Downtown Kalamazoo. These facilities include a bike lane proposed for Michigan and for Gull (up to Riverview), and a bike boulevard on Bridge.

Markings to improve street crossings are suggested, along with a review of turning movements, median treatments and potential lane reductions at complex intersections at the south end of the focus area.

Safe, marked crosswalks and signage and crossing upgrades are suggested throughout.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA 9TH AND I-94

Crash Characteristics

All four crashes involved pedestrians, including two fatal crashes and occurred in 2013. One fatal crash occurred directly at the point of exit/entry with the freeway, while the other fatal crash occurred between N Street and Financial Parkway.

Although there are sidewalks along this stretch of road, the continuity is not carried through evenly on both sides. Nearing I-94, sidewalks disappear totally and are replaced by desire paths. The sidewalks that do exist are also frequently interrupted by wide driveway aprons serving auto-oriented businesses.

9th Street ranges from five to seven lanes in this focus area, with widest lane counts occurring closer to the intersection with I-94 due to additional turn lanes. AADT remains fairly consistent at 24,000, though nearing O Street AADT drops to 18,000 and then just below 7,000. The speed limit along 9th street is 45 mph.

Safety Improvements

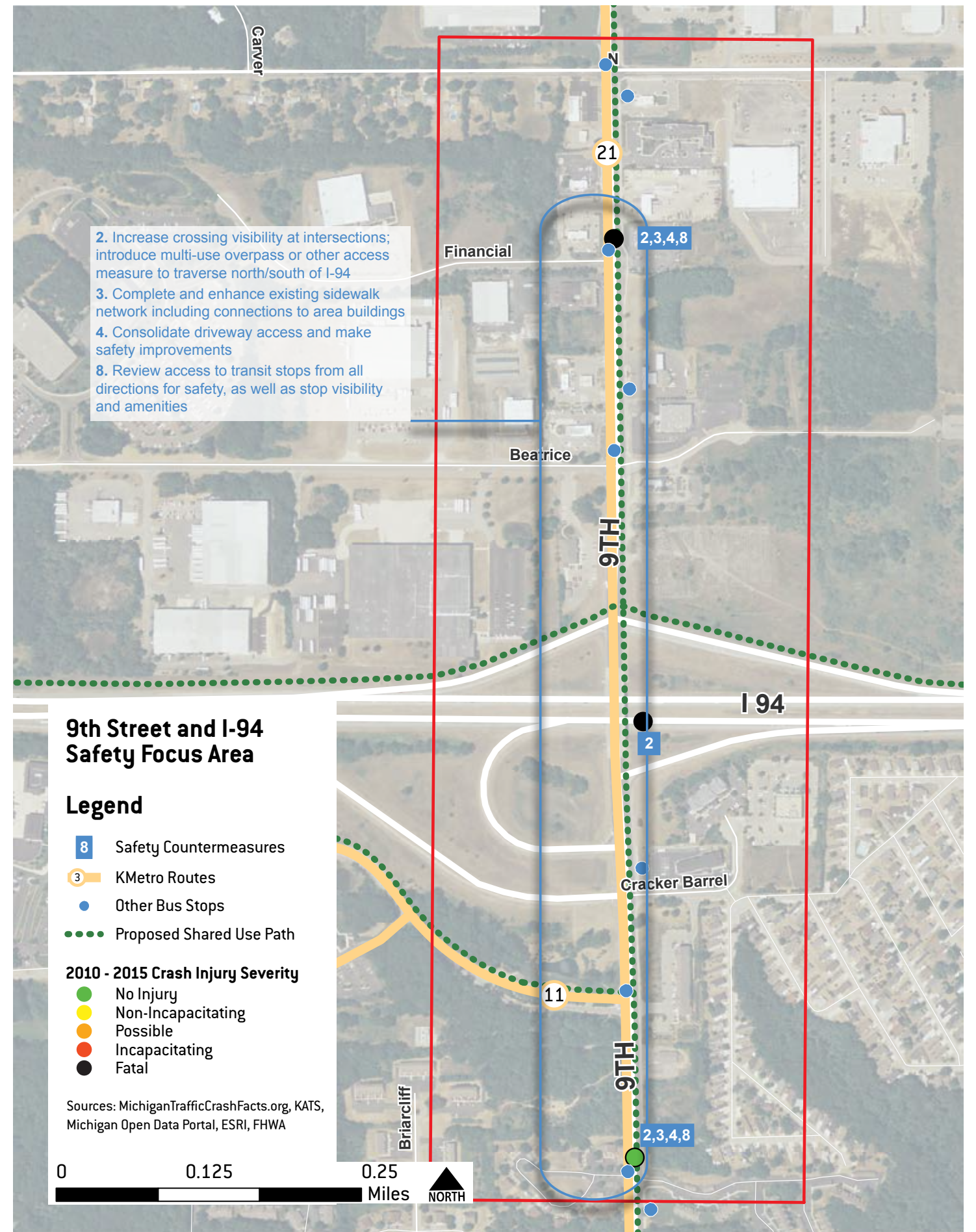
New shared use paths are suggested for this focus area on 9th, north of I-94 and connecting to Elm Valley Drive from Cracker Barrel.

Safety proposals include completing the sidewalk network and improving biking and walking connections to area buildings and across I-94. Other suggestions propose increasing visibility at intersections and addressing safety and driveway access along 9th.

The 9th Street overpass will be rehabilitated in 2018 and will include a separated pedestrian facility to improve safety for non-motorized users.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

S. WESTNEDGE FROM KILGORE TO MILHAM

Crash Characteristics

A total of 15 crashes were reported in this area for the years studied, of which five were incapacitating bicycle crashes and one was an incapacitating pedestrian crash. 12 crashes involved a bicyclist and three were pedestrian related. 10 crashes (80%) were intersection related. Two bicycle crashes occurred at Kilgore Road, seven occurred near the crossing with I-94, and three occurred at the intersection with Milham Avenue.

S. Westnedge ranges from six to nine lanes throughout this section. Near the intersection with I-94 the road widens further to eight to nine lanes including turn lanes. W. Kilgore is five lanes with two lanes in each direction with center turn lanes at Westnedge. Milham is seven lanes with multiple center turn and right turn lanes at Westnedge.

Crossing distances range from approximately 60 to 90 feet, with parallel stripe style crosswalks. Pedestrian crossing signals are located at the intersections, but do not offer a count-down display.

The AADT for S. Westnedge ranges from a low of approximately 21,000 to a high of nearly 42,000. AADT for Milham ranges from approximately 11,500 to 16,000 on either side of Westnedge. The speed limit on S. Westnedge Avenue, Milham Avenue, and W. Kilgore Road in this area is 35 mph. AADT for W. Kilgore ranges from approximately 8,500 to almost 11,000 on either side of Westnedge.

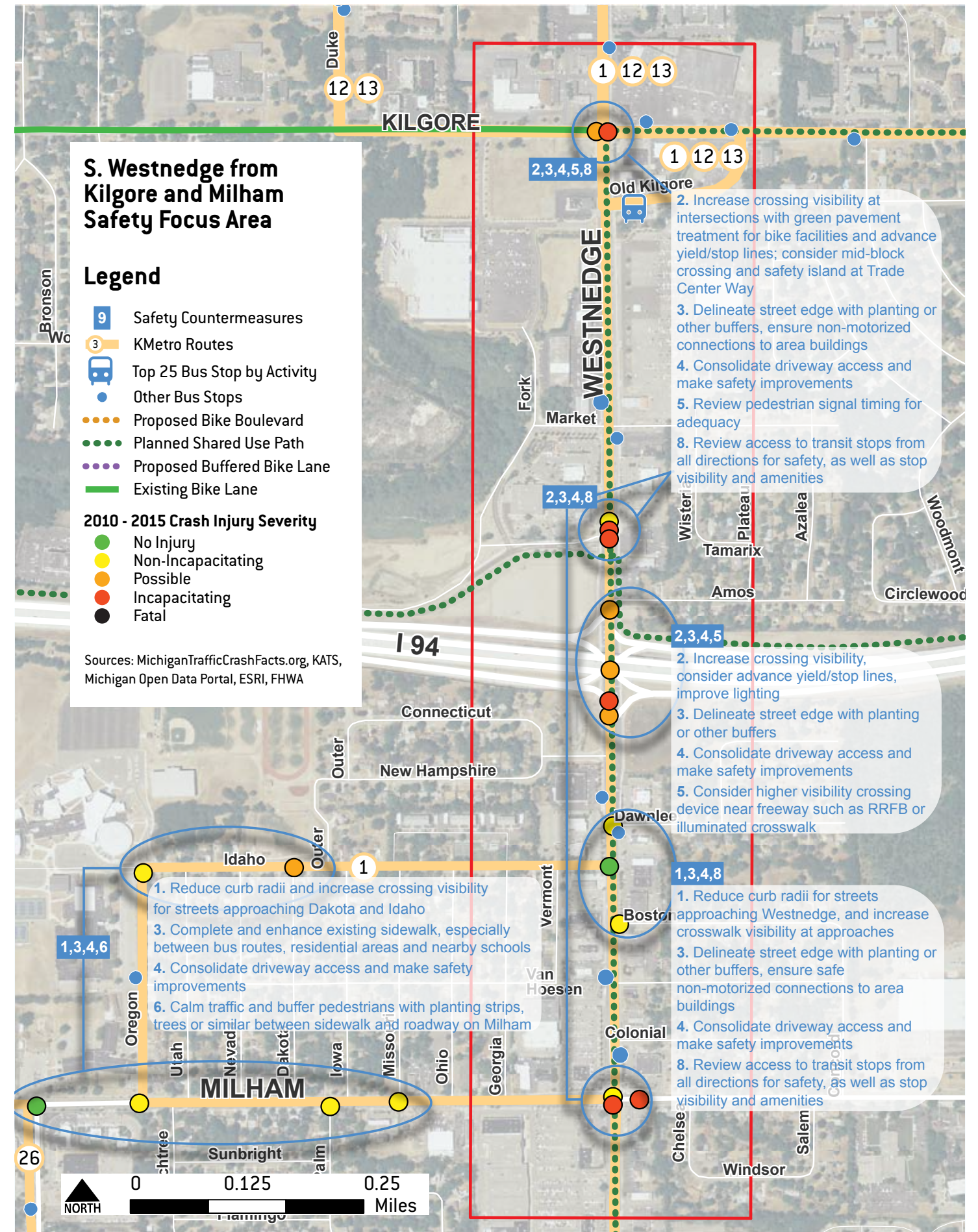
Safety Improvements

Proposals to address crashes include new shared use path facilities on Kilgore to connect with an existing bike lane. A shared use path is recommended for Westnedge and would connect to a proposed shared use path traveling on the northern side of I-94. A mid-block pedestrian crossing and safety island at Trade Centre Way and Westnedge Avenue is also recommended.

Visibility improvements, intersection treatments and additional access to destinations is suggested throughout. A landscape buffer along Westnedge could improve the pedestrian environment and calm traffic.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA ROMENCE AND WESTNEDGE

Crash Characteristics

A total of 15 crashes were reported in this section between 2010 and 2015, of which three were incapacitating and one was fatal. Nine crashes were between bicyclists and motor vehicles, while six were pedestrian related. 10 crashes, or 67%, were intersection related. Two crashes occurred at the Millennium Trail crossing south of Crossroads Mall, and five crashes occurred at the Millennium Trail crossing at Garden Lane and S. Westnedge Avenue south of the intersection. The Romence / Westnedge intersection itself accounted for seven crashes.

Romence Road Parkway is five lanes west of Westnedge, changing to a four lane divided road for a quarter mile east of the intersection with numerous slip turn lanes. S. Westnedge is generally five lanes in this section as well, widening to six lanes on either side of the intersection. Crossing distances range from approximately 60 to 90 feet. Intersection crosswalks are in a parallel stripe design rather than ladder design style. Pedestrian crossing signals are located at the intersections, but do not offer a count-down display.

The AADT for S. Westnedge within the focus area ranges from approximately 28,000 at the northern end to 22,100 at southern end.

AAADT for Romence ranges from 15,600 west of Westnedge to 14,500 on the eastern side of the intersection. The speed limit on this section of Romence is 35 mph west of Westnedge and 40 mph to the east of the intersection where the character changes to a divided highway.

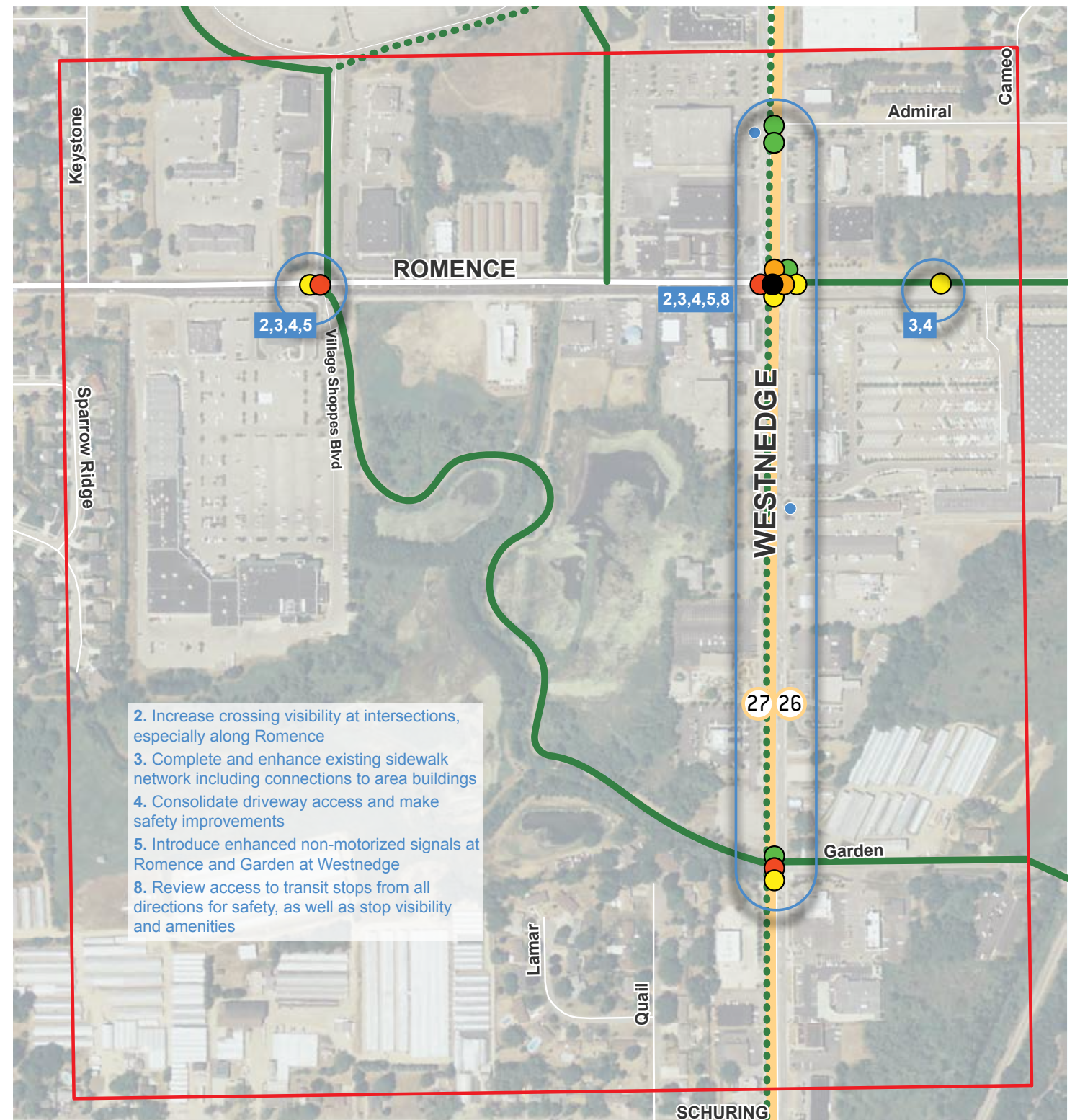
Safety Improvements

Shared use path additions are recommended on Westnedge and near Crossroads Mall to connect with existing Millennium Trail and other paths.

Improvements to intersections are suggested, especially for Westnedge and Romence and the intersection of Westnedge with the Millennium Trail. These include crosswalk visibility, non-motorized signals at the trail crossing and driveway access consolidation and safety.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



2. Increase crossing visibility at intersections, especially along Romence
 3. Complete and enhance existing sidewalk network including connections to area buildings
 4. Consolidate driveway access and make safety improvements
 5. Introduce enhanced non-motorized signals at Romence and Garden at Westnedge
 8. Review access to transit stops from all directions for safety, as well as stop visibility and amenities

Romence and Westnedge Safety Focus Area

2010 - 2015 Crash Injury Severity

- No Injury
- Non-Incapacitating
- Possible
- Incapacitating
- Fatal

Safety Countermeasures

- 9
- 3

Transit

- KMetro Routes
- Bus Stops

Shared Use Paths

- Planned Shared Use Path
- Existing Shared Use Path

Sources: MichiganTraffic-CrashFacts.org, KATS, Michigan Open Data Portal, ESRI, FHWA

FOCUS AREA

N. GRAND STREET

Crash Characteristics

N. Grand Street is the continuation of US 131 and the main commercial street through the Village of Schoolcraft. Two pedestrian deaths occurred along this strip in the three block stretch between Vienna and Eliza Streets, one occurring in 2011 and the other in 2012. While the crash at Vienna Street occurred at the intersection, the crash closer to Eliza happened mid-block.

The crossing distance of N. Grand is approximately 71 feet from curb to curb. The street is five lanes wide: two travel lanes in each direction in addition to a center turn lane. The length of blocks in the section is almost an eighth of a mile between intersections – over 600 feet. Intersection crosswalks are in a parallel stripe design rather than ladder design style. Pedestrian crossing signals are located at intersections along N. Grand in the identified section.

The AADT for N. Grand in the vicinity of these fatal crashes was approximately 20,600. The speed limit on the roadway is 35 mph.

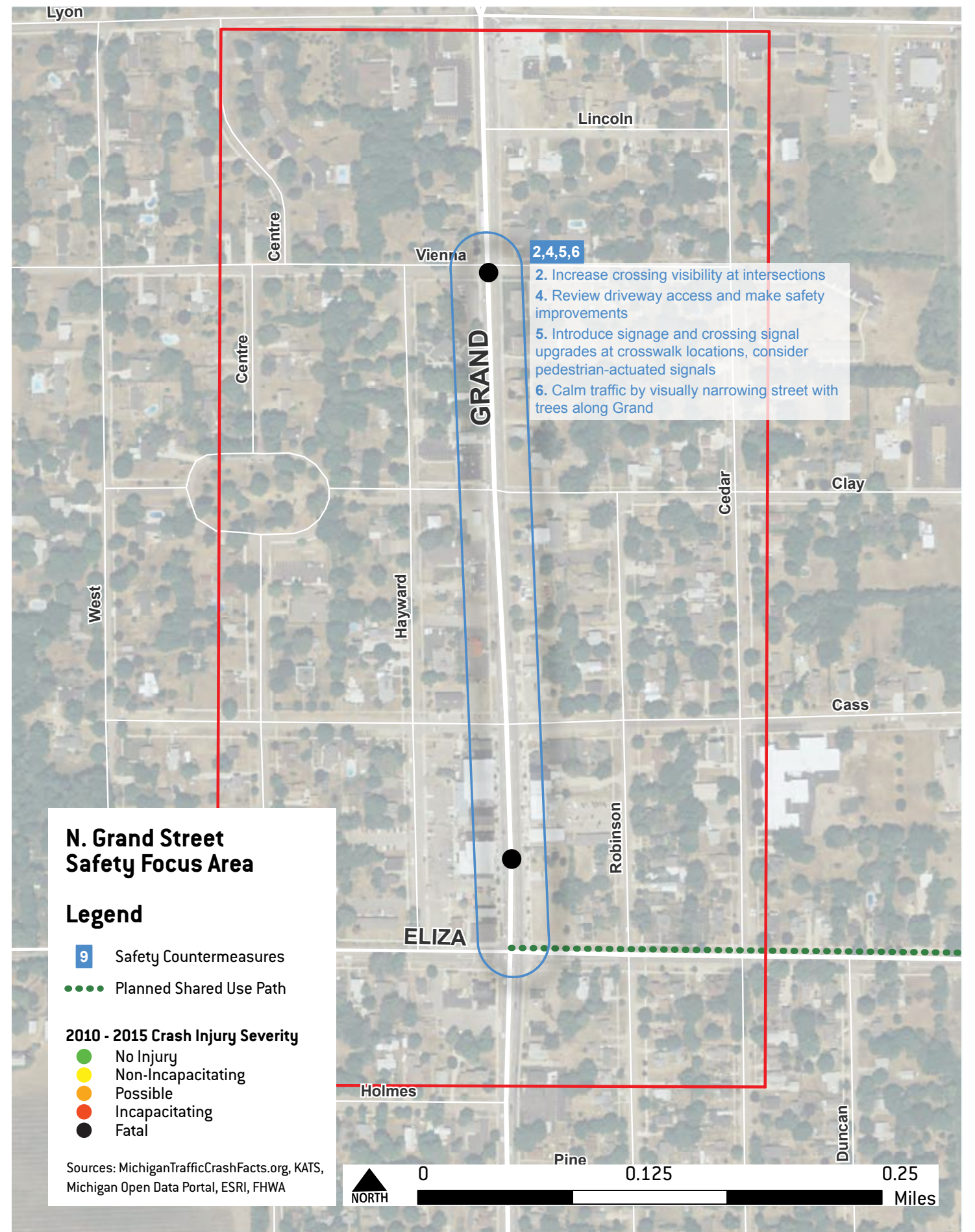
Safety Improvements

A shared use path is suggested on Eliza coming from the east up to the junction with Grand and US 131.

Suggested safety measures include improving driveway access management, signage and signals at crosswalks, and traffic calming along Grand in Downtown Schoolcraft.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



FOCUS AREA

PORTAGE ROAD AT I-94

Crash Characteristics

Seven crashes in this area involved bicyclists, including four at intersections. No bicycle crashes were incapacitating or fatal. Six crashes in the area involved pedestrians: one was incapacitating, another was fatal. The fatal crash appears to have happened within the I-94 right of way.

Although there are sidewalks in this area, of road, the continuity is not carried through evenly on all sides. Nearing I-94 on Portage, there are no north-south pedestrian walkways and sidewalks are replaced by desire paths. Several locations in this area include sidewalks that are interrupted by wide driveway aprons.

The crash site Bender at Portage includes one crosswalk in the east-west direction, but the western terminus ends without connecting further. The northwest and northeast portions of the intersection do not have curb cuts or sidewalk facilities to allow pedestrian connection. Dorchester and Portage, the site of another crash, is the location of a northbound bus stop.

Portage Road ranges from 5 to 7 lanes in this focus area, with widest lane counts occurring closer to the intersection with I-94, where right of way widths are just over 100 feet due to additional turn lanes. North of I-94, roadway widths range from 45 feet to slightly less than 60 feet. AADT remains fairly consistent at 21,000-22,000 along Portage, and between 6,000 and 11,000 along Kilgore through the I-94 intersection. The speed limit along Portage is 45 mph south of I-94 and 40 mph north of I-94.

Safety Improvements

A shared use path is suggested north of I-94, and a bike boulevard is suggested east of Portage and north of I-94 in this focus area.

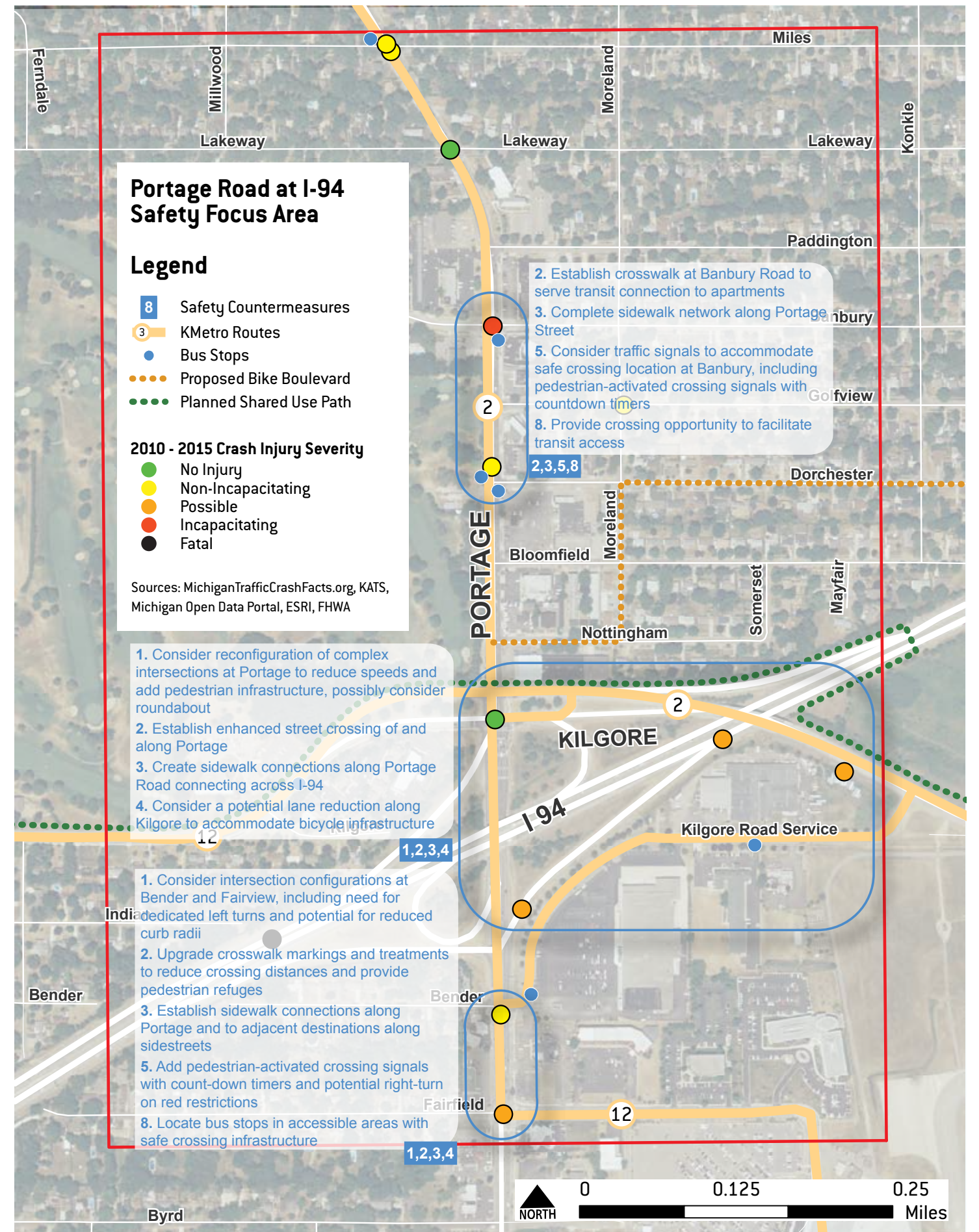
Crossing improvements, including striping, signals and co-location of bus stops are proposed. The complexity of I-94/Kilgore/service roads should be addressed to reduce speeds.

A complete sidewalk network is suggested along Portage and across I-94.

The interchange will be completely reconstructed in 2020 and will be built with a new geometric layout that is safer for all users.

Countermeasures Key

1. Intersection Treatments and Design
2. Crossing Areas
3. Sidewalks and Shoulders
4. Roadway Design
5. Markings, Signs and Signals
6. Traffic Calming
7. Shared Roadway Treatments
8. Transit Access



PLANNED PRIORITIES AND PHASING



SCORING METHODOLOGY

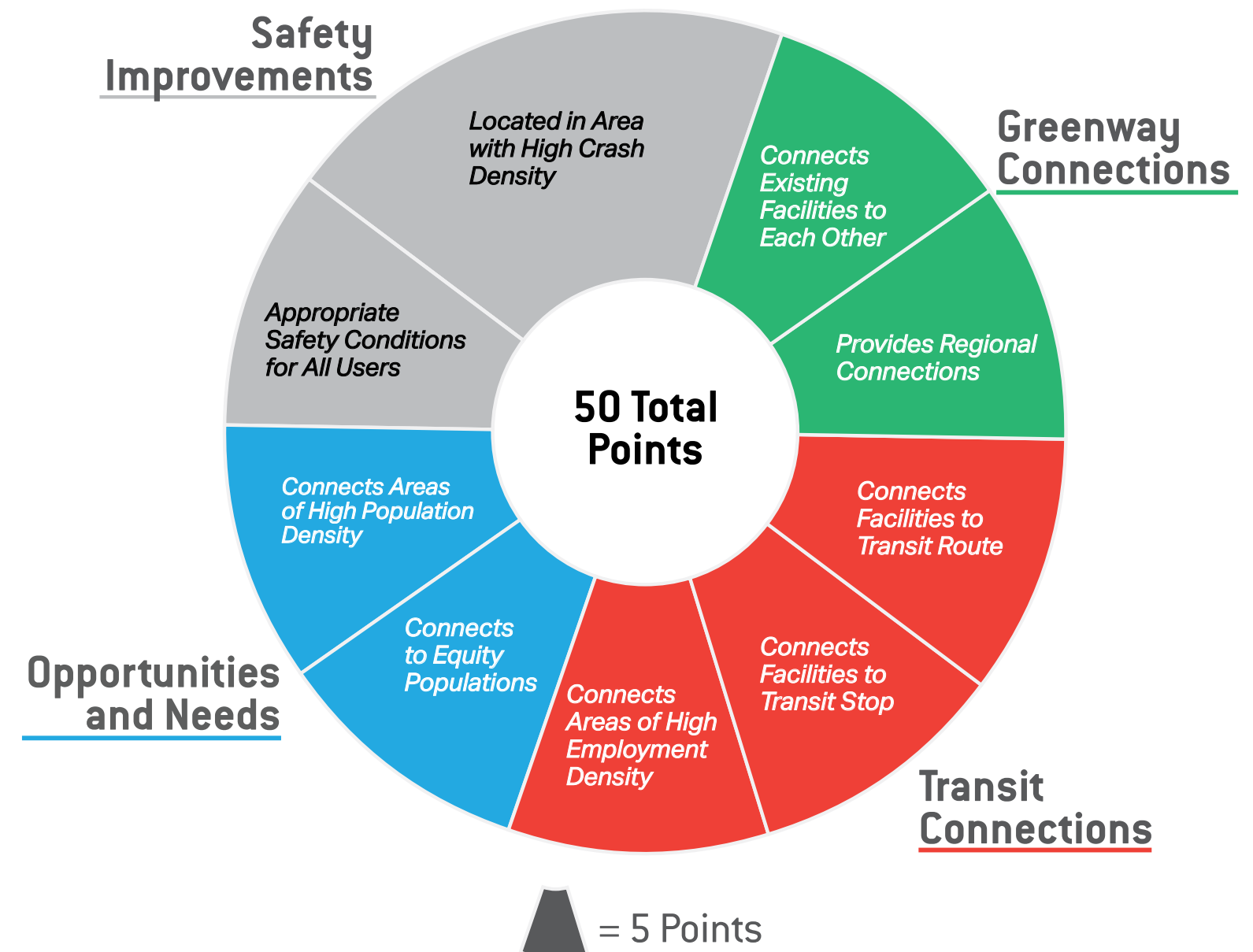
The KATS Region has a limited amount of annual funding that can be spent on new non-motorized infrastructure facilities. Due to the relatively small amount of money that bicycle and pedestrian projects receive and the large footprint of the KATS Region, a ranking system was established to prioritize the recommended projects and ensure funds are spent efficiently. By ranking the projects, KATS staff can determine which projects are most beneficial to the region based on the goals and objectives of this study. Additionally, new projects identified after this study is completed can be scored on the same scale and incorporated into the prioritization list.

The prioritization process is based off of the scoring methodology used in the KATS 2045 MTP, but incorporates the KATS Moves goals and objectives as scoring criteria. Input from the public is also incorporated into the scoring criteria. The evaluation is focused on four different areas of improvement:

- **Transit Connections** - Emphasizes the recommended facility's interaction with the transit system
- **Opportunities and Needs** - Rewards projects located in high density areas and, therefore, potentially benefiting the most people
- **Greenway Connections** - Evaluates projects based on how they enhance the non-motorized network
- **Safety Improvements** - Evaluates safety improvements for pedestrians and cyclists and focuses on high crash locations.

50 total points are available and each goal is worth a total of either 10 or 15 points depending on its weighting. Transit Connections and Safety Improvements are worth more total points because they were determined to be of higher priority by the Steering Committee and public. Each goal has two to three evaluation measures that are worth five to ten points. A points system was developed for the evaluation measures that awards projects a certain number of points based on various quantifiable measures.

The detailed scoring methodology, including the points available and scoring criteria, can be found in Tech Memo #3 (located at www.KATSMoves.org).



PROJECT PRIORITIZATION - GREENWAY FACILITIES

Using the scoring process previously detailed, the projects were scored based on their overall benefit to the region. Because the projects within the core of the region tend to score much higher, the ranked facilities are presented in four different categories based on their location; Greenways Inside of the KMetro Service Area, Greenways Outside of the KMetro Service Area, On-Street Facilities Inside of the KMetro Service Area, and On-Street Facilities Outside of the KMetro Service Area. This will allow KATS and the local municipalities to compare projects with similar costs, right-of-way requirements, and operating characteristics.

The results of this exercise do not indicate that certain projects are not viable or needed, rather it is a tool to determine which projects the region should move forward with first. The scoring results present an objective ranking that can be used to determine the order that specific projects could be constructed.

The map to the right shows the overall priority by location of the greenways identified for the KATS Region. They include both traditional trails (like the Kalamazoo River Valley Trail) and shared-use paths (similar to the path along Romence Road) as these facilities have similar construction costs, take up more right-of-way than on-street facilities, and can accommodate both bicycles and pedestrians.

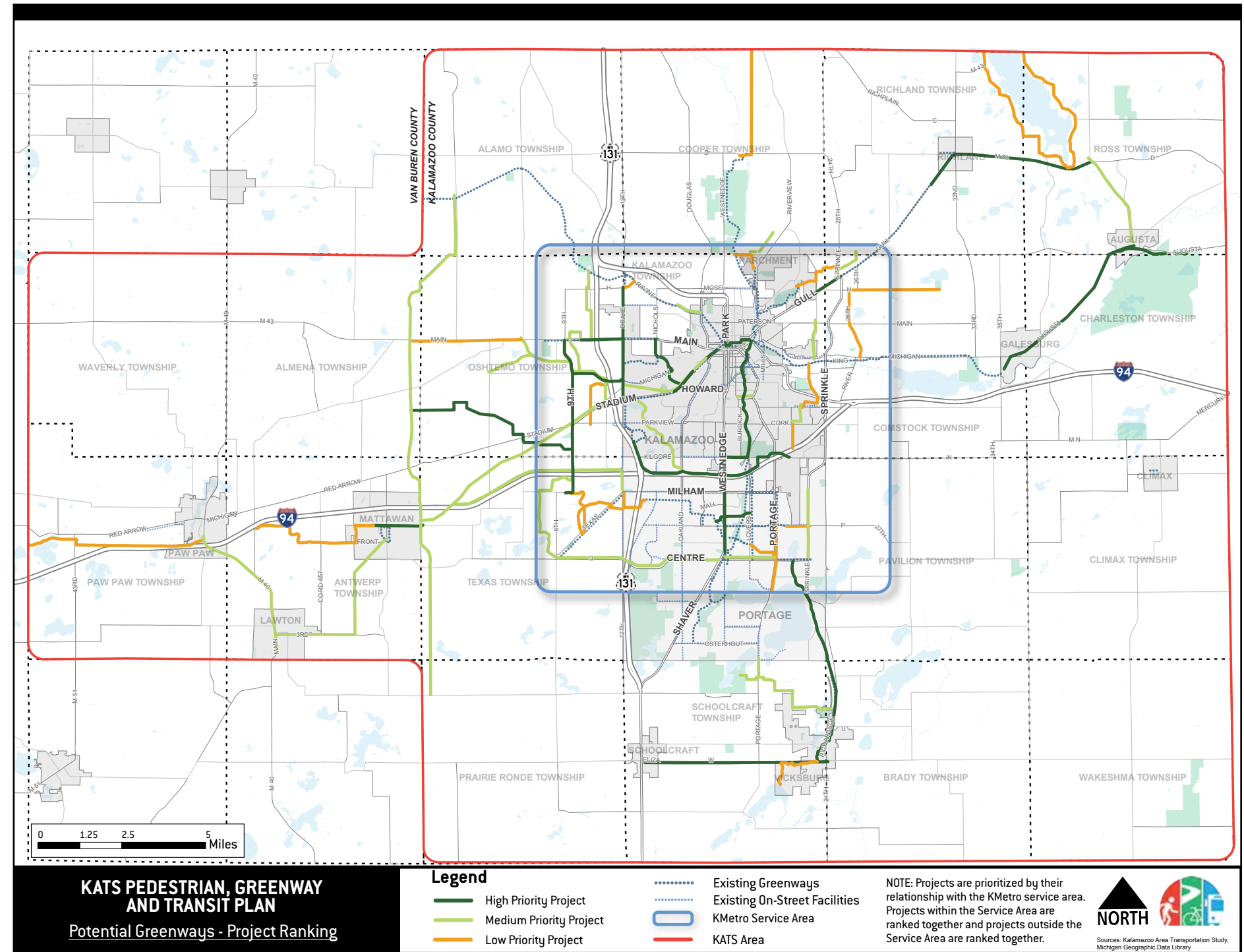
The following streets within the KMetro Service Area received the highest scores:

- Downtown Connection of the KRVT
- Michigan Avenue connecting Downtown to Western Michigan University
- S Westnedge Avenue
- Portage Creek Greenway Trail
- KL Road Trail

These projects travel through areas with a high number of jobs, have connections to high activity transit routes, fill in non-motorized network gaps, and provide safety improvements to high crash areas.

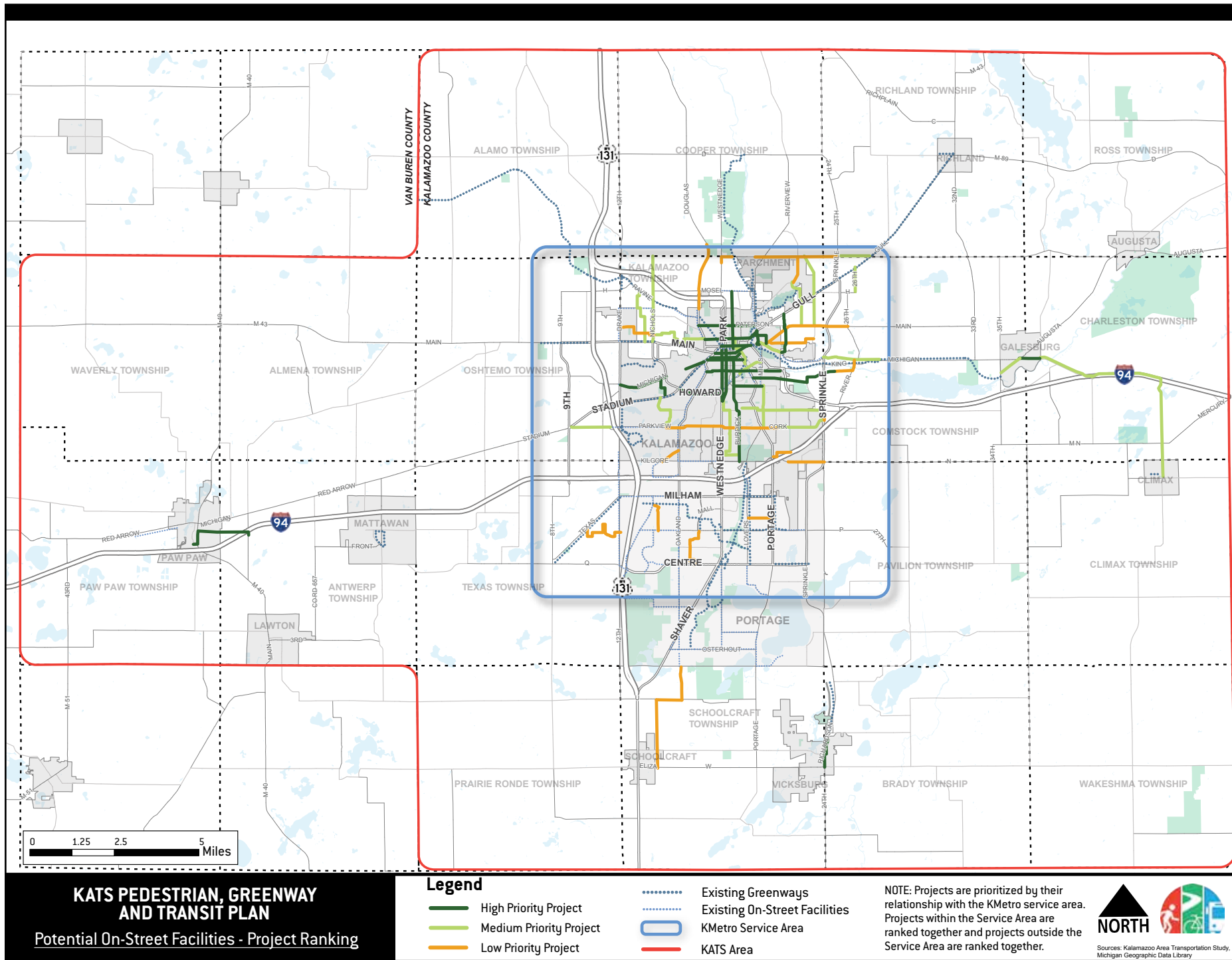
Outside of the KMetro Service Area, W Avenue connecting Vicksburg and Schoolcraft, the Oshtemo Electric Utility trail, the Augusta Trail, and the Portage-Vicksburg Trail were the highest ranked. These projects connect to a relatively high number of jobs, help fill in the non-motorized network, and provide long distance regional connections.

A full list of the recommended greenways can be found in Appendix B.



The potential greenways were ranked based on the scoring methodology to determine which projects would have the greatest benefit to the most people. Projects inside and outside of the KMetro service area are compared against each other.

PROJECT PRIORITIZATION - ON-STREET FACILITIES



Potential On-Street facilities include bicycle boulevards, standard bike lanes, buffered bike lanes, and protected bike lanes. Previously identified projects were already assigned facility types, while those identified as a part of this study were assigned a facility type based on the perceived stress level of the street. The map to the left shows the potential on-street projects and the priority ranking by location (inside or outside of the KMetro Service Area). Again, those projects that exist within the KMetro Service Area tend to have a higher overall score than those outside the Service Area due to the project's proximity to transit and high population density areas.

The following received the highest scores of the On-Street facilities located within the KMetro Service Area:

- N Burdick Street, Paterson Street
- Howard Street
- Lovell Street
- Kalamazoo Avenue in Downtown

These projects have similar scores to the top greenways located within the KMetro Service Area. The recommended facility types for the top on-street projects include bike lanes, buffered bike lanes, and protected bike lanes.

The top on-street facilities located outside of the KMetro Service Area are the following:

- 56th Street in Paw Paw
- Kalamazoo Avenue in Vicksburg
- Michigan Avenue in Galesburg

All of the facilities located outside of the KMetro Service Area are currently suggested to be bike lanes, largely because the level of bike and auto traffic in these areas is typically low. However, with fast auto speeds there may need to be some consideration of additional comfort for cyclists on these roads through buffering or other protection measures.

The potential on-street facilities were ranked based on the scoring methodology to determine which projects would have the greatest benefit to the most people. Projects inside and outside of the KMetro service area are compared against each other.

IMPLEMENTATION AND FUNDING

PROJECT PHASING

To determine likely phasing of the recommended improvements, the prioritized project list was combined with an analysis of the likely feasibility and cost of each project. The intersection of the Project Priority ranking and the Cost/Feasibility ranking was utilized to categorize each project into one of three timelines; Short-Term, Mid-Term, and Long-Term. Projects to be focused on in the Short-Term (next 1-6 years) are generally those with a high priority score and relatively low costs. Meanwhile, the categorization of projects reflects that more complex and costly projects, even if they are high priorities, are likely to take a longer time to implement due to funding and design issues.

The implementation timeframe offers a framework through which KATS can measure the progress of the implementation of the projects that score best in terms of completing the regional network, connecting to transit, responding to the needs of regional residents, and enhancing safety. It is recommended that the implementation progress is considered and revisited on an annual basis.

While a 25-year timeframe is suggested (generally matching KATS' long-range planning horizon), the infusion of additional funding support at the local or regional level could accelerate the implementation of these projects.

A number of projects that have been previously planned for or were identified as part of KATS Moves are being either fully or partially constructed in 2017. The following projects are slated for at least partial implementation:

- N Burdick Street Bike Lane - From Water Street to Mosel Avenue
- Drake Road Shared Use Path - From Stadium Drive to Main Street
- Vine Street Bike Lane - From Davis Street to Hatfield Avenue
- KRVT Downtown Connection Shared Use Path - From Harrison Street to Cooley Street
- Portage Creek Greenway Shared Use Path - From Kilgore Road to Michigan Avenue
- Vicksburg Trail Phase 1 Shared Use Path - From Portage-Vicksburg Trail to W Highway

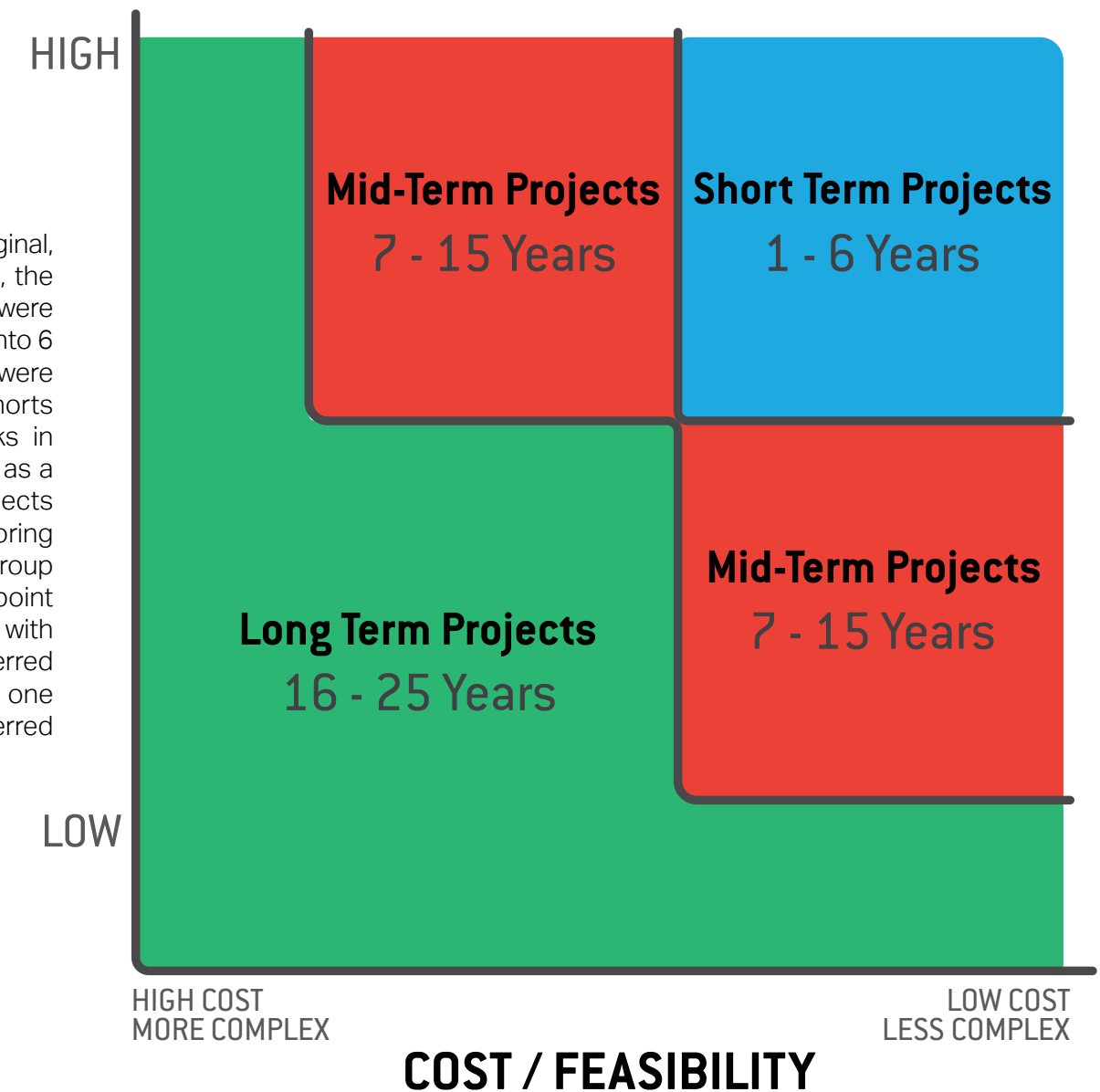
The following trail project has also been programmed for 2018:

- KRVT - Augusta Road Shared Use Path - From N 42nd Street to N 35th Street

These projects are assumed as under construction in the short-term and not included in the phasing plan.

PROJECT PRIORITY

Starting with the original, 50 point priority scores, the recommended projects were grouped by total score into 6 cohorts. The projects were sorted into these cohorts based on logical breaks in the total priority scores as a way to group similar projects together and make scoring easier. Each priority group was then assigned a point value from six to one, with six being the most preferred group of projects and one being the least preferred group of projects.



The projects were sorted into four cost groups and two feasibility groups and assigned scores for each. All projects were ranked from least costly to most costly and split into four groups based on natural breaks in the list and assigned a point value from four to one. The most costly projects received one point. For the feasibility rankings, projects were assigned a score between zero and two based on how complex the project was assumed to be (zero being more complex projects). The total Cost and Feasibility score is the sum of the individual cost and feasibility rankings.

IMPLEMENTATION TIMELINE

After plotting each project on the implementation chart on the previous page, they were assembled and grouped into short-term, mid-term, and long-term projects. The short-term projects are a mix of on-street and off-street facilities that range between about 1/2 mile and 3 miles in length. Most of these potential projects are located in the core of region, where they will connect to the KMetro transit system and serve a greater number of people. 33 projects are on the short-term project list and add up to about \$4.8M in total cost, or about \$800,000 per year.

There are 72 projects listed in the mid-term list, which tend to be longer and more complex. Many of these projects were ranked high in the prioritization scoring but have high project costs or will likely be harder to implement. The 105 miles of mid-term projects are estimated to be completed in 7-15 years, which gives local agencies more time to plan, fund, and design these facilities. The mid-term projects are expected to cost about \$19.5M total, or about \$2.4M per year.

The most expensive, hardest to implement, and lowest priority projects are contained in the long-term project list. These projects are expected to be completed in 16-25 years. The 32 long-term projects are expected to cost about \$28.5M total, or about \$3.2M per year, but will add over 120 miles of non-motorized facilities to the KATS Region. The detailed scoring and ranking for all of the projects, including the mid-term and long-term projects, can be found in Appendices A and B.

It is important to note that due to the high level nature of this study, some of the projects prioritized as Short-Term projects may be harder to implement due to right-of-way traffic issues that have not been accounted. As projects are slated for implementation, they may need to be re-adjusted based on these constraints.

There were a number of projects that were awarded a high priority score but were placed into the mid-term or long-term implementation lists. These projects either have a high construction cost or travel through areas that would be difficult to construct a facility on due to land assembly needs and other constraints. These projects include:

- I-94 Trail Shared Use Path
- Westnedge Avenue Buffered Bike Lane
- Howard Avenue Protected Bike Lane
- Portage Creek Greenway Shared Use Path
- S Westnedge Avenue Shared Use Path

KATS Moves Short-Term Non-Motorized Projects

Project Name	Facility Type	Length (Miles)	From	To
Paterson St	Bike Lane	1.5	Douglas	Riverview
Michigan Ave	Bike Lane	1.2	Howard	Stadium
Lovell St	Bike Lane	1.0	Portage	Stadium
S Burdick St	Bike Lane	3.1	Kilgore	Lovell
Lake St	Bike Lane	2.6	Larch	Portage
North St	Bike Lane	1.3	Gull	Douglas
Riverview Dr	Bike Lane	0.4	Mills	Gull
South St	Bike Lane	0.9	Michigan	Edwards
Stockbridge Ave	Bike Lane	0.8	Mills	Burdick
Nichols Rd	Bike Lane	2.5	Howard	G
E Michigan Ave	Bike Lane	1.7	Sprinkle	KRVT
E Michigan Ave	Bike Lane	0.7	Wallace	Mills
S Pitcher St	Bike Lane	0.6	Portage	Kalamazoo
N Edwards St	Bike Lane	0.5	North	South
Michigan Ave	Shared Use Path	0.4	Michikal	Eldred
Michigan Ave	Buffered Bike Lane	1.4	Howard	Drake
Gull Rd	Bike Lane	0.3	North	Riverview
KL Rd Trail	Shared Use Path	1.6	9th	Drake
Drake Rd	Shared Use Path	1.5	H	Main
Kalamazoo Ave	Protected Bike Lane	0.9	Westnedge	KRVT
Portage Creek Greenway	Shared Use Path	0.4	Pitcher	Michigan
Solon St	Shared Use Path	0.5	Howard	Main
Crosstown Pkwy	Buffered Bike Lane	0.8	Portage Creek Greenway	Mills
Main St	Shared Use Path	1.4	10th	Drake
Kilgore Rd	Shared Use Path	0.7	Westnedge	Portage Creek Greenway
Park St	Buffered Bike Lane	1.5	Arcadia Creek Trail	Maple
Bridge/Gilbert Bicycle Boulevard	Bicycle Boulevard	0.6	Gull	Main/Michigan
S 9th St	Shared Use Path	2.6	W Main	Stadium
Crossroads Mall Trail	Shared Use Path	1.1	Sears	Portage Creek Greenway
Miller Rd/Phillips St	Buffered Bike Lane	2.5	Sprinkle	Portage Creek Greenway
Chicago/Elkerton Bicycle Boulevard	Bike Boulevard	1.3	Gull	Michigan
Croyden/Canterbury Bicycle Boulevard	Bicycle Boulevard	1.2	Nichols	Drake
Greenwood Bicycle Boulevard	Bicycle Boulevard	0.6	Michigan	Amtrak Rail Trail
North St Bicycle Boulevard	Bicycle Boulevard	0.5	Douglas	Arlington

FUNDING STRATEGIES

Bicycle and pedestrian projects are broadly eligible for funding from nearly all major federal highway, transit, safety, and other programs. To be eligible for federal funding, bicycle projects must be principally for transportation, rather than recreation purposes, and must be designed and located pursuant to the transportation plans required of states and Metropolitan Planning Organizations, such as KATS.

TAP Grants

Transportation Alternatives Program (TAP) is a competitive grant program that uses federal transportation funds for specific activities that enhance the intermodal transportation system and provide safe alternative transportation options.

CMAQ

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program assists areas designated as non-attainment or maintenance by the Clean Air Act by funding projects that contribute to the attainment of National Air Quality Standards.

National Highway Transportation Safety Administration (NHTSA) 402 Safety Fund

The 402 Safety Fund supports State highway safety programs designed to reduce traffic crashes and resulting deaths, injuries, and property damage, including programs that improve pedestrian and bicycle safety.

MDNR Recreation Passport Grant Program

The Local Public Recreation Facilities Fund is to be used for the development of public recreation facilities for local units of government.

Michigan Natural Resources Trust Fund (MNRTF)

The MNRTF projects provide for natural resource protection and outdoor recreation by funding land acquisition and park development projects.

Community Development Block Grant (CDGB) Program

Funds are distributed for projects that consider poverty, population, housing overcrowding, age of housing, and population growth lag in relation to other metropolitan areas.

West Michigan Trails & Greenways Coalition (WMT&GC)

The WMT&GC is a non-profit group dedicated to developing non-motorized trails and greenways into a linked system connecting wilderness areas, parks, historic landmarks and cultural sites throughout West Michigan.

Surface Transportation Program

The Surface Transportation Program provides states with flexible funds that may be used for a wide variety of projects on any federal-aid highway, bridges on any public road, and transit facilities

Non-Motorized Project Type	TAP	CMAQ	NHTSA	MDNR Rec Passport	MNRTF	Com Dev Block Grant	WMT&GC	STP	NHS	PPP	Millages
Bicycle & Pedestrian Planning	X	X	X				X	X		X	X
Bike Lanes	X	X		X		X		X	X	X	X
Buffered Bike Lanes	X	X		X		X		X	X	X	X
Protected Bike Lanes	X	X		X		X		X	X	X	X
Shared-use path/Greenway	X	X		X	X		X	X	X	X	X
Bus Stop Improvements	X	X				X		X	X	X	X
Sidewalks	X	X						X	X	X	X
Crosswalks	X	X						X	X	X	X
Curb Cuts	X	X						X	X	X	X
Traffic Calming	X	X						X		X	X
Safety/Education	X	X	X				X	X		X	X

The funding opportunities available in Michigan for the KATS Region can be applied to a variety of different non-motorized transportation projects, including infrastructure, land acquisition, and education.

FUNDING STRATEGIES

National Highway System

Bicycle and pedestrian facilities within NHS corridors are eligible activities for NHS funds, including projects within interstate rights-of-way (23 U.S.C. 103(b)(6)).

City and Township Millages

Millages can be levied by municipalities in the KATS Region to fund specific projects located within the jurisdiction issuing the millage. Funds collected could be used for greenways, on-street facilities, and transit infrastructure improvements.

Public/private partnerships

Thanks to the generosity of private donors in West Michigan, several of the largest and most successful trail projects have been funded in large part by grants from private benefactors, notably Frederik Meijer. Additionally, some communities hold fund drives to raise private funds or other grants of labor and materials in small increments from the community.

Community and private foundations may also provide an important funding source for non-motorized transportation development. For example, MDOT Transportation Enhancement grants will pay for the construction of shared-use path but not for any feasibility studies or engineering work. Foundations can play an important part in filling the gaps left by other funds. Other facility amenities such as picnic grounds or boardwalks may also be paid in part with grants from foundations.

The total cost to implement roughly 275 miles of the Non-Motorized Transportation Improvement Projects is estimated at approximately \$70,000,000. Based on historical federal/state funding for non-motorized facilities in the KATS area, it is estimated that about \$750,000 are spent on non-motorized projects every year. Given the number and expense of projects and projected funding levels, it would take almost a century for the non-motorized project list to be completed. Fortunately many local communities are constructing non-motorized facilities either by matching funds in different grant programs or entirely with local funds. Cities are also keeping maintenance in mind for new transportation projects, including non-motorized facilities. For example, the City of Portage has over \$7.5 million in their Capital Improvement Plan for the next 10 years. Likewise, the City of Kalamazoo has almost \$2.5 million set aside for the next two phases of the Portage Creek Greenway and Kalamazoo Township has \$40,000 programmed for grant matching purposes to implement non-motorized trails.

TAP GRANTS

- Bus stop bicycle infrastructure improvements
- West Portage Creek Trail
- W Avenue Shared Use Path
- Howard Street Protected Bike Lane

NHTSA 402 FUND

- Intersection improvements in Safety Focus Areas
- Traffic calming in high crash locations
- Safety training courses and materials

MNRTF

- Trails with high amounts of land acquisition needs
- Portage Creek Greenway
- Penn Central Rail Trail
- Van-Kal Trail

WMT & GC

- Regional trails that connect communities with each other
- KRVT - Augusta Road
- Stadium - Mattawan Trail
- Portage - Vicksburg Trail

SURFACE TRANSPORTATION PROGRAM

- Facilities on public roads and transit infrastructure
- Buffered bike lanes on Westnedge Avenue and Park Street
- Protected bike lane on Howard Street
- Charles Street bicycle boulevard

PUBLIC/PRIVATE PARTNERSHIPS

- Private donors can help fund both the construction and design of trails
- I-94 Trail
- Texas Township Trail
- KL Road Trail

CMAQ

- Bus stop bicycle infrastructure improvements
- Wayfinding signage
- Ostemo Electric Utility Trail
- West Portage Creek Trail

MDNR RECREATION GRANT

- Trails that align with the Michigan Statewide Comprehensive Outdoor Recreation Plan

CDBG PROGRAM

- Non-motorized facilities through low income neighborhoods
- West Douglas Bicycle Boulevard
- Portage Creek Greenway
- Drake Road Shared Use Path

NATIONAL HIGHWAY SYSTEM

- Non-motorized facilities within NHS corridors are eligible
- I-94 Trail
- Bridges or tunnels for trails crossing I-94 or US-131
- S 9th Street shared-use path

COORDINATION WITH ROADWAY PROJECTS

Many of the on- and off-street projects could be coordinated with roadway projects previously programmed in the Transportation Improvement Program (TIP) in the region. Many of these resurfacing, widening, and other construction projects were planned for prior to consideration of bicycle facilities, but it is assumed that these will be considered during the design process. KATS may be able to stretch the Region's non-motorized transportation dollars farther by working with the various municipalities, the County, or the State to include the construction of projects listed in the KATS Moves Plan that overlap with roadway projects in the TIP. As these roadway projects become listed on the TIP, KATS should start working with the various entities to coordinate non-motorized facility and safety improvement construction with roadway projects.

The projects detailed in the tables to the right show roads that are listed in the 2017 - 2020 TIP and the potential non-motorized facilities and safety focus areas that correspond to those roads. These projects would be initial candidates for coordination in the short-term.



The recommended non-motorized projects should be coordinated with scheduled road work projects to save in overall costs. Riverview Drive (above) was resurfaced in 2015 and bike lanes were added after the resurfacing. Source: Google Maps

Non-Motorized Facilities to Coordinate with Roadway Projects Listed in 2017 - 2020 TIP

Project Name	Facility Type	Length (Miles)	Responsible Agency
S 9th Street	Shared-Use Path	2.3	MDOT
Sprinkle Road	Shared-Use Path	2.0	RCKC
Stadium - Mattawan Trail	Shared-Use Path	6.6	RCKC
KL Road Trail	Shared-Use Path	1.6	RCKC
Stockbridge Avenue	Bike Lane	0.8	Kalamazoo
N Burdick Street	Bike Lane	1.7	Kalamazoo
Cork Street	Protected Bike Lane	1.9	Kalamazoo
Vine Street	Bike Lane	2.2	Kalamazoo
Kalamazoo Avenue	Bike Lane	0.9	Vicksburg

Safety Focus Areas to Coordinate with Roadway Construction Projects in 2017 -2020 TIP

Safety Focus Area	TIP Project(s)	Responsible Agency
1 - Michigan & Drake	S Drake Rd shared-use path	Kalamazoo
	KL Ave widen to 3 lanes/HMA overlay	RCKC
2 - Michigan & Howard	W Michigan and Howard traffic ops/safety	Kalamazoo
	Howard St resurface, upgrade sidewalk ramps to ADA standards	Kalamazoo
4 - Downtown Kalamazoo	Pitcher St reconstruction	Kalamazoo
	Pitcher St resurface	Kalamazoo
8 - Gull & Sprinkle	Sprinkle Rd Corridor traffic ops/safety	RCKC
10 - 9th & I-94	I-94 under 9th St bridge work	MDOT

APPENDICES



APPENDIX A - PROJECT AND IMPLEMENTATION PRIORITY SCORING

Project	Facility	From	To	Project Prioritization Score	Implementation Priority Score
KRVT - Downtown Connection	Shared Use Path	Harrison	Cooley	47	6
Drake Rd	Shared Use Path	Stadium	Main	45	6
S Westnedge Ave	Shared Use Path	Shaver	Kilgore	45	6
Portage Creek Greenway	Shared Use Path	Kilgore	Michigan	44	6
KL Rd Trail	Shared Use Path	9th	Drake	43	6
Patterson St	Bike Lane	KRVT	Riverview	42	6
N Burdick St	Bike Lane	Water	Mosel	42	6
Kalamazoo Ave	Protected Bike Lane	Westnedge	KRVT	42	6
Howard Ave	Protected Bike Lane	Stadium	Park	42	6
Drake Rd	Shared Use Path	H	Main	42	6
Michigan Ave	Bike Lane	Archer	Stadium	41	6
Lovell St	Bike Lane	Portage	Stadium	41	6
Vine St	Bike Lane	Oakland	Hatfield	40	5
Westnedge Ave	Buffered Bike Lane	Arcadia Creek Trail	Betsy Ann	40	5
Gull Road	Comstock Twp	Nazareth	Sprinkle	40	5
South St	Bike Lane	Michigan	Edwards	39	5
Lake St	Bike Lane	Larch	Lovers	39	5
S Burdick St	Bike Lane	Kilgore	Lovell	39	5
Park St	Buffered Bike Lane	Arcadia Creek Trail	Betsy Ann	39	5
I-94 Trail	Shared Use Path	Campus Dr	Kilgore	39	5
Gull Rd	Bike Lane	North	Riverview	38	5
Riverview Dr	Bike Lane	Gull	Mills	38	5
Stockbridge Ave	Bike Lane	Mills	Westnedge	38	5
Michigan Ave	Buffered Bike Lane	Howard	Drake	38	5
Kilgore Rd	Shared Use Path	Westnedge	Portage Creek	38	5
Main St	Shared Use Path	10th	Drake	38	5
Howard St/WMU	Shared Use Path	Kendall	Stadium	38	5
North St	Bike Lane	Gull	Douglas	37	5
Michigan Ave	Protected Bike Lane	Michikal	Kalamazoo	37	5
Bridge/Gilbert Bicycle Boulevard	Bicycle Boulevard	Gull	Main	36	5
Michigan Ave	Shared Use Path	Michikal	Eldred	36	5
Amtrak Rail Trail	Shared Use Path	Drake	Lovell	36	5
Greenwood Bicycle Boulevard	Bicycle Boulevard	Michigan	Penn Central Rail Trail	35	4
Chicago/Elkerton Bicycle Boulevard	Bike Boulevard	Gull	Michigan	35	4
Stadium Dr	Shared Use Path	Howard	Railroad	35	4
Solon St	Shared Use Path	Howard	Main	35	4

Project	Facility	From	To	Project Prioritization Score	Implementation Priority Score
Crossroads Mall Trail	Shared Use Path	Seats	Portage Creek Greenway	35	4
S 9th St	Shared Use Path	W Main	Stadium	35	4
S Pitcher St	Bike Lane	Portage	Kalamazoo	34	4
S 9th St	Shared Use Path	KVCC	Stadium	34	4
West Portage Creek Trail	Shared Use Path	Stadium	Oakland	34	4
Crosstown Pkwy	Buffered Bike Lane	Portage Creek Greenway	Mills	33	4
Miller Rd/Phillips St	Buffered Bike Lane	Sprinkle	Portage Creek Greenway	33	4
E Michigan Ave	Bike Lane	Wallace	Mills	32	4
Croyden/Canterbury Bicycle Boulevard	Bicycle Boulevard	Nichols	Drake	32	4
E Michigan Ave	Bike Lane	Sprinkle	KRVT	32	4
Nichols Rd	Bike Lane	Howard	G	32	4
Gull Prairie Apartments Trail	Shared Use Path	Sprinkle	G Ave	32	4
Centre Rd	Shared Use Path	12th	Shaver	32	4
Texas Twp Trail	Shared Use Path	12th	9th	32	4
Stadium - Mattawan Trail	Shared Use Path	Pennycross	11th	32	4
N Edwards St	Bike Lane	North	South	31	4
Norh St Bicycle Boulevard	Bicycle Boulevard	Douglas	Arlington	31	4
Cork St	Protected Bike Lane	Duke	Fulford	31	4
James St/ Pasadena St	Bike Boulevard	Stockbridge	Cork	30	3
Nazareth Rd	Bike Lane	G Ave	Main	30	3
Cherokee St	Bike Boulevard	Kal Haven Trail	Main	30	3
Alcott St	Shared Use Path	Burdick	Portage	30	3
Centre Ave Extension	Shared Use Path	Lovers	Portage	30	3
Beymore-Ridge Trail	Shared Use Path	KL	Main	30	3
I-94 Trail	Shared Use Path	Stadium-Mattawan Trail	12th	30	3
W Ave	Shared Use Path	US-131	Richardson	30	3
Sunnyside Rd	Bike Boulevard	Gull	Main	29	3
Stadium Dr/Amtrak Rail ` Trail Link	Shared Use Path	Stadium	Railroad	29	3
Nazareth Rd	Shared Use Path	Kenilworth	King Hwy	29	3
Sprinkle Rd	Shared Use Path	Q	O	29	3
KL Rd Trail	Shared Use Path	4th	9th	29	3
26th Ave	Bike Lane	H Ave	Gull	28	3
Brook Dr	Bike Lane	Mt Olivet	Gull	28	3
Rose St	Bike Boulevard	Park	Pratt	28	3
G Ave	Buffered Bike Lane	Sprinkle	Gull	28	3
S 11th St	Shared Use Path	W KL Ave	Stadium	28	3
Ravine Rd	Shared Use Path	Nichols	Kal-Haven Trail	28	3

 Projects Partially or Entirely Under Construction or Programmed for Construction

PROJECT AND IMPLEMENTATION PRIORITY SCORING

Project	Facility	From	To	Project Prioritization Score	Implementation Priority Score
Parkview Ave	Protected Bike Lane	Stadium	Crystal	28	3
10th St	Shared Use Path	Main	Kal-Haven Trail	28	3
Portage - Vicksbug Trail	Shared Use Path	V	Centre	28	3
Pratt St	Bike Lane	Burdick	Westnedge	27	3
Rambling/Broadway St	Bike Lane	Stadium	Parkview	27	3
Whites St	Bike Lane	Broadway	Duke	27	3
Squires Rd	Shared Use Path	Ravine	Drake	27	3
12th St	Shared Use Path	Milham	W ON Ave	27	3
Davis Creek Trail	Shared Use Path	Cork	Miller	27	3
KRVT - Parchment Loop	Shared Use Path	G	Mosel	27	3
East Central Trailway	Shared Use Path	Portage	Lovers	27	3
Olmstead Rd	Shared Use Path	Comstock	Miller	27	3
S Portage Rd	Shared Use Path	Ames	Milham	27	3
Oshtemo Electric Utility Trail	Shared Use Path	Van Kal Trail	9th	27	3
E Main St	Bike Lane	Sprinkle	Gilbert	26	3
Olmstead Rd	Shared Use Path	Lake	King Hwy	26	3
Augusta Trail	Shared Use Path	Fort Custer Cemetery	Lincoln	26	3
Moorsbridge Rd	Bike Lane	Romence	Centre	25	2
Sprinkle Rd	Buffered Bike Lane	Miller	Cork	25	2
Douglas Ave	Bike Lane	Dunkley	G	25	2
56th St - Paw Paw	Bike Lane	County Rd 653	Gremps	25	2
Vicksburg Trail - Phase 1	Shared Use Path	Portage-Vicksburg Trail	W Hwy	25	2
Al Sabo Preserve Trail	Shared Use Path	Texas Dr	KVCC	25	2
Quail Run Trail	Shared Use Path	KL	Parkview	25	2
Texas - 12th Trail	Shared Use Path	12th	Texas	25	2
G Ave	Bike Lane	20th	Riverview	24	2
Dorchester Ave	Bike Boulevard	Portage	Emerald Drive Park Trail	24	2
Attleberry	Bike Boulevard	Texas	12th	24	2
Haverhill Extension	Shared Use Path	12th	Haverhill Trail	24	2
KRVT - Augusta Rd	Shared Use Path	42nd	35th	24	2
Westnedge Ave/G Ave	Bike Lane	Edison	KRVT	23	2
Kilgore Rd	Bike Lane	I-94 Trail	Sprinkle	23	2
West Douglas Bicycle Boulevard	Bicycle Boulevard	Prairie	Nichols	23	2
Romence Rd	Shared Use Path	Pfizer	Sprinkle	23	2
KRVT - M-89	Shared Use Path	42nd	Gull Manor	23	2
Comstock Ave	Bike Lane	Larch	River	22	2
Angling Rd	Bike Lane	Merryview	Oakland	22	2

Project	Facility	From	To	Project Prioritization Score	Implementation Priority Score
Michigan Ave	Bike Lane	N 37th	W Battle Creek	22	2
Cork St	Bike Lane	Sprinkle	Lovers	22	2
Charles St Bicycle Boulevard	Bicycle Boulevard	Main	Nazareth	22	2
Primrose St	Bike Boulevard	Romence	Centre	22	2
G Ave	Bike Lane	G	Riverview	22	2
Emerald Drive Park Trail	Shared Use Path	I-94	Cork	22	2
McGillin St	Shared Use Path	Root	Van Kal Trail	22	2
M-40	Shared Use Path	G.E. Fadel	Orchard	22	2
Lawton-Mattawan Trail	Shared Use Path	S 29th	Main	22	2
River St	Bike Lane	Comstock	Michigan	21	2
Mt Olivet Rd	Bike Lane	G	Range	21	2
Main St	Bike Lane	Nazareth	26th	21	2
Spring Valley Park Trail	Shared Use Path	Nazareth	G Ave/Walmart	21	2
Spring Valley Park Trail	Shared Use Path	Mt Olivet	Nazareth Rd	21	2
26th St	Shared Use Path	H Ave	King Hwy	21	2
H Ave	Shared Use Path	26th	Shepherd	21	2
Vicksburg Trail - Phase 3	Shared Use Path	Portage-Vicksburg Trail	Mandigo	21	2
Ramona Ave	Bike Lane	Lovers	Porage	20	1
E Michigan Ave	Bike Lane	Miller	S 44th	20	1
Old Conrail Line Trail	Shared Use Path	Collingwood	G	20	1
2nd Rd	Shared Use Path	Kal-Haven Trail	G Ave	20	1
W Battle Creek Ave	Bike Lane	N 35th	Michigan	19	1
Van Kal Trail	Shared Use Path	U	2nd	19	1
S 44th St	Bike Lane	E Michigan	E Maple	18	1
KRVT - 42nd St	Shared Use Path	D	Augusta	18	1
M-43	Shared Use Path	6th	Val Kal Trail	18	1
58th St Trail	Shared Use Path	46th	Gremps	18	1
KRVT - North	Shared Use Path	County Line	D	17	1
58th-56th St Trail	Shared Use Path	32nd	Root	17	1
Gull Lake Trail	Shared Use Path	Interlaken	Baseline	17	1
Oakland Dr	Bike Lane	Oak Leaf	U AVE	16	1
S 14th St	Bike Lane	U Ave	Eliza	16	1
Vicksburg Trail - Phase 2	Shared Use Path	W Hwy	Barton Lake	16	1
W U Ave	Bike Lane	Oakland	S 14th	12	1

 Projects Partially or Entirely Under Construction or Programmed for Construction

APPENDIX B - GREENWAY PROJECT LIST AND RANKING

Project	Municipality	From	To	Length (mi)	Estimated Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
Michigan Ave	Kalamazoo	Michikal	Eldred	0.4	\$118,239	5	5	10	Short Term
KL Rd Trail	Oshtemo Twp	9th	Drake	1.6	\$446,604	6	4	10	Short Term
Drake Rd	Kalamazoo/ Oshtemo Twp	H	Main	1.5	\$431,594	6	4	10	Short Term
Drake Rd	Kalamazoo/ Oshtemo Twp	Stadium	Main	1.4	\$396,706	6	4	10	Short Term
KRVT - Downtown Connection	Kalamazoo	Harrison	Cooley	0.9	\$252,474	6	4	10	Short Term
Portage Creek Greenway	Kalamazoo	Pitcher	Michigan	0.4	\$121,879	6	4	10	Short Term
Solon St	Kalamazoo Twp	Howard	Main	0.5	\$150,732	4	5	9	Short Term
Main St	Oshtemo Twp	10th	Drake	1.4	\$393,320	5	4	9	Short Term
Kilgore Rd	Kalamazoo/Portage	Westnedge	Portage Creek	0.7	\$193,720	5	4	9	Short Term
Portage Creek Greenway	Kalamazoo	Kilgore	Lake	2.5	\$699,000	6	2	9	Mid Term
S 9th St	Oshtemo	W Main	Stadium	2.6	\$728,295	4	4	8	Short Term
Stadium Dr	Kalamazoo	Howard	Railroad	0.5	\$149,350	4	3	8	Mid Term
Gull Road	Comstock Twp	Nazareth	26th	0.8	\$235,739	5	3	8	Mid-Term
Crossroads Mall Trail	Portage	Sears	Portage Creek Greenway	1.1	\$315,511	4	4	8	Short Term
Olmstead Rd	Kalamazoo Twp	Lake	King Hwy	0.3	\$87,116	3	6	9	Mid Term
S Westnedge Ave	Portage	Shaver	Kilgore	2.8	\$799,948	6	3	9	Mid Term
12th St	Portage/Texas Twp	Milham	W O N Ave	0.6	\$169,836	3	5	8	Mid Term
Alcott St	Kalamazoo	Burdick	Portage	0.5	\$128,476	3	5	8	Mid Term
Romence Rd	Portage	Pfizer	Sprinkle	0.7	\$193,677	2	5	7	Mid Term
10th St	Oshtemo Twp	Main	Kal-Haven Trail	2.2	\$612,632	3	4	7	Mid Term
Augusta Trail	Augusta/Ross Twp	Fort Custer Cemetery	Lincoln	1.8	\$496,124	3	4	7	Mid Term
Beymore-Ridge Trail	Oshtemo Twp	KL	Bunkerhill	1.7	\$480,323	3	4	7	Mid Term
Olmstead Rd	Kalamazoo/ Kalamazoo Twp	Comstock	Miller	1.5	\$423,677	3	4	7	Mid Term
Nazareth Rd	Kalamazoo	Kenilworth	King Hwy	1.2	\$332,006	3	4	7	Mid Term
East Central Trailway	Portage	Portage	Lovers	1.0	\$270,821	3	4	7	Mid Term
KRVT - Parchment Loop	Parchment/ Kalamazoo Twp	G	Mosel	0.9	\$260,489	3	4	7	Mid Term
Davis Creek Trail	Kalamazoo	Cork	Miller	0.8	\$221,900	3	4	7	Mid Term
Ravine Rd	Kalamazoo/ Kalamazoo Twp	Nichols	Kal-Haven Trail	0.7	\$205,667	3	4	7	Mid Term

Project	Municipality	From	To	Length (mi)	Estimated Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
S 11th St	Oshtemo	W KL Ave	Stadium	0.7	\$205,235	3	4	7	Mid Term
Squires Rd	Kalamazoo Twp	Ravine	Drake	0.4	\$108,537	3	4	7	Mid Term
Stadium Dr/Penn Central Trail Link	Kalamazoo	Stadium	Railroad	0.1	\$41,976	3	4	7	Mid Term
Stadium - Mattawan Trail	Oshtemo/Texas Twp	Pennycross	11th	6.6	\$1,863,779	4	3	7	Mid Term
Texas Twp Trail	Texas Twp	12th	9th	5.7	\$1,611,438	4	3	7	Mid Term
S 9th St	Oshtemo/Texas Twp	KVCC	Stadium	2.2	\$627,971	4	3	7	Mid Term
Howard St/WMU	Kalamazoo	Kendall	Stadium	1.2	\$351,543	5	2	7	Mid Term
H Ave	Comstock Twp	26th	Shepherd	2.7	\$756,724	2	4	6	Mid Term
Texas - 12th Trail	Texas Twp	12th	Texas	2.6	\$737,670	2	4	6	Mid Term
26th St	Comstock Twp	H Ave	King Hwy	2.1	\$587,930	2	4	6	Mid Term
Quail Run Trail	Oshtemo Twp	KL	Parkview	1.8	\$498,493	2	4	6	Mid Term
Al Sabo Preserve Trail	Texas Twp	Texas Dr	KVCC	1.6	\$463,732	2	4	6	Mid Term
McGillin St	Mattawan	Root	Van Kal Trail	1.5	\$413,753	2	4	6	Mid Term
Vicksburg Trail - Phase 1	Vicksburg	Portage-Vicksburg Trail	W Hwy	1.2	\$340,721	2	4	6	Mid Term
Spring Valley Park Trail	Kalamazoo	Mt Olivet	Nazareth Rd	0.9	\$251,893	2	4	6	Mid Term
Spring Valley Park Trail	Kalamazoo/ Comstock Twp	Nazareth	G Ave/ Walmart	0.8	\$233,303	2	4	6	Mid Term
Haverhill Extension	Portage	12th	Haverhill Trail	0.8	\$221,787	2	4	6	Mid Term
Emerald Drive Park Trail	Kalamazoo	I-94	Cork	0.7	\$202,404	2	4	6	Mid Term
Centre Rd	Portage	12th	Shaver	3.1	\$862,607	4	2	6	Mid Term
Gull Prairie Apartments Trail	Comstock Twp	Sprinkle	G Ave	0.9	\$255,211	4	2	6	Mid Term
I-94 Trail	Kalamazoo/Portage	Campus Dr	Kilgore	5.8	\$1,627,443	5	1	6	Mid Term
Portage - Vicksburg Trail	Portage	V	Centre	5.5	\$1,549,149	3	3	6	Long Term
Amtrak Rail Trail	Kalamazoo	Drake	Lovell	2.9	\$811,053	5	1	6	Long Term
W Ave	Schoolcraft/ Vicksburg/ Schoolcraft Twp	US-131	Richard-son	5.5	\$1,535,143	3	3	6	Long Term
KL Rd Trail	Oshtemo Twp	4th	9th	4.6	\$1,291,258	3	3	6	Long Term
Sprinkle Rd	Portage	Q	O	2.0	\$568,030	3	3	6	Long Term
S Portage Rd	Portage	Ames	Milham	2.0	\$550,854	3	3	6	Long Term

 Projects Partially or Entirely Under Construction or Programmed for Construction

GREENWAY PROJECT LIST AND RANKING

Project	Municipality	From	To	Length (mi)	Estimated Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
West Portage Creek Trail	Kalamazoo	Stadium	Oakland	3.2	\$910,830	3	2	5	Long Term
KRVT - 42nd St	Ross Twp/Augusta	D	Augusta	2.9	\$826,651	1	4	5	Long Term
Vicksburg Trail - Phase 2	Vicksburg	W Hwy	Barton Lake	1.9	\$542,550	1	4	5	Long Term
2nd St	Alamo	Kal-Haven Trail	G Ave	1.8	\$501,445	1	4	5	Long Term
Lawton-Mattawan Trail	Antwerp/Mattawan	S 29th	Main	5.6	\$1,574,112	2	3	5	Long Term
KRVT - Augusta Rd	Galesburg/Charleston/Augusta	42nd	35th	5.6	\$1,563,614	2	3	5	Long Term
KRVT - M-89	Richland/Ross Twp	42nd	Gull Manor	5.3	\$1,483,287	2	3	5	Long Term
Vicksburg Trail - Phase 3	Vicksburg	Portage-Vicksburg Trail	Mandigo	4.4	\$1,226,572	2	3	5	Long Term
Oshtemo Electric Utility Trail	Oshtemo	Van Kal Trail	9th	5.9	\$1,666,198	3	2	5	Long Term
I-94 Trail	Texas Twp	Stadium-Mattawan Trail	12th	5.3	\$1,478,429	3	2	5	Long Term
Centre Ave Extension	Portage	Lovers	Portage	1.5	\$413,822	3	2	5	Long Term
Van Kal Trail	Oshtemo/Almena/Texas/Prairie Ronde Twps	U	2nd	14.1	\$3,970,502	1	3	4	Long Term
Gull Lake Trail	Ross/Richland Twp	Interlaken	Baseline	9.5	\$2,680,807	1	3	4	Long Term
58th St Trail	Paw Paw	46th	Gremps	5.4	\$1,509,731	1	3	4	Long Term
58th-56th St Trail	Antwerp/Mattawan	32nd	Root	4.6	\$1,290,262	1	3	4	Long Term
KRVT - North	Cooper Twp	County Line	D	3.5	\$973,479	1	3	4	Long Term
Old Conrail Line Trail	Cooper Twp	Collingwood	G	0.9	\$248,885	1	3	4	Long Term
M-40	Paw Paw/Lawton/Antwerp Twp	G.E. Fadel	Orchard	4.5	\$1,261,296	2	2	4	Long Term
M-43	Oshtemo	6th	Val Kal Trail	3.3	\$928,710	1	2	3	Long Term

Projects Partially or Entirely Under Construction or Programmed for Construction

**Shared-Use Path construction costs were estimated at \$281,352 per linear mile*

APPENDIX C - ON-STREET FACILITY LIST AND RANKING

Project	Municipality	Facility Type	From	To	Length (mi)	Est. Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
N Burdick St	Kalamazoo/ Kalamazoo Twp	Bike Lane	Water	Mosel	1.7	\$33,325	6	6	12	Short Term
Patterson St	Kalamazoo	Bike Lane	Douglas	Riverview	1.7	\$32,573	6	6	12	Short Term
Michigan Ave	Kalamazoo	Bike Lane	Archer	Drake	0.8	\$16,716	6	6	12	Short Term
Lovell St	Kalamazoo	Bike Lane	Portage	Stadium	1.0	\$20,689	6	6	12	Short Term
S Burdick St	Kalamazoo	Bike Lane	Kilgore	Lovell	3.1	\$60,704	5	6	11	Short Term
Lake St	Kalamazoo	Bike Lane	Larch	Lovers	2.6	\$51,536	5	6	11	Short Term
Vine St	Kalamazoo	Bike Lane	Oakland	Hatfield	2.0	\$40,351	5	6	11	Short Term
North St	Kalamazoo	Bike Lane	Gull	Douglas	1.3	\$26,539	5	6	11	Short Term
South St	Kalamazoo	Bike Lane	Michigan	Edwards	0.9	\$17,944	5	6	11	Short Term
Stockbridge Ave	Kalamazoo	Bike Lane	Mills	Westnedge	0.8	\$16,648	5	6	11	Short Term
Nichols Rd	Kalamazoo Twp	Bike Lane	Howard	G	2.5	\$49,975	4	6	10	Short Term
E Michigan Ave	Comstock Twp	Bike Lane	Sprinkle	KRVT	1.7	\$33,061	4	6	10	Short Term
E Michigan Ave	Kalamazoo	Bike Lane	Wallace	Mills	0.7	\$14,568	4	6	10	Short Term
S Pitcher St	Kalamazoo	Bike Lane	Portage	Kalamazoo	0.6	\$12,179	4	6	10	Short Term
N Edwards St	Kalamazoo	Bike Lane	North	South	0.5	\$9,608	4	6	10	Short Term
Michigan Ave	Kalamazoo	Buffered Bike Lane	Howard	Drake	1.4	\$99,045	5	5	10	Short Term
Gull Rd	Kalamazoo	Bike Lane	North	Riverview	0.3	\$5,579	5	5	10	Short Term
Kalamazoo Ave	Kalamazoo	Protected Bike Lane	Westnedge	KRVT	0.9	\$186,737	6	4	10	Short Term
Crosstown Pkwy	Kalamazoo	Buffered Bike Lane	Portage Creek Greenway	Mills	0.8	\$52,139	4	5	9	Short Term
Park St	Kalamazoo	Buffered Bike Lane	Arcadia Creek Trail	Betsy Ann	1.5	\$106,158	5	4	9	Short Term
Bridge/Gilbert Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Gull	Main	0.6	\$14,857	5	4	9	Short Term
Miller Rd	Kalamazoo	Buffered Bike Lane	Sprinkle	Portage Creek Greenway	2.5	\$170,976	4	4	8	Short Term
Chicago/Elkerton Bicycle Boulevard	Kalamazoo Twp	Bike Boulevard	Gull	E Michigan	1.3	\$31,502	4	4	8	Short Term
Croyden/Canterbury Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Nichols	Drake	1.2	\$31,164	4	4	8	Short Term
Greenwood Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Michigan	Penn Central Rail Trail	0.6	\$14,951	4	4	8	Short Term
North St Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Douglas	Arlington	0.5	\$12,636	4	4	8	Short Term

Project	Municipality	Facility Type	From	To	Length (mi)	Est. Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
Nazareth Rd	Kalamazoo/ Kalamazoo Twp	Bike Lane	G Ave	Main	2.1	\$41,783	3	6	9	Mid Term
E Main St	Kalamazoo/ Kalamazoo Twp	Bike Lane	Sprinkle	Gilbert	1.7	\$33,274	3	6	9	Mid Term
Whites St	Kalamazoo	Bike Lane	Broadway	Duke	1.4	\$28,218	3	6	9	Mid Term
Rambling/ Broadway St	Kalamazoo	Bike Lane	Stadium	Parkview	1.3	\$24,878	3	6	9	Mid Term
Brook Dr	Kalamazoo	Bike Lane	Mt Olivet	Gull	0.8	\$15,958	3	6	9	Mid Term
26th Ave	Comstock Twp	Bike Lane	H Ave	Gull	0.7	\$14,324	3	6	9	Mid Term
Pratt St	Kalamazoo	Bike Lane	Burdick	Westnedge	0.4	\$7,409	3	6	9	Mid Term
Howard Ave	Kalamazoo	Protected Bike Lane	Stadium	Park	1.4	\$288,016	6	3	9	Mid Term
G Ave	Parchment/ Cooper/Richland/ Kalamazoo/ Comstock Twp	Bike Lane	G	Riverview	2.2	\$43,014	2	6	8	Mid Term
56th St - Paw Paw	Paw Paw/Antwerp Twp	Bike Lane	County Rd 653	Gremps	2.1	\$41,516	2	6	8	Mid Term
Douglas Ave	Kalamazoo/ Cooper Twp	Bike Lane	Dunkley	G	2.0	\$39,036	2	6	8	Mid Term
Cork St	Kalamazoo	Bike Lane	Sprinkle	Lovers	1.5	\$29,823	2	6	8	Mid Term
Kilgore Rd	Kalamazoo	Bike Lane	I-94 Trail	Sprinkle	1.1	\$21,216	2	6	8	Mid Term
Main St	Comstock/ Kalamazoo Twp	Bike Lane	Nazareth	26th	1.0	\$19,220	2	6	8	Mid Term
Moorsbridge Rd	Portage	Bike Lane	Romence	Centre	0.9	\$16,819	2	6	8	Mid Term
Mt Olivet Rd	Kalamazoo	Bike Lane	G	Range	0.8	\$15,576	2	6	8	Mid Term
Michigan Ave	Galesburg	Bike Lane	N 37th	W Battle Creek	0.6	\$12,136	2	6	8	Mid Term
Angling Rd	Kalamazoo	Bike Lane	Merryview	Oakland	0.6	\$12,113	2	6	8	Mid Term
Comstock Ave	Comstock Twp	Bike Lane	Larch	River	0.5	\$10,570	2	6	8	Mid Term
Westnedge Ave/G Ave	Kalamazoo Twp	Bike Lane	Edison	KRVT	0.5	\$9,704	2	6	8	Mid Term
River St	Comstock Twp	Bike Lane	Comstock	Michigan	0.3	\$6,195	2	6	8	Mid Term
G Ave	Parchment	Bike Lane	20th	Riverview	0.3	\$5,213	2	6	8	Mid Term
G Ave	Richland/ Comstock Twp	Buffered Bike Lane	Sprinkle	Gull	1.0	\$67,082	3	5	8	Mid Term
Michigan Ave	Kalamazoo	Protected Bike Lane	Michikal	Kalamazoo	1.0	\$213,276	5	3	8	Mid Term
Westnedge Ave	Kalamazoo	Buffered Bike Lane	Arcadia Creek Trail	Betsy Ann	1.5	\$104,228	5	3	8	Mid Term

Projects Partially or Entirely Under Construction or Programmed for Construction

ON-STREET FACILITY LIST AND RANKING

Project	Municipality	Facility Type	From	To	Length (mi)	Est. Cost	Priority Score	Cost Feasibility Score	Total Score	Implement. Timeframe
Sprinkle Rd	Kalamazoo/ Comstock Twp	Buffered Bike Lane	Miller	Cork	0.3	\$18,803	2	5	7	Mid Term
Rose St	Kalamazoo	Bike Boulevard	Park	Pratt	2.1	\$52,955	3	4	7	Mid Term
Cherokee St	Kalamazoo Twp	Bike Boulevard	Kal Haven Trail	Main	1.7	\$43,502	3	4	7	Mid Term
James St/ Pasadena St	Kalamazoo	Bike Boulevard	Stock-bridge	Cork	1.2	\$31,055	3	4	7	Mid Term
Sunnyside Rd	Kalamazoo Twp	Bike Boulevard	Gull	Main	0.7	\$17,360	3	4	7	Mid Term
Cork St/White St	Kalamazoo	Protected Bike Lane	Duke	Fulford	1.9	\$396,824	4	3	7	Mid Term
Attleberry Ave	Texas Twp	Bike Boulevard	Texas	12th	2.0	\$49,150	2	4	6	Mid Term
Croyden/ Canterbury Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Prairie	Nichols	1.5	\$38,168	2	4	6	Mid Term
Primrose St	Portage	Bike Boulevard	Romence	Centre	1.4	\$36,189	2	4	6	Mid Term
Charles St Bicycle Boulevard	Kalamazoo	Bicycle Boulevard	Main	Nazareth	1.4	\$36,150	2	4	6	Mid Term
Dorchester Ave	Kalamazoo	Bike Boulevard	Portage	Emerald Drive Park Trail	0.6	\$16,156	2	4	6	Mid Term
E Michigan Ave	Charleston Twp	Bike Lane	Miller	S 44th	3.7	\$73,458	1	6	7	Long Term
S 44th St	Charleston Twp/ Climax	Bike Lane	E Michigan	E Maple	2.9	\$57,744	1	6	7	Long Term
S 14th St	Schoolcraft Twp	Bike Lane	U Ave	Eliza	2.0	\$39,992	1	6	7	Long Term
Oakland Dr	Schoolcraft Twp	Bike Lane	Oak Leaf	U AVE	1.0	\$19,394	1	6	7	Long Term
W U Ave	Schoolcraft Twp	Bike Lane	Oakland	S 14th	0.8	\$14,977	1	6	7	Long Term
Ramona Ave	Portage	Bike Lane	Lovers	Portage	0.8	\$14,844	1	6	7	Long Term
W Battle Creek Ave	Galesburg	Bike Lane	N 35th	Michigan	0.7	\$13,897	1	6	7	Long Term
Parkview Ave	Oshtemo Twp	Protected Bike Lane	Stadium	Crystal	1.2	\$242,965	3	3	6	Long Term

*Cost estimates for each linear mile of each proposed facility are as follows:

- Bicycle Boulevard: \$25,070 per mile
- Bike Lane: \$19,780 per mile
- Buffered Bike Lane: \$69,211 per mile
- Protected Bike Lane: \$210,214 per mile

See Technical Memorandum #3 for full details on the cost estimating process