

Map to 2045



DRAFT - Duluth-Superior Metropolitan Bikeways Plan – ***DRAFT***



Draft Version – November 2018

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Purpose – Role of the Metropolitan Bicycle Plan

The Duluth-Superior Metropolitan Interstate Council (MIC) has undertaken a complete update to the metropolitan Bikeways Plan first developed and approved in 1994. This plan is to guide the development of the bikeways system in the Duluth-Superior Urban Area for the next 25 years and sets forth a vision of where the region would like to be and guidance on how to get there.

The Plan is complementary document to the existing Duluth-Superior Long Range Transportation Plan (LRTP). The LRTP establishes a vision for transportation in the urban area. A major component of this vision is a transportation system which is fully integrated and multimodal, where citizens of all ages and abilities have convenient and desirable options. This Bikeways Plan provides a blueprint to advance the bicycling component of this vision.

The Plan contains goals and recommendations that are regional in scope and provides a planning framework to guide decision-making. Urban transportation systems are complex where trips are routinely made across jurisdictional boundaries, regardless of the roadway authority responsible for maintenance and operations. Therefore, this Plan takes the viewpoint that the region should have a complete and integrated network of bikeways which support people making bicycle trips.

While bicycle planning and policy-making is primarily focused on the local level, the development of this Plan provides an opportunity to improve regional coordination and connectivity of bicycle facilities between jurisdictions. The Plan also provides

IMPORTANT NOTE

This document includes maps showing large-scale, very general routing options. These maps are to be used as a reference for long-term planning purposes and do not reflect or indicate official construction plans for incomplete bikeways. All bikeways routing may change when implemented due to on-the-ground engineering and public input.

guidance to local decision-makers on the design of bicycle facilities, development of programs, and prioritization of improvement projects.

This is also a working document and is meant to be adaptable. As projects take place, including bikeway and land use changes, routes may need to be changed, whether it be a bikeway that now needs to be adjusted, expanded, removed or changed in some way to meet the new condition.

This document is not for route finding or wayfinding of the existing bike routes. This is to guide roadway jurisdictions and the general public on the future direction of the bikeway network. This document is to be used for planning purposes and the actual routes and improvements will be ultimately decided by the roadway authority.

Finally, this plan highly recommends with any bikeway improvement which will require a reconfiguration of the roadway space, whether it be traffic lane reconfiguration or parking changes, that a robust public engagement process is undertaken (which may involve multiple years of planning) involving all impacted parties and that consideration of the general public interest prevail over the particular interest.

KEY POINTS about the Bike Plan

A 25- year vision of the bikeway system.

Not a route finding or wayfinding document.

Guiding document – for planning purposes, not construction.

Plan is adaptable, not static.

Federal Rules & Guidance.

The Metropolitan Interstate Council is the officially designated Metropolitan Planning Organization (MPO) for the Twin Ports and receives federal funding to undertake transportation planning efforts on behalf of the Duluth-Superior urban area. Of the planning responsibilities that the MPO must undertake, one is to plan for the bicycle as a mode of transportation. Below are the federal rules:

23 CFR 450 – Metropolitan Transportation Planning & Programming

(a) Set forth the national policy that the MPO designated for each urbanized area is to carry out a continuing, cooperative, and comprehensive performance-based multimodal transportation planning process, including the development of a metropolitan transportation plan and a TIP, that encourages and promotes the safe and efficient development,, management,, and operation of surface transportation systems to serve the mobility needs of people and freight (including accessible pedestrian walkways, **bicycle transportation facilities**, and intermodal facilities that support intercity transportation, including intercity buses and intercity bus facilities and commuter vanpool providers) fosters economic growth and development, and takes into consideration resiliency needs, while minimizing transportation-related fuel consumption and air pollution; and

450.306

(b)(2) Increase the safety of the transportation system for motorized and non-motorized users;

US DOT - Federal Highway (FHWA)

Incorporating On-Road Bicycle Networks into Resurfacing Projects – March 2016

- US DOT policy is to incorporate safe and convenient walking and bicycle facilities into transportation projects.
- It is the responsibility of every transportation agency in the United States to improve conditions for bicycling and to integrate into their transportation systems.
- Additional, transportation agencies are encouraged not just to meet the minimum requirements of providing bicycle facilities, but to go beyond minimum standards to provide the safest and most convenient bicycle facilities practicable.

450.316

(vii) Seeking out and considering the needs of those traditionally underserved by existing transportation systems, such as low-income and minority households, who may face challenges accessing employment and other services;

450.324

Development and content of the metropolitan transportation plan

(b) The transportation plan shall include both long range and short range strategies/actions that provide for the development of an integrated multimodal transportation system (including accessible pedestrian walkways and **bicycle transportation facilities**) to facilitate the safe and efficient movement of people and goods in address current and future transportation demand.

(f) The metropolitan transportation plan shall, at a minimum, include:

(12) Pedestrian walkway and **bicycle transportation facilities** in accordance with 23 USC 217 (g)

Why Bicycling?

A key point of this plan is not that bicycles are the most important transportation mode nor is it expected that bicycles would even become the dominant mode of the future. But more so, that bicycling is a legitimate transportation mode for people of all ages and abilities and it is important for the long term health, quality of life and overall vibrancy of this area.

Modes of transportation are not the ends, but the means to an end. Finding the right balance, is akin to when working on a project, utilizing the right tool for the job. Other tools may work, but what is the most efficient and effective. Therefore, it is critical to find the best tool, or in this case, use of the various transportation modes, to most efficiently and effectively serve the Duluth-Superior Urban Area.

One of the most efficient ways within an urban area to provide physical connections is through the use of a bicycle as a mode of transportation. With a majority of trips in urban areas (which includes all trips a person makes, not only the commute to work ones) encompasses shorter distances, less than 3 miles. These shorter distances coupled with the real limits on space and public infrastructure resources, creates an environment where bringing more people into smaller spaces calls for us to devise the best ways to provide more access with less space. When bicycling is added to the options for people of all ages and abilities to get themselves around, the benefits are numerous. The benefits of a highly bikeable community is that it allows population

Reduce congestion, by shifting short trips (the majority of trips) out of cars. This will agroups without access to a car (e.g., children and low-income households) to have access to destinations within a bikeable distance that are safe and comfortable.

Bicycling Benefits

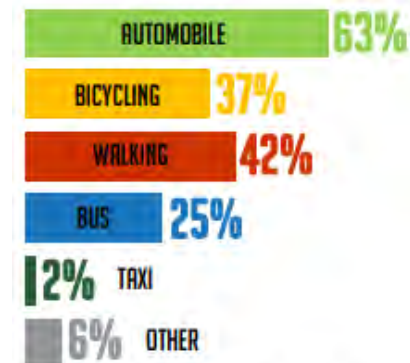
- One of the most high-returning public infrastructure investments in an urban area when provide a fully connected network of all ages & abilities bikeways.
- Reduces health risks associated with physical inactivity.
- Strengthens the local economy.
- More affordable for the whole community.
- In areas of and times of congestion, it provides an increase in traffic and parking capacity, particularly in areas where space is limited, but more and more people are going.
- Equitable access to transportation.

A highly bikeable community also means residents, workers and visitors have opportunities for physical activity that can be incorporated as part of regular day-to-day activities.

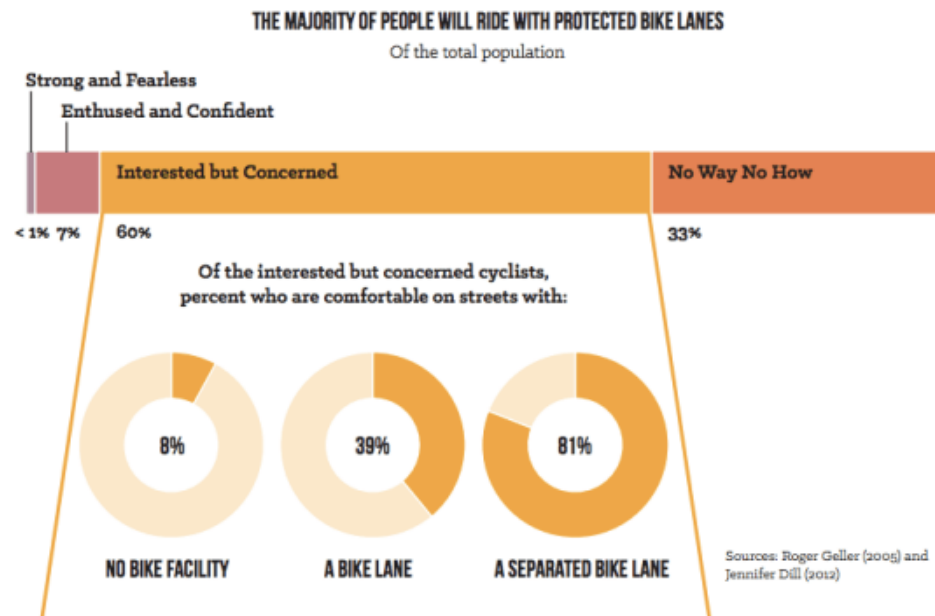
The vast majority of trips in urban areas are of distances of 3 miles or less. The bicycle serves this distance quite well. Furthermore, in places, a key measurement of a vibrant, successful place is by the number of people in that particular place, not necessarily the number of motor vehicles, buses, or even bikes. The equation then is about figuring out how to accommodate more people in an given space. In urban areas where space is constrained and people generally travel shorter distances, bicycling is a really good tool (not the only tool).

Lastly, the general public is increasingly asking for better bicycle transportation facilities. Nationally, it has been found that the majority of the general public, around 70%, will bicycle for transportation with the proper infrastructure in place. Locally, results from recent surveys in the Duluth-Superior area, respondents have stated they would bicycle for transportation more often if the infrastructure was improved.

Ideally, what would be your preferred method of transportation for everyday travel?



Source: Imagine Duluth 2035 Survey.
Participants could select up to two options.



What has changed? The reason for the Plan update.

Bicycling in the United States has taken on many iterations, a boom and bust cycle since the invention of the bicycle. From the initial push by people who bicycle for paved roads in the early 1900s to the 1970s energy crisis and environmental awareness which lead to a big wave of popularity and push for bicycling to the last ten years with the exponential growth of bike infrastructure in cities across the U.S. People are buying bicycles in record numbers and there is an increasingly growing push for communities to build bicycle-friendly infrastructure including trails and bike-lanes.

In the past, and for some still today, a major view of bicycling is that it is viewed as a childhood activity and not necessarily a mainstream adult activity (except for a small percent of the population). For adults, the bicycle has also grown to be viewed primarily a vehicle for recreational purposes. While some still hold that viewpoint today, planning for bicycles as a vehicle for transportation has been underway for over 40 years. In the 1970s, both locally and nationally, plans were released to direct transportation investments to ensure bicycling was a viable component of the overall transportation system. In 1974, Federal Highway released their “Bikeways – State of the Art” Report to provide national guidance on designing bikeways. The following year, the City of Duluth released their Bikeways Plan calling for a network of bicycle friendly improvements to the city street network.

However, by the end of the 1970s, bicycle enthusiasm waned and a key theory emerged, one championed by John Forester, a prominent bicycle transportation engineer of the time. He asserted that sharing the road without separated bikeway

The Changes:

- Travel behavior shift – general public push for better bikeway facilities.
- Growing public health concerns due to physical inactivity.
- Local government fiscal realities have created a need to gain better return on infrastructure investments.
- Declining of gas tax funding.
- Massive technological innovation, particularly the smart phone.
- Delay in driving by young people.

facilities was far more safer for cyclists. This idea was largely accepted across the United States and stalled most efforts to build separated bikeway facilities.

In 1991, federal funding was directed towards planning for the transportation system and specifically called on MPOs, to put together a bicycle and pedestrian transportation plan. The MIC decided to create separate bicycle and pedestrian plans and completed the regional bicycle plan in 1994. This plan focused on bicycle commuters and recreational bicyclists and largely comprised of sharing the road bikeway facility recommendations.

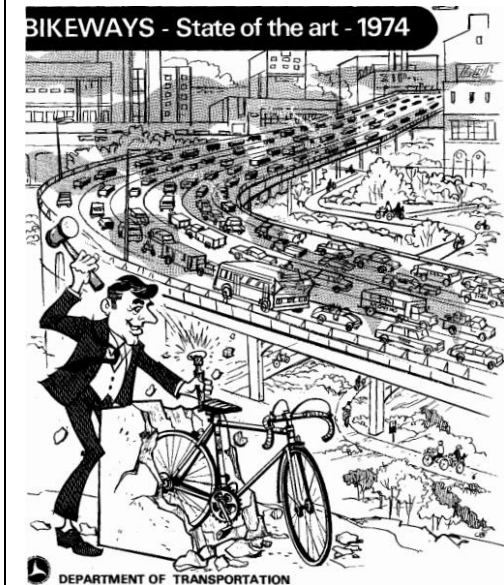
However, since the 1990s, there has been a significant change in thought on how to best accommodate bicyclists. A move away from a primarily sharing the road system to one that provides separate facilities has emerged. This idea is linked to the research which shows that a majority of people would be willing to bike, but not where they would have to share the lane with a motor vehicles.

On top of this is the trend that people are becoming less physically active and the evidence is mounting that this is creating significant health impacts. The research further shows that to change this lack of physical activity behavior, that exercise has to be incorporated as part of everyday routine. With cities and regions being more spread out, transportation has a role in promoting physical activity. People note that time and distance are the two biggest factors preventing them from being more physically active. A bicycle is one of the most efficient and effective tools to overcome the barrier of time and distance, since the majority of trips people make are within 3 miles.

Transportation vs Recreation – design for whom?

Transportation – getting from point A to point B. Direct, without unnecessary stopping or detours.

Recreation – leisurely or a work out, does not need to be direct, should include loops.



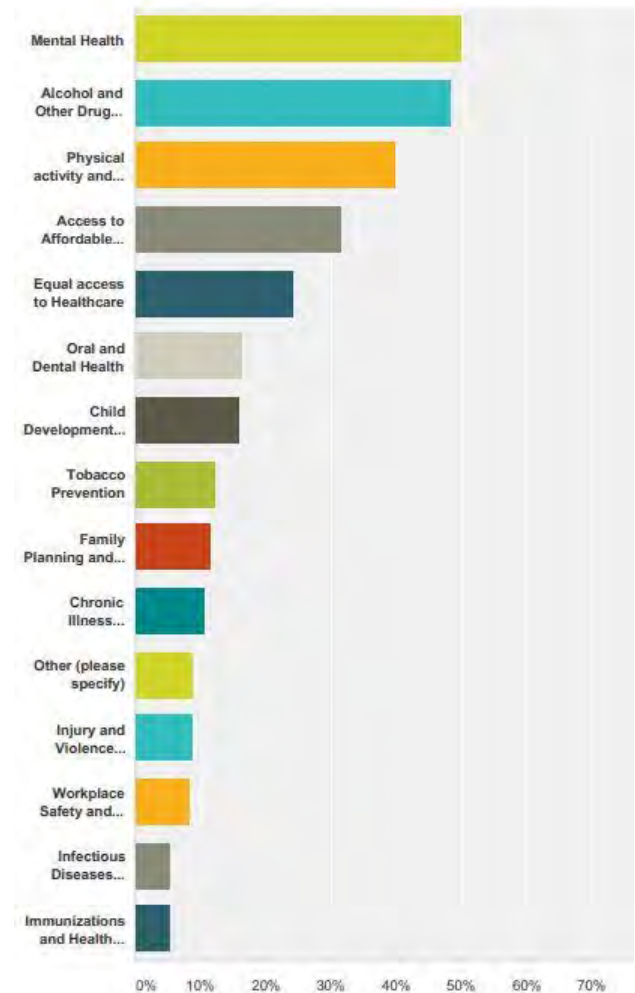
Regular physical activity reduces the risk for certain chronic diseases including high blood pressure, stroke, coronary artery disease, type 2 diabetes, obesity, colon cancer and osteoporosis. Furthermore, the built environment and overall environment should promote and support people being active

Local public health organizations, including county public health departments and hospitals, routinely undertake a community health needs assessment to determine the health priorities for the area and devise strategies to address these health needs. The two counties that cover the MIC area, St. Louis County in Minnesota and Douglas County in Wisconsin are leaders in these efforts and help put together a community health improvement and implementation plan. In St. Louis County, the Community Health Needs Assessment and Implementation Plan identified four priority areas, one of which being “Obesity, including lack of access to healthy foods and physical activity. The plan has a goal of reducing the rate of obesity. The Douglas County plan has a goal to increase healthy eating and physical activity to reduce overweight/obesity of Douglas County residents. Both plans call for increasing opportunities for people to be physically active as one of the key measures to improve health outcomes.

Douglas County Community Health Survey - 2016

Q5 What THREE THINGS need to be improved to make Douglas County Healthier? (check only 3 boxes)

Answered: 537 Skipped: 17



Over the last 10 years, significant progress has been made, including in the Twin Ports to make it better for people to bicycle. Bicycle transportation facilities have been expanded, communities are redesigning streets with bicyclists in mind, bicycle support facilities are being installed including bike route wayfinding signage, bike racks and bike share system and local governments are beginning to innovate new bikeway designs. There is now national guidance for designing bikeways, through National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide, update to national and state design standards and local communities pioneering new bikeway designs.

With all of this that is happening, it was time to consider these renewed focus on the unique situation of urban streets that require innovative treatments. This bikeways plan is focused on this urban viewpoint and solutions.

Planning Process

The Bikeways Plan builds on previous planning efforts both completed by the MIC as well as surrounding jurisdictions and partner agencies and organizations. There are numerous planning efforts that have informed the development of this plan. The level of detail into which each of these plans gives recommendations regarding the bicycle network varies greatly. In addition, there are a number of bikeway planning efforts that while not officially adopted but have none-the-less have informed this plan, including the Downtown Duluth Bikeways Audit & Survey, Michigan Street Protected Bikeway Demonstration Project and the various Safe Routes to School plans.

Nationally, innovation of urban bicycle infrastructure was transforming urban streets and rapidly expanding bikeway infrastructure in cities across the United States. As new designs were being tried, new resources for urban bikeway design were also become widely available, particularly the NACTO guides. This all led to the conclusion that a complete update of the Bikeways Plan was in order to better reflect the best practices and new urban street designs being developed.

Therefore in 2010, work began in a re-thinking of the bikeway system. The MIC worked closely with local partners on this update, in some cases served in a supporting role and in others as the lead, but all with the intention of incorporating the recommendations and ideas into the updated Bikeways Plan.

Bikeway Planning Efforts

1975 Duluth Bikeways Plan
 1994 Duluth-Superior Metropolitan Bikeways Plan
 1998 Duluth-Superior Metro Area Bikeways Status
 Report & Implementation Plan
 2007 Proctor Master Trails Plan

2010 – Connecting Duluth Report

2011 – Duluth Trail & Bikeway Plan

2013-14 – Plan for Duluth's Bikeways

2015 – Downtown Duluth Bikeways Audit & Survey

2015 Hermantown-Proctor Munger Trail Spur

2016 Duluth Township Trails Plan

2017 – Cross City Trail Mini-Master Plan

2017 – Protected Bikeline Demonstration Project

2018 – Canosia Township Trails Plan

Upcoming bikeway planning efforts:

2019 – Superior Active Transportation Plan

2019 – Campus Connector Mini-Master Trails Plan

From the very start, a number of big issues arose that really needed a series of separate planning efforts before the bikeways plan update could move forward. These issues needed to be resolved or at least moving forward with workable solution was essential. These issues were:

1. The determination of which streets within the City of Duluth are recommended to have bike facilities, particularly bike lanes.
2. Final alignment of the Cross City Trail, the backbone trail running the length of Duluth and closing the gap connecting between the Munger and Gitchi Gami State Trails.
3. Major connecting trails to Proctor, Hermantown and the surrounding townships.
4. Clarification on the Downtown Duluth bikeway network.
5. Update of the bikeway system in Superior (this will be undertaken as part of the Superior Active Transportation Plan).

2010 Connecting Duluth Report – citizen-driven effort lead by Fit City Duluth, conducting a complete bicycle system assessment. The local advocacy organization engaged bicyclists directly in the City of Duluth about where they ride and where they would prefer. A series of public meetings were held through out Duluth to gather this input and report back. A final report detailing preferred routes as well as recommendations.

2011 Duluth Trail & Bikeway Plan – Plan created a vision for trails and bikeways in Duluth for both recreation and transportation purposes. The plan identified a system of transportation routes for bicycling, both on-street and off-street and provided

Duluth Trail & Bikeway Plan - Bikeway System Evaluation:

- A largely bike unfriendly on-road environment • Good base of existing bike routes • Strong tourism market
- Tremendous resources - terrain, lake, river, views, natural areas, four season climate, etc.
- Positive Complete Streets policy • Few paved trails and no bike lanes
- Few and hidden trailheads
- Challenging terrain and climate
- Need for off-street paved trails and on-street bike lanes
- Need for a bikeway advocacy group to promote road biking
- Need for bikeway connections to downtown, schools and commercial areas • Safe, dedicated bike facilities (lanes, sharrows and bike parking) as needed downtown

recommendations on what bikeway type should be installed. The plan also called for addition follow up, including a feasibility evaluation, public outreach and site specific design process is recommend for each of these improvement projects. Some improvements involve the simple addition of signage and pavement markings, others may be part of a larger road reconstruction and some may require removal of on-street parking.

2013-14 – Plan for Duluth’s Bikeways Duluth undertakes a extensive evaluation of the recommended bikeways from the past planning efforts. Another round of public meetings were held gather input and devised a plan for bikeways. A final public meeting was held, then the plan brought through the formal city processes, including the Planning Commission and received approval from Duluth City Council.

2015 – Duluth-Superior Metropolitan Bikeways Plan – the planning efforts for this project began in 2015. The process moved slowly as a number of big issues arose and needed to be worked through before proceeding.

- Started with TAC and MIC engagement - a Perspective on Bicycling Survey and followed up with a Vision exercise and identification of gap areas.
- Superior Bikeways Public Meeting
- Downtown Duluth Bikeways Audit & Survey

2016 – Review of feedback and prior plans

- Trouble Spots Survey.

- Outreach to local groups including presentations to the Active Living Committee and Duluth Bikes.

2017 – Technical Review, Analysis and mapping

- Protected Bikelane Demonstration Project

2018 – Drafting of Plan

- Public Open House
- Roadway Jurisdiction Vetting
- Draft Review & Comment Period
- Draft Plan Public Meeting
- Final Approval

Vision

The Duluth-Superior Metropolitan Area is a great place for people to bicycle all year, whether for a trip to the grocery store, a ride along the trail, or a pleasant way to get to school or work. This can be seen in the large numbers of people who are out and about on a bike, regardless of the season. Many days see multitudes of people using the bike facilities going to work or school on a weekday morning, or enjoying a family trip on a weekend, taking in a major event or just heading over to a friend's house.

Goals

1. Bicycle transportation facilities are fully integrated into a seamless multimodal transportation system.
2. Safe, convenient and efficient bikeway system for people of all ages and experience levels to go about their daily activities all year by bicycle if they choose.
3. The location, type and design of bicycle transportation facilities are determined utilizing evidence based solutions.
4. Work in a common effort to investigate and address bicycle transportation needs through the development and promotion of the Metropolitan Bikeways Plan.
5. Increase opportunities to be physically active as part of everyday routine to reduce physical inactivity and the negative health outcomes.
6. Reduce bicycle-motorists and bicycle-pedestrian conflicts.

State Bikeway Plan Goals

Minnesota – Statewide System Bicycle Plan

Plan goals are to increase:

- Safety and comfort - Build and maintain safe and comfortable bicycling facilities for people of all ages and abilities
- Local bicycle network connections - Support regional and local bicycling needs
- State bicycle routes - develop a connected network of state bicycle routes with partners
- Ridership - increase ridership of people who already bicycle and people who don't

Wisconsin – Bicycle Transportation Plan

Plan goals are to increase mobility, choice, safety & connectivity and specifically:

1. Increase level of bicycling
2. Reduce crashes.

Strategies – 5 e's

Engineering

- Whenever conducting a resurfacing or reconstruction activity
- Develop and implement street design guidelines that foster a pleasant and comfortable environment for pedestrians and cyclists. Beautiful streetscaping has also shown to increase community livability and pride, reduce crime, increase sales taxes where retail is present and increase overall property values.
- Do not wait for major street and trail projects to install bike facilities. Connect destinations, close gaps and try bikeway designs, even if the best practice solution is not feasible at the time.
- Offer more ongoing training opportunities on accommodating bicyclists for engineering and planning staff.
- Consider passing local ordinances or policies that would require larger employers to provide shower facilities and other end-of-trip amenities.
- Standardize regulatory requirements for the installation of bike racks for ease of maintenance and security of bikes against vandalism and theft.
- Ensure that the standards for bike parking conform to APBP guidelines. Promote active transportation by working to reduce traffic speeds where appropriate. Use traffic calming measures and low speed design principles to achieve higher compliance rates and encourage lower speeds lower than the state minimum. Speed has been identified as a key risk factor in road traffic injuries, influencing both the risk of a road traffic crash as well as the severity of the injuries that result from crashes. For instance, pedestrians and cyclists have a 90% chance of survival if hit by a car travelling at the speed of 20 mph or below, but less than a 50% chance of surviving an impact of 30 mph or above. Studies also generally report a positive association between traffic safety (perceived and/ or measured) and walking and cycling, particularly among women. Join the statewide coalitions (BikeMN, MN Complete Streets, etc.) in their effort to lower the statewide minimum speed.

The Healthiest Wisconsin 2020 objectives for Physical Activity include:

By 2020, increase physical activity for all through changes in facilities, community design and policies.

By 2020, every Wisconsin community will provide safe, affordable and culturally appropriate environments to promote increased physical activity.

By 2020, every Wisconsin community will provide safe, affordable and culturally appropriate environments to promote increased physical activity for individuals among populations of differing races, ethnicities, sexual identities and orientations, gender identities, and educational or economic status.

- Adequately maintain the on and off-road bicycle infrastructure to ensure usability and safety. Increase the frequency of sweepings and address potholes and other hazards faster.

Long Term Strategies:

- All bikeways except on low volume, low speed streets will have a physical separation from motor vehicle traffic.
- Develop solutions to physical barriers in order to provide convenient bicycle access to all parts of the community.
- Develop a system of bicycle boulevards, utilizing quiet neighborhoods streets, that creates an attractive, convenient, and comfortable cycling environment welcoming to cyclists of all ages and skill levels. Learn how to do it at <http://www.ibpi.usp.pdx.edu/guidebook.php>. Use the Bicycle Boulevards section of the NACTO Urban Bikeway Design Guide for design guidelines.
- Since arterial and collector roads are the backbone of every transportation network, it is essential to provide designated bicycle facilities along these roads and calm traffic speeds to allow bicyclists of all skill levels to reach their destinations quickly and safely. On roads with posted speeds limits of more than 35 mph, it is recommended to provide protected bicycle infrastructure, such as cycle tracks, buffered bike lanes or parallel 8-10ft wide shared-use paths.
- Make intersections safer and more comfortable for cyclists. Particularly the intersection of E. Skyline, Kenwood Ave and 11th Ave needs to be fixed. Include elements such as color, signage medians, signal detection, and pavement markings. The level of treatment required for bicyclists at an intersection will depend on the bicycle facility type used, whether bicycle facilities are intersecting, the adjacent street function and land use. See the NACTO design guidelines and the 2012 AASHTO Guide for the Development of Bicycle Facilities for recommended intersection treatments.

- Better link transit and bicycling by increasing parking at major transit stops and on-board buses, where it makes sense to provide bike-supportive infrastructure including bike racks, secure lockers at transfer points between modes at transit centers and bottom of the hill along key corridors.
- Increase bike capacity on buses (particularly on longer distance routes where there's limited alternatives and identify ways for non-traditional bikes to travel by bus.

Education

- Implement the new Bicycle and Pedestrian Safe Routes to School curriculum in all schools. Encourage the school district to adopt Minnesota's new Walk! Bike! Fun! Curriculum.
- It is essential to make both motorists and cyclists aware of their rights and responsibilities on the road. Continue to expand your public education campaign promoting the share the road message.
- Consider creating a volunteer-based Bicycle Ambassador program. Have Ambassadors attend community and private events year-round to talk to residents and visitors of all ages about bicycling and to give bicycle safety demonstrations. They can also offer bike commuting presentations for area businesses.
- Offer more adult education opportunities at the YMCA and community centers targeting the 'interested but concerned' bicyclist. Ensure that the curriculum addresses the 'vertical challenge'.
- Host a Traffic Skills 101 or bike commuter course for engineers and planners to help them better understand cyclists' needs. For more information visit: www.bikeleague.org/programs/education/
- Host a League Cycling Instructor (LCI) seminar to increase the number of certified LCIs in your community. Having local instructors will enable your community to expand cycling education, recruit knowledgeable cycling

- ambassadors, deliver education to motorists, provide cycling education to motorists, provide cycling education to adults and kids, and have experts
- available to assist in encouragement programs Visit <http://www.bikeleague.org/programs/education/> for more information.
- Start a bicyclist ticket diversion program. Road users given a citation are offered an opportunity to waive fees for violations by attending a bicycling
- education course. This course should include a classroom and on-road component.

Encouragement

- Consider offering a ‘Open Streets’ type event, closing off a major corridor to auto traffic and offering the space to cyclists, pedestrians and group exercise events.
- Set up and promote a bicycle-themed community celebration or social ride each time a new bicycle related project is completed. This is a great way to show off the community’s good efforts and introduces new users to the improvement.
- Encourage the University of Minnesota Duluth and other local institutions of higher education to promote cycling and to seek recognition through the Bicycle Friendly University program. Many colleges and universities have embraced the growing enthusiasm for more bicycle-friendly campuses by incorporating bike share programs, bike co-ops, bicycling education classes and policies to promote bicycling as a preferred means of transportation. The community could potentially profit as well: Communities near a BFU have a very high number of regular cyclists (as many students bike to campus, shops and restaurants), less congestion around campus, safer streets and university-hosted public bicycle events, programs and classes.

Enforcement

- Ask police officers to use targeted information and enforcement to encourage motorists and cyclists to share the road safely. This could be in the form of a brochure or tip card explaining each user's rights and responsibilities, such as "A Pocket Guide to Minnesota Bicycle Laws" produced by the Minnesota State Non-Motorized Transportation Advisory Committee. Have information material available in Spanish, if applicable.
- Enforcement practices could also include positive enforcement ticketing. Police officers could team up with local stores to reward safe cycling practices.
- Provide safety amenities such as adequate path lighting and emergency call boxes and offer services such as non-mandatory bike registration and missing bike recovery assistance.
- Pass more laws that protect cyclists, e.g. implement specific penalties for motorists for failing to yield to a cyclist when turning, making it illegal to park or drive in a bike lane (intersections expected), implement penalties for motor vehicle users that 'door' cyclists, ban cell phone use while driving, specifically protect all vulnerable road users, formalize a legal passing distance of 3 feet, and make it illegal to harass a cyclist.
- Obey traffic laws - accountability

Evaluation

- Ensure dedicated funding for the implementation of the various bikeway plans.
- Conduct official pre/post evaluations of bicycle-related projects in order to study the change in use, car speed and crash numbers. This data will be valuable to build public and political support for future bicycle-related projects.
- Adopt a target level of bicycle use (e.g. percent of trips) to be achieved within a specific timeframe and ensure data collection necessary to monitor progress.

- Expand efforts to evaluate bicycle crash statistics, particularly track those that involve bicyclist fatalities and serious injuries and produce a specific plan to reduce the number of crashes in the community. Available tools include Intersection Magic and the Pedestrian and Bicyclist Crash Analysis Tool.
- Measuring the Level of Traffic Street on community roads and at intersections, to be able to identify the most appropriate routes for inclusion in the community bicycle network, determine weak links and hazards, prioritize sites needing improvement, and evaluate alternate treatments for improving bike-friendliness of a roadway or intersection: <http://www.bikelib.org/bike-planning/bicycle-level-of-service/> (roads) and <http://www.bicyclinginfo.org/library/details.cfm?id=4425> (intersections)
- Establish a mechanism that ensures that bicycle facilities and programs are implemented in traditionally underserved neighborhoods.

Bikeways Accessible to Everyone

The Bikeways Plan builds on previous planning efforts both completed by the MIC as well as agencies and organizations. There are numerous planning efforts that have informed the detail into which each of these plans gives recommendations regarding the bicycle network of bikeway planning efforts that while not officially adopted but have none-the-less have informed Downtown Duluth Bikeways Audit & Survey, Michigan Street Protected Bikeway Demonstration to School plans.

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Therefore in 2010, work began in a re-thinking of the bikeway system. The MIC worked closely with some cases served in a supporting role and in others as the lead, but all with the intention of incorporating new ideas into the updated Bikeways Plan.

Route selection is critical. Bikeways will under-perform when routing is illogical, require frequent turns, or require shared lane usage on roadways with high traffic speeds and volumes.

Bikeways Route Planning - Decision-making Criteria

Designating a system of preferred routes.

Candidate routes should meet the following criteria:

Bikeway Planning Efforts

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1994 Duluth-Superior Metropolitan Bikeways Plan
1998 Duluth-Superior Metro Area Bikeways Status Report & Implementation Plan
2007 Proctor Master Trails Plan

2010 – Connecting Duluth Report

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Upcoming bikeway planning efforts:

2019 – Superior Active Transportation Plan

2019 – Campus Connector Mini-Master Trails Plan

1. Low-stress bikeway network – continuous and direct route.
2. Designed with the end user in mind, people who are riding bicycles for transportation (not recreation).
3. Trips – design for people making a variety of trips (majority) and not only the commute to work trip.
4. Slope – avoid steep grades
 - a. Any street or path with a grade greater than 13% must be avoided (not reasonable).
 - b. Any street or path with a grade between 5-8% can be a bikeway for only 1 consecutive block if no other option is available.
5. Public Health - designed to for people to conduct their activities via bicycle as part of their everyday routine (Focus on 2-5 miles or the length of a typical urban bicycle trip.)
6. All ages and all abilities network – building a system that the largest number of people can utilize not just the confident road cyclists.
7. Direct access to destinations:
 - a. Public School – where attendance is required by law.
 - b. Public transit centers and stations
 - c. Civic & Community Institution (town hall, city hall, county courthouse)– places where public decisions are made i.e. places where public meetings are held.
 - d. Food Distribution– places where people purchase or pick up food

- e. Commercial destination centers –

- f. Medical Facilities – hospitals, doctor’s office, pharmacy
- g. Recreational places – parks and trails.
- 8. Strategic connections
- 9. Desire line for bicyclists – closely follow a desire line for bicycle travel

Bikeway Types.

Bike Lanes

Conventional Bike Lanes- The bike lane is located adjacent to motor vehicle travel lanes and flows in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge, or parking lane. This facility type may be located on the left side when installed on one-way streets, or may be buffered if space permits.

Buffered Bike Lanes- Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

Contra-Flow Bike Lanes- Contra-flow bicycle lanes are bicycle lanes designed to allow bicyclists to ride in the opposite direction of motor vehicle traffic. They convert a one-way traffic street into a two-way street: one direction for motor vehicles and bikes, and the other for bikes only. Contra-flow lanes are separated with yellow center lane striping. Combining both direction bicycle travel on one side of the street to accommodate contra-flow movement results in a two-way cycle track.

Left-Side Bike Lanes- Left-side bike lanes are conventional bike lanes placed on the left side of one-way streets or two-way median divided streets.

Cycle Tracks

One-Way Protected Cycle Tracks- One-way protected cycle tracks are bikeways that are at street level and use a variety of methods for physical protection from passing traffic. A one-way protected cycle track may be combined with a parking lane or other barrier between the cycle track and the motor vehicle travel lane.

Raised Cycle Tracks- Raised cycle tracks are bicycle facilities that are vertically separated from motor vehicle traffic. Many are paired with a furnishing zone between the cycle track and motor vehicle travel lane and/or pedestrian area. A raised cycle track may allow for one-way or two-way travel by bicyclists.

Two-Way Cycle Tracks- Two-way cycle tracks (also known as protected bike lanes, separated bikeways, and on-street bike paths) are physically separated cycle tracks that allow bicycle movement in both directions on one side of the road. Two-way cycle tracks share some of the same design characteristics as one-way tracks, but may require additional considerations at driveway and side-street crossings.

Bicycle Boulevards

Route Planning- Direct access to destinations

Route selection for bicycle boulevards is critical. Bicycle boulevards will not work if they are routed in illogical ways, if they require frequent or unnecessary stopping, or if they follow higher traffic speed and volume roadways. Bicycle boulevards have the potential to play a key role in a low-stress bikeway network, as they can complement, and provide strategic connections between, off-street paths, cycle tracks and bike lanes.

Signs and Pavement Markings- Easy to find and to follow

Signs and pavement markings create the basic elements of a bicycle boulevard. They indicate that a roadway is intended as a shared, slow street, and reinforce the intention of priority for bicyclists along a given route. Signs and pavement markings alone do not create a safe and effective bicycle boulevard, but act as reinforcements to other traffic calming and operational changes made to the roadway.

Speed Management- Slow motor vehicle speeds

Speed Management measures for bicycle boulevards bring motor vehicle speeds closer to those of bicyclists. Reducing speeds along the bicycle boulevard improves the bicycling environment by reducing overtaking events, enhancing drivers' ability to see and react, and diminishing the severity of crashes if they occur. Speed management is critical to creating a comfortable and effective bicycle boulevard.

Volume Management- Low or reduced motor vehicle volumes

Volume Management measures reduce or discourage thru traffic on designated bicycle boulevard corridors by physically or operationally reconfiguring select corridors and intersections along the route. On roadways with shared travel lanes such as bicycle boulevards, motor vehicle traffic volumes significantly impact bicyclist comfort. Higher vehicle volumes decrease comfort and may lead to a greater potential for conflicts, as well as a loss of perceived safety.

Minor Street Crossings- Minimal bicyclist delay

Minor Street Crossings for bicycle boulevards typically involve the intersection of two residential or local streets with low motor vehicle volumes and speeds. At intersections with local streets and minor collectors, bicycle boulevards should have right-of-way priority and reduce or minimize delay by limiting the number of stop signs along the route. Stretches of at least a half mile or more of continuous travel without stop sign control are desirable.

Major Street Crossings- Safe and convenient crossings

Major street crossings may pose a significant barrier the effectiveness and quality of a bicycle boulevard. Treatments of high quality should be selected to mitigate these barriers.

Offset Intersections- Clear and safe navigation

Offset Intersections are junctions at which two streets in a designated bicycle boulevard corridor align asymmetrically with an intersecting roadway. Since bicycle boulevards typically utilize local streets, bicyclists are likely to encounter discontinuities in the street grid that require them to turn briefly onto another street before resuming their original direction. Offset intersection treatments are categorized into treatments for major street crossing and treatments for minor street crossings.

Green Infrastructure- Enhancing environments

Incorporating green infrastructure into transit street design can improve water quality, detain stormwater flows, reduce the volume of stormwater runoff, and relieve burden on municipal water treatment systems.

Intersections

Bike Boxes- A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase.

Intersection Crossing Markings- Intersection crossing markings indicate the intended path of bicyclists. They guide bicyclists on a safe and direct path through intersections, including driveways and ramps. They provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane

Two-Stage Turn Queue Boxes- Two-stage turn queue boxes offer bicyclists a safe way make left turns at multi-lane signalized intersections from a right side cycle track or bike lane, or right turns from a left side cycle track or bike lane. Two-stage turn queue boxes may also be used at unsignalized intersections to simplify turns from a bicycle lane or cycle track, as for example, onto a bicycle boulevard. At midblock crossing locations, a two-stage turn queue box may be used to orient bicyclists properly for safe crossings. Multiple positions are available for queuing boxes, depending on intersection configuration.

Median Refuge Island- Median refuge islands are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings. Crossings of two-way streets are facilitated by allowing bicyclists and pedestrians to navigate only one direction of traffic at a time. Medians configured to protect cycle tracks can both facilitate crossings and also function as two-stage turn queue boxes.

Through Bike Lanes- For bicyclists traveling in a conventional bike lane or from a truncated cycle track, the approach to an intersection with vehicular turn lanes can present a significant challenge. For this reason it is vital that bicyclists are provided with an opportunity to correctly position themselves to avoid conflicts with turning vehicles.

Combined Bike lanes/ Turn Lane- A combined bike lane/turn lane places a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane. Shared lane markings or conventional bicycle stencils with a dashed line can delineate the space for bicyclists and motorists within the shared lane or indicate the intended path for through bicyclists.

Cycle Track Intersection Approach- The approach to an intersection from a cycle track should be designed to reduce turn conflicts for bicyclists and/or to provide connections to intersecting bicycle facility types. This is typically achieved by removing the protected cycle track barrier or parking lane (or lowering a raised cycle track to street level), and shifting the bicycle lane to be closer to or shared with the adjacent motor vehicle lane.

Signals

Bicycle Signal Heads- A bicycle signal is an electrically powered traffic control device that should only be used in combination with an existing conventional traffic signal or hybrid beacon.

Signal Detection and Actuation- Bicycle detection is used at actuated signals to alert the signal controller of bicycle crossing demand on a particular approach. Bicycle detection occurs either through the use of push-buttons or by automated means (e.g., in-pavement loops, video, microwave, etc).

Active Warning Beacon for Bike Route at Unsignalized intersection- Active warning beacons are user-actuated amber flashing lights that supplement warning signs at unsignalized intersections or mid-block crosswalks. Beacons can be actuated either manually by a push-button or passively through detection.

Hybrid Beacon for Bike Route Crossing of Major Street- A hybrid beacon, also known as a High-intensity Activated Crosswalk (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian and/or bicycle signal heads for the minor street.

Signing and Marking

Colored Bike Facilities- Colored pavement within a bicycle lane increases the visibility of the facility, identifies potential areas of conflict, and reinforces priority to bicyclists in conflict areas and in areas with pressure for illegal parking.

Colored Pavement Material Guidance- Colored pavement can be utilized either as a corridor treatment along the length of a bike lane or cycle track, or in limited locations as a spot treatment, such as a bike box, conflict area, or intersection crossing marking. Colored pavement for use within bikeways treatments may take the form of an overlay, when the colored material is placed on top of the pavement or embedded, when the colored material is mixed into the pavement.

Shared Lane Markings- Shared Lane Markings (SLMs), or “sharrows,” are road markings used to indicate a shared lane environment for bicycles and automobiles.

Bike Route Wayfinding- A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

4. Bicycle Network

The selection of routes is based on a person who bicycles user experience. The directness of the routes as well as the severity of slope have all been considered in route selection. In addition, population density and common destinations and activity hubs, whether they be to schools, community centers, areas with large clusters of jobs and business districts have all been identified as key areas for the bikeways. Distance has played a key role in this plan as well. Most bicyclists will not travel further than 3 miles per trip as part of their everyday routine. Therefore, the plan focuses on shorter distance trips. However, the plan does include the longer distance routes that connect between the major hubs. In the end, these bicycle have been devised not just for the small percentage of people who are comfortable riding with motor vehicles with no separation or protection, but for people of all ages and abilities who would bicycle if there were safe and comfortable routes available to them.

All streets were mapped out based on their percent grade.

- 10% grades—bike routes on streets with slopes greater than 10% were only considered if there was no reasonable alternative, but would continue for no more than one block in length.

- 13% grades—bike routes on streets with slopes greater than 13%



Bike Lane on Tower Avenue in Superior, WI. Commercial districts are regular destinations for people, and ideally set up to move around via a bicycle due to the close distances between destinations.

Map Legend Definitions

Bikeway Types

Future Bikeway Facility—this is any facility, on or off-street, that will require reconfiguration of the existing roadway design. Determination of the particular facility type will be made at the time of the project, and could possibly include pilot or interim designs.

Off Road Multi-Use Path—a minimum of 8-foot wide path that accommodates multiple self-propelled devices, including but not limited to, pedestrians walking, bicycles, scooters, strollers, skateboards, inline skates, etc.

On Street Bikeable Shoulder—a minimum of 3-foot wide shoulder space on the side of a roadway along roadways with low number of existing and potential bicyclists. Shoulder width should depend on a number of factors including traffic volumes, speed of traffic and natural topographical challenges.

On Street Bike Lane—a designated space on the roadway, usually through striping, signage and pavement markings.

On Street Shared Lane—a travel lane that is shared by both motorists and bicyclists.

Core Areas

Commercial Hub—

Complete Streets Priority Area—

Job Cluster—

1-mile Buffer Zone—

Destination

Civic Building—

Grocery Stores—

K-12 Schools—

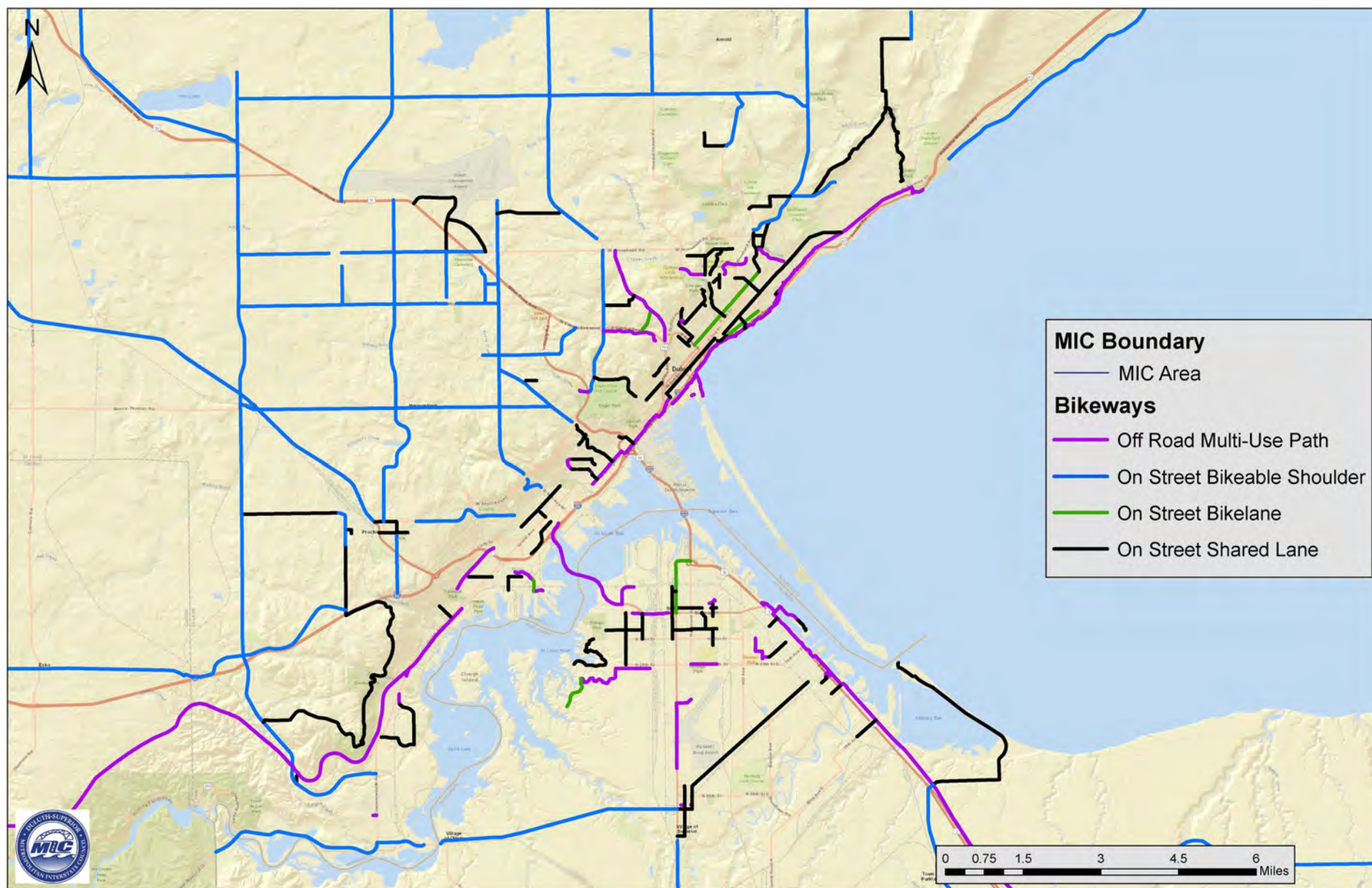
Key Destinations—

Study

Study Route—

Study Corridor—

All Ages & All Abilities Existing Bikeway System



Existing Bikeways System — all ages & abilities

The existing bikeways system depicts the routes that serve people of all ages and abilities currently. These routes take into account the type of bikeway, volume of traffic, speed of traffic and width of bikeway. Routes with existing wayfinding signage or bikeway pavement markings were not automatically included in this existing bikeway system map. For example, Kenwood Avenue in Duluth and 28th Street in Superior have sharrows marked on the pavement, yet both are excluded from this as neither bikeway is an all ages & abilities. Both streets have a high enough traffic volume that precludes it from being included. For reference, see the NACTO guide on “Designing for all ages and abilities”.

There are over 50 gaps in the existing bikeways network. The majority of these gaps have alternate routes available on streets with low traffic volumes and low speeds. However, some routes have no reasonable alternative for a person bicycling as part of their everyday routine.

Close the gaps, sooner than later

A list of the major gaps has been created. These are the top places to focus resources on closing these gaps as soon as possible. With time being of essence, solutions to closes these gaps may include trying out pilot projects or interim projects until a roadway is scheduled for major work or funding becomes available.

Existing Bikeways System Characteristics:

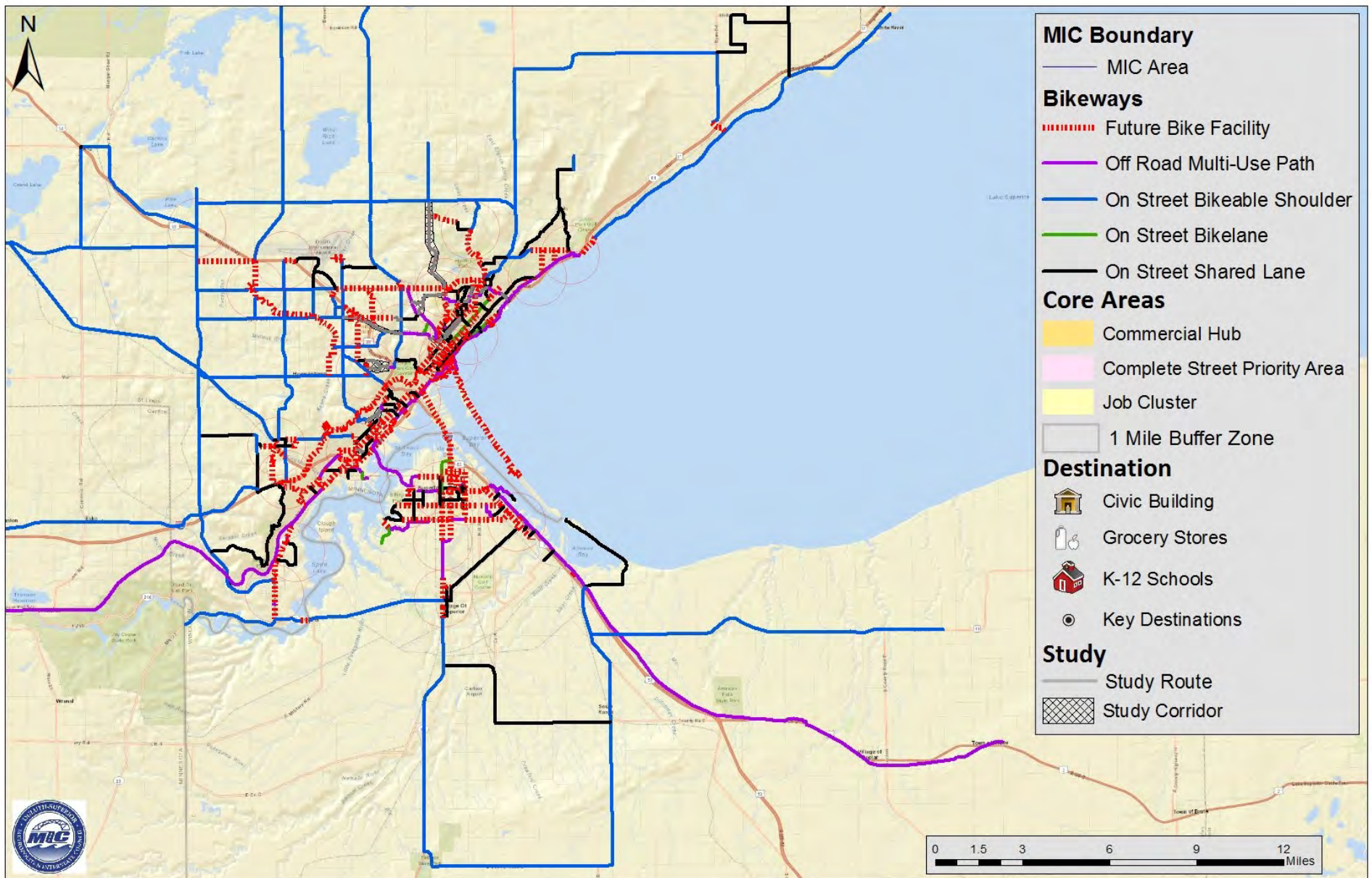
- Shared Lanes = 84 miles
- Conventional Bike Lanes = 5 miles
- Bikeable Shoulders = 218 miles
- Multi-use Paths = 64 miles

Total Mileage of Existing Bikeways = 371 miles

Top 10—Existing Major Gaps in the Bikeway System

1. London Rd/Superior St—between 6th Ave West to 14th Ave E and 21st Ave E to 26th Ave E
2. Lake Ave —Superior Street to Lift Bridge
3. St. Marie St—from Vermillion Rd to Carver Ave
4. Downtown Superior to UWS—Tower Ave to Catlin Ave
5. Grand Ave—63rd Ave W to Central Ave
6. Central Entrance—Basswood Ave to Decker Rd
7. Proctor—along 2nd Street from Hwy 2 to 9th Ave
8. Arrowhead Rd—from Kenwood Ave to Haines Rd
9. Woodland Ave—from 21st Ave E to Anoka St
10. Ugstad—Falcon Dr to Roosevelt Dr

Future 2045 Bikeways Map—25 year vision (click map to view interactive version)



Future Bikeways System—25-year vision

The Future Bikeways System map is a vision of what the system will ideally look like 25 years from today. Is it possible to complete this ambitious vision by then? Over the next 25 years, all major roadways in the area will have some level of improvement, from resurfacing to full reconstruction. This is the optimal time for incorporating bikeway facilities. Therefore, yes it is possible to accomplish this vision.

This plan identifies the existing various bikeway types as well as calls for new bikeways on streets that do not currently have one.

Future Bikeway Facility

The plan calls for a bikeway along this corridor. However, the type of bikeway is undetermined at this time. When it is determined to undertake a project, whether it be a stand alone bikeway project or part of a larger resurfacing or reconstruction project, then a deeper level of analysis will be conducted to determine the exact improvement.

The improvement could be an on or off-street or mix, but will require some level of reconfiguration of the existing roadway design. Determination of the particularly facility type will take robust public and stakeholder engagement and could possibly include demonstration projects as well as pilot or interim designs.

Future Bikeways System—25-year vision

The Future Bikeways System map is a vision of what the system will ideally look like 25 years from today. Is this ambitious vision possible to accomplish by then? Over the next 25 years, all major roadways in the area will have some level of improvement, from resurfacing to full reconstruction. This is the optimal time for incorporating bikeway facilities.

With a focus of this plan on shorter distance trips, all the major commercial and neighborhood hubs and job clusters have been identified in this plan. The following series of maps depicts each hub and the recommended routes in that hub. Most bicycle trips people will take are shorter distances and therefore focusing on and improving the routes with each hub area is priority.

Bikeway Types

This plan identifies the existing various bikeway types as well as calls for new bikeways on streets that do not currently have one. Here is the definitions of the various bikeway types:

Future Bikeway Facility—this is any facility, on or off-

Trip Generation—Activity Hubs

Trip Generation—Activity Hubs

With a focus of this plan on shorter distance trips, all the major commercial and neighborhood hubs and job clusters have been identified in this plan. The following series of maps depicts each hub and the recommended routes in that hub. Most bicycle trips people will take are shorter distances and therefore focusing on and improving the routes with each hub area is priority.

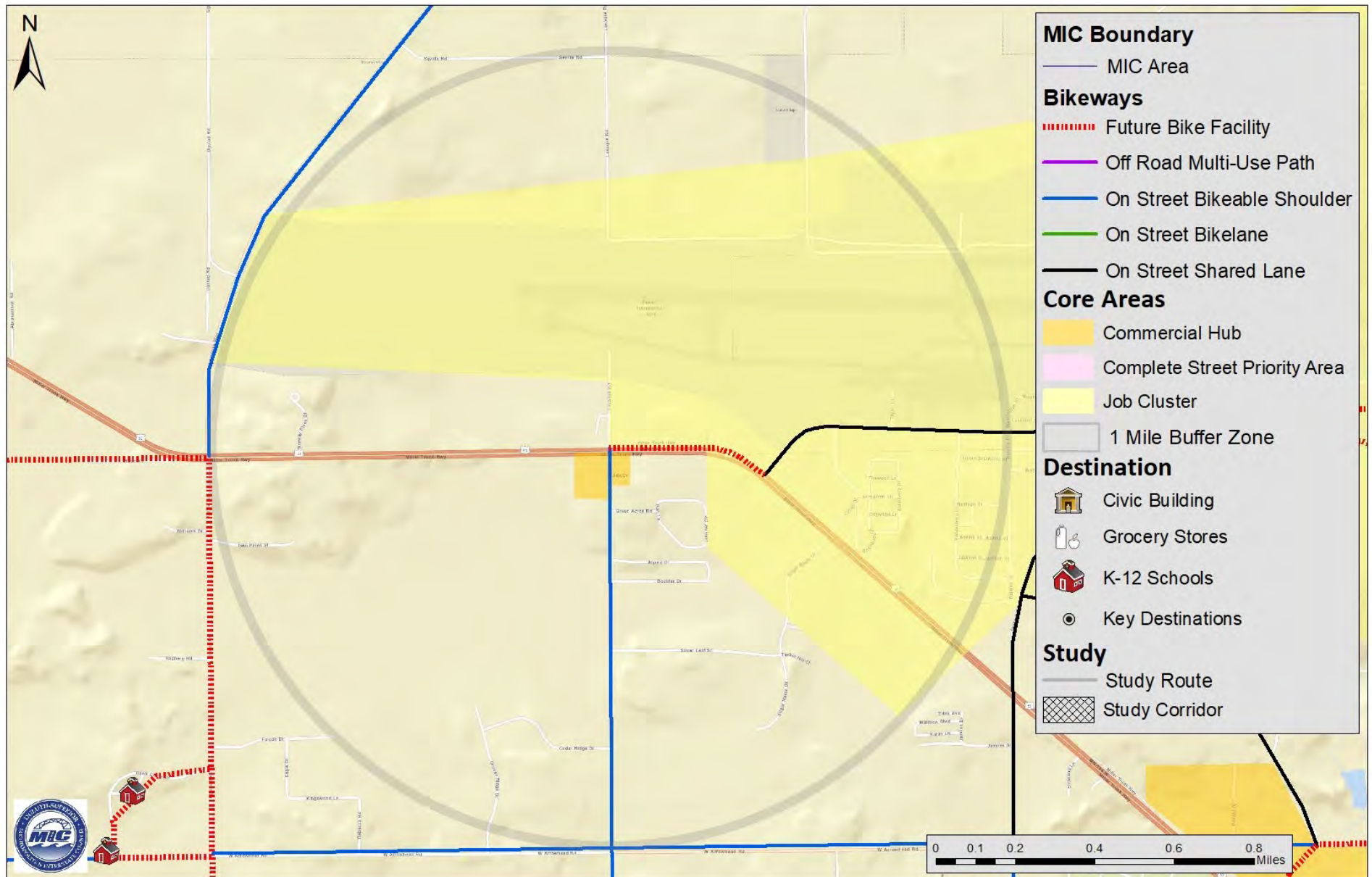
Future Bikeway Facility—this is any facility, on or off-street, that will require reconfiguration of the existing roadway design. Determination of the particular facility type will be made at the time of the project, and could possibly include pilot or interim designs.

Off Road Multi-Use Path—an 8-12-foot wide path that accommodates multiple self-propelled devices, including but not limited to, pedestrians walking, bicycles, scooters, strollers, skateboards, inline skates, etc.

On Street Bikeable Shoulder

Trip

MAP 4.1: Airport Zone



Top Priorities

1. Hermantown Community Center
2. Airport jobs to hub (closest) Hermantown market plan
3. Airport job cluster to residential/ Duluth Heights—
population density

One Mile Buffer Population: 1724

Notes:

The population within this airport zone encompasses a Federal Prison. Of the total population, 629 of the 1724 are inmates and not potential bicyclists.

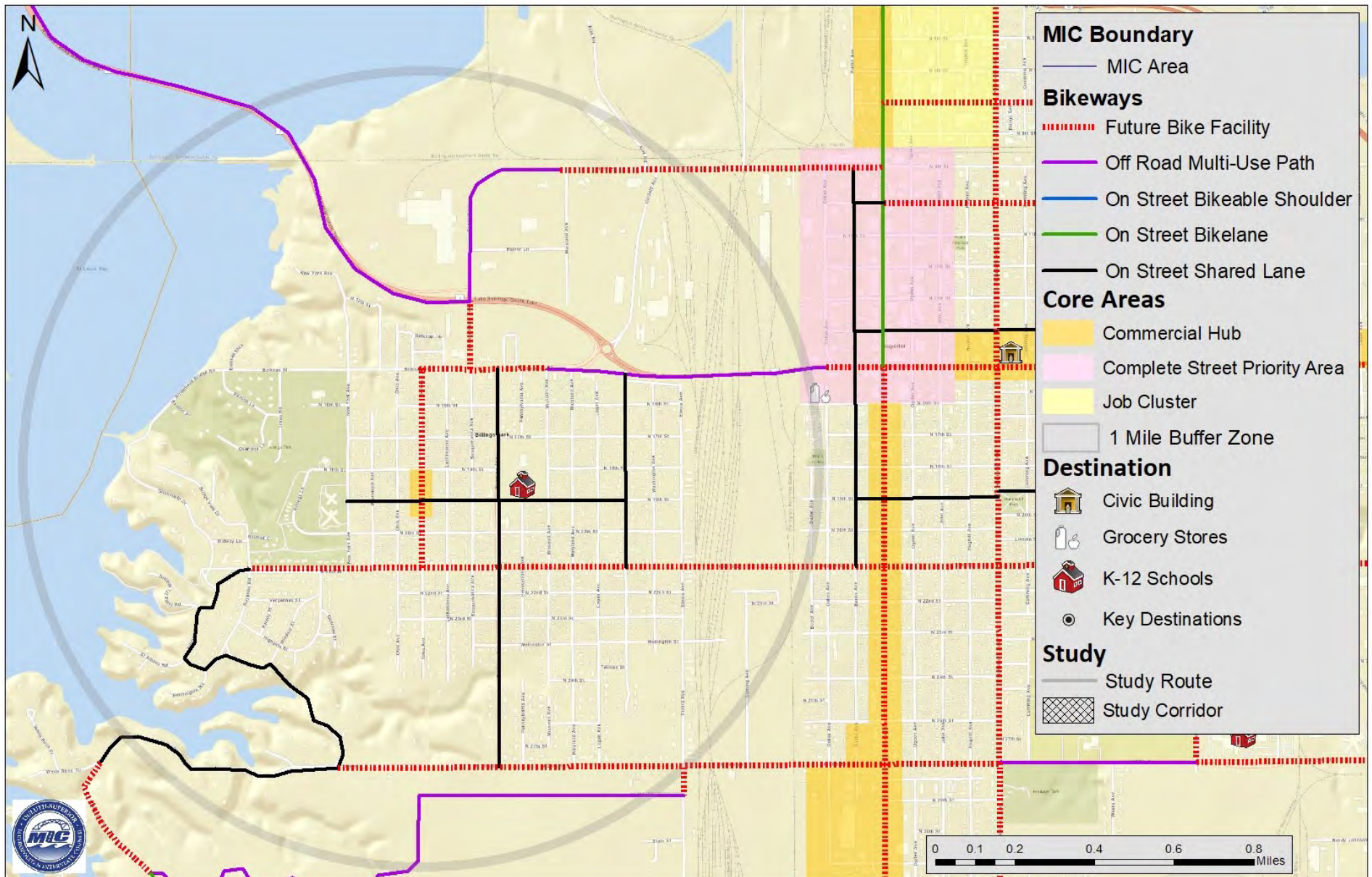
This hub primarily serves the airport area job cluster.

This commercial hub has a cluster of restaurants, banks, retail, and medical offices.

Key Gaps

- Lavaque Rd to Airport Rd

MAP 4.2: Billings Park—Superior, Wisconsin



Top Priorities

1. Connection to Cooper Elementary
2. Wider connection across railroad tracks
3. Bong Bridge connection

One Mile Buffer Population: 4195

Notes:

This hub primarily serves Cooper Elementary School and the surrounding residential area of Billings Park

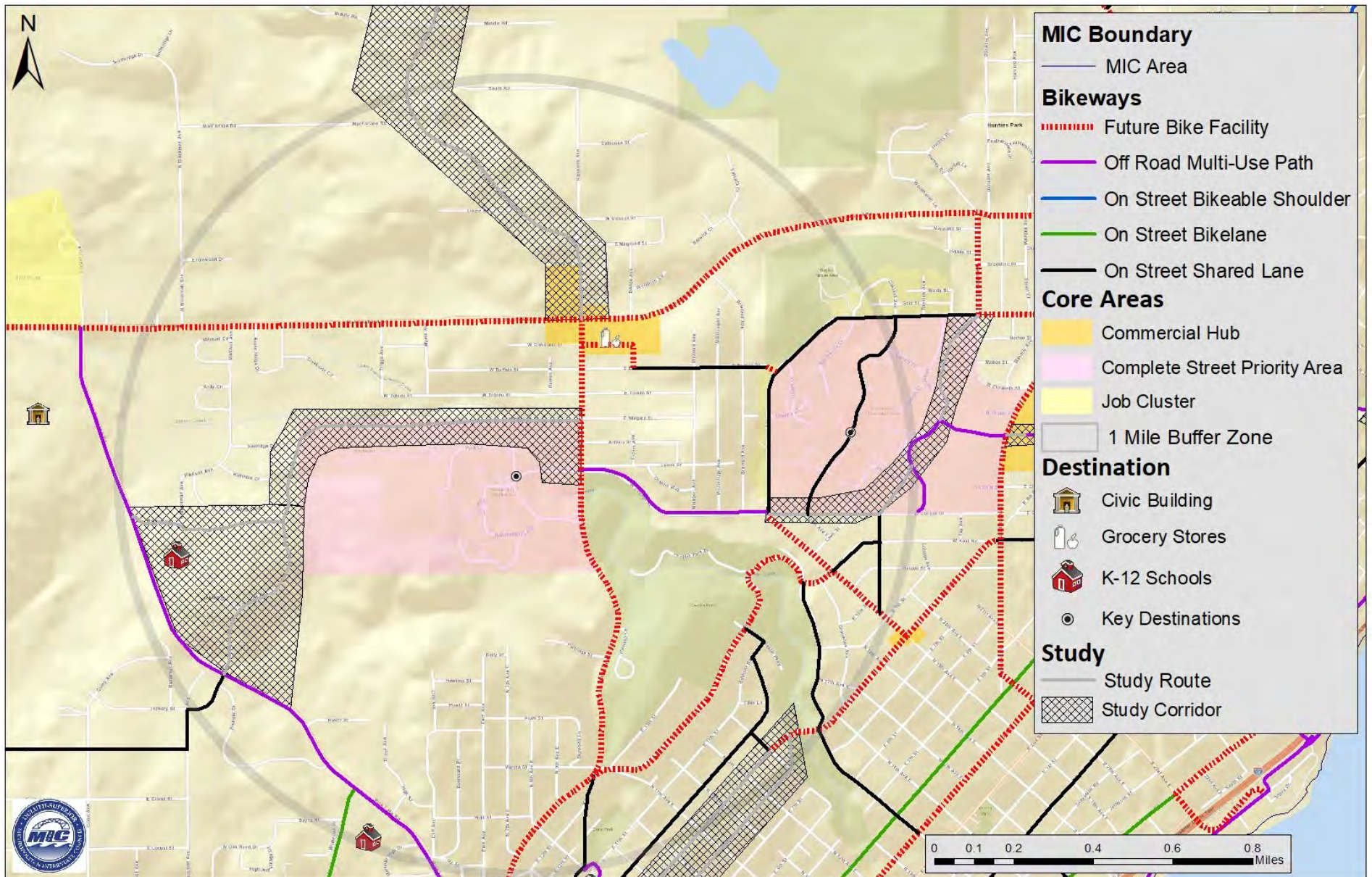
This commercial has a cluster of restaurants and retail.

* Allowing Billings Park residents to get around within their neighborhood.

Key Gaps

- N 21st St
- N 28th St
- Connection HWY 2

MAP 4.3: College of St. Scholastica —Duluth, Minnesota



Top Priorities

1. Extension of trail to center of campus
2. Connection to Duluth Heights/ Boulder Ridge/ Rice Lake Rd
3. Lowell school connection

One Mile Buffer Population: 10524

Notes:

This hub primarily serves the College of St. Scholastica and residents of the Kenwood area.

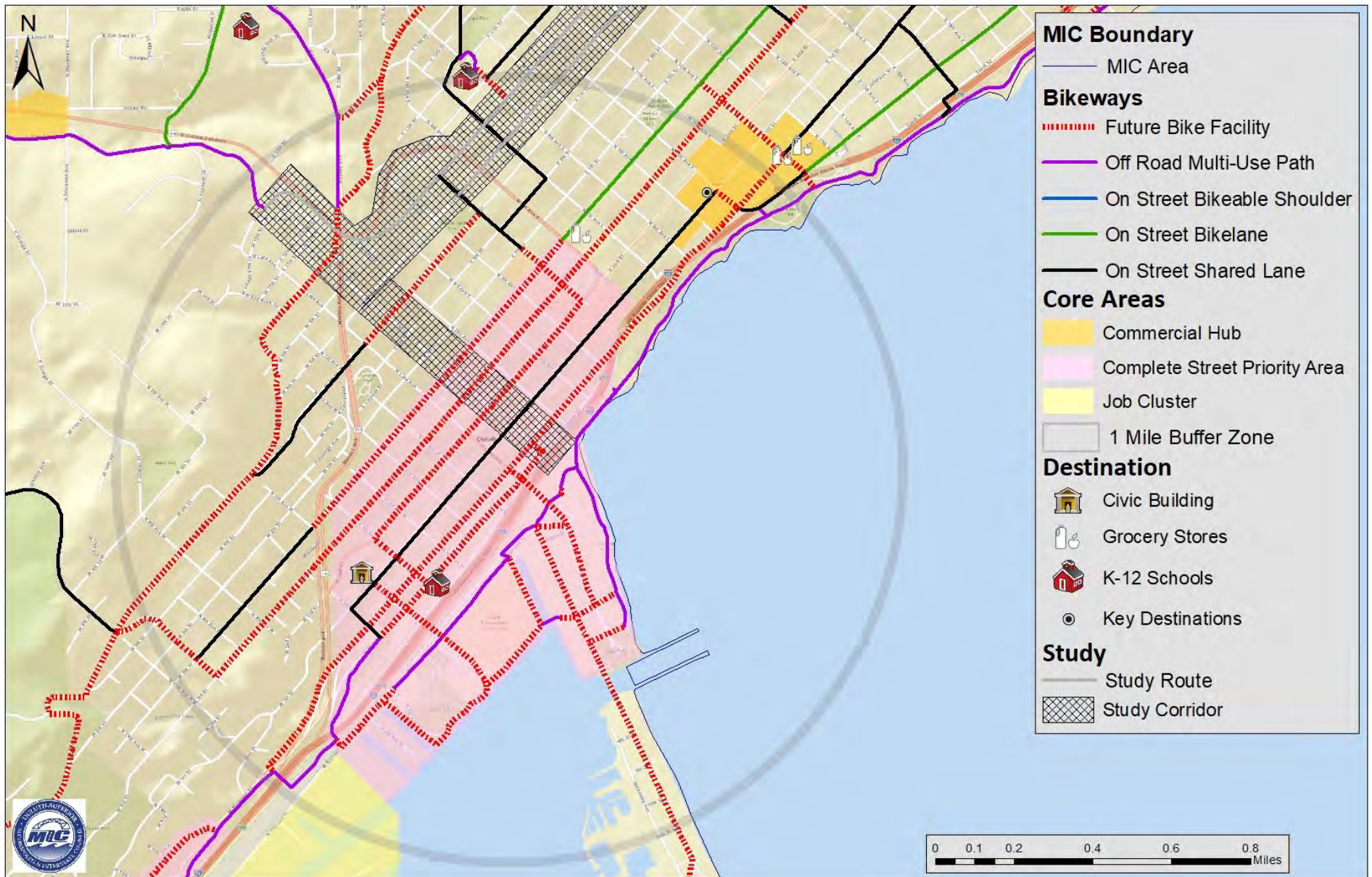
This commercial has a cluster of retail, banks, restaurants, grocery stores, and pharmacy.

Study Corridor

Key Gaps

- Arrowhead Rd
- Kenwood Ave
- Skyline Pkwy

MAP 4.4: Downtown Duluth



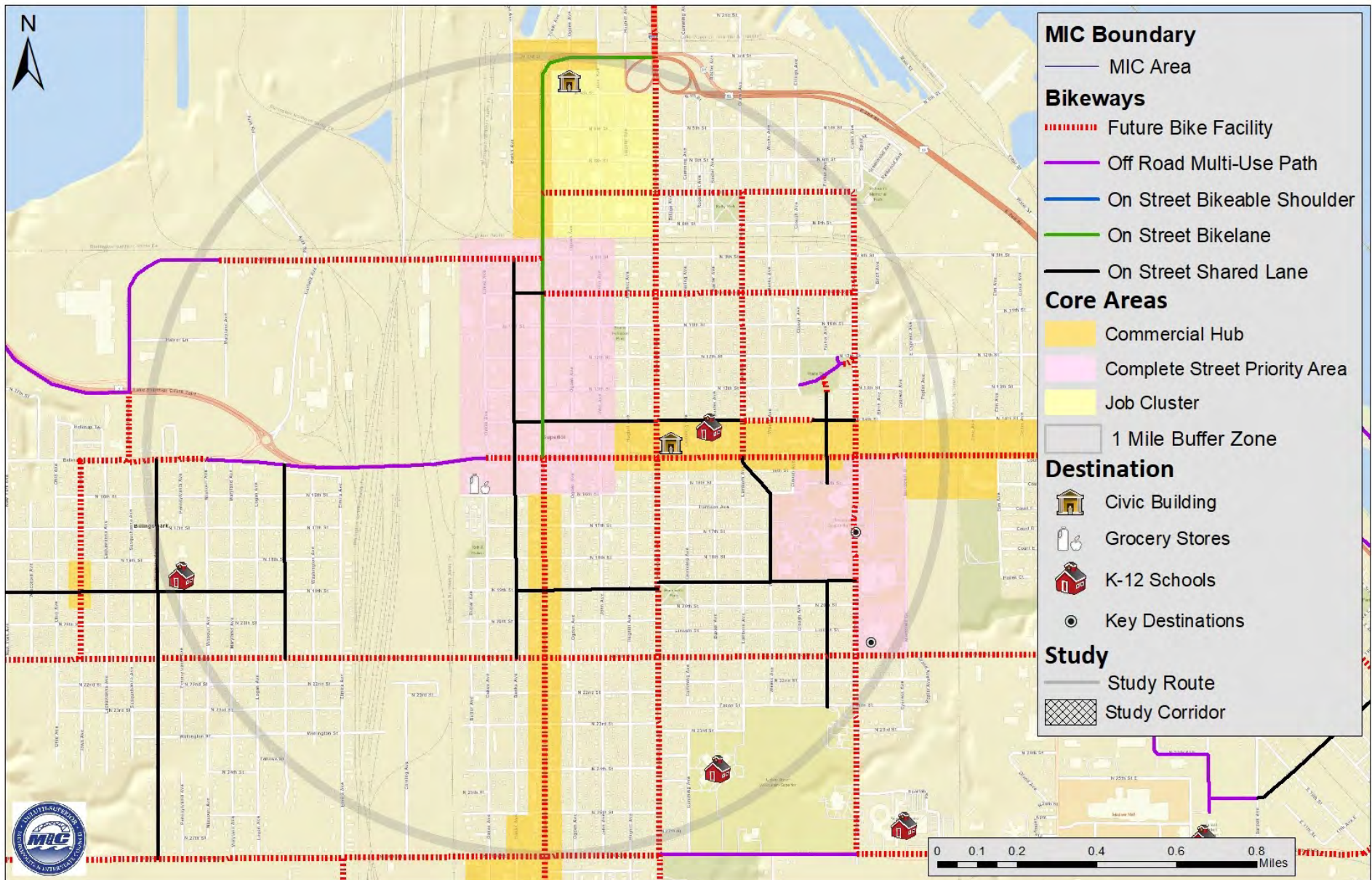
Top Priorities

1. Superior St– connecting the lot downtown connection trail through downtown to the East hillside
2. Lake Ave– Downtown to Canal Park
3. Hill Route– 3rd Ave W (DTC) to 2nd St to 5th St

One Mile Buffer Population: 9817

Key Gaps

MAP 4.5: Downtown Superior



Top Priorities

1. Belknap– East Downtown to UWS corridor
2. Tower Ave– Library to South
3. Blatnik Bridge connection

One Mile Buffer Population: 12260

Notes:

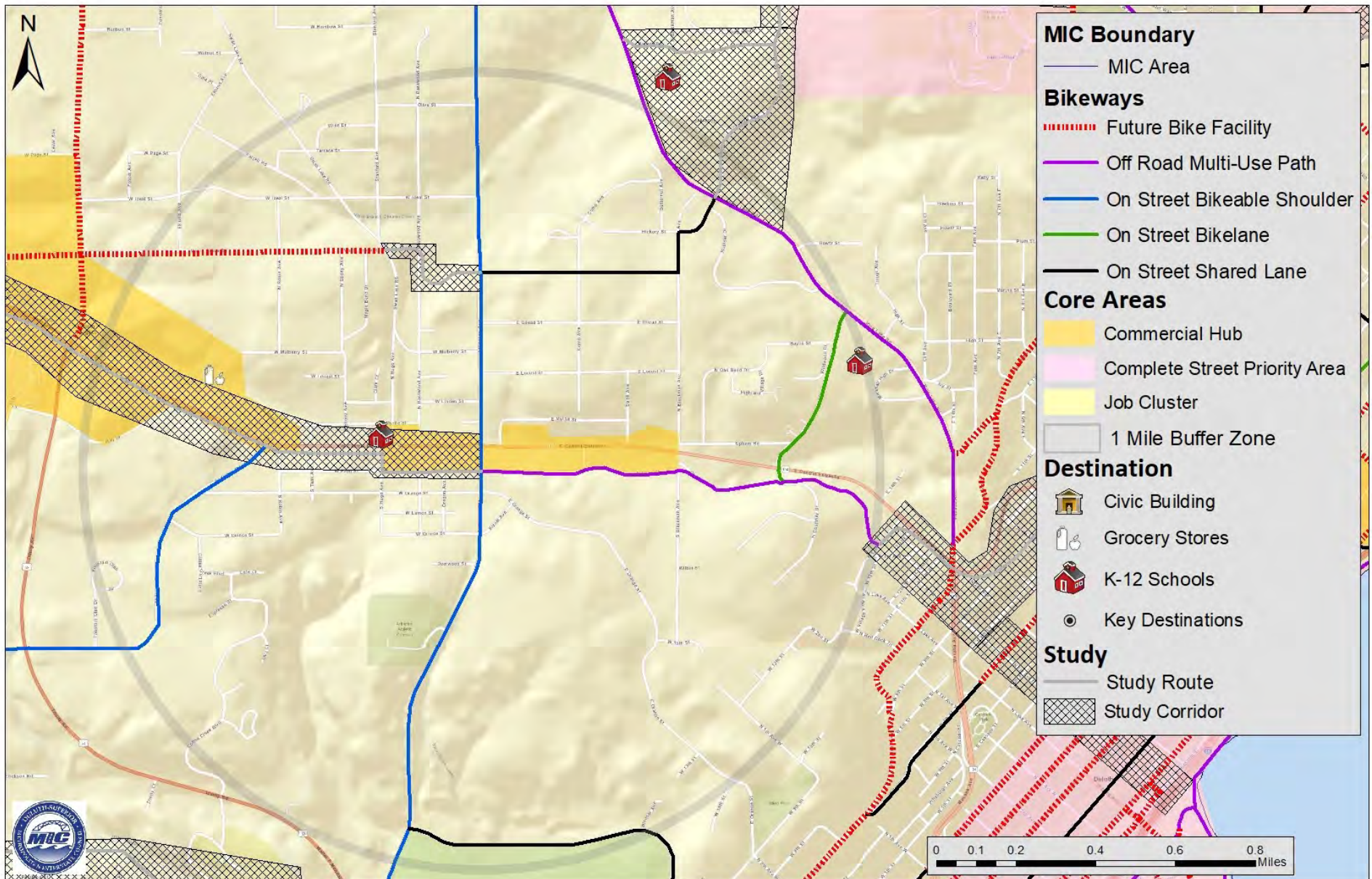
This hub primarily serves North End, Downtown, and Billings Park residents.

This commercial has a cluster of the downtown area, which includes the Belknap corridor and the Tower Ave corridor.

Key Gaps

- Right now there is no connectivity through the city
- Belknap St
- Hammond Ave
- N 21st St

MAP 4.6: Duluth Heights



Top Priorities

1. Central Entrance path extension
2. Duluth Heights neighborhood- Joshua Ave Trail
3. Campus connection trail extension of Duluth Heights

One Mile Buffer Population: 3852

Notes:

This hub primarily serves the Duluth Heights residents.

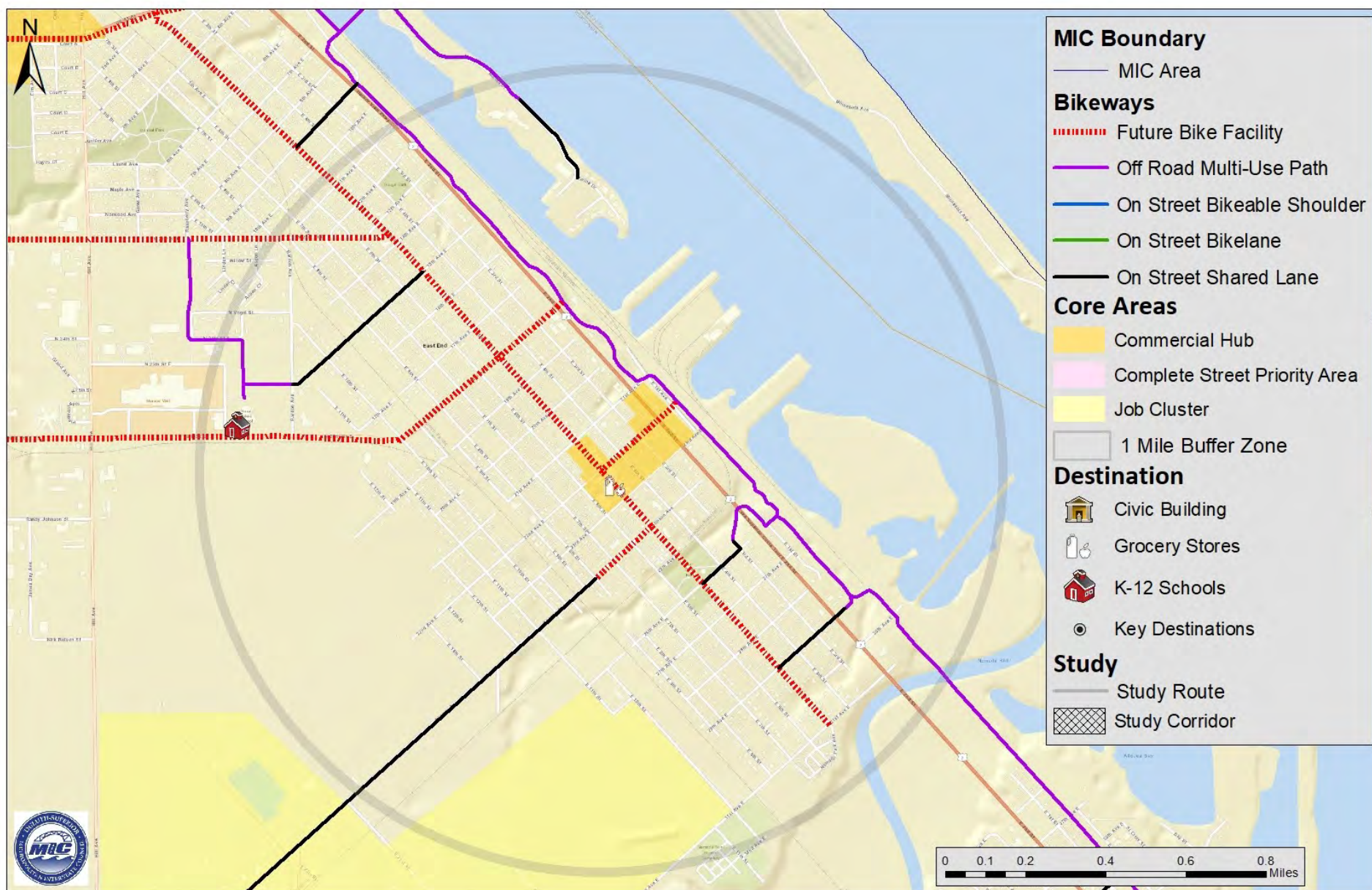
This commercial hub has the Miller Hill Mall and other restaurants , retail stores, and grocery stores.

Study Corridor

Key Gaps

- Maple Grove Rd

MAP 4.7: East End—Superior, Wisconsin



Top Priorities

1. 5th St Bikeway
2. 28th St Bikeway– school friendly
3. Grocery store connection across Hwy 2/53

One Mile Buffer Population: 3782

Notes:

This hub primarily serves the East End residents.

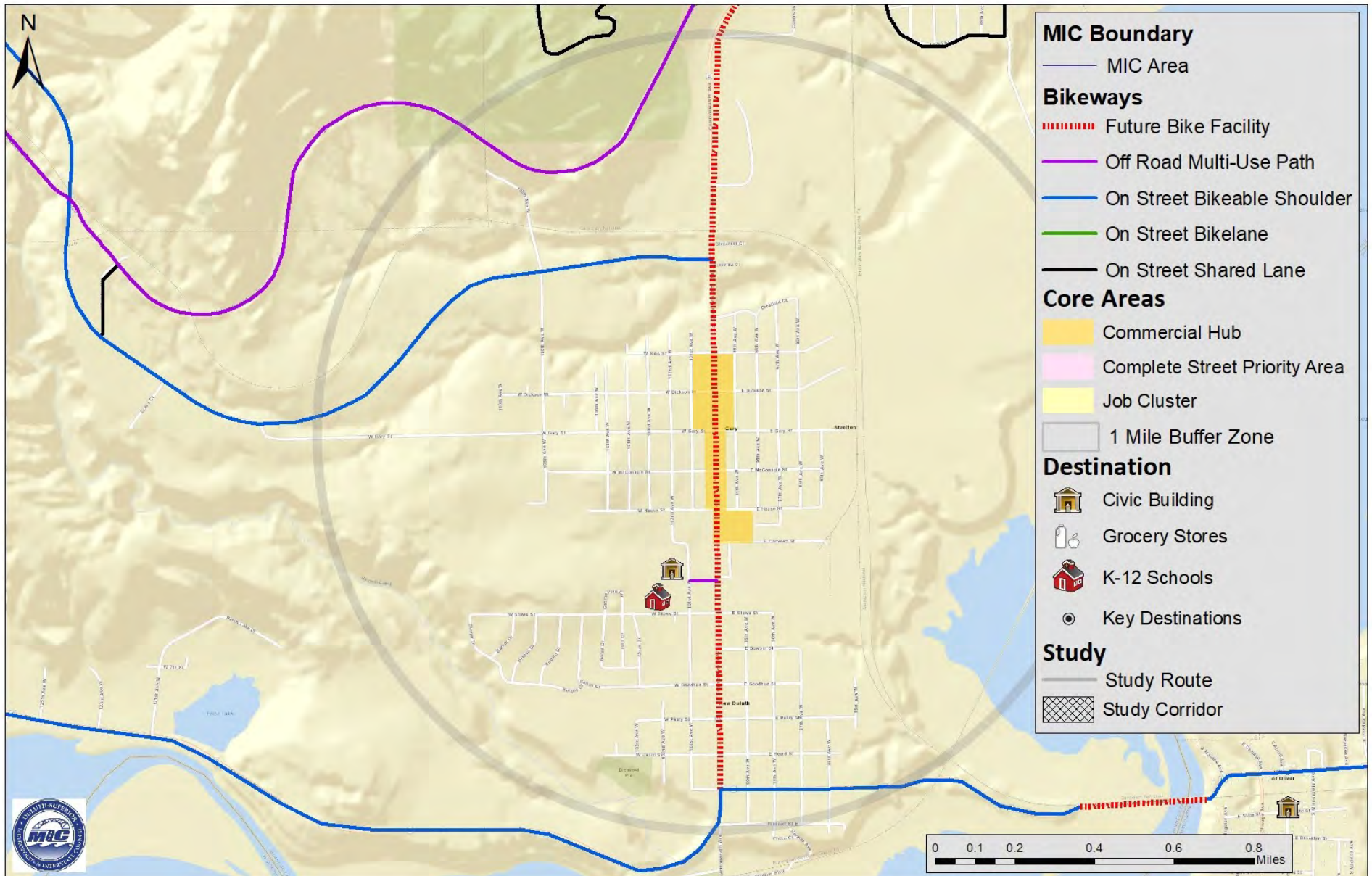
This commercial has a cluster of restaurants, hardware store, grocery stores, and banks.

* Allowing East End residents to get around within their neighborhood.

Key Gaps

- E 5th St
- 22nd Ave E
- 18th Ave E

MAP 4.8: Gary-New Duluth—Duluth, Minnesota



Top Priorities

- 1. Hwy 23 Bikeway
- 2. Stone School—bike friendly crossings at Hwy 23
- 3. Connection to Morgan Park

One Mile Buffer Population: 2661

Notes:

This hub primarily serves the Gary– New Duluth residents.

This commercial has a cluster of restaurants, retail, and grocery stores.

* Allowing the Gary-Duluth residents to get around within their neighborhood.

Key Gaps

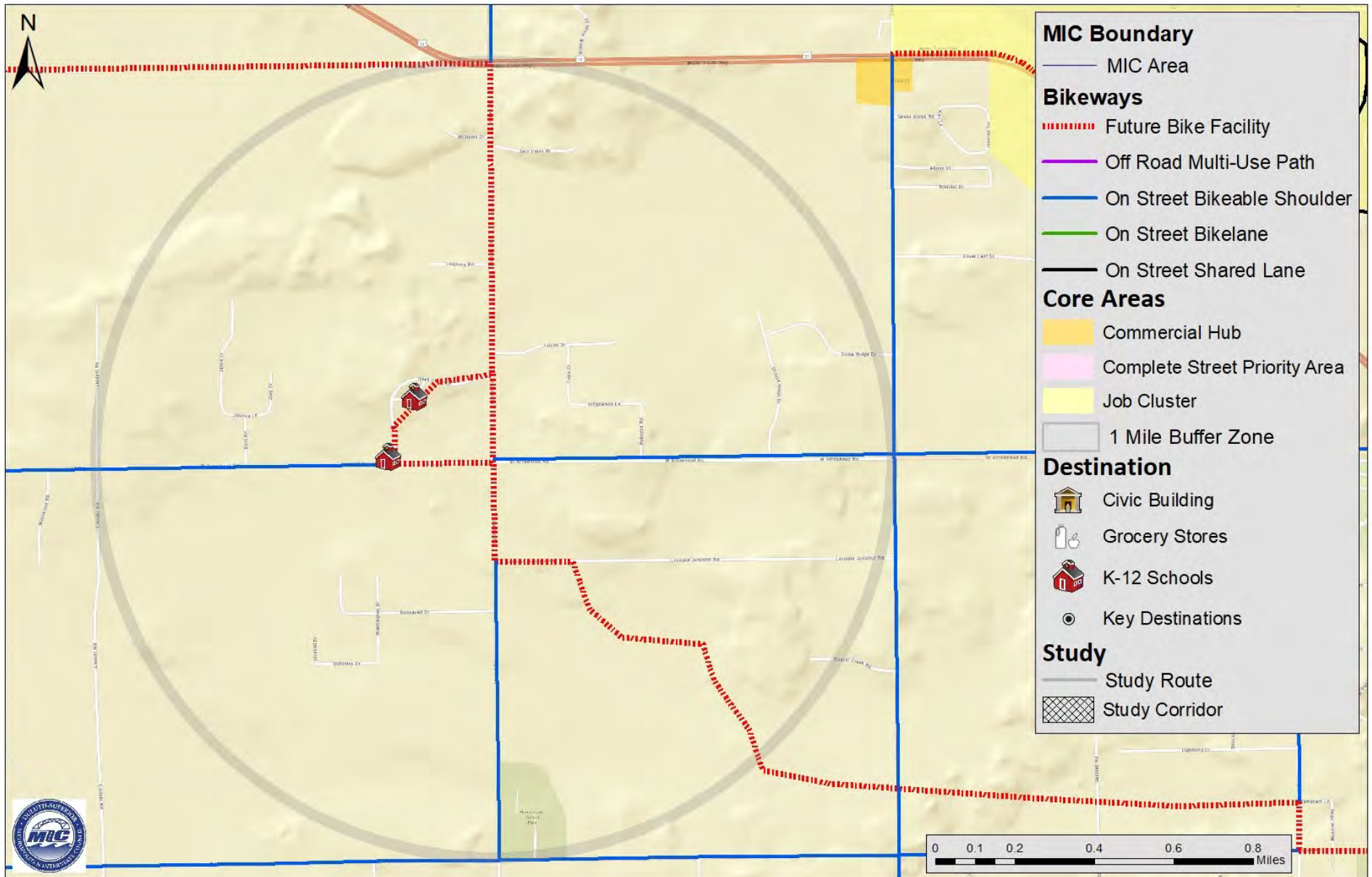
- Commonwealth Ave

Route Attribute	I-35 to Zoo (Routes 1 & 3 both ways)	Zoo to Gary/ NewDuluth (Route 2 both ways)
Avg number of bus trips per day	66 westbound 68 eastbound	28 westbound 30 eastbound
Avg bus headway (minutes)	18 minutes	42 minutes
Avg bus occupancy	48% capacity	28% capacity

Figure X.X | Characteristics of Highway 23 Transit Service

Bus service is more frequent and more heavily utilized east of the transit turnaround at the Lake Superior Zoo.

MAP 4.9: Hermantown Community Center Area



Top Priorities

1. Bike path on school campus
2. Connections to immediately surrounding neighborhoods
3. Arrowhead and Ugstad intersection
4. Hermantown Trail

One Mile Buffer Population: 1080

This hub primarily serves the Hermantown Community

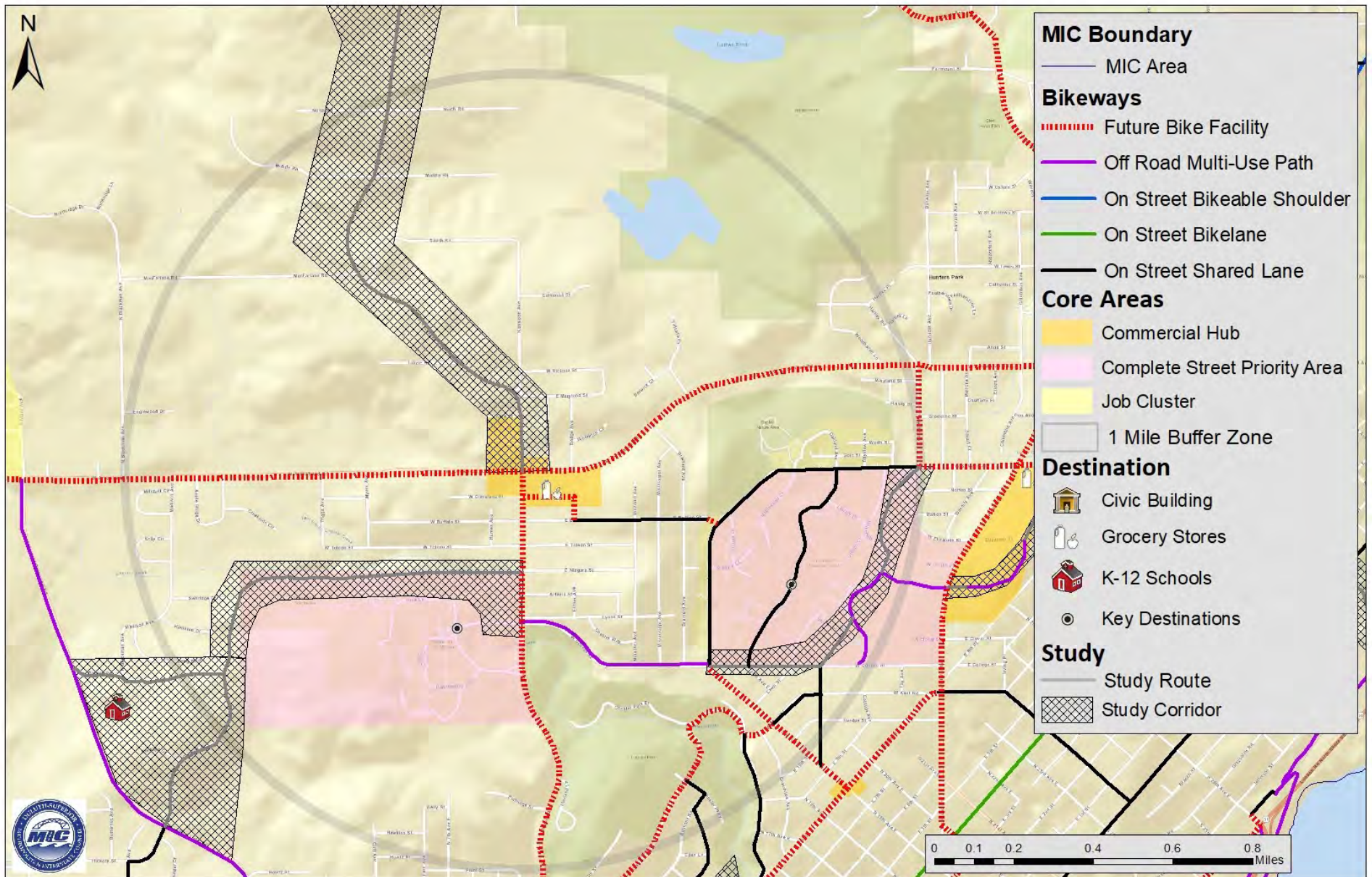
This hub is the central location of the Hermantown School District.

* Allowing the Hermantown district to have connectivity within the city.

Key Gaps

- Ugstad Rd
- Hermantown School District
-

MAP 4.10: Kenwood



Top Priorities

1. Kenwood Ave
2. Kenwood and Arrowhead Rd
3. Kenwood shopping center to UMD

One Mile Buffer Population: 8980

Notes:

This hub primarily serves the residents of the Kenwood area and students of UMD and St. Scholastica.

This commercial has a cluster of retail , banks, restaurants, grocery stores, and pharmacy.

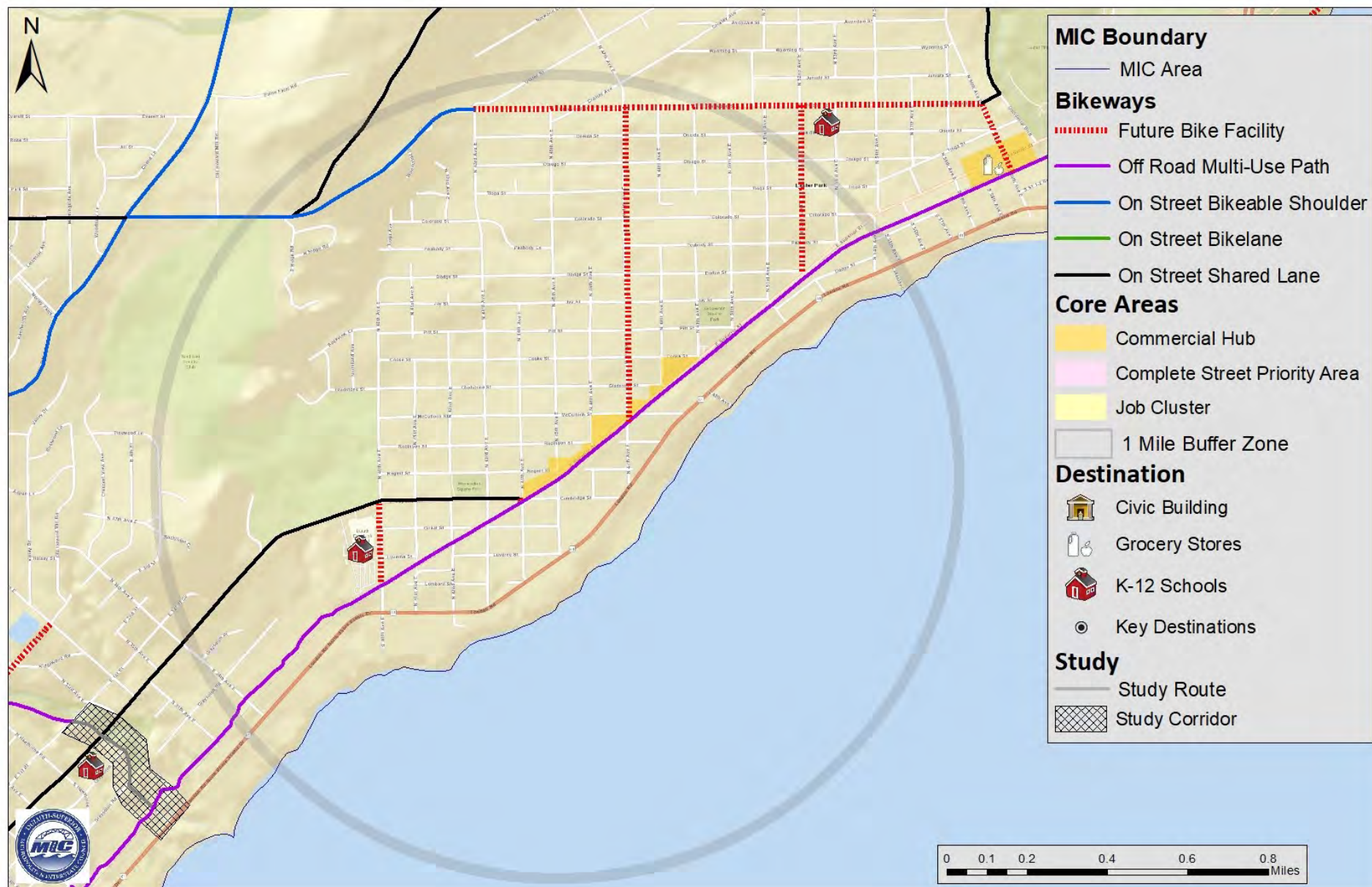
Study Corridor

* Allowing Kenwood residents to get around within their neighborhood.

Key Gaps

- Arrowhead Rd
- Kenwood Ave

MAP 4.11: Lakeside—Duluth, Minnesota



Top Priorities

1. East High School connection– 40th Ave E– Superior St
2. Glenwood– upper to Jean Duluth Rd / Snively Rd
3. Lakewalk connections-curb ramp– connection
4. 47th Ave E bike lanes

One Mile Buffer Population: 6210

Notes:

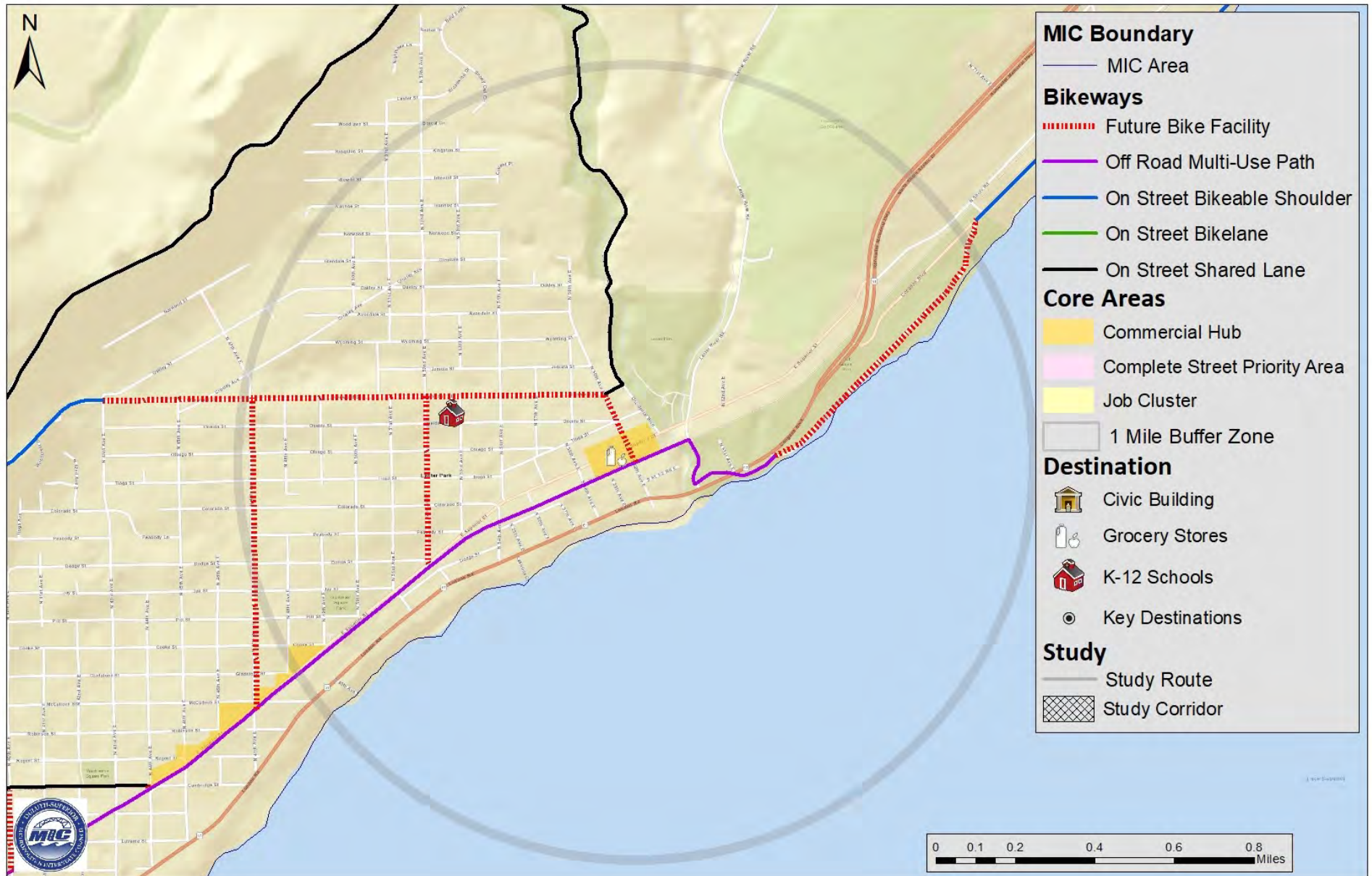
This hub primarily serves the Lakeside residents.

This commercial has a cluster of restaurants, retail, grocery stores, banks, hardware stores, and gyms.

Key Gaps

- Glenwood St
- N 45th Ave E
- N 40th Ave E

MAP 4.12: Lester Park—Duluth, Minnesota



Top Priorities

1. Lakwalk connection– Super One– curb ramp to avenue
2. Lower Glenwood to Lester Park elementary
3. 52nd Ave to Lester Park elementary

One Mile Buffer Population: 4209

Notes:

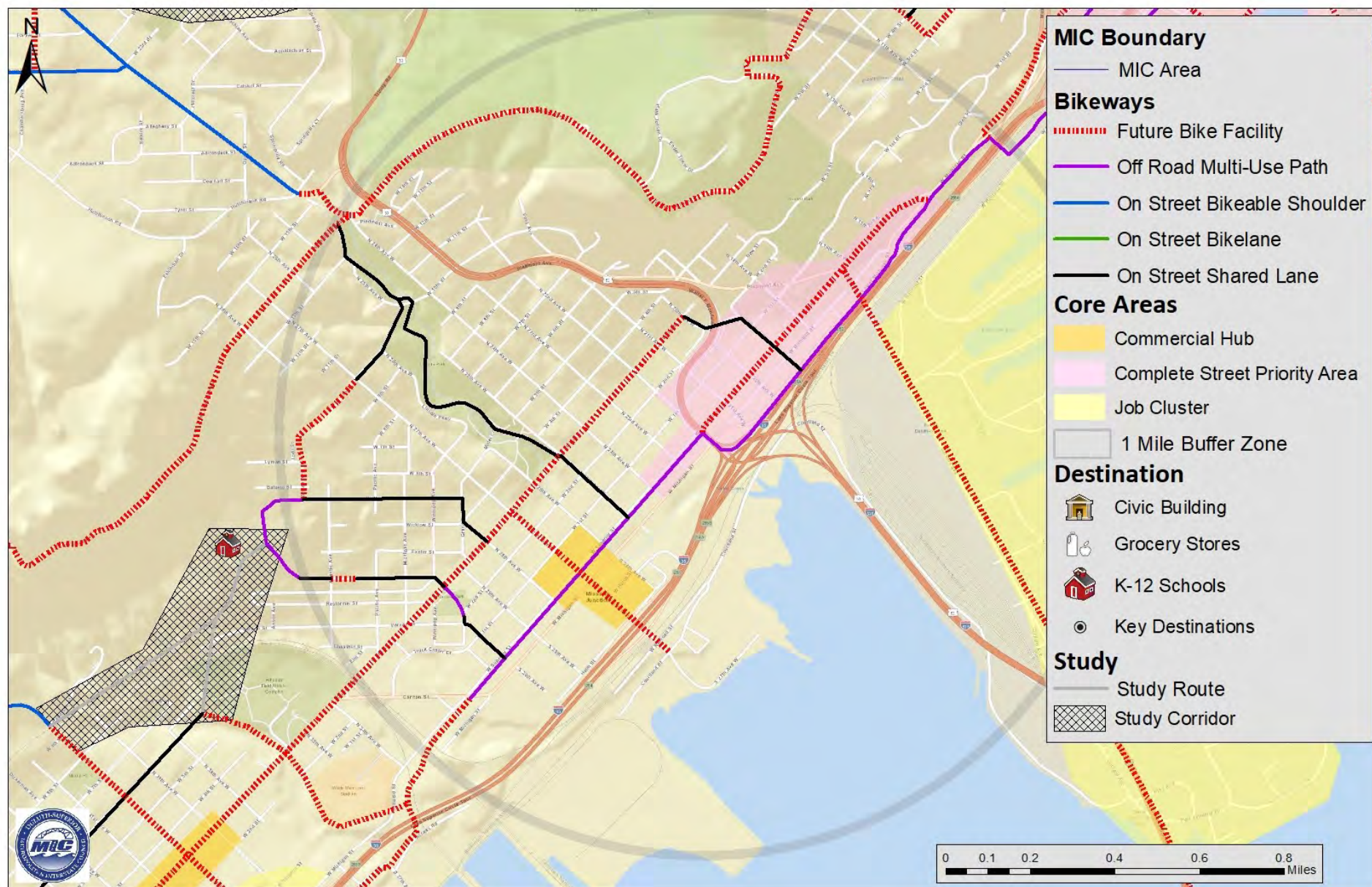
This hub primarily serves the Lester Park residents.

This commercial has a cluster of restaurants, retail, grocery stores , banks, hardware stores, and gyms.

Key Gaps

- N 52nd Ave E
- Glenwood St
- N 60th Ave E

MAP 4.13: Lincoln Park—Duluth, Minnesota



Top Priorities

1. 3rd St Bikeway
2. Lincoln Park Craft District
3. Downtown/ Mesaba Ave connection

One Mile Buffer Population: 6237

Notes:

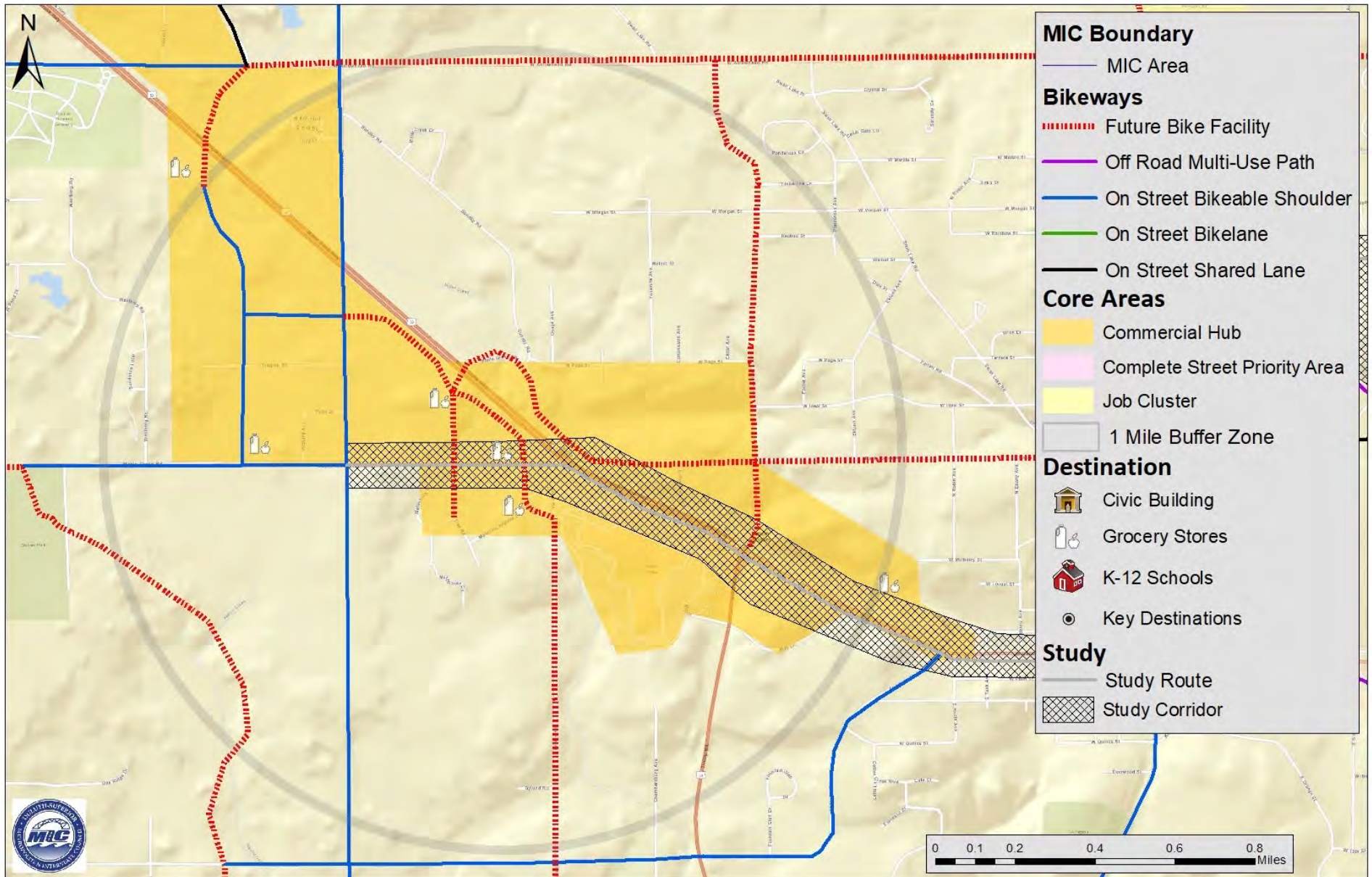
This hub primarily serves the Lincoln Park residents and connection to a growing hub.

This commercial has a cluster of restaurants, retail, grocery stores, and banks.

Key Gaps

- W 3rd St
- N 27th Ave W
- W Superior St

MAP 4.14: Miller Hill Commercial Center—Duluth, Minnesota



Top Priorities

1. Central Entrance
2. Hwy 53/ Miller Trunk Hwy crossing
3. Maple Grove

One Mile Buffer Population: 2011

Notes:

This hub primarily serves the Duluth Heights residents, urban dense, and workers of the Miller Hill Mall.

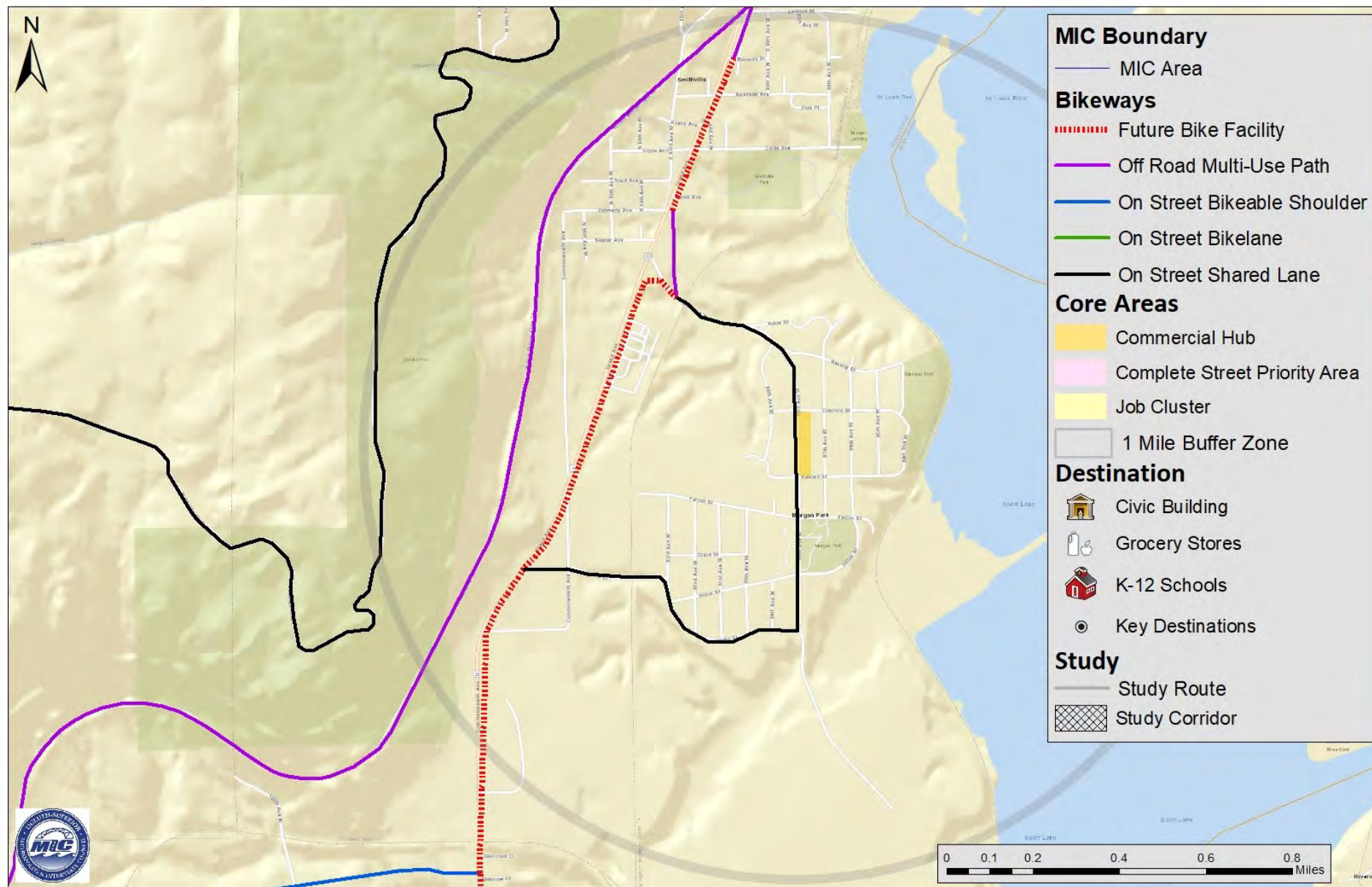
This commercial hub has the Miller Hill Mall and other restaurants, retail stores, and grocery stores.

Study Corridor

Key Gaps

- Mall Dr
- Burning Tree Rd
- Maple Grove Rd

MAP 4.15: Morgan Park—Duluth, Minnesota



Top Priorities

1. Hwy 23 to the North
2. Hwy 23 to the south– business district and school
3. Main route through Morgan Park

One Mile Buffer Population: 2281

Notes:

This hub primarily serves the Morgan Park residents.

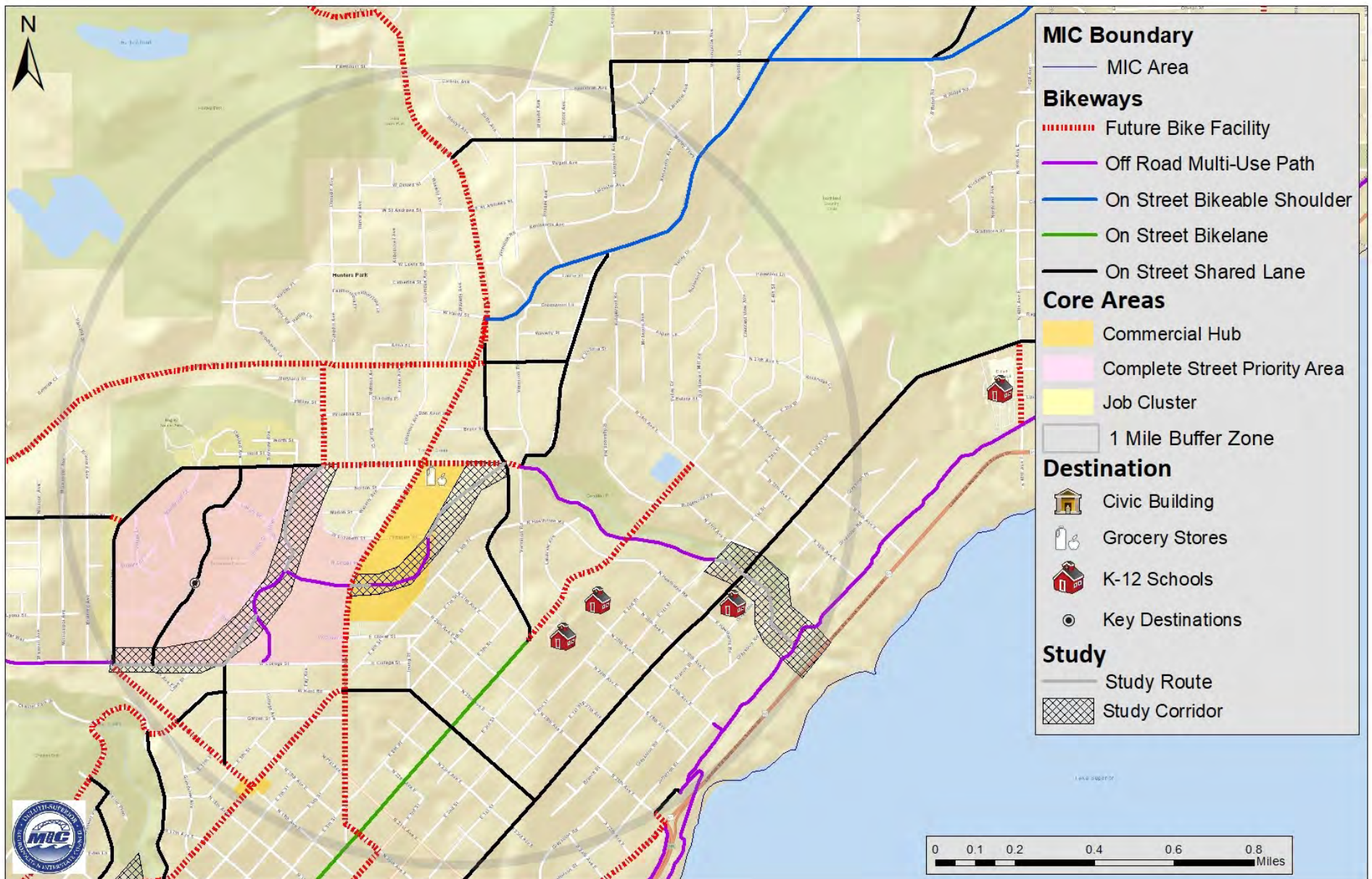
Provides the commercial cluster of Morgan Park.

* Allowing Morgan Park residents to get around within their neighborhood.

Key Gaps

- Hwy 23

MAP 4.16: Mount Royal—Duluth, Minnesota



Top Priorities

1. St Marie St
2. Woodland Ave
3. Bluestone connection to Mount Royal
4. 4th St bike lane extension

One Mile Buffer Population: 12091

Notes:

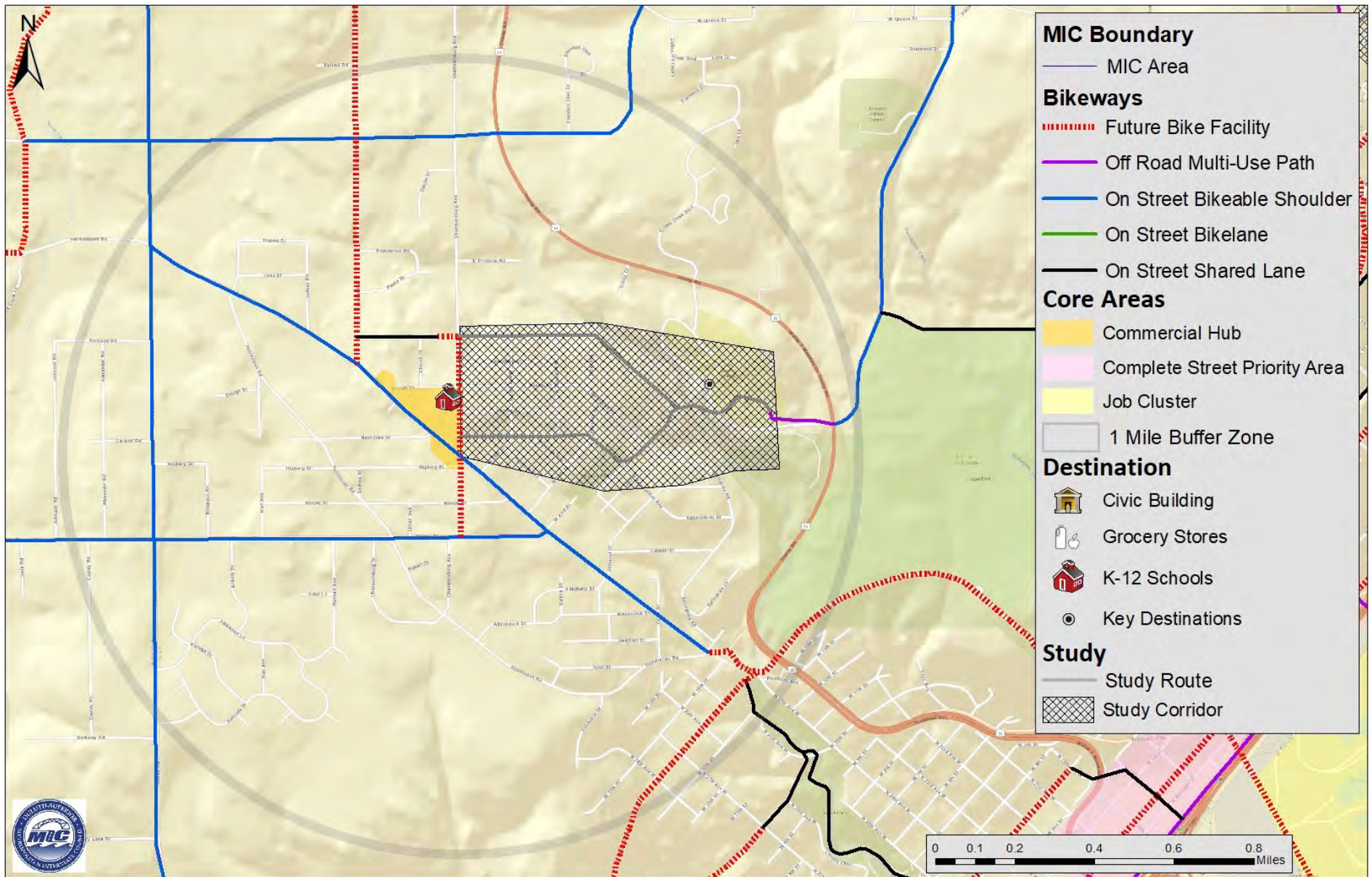
This hub primarily serves UMD students, Chester Park residents and three elementary schools.

This commercial hub has the cluster of good and services that the Woodland corridor offers.

Study Corridor

Key Gaps

MAP 4.17: Piedmont—Duluth, Minnesota



Top Priorities

1. Chambersburg Ave
2. Lake Superior College connection
3. Piedmont Ave

One Mile Buffer Population: 4644

Notes:

This hub primarily serves the Piedmont residents.

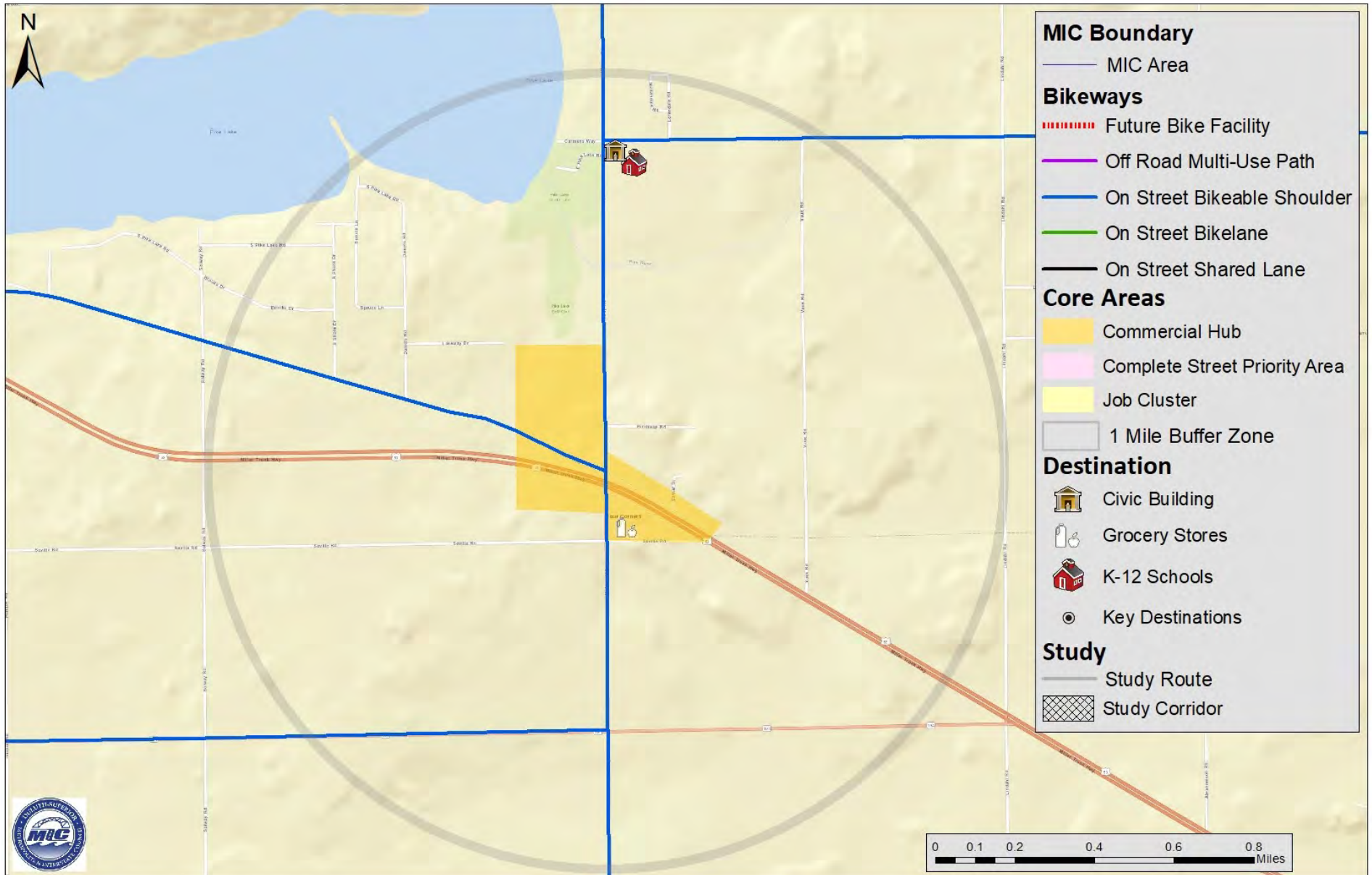
This commercial hub has a cluster of restaurants, retail, and medical offices.

Study Corridor

* Allowing Piedmont residents to get around within their neighborhood.

Key Gaps

MAP 4.18: Pike Lake



Top Priorities

1. Hwy 53 intersection at Midway Rd
2. Midway Rd to Pike Lake Schools
3. Old Miller Trunk Hwy
4. Midway and Martin Rd intersection

One Mile Buffer Population: 891

Notes:

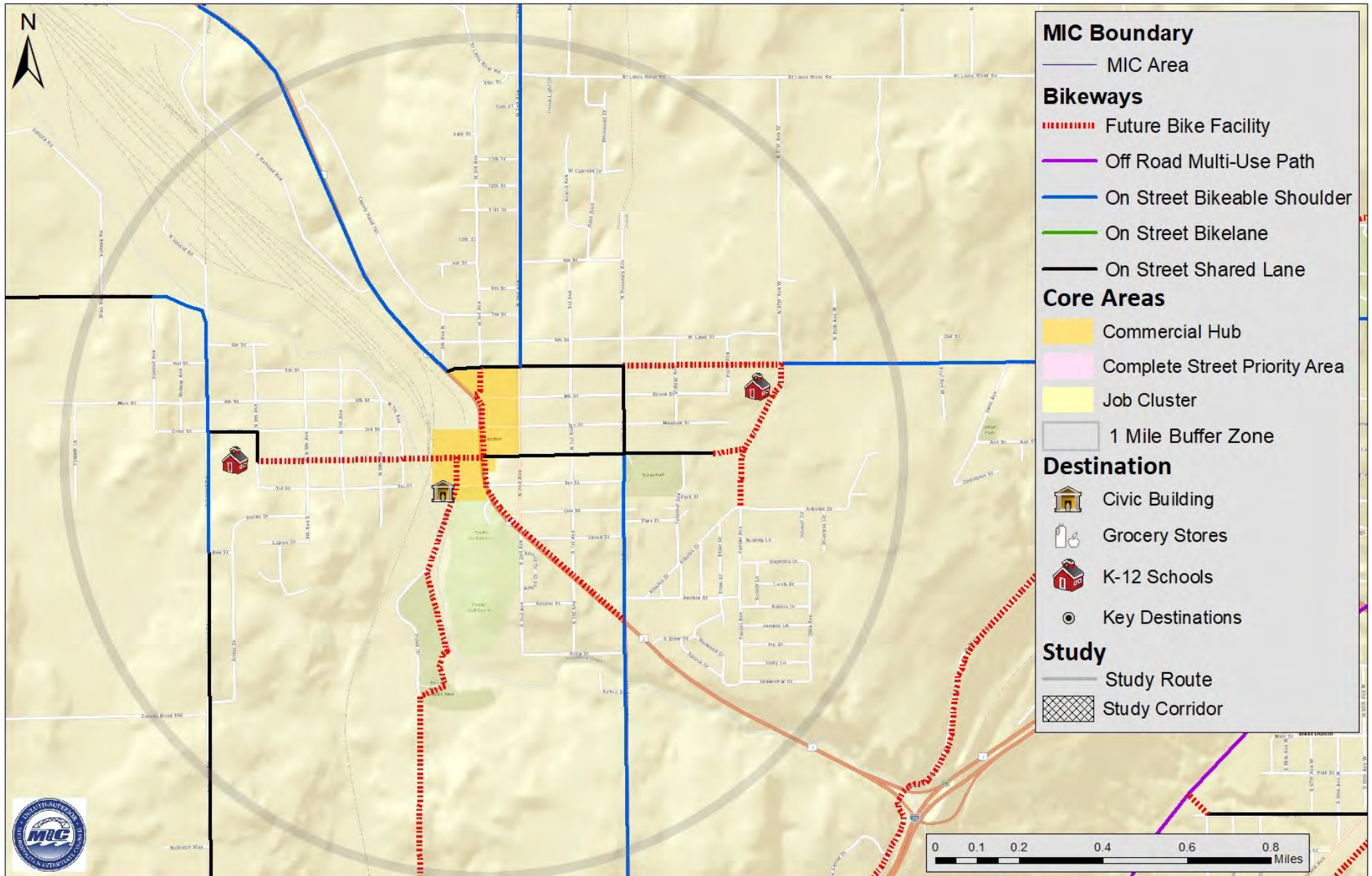
This hub primarily serves the Pike Lake residents.

This commercial hub has cluster of restaurants, banks, retail grocery stores, and medical offices.

* Allowing Pike Lake residents to get around within their neighborhood.

Key Gaps

MAP 4.19: Proctor



Top Priorities

1. 2nd St to high school and middle school
2. Connection to Bay View elementary
3. Hwy 2– downtown Proctor

One Mile Buffer Population: 4079

Notes:

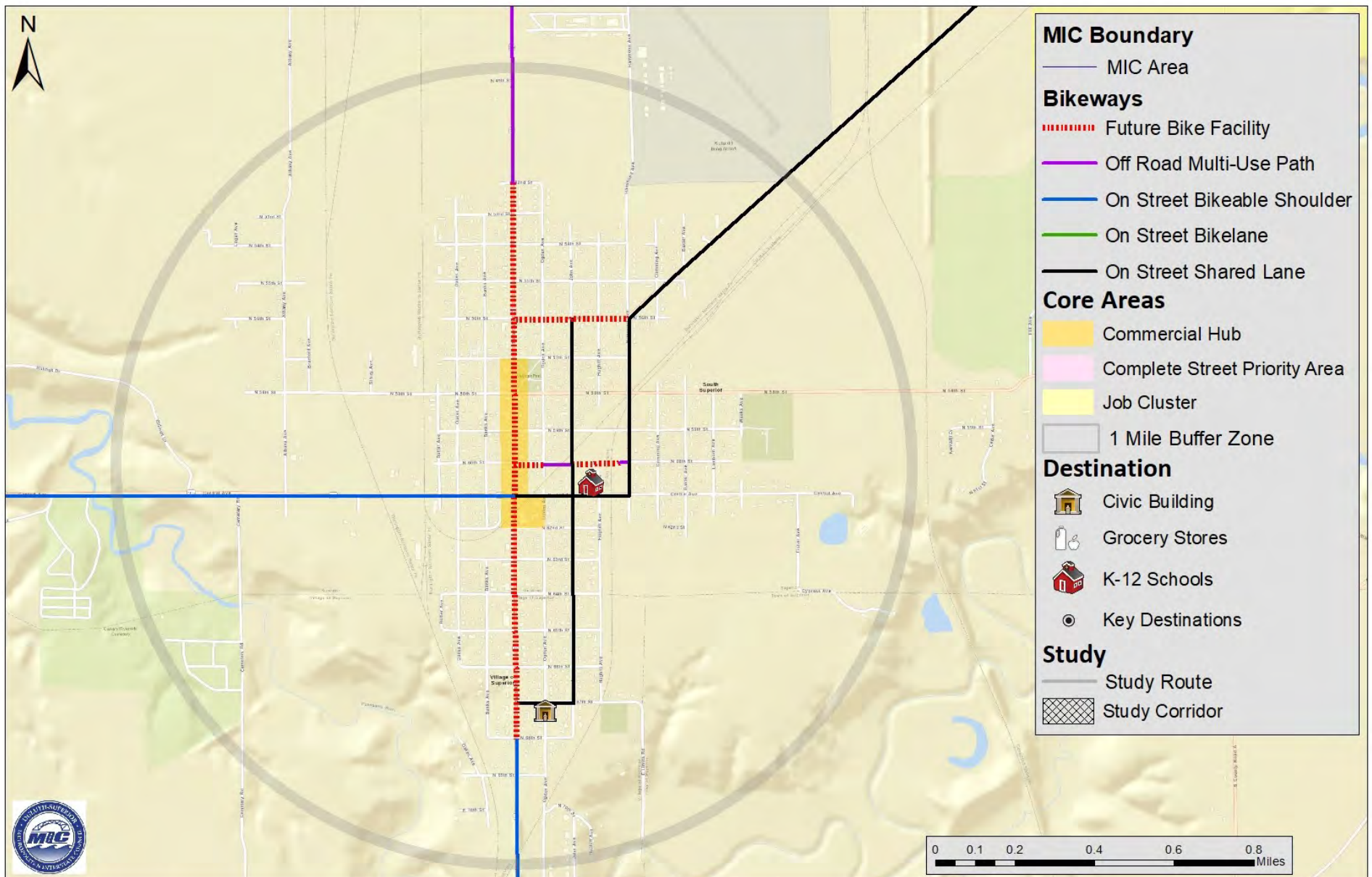
This hub primarily serves the city of Proctor residents.

This commercial hub has cluster of restaurants, banks, retail, and hardware stores.

* Allowing Proctor residents to get around within their neighborhood.

Key Gaps

MAP 4.20: South End Superior



Top Priorities

1. Tower Ave crossing , particularly at 60th St
2. Tower Ave– South end commercial district
3. Connection to the north on Tower Ave

One Mile Buffer Population: 2447

Notes:

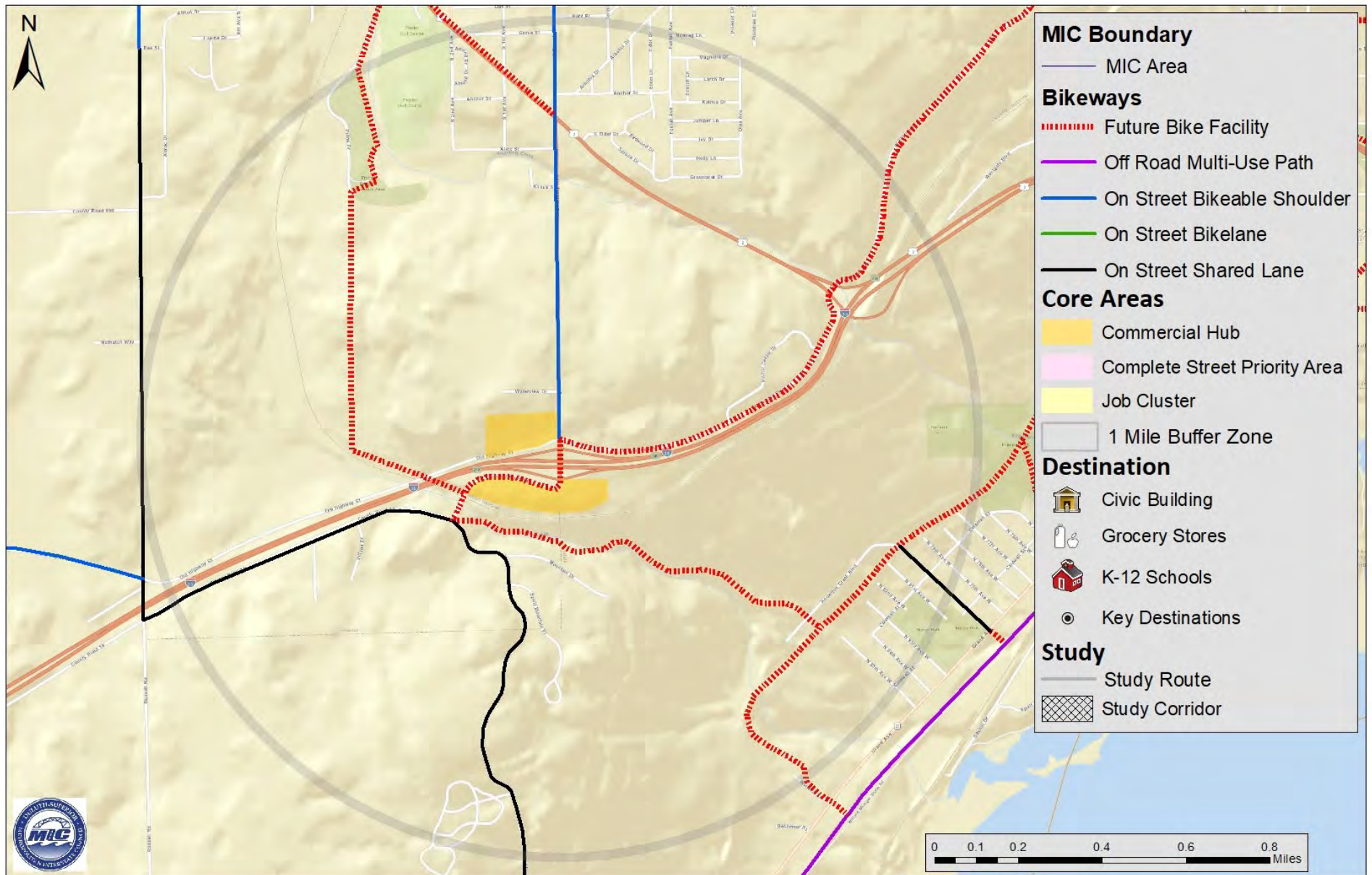
This hub primarily serves the South End Superior residents and as a connection to Downtown Superior.

This commercial hub has cluster of restaurants, retail , and hair salons.

* Allowing South End residents to get around within their neighborhood.

Key Gaps

MAP 4.21: Spirit Mountain



Top Priorities

1. Boundary Ave/ I-35 intersection
2. Boundary Ave
3. Proctor Trail connection to Munger Trail

One Mile Buffer Population: 1755

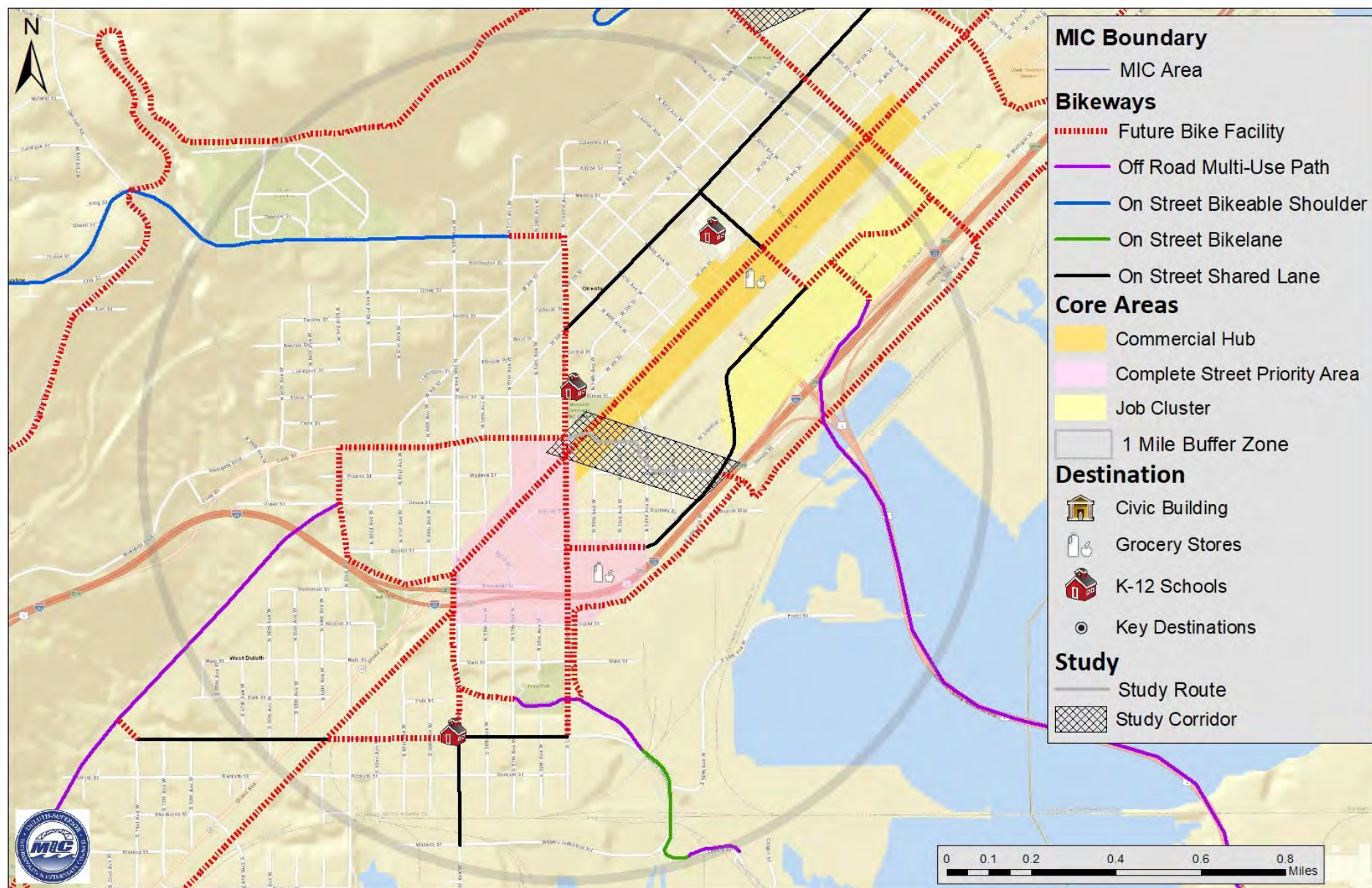
Notes:

This hub primarily serves the Proctor and Bayview residents.

This commercial has a cluster of restaurants, lodging, and recreational activities.

Key Gaps

MAP 4.22: Spirit Valley (West Duluth)



Top Priorities

1. Central Ave
2. Grand Ave
3. Bong Bridge to Grand Ace to Cross City Trail

One Mile Buffer Population: 7276

Notes:

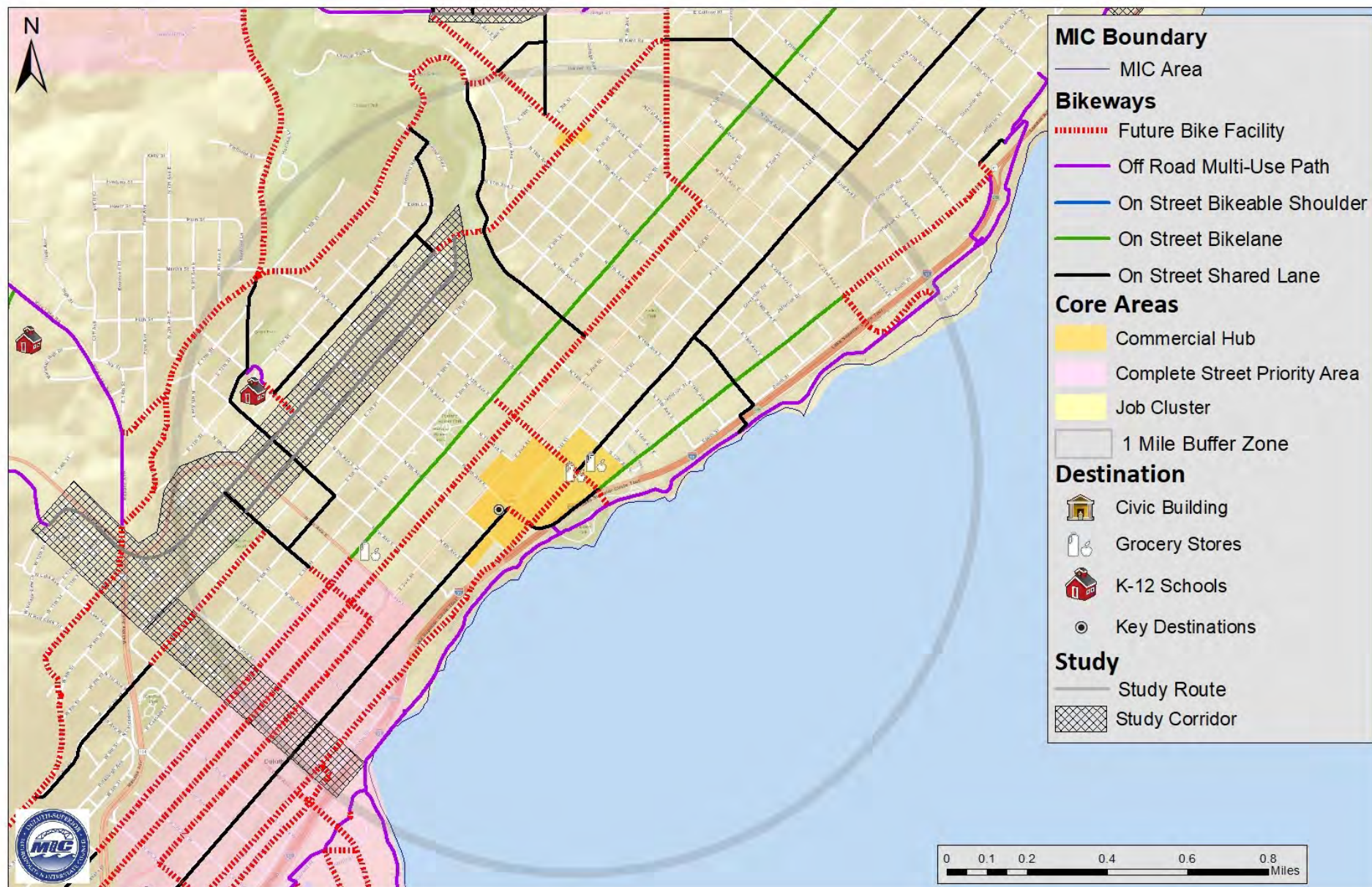
This hub primarily serves the Spirit Valley residents, multiple elementary schools, and a growing commercial hub.

This commercial has a cluster of restaurants, retail, grocery stores, gyms, and banks.

Study Corridor

Key Gaps

MAP 4.23: East Hillside—Duluth, Minnesota



Top Priorities

1. Superior Street
2. 12th Ave East
3. London Road

One Mile Buffer Population: 15541

Notes:

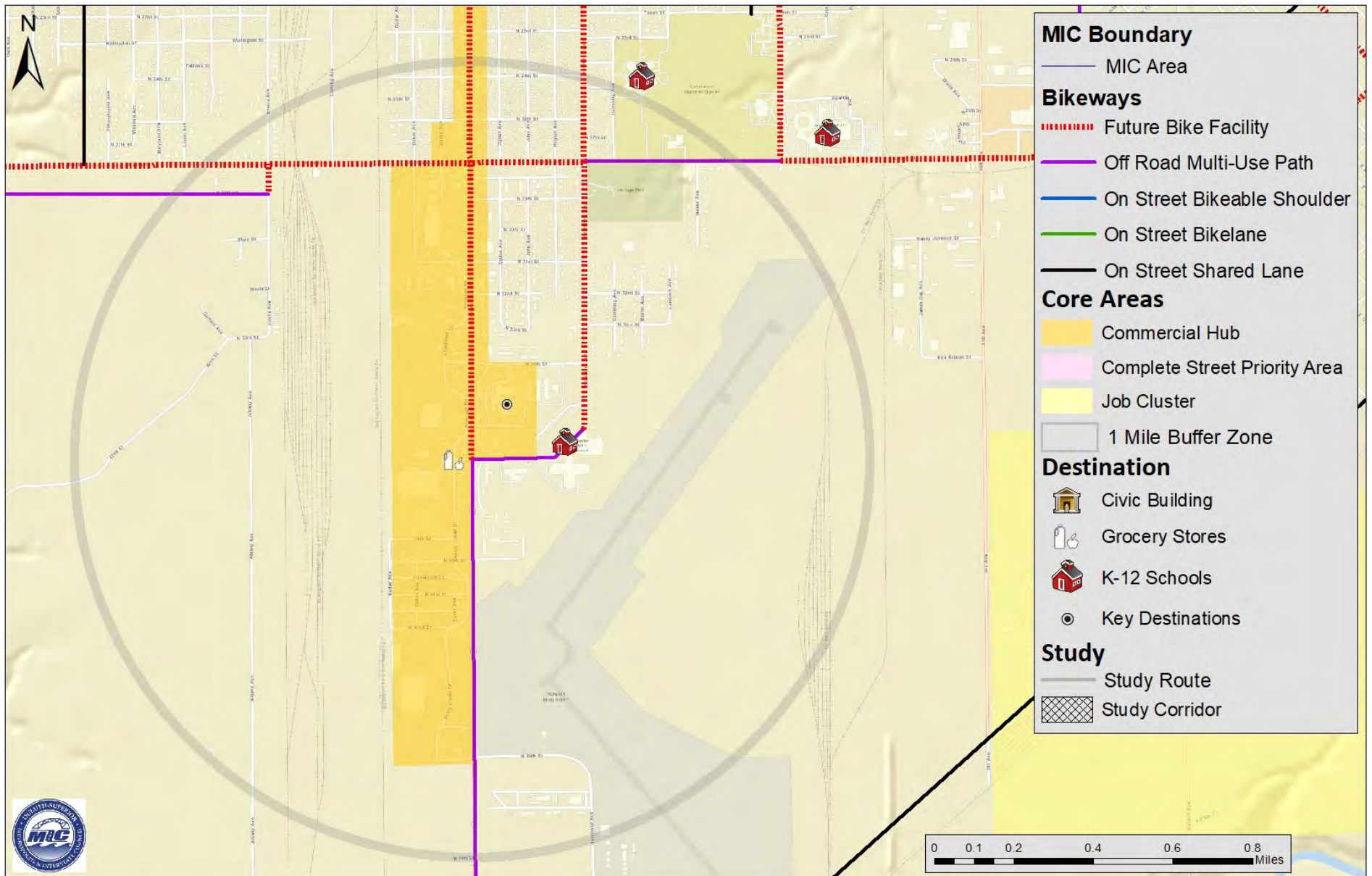
This hub primarily serves the East Hillside residents and as a connection to Downtown Duluth.

This commercial has a cluster of restaurants, retail, grocery stores, medical offices, and banks.

Study Corridor

Key Gaps

MAP 4.24: Tower Avenue Commercial Area—Superior, Wisconsin



Top Priorities

1. Tower Ave
2. 28th Street
3. Hammond Ave

One Mile Buffer Population: 2591

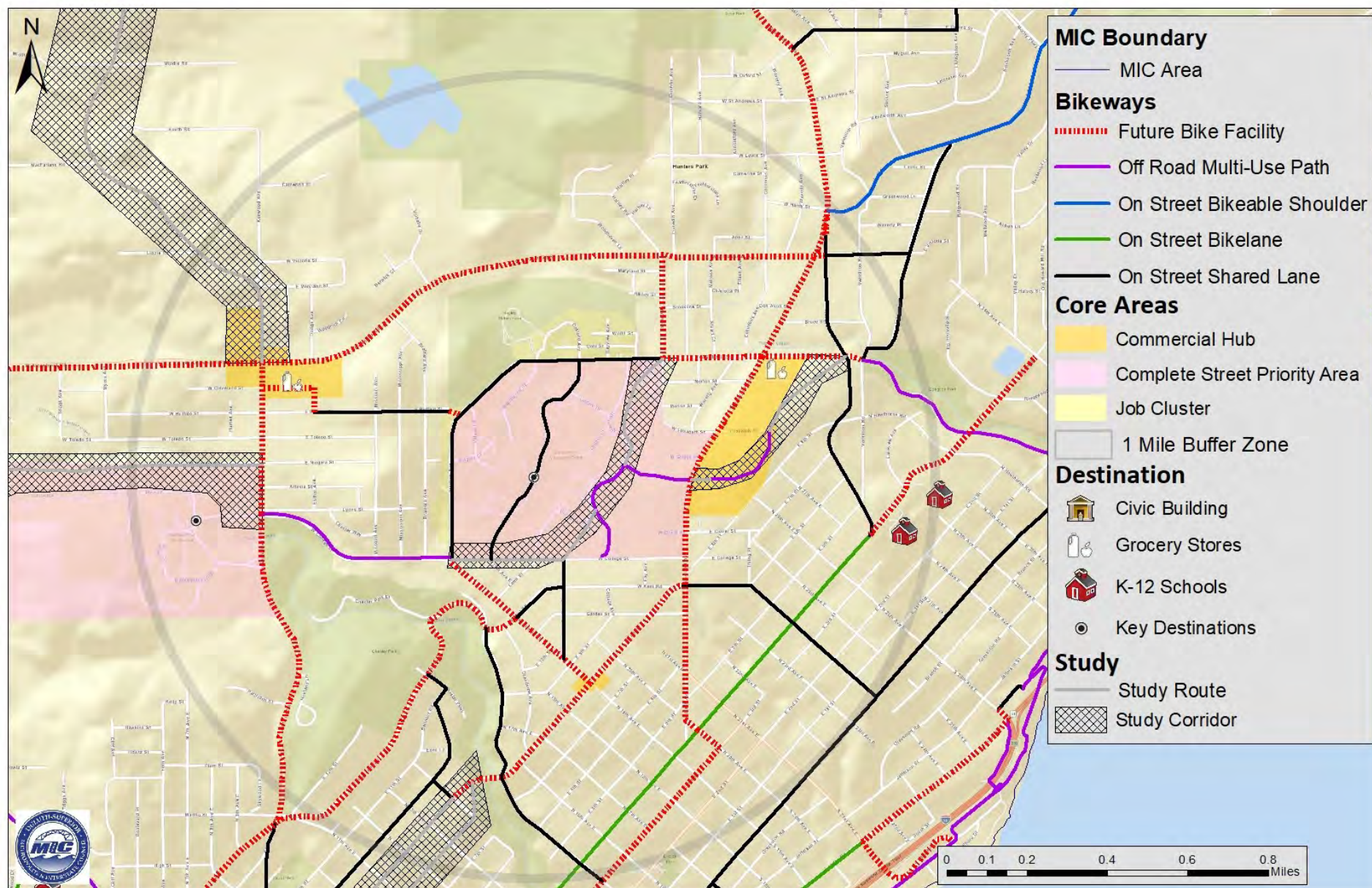
Notes:

This hub primarily serves the Downtown and South End residents, and serves as the main commercial hub of Superior.

This commercial has a cluster of restaurants, retail, and grocery stores, medical offices, and banks.

Key Gaps

MAP 4.25: UMD



Top Priorities

1. St. Marie Street
2. Carver Ave
3. Snelling Ave, 19th Ave E, 8th Street Connection

One Mile Buffer Population: 7276

Notes:

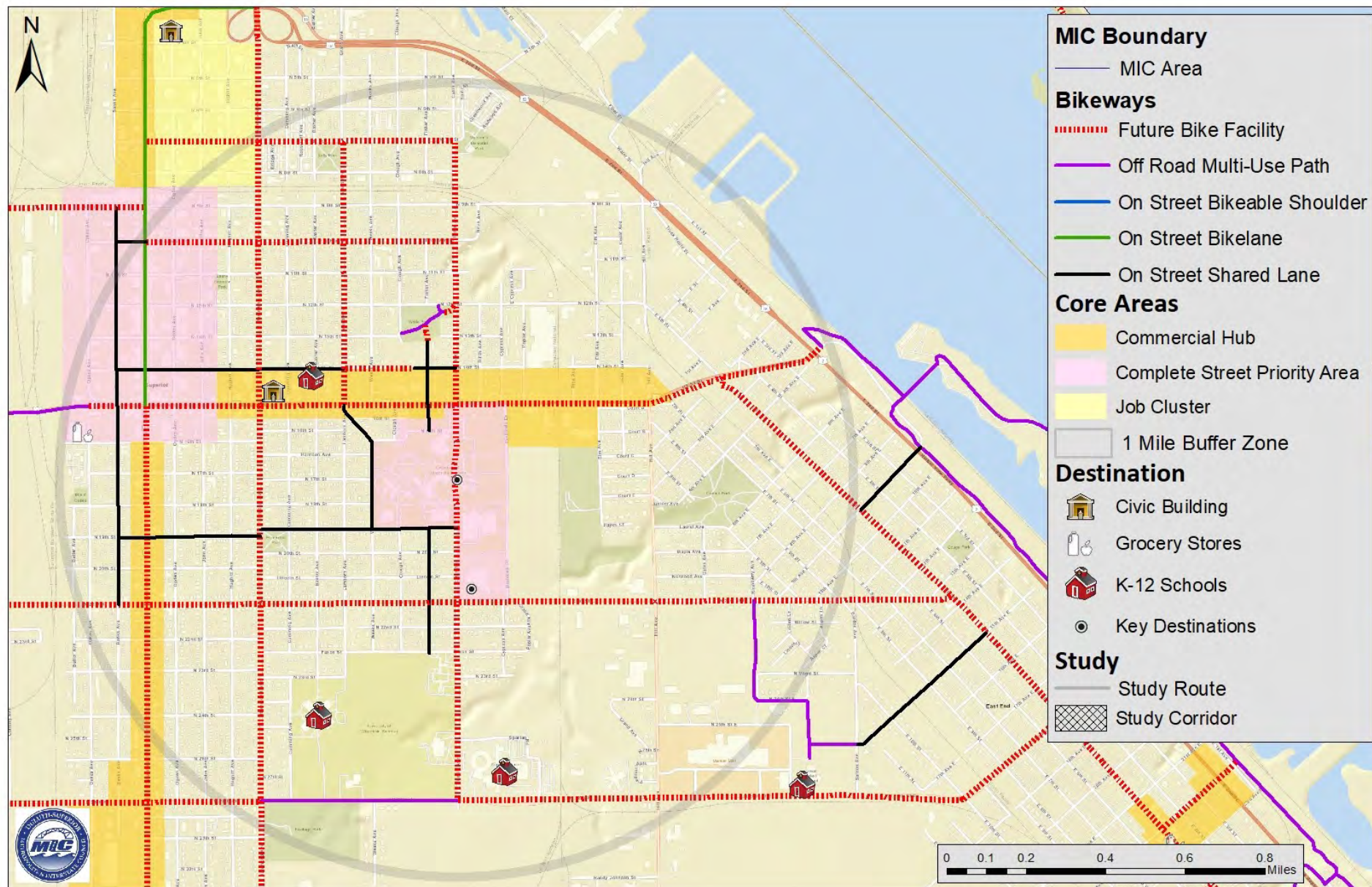
This hub primarily serves UMD students and Chester Park residents.

This commercial has a cluster of goods and services on the Woodland Ave and Kenwood Ave.

Study Corridor

Key Gaps

MAP 4.26: UWS



Top Priorities

1. Catlin Ave
2. 21st Street
3. Belknap Ave

One Mile Buffer Population: 12716

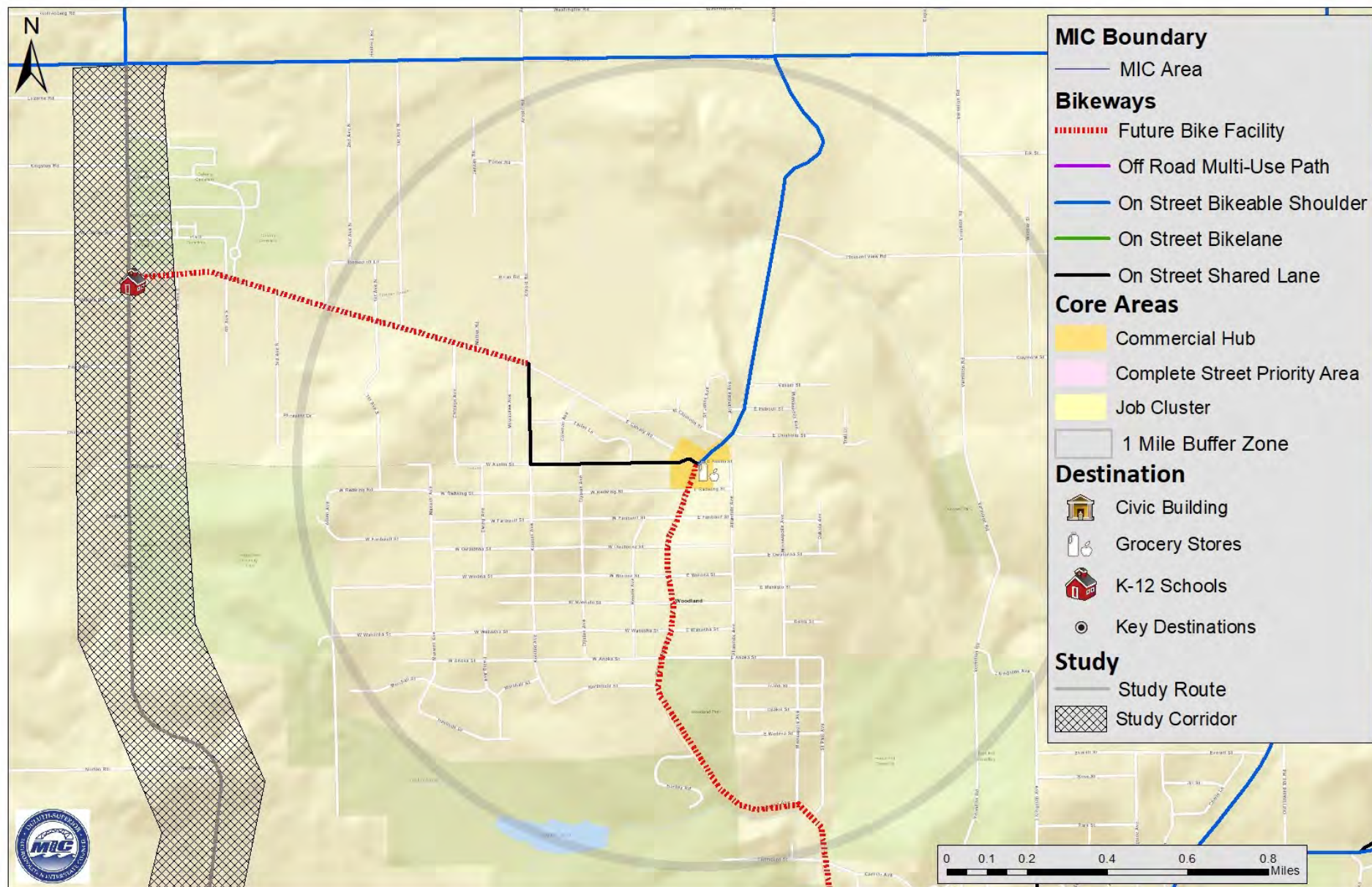
Notes:

This hub primarily serves the students of UWS and residents to the major commercial hubs of the area.

This commercial area has the Belknap Corridor and the Tower Ave corridor.

Key Gaps

MAP 4.27: Woodland—Duluth, Minnesota



Top Priorities

1. Woodland Ave—connecting the neighborhood to the hub.
2. Calvary Rd—providing an all ages, all ability bikeway facility between the Woodland Neighborhood to Homecroft Elementary School.
3. Connecting Woodland Ave south to Hartley Park and the UMD area.

One Mile Buffer Population: 4141

Notes:

This hub primarily serves the Woodland residents.

This commercial has a cluster of restaurants, retail, and grocery stores, and banks.

* Allowing Woodland residents to get around within their neighborhood.

Key Gaps

Implementation

This plan focuses on the long range vision for the bike route network

Bicycling is a viable mode of transportation. This plan, with community input, is a long-term vision for bikeways within Duluth-Superior Metropolitan Area. The ideas in this plan can be implemented in a number of ways. Funding is often a large barrier to building and maintaining bikeways, meaning implementation depends on volunteers to champion projects. The implementation also involves working closely with the community, property owners, and others. Some projects can be accomplished with volunteers, some with the help of local jurisdictions or agencies, and some with donations or grants. Some bikeways will need to involve many partners in the implementation.

Additional considerations for bikeway implementation involve determining alignments, the surface type needed, construction and engineering needs, environmental impacts, liabilities, legal constraints, potential conflicts with other user groups, property ownership, maintenance, security, marketing, wayfinding, and more. Some additional guides and resources are listed in the appendix that may be able to assist in some of these areas.

Implementation will only be possible with citizen by-in/driven and will take a coordinated effort between roadway jurisdictions, private property owners, community groups, citizens and impacted stakeholders.

Key Bikeway Implementation Guidance

[NACTO – Urban Bikeway Design Guide](#)

[NACTO – Design for All Ages & Abilities, contextual guidance for high-comfort bicycle facilities.](#)

[FHWA – Incorporating On-Road Bicycle Networks into Resurfacing Projects](#)

[FHWA – Small Town & Rural Multimodal Networks](#)

Addressing Issues

Common Barriers and Solutions

1. Safety - do not feel safe bicycling in the street.
 - a. Separate bikelanes from motor vehicle traffic
 - b. Reduce motorist-bicyclists confusion & frustration – provide clear direction
2. Comfort - due to weather and street condition
 - a. Regular maintenance of the streets with bikeways
 - b. Reliable snow removal and street sweeping
3. Hills – too steep of terrain, too many hills.
 - a. Point cyclists (through mapping, pavement markings and signage) towards uphill routes that are not too steep, provide bike climbing lanes and have off-street paths zig-zag up the hill.
 - b. Improve bike to transit connections
 - c. Allow for on-board bicycle options
 - d. Install staircase bicycle ramps
4. Inconvenient – distance and can't carry other items
 - a. Create direct routes on the longer distance bikeways, less meandering.
 - b. Continue school bicycling education programs
 - c. Show what is possible – educate public about commuter gear at events, demonstrate the latest gear for helping people car items by bike.
5. Do not have a bike
 - a. Expand bike share, particularly in areas of low income, low car ownership.

Common Barriers to Bicycling

Safety

Comfort

Hills

Inconvenient

No bike available

- b. Bike maintenance workshops and support such as free pop-up bike shops.
- c. Create a program to utilize the numerous bicycles that are picked up by transit and the police to get out to people who do not have a bike.

General Recommendations

1. Connect the major traffic generators (schools, commercial hubs, retail centers, job clusters) with the most direct routes.
2. Try demonstration and pilot projects. Give people a taste of what the changes might be like. One-day road diets and pop-up protected bike lanes let people test the concept before any large expenditures are made. Pilot projects need to be well thought-out, but they can be adjusted. Make adjustments based on actual data, not forecasts and fears of change,” says Campbell.
3. Continue to research, develop and expand bike share options in the Duluth-Superior area.
4. Incorporate bikeway design best practices, creative place-making, public art opportunities, and green infrastructure into street, transit and trail projects.
5. Include in local development standards, