HOWLAND TOWNSHIP ACTIVE TRANSPORTATION PLAN

January 2025| DRAFT

ACKNOWLEDGEMENTS

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Howland Township

Ohio Department of Transportation

Toole Design

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CONTENTS

VISION AND GOALS

VISION AND GOALS

COMMUNITY VISION STATEMENT

Walking and Biking in Howland Township will be a safe, convenient and accessible transportation option for everyone.

COMMUNITY GOALS

Through the community engagement process, overarching themes were identified that reflect the Howland Township vision. These themes were used to develop a series of goals and corresponding objectives for this Plan:

- **Equity:** Ensure the system accommodates users of all ages, abilities, and incomes.
- **Network Utilization:** Increase walking and biking usage and reduce the number of vehicle trips
- **Network Connectivity:** Promote comfortable and continuous bicycle and pedestrian facilities that connect people to destinations.
- **Safety:** Reduce bicyclist and pedestrian injuries and fatalities.
- **Livability:** Improve the quality of life for all residents of Howland Township
- **Maintenance:** Ensure critical existing infrastructure is in a state of good repair.

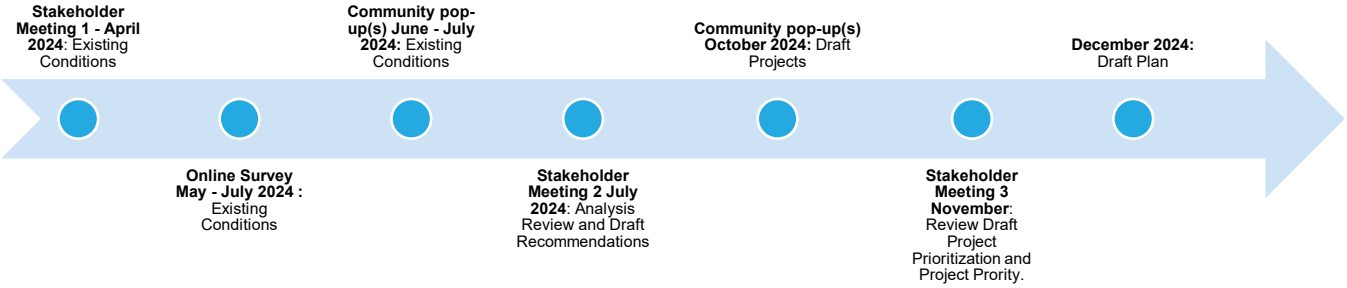
COMMUNITY ENGAGEMENT

Figure 1: Howland Township Park (image source: Eric ASP)

COMMUNITY ENGAGEMENT

Community engagement was an essential tool in the plan development process. Involving the public builds trust in the Plan and improves the overall quality of the findings. The project team used many different ways to collect public input including an online survey, a community pop-up, a web map survey, steering committee meetings, and a public meeting.

ENGAGEMENT TIMELINE



STRATEGIES

The Steering Committee comprised of Township staff, public health officials, school staff, Ohio Department of Transportation (ODOT), Eastgate Regional Council of Governments (Eastgate), local residents, Trumbull County **(engineering, planning)**, Howland Park District, Metroparks, and business owners guided the development of The Howland Township ATP. Steering Committee members are listed under Acknowledgments at the beginning of this document.

The Steering Committee met 3 times over the course of the plan development.

Steering Committee Meetings

- **Meeting One** kicked off the planning process with the public including a mapping exercise to identify opportunities and challenges.
- **Meeting Two** focused on a review and discussion of the draft network recommendations.
- **Meeting Three** included a review of the revised network and project priorities discussion. Participants identified projects they preferred to be built first.

Figure 2: Promotional Materials for Community Engagement

Pop-Up Events

Pop-up events have a broader reach than conventional public meetings. By leveraging existing events or popular destinations, the project team reached a wide cross-section of Howland Township community members, especially those who might not want to or be able to participate in online or traditional forms of engagement.

The project team held 3 pop-up events over the course of the project. Pop-up events were held at a food truck festival, food pantry. Additionally, a board was placed in Howland Township Post office for supplemental community engagement. Each event had display boards explaining the Plan's purpose, handouts, and interactive mapping. The purpose of the pop-up events was two-fold: to gather information about existing walking and bicycling conditions during the first half of the project, and to share preliminary recommendations with the public during the second half.

Online Interactive Webmap

Online surveys can have a broader reach than conventional public meetings. By posting a map survey online, the project team reached a wide cross-section of Howland Township community members,

especially those who might not want to or be able to participate in traditional in-person engagement activities. The Web Map Survey was posted through the months of May – July 2024. The map asked people to identify important destinations throughout Howland Township as well as gaps and barriers in the active transportation network.

KEY TAKEAWAYS

The first round of public engagement and community stakeholder interviews helped determine popular destinations, barriers to walking and biking in Howland Township, and key streets that people are currently using to bike or walk. Please refer to figures 3-6 identifying common community destinations, community problem areas and desired walking / biking routes.

Destinations

- Businesses (Giant Eagle Supermarket, Eastwood Mall, etc.)
- Schools (Howland High School, Mines Intermediate School)
- Recreational (Avalon Country Club, Howland Athletic Club, Howland Township Park)

Top barriers to biking / walking

- Roads with high traffic volumes / speeding (Market Street, North River Road, Niles Cortland)
- Roadways with lack of sidewalks (Niles Cortland, portions of North River Road, Howland Wilson)
- Roadways such as Niles Cortland Road with unsafe intersections

Priority Projects from Engagement

The final public meeting and survey allowed residents to vote on which projects they would like to see implemented first. Top identified projects included:

- Elm Road from City of Warren Boundary to Howland Township Boundary
- Bronze Road; Overland Avenue, from Western Reserve Greenway Trail to Elm Road
- North River Road from City of Warren Boundary to Niles Cortland Road from North River Road to
- Mines Road
- Kings Grave Road from Niles Cortland Road to Henn Syde Road.
- East Market Street from City of Warren Boundary to Howland Township Boundary
- Howland Wilson Road from King Graves to Fuller Drive connection
- Mosquito Creek Greenway from North River Road to Howland Township Park
- High School Campus Routes- Willow Drive, Shaffer Drive NE, Woodland Dr NE
- Niles Cortland
- Howland Wilson Connection to East Market Street

Summary of key routes for bicycling/walking

The draft proposed network was presented in the second public meeting and in a steering committee meeting. Feedback from the public lead to the addition of several projects including:

- Niles Cortland Road/Route 46
- Howland Wilson Road
- North River Road
- North Road
- East Market Street
- Henn Hyde Road
- King Graves Road

COMMUNITY DESTINATIONS

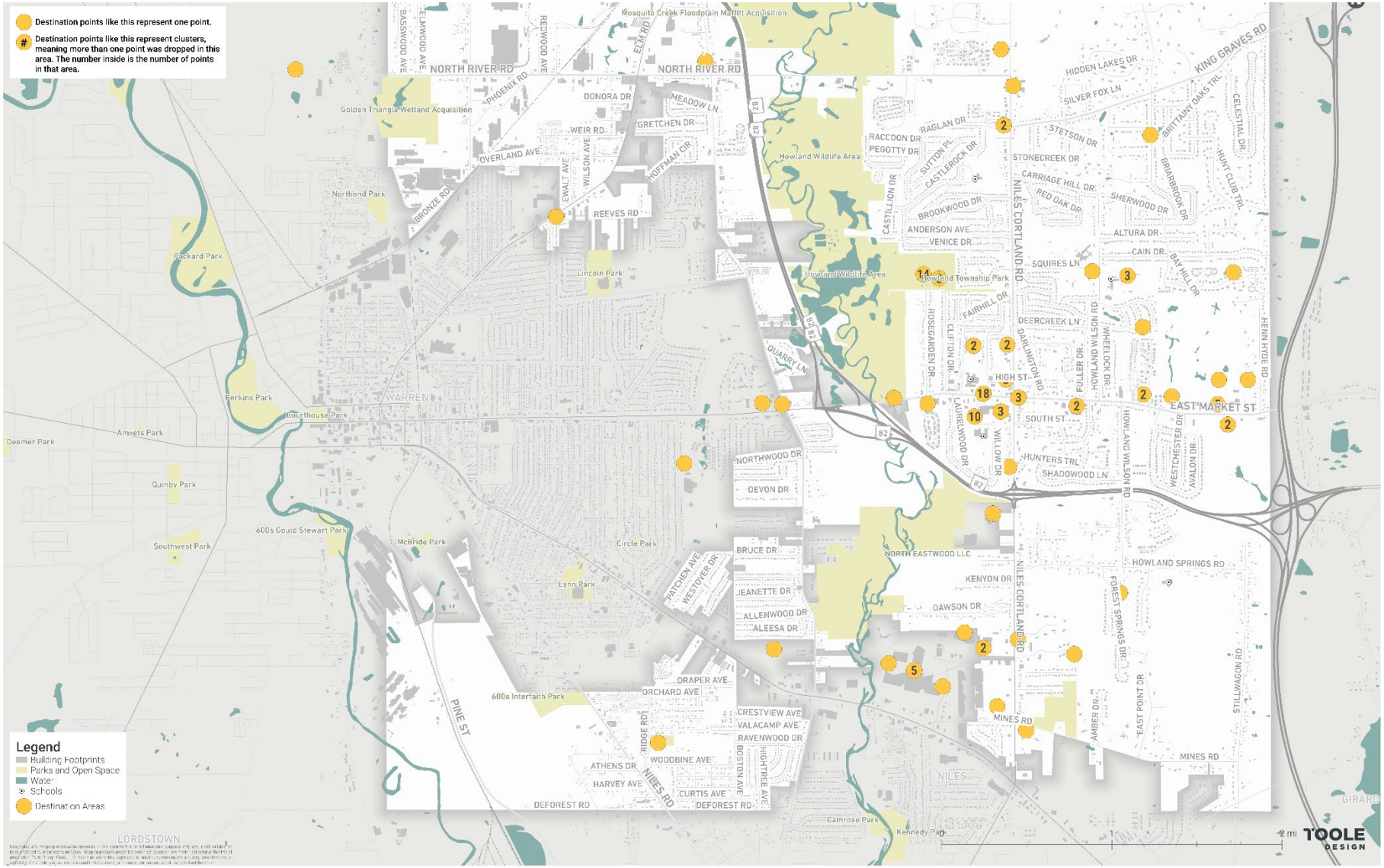


Figure 3: Community Destinations

PROBLEM SPOTS

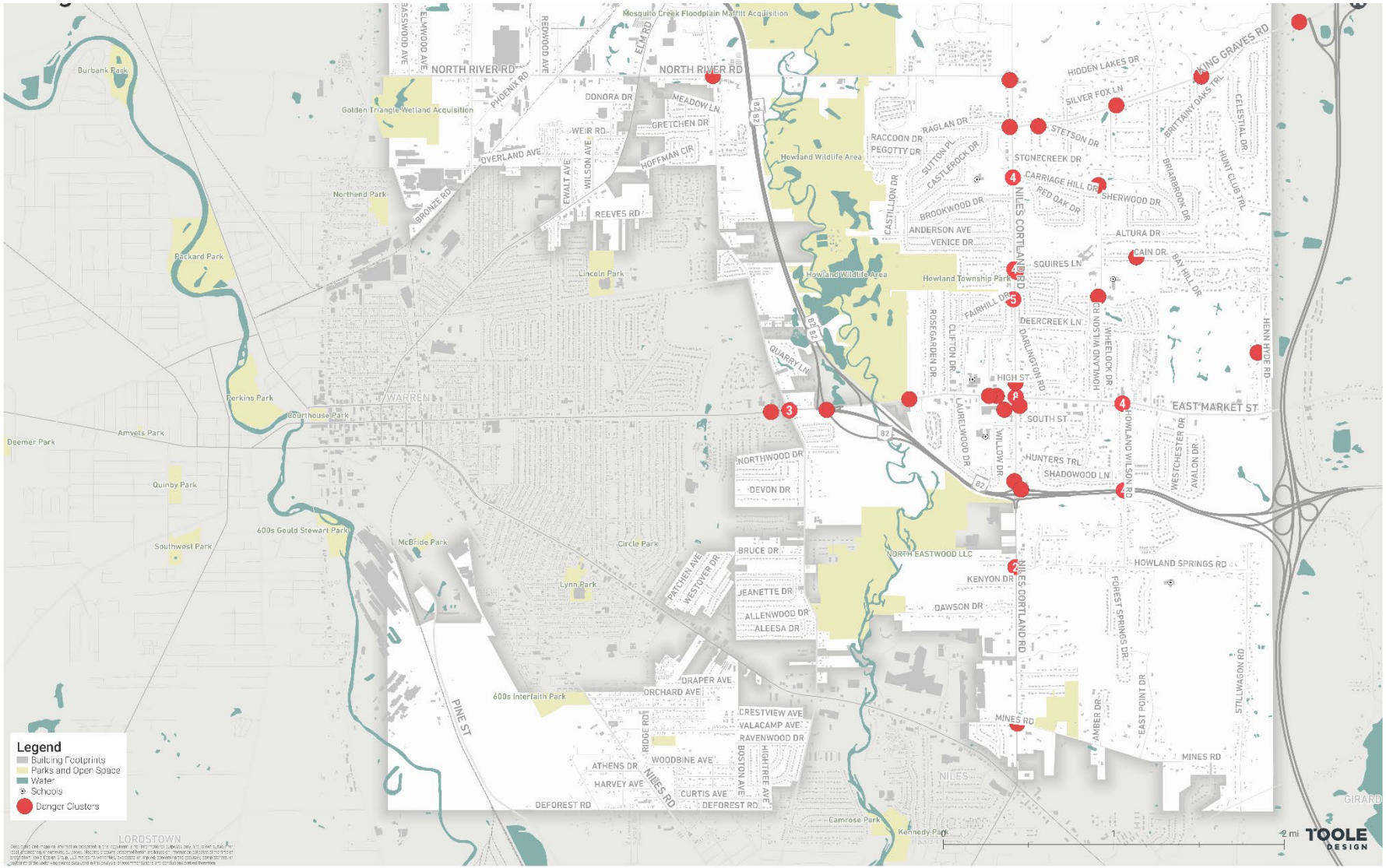


Figure 4: Problem Spots

DESIRED WALKING ROUTES

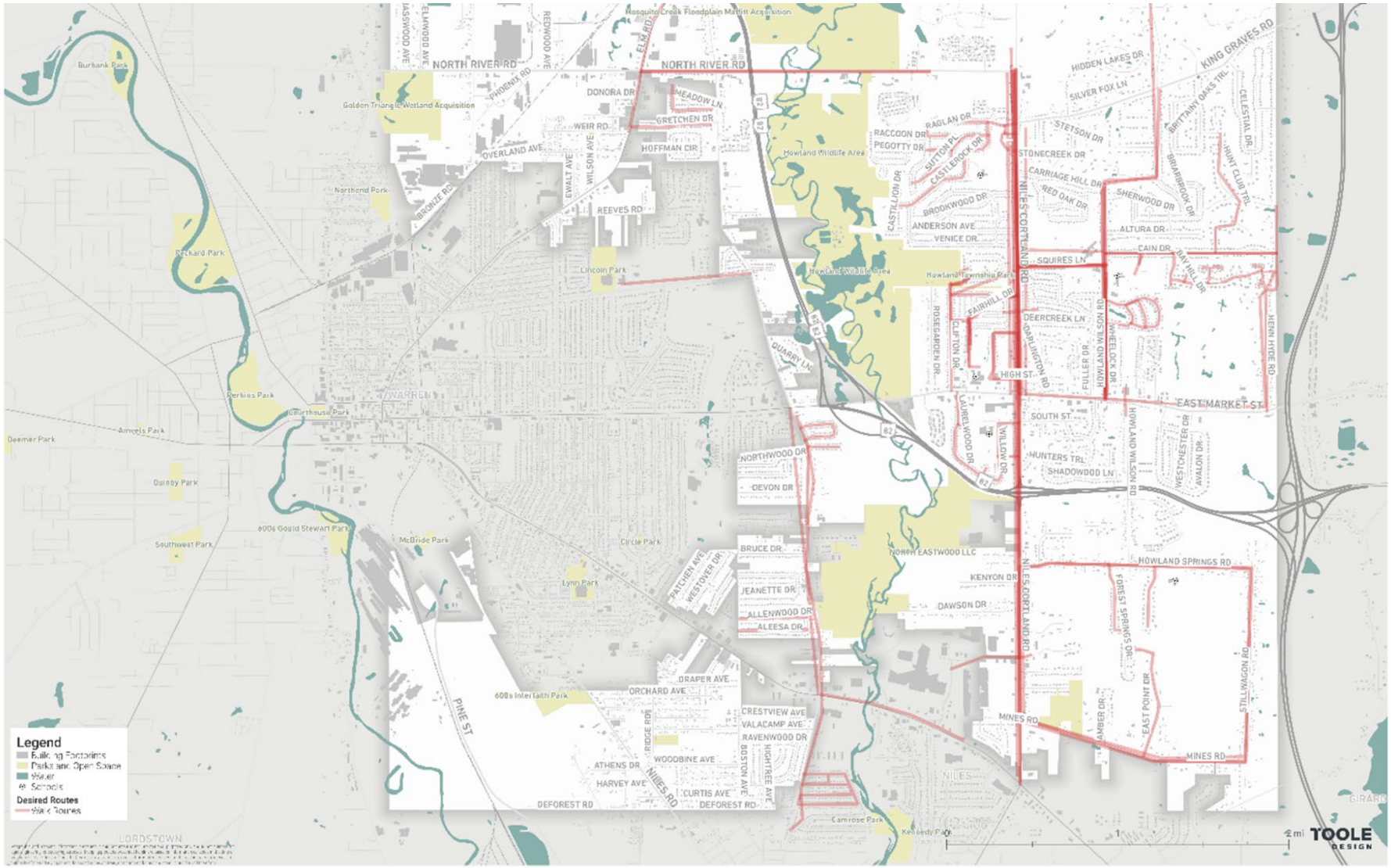


Figure 5: Desired Walking Routes

DESIRED BIKE ROUTES

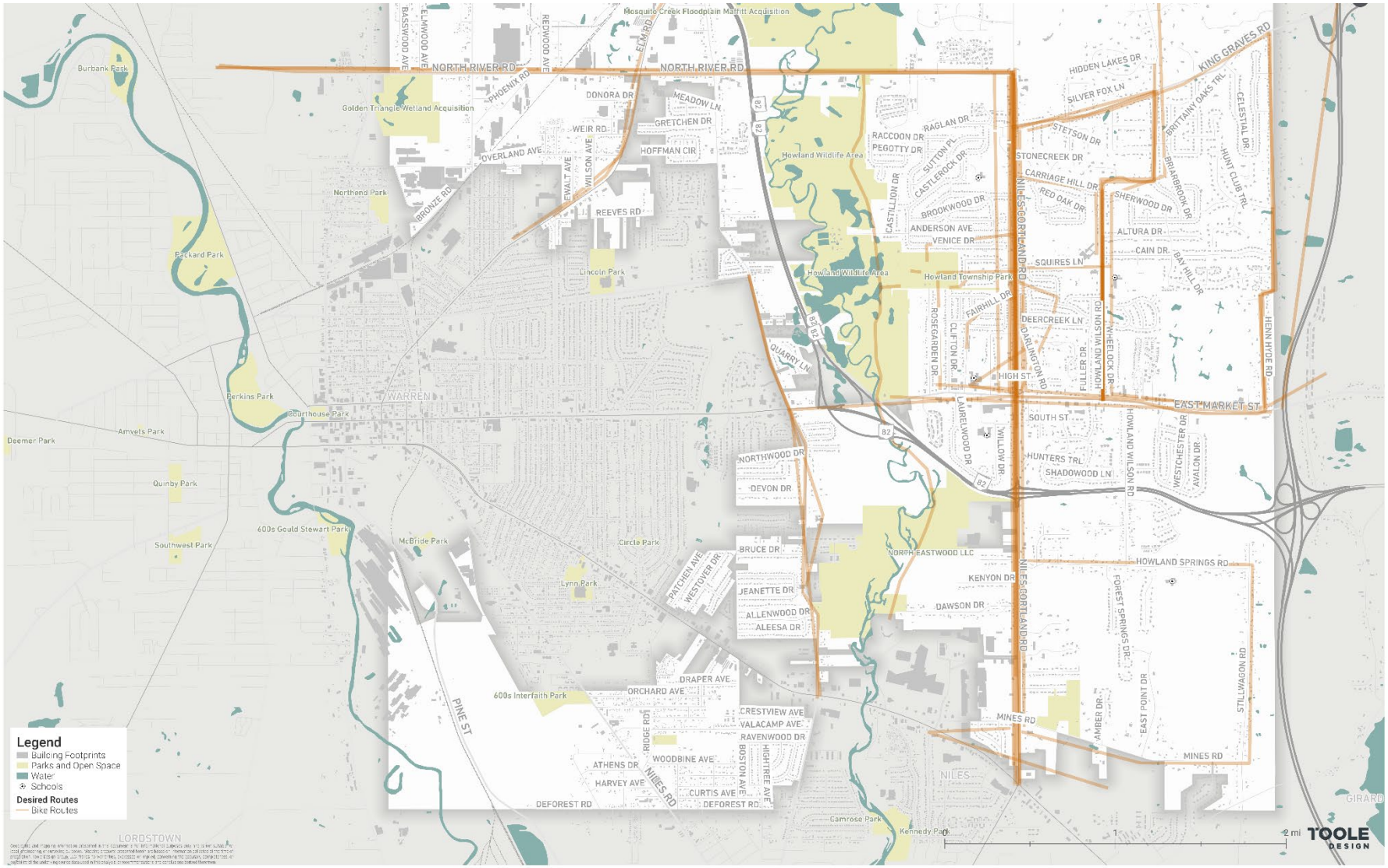


Figure 6: Desired Bike Routes

EXISTING CONDITIONS

EXISTING CONDITIONS

This chapter summarizes the available data for active transportation in Howland Township today. It includes a demographic profile of Howland Township, a summary of recent plans and current policies, and data trends and maps that relate to walking and biking conditions. Topics for the data and mapping trends include existing infrastructure, equity, safety, connectivity, and information on where it may feel stressful to walk or bike in the community today.

DEMOGRAPHIC PROFILE

Howland Township is located in Trumbull County, Ohio and is part of the Youngstown-Warren Metropolitan Area. The Township is about 17.6 square miles and had about 19,042 residents according to the 2020 Decennial Census. Howland Township's population has decreased slightly by 0.33 percent since 2010 (19,106), with most of the decline occurring in younger age groups.[1] The 2018-2022 American Community Survey (ACS) provides a more recent population count of 19,008 residents.[2] The 2018-2022 ACS survey will be used for the remainder of this analysis.

Howland Township's major employers include several large educational and health care providers that also serve residents. The largest employment sectors of the Township are educational services, health, and social assistance (29.3 percent); manufacturing (14.5 percent); arts, entertainment, and recreation (9.3 percent); and professional, scientific, management, and administrative and waste management services

[1] U.S. Census Bureau, (2020), RACE, Decennial Census, DEC Redistricting Data (PL 94-171), Table P1, accessed on August 26, 2024, https://data.census.gov/table/DECENNIALPL2020.P1?q=howland township ohio 2020 decennial census.
[2] U.S. Census Bureau, (2022), Total Population, American Community Survey, ACS 5-Year Estimates Detailed Tables, Table B01003, accessed on August 26, 2024, https://data.census.gov/table/ACSDT5Y2022rruB01003?q=howland township ohio&t=Population Total.

(9.1 percent). Howland Township has an unemployment rate of 2.1 percent, which is lower than Ohio's state average of 3.2 percent.[3]

The median income for Howland Township households is $70,524, and the average household income is $90,537,[3] exceeding the state's overall median household income and on par with the state average household income ($66,990 and $90,958, respectively). Additionally, 11.2 percent of Township residents, a little over 2,100 people, are experiencing poverty compared to 13.3 percent of people statewide.[4] Nearly 35 percent of these residents are under 18 years of age (758 residents) and 14.5 percent are aged 65 or older (308 residents).[4] Women (12.4 percent) are more likely to experience poverty than men (10.0 percent) in Howland Township.[4] Poverty disproportionately impacts individuals from non-white racial backgrounds. Specifically, compared to 10.2 percent of white Township residents, 22.1 percent of Black or African American residents, 38.3 percent of Hispanic or Latino residents, and 28.2 percent of individuals of multiracial backgrounds are experiencing poverty.[4]

Table 1 summarizes key demographic information for Howland Township. The 2018-2022 American Community Survey provided 5-year data for race, age, car ownership by household, and commute mode share percentages for Howland Township. According to this data, 22.9 percent of residents are below 20 years old compared to 24.7 percent statewide. Still, nearly a quarter of Howland Township's population is of school age and likely travels to nearby schools and universities.

Howland Township is highly vehicle-oriented, with 96.5 percent of households owning at least one car and 92.5 percent of workers commuting to work in a vehicle. The low number of pedestrians and cyclists commuting indicates an opportunity to grow the number through strategic infrastructure investments and targeted non-infrastructure policies and programs.

[3] U.S. Census Bureau, (2022), *Selected Economic Characteristics, American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP03*, accessed on August 26, 2024, https://data.census.gov/table/ACSDP5Y2022.DP03?q=DP03: Selected Economic Characteristics&g=060XX00US3915536554.
[4] U.S. Census Bureau, (2022), *Poverty Status in the Past 12 Months, American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1701*, accessed on August 26, 2024, https://data.census.gov/table/ACSST5Y2022.S1701?q=howland township ohio&t=Poverty.

Table 1. Howland Township Demographics

	Category	Percent
Race[5]	Category	Percent
	White	91.2%
	Multiracial	4.4%
	Black	2.9%
	Asian	1.3%
	Native American	0.0%
	Hispanic	3.0%
Age[5]	< 20	22.9%
	20 – 24	4.5%
	25 – 34	12.0%
	35 – 44	10.5%
	45 – 54	11.3%
	55 – 64	17.4%
	Above 65	24.2%
Car Ownership by Household[6]	0	3.5%
	1	32.3%
	2	42.9%
	3+	21.4%
Commute Mode Share[7]	Drove alone	86.0%
	Carpooled	6.5%
	Walked	0.7%
	Bicycled	0.0%
	Transit	0.3%
	Other	6.5%

[5] U.S. Census Bureau, (2022), ACS Demographic and Housing Estimates, American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP05, accessed on August 26, 2024, https://data.census.gov/table/ACSDP5Y2022.DP05?q=howland township ohio.
[6] U.S. Census Bureau. "Selected Housing Characteristics." American Community Survey, ACS 5-Year Estimates Data Profiles, Table DP04, 2022, https://data.census.gov/table/ACSDP5Y2022.DP04?q=car ownership&t=Selected Householder Characteristics&g=060XX00US3915536554. Accessed on August 26, 2024.
[7] U.S. Census Bureau. "Commuting Characteristics by Sex." American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0801, 2022, https://data.census.gov/table/ACSST5Y2022.S0801?q=commute&g=060XX00US3915536554. Accessed on August 26, 2024.

EXISTING PLANS, POLICIES, AND SUPPORTIVE PROGRAMS

This plan builds on previous plans and initiatives developed by entities within Howland Township. It looks to these plans for existing conditions data, issue identification, and recommendation support (Table 2).

Plan or Policy	Lead Agency	Year Completed	Key Takeaways
School Travel Plan for Howland Middle School	Howland Township	2013	• The School Travel Plan reports the key reasons that parents do not allow their middle schoolers to walk or bike to school. This included the speed and amount of traffic, the safety of intersections and crossings, and the distance between the school and neighborhoods. • Around 22% of the students live within one mile of the school (in 2013). Key recommendations include converting the Willow Street/South Street/Brewster Street intersection to a three-way stop; upgrade pedestrian conditions at the intersections on East Market Street; signalize the intersection of SR 46 and South Street; and install new sidewalks on Brewster Street (west of Willow Street), Laurelwood Drive/Willow Street (from Heatherwood to South Street).
Howland Township Schools Transportation Policy	Howland Township Public Schools	2020-2021 School Year	• All students are eligible for bus transportation. • Bus stops are within a mile walking distance of a student's home. • High school students may bike to and from school, and parking for bikes is available. Students in all grades may also walk to and from school.
Comprehensive Plan Update	Howland Township	2023	• Majority of roads in the Township lack sidewalks. More bike and pedestrian connections was the third-most common survey response, and many residents engaged in the plan update expressed frustration that vehicles were the only reliable way to get around. • The plan recommends a corridor plan for East Market Street from Rosegarden Drive to Howland-Wilson Road that includes pedestrian and bike facilities. • The plan recommends a new, 10-foot-wide trail linking Bolindale Deforest Park and Elim Christian Center to the proposed Western Reserve Greenway extension. • The plan recommends bike lanes on North River Road from the proposed Mosquito Creek Greenway Trailhead to the Western Reserve Greenway. • The plan maps priority sidewalk improvements on six key streets. • The plan calls for the Mosquito Creek Greenway to link Howland Township Park with North River Road, and multiple neighborhood connections. A conceptual alignment is included in the plan.

Plan or Policy	Lead Agency	Year Completed	Key Takeaways
			• The plan calls generally for wayfinding, bike parking, bike repair stands, high-visibility crosswalks, median refuge islands, and curb extensions. The plan identifies proactive land use strategies to improve pedestrian connectivity in future development.
East Market Street Corridor Plan	Howland Township	Ongoing	• The East Market Street Study will be conducted in 2024 and will include three public meetings. The plan will include alternatives for improving walking and biking on the corridor, which could include alternative routes to connect Howland High School, Howland Township Park, and the Howland Public Library.
Niles Cortland Road Alternative Transportation Study	Howland Township, Eastgate Regional Council of Governments, Trumbull County Engineer	2019	• The study proposed sidewalks on Niles Cortland Road (State Route 46) between State Route 82 and North River Road. • It also recommended a policy to share sidewalk maintenance responsibilities with property owners. The study also recommended connecting bike and walking paths, particularly between areas like Crosswinds and Venice Drive into Howland Township Park.
Regional Bike Plan	Eastgate Council of Governments	2010	• Provides regional support about the benefits of biking and complete streets. • The plan maps the Western Greenway Trail. The plan identified several desired bike routes through part of Howland Township.
Multimodal Network Connectivity Study	Eastgate Council of Governments	2019	• The plan assigns a Bicycle Suitability Rating (from Advanced to Beginner) and a Bicycle Level of Service (A through F) for roads within 5 miles of major regional activity centers. Because Niles and Warren are considered activity centers, the bulk of Howland Township is included in the analysis. The plan maps "walksheds" based on available sidewalk and shows that sidewalks in Howland Township are poorly connected to major destinations just outside the Township.
Eastgate 2050 Metropolitan Transportation Plan	Eastgate Council of Governments	2023	• Long Range Plan projects in Howland Township include: four phases of State Route 46 sidewalk improvements (Kettering to East Market; Stonecreek to North River; Woodland to Stone Creek; and High to Woodland); TAP Funded $ 3.1 Million, programmed for years 2028 to 2035. Elm Road, Warren Sharon Road, Larchmont Avenue, North River Road, Heaton North Road, and Niles Warren Road are scheduled for resurfacing in 2028-2035 by the Trumbull County Engineer.
Connecting Ashtabula to Pittsburgh by Trail	Rails to Trails Conservancy, Industrial Heartland Trails Coalition	2021	• The plan proposes an alignment through part of Howland Township, to finish the Western Reserve Greenway. The proposed alignment is through the Bolindale neighborhood and would head south at Niles Road SE towards Warren Avenue and into Niles. With the 4-mile project completed, there will be a continuous trail from Mahoning County to Lake Erie.

Plan or Policy	Lead Agency	Year Completed	Key Takeaways
Americans with Disabilities Act Transition Plan	Trumbull County	2021	• Trumbull County's ADA plan is regularly updated and documents needed changes to County-owned buildings and public assets, like streets, to ensure compliance with the Americans with Disabilities Act. • The County's recent sidewalk projects in Howland Township are documented in the Plan as progress, as well as required updates to curb ramps and pedestrian signals. Elm Road, between SR-82 and US-422 is identified as an opportunity for pedestrian improvements through an upcoming street/utility project.
Pedestrian Priority Corridors, Zoning Resolution: 17.06 Pedestrian Access Standards	Howland Township	2015	• This update to the Township Zoning Resolution requires that any new development along a pedestrian priority corridor must build a sidewalk on all public streets for the full length of street frontage. The Pedestrian Priority Corridors are Niles-Cortland Road (NE and SE); North River Road between Niles-Cortland Road and State Route 82; and East Market Street between North Road and the Township boundary.

Table 2. Existing Plans and Policies

Program Name	Program Lead	Target Audience	Key takeaways
Creative Crosswalks Program	Trumbull Art Gallery, Howland Schools	Students and the public	• In 2020, students painted creative crosswalks near the middle school to raise awareness about pedestrian safety and promote public art. The project was led in part by the Health Community Partnership's Active Transportation Action Team.
Helmet Giveaway and Bike Safety Checks	Howland Police and Fire Department	All ages	• Most years, Howland Police and Fire Department give away bike helmets in a free event. Child bike safety checks are also conducted.
Trumbull County Creating Healthy Communities	Trumbull County Combined Health Department	Various community organizations and sectors	• Trumbull County's Combined Health Department is a recipient of the Ohio Department of Health's Creating Healthy Communities (CHC) program. This program supports select counties with staff, technical assistance, and access to resources and projects related to healthy nutrition and active transportation. • Howland Township could benefit from this program by building relationships with the Trumbull County CHC representative and assessing what services or support might be available.

Table 3: Supportive Programs

EXISTING TRANSPORTATION SYSTEM

TRANSPORTATION FUNDING AND INVESTMENTS

Historic

Howland Township has been proactive in planning for active transportation. The 2013 Howland Local Schools Safe Routes to School Plan pinpointed the necessity for infrastructure (like sidewalks, trails, and crosswalks) and non-infrastructure (like policies and programs to support students) to enhance the safety and conditions for children walking and biking to school. In 2015, Howland Township began requiring new developments to construct sidewalks on its primary commercial corridors through its zoning resolution. Also in 2015, the Township began requiring new developments include bicycle racks on the premises. Additionally, Howland Middle School was the recipient of a bike rack through a Safe Routes to School grant.

Current or Planned Projects

Howland Township is actively pursuing the objectives set forth in the 2023 Comprehensive Plan Update to boost bicycle and pedestrian connectivity. For example, the Township and the Ohio Department of Transportation are currently planning construction for sidewalks on the eastside of State Route 46, from Hunters Trail to East Market Street. The initiative will also include ADA-compliant curb ramps at the intersection of East Market Street and State Route 46 (also referred to as Howland Corners.)

The Township is beginning a comprehensive corridor plan for East Market Street in partnership with the Eastgate Regional Council of Governments. The plan will address safety, access, and mobility needs for all users of the corridor, and will tie in recommendations for improved walking and biking infrastructure from the Township's Comprehensive Plan. This plan will be especially critical given the many schoolchildren that use East Market Street to reach Howland High School and Middle School.

Existing Image 1: Crossing at East Market Street and Niles Cortland Road, known as Howland Corners. New ADA-compliant curb ramps will be installed.

Existing Bike Lanes and Trails

U.S. Bicycle Route 44 passes through Warren and the southwestern quadrant of Howland Township (Figure 7). State and U.S. bicycle routes offer bicyclists connections to and through population centers in Ohio, forming a backbone for local and regional bike networks

to expand and link across the state. U.S. Bicycle Route 44 heads south on the Western Reserve Greenway Trail past North River Road, but as it approaches Warren, there are portions where bicyclists must ride on Paige Avenue without dedicated bike lanes. The route then reconnects to the Western Reserve Greenway Trail, crossing several roads in the City of Warren including Elm Road, Woodland Street, High Street, East Market Street, South Street, and Youngstown Road SE. Finally, the trail ends at Burton Street, and bicyclists briefly head west before turning south onto Niles Warren River Road, where there is no bike infrastructure.

There is a bicycling and walking path in Howland Township Park, but there are no other dedicated bike lanes or bike trails in Howland Township.

Walkways

Most roads in Howland Township lack sidewalks. The Township's major roads were first built when the Township was rural and sparsely populated. Sidewalks were also not typical in the suburban-style subdivisions built in the 1970s through 2000s. Over the past several decades, Howland Township, like many other communities, has been working to construct sidewalks so that residents can enjoy the health, transportation, and economic benefits they provide.

There are sidewalks along both sides of East Market Street between Sandpiper Trail and Henn Hyde Trail NE, but in general, they lack a protective buffer from the roadway and have some gaps and challenging conditions. Photos 3-5 show these conditions and the numerous unmarked crossings at intersections and parking lot entrances.

Existing Image 2: Damaged sidewalk on East Market St approaching the Niles Cortland Rd intersection

Existing Image 3: Sidewalk along East Market St in Howland Square.

There are sidewalks near Howland High School on the east side of Shaffer Drive, as well as the southern portion of Willow Drive, connecting to High Street and ending at Niles Cortland Road. Photo 5 shows that there are no marked crosswalks at the Shaffer Road-East Market Street intersection. Near Howland Middle School, there is a sidewalk that extends from Brewster Drive SE to Edison Street, and then continues to

South St SE, ultimately ending at Niles Cortland Road (Photo 6). Parts of this sidewalk are too narrow for today's standards and would not be considered safe for students using wheelchairs. In Howland Center, there is also a sidewalk along Clifton Drive, connecting East Market Street to the walking trail at Howland Township Park.

In the northern part of Howland Township, there are sidewalks on both sides of North River Road between the Mosquito Creek Wetlands and Niles Cortland Road, with a small portion of sidewalk extending south on the east side of Niles Cortland Road. Finally, there is a sidewalk along Elm Road, located south of Weir Road. There are no sidewalk or trail connections between the northwest and southwest quadrants and the Township center, reinforcing the need for residents to drive even short distances across town.

Existing Image 4: Intersection of Shaffer Drive and East Market Street next to Howland High School, looking East.

Figure 7 shows the existing pedestrian and bicyclist facilities in Howland Township, as well as proposed sidewalks, trails, and bike routes suggested by other entities prior to the development of this Active Transportation Plan.

Points of Interest

Howland Township Park is on Rosegarden Drive and provides recreational space for the community. The park offers a paved walking trail, a small playground, multiple pavilions, and several sports areas including tennis courts and soccer fields. Two additional parks, Morgandale Park and Bolindale DeForest Park, in the northwest and southwest quadrants of the Township respectively, provide additional green space to the community.

Notable public buildings in Howland include the Howland Library located on East Market Street and the Government Center, Post Office, and Howland Scope Center on High Street NE. Police and EMS services are across the street from the Government Center on the corner of High Street and Niles Cortland Road.

Key retail destinations in Howland include the Howland Center commercial node, the Niles Cortland Road corridor anchored by the Eastwood Mall Complex, and the Elm Road Corridor.

Bike Racks

Howland Township has added several bike racks since 2015 when the Township amended its zoning regulations to require new developments to include bicycle racks on-site. Additionally, Howland Middle School received a bicycle rack through a 2015 Safe Routes to School grant. There are also bike racks located at Howland Township Park and the Howland Administration Building.

Public Transit

The Western Reserve Transit Authority (WRTA) offers bus services throughout Mahoning County and the City of Warren. In Howland Township, there are two routes: Route 28, which begins at Federal Station in Youngstown and runs along U.S. 422, stopping at Highland Terrace in Warren, and Route 74, which begins in Downtown Warren and runs along Elm Road to Walmart in Bazetta Township (Figure 8). Route 28 buses operate from 5:40 a.m. to 7:30 p.m., and Route 74 buses operate from 6:30 a.m. to 4:52 p.m. on weekdays only.

Existing Image 5: Crosswalk next to Howland Middle School (crossing Edison St SE/Willow Dr SE)

Connectivity

Figure 9 summarizes the existing facilities in Howland Township, including current and future sidewalks, bike paths and previously proposed bike paths, and public transit. While the map reveals gaps in the current walking and biking infrastructure, it also helps identify opportunities for enhancing connectivity within the Township.

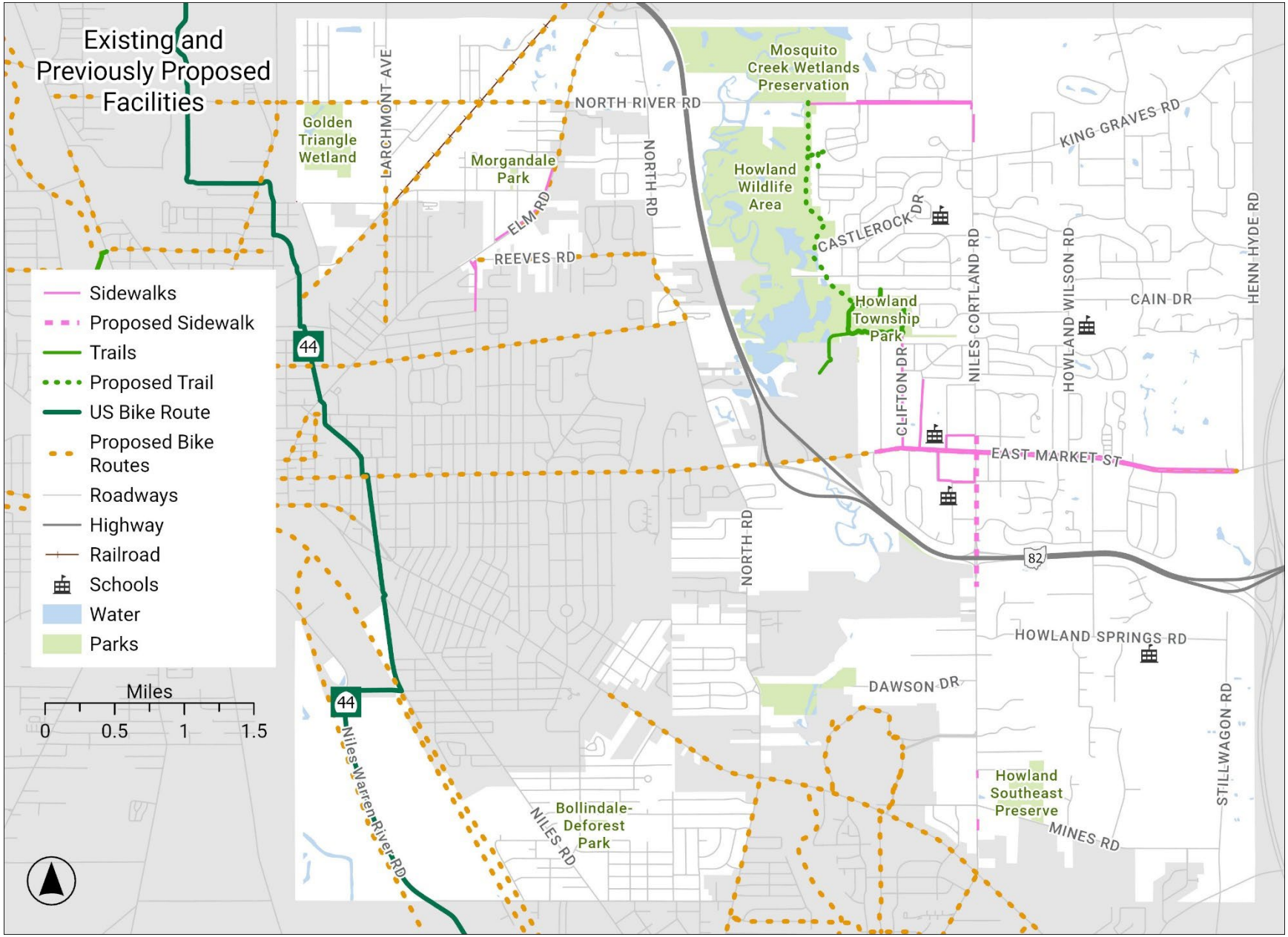


Figure 7. Existing and Previously Proposed Facilities

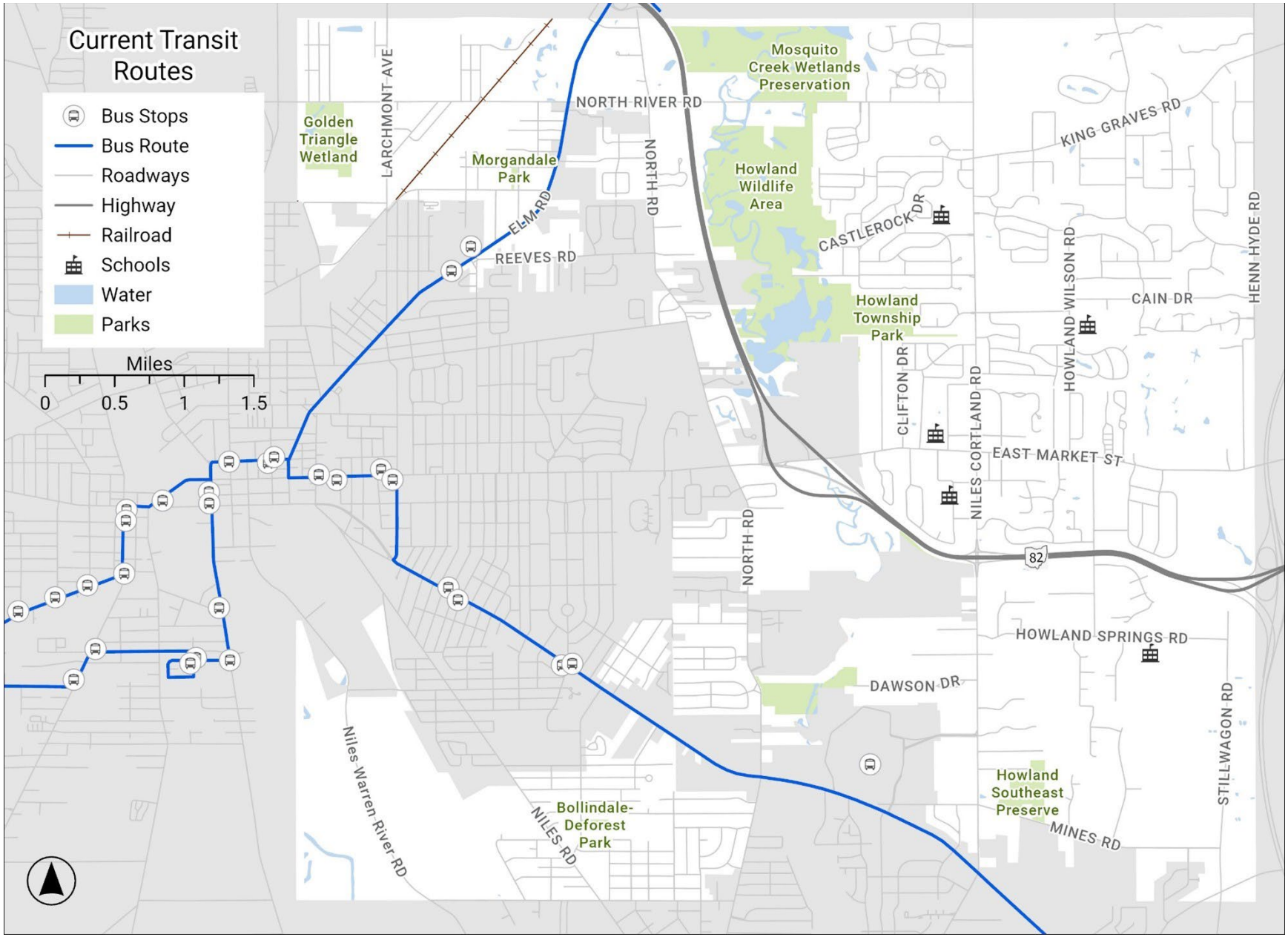


Figure 8: Transit Routes and Bus Stops

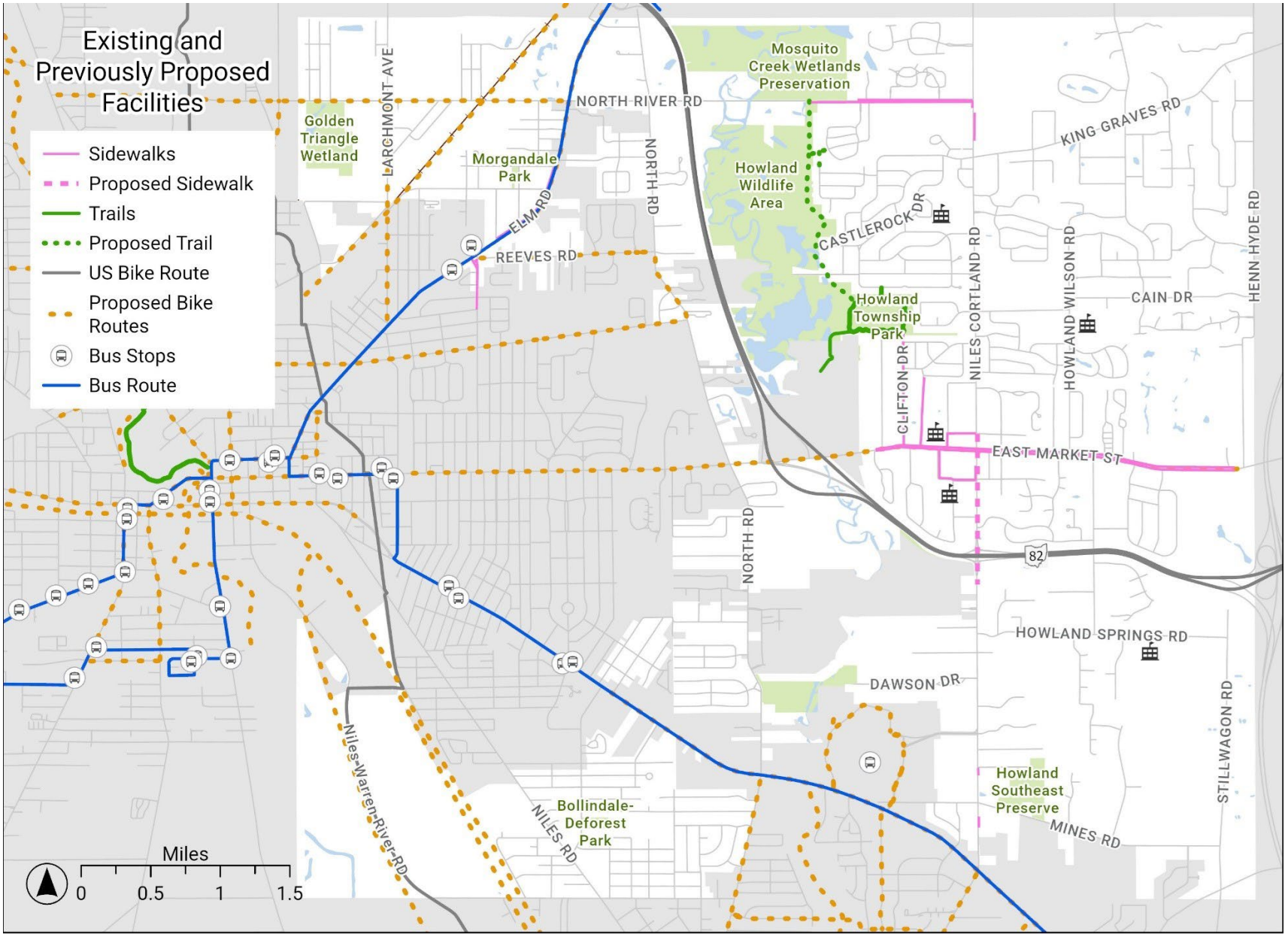


Figure 9. Existing and Previously Proposed Facilities, Summar

ANALYSES

After mapping the existing transportation system, the project team performed several analyses to better understand the equity of the transportation network, its connectivity, use of walking and bicycling facilities, safety, and infrastructure conditions. The following section provides a summary of each existing condition analysis:

Equity

- Active Transportation Need and Demand Analyses

Network Utilization

- Walking and Bicycling Activity

Systemic Safety Analysis

Level Of Traffic Stress

Safety: Crash Trends and Patterns

- Local Crash Trends Analysis
- Pedestrian and Bicycle Crash Locations
- 2023 Fatal Crash Summary

Livability

- Community Health Assessment

EQUITY

Incorporating Equity in Active Transportation Planning

Active transportation options contribute to a more equitable transportation system by reducing barriers for people who do not use a motor vehicle. Many people do not drive because of ability, income, age, or a combination of these factors. Additionally, the cost of owning and maintaining a vehicle can be a major burden, especially on low-income families. Many low-income families will avoid putting wear and tear on a vehicle except for necessary trips, relying on walking and biking for most activities. People without a vehicle need to access employment, school, grocery shopping, and a variety of other activities to fully participate in society. Transit, walking, and bicycling play a vital role in the overall transportation system by offering increased mobility, independence, and access to opportunity for people with low incomes and without vehicles.

National statistics point toward the need for equity in active transportation planning and design. Across the country and in Ohio, there are disproportionately more walking and bicycling fatalities among communities of color, older adults, and low-income populations.[8] Connected and accessible active transportation infrastructure for these groups results in better access to daily physical activity and improved quality of life.

[8] Ohio Department of Transportation (ODOT). 2020. *Safety Analysis Reports. https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/walkbikeohio/existing-future-conditions-analysis/safety-analysis-reports.*

Active Transportation Need and Demand Analyses

As part of its statewide bicycle and pedestrian plan (Walk.Bike.Ohio), ODOT performed an active transportation need and demand analysis for the entire state. It created a composite need score for every census tract in the state, with scores assigned based on the presence of non-white groups, youth, older adults, poverty, low educational attainment, limited English proficiency, and low motor vehicle access. Higher scores correspond to a higher presence of underserved groups and indicate a greater need to increase equitable outcomes.

Active transportation demand estimates the cumulative demand for active transportation and recreation depending on where people live, work, play, shop, learn, and access transit. The analysis considers these variables to identify areas of potential demand for active transportation. The inputs and scoring for the demand analysis are listed in Table 4: Demand Analysis Inputs and Scoring from Ohio Department of Transportation, 2020. WBO Demand Analysis

Areas of high need and high demand should be prioritized for bicycle and pedestrian improvements because residents in these areas likely would use safer active transportation options to get to places like work, school, recreation, places of worship, and shopping. Areas with high active transportation need and demand in Howland Township are shown in Figure 10 and Figure 11.

Existing Image 6: Looking South on Niles Cortland Road, north of the Eastwood Mall Complex

Areas with overlapping high active transportation demand and need are key areas to invest in pedestrian and bicycle infrastructure and are summarized in Figure 12. The highest combined active transportation need and demand scores were concentrated the Township's northwestern Morgandale neighborhood. The southwest and southeast quadrants near Bolindale and Howland Springs, respectively, also had high composite scores. Photo 6 depicts an area of Niles Cortland Road, just north of the Eastwood Mall Complex, which is identified as both high need and high demand. Although there is no sidewalk present, many residents likely travel to the mall for employment and shopping. These areas are a prime opportunity to improve quality of life and connectivity in Howland Township.

DEMAND INDICATOR	RATIONALE	METRIC	SCORING
Employment Density	A measure of where people work	2015 Longitudinal Employer-Household Dynamic (LEHD), Work-Area Characteristics	0: Employment = 0 1-5: Assigned score by quantile
Population Density	A measure of where people live	2012-2017 American Community Survey (US Census)	0: Population = 0 1-5: Assigned score by quantile
Walk/Bike Commute Mode Share	A measure of existing active transportation usage	2012-2017 American Community Survey (US Census)	0: Bike/Ped Mode Share = 0 1-5: Assigned score by quantile
Park Density	A measure of parkland expressed as acreage per Census Tract	Park data obtained from ESRI dataset; calculated according to parkland acreage per Census Tract	0: Park Acres = 0 1-5: Assigned score by quantile
Presence of College/ Universities	A measure of where people attend college	College/university data obtained from ESRI dataset; calculated based on whether or not a Census Tract contains a college/ university location	Score of 0 if there are no College/University locations within a census tract and score of 5 if there is at least one College/ University location within a census tract
Retail Employment Density	A measure of where people shop and are employed by retail industries	2015 Longitudinal Employer-Household Dynamic (LEHD), Work-Area Characteristics	0: Retail = 0 1-5: Assigned score by quantile
Number of People 200% Below Poverty Line	A measure of concentrated poverty. Equity factors, including poverty, should be included in planning decisions to enable an equitable distribution of transportation resources	2012-2017 American Community Survey (US Census)	0: Poverty = 0 1-5: Assigned score by quantile

Table 4: Demand Analysis Inputs and Scoring from Ohio Department of Transportation, 2020. WBO Demand Analysis

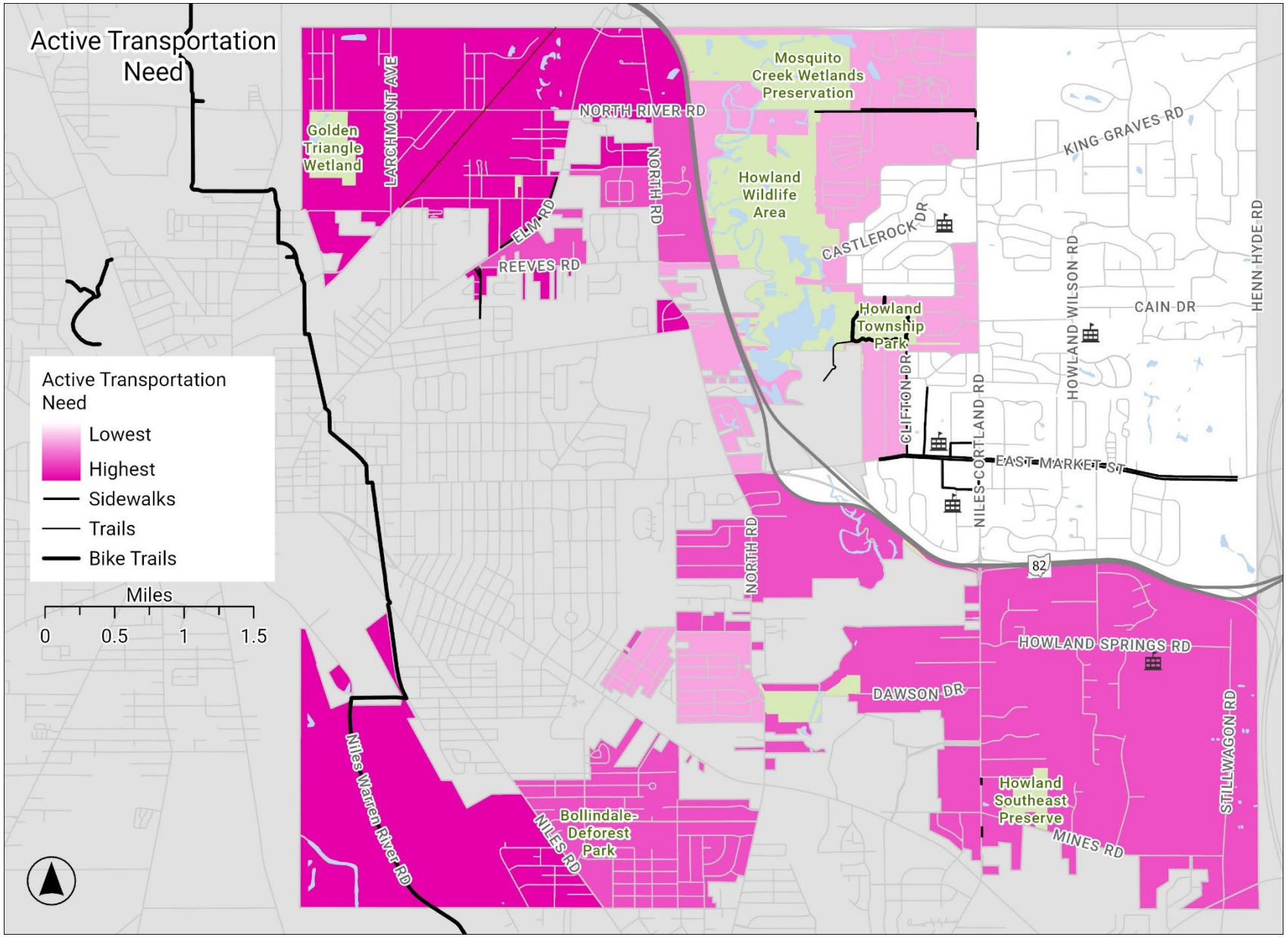


Figure 10. Howland Township Active Transportation Need

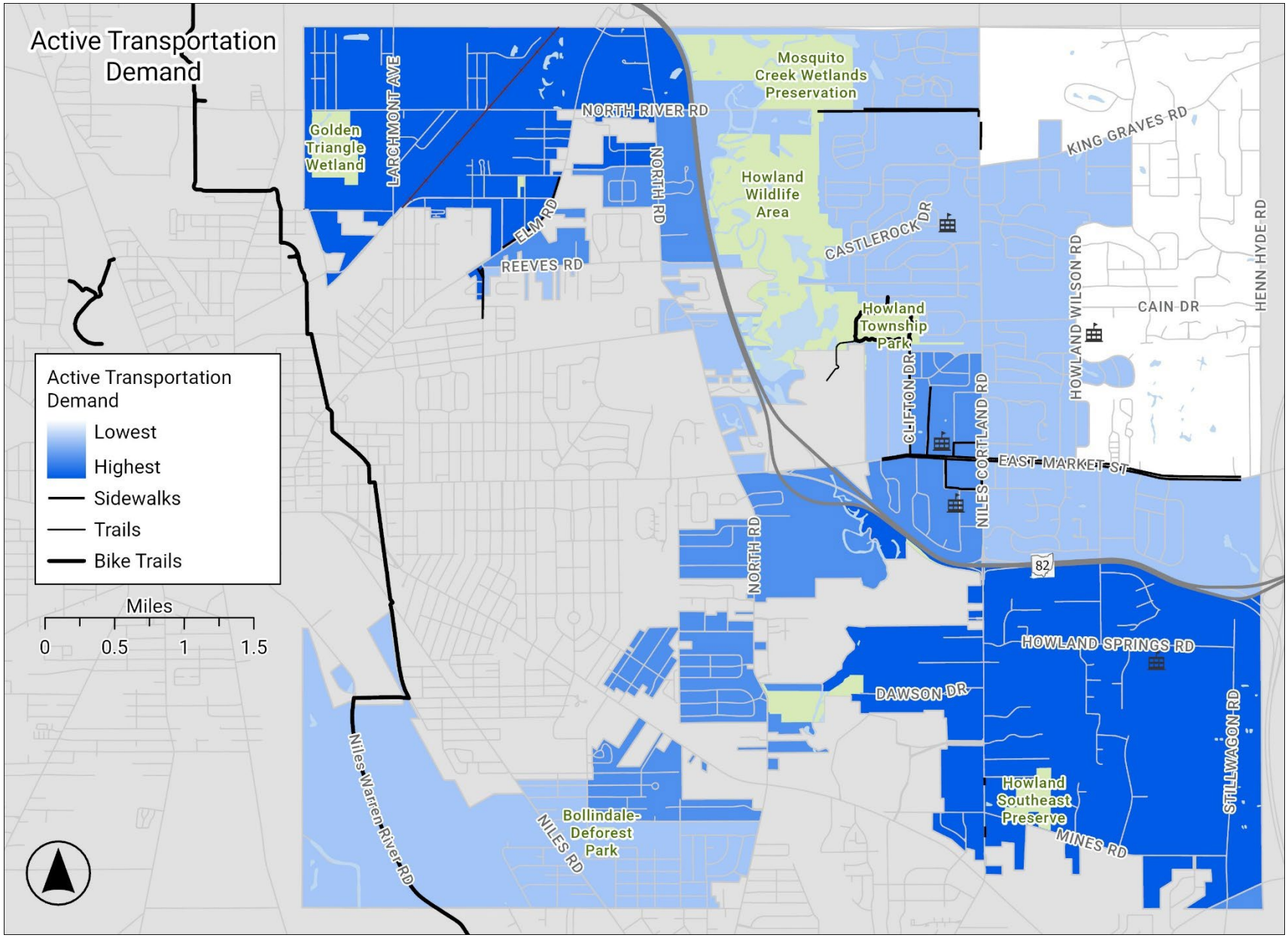


Figure 11. Howland Township Active Transportation Demand

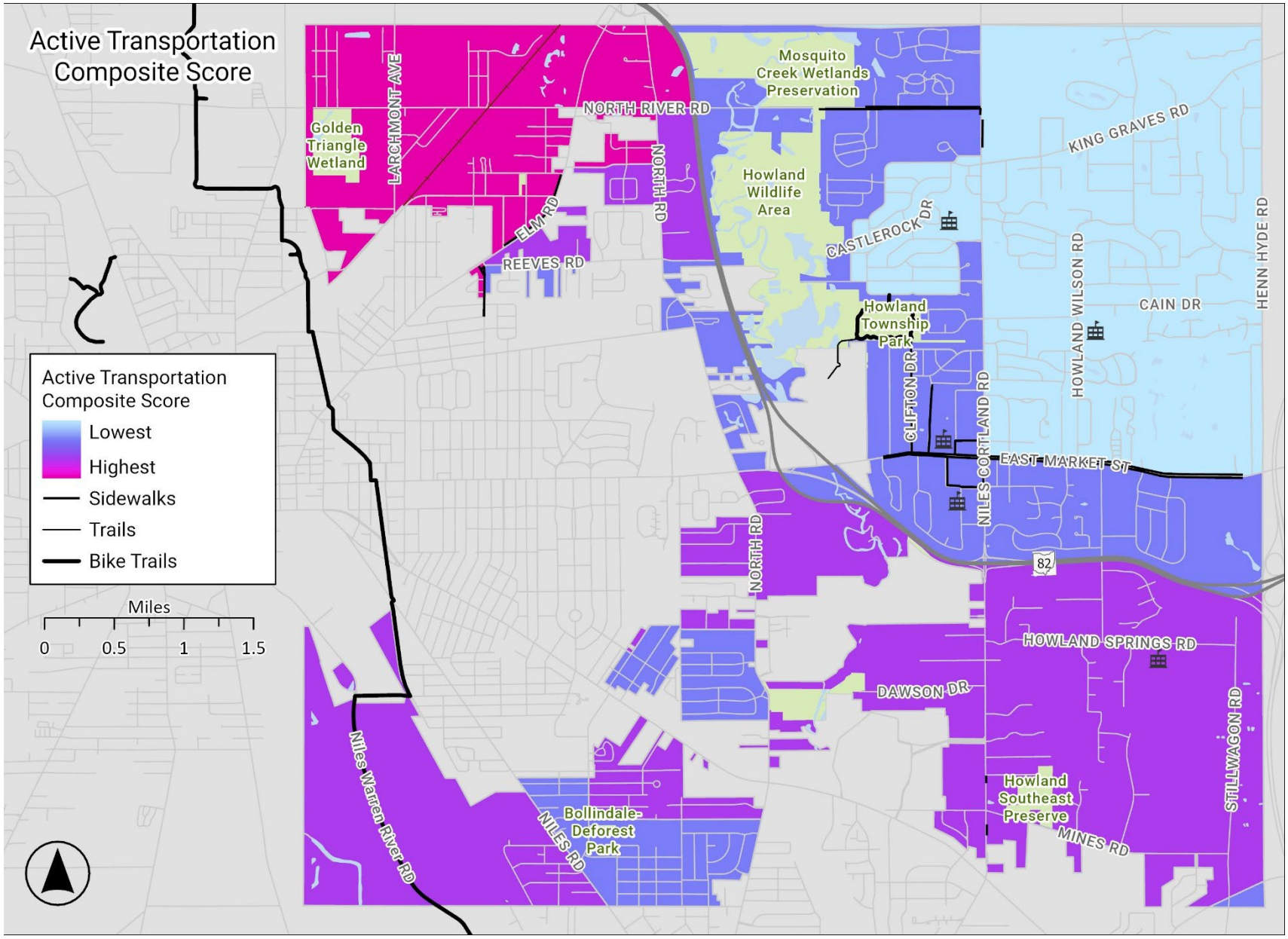


Figure 12. Howland Township Active Transportation Composite Need and Demand Score

Equity Analysis

An equity analysis was conducted, resulting in a score that illustrates the levels of inequity within the township. (Figure 13). This score may be used to assist in project prioritization because areas with higher levels of disparity may benefit from additional investment. A composite equity score was assigned to each geography based on the impact values of each factor. Higher composite equity scores indicate a higher level of inequity in the area. The area with the highest overall composite equity scores were the Morgandale neighborhood (northwest) and the Bolindale neighborhood (southwest).

The composite equity score includes the following socioeconomic factors:

- Racial Minority
- Youth
- Older adults
- Poverty level
- No-vehicle households
- No high school diploma (people aged 25 years and older), and
- Limited English proficiency.

The composite equity score is very similar to the Active Transportation Need score, with relatively minor differences.

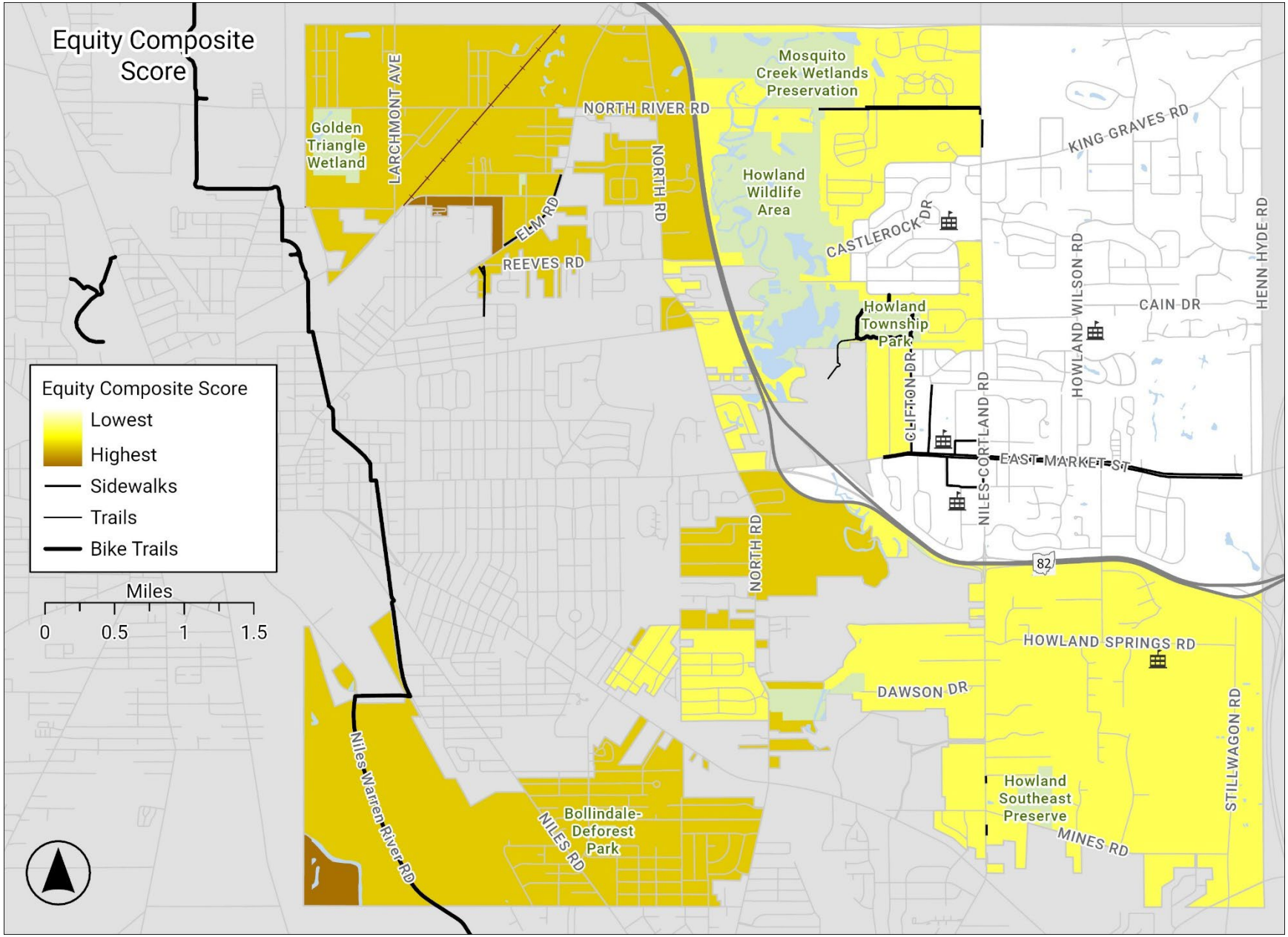


Figure 13. Howland Township Composite Equity Score

NETWORK UTILIZATION

Level of Walking and Bicycling Activity

Network utilization describes who is walking and bicycling, where they are going, and how often they choose this mode of transportation. Several factors impact network usage, including land use and development patterns, the presence or absence of active transportation facilities, proximity of destinations, safety concerns, and socioeconomic need. Understanding the level of walking and bicycling activity in Howland Township provides an understanding of where people are already walking and bicycling and where there may be a lack of infrastructure resulting in low levels of walking and bicycling activity.

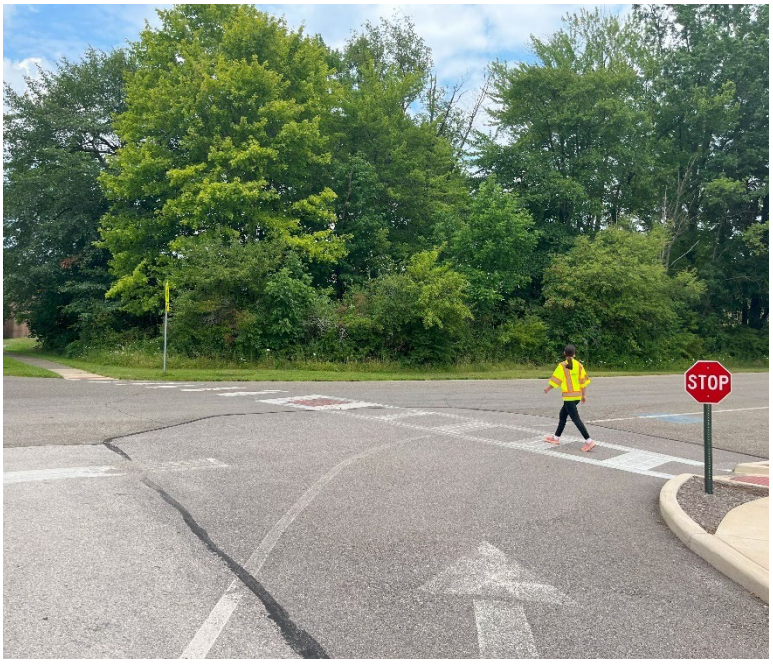


Photo 7. Crosswalk in front of Howland Middle School, crossing Edison Street SE.

Walking and Bicycling Activity

The project team used StreetLight to analyze levels of walking and bicycling (Figure 14 and Figure 15) and to better understand where and when people walk and bike within Howland Township by Census Tract. Streetlight is a data service that harnesses GPS devices, such as those in cars and smartphones, and converts it to vehicle, transit, bike, and foot traffic patterns in a mappable format. This data is provided to communities in Ohio through the Ohio Department of Transportation. While this data may not be an exact analysis due to the limitations of crowdsourcing data (e.g. StreetLight uses smartphone data, which not all people have access to, and data is only available by census tract rather than street-by-street), the data does give an understanding of where people are likely walking and biking. Based on the analysis, the following areas have relatively high levels of walking and biking:

- Howland Springs (southeast quadrant, census tract 9329)
- Areas just west of Route 46 (census tract 9330.02)

One of the highest locations of pedestrian activity is in the Southeast quadrant with the Howland Springs neighborhoods. The Eastwood Mall Complex, Howland Springs Primary School, Sam's Club, and Lowe's Home Improvement are all located in this area. There are few to no sidewalks or marked crosswalks in this area, even though these are essential for residents from nearby neighborhoods who may need to walk to grocery stores and other local destinations. Another area of high pedestrian activity is in Howland Center, west of Niles Cortland Road. This area contains Howland Middle School, Howland High School, and Howland Glen Elementary School, as well as Howland Township Park. These areas have limited pedestrian facilities, which include sidewalks on East Market Street, Clifton Street, and Brewster Drive, and portions of sidewalks on Shaffer Drive, South Street, and North River Road.

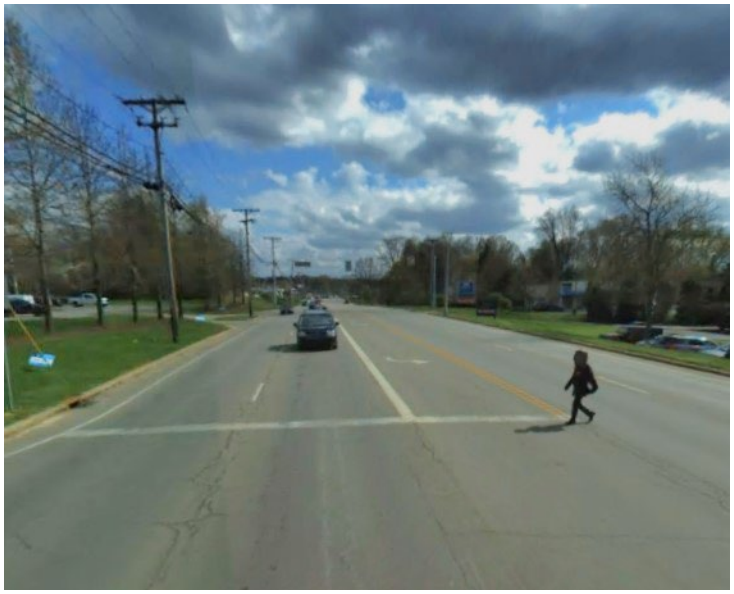


Photo 8. Pedestrian crossing Niles Cortland Road SE where there is no marked crosswalk (Google Streetview).

- Areas with higher bicycling activity:
  - Howland Springs (southeast quadrant, census tract 9329)
  - Morgandale (northwest quadrant, census tract 9213)

The highest biking activity is in the southeast quadrant in the Howland Springs neighborhood, though there are no biking facilities in this location. The next biking hotspot is in the Morgandale area, which also has no bicycle facilities.

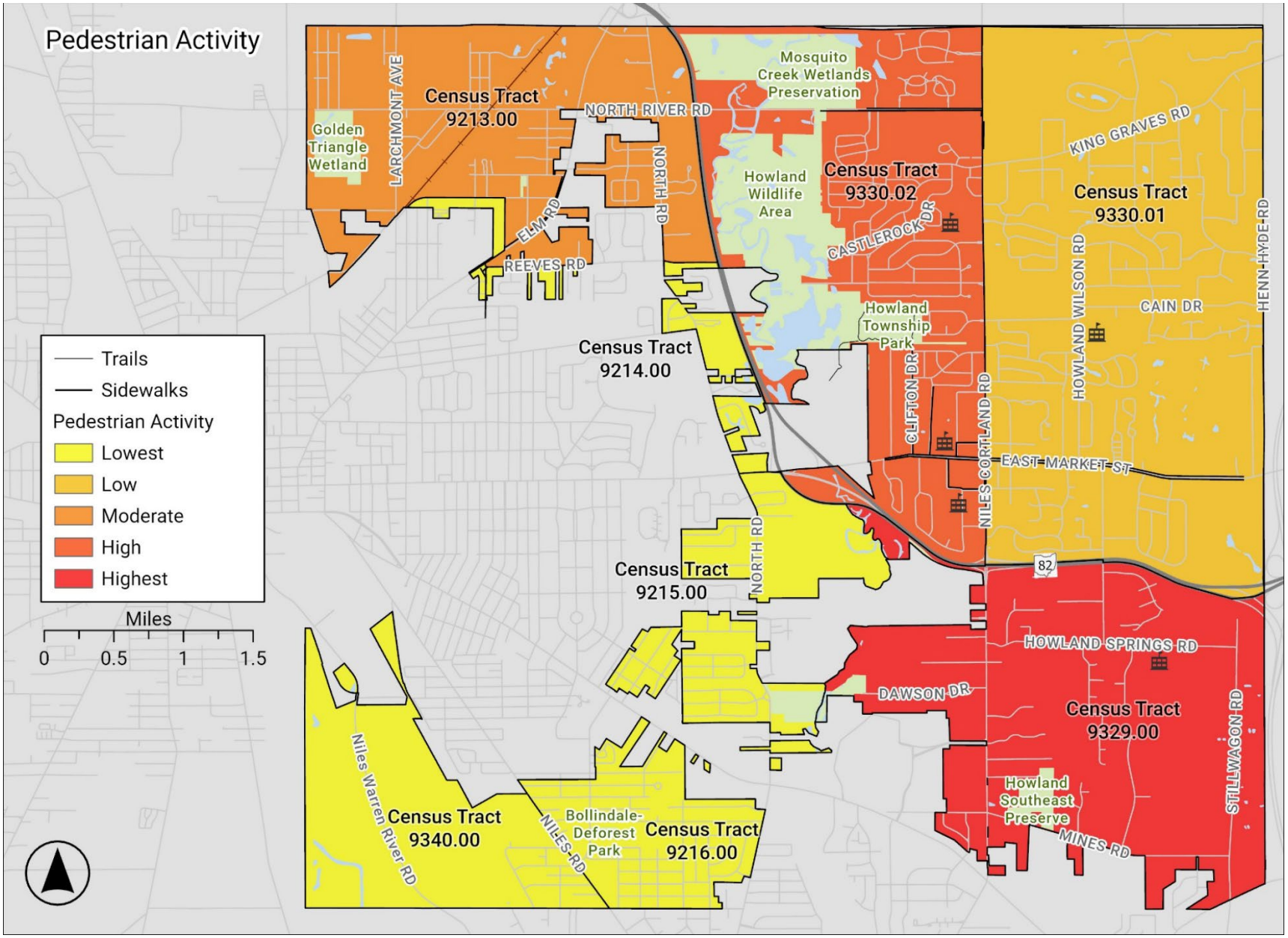


Figure 14. Pedestrian Activity By Census Tract (Source: StreetLight data)

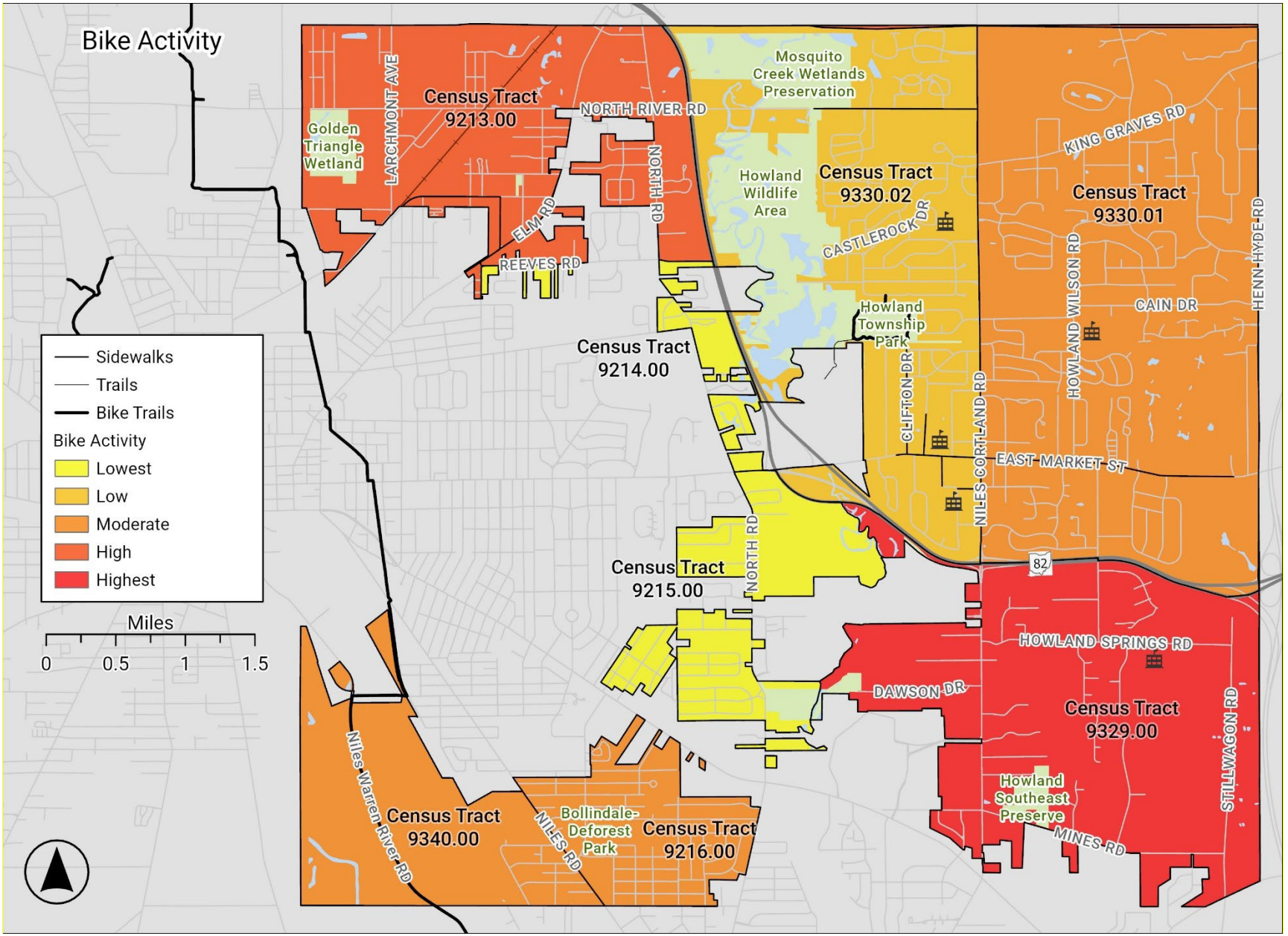


Figure 15. Bicycle Activity by Census Tract (Source: StreetLight data)

SYSTEMIC SAFETY ANALYSIS

Systemic safety is the core concept underpinning a number of federal and state programs, funding sources, and engineering practices. This proactive approach seeks to eliminate fatal and serious crashes from public roads by evaluating the causes and risk-factors that lead to serious crashes and working to address them across the transportation network. A systemic safety analysis examines crash data and roadway characteristics to identify widespread risk factors and patterns that contribute to crashes and high crash frequencies. This systemic analysis focuses specifically on pedestrian and bicycle crashes. The goal of this analysis is to help implement a proactive, comprehensive, and risk-based approach to safety, identifying roadways for systemic treatments to prevent bicycle and pedestrian crashes from occurring.

This analysis uses data on crashes from 2019 to 2023. During that timeframe, there were a total of twelve pedestrian and bicyclist crashes, with eight involving pedestrians and four involving bicycles.

The Systemic Safety Analysis (Table 5) shows the combination of roadway characteristics in each row (like speeds, number of lanes, and traffic volumes) that contribute most to crashes in Howland Township. This helps to prioritize the most dangerous streets for people walking and biking.

The project team examined several factors to determine which are most likely to contribute to crashes. In Howland Township, a combination of the functional class of the road (whether arterial, collector, or local street) and the speed limit of a road are the most significant indicators of where a bike or pedestrian crash is most likely.

Table 5 shows the results of the Systemic Safety Analysis. Overall, arterial roads rank the highest, regardless of speed limit. These roads represent less than 25 percent of the road network, but account for half of the pedestrian and bicycle crashes.

Risk Level	Functional Class	Speed Limit	Bike and Ped Crash Proportion	Mileage Proportion
Critical	Principal Arterial Roads	-	25.00%	12.89%
High	Minor Arterial Roads	-	25.00%	10.52%
Moderate	Major and Minor Collector Roads	-	0.00%	2.69%
Low	Local Roads	35 mph or higher	25.00%	7.76%
Minimal	Local Roads	25 mph or lower	25.00%	65.77%

Table 5. Systemic Safety Analysis Results

The principal and minor arterial roads in Howland Township (Critical and High Risk) include the following locations:

Principal Arterials (Critical Risk)

- Elm Road
- Niles Cortland Road, south of State Highway 82
- East Market Street, east of State Highway 82

Minor Arterials (High Risk)

- Niles Cortland Road, north of State Highway 82
- King Graves Road
- East Market Street, west of State Highway 82
- North Road, south of Atlantic Street
- North River Road
- Niles Road
- Niles Warren River Road

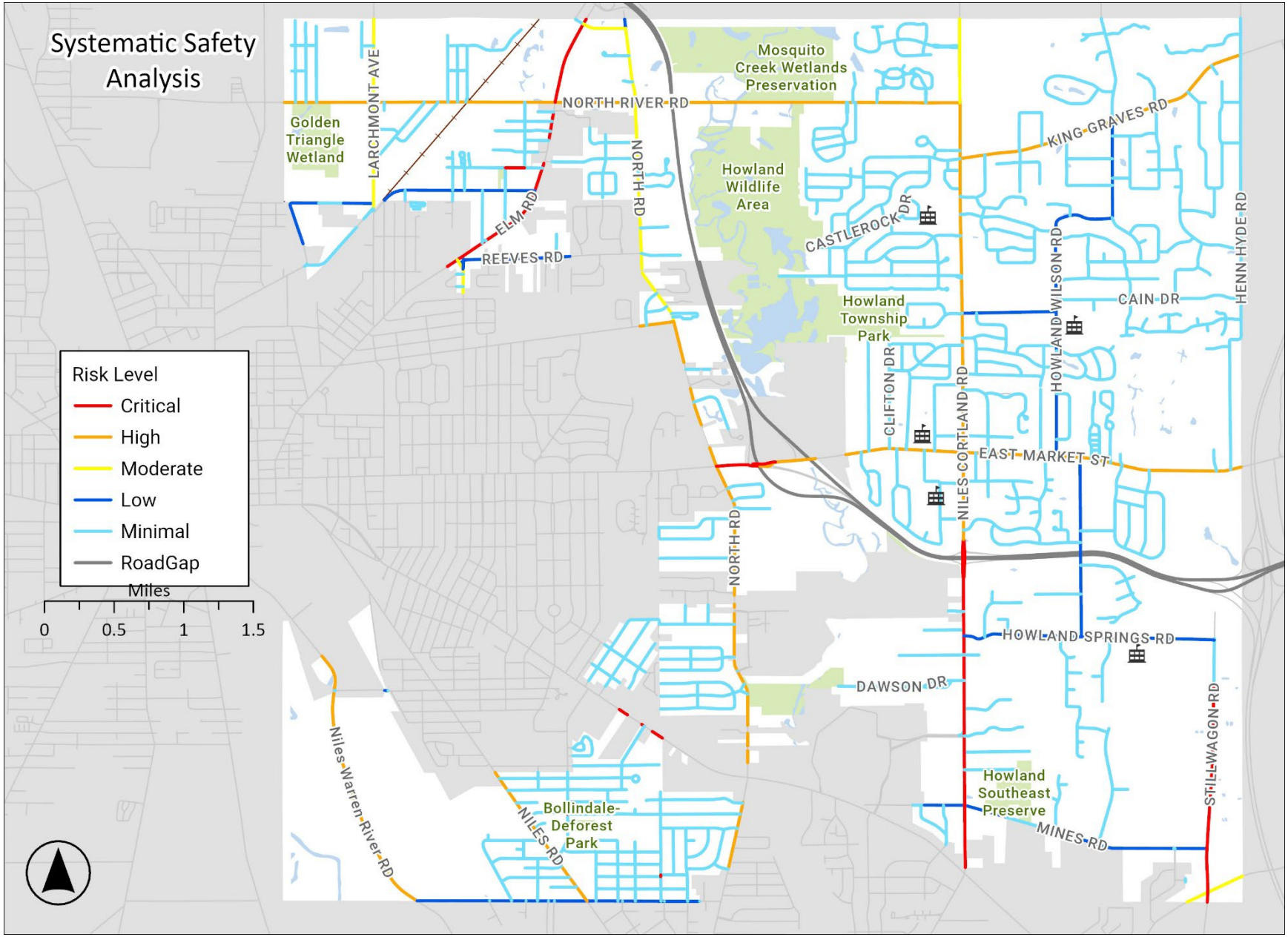


Figure 16. Risk Levels for Bike and Pedestrian Crashes

LEVEL OF TRAFFIC STRESS

In active transportation planning, a Level of Traffic Stress (LTS) analysis uses broadly available road characteristics to classify the experience of pedestrians and bicyclists. An LTS analysis typically groups roads into one of the four following categories:

- **LTS 1** – A low-stress facility suitable for all ages and abilities. These facilities have strong separation from all except low speed, low volume traffic.
- **LTS 2** –These facilities are separated from moderate-speed and multilane roads and tend to be comfortable for most adults. Streets tend to be lower-speed and have lower volumes of traffic.
- **LTS 3** – These are moderate stress facilities that tend to be comfortable for confident on-road bicyclists. Streets in this category tend to be moderate speed or multilane traffic, or proximity to higher speed traffic.
- **LTS 4** – A high-stress facility that is uncomfortable for most adults. Involves interaction with higher speed traffic or close proximity to high-speed traffic

An LTS analysis can be tailored to the experience of bicyclists, regarded as a Bicycle Level of Traffic Stress (BLTS) analysis, or pedestrians, regarded as a Pedestrian Level of Traffic Stress (PLTS) analysis.

Bicycle LTS Methodology

ODOT developed an LTS tool for the U.S. and State Bike Route System, which was adopted for this analysis. To avoid confusion between bicyclist and pedestrian LTS, this analysis method will be referred to as BLTS. This information comes from researchers who worked with bicyclists of average experience and ability levels, and who found that the perception of traffic is the largest indicator of a stressful experience. The inputs for the ODOT BLTS analysis capture traffic conditions that can influence stress for a typical bicyclist as shown below:

- Number of lanes
- Direction of travel (one- or two-way)
- Posted speed limit
- Annual average daily traffic (AADT)
- Bicycle facility type (shared-use path, separated bicycle lane, buffered bicycle lane, bicycle lane, paved shoulder, or shared lane)
- Bicycle lane width

The ODOT Transportation Information Mapping System (TIMS) roadway inventory provided the inputs for the BLTS analysis, combined with bicycle facility data from Howland Township. In general, most local roads or neighborhood streets have lower stress due to low number of lanes, lower posted speed, and lower traffic volumes.

Pedestrian LTS Methodology

Pedestrian LTS (PLTS) analyses can assess stress levels for walking alongside a road (segment) and crossing a road (intersection). PLTS on road segments was calculated using methodology developed by Washington State Department of Transportation.[9] The inputs for the analysis are as follows:

Segment PLTS inputs:

- Sidewalk condition and width
- Buffer type and width
- Number of lanes and posted speed
- Annual average daily traffic (AADT)

PLTS at intersection crossings was calculated using methodology developed by Oregon Department of Transportation.[10] The inputs for the analysis are as follows:

Crossing PLTS inputs:

- Pedestrian signal presence
- Functional class
- Number of lanes and posted speed
- Annual average daily traffic (AADT)
- Median refuge & lighting presence

[9] Washington State Department of Transportation, 2022. Design Bulletin 2022-01: Bicycle Level of Traffic Stress (BLTS). [pdf] Available at: https://wsdot.wa.gov/sites/default/files/2022-06/DesignBulletin2022-01.pdf

[10] Oregon Department of Transportation, 2024. Active Transportation Plan: Chapter 14. [pdf] Available at: https://www.oregon.gov/ODOT/Planning/Documents/APMv2_Ch14.pdf

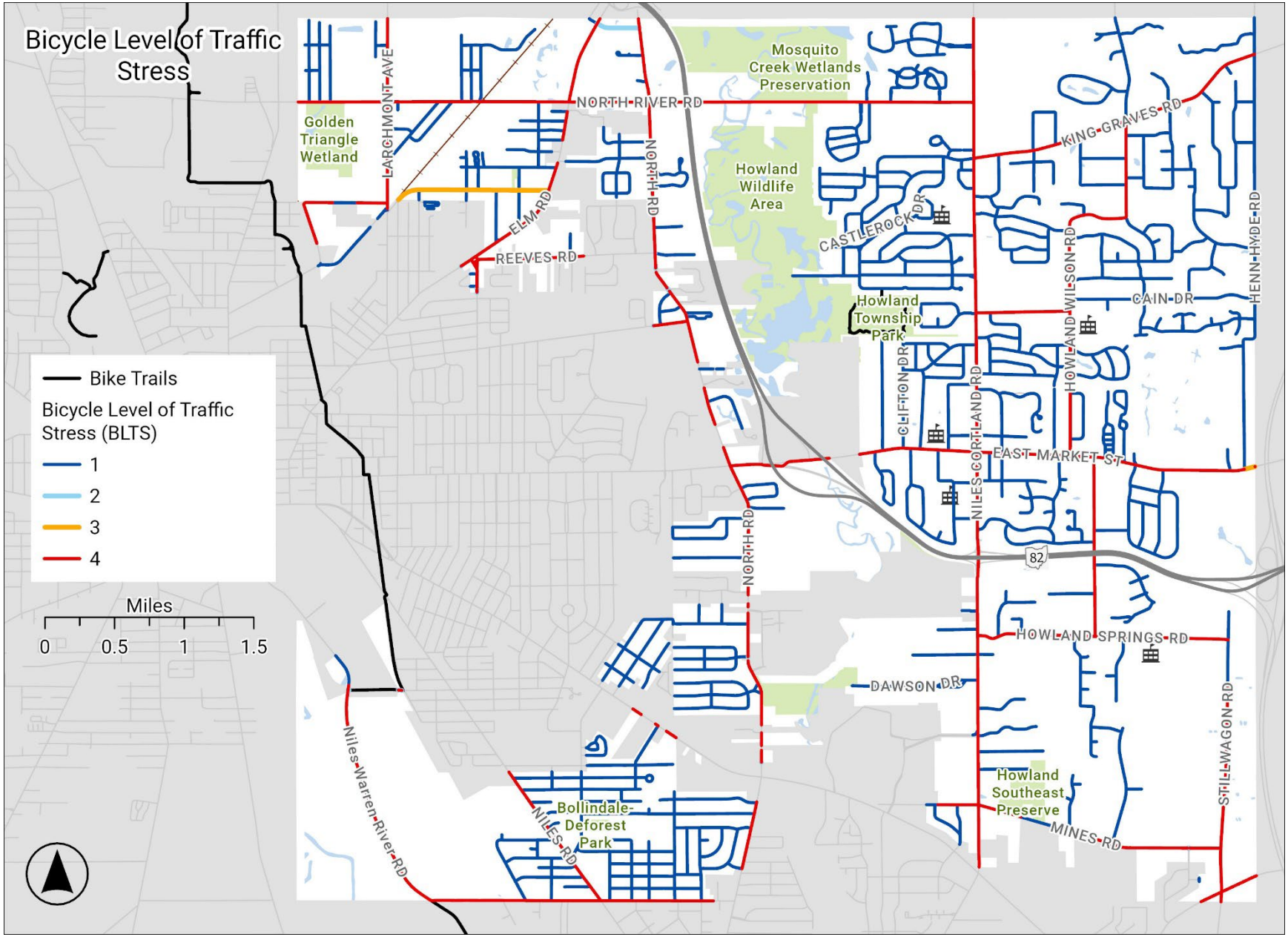


Figure 17. Bicycle Level of Traffic Stress

BLTS Results

Figure 17 illustrates the results of the Bicycle LTS analysis. Howland Township has few bicycle facilities, resulting in high-stress corridors along busier roads with higher speed limits. Residential roads with less traffic and lower speed limits provide low-stress corridors for bicyclists. Low-stress roads are often separated by higher-stress roads, indicating a need for low-stress connections throughout Howland Township. The high-stress roads (BLTS 4) are primarily the following:

- North River Road
- Larchmont Avenue
- Elm Road
- North Road
- Niles Cortland Road (SR 46)
- King Graves Road
- Howland Wilson Road
- Squires Lane
- Overland Avenue
- East Market Street
- Howland Springs Road
- Mines Road
- Niles Road SE
- Deforest Road SE
- Niles Warren Road SE

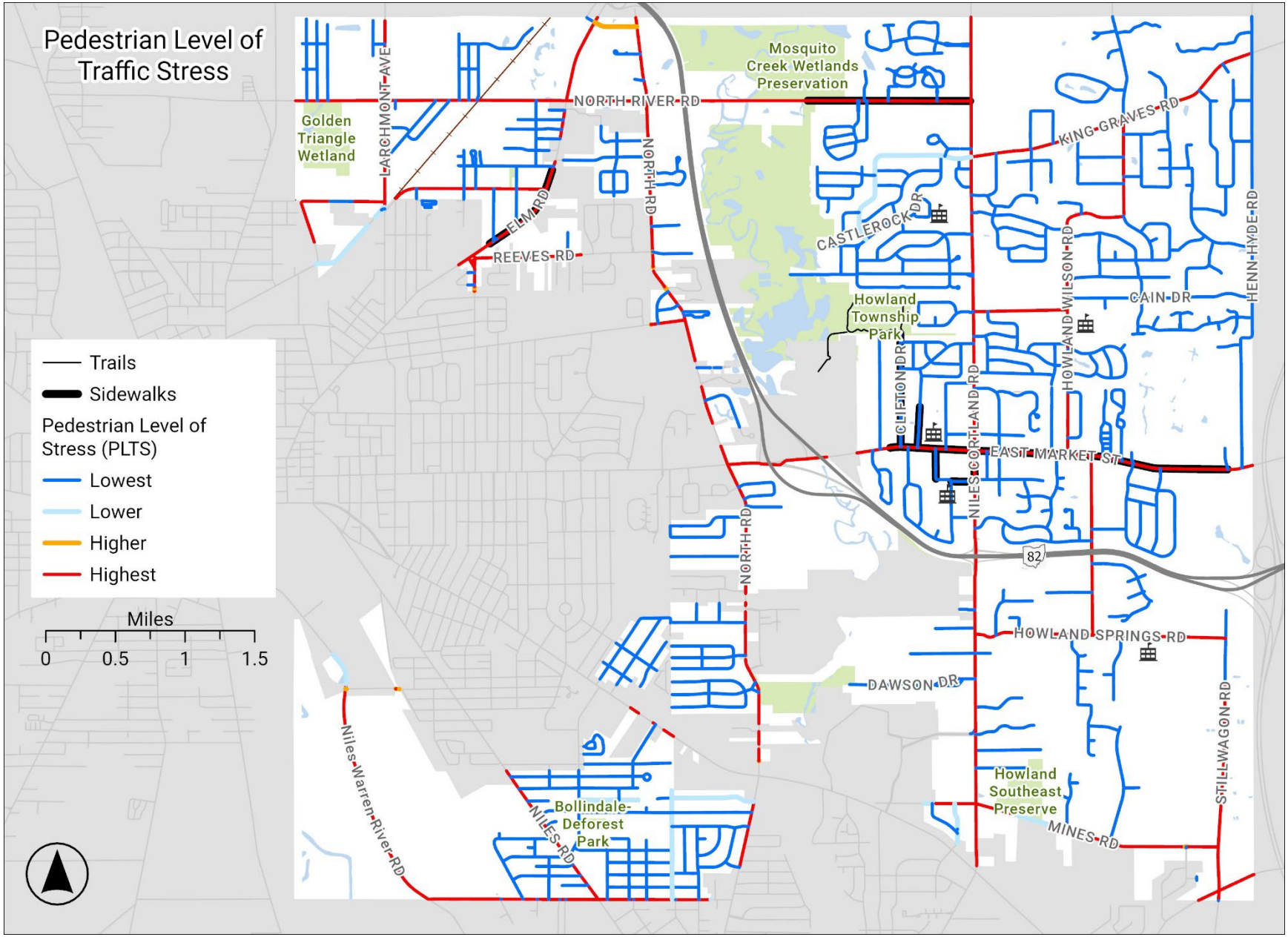


Figure 18. Pedestrian Level of Traffic Stress

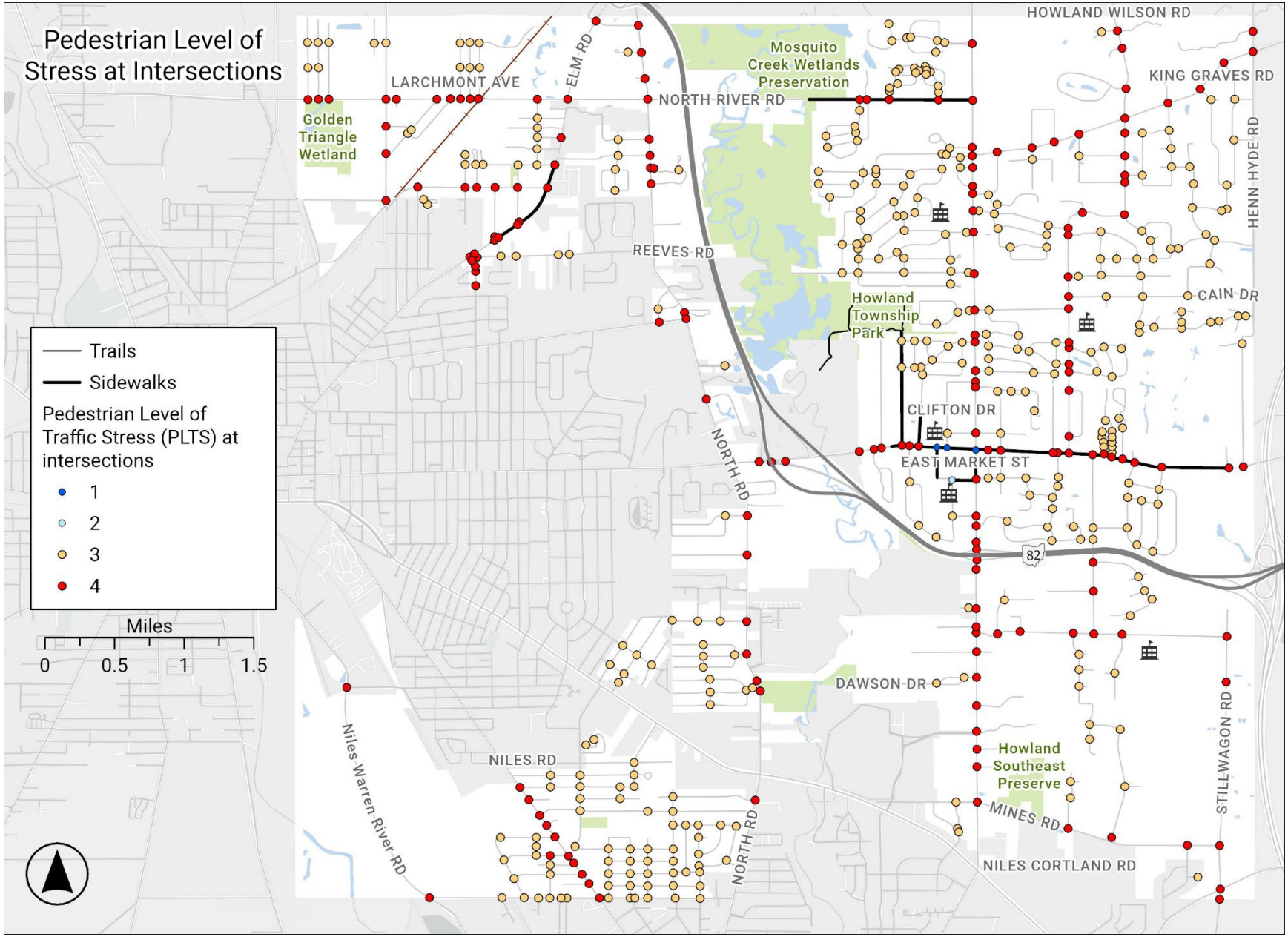


Figure 19. Pedestrian Level of Traffic Stress at Intersections

PLTS Results

Figures 18 and 19 illustrate the results of the Pedestrian LTS analysis. Howland Township has few pedestrian facilities, resulting in high-stress corridors along busier roads with higher speed limits. Despite portions of sidewalk being present along North River Road, Elm Road, and East Market Street, these areas still have a high level of stress due to buffer width, average daily traffic volume, and posted speed limits. Residential roads with less traffic and lower speed limits provide lower-stress corridors for pedestrians. The high-stress roads (PLTS 4) are primarily the following:

- North River Road
- Larchmont Avenue
- Elm Road
- North Road
- Niles Cortland Road (SR 46)
- King Graves Road
- Howland Wilson Road
- Squires Lane
- Overland Avenue
- East Market Street
- Howland Springs Road
- Mines Road
- Niles Road SE
- Deforest Road SE
- Niles Warren Road SE

The project team evaluated other PLTS methodologies, but these classified nearly the entire Township as high stress due to the lack of sidewalks. This approach was ineffective in identifying and prioritizing roadways most in need of pedestrian infrastructure improvements. Consequently, the previously mentioned methods were used.

Figure 19 indicates that many intersections are high stress for pedestrians. Howland Township has three signalized crosswalks along East Market Street, resulting in low PLTS at these locations. A crosswalk near the Middle School, equipped with signage but lacking a signalized crossing, has a slightly higher score. Due to the absence of crosswalks throughout the rest of the Township, most intersections have a PLTS of 3 or 4. Roads with a concentration of high-stress (PLTS 4) intersections are the following:

- Elm Road
- North River Road
- Niles Cortland Road (SR 46)
- King Graves Road
- East Market Street
- Niles Road

SAFETY: CRASH TRENDS AND PATTERNS

Evaluating Crash Trends and Patterns

Evaluating crash trends and patterns identifies problematic locations and provides an understanding of what factors may be contributing to crashes. Understanding these crashes can lead to projects that have the greatest likelihood of improving safety for pedestrians and bicyclists.

Local Crash Trend Analysis: The Crash Analysis and Planning Evaluation Tool

The Crash Analysis and Planning Evaluation Tool is provided by ODOT and provides a crash trend analysis of the local area. The project team downloaded bicycle and pedestrian crash data using ODOT's GIS Crash Analysis Tool. During the period reviewed (2019 to 2023), there were 12 crashes involving bicyclists and

pedestrians in Howland Township, nine of which resulted in minor or serious injuries and one resulted in a fatality (Figure 20).

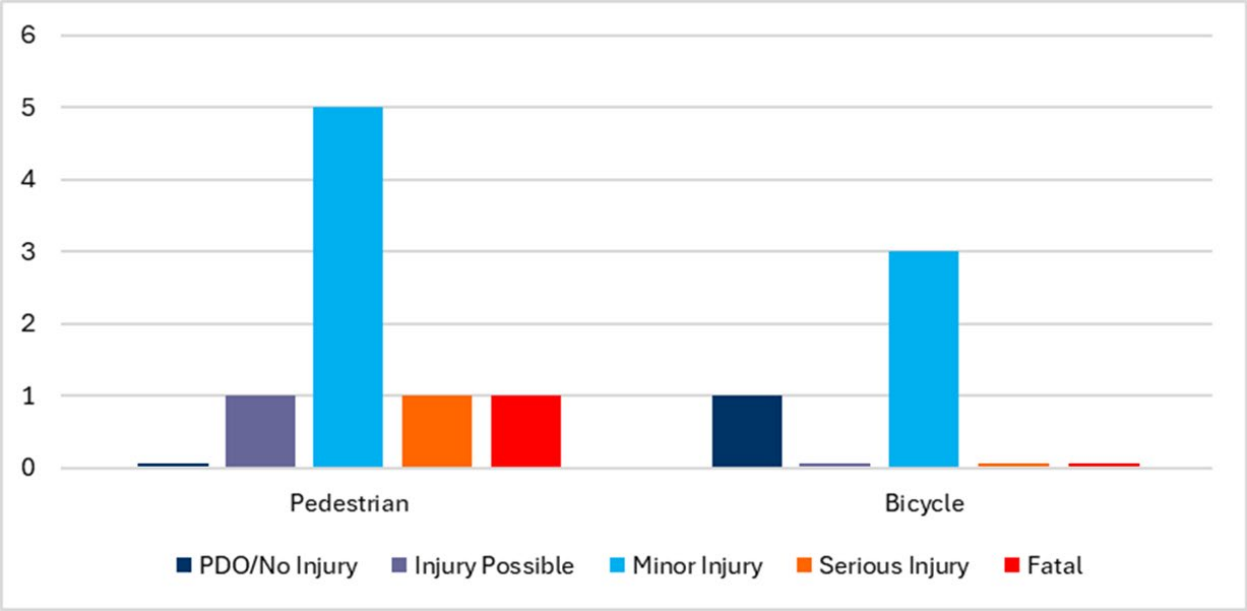


Figure 20. Pedestrian and Bicycle Crashes by Severity Type

In Howland Township, pedestrian and bicycle crashes increased from 2019 to 2022, then dropped off in 2023. In 2023, no pedestrian and bicycle crashes were reported within the Township (Figure 21). The highest number of pedestrian and bicycle crashes was in 2022 when 4 crashes were reported. Overall trends show a slight increase in population, and a decrease in pedestrian and bicycle crashes during the study period. Generally, bike and pedestrian crashes tend to reflect how comfortable a place is to walk and bike. In a place like Howland Township that has few bike facilities and sidewalks, a reduction in pedestrian and bicycle crashes may mean that fewer people are walking and biking, rather than an improvement in safety. While some individuals have no alternative, many may opt to drive instead. Additionally, it is important to acknowledge that pedestrian and bicycle crashes are frequently underreported.[11]

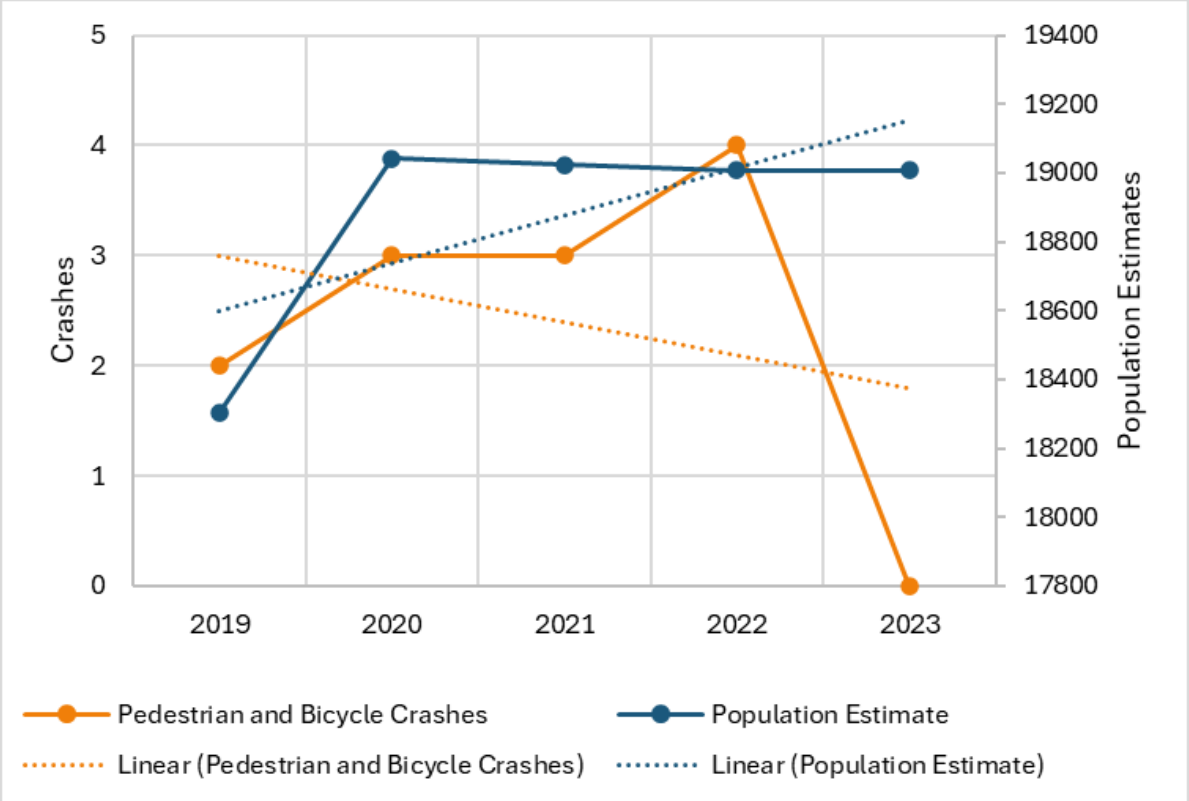


Figure 21. Pedestrian and Bicycle Crash Trends – Crashes and Population (2019 to 2023)

[11] Pedestrian & Bicycle Information Center. (n.d.). Facts & Figures: Safety. Available at: http://www.pedbikeinfo.org/factsfigures/facts_safety.cfm

ODOT identifies focus crash types, or emphasis areas, through a data-driven process that uncovers patterns and trends in crash occurrences. These safety emphasis areas guide the State's planning and investment into safety improvements. In this region, ODOT has identified five emphasis areas with high severity or frequency of crashes: intersection-related crashes, drug-related crashes, senior driver-related crashes, young driver-related crashes, and distracted driver-related crashes. Overall, senior driver related crashes are the most common type of bicycle and pedestrian crashes in the Township (Figure 22). Young drivers and intersection related crashes were the next most common. There were no pedestrian and bicycle crashes reported to be alcohol, marijuana, school zone, work zone, or speed related during the study period.

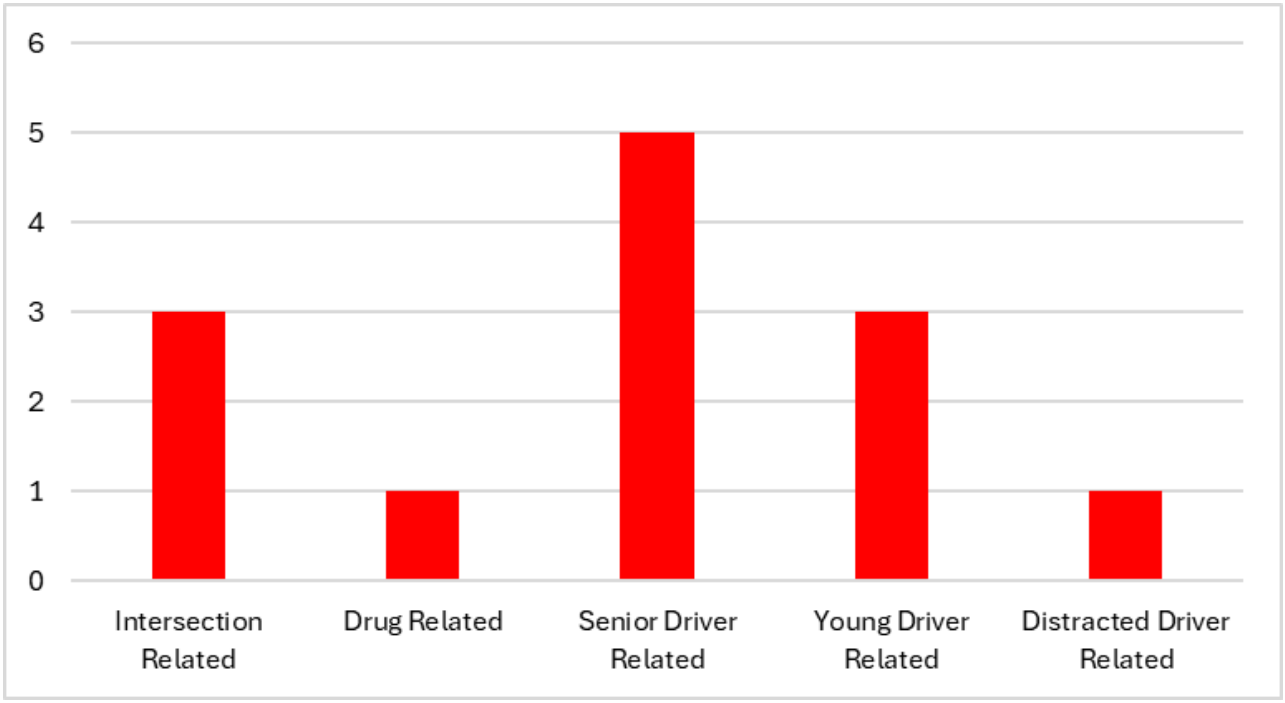


Figure 22. Pedestrian and Bicycle Crashes by the Strategic Highway Safety Plan Emphasis Area

Pedestrian- and Bicycle-Involved Crash Locations

Figure 23 shows the locations of recent crashes involving a bicyclist or a pedestrian. There were three crashes on Elm Road and three crashes near Howland High School and Middle School. On Elm Road, one bicycle crash and two pedestrian crashes occurred. According to the crash report, a bicyclist exiting a private drive onto Elm Road was struck by an oncoming vehicle. One pedestrian crash occurred in a parking lot adjacent to the road due to improper backing from the driver of the vehicle. The other was reported as an improper crossing by the pedestrian, indicated drug use was a factor, and resulted in a fatality.

Near Howland High School and Middle School, there was one bicycle crash and two pedestrian crashes. One pedestrian was struck while attempting to cross North Brewster Drive. Another pedestrian was struck while crossing Clifton Drive at the stop sign on East Market Street. A bicyclist was struck at the same crossing, which is an unmarked crosswalk. Both incidents occurred in the same manner, direction, and dynamic at this location.

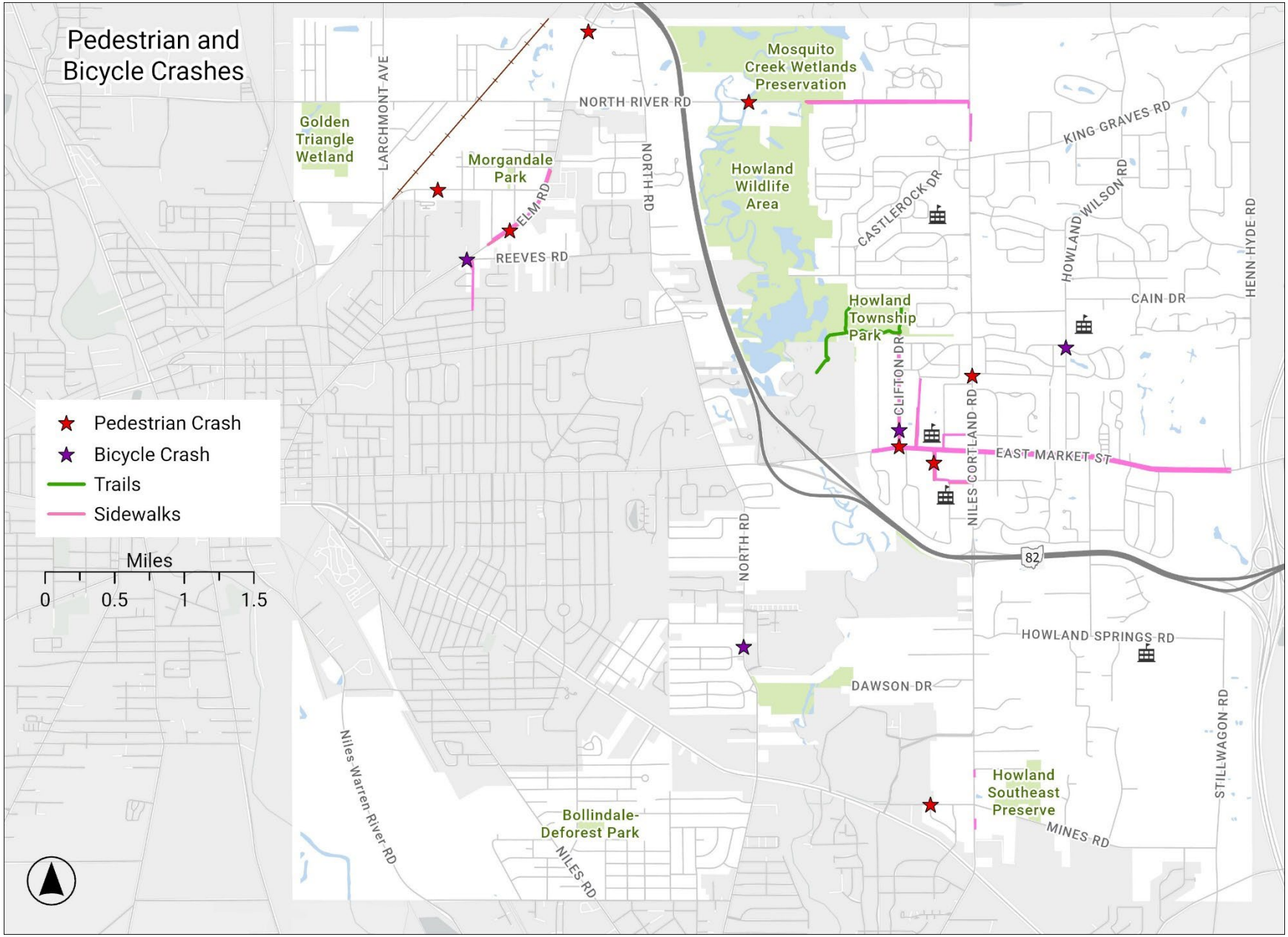


Figure 23. Pedestrian and Bicycle Crashes (2019-2023)

LIVABILITY

Understanding Howland Township's Quality of Life

Livability and quality of life are the sum of factors like the natural and built environments, social conditions, economic conditions, and public health. Ohio is one of the least healthy states in the country, ranking 44 out of 50 on health value, with Trumbull County being among the least healthy counties in the state. [12] This is likely due in part to the lack of adequate options for walking and bicycling for both transportation and physical activity. In addition, auto-oriented lifestyles increase emissions and harmful air quality. Finally, transportation costs can be a burden to Ohioans; replacing automobile trips with walking and bicycling trips creates more economic stability for families. Active transportation networks provide greater choices for mobility, increase opportunities for physical activity, reduce emissions, improve air quality, reduce transportation costs, and positively impact quality of life.

[12] Akah, Hailey JD, et al. "2024 Health Value Dashboard: Publications." *Health Policy Institute of Ohio*, www.healthpolicyohio.org/our-work/publications/2024-health-value-dashboard. Accessed 26 July 2024.

KEY TAKEAWAYS

Howland Township is taking action to enhance its transportation network with a focus on safe and efficient transportation for all residents and improving bicycle and pedestrian connectivity throughout the Township. The Howland Township Comprehensive Plan Update outlines the need for a corridor plan for East Market Street, improved multimodal connectivity through new trails, bike lanes and sidewalks, and bicycle and pedestrian supportive infrastructure.

While the existing sidewalk network remains limited, the ongoing TRU-SR46 construction project represents a positive step toward improving pedestrian safety in Howland Center, particularly near the schools. However, there remains a pronounced need for pedestrian and bicyclist infrastructure across the rest of the Township. Specifically, the Northwest and Southwest quadrants require better connectivity to the Township's center. Additionally, the area surrounding the Eastwood Mall complex would substantially benefit from the development of pedestrian amenities, facilitating secure access to grocery stores and other retail outlets.

The crash trend analysis for Howland Township's active transportation network illustrates the need for improved safety measures for bicyclists and pedestrians. The areas around Elm Road and the High School and Middle School showed concentrations of pedestrian and bicycle crashes. Crashes involving older drivers contributed the largest portion of bicycle and pedestrian crashes. With an aging population and a significant portion (24.2 percent) of Howland's residents being 65 years or older, enhancing bicycle and pedestrian safety is increasingly essential. Finally, the systemic analysis found that arterials and roads with higher speed limits are likely to have increased incidents of bicycle and pedestrian crashes.

The Active Transportation Demand/Need analysis, conducted by ODOT as part of its statewide bicycle and pedestrian plan (Walk.Bike.Ohio) shows that there is a high need for active transportation in certain parts of the Township. Areas that will benefit the most from additional investment have both high demand and high need for active transportation. New infrastructure or safety improvements should be prioritized in areas with a higher level of disparity, high demand and need for active transportation, along streets identified as higher risk in the systemic safety analysis, or as an alternative route to those streets. These locations include neighborhoods in the Morgandale and Bolindale areas, and main roads including East Market Street, Niles Cortland Road, Elm Road, and North River Road, among others.

This chapter establishes a foundation for building recommendations aimed at improving pedestrian and bicycle facilities in Howland Township. Strengthening the multimodal infrastructure and transportation policies can improve safety and connectivity in the township, paving the way for a transportation network that is equitable and efficient for the entire community.

PROPOSED PROJECTS AND PROGRAMS

PROPOSED PROJECTS AND PROGRAMS

This plan makes recommendations that will promote and support active transportation through a combination of infrastructure projects, policies / zoning, and programs. Infrastructure recommendations refer to physical, built projects that will change how roadways are configured to provide space for all users. Policy and program recommendations aim to re-prioritize walking and bicycling and to change the culture around active transportation and help increase its use through engagement, education, encouragement, and evaluation.

INFRASTRUCTURE PROJECTS

The final proposed network is based on the existing conditions analysis, Steering Committee meetings, and public input. The priority of the infrastructure recommendations was to address safety and accessibility issues of the existing network, provide connections to important destinations, fill sidewalk and trail gaps, and create a connected, comprehensive active transportation network. Recommendations include sidewalks, on-street bike facilities, shared use path, and crossing improvements. The project includes a total of 23 miles of bike and walking routes, 5 miles of sidewalk, 10 miles of neighborhood bikeways and 9 intersection improvements. The bike and walking routes are where biking and walking could be a safe, comfortable option. The walk routes are where there could be sidewalks in the future. The bike routes are

where biking on the street could be safer and more comfortable. The slow streets are residential streets that can be safer for people who walk and bike with traffic calming measures.

See Figure 25 - 30 for network recommendations maps and Table 6 for a complete list of all proposed projects with descriptions.

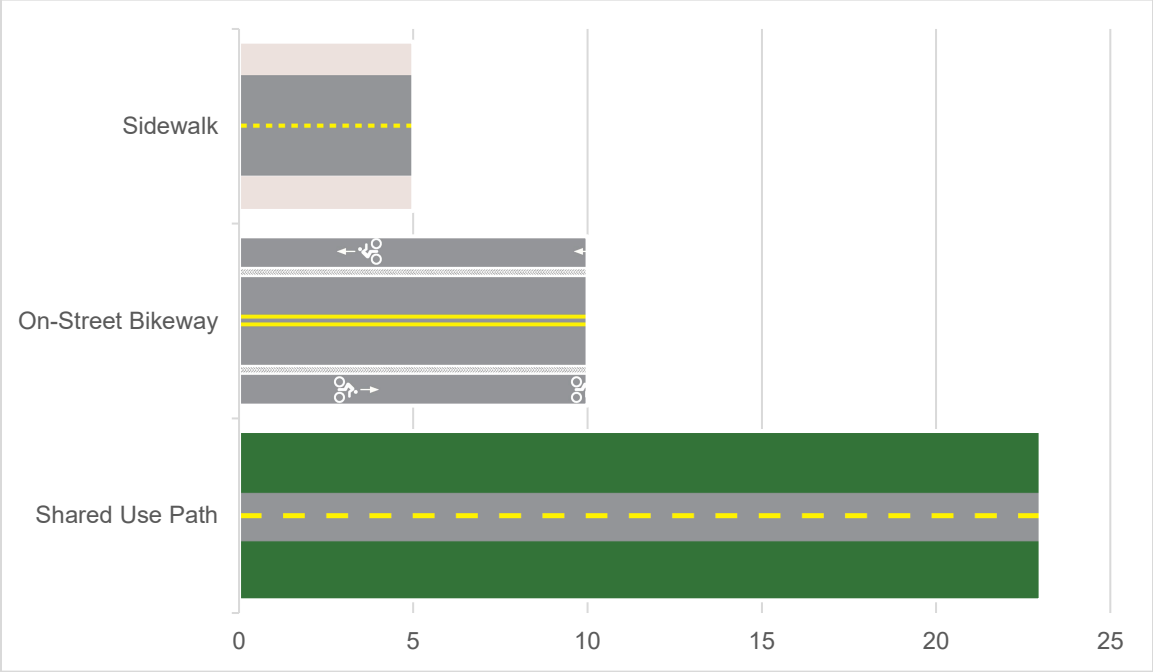


Figure 24: Proposed Projects by Miles

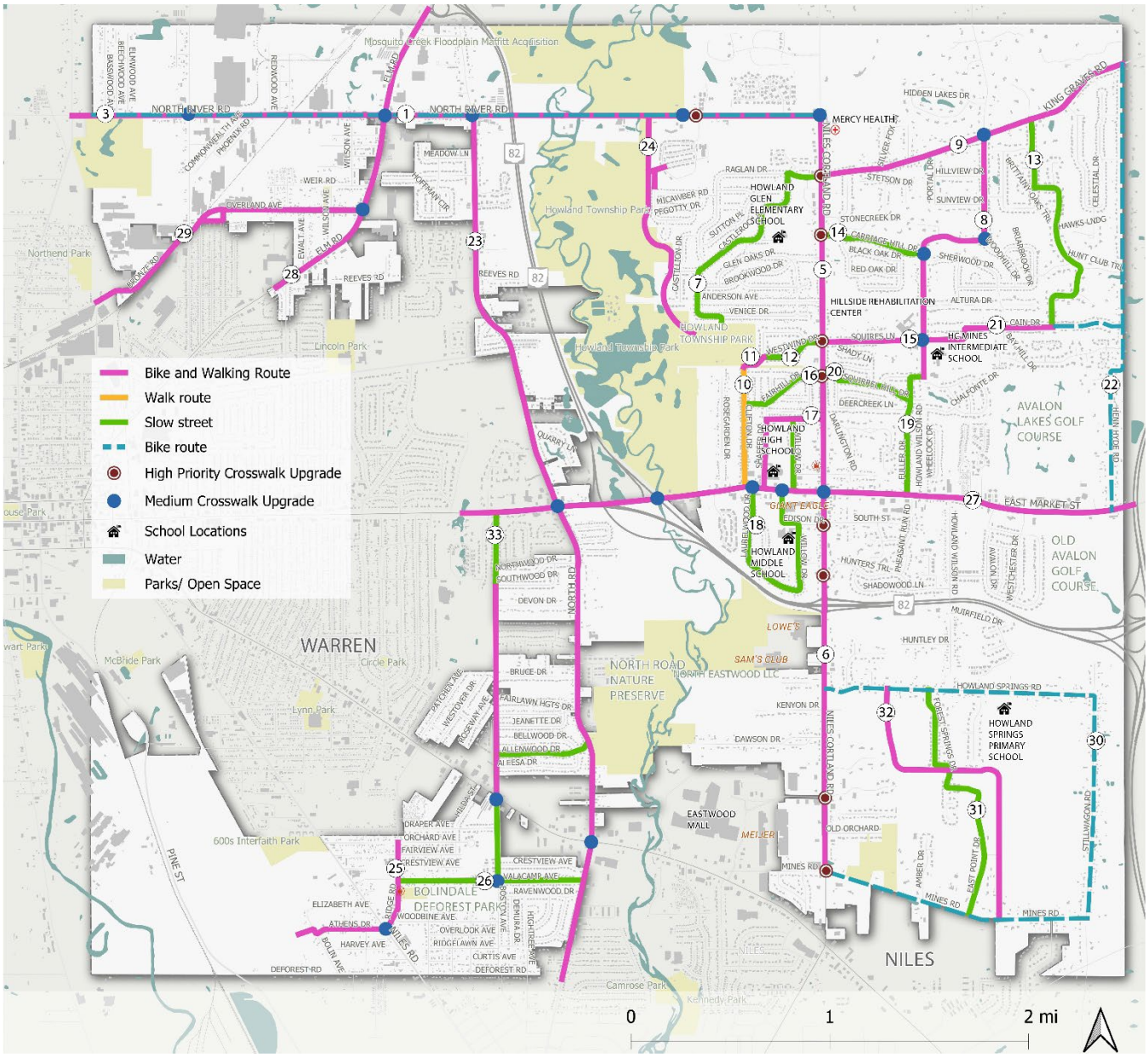


Figure 25: Proposed Network

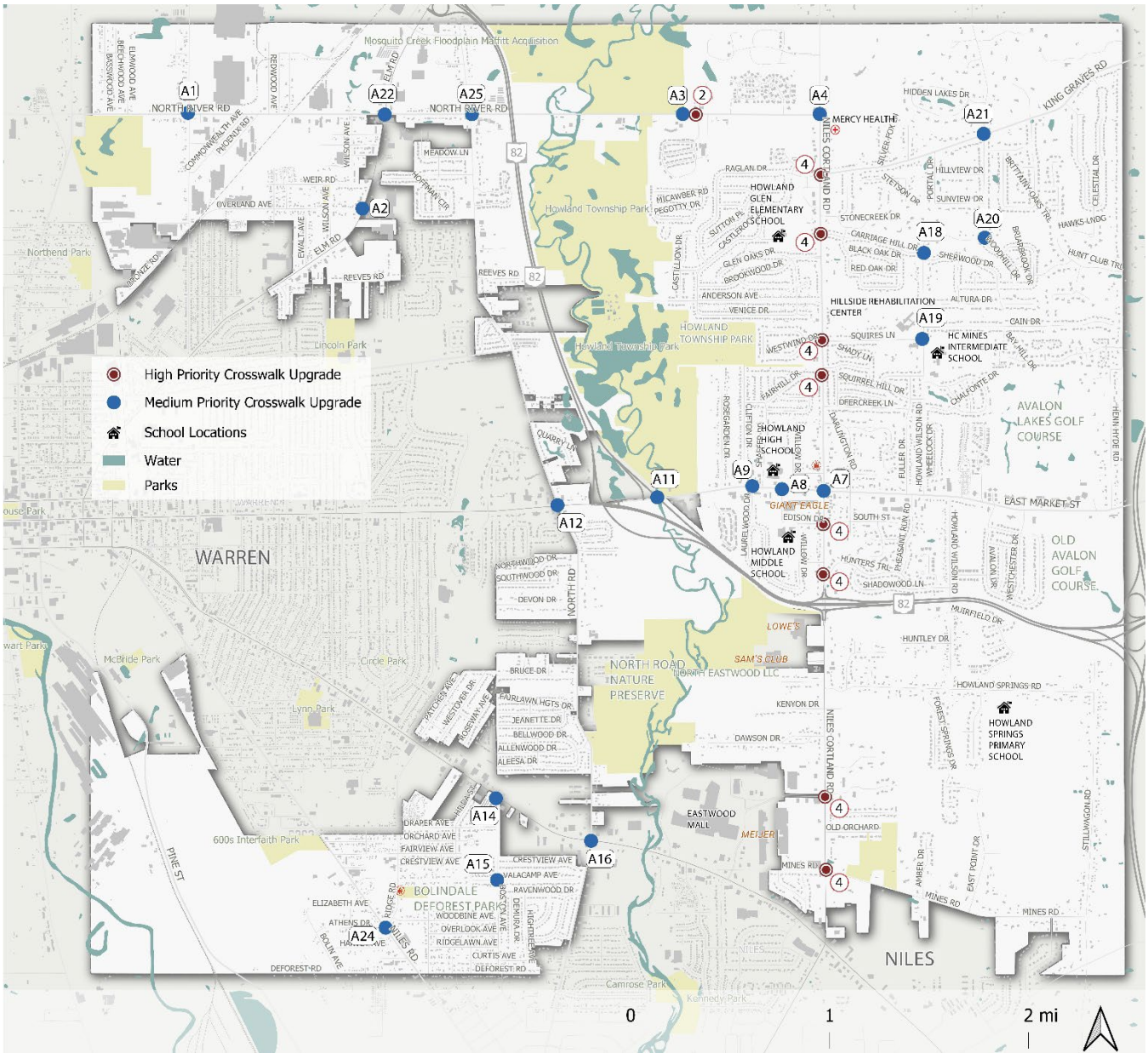


Figure 26 Proposed Crossing Improvements

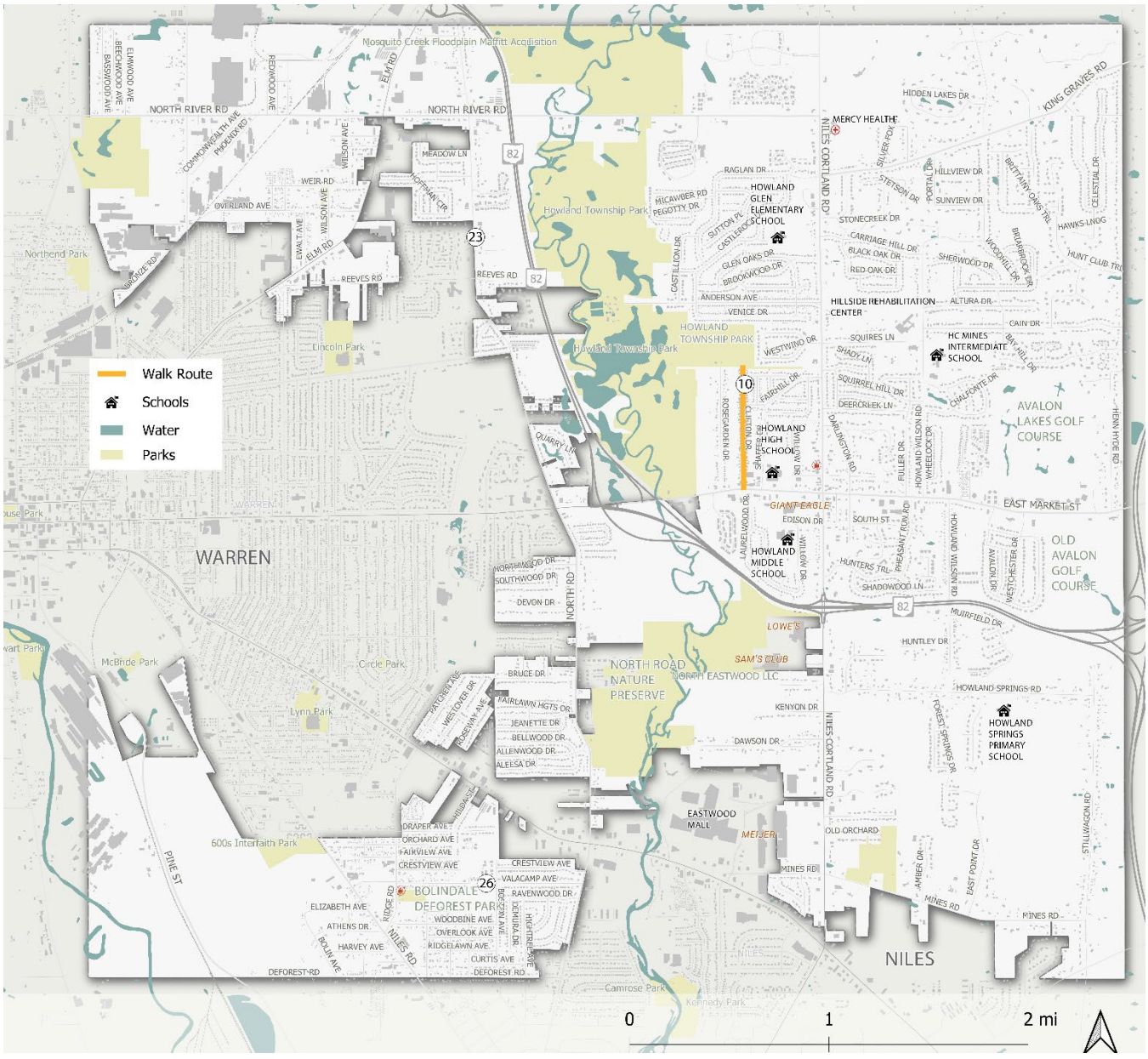


Figure 27: Proposed Sidewalk

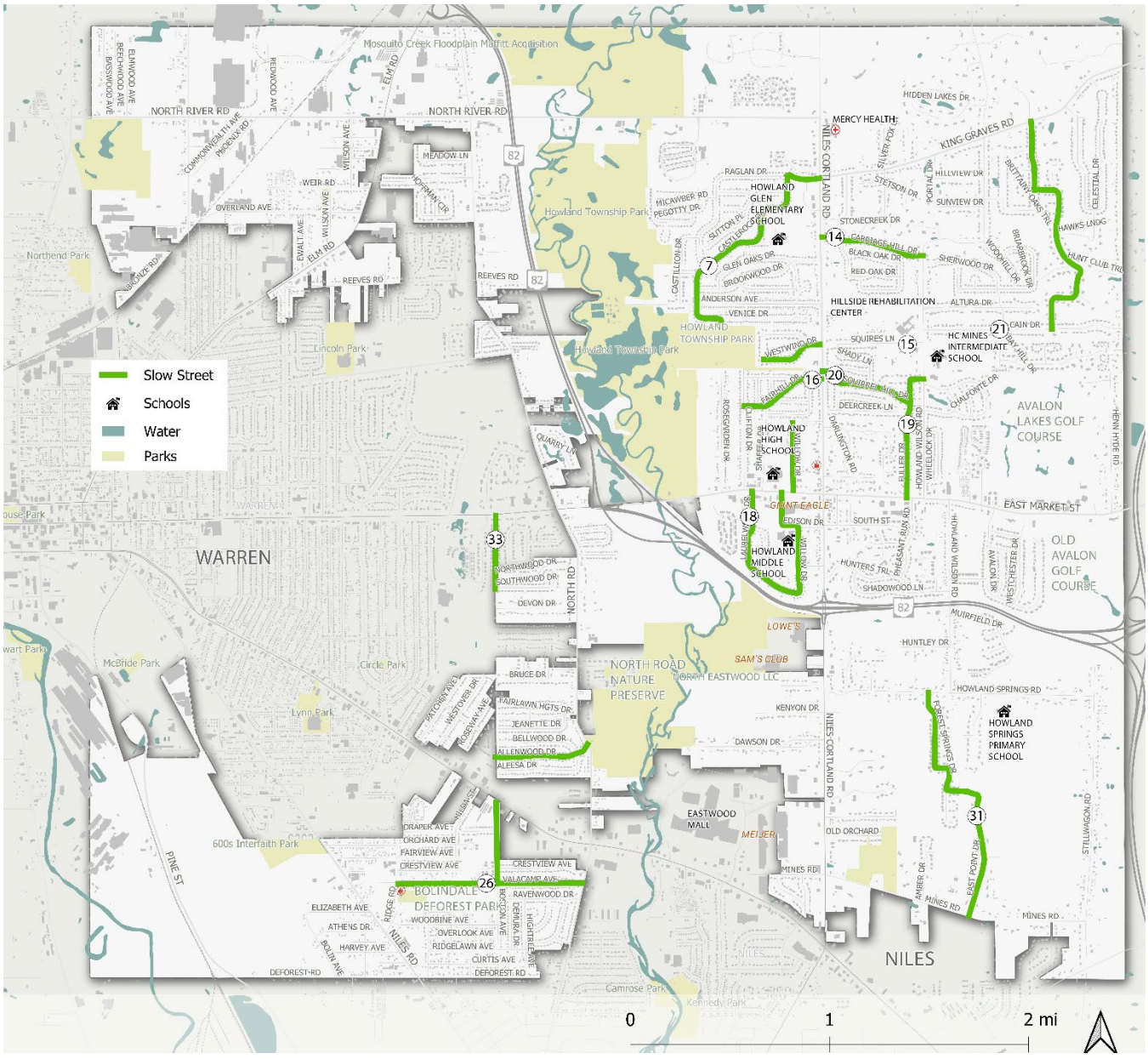


Figure 28: Proposed Slow Streets

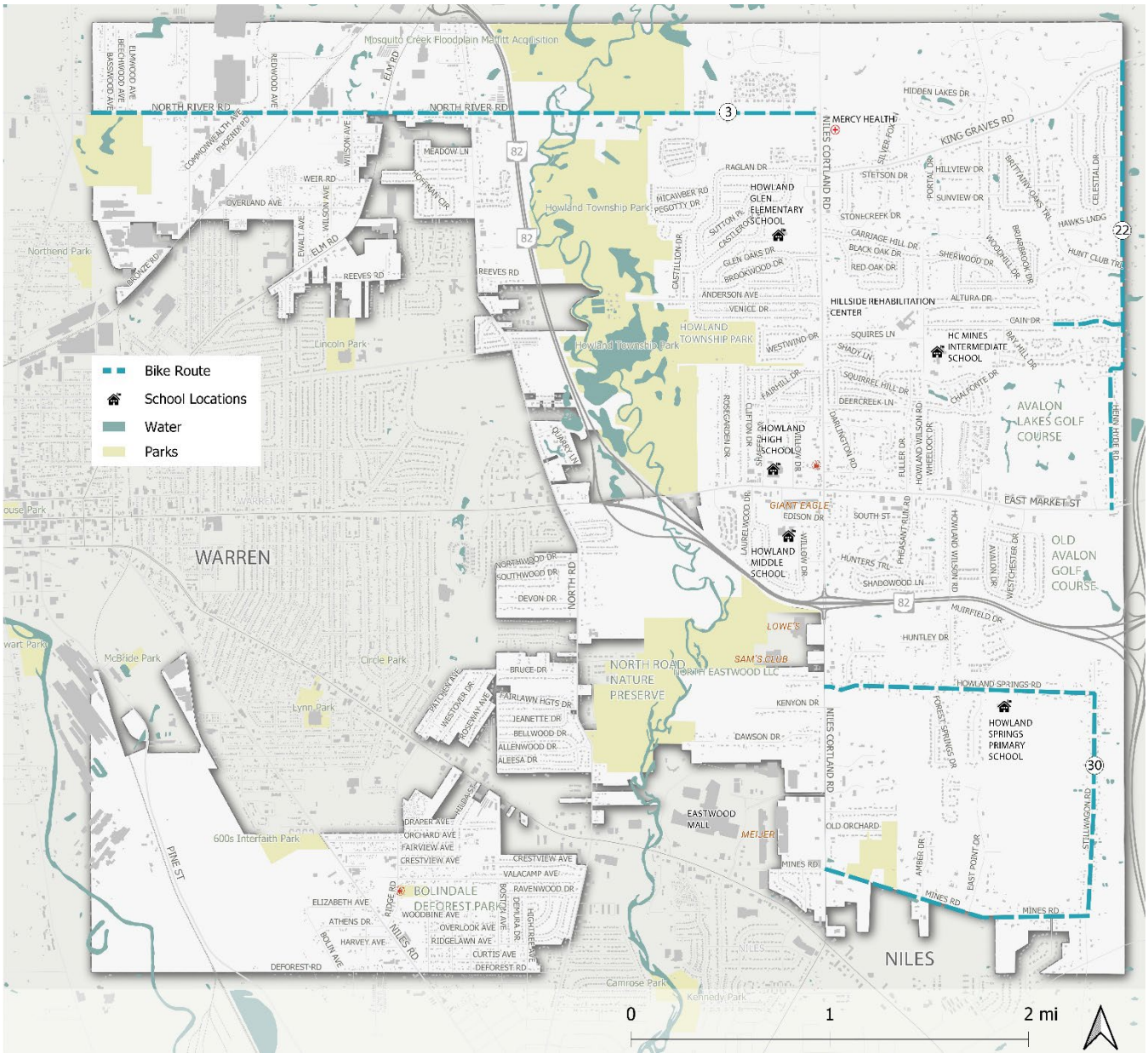


Figure 29: Proposed Bike Routes

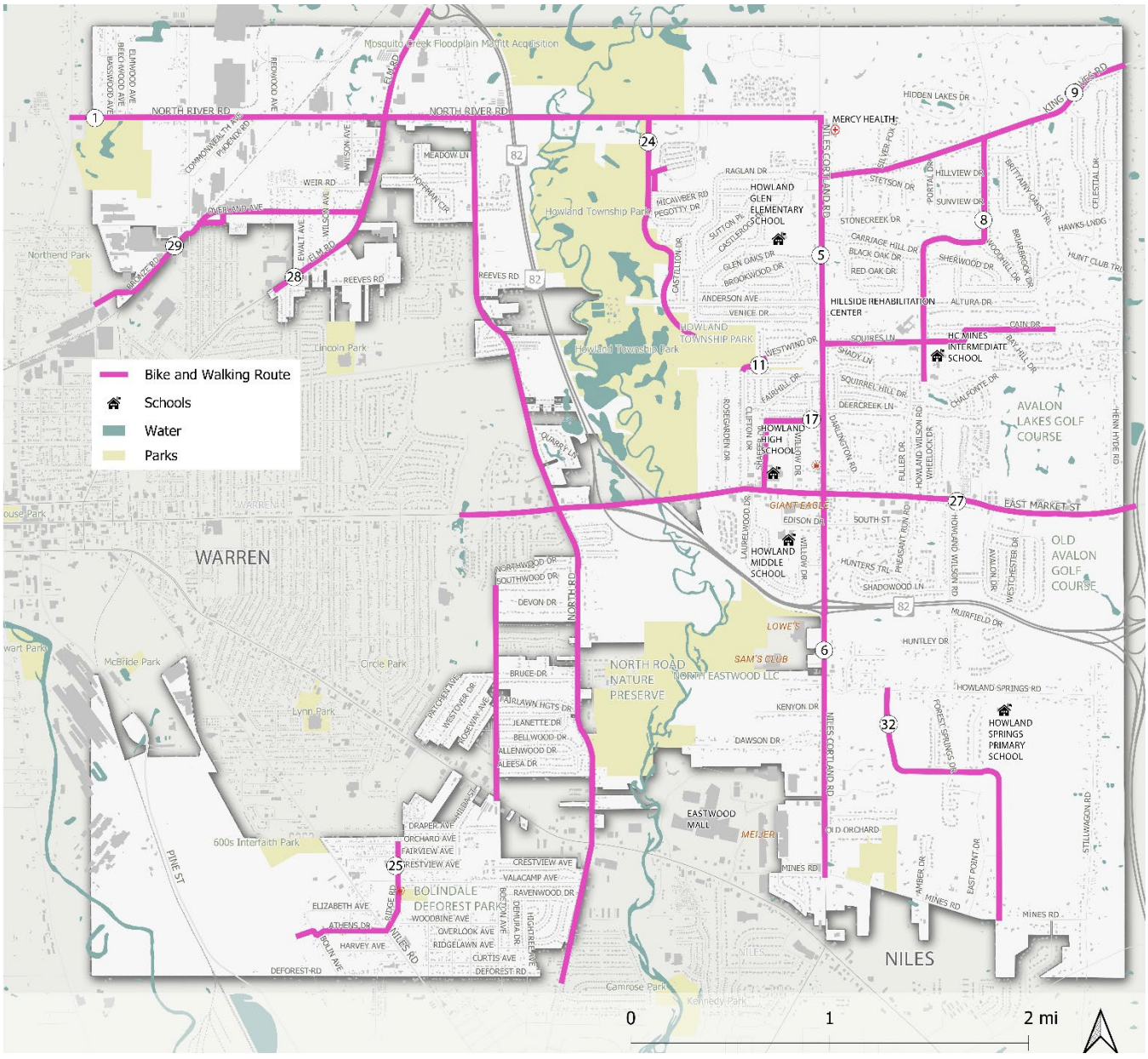


Figure 30: Proposed Walk and Bike Routes

Table 6. Proposed Projects

Project ID	Location	Extents	Facility Type	Recommendation
1	North River Road	City of Warren Boundary to Niles Cortland Road	Sidewalk; Lighting; Striping	Extend sidewalk from current endpoint west of Valley Circle NE to Warren Border. Would require bridge changes (over Mosquito Creek). Where existing sidewalks cross long driveways, like at Dollar General, improve striping to ensure driver yielding. In the long-term improve pedestrian lighting.
2	North River Road	West of Valley Circle NE	Crossing Improvement	Improve existing RRFB Crossing with high visibility striping
3	North River Road	City of Warren Boundary to Niles Cortland Road	Bike Facility	Widen pavement to create a paved shoulder or striped bike lane, possibly using rumble strips. Coordinate improvement with upcoming resurfacing project.
4	Niles Cortland Road	Multiple Intersections	Crossing Improvements	Consider bike and pedestrian crossings at: Raglan/King Graves; Carriage Hill Drive; Squires Lane; Fairhill Drive NE; South Street (Signal was recommended by the STP); Hunters Trail, which will have sidewalk connections due to SR 46/82 project; Shaker Blvd SE; and Mines Road
5	Niles Cortland Road (north of SR-82)	SR-82 to North River Road	Sidewalk Gaps and Shared Use Path	Revisit recommendations of the Niles Cortland Pedestrian Plan where sidewalks are recommended on both sides of the road and consider construction of a shared use path on at least one side of the road. Where a facility can only be constructed on one side, priority should be given to a shared use path to provide a facility for both bicyclists and pedestrians.
6	Niles Cortland Road (south of SR-82)	SR-82 to Shaker Blvd SE	Road diet/ Separated bike lanes	Niles Cortland Rd is a five or six-lane road in this section. The traffic volumes are high (~30k AADT) between SR-82 and Shaker Blvd SE the (mall entrance). According to the Ohio Multimodal Design Guide, this segment meets the criteria for a possible road diet with further study. Additionally, wide lanes (currently 12-foot) could possibly be narrowed.
7	Castlerock Slow Street Route (Multiple streets)	From Howland Township Park to Niles Cortland Road	Slow Street	This route connects the park to Howland Glen Elementary School through a dense neighborhood. A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.
8	Howland Wilson Road	King Graves to Fuller Drive connection	Sidewalks or SUP; Bike Facility; Traffic Calming	Howland Wilson Road has many neighborhood connections and runs parallel to Niles Cortland Road, and connects to HC Mines Intermediate School. Additional study is needed to determine whether sidewalks or a shared use path would be feasible on either/both sides of the road in the future. In the short-term, speed tables could be combined with crosswalks to create raised crossings. Mini-roundabouts could be considered at intersections like Squires Lane, Sherwood Drive, and Woodhill Circle, and bike facility striping may be feasible.

9	*King Graves Road*	*Niles Cortland Road to Henn Hyde Drive*	*Sidewalks*	*King Graves Road is a high stress street for people biking and walking. Sidewalks or a shared use path should be evaluated for feasibility.*
10	*Clifton Drive*	*Market Street to Township Park*	*Sidewalk Improvements*	*Clifton has narrow sidewalks that connect to the Township Park. Widening and improving sidewalks is needed, especially at the Park entrance and at Market Street near the High School Campus.*
11	*Westwind Drive NE*	*Township Park to Westwind Drive NE*	*Trail Extension*	*An additional entrance to the Township Park is feasible from the corner of Westwind Drive NE and Southwind Dr NE.*
12	*Westwind Drive NE*	*Southwind Dr NE to Niles Cortland Road*	*Slow Street*	*This slow street route would connect US-46 at Squire's Lane to the proposed trail extension into Howland Township Park.*
13	*Brittany Oaks Route*	*King Graves to Cain Drive*	*Slow Street*	*A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.*
14	*Carriage Hill Drive*	*Niles Cortland Road to Howland Wilson Road*	*Slow Street*	*A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.*
15	*Old Farm Trail/Squirrel Hill Drive*	*Niles Cortland Road to Fuller Road*	*Slow Street*	*A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.*
16	*Fairhill Drive*	*Clifton to Niles Cortland Road*	*Slow Street*	*A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.*
17	*High School Campus Routes*	*Willow Drive, Shaffer Drive NE, Woodland Dr NE*	*Various Improvements*	*Sidewalks were recently installed on parts of Willow Drive and High Street to provide connectivity to the High School. As the Campus continues its plans to renovate and expand, additional improvements may be needed. The recommendations of this plan are flexible and should adapt as Campus plans are finalized. To the north, a connection via Shaffer Drive NE and Woodland Drive NE would make it feasible for students living in the northwest quadrant of the Township to walk to school. Willow Drive may need additional traffic calming, sidewalk, and crosswalks in order for students to safely access the main entrances of the school. Improvements to the intersection of Willow Drive and Market Street are also needed to promote safer student travel (high visibility crosswalks, advanced stop bars, etc.). These improvements are being studied and defined further in the East Market Street Corridor Study.*

18	*Middle School Campus Routes*	*Brewester Drive SE, Willow Drive SE Laurelwood Dr SE; South Street*	*Various Improvements*	*The Middle School is accessed via Brewster Street for students walking to school using East Market Street. Traffic calming and pedestrian improvements are needed on all three of these routes leading to the Middle School (filling sidewalk gaps, installing new and improved crosswalks, slowing school traffic with curb extensions or changes to school traffic patterns). South Street currently connects to Niles Cortland Road, but the crossing is unsafe and the sidewalk is narrow. Widening the sidewalk and crossing improvements are also needed.*
19	*Fuller Drive*	*New Connection to Howland Wilson Road*	*Slow Street; Trail*	*Currently, Fuller Drive does not connect to Howland Wilson Road, but the Township owns ROW that could enable a future connection. Making Fuller Drive a Slow Street that connects to Howland Wilson Road would create a calmer environment for active transportation.*
20	*Squires Ln NE*	*Niles Cortland Road to HC Mines*	*Traffic Calming, Climbing bicycle lane or Shared Use Path*	*This is a high stress street for people biking and walking. Although it has low traffic volumes (< 2,000 ADT), it is posted at 40 mph with a steep grade (average slope of 4%, with some locations above 5%). Consider some speed management measures (e.g. speed tables) and a climbing bicycle lane or paved shoulder on the uphill side of the road. To accommodate pedestrians as well, consider a shared use path. ROW width is 50' along most of the road (60' near the Rehabilitation Center), so there may be sufficient width within the existing ROW. North of HC Mines, there is an opportunity to install a shared use path as an alternative to Squires Lane.*
21	*Cain Drive*	*Squires Lane to Henn Hyde*	*Bike Route; Slow Street*	*A traffic-calmed route from HC Mines to the proposed bike route on Henn Hyde Drive would connect the northern subdivisions near Brittany Oaks Trail to East Market Street and HC Mines Intermediate School.*
22	*Henn Hyde Drive*	*King Graves Road to East Market Street*	*Bike Facility*	*Henn Hyde Drive has been a designated bike route in the past with sharrows on the street. However, the traffic and speed on the street make this is a stressful environment for most cyclists. Long term improvements could include a designated bike facility or Slow Street concepts. In the short term, maintaining this bike route is important for experienced cyclists.*
23	*North Rd*	*North River Drive to Deforest Road*	*Sidewalks*	*This is a main north-south connector street in Howland Township that provides critical access west of Route 82. Improving North Road with a sidewalk is a long-term goal that will require significant coordination and property owner engagement but would greatly improve access in high need neighborhoods like Mogandale and Bolindale.*
24	*Mosquito Creek Greenway*	*North River Road to Howland Township Park*	*Shared Use Path*	*This proposed trail originated in the Howland Township Comprehensive Plan and would connect multiple subdivisions to each other and the Township Park and ultimately to East Market Street, through a scenic nature preserve. This Plan recommends conducting a feasibility study to determine environmental constraints.*

25	*Western Reserve Greenway Trail-Bolindale Extension*	*Athens Drive/Ridge Road-from Western Reserve Greenway Trail to Orchard Avenue*	*Shared Use Path*	*The Howland Township Comprehensive Plan recommends a shared use trail along Ridge Rd and Athens Dr to connect to the proposed greenway extension.*
26	*Valacamp Avenue*	*Ridge Road to North Road*	*Slow Street; Bike/Pedestrian Facilities*	*Valacamp is a key route in the Bolindale neighborhood that currently attracts high-speed, cut-through traffic at relatively low volumes. Improving this route in the short term as a Slow Street would include breaking up the long blocks with speed tables and/or a mini-roundabout at the intersection of Boston Avenue SE and installing other Slow Street treatments. In the long-term, this plan proposes separated facilities for people biking and/or walking.*
27	*East Market Street*	*City of Warren Boundary to Howland Township Boundary*	*Shared Use Path*	*Implement the recommendations of the East Market Street Corridor Study which include a shared use path and/or separated bike facility on East Market Street.*
28	*Elm Road*	*City of Warren Boundary to Howland Township Boundary*	*Road Diet; Sidewalk Improvements*	*Elm Road is scheduled for resurfacing. In conjunction or as a compliment to that project, the Township and Trumbull County should consider improving bike and pedestrian connections with a road diet to provide a bike facility, sidewalk upgrades, and crosswalk enhancements.*
29	*Western Reserve Greenway Trail-Morgandale Extension*	*Bronze Road; Overland Avenue, from Western Reserve Greenway Trail to Elm Road*	*Bike Facility*	*The route connects the Morgandale neighborhood to the existing Greenway Trail in Warren. This industrial area has low traffic but a high percentage of freight and large vehicles. A separated bike facility should be considered.*
30	*Howland Springs Bike Route*	*Mines Road, Stillwagon Road, Howland Springs Road*	*Bike Route*	*These three streets are two-lane, higher stress streets that are rural in nature but provide key access to destinations like Eastwood Mall and the Howland Springs subdivisions. These streets could be signed as bike routes for experienced cyclists in the short term, and possibly have higher-quality bike facilities in the future.*
31	*Forest Springs Drive/East Point Drive*	*Howland Springs Road to*	*Slow Street*	*A slow street would reduce vehicle speeding and create a calmer environment for children and adults who walk and bike. In the long term, sidewalks could be considered.*

		Mines Road		
32	*Ohio Edison Utility Trail*	*Howland Springs Road to Mines Road*	*Trail*	*Ohio Edison ROW could possibly be used to provide a trail connection as an alternative or compliment to other proposed routes in the Howland Springs neighborhood.*
33	*Broadway Avenue Trail Extension*	*East Market Street to Boston Avenue*	*Trail; Sidewalk*	*A line of ROW connects the west end of a number of neighborhood streets and could be used as a bike and pedestrian trail connection, connecting north to Mercy Health's campus and to East Market Street, and south, past US 422 and into the Bolindale neighborhood near Boston Avenue and the proposed Valacamp Avenue connection. This proposed connection could be an alternative to North Road or an additional connection if Allenwood Drive is used as a connection between the two routes. Improvements to the crossing at 422 would be needed, and the full route should be evaluated for ROW considerations.*

ACTIVE TRANSPORTATION NETWORK RATIONALE

A primary goal of this plan is to increase the safety and convenience of walking and biking and to that end, recommendations include a variety of route options and facility types to accommodate the majority of community members. The recommendations outlined in Figure 25 add over miles of sidewalks, 23 miles of bike and walking routes, 10 miles of neighborhood bikeways, and 9 intersection or crossing improvements. The following section goes into more detail on how and why facilities in the network were selected.

Pedestrian Facilities

Pedestrian infrastructure is primarily provided in the form of sidewalks. The presence of sidewalks along a roadway corresponds to a 65 to 89 percent reduction in walking along road pedestrian crashes.[13] Pedestrians are also among the most vulnerable road users and 72 percent of pedestrian fatalities occur at non-intersection locations.[14] Additional treatments implemented along roadways and crossing improvements would improve the bicycling and walking experience, encourage more walking, and decrease the number of crashes that occur. Crossing improvements proposed in this plan include high-visibility crosswalks, signage, curb extensions, pedestrian refuge islands, rectangular rapid-flashing beacons (RRFB), pedestrian hybrid beacon (PHB).

Crossing Improvements

Additional treatments implemented along roadways are crossing improvements, which improve the bicycling and walking experience by reducing barriers and allowing people to comfortably cross higher volume, higher speed streets or comfortably navigate larger, more complex intersections. Crossing improvements proposed in this plan include:

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[13] FHWA (2017). Desktop Reference for Crash Reduction Factors, FHWA-SA-08-011, Table 11. Referenced in https://safety.fhwa.dot.gov/provencountermeasures/walkways/

[14] FHWA (2018). Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations, Page 1. https://safety.fhwa.dot.gov/ped_bike/step/docs/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf

- » Intersection geometry changes, which may include curb extensions, bump outs, roundabouts, pedestrian refuge islands, lane narrowing, or lane reductions
- » Pedestrian and Bike crossing improvements, which may include high-visibility crosswalks, restricted vehicular turning movements, pedestrian signalization improvements, and raised crossings
- » Rectangular Rapid Flashing Beacons (RRFBs)
- » Pedestrian Hybrid Beacons (PHBs)
- » Pedestrian/bicycle bridges

Bicycle Facilities

Local infrastructure and routes will help riders of varying abilities access their daily destinations such as schools, grocery stores, parks, and work. There are several important factors to consider during bicycle facility selection, such as design users and roadway conditions. The recommendations of this plan were developed with careful consideration, using a detailed and evidence-based approach to ensure they respond to the community's needs while supporting accessibility and equity. The recommendations were developed based on analyses, engagement and stakeholder guidance described in previous chapters.

Robust community and stakeholder engagement efforts, including surveys, meetings, pop-up events, and open houses, identified critical gaps and barriers in the active transportation network, mapping disconnected routes, physical obstacles, and areas with safety concerns. This outreach allowed residents, advocates, and local leaders to share their perspectives and validate the data-driven insights. Together, these analyses and community inputs shaped actionable, inclusive recommendations designed to improve safety, connectivity, and accessibility for all users.

Design Users

Understanding which types of bicyclists feel comfortable using a given facility is key to building a safe, convenient, and well-used network. This section describes different types of bicyclists and which facility types each will use or not. It also introduces the FHWA Bikeway Selection Guide Bicycle Facility Selection Matrices that identify what type of facility is appropriate for the majority of bicyclists based on roadway speed, volume, and context.

Design User Profiles

Highly Confident Bicyclist (~4-7%)

- Smallest group.
- Prefer direct routes and will operate in mixed traffic, even on roadways with higher motor vehicle operating speeds and volumes.
- Many also enjoy separated bikeways.
- May avoid bikeways perceived to be less safe, too crowded with slower moving users, or requiring deviation from their preferred route.

Somewhat Confident Bicyclist (~5-9%)

- Comfortable on most types of facilities.
- Lower tolerance for traffic stress, prefer striped or separated bike lanes on major streets and low-volume residential streets.
- Willing to tolerate higher levels of traffic stress for short distances.

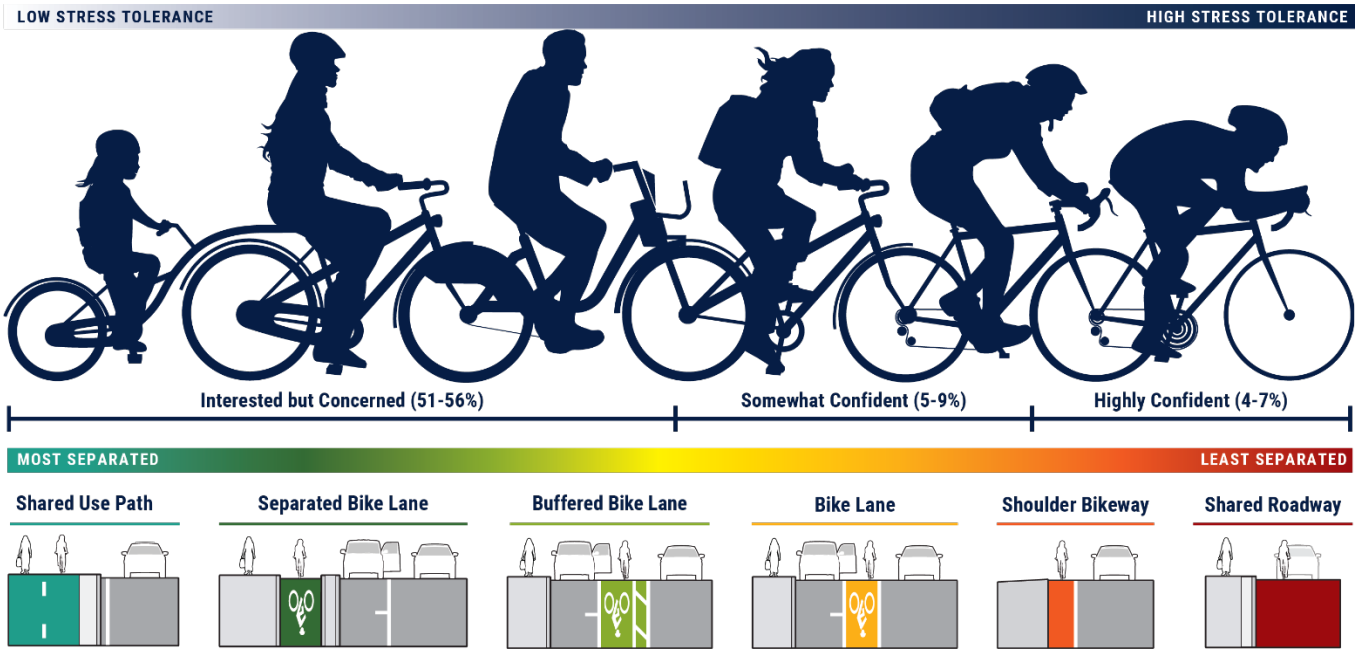
Interested but Concerned Bicyclist (~51-56%)

- Largest group.
- Lowest tolerance for traffic stress.
- Avoid bicycling except with access to networks of separated bikeways or very low-volume streets with safe roadway crossings.
- Tend to bicycle for recreation but not transportation.
- Generally, the recommended design user profile to maximize potential for bicycling.

Bicyclists are most commonly classified according to their comfort level, bicycling skill and experience, age, and trip purpose. These characteristics can be used to develop generalized profiles of various bicycle users and trips, also known as "design users," which inform bicycle facility design. Comfort, skill, and age may affect bicyclist behavior and preference for different types of bicycle facilities. Selecting a design user profile is often the first step in assessing a street's compatibility for bicycling. The design user profile should be used to select a preferred type of bikeway treatment for different contexts, urban, suburban, rural town or rural roadways (see Figure 28, Figure 29 and Figure 30). People who bicycle are influenced by their relative comfort operating with or near motor vehicle traffic. To accommodate the majority of the

population, the "Interested but Concerned" rider should be the primary user type that facilities are designed for. In some contexts, such as rural roadways where less people may be expected to be traveling by bike, the Somewhat Confident or Highly Confident rider is the most relevant design user.

Figure 31: Types of Bicyclists (Source: Toole Design)

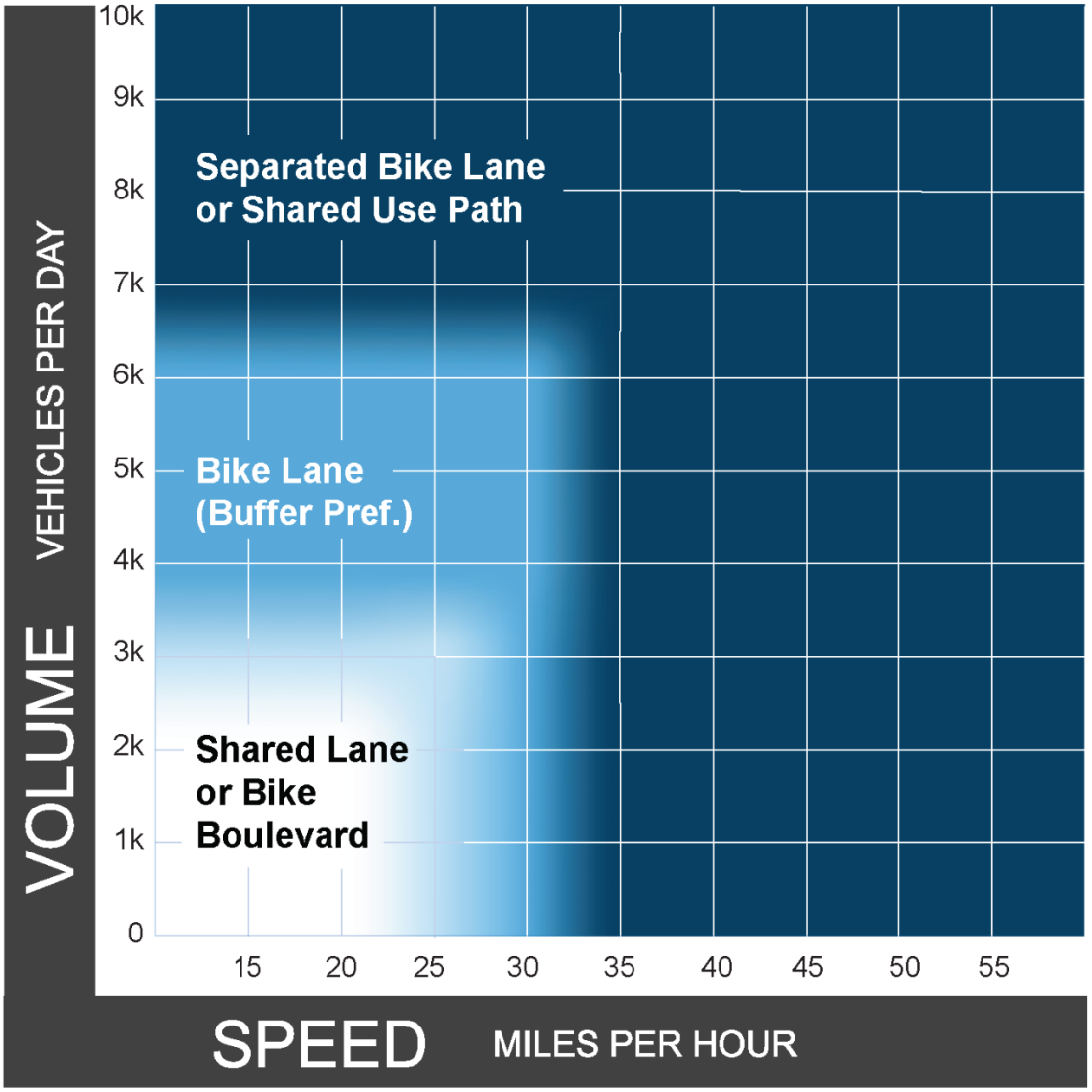


Facility Selection Methodology

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

Before projects can be implemented the type of on-street bicycle facility will need to be defined. The Federal Highway Administration (FHWA)'s Bikeway Selection Guide's facility selection matrices (Figure 31 & 32) can be used to help determine the best facility for the roadway based on context, speed, and volume as well as the relevant design user type. See the full guide for further detail on facility selection.

Figure 32: FHWA Bikeway Facility Matrix: Preferred Bikeway Type for Urban, Urban Core, Suburban and Rural Town Contexts (Design User: Interested but Concerned)



Notes

1 Chart assumes operating speeds are similar to posted speeds. If they differ, use operating speed rather than posted speed.

2 Advisory bike lanes may be an option where traffic volume is <3K ADT.

3 See page 32 for a discussion of alternatives if the preferred bikeway type is not feasible.

Facility Toolkit

This toolkit was created as part of ODOT's Active Transportation Plan Development Guide, created in 2021. There are numerous facility types which accommodate people of varying abilities and in different environments. Research shows that the provision of low-stress, connected bicycle networks improves bicyclist safety and encourages bicycling for a broader range of user types.[15] Pedestrian infrastructure is primarily provided in the form of sidewalks. The following section includes descriptions of pedestrian and bicycle facilities and links to further references.

Sidewalks

Sidewalks are intended to be used by people walking. They are adjacent to but separated from the roadway by a curb and/or buffer, such as a tree lawn. As roadway speeds and volumes increase, more separation is needed to maintain a safe and comfortable walking environment for pedestrians. Common in urban areas, they may also be necessary in rural areas with pedestrian generators, such as schools and businesses. For further guidance on pedestrian design, refer to ODOT's Multimodal Design Guide, Chapter 4 -Pedestrian Facilities.

Figure 31: Sidewalk (Source: Toole Design)

Crossing Improvements

A variety of solutions can be employed to make intersections and mid-block crossings safer and more convenient for people walking. These treatments range from painted facilities, such as high-visibility crosswalks, to signs, lights, and signals. Painted crosswalks delineate the safest pathway for pedestrians, and rectangular rapid flashing beacons (RRFBs) enhance user safety and convenience at crossing points when full signalization is not warranted. For further guidance on pedestrian design, refer to ODOT's Multimodal Design Guide (MDG) Chapter 4 -Pedestrian Facilities, MDG Chapter 8 – Signals, Beacons, and Signs, and FHWA's Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations.

Figure 32: Crosswalk (Source: Toole Design)

Bicycle Facilities

As part of the existing conditions assessment, the project team conducted a Level of Traffic Stress (LTS) analysis, which uses broadly available road characteristics to classify the experience of riding a bicycle on different streets. The LTS analysis grouped roads into one of four categories:

- LTS 1 – A low stress street suitable for all ages and abilities. Streets tend to have posted speeds of 30mph or lower, with low volume and few travel lanes.
- LTS 2 – Streets suitable for those who are "interested but concerned" about riding a bicycle, which includes most adults and families. These streets tend to have posted speeds of 35mph or slower with low to moderate volume.

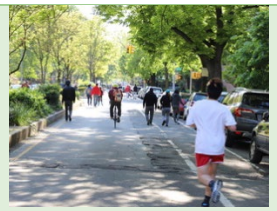
[15] AASHTO (2021). Guide to Bicycle Facilities, 4th Edition, 2.2. Why Planning for Bicycling is Important.

- LTS 3 – Streets suitable for those who are "enthused and confident" about riding a bicycle. These streets tend to have lower speeds (35mph) with higher volumes or higher speeds (40mph or higher) but with low volumes.
- LTS 4 – A high stress street is uncomfortable for most adults. These streets tend to have high speeds with high volumes.

Streets with a higher level of stress require greater separation between bicyclists and vehicles in order to reduce stress and create a facility that is appropriate for all ages and abilities. Table 5 defines the appropriate bicycle facility or facilities based on the roadway's LTS score. (Note that separated bike lanes and shared use paths could be appropriate for all LTS categories if space is available). For further guidance on bicycle infrastructure design, refer the following ODOT Multimodal Design Guide chapters:

- Chapter 5 – Shared Use Paths
- Chapter 6 – On-Road Bicycle Facilities
- Chapter 7 – Motor Vehicle Facilities Supporting Multimodal Accommodation
- Chapter 9 – Multimodal Accommodations at Interchanges & Alternative Intersections

Table 7. Level of Traffic Stress

Level of Traffic Stress (LTS)	Type of Facility	Description
LTS 1		**Bicycle Boulevard** - Where traffic volumes and speeds are low, many bicyclists can comfortably share lanes with motor vehicles. Shared lane markings and signs are added to inform people driving that bicyclists may operate in the lane and where to expect bicyclists. Wayfinding signage, traffic calming, and intersection treatments need to be incorporated into bicycle boulevards to increase user comfort and prioritize bicycle travel.
LTS 2		**Paved Shoulder -** Providing additional pavement width outside of the travel lanes can reduce crashes, aid maintenance, and provide space for bicyclists. Additional benefits include reducing pavement edge deterioration, accommodating oversize and maintenance vehicles, and providing emergency refuge for public safety vehicles and disabled vehicles. Paved shoulders should be accompanied by signage.
LTS 2		**Slow Streets -** Slow Streets are residential streets designed to prioritize safety and comfort for pedestrians, cyclists, and other non-motorized users by implementing various traffic calming measures. The speed limit on Slow Streets is typically lowered to encourage safer driving, often to around 20 mph or lower, which allows people walking and biking to feel more secure. These can include physical interventions such as speed bumps, raised crosswalks, wide sidewalks, curb extensions, chicanes (curved road layouts), and road narrowing.
LTS 2		**Bike Lane / Buffer Bike Lane -** Bike lanes and buffered bike lanes are one-way facilities within the roadway demarcated with painted lane lines. Standard bike lanes provide some improvements to bicyclist safety, and can be enhanced with painted buffers, bike lane extensions through intersections, green colored pavement, and regulatory signs.
LTS 3 and LTS 4		**Separated Bike Lane -** A separated bike lane is a one- or two-way facility within the roadway and physically separated from adjacent travel lanes with vertical elements such as a curb, flex posts or on-street parking. Such facilities reduce the risk of injury and can increase bicycle ridership due to increased safety and comfort.
LTS 4		**Multi-Use Paths –** Typically designed as two-way facilities physically separated from motor vehicle traffic and used by bicyclist, pedestrians, and other non-motorized users, multi-use paths provide a low-stress and comfortable travel environment for users of all confidence levels. They are used for recreational opportunities in addition to transportation and can be located along roadways or completely separated from the road network, sometimes along rivers or old railroad corridors.

PROGRAMS AND POLICIES

Establishing safe and convenient active transportation infrastructure is critical to improving walking and bicycling conditions. But without programs and policies in place to support active transportation, infrastructure projects can only go so far. A variety of non-infrastructure tools can increase pedestrians' and bicyclists' safety by establishing a culture of walking and biking and creating a friendly regulatory and political environment for active transportation.

Programs and policies can typically be implemented relatively quickly and inexpensively. Programs can be easily scaled to a wide audience, such as elementary school students, transit riders, or business owners or they can target specific groups for programming, like speeding motorists in school zones. Individual programs can increase walking and bicycling in specific circumstances and locations but should be coordinated with infrastructure and policy development to ensure lasting change. See for a list of proposed programs and policies. These proposed programs and policies aim to accomplish the following goals:

- **Foster culture change:** shift community members mindset so that walking and bicycling is normal and expected.
- **Maintain momentum:** help maintain momentum and excitement around active transportation while infrastructure projects are in development.
- **Build support:** encourage new people to try active transportation and help community partners recognize the value of increased active transportation options.
- **Support efficient operations and maintenance:** help institutionalize best practices in active transportation operations and maintenance.

The timeframes outlined in are defined as follows:

- **Short-term:** One year
- **Medium-term:** Two to three years
- **Long-term:** Three years or more

The status of programs and policies should be assessed and updated each time the overall plan is updated. Status is defined as:

- **New:** A program or policy that is proposed in this Plan.
- **Ongoing:** An existing program or policy that will be continued.
- **On-hold:** A program or policy that has been stalled or deferred.
- **Completed:** When regularly updating the plan, update the program or policy status to complete when applicable to help track progress.

Table 8. Program and Policy recommendations

Theme	Program/ Policy	Action Item	Responsible Party	Key Partners	Timeframe
Planning + Guidance	Subdivision Regulations	Work with Trumbull County to raise awareness of the need for more walkable subdivision regulations. Revisions could allow shorter block lengths, walkable intersection design, room for sidewalks in the right of way, and connections between cul-de-sacs for people walking and biking.	Howland Township Planning & Zoning Department	Trumbull County	Medium-term
	Zoning Code Revisions	Promote walkable mixed-use development as appropriate through the use of Overlay Districts or refinements to existing land use categories. Encouraging shared parking agreements and siting new developments close to the street are two examples of many strategies that can be accommodated in new development to encourage walkability.	Howland Township Planning & Zoning Department	Trumbull County	Short-term
	ADA Transition Plan	A Transition Plan helps communities remain compliant with the Americans with Disabilities Act and identify facilities that need improvements. Trumbull County's ADA Transition Plan inventories existing sidewalks and calls for some upgrades on County routes in the Township, like Elm Road. The Township's own Plan would examine access to Township facilities as well as the local street network to ensure people with disabilities have safe and comfortable access.	Howland Township	Trumbull County Engineering Department / ODOT	Medium-term

Theme	Program/ Policy	Action Item	Responsible Party	Key Partners	Timeframe
	Mosquito Creek Greenway Feasibility Study	The Township's coordination with Trumbull County, the Trumbull County Metroparks, and the Western Reserve Land Conservancy has preserved many acres of sensitive natural land in the Mosquito Creek Nature Preserve. This partnership can be leveraged to consider feasibility of a public access trail inside the Nature Preserve with connections in Bazetta Township and south of North River Road into Howland Township Park, as outlined in the Comprehensive Plan.	Howland Township / US Army Corps of Engineers (USACE)	Bazetta Township, Trumbull County Planning Commission, Trumbull County Metroparks, Western Reserve Land Conservancy	Medium-Term
	Complete Streets Policy	Develop a Complete Street Policy that prioritizes safety, comfort, and convenience for all users of transportation. Guided by the Active Transportation Plan, this policy will standardize the approach to transportation projects aimed at improving mobility and livability throughout Howland Township. This includes new road systems, roadway reconstruction, and scheduled maintenance projects.	Howland Township	Eastgate	Medium-term
Education +Promotion	Smart Street Lighting	Research smart street lighting capabilities to enhance roadway safety. Work with local utility companies to implement a program over several years to convert all Township streetlights to lights with smart technology.	Howland Township	Ohio Edison, Niles Electric	Long-term

Theme	Program/ Policy	Action Item	Responsible Party	Key Partners	Timeframe
	Bicycle-Friendly Businesses	Bicycle-friendly businesses encourage people to ride a bike by providing incentives to customers who arrive by bicycle. Incentives may include bike parking (sometimes on-street bike corrals or custom designed bike racks), a repair station, opportunities to refill water and use the restroom, discounts, or hosting bicycle events at their business. Businesses participating in bicycle friendly businesses often display a sign provided by the program that states they are a bicycle friendly business. These programs are often managed by local bicycle advocacy organizations, municipal planning or transportation departments, or local chambers of commerce.	Howland Township	Local businesses	Long-term
	Open Streets	Host regular, reoccurring events where streets are closed to cars and open for people to walk, bike, scoot or roll. Prioritize areas around community open spaces.	Howland Township		Short-term
	Walk and Bike to School Days	Encourage walk/bike to school days along designated walking/biking routes with giveaways like bike lights, helmets, and other safety equipment. Some volunteers may also be willing to set up consistent neighborhood walking or biking groups.	Howland Local Schools		Short-term
	Safety Day	Involve students and active transportation advocates in the Township's Safety Day programming. Safe walking/biking to school and around Howland Township could be promoted with giveaways, educational materials, and more.	Howland Township Police Department / Howland Fire Department	Howland Local Schools	Short-term

Theme	Program/ Policy	Action Item	Responsible Party	Key Partners	Timeframe
	No Idling	Consider a policy to encourage parents picking up their children not to idle their cars while waiting in the pick-up and drop-off lines. This can also be expanded Township-wide at destinations where idling is a problem and could be a student-led program with students creating signs and flyers.	Howland Local Schools		Short-term
	Active Transportation Training through ODOT	Expand staff familiarity with active transportation planning and designing with resources available through ODOT's Active Transportation Academy and (ATA) Local Technical Assistance Program (LTAP). A suite of on-demand trainings ranging from Multimodal Design Guidance, first and last mile transit connections, and walking school bus trainings are available. These training could be held in-person with regional partners.	Howland Township	Eastgate, Trumbull County, nearby cities and Township	Short-term
	Wayfinding Routes	Identify key walking and bicycling destinations throughout the Township, with a focus on natural resources, historic sites, sports/entertainment facilities, and the arts. Create a wayfinding system to highlight community destinations and walking travel times. Publish maps of walking routes in walkable or bike-friendly, destination-rich areas of the Township.	Howland Township	Trumbull County Bureau Tourism	Medium-term
Implementation	Winter Maintenance Plan	As the network develops, update a Winter Maintenance Plan to clearly define roles for snow removal on priority sidewalks, trails, and bike routes in the Township. ODOT's Pedestrian and Bicycle Snow Removal Toolkit is a good resource for guidance.	Howland Township Public Works Department	Trumbull County, ODOT, City of Warren, Property Owners	Short-term

Theme	Program/ Policy	Action Item	Responsible Party	Key Partners	Timeframe
	School Coordination	Regularly coordinate with Howland Local Schools, especially the High School, as future sites are planned. New improvements to bus parking, managing the flow of arrival and dismissal traffic, and circulation patterns may become feasible in the future.	Howland Township	Howland Local Schools	Short-term
	Demonstration Projects	Short-term, temporary projects can help the public understand what is planned for the future and build support for change. Consider demonstration projects on the proposed "Slow Street" network of walking/biking routes and consider quick-build approaches to installing curb extensions and other roadway features identified in the Plan.	Howland Township Public Works Department	Eastgate, Trumbull County Health Department, YSU Extension	Short-term

PRIORITY PROJECTS

PRIORITY PROJECTS

The infrastructure recommendations in the previous chapter are conceptual routes, meant to show the potential of a comprehensive active transportation system in Howland Township. The recommendations are planning level in scope and are not necessarily constrained by existing challenges. Funding, land use, property rights, terrain, and other project specific factors may make certain recommendations less practicable than others. Project prioritization uses measurable data to provide the Township with an achievable shortlist of feasible projects that align with the public and stakeholders' priorities.

PRIORITIZATION METHODOLOGY

Howland Township's prioritization method is based on stakeholder input gathered during the final Stakeholder Committee meeting. The method uses quantitative factors like demographic demand (including population density) and need, as well as qualitative factors, like whether a project could be achievable by incorporating it into an upcoming planned effort. Table 9 shows the weighted categories and descriptions for Howland's prioritization.

Table 9. Weighted Data Driven Prioritization Methodology

Goal	Description	Weight
Connected Network	*Connections to destinations such as parks, libraries, healthcare and grocery stores*	*15*
	Connections to neighboring communities	*5*
	People living within a quarter mile of the project	*10*
	Connection to a regional trail	*10*
Feasible & Fundable	*Serves a K-12 school**	*15*
	Serves a high need area	*10*
	Synergy with ongoing/planned efforts	*20*

Goal	Description	Weight
Public Support	Public engagement priority (either from a public plan, in-person meeting, or web engagement)	15

*with high number of students nearby, so as to be competitive for SRTS funding

Table 10. Weighted Categories for Quantitative Prioritization

Category	Weight	Variable	Description	Quantitative Assessment
Connected Network	15	Community Destinations	The route connects to a community destination (a park, library, healthcare center, or grocery store).	If yes, 15 points awarded. If no, 0 points awarded.
	5	Neighboring Communities	The route connects to a neighboring community, like the City of Warren or Niles.	If yes, 5 points awarded. If no, 0 points awarded.
	10	Active Transportation Demand	The project is in a High Demand area, defined by ODOT. ODOT measures Active Transportation Demand using variables such as population density, employment density, and walk/bike commute mode share. Areas with higher concentrations of these characteristics have higher demand for walking and biking facilities.	If in the highest demand category, 10 points awarded. If in a moderate demand category, 5 points awarded. If in any other category, 0 points awarded.
	10	Regional Trail Connection	The route connects to a regional trail, either planned or existing.	If yes 10 points awarded. If no, 0 points awarded.
Feasible and Fundable	15	Safe Routes to School eligible	The project would be eligible for ODOT's Safe Routes to School Implementation funding, because it would improve safety and connectivity to a K-12 school where most students live within a two-mile radius.	If yes, 15 points awarded. If no, 0 points awarded.
	10	High Need Area	The project is in a High Need area, defined by ODOT. ODOT measures Active Transportation Need using variables such as the presence of minority groups, youth, older adults, and people in poverty. Areas with higher concentrations of these need indicators have higher need for walking and biking facilities. Many ODOT programs use need as a criteria for determining funding eligibility and/or competitiveness.	If in the highest need category, 10 points awarded. If in a moderate need category, 5 points awarded. If in any other category, 0 points awarded.
	20	Synergy with Ongoing or Planned Efforts	The project is on a route that has planning, design, or construction work either in progress or funded. For example, this includes projects that may be able to be incorporated into upcoming resurfacing projects, either by the Township or a partner agency.	If yes, 20 points awarded. If no, 0 points awarded.
Public Support	15	Public Engagement Priority	The project is mentioned either in a recent public plan that received community input or from engagement comments received during the Active Transportation planning process.	If in a public plan, 5 points awarded. If mentioned during in-person engagement, 5 points awarded. If mentioned on online web map engagement, 5 points awarded. Up to 15 points available.

PRIORITIZED INFRASTRUCTURE PROJECT LIST

Implementing this plan will take time and significant effort. The following table identifies short-, medium-, and long-term plan priorities. Implementation will require working with a larger number of partners, as well as building public support for priority projects. Whenever possible, recommendations in this plan should be incorporated into other roadway projects. Every year Howland should re-evaluate the priority list to track which projects have been implemented and make adjustments as needed.

Table 11. Prioritized Infrastructure Project List

	Project ID	Location	Extents	Facility Type
High Priority	*1*	*North River Road*	*City of Warren Boundary to Niles Cortland Road*	*Sidewalk; Lighting; Striping*
	3	*North River Road*	*City of Warren Boundary to Niles Cortland Road*	*Bike Facility*
	4	*Niles Cortland Road*	*Multiple Intersections*	*Crossing Improvements*
	6	*Niles Cortland Road (south of SR-82)*	*SR-82 to Shaker Blvd SE*	*Road diet/ Separated bike lanes*
	25	*Western Reserve Greenway Trail-Bolindale Extension*	*Athens Drive/Ridge Road-from Western Reserve Greenway Trail to Orchard Avenue*	*Shared Use Path*
	27	*East Market Street*	*City of Warren Boundary to Howland Township Boundary*	*Shared Use Path*
	28	*Elm Road*	*City of Warren Boundary to Howland Township Boundary*	*Road Diet; Sidewalk Improvements*
	29	*Western Reserve Greenway Trail-Morgandale Extension*	*Bronze Road; Overland Avenue, from Western Reserve Greenway Trail to Elm Road*	*Bike Facility*
Medium Priority	*5*	*Niles Cortland Road (north of SR-82)*	*SR-82 to North River Road*	*Sidewalk Gaps and Shared Use Path*
	7	*Castlerock Slow Street Route (Multiple streets)*	*From Howland Township Park to Cadwallader Cemetery using Castle Rock/King Graves Road*	*Slow Street*
	8	*Howland Wilson Road*	*King Graves to Fuller Drive connection*	*Sidewalks or Shared Use Path; Bike Facility; Traffic Calming*
	9	*King Graves Road*	*Niles Cortland Road to Henn Hyde Drive*	*Sidewalks*
	10	*Clifton Drive*	*Market Street to Township Park*	*Sidewalk Improvements*
	11	*Westwind Drive NE*	*Township Park to Westwind Drive NE*	*Trail Extension*
	12	*Westwind Drive NE*	*Southwind Drive NE to Niles Cortland Road*	*Slow Street*

	Project ID	Location	Extents	Facility Type
	20	Squires Lane NE	Niles Cortland Road to HC Mines	Traffic Calming, Climbing bicycle lane or Shared Use Path
	23	North Road	North River Drive to Deforest Road	Sidewalks
	24	Mosquito Creek Greenway	North River Road to Howland Township Park	Shared Use Path
	26	Valacamp Avenue	Ridge Road to North Road	Slow Street; Bike/Pedestrian Facilities
	32	Ohio Edison Utility Trail	Howland Springs Road to Mines Road	Trail
	33	Broadway Avenue Trail Extension	East Market Street to Boston Avenue	Trail; Sidewalk
	13	Brittany Oaks Route	King Graves to Cain Drive	Slow Street
Low Priority	14	Carriage Hill Drive	Niles Cortland Road to Howland Wilson Road	Slow Street
	15	Old Farm Trail/Squirrel Hill Drive	Niles Cortland Road to Fuller Road	Slow Street
	16	Fairhill Drive	Clifton to Niles Cortland Road	Slow Street
	17	High School Campus Routes	Willow Drive, Shaffer Drive NE, Woodland Drive NE	Various Improvements
	18	Middle School Campus Routes	Brewester Drive SE, Willow Drive SE Laurelwood Dr SE; South Street	Various Improvements
	19	Fuller Drive	New Connection to Howland Wilson Road	Slow Street; Trail
	21	Cain Drive	Squires Lane to Henn Hyde	Bike Route; Slow Street
	22	Henn Hyde Drive	King Graves Road to East Market Street	Bike Facility
	30	Howland Springs Bike Route	Mines Road, Stillwagon Road, Howland Springs Road	Bike Route
	31	Forest Springs Drive/East Point Drive	Howland Springs Road to Mines Road	Slow Street

Table 12. Prioritized Intersection or Crossing Improvement Projects

	Project ID	Location	Extents	Recommendation
High Priority	2	N River Road NE	West of Valley Circle NE	Improve existing RRFB Crossing with high visibility striping
	4	Niles Cortland Road SE	Raglan Drive/King Graves Rd	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Carriage Hill Dr	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Squires Lane	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Fairhill Dr NE	Bike and Pedestrian Crossing Improvement

	Project ID	Location	Extents	Recommendation
	4	Niles Cortland Road SE	South St	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Hunters Trail	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Shaker Blvd SE	Bike and Pedestrian Crossing Improvement
	4	Niles Cortland Road SE	Mines Rd	Bike and Pedestrian Crossing Improvement
Medium Priority	A3	North River Road	West of Valley Circle NE	Bike and Pedestrian Crossing Improvement
	A1	North River Road	Larchmont Ave	Bike and Pedestrian Crossing Improvement
	A2	Elm Rd NE	Overland Ave NE	Bike and Pedestrian Crossing Improvement
	A3	North River Road	West of Valley Circle NE	Pedestrian Crossing Improvement
	A7	Niles Cortland Road SE	E Market St	Bike and Pedestrian Crossing Improvement
	A8	E Market Street	Brewster Dr	Rectangular Rapid Flashing Beacons
	A9	E Market Street	Laurelwood Dr	Pedestrian Hybrid Beacon
	A11	E Market Street	S82	Speed sign
	A12	E Market Street	North Rd NE	Intersection Geometry Changes
	A14	Youngstown Road SE	East of Hilda Dr SE	Intersection Geometry Changes
	A15	Valacamp Avenue SE	Boston Ave SE	High visibility striping
	A16	Youngstown Road SE	North Rd SE	Intersection Geometry Changes
	A18	Howland Wilson Rd NE	Carriage Hill Dr NE	High visibility striping
	A19	Howland Wilson Rd NE	Squires Ln	Pedestrian Hybrid Beacon and High visibility striping
	A20	Howland Wilson Rd NE	Woodhill Cir NE	Bike and Pedestrian Crossing Improvement
	A21	King Graves Rd NE	Howland Wilson Rd NE	Bike and Pedestrian Crossing Improvement
	A22	North River Rd NE	Elm Rd NE	Intersection Geometry Changes
	A24	Niles Rd SE	Athens Dr SE	Bike and Pedestrian Crossing Improvement
	A25	North River Road	North Rd NE	Bike and Pedestrian Crossing Improvement

IMPLEMENTATION

IMPLEMENTATION

ROLES AND RESPONSIBILITIES

Collaboration is the first step towards successful implementation of the Howland Active Transportation Plan's infrastructure recommendations. Projects were prioritized based in part, on their synergy with ongoing efforts and upcoming projects funded by various public agencies. For example, Howland Township maintains its local streets through its annual repaving program; the County oversees major routes like East Market Street, King Graves Road, Elm Road, and Squires Lane; and regional partners like ODOT and Eastgate Regional Council of Governments assist with funding and investments into regionally-significant infrastructure. Each of these agencies are collectively responsible for the design, funding, construction, maintenance, monitoring, and/or evaluation of the planned active transportation network. See Table 13 for a list of general responsibilities.

Table 13. Implementation Responsibilities

Agency	Responsibility	Description
Howland Township	Local Roads	*Including design, construction, maintenance of local Township roads. This includes the Township's annual resurfacing program.*
Howland Local Schoos	School properties	*As future plans for the schools evolve, the School District should keep the recommendations of the Active Transportation Plan up to date and coordinate with Howland Township on future funding pursuits.*
Trumbull County MetroParks	Western Reserve Greenway Bike Trail	*MetroParks is leading a collaborative effort to expand the Western Reserve Greenway Trail from its current endpoint in the City of Warren to the City of Niles, with partners from both cities and Howland Township. The proposed route would connect through the Township in the Bolindale neighborhood.*

Trumbull County Engineering Department	County Roads	*Trumbull County is a collaborative partner who can incorporate biking and walking facilities into county transportation projects. A number of key recommendations of this plan are on County roads like King Graves Road, Squires Lane, East Market Street, and Elm Road. Another form of support Trumbull County can provide is to include active transportation facility recommendations into future updates of the county's ADA Transition Plan.*
Eastgate Regional Council of Governments	Regionally-significant transportation funding and planning support	*One primary function Eastgate provides is the maintenance of the region's Transportation Improvement Plan (TIP) that helps direct funding to key needs, including active transportation facilities. Eastgate can help implement this plan by reviewing the recommendations, providing planning insight and relationship building to support key connections, and partnering with the Township to fund new connections.*
ODOT	State-owned facilities outside of municipalities; US-State Bike Route Designations	*ODOT incorporates active transportation facilities into state-funded projects and on state routes. ODOT can also support the implementation of this plan with local project support like Safe Routes to School Implementation funds, US-State Bike Route planning support, and other technical resources.*

FUNDING STRATEGIES

Active transportation projects comprise a fraction of overall transportation network construction and maintenance. While pedestrian and bicycle infrastructure generally does not serve as many users as highways, bridges, and other critical infrastructure, it can have a substantial positive effect on local economies. Additionally, providing opportunities for active living promotes public health and may reduce the burden on tax-payer funded healthcare systems over time. In this light, active transportation infrastructure is a critical component of a complete transportation network and results in a positive return on investment for communities that fund such projects.

Several state and federal funding sources can be used to supplement local funding sources to build out the active transportation network and fund related programming efforts. Table 14 lists the primary funding sources for active transportation projects in Ohio; click on the name of each funding source to access web pages with further information. In addition, ODOT and the Ohio Department of Health (ODH) have developed an Active Transportation Funding Matrix. Communities may use this tool to search for additional potential funding sources to support infrastructure and non-infrastructure projects that advance walking and bicycling. As part of the statewide Walk.Bike.Ohio Plan, ODOT published a Funding Overview Report that provides more details on types of funding available, schedules, and eligibility requirements. For information on funding for public transit, visit the ODOT Office of Transit's website.

Table 14. Primary Active Transportation Funds in Ohio

Funding Source	Distributed by	Eligible Project Examples	Eligible Project Sponsor
Transportation Alternatives	Metropolitan Planning Organization (if applicable), or Ohio Department of	Bicycle & pedestrian facilities Safe routes for non-drivers Conversion & use of abandoned railroad facilities Overlooks & viewing areas	Local governments

Funding Source	Distributed by	Eligible Project Examples	Eligible Project Sponsor
	Transportation (ODOT) if not		
Safe Routes to School	ODOT	Infrastructure Non-Infrastructure School Travel Plan assistance	Local governments (infrastructure) Local governments, school or health district, or non-profit (non-infrastructure)
Highway Safety Improvement Program	ODOT (Coordinate with local ODOT District to submit a safety study)	Signalization Turn lanes Pavement markings Traffic signals Pedestrian signals/crosswalks Bike lanes Road diets	Local governments
Recreational Trails Program	Ohio Department of Natural Resources (ODNR)	New recreational trail construction Trail maintenance/restoration Trailside and trailhead facilities Purchase/lease of construction & maintenance equipment Acquisition of easements Educational programs	Local governments State and federal agencies Park districts Conservancy districts Soil and water conservation districts Non-profits
Clean Ohio Trails Fund	ODNR	New trail construction Land acquisition for a trail Trail planning/engineering and design (must include construction)	Local governments Park districts Conservancy districts Soil and water conservation districts Non-profits
Clean Ohio Green Space Conservation Program	Ohio Public Works Commission (OPWC)	Open space acquisition including easements Bike racks Kiosks/Signs Hiking/Biking trails Pedestrian bridges Boardwalks	Local governments Park districts Conservancy districts Soil and water conservation districts Non-profits

MAINTENANCE STRATEGIES

The long-term performance of bicycle and pedestrian networks depends on both the construction of new facilities and an investment in continued maintenance. Maintaining bicycle and pedestrian facilities is critical to ensuring those facilities are accessible, safe, and functional.

FREQUENCY

The first step to approaching maintenance is to understand how often maintenance should be performed. Many activities, such as signage updates or replacements, are performed as needed, while other tasks such as snow removal are seasonal (see Table 15). Creating a winter maintenance approach is important to encourage year-round travel by walking and biking. One key component of this approach should be identifying priority routes for snow removal. More information on winter maintenance such as types of equipment needed for different facility types and how to consider snow removal in the design of facilities can be found in Toole Design's Winter Maintenance Resource Guide.

Table 15: Maintenance Activity Frequency

Frequency	Facility Type	Maintenance Activity
As Needed	Shared Use Paths	Tree/brush clearing and mowing
		Replace/repair trail support amenities (parking lots, benches, restrooms, etc.)
		Map/signage updates
		Trash removal/litter clean-up
		Repair flood damage: silt clean-up, culvert clean-out, etc.
		Patching/minor regrading
	Shared Use Paths/ Separated Bike Lanes / Paved Shoulders/ Bike lanes	Sweeping
	Bicycle Boulevards	Sign replacement
	Sidewalks	Concrete panel replacement
Seasonal	All	Snow and Ice control
	Shared Use Paths	Planting/pruning/beautification
		Culvert/drainage cleaning and repair
		Installation/removal of seasonal signage
Yearly	Shared Use Paths/ Sidewalks	Evaluate support services to determine need for repair/replacement
		Perform walk audits to assess ADA compliance of facilities
	Separated Bike Lanes / Paved Shoulders/ Bike lanes	Surface evaluation to determine need for patching/regrading/re-striping of bicycle facilities
5-year	Shared Use Paths	Repaint or repair trash receptacles, benches, signs, and other trail amenities, if necessary
		Sealcoat asphalt shared use paths

Frequency	Facility Type	Maintenance Activity
10-year	Shared Use Paths	Resurface/regrade/re-stripe shared use paths
20-year	Shared Use Paths/ Sidewalks	Assess and replace/reconstruct shared use paths/ sidewalks

PLAN FOR MAINTENANCE

Creating a strong maintenance program begins in the design phase. The agency that will eventually own the completed project should collaborate with partners to determine the infrastructure placement, final design, and life cycle maintenance cost. Maintenance staff should help identify typical maintenance issues, such as areas with poor drainage or frequent public complaints. They may have suggestions for design elements that can mitigate these issues or facilitate maintenance activities and can provide estimates for ongoing maintenance costs for existing and proposed facilities.

COORDINATION & RESPONSIBILITY BETWEEN AGENCIES

Many jurisdictions struggle with confusion around which entity – city, village, township, county, or state – is responsible for the maintenance of trails and other active transportation facilities. Frequently there is no documentation showing who is responsible for maintenance of existing facilities, which can prolong unsafe conditions for trail users. Coordination between the government agencies is key for effective maintenance programs. Intergovernmental agreements (IGAs) are used to codify the roles and responsibilities of each agency regarding ongoing maintenance. For example, a local government may agree to conduct plowing, mowing, and other maintenance activities on trails in its jurisdiction that were built by another agency. Clarifying who is responsible for maintenance costs and operations ensures that maintenance problems are resolved in a timely manner.

MAINTENANCE ACTIVITIES

Different facility types require different types of strategies to be maintained. Table 16 breaks down maintenance activities and strategies for each by facility type.

Table16: Maintenance Strategy Recommendations

Facility Type	Maintenance Activity	Strategy
Shared Use Paths/ Separated Bike Lanes	Pavement Preservation	Develop and implement a comprehensive pavement management system for the shared use path network.
	Snow and Ice Control	Design shared-use paths to accommodate existing maintenance vehicles.
	Drainage Cleaning/Repairs	Clear debris from all drainage devices to keep drainage features functioning as intended and minimize trail erosion and environmental damage.
		Check and repair any damage to trails due to drainage issues.
	Sweeping	Implement a routine sweeping schedule to clear shared-use paths of debris.
		Provide trail etiquette guidance and trash receptacles to reduce the need for sweeping.
	Vegetation Management	Implement a routine vegetation management schedule to ensure user safety.

Facility Type	Maintenance Activity	Strategy
		Trim or remove diseased and hazardous trees along trails.
		Preserve and protect vegetation that is colorful and varied, screens adjacent land uses, provides wildlife habitats, and contains prairie, wetland and woodland remnants.
	ADA Requirements	Conduct walk and bike audits to assess accessibility of new, proposed, and existing shared-use paths.
		Ensure that ADA compliance is incorporated into the design process for new facilities.
Paved Shoulders/ Bike Lanes	Pavement Markings	Explore approaches to routinely inspect pavement markings for bicycle infrastructure and replace as needed.
		Consider preformed thermoplastic or polymer tape on priority bikeways (identified in this Plan) adjacent to high-volume motor vehicle routes (preformed thermoplastic or polymer tape are more durable than paint and requires less maintenance).
	Snow and Ice Control	Clear all signed or marked shoulder bicycle facilities after snowfall on all state-owned facilities that do not have a maintenance agreement with a local governmental unit in place.
	Sweeping	Implement a routine sweeping schedule to clear high-volume routes of debris.
Bicycle Boulevards	Sign Replacement	Repair or replace damaged or missing signs as soon as possible.
Sidewalks	Pavement Preservation and Repair	Conduct routine inspections of high-volume sidewalks and apply temporary measures to maintain functionality (patching, grinding, mudjacking).
		Consider using public agency staff or hiring contractors for sidewalk repairs, rather than placing responsibility on property owner (property owner can still be financially responsible).
	Snow and Ice Control	Educate the public about sidewalk snow clearance.
		Require sidewalk snow clearance to a width of five feet on all sidewalks.
		Establish required timeframes for snow removal.
		Implement snow and ice clearing assistance programs for select populations.

ON-GOING MONITORING AND EVALUATION

Measuring the performance of Howland Township's growing active transportation networks will be critical to its ongoing success. As the plan is implemented, the Township will need to be able to measure and communicate to the public whether infrastructure investments are paying active transportation dividends (i.e., more connections to community destinations, more miles of the network constructed, etc.). The Township can work to monitor simple data to make the case for continued investment in the network. Ideally, data would be reviewed and shared annually as shown in Table 17.

Table 17: On-going Monitoring and Evaluation Measures

Monitoring and Evaluation Measure	Goal	**Timeline** (how often is data collected/updated)	**Responsibility** (who will collect the data)
Active Transportation Infrastructure	*Increase the number of Slow Street routes- Target of 1 Slow Street route per year.*	*Annually*	*Howland Township*
	Miles of active transportation infrastructure constructed- Target of 0.5 miles per year.		
Access	*# of destinations (schools, parks, libraries, grocery stores, shopping centers) connected to bike or pedestrian infrastructure, including slow streets.*		
	% of new developments with bicycle parking facilities.		
Transparency and Capacity	*# of funding applications or collaborative partnerships to pursue active transportation programs/projects- Target 2 per year*		
	Annual tracking/reporting on Plan progress		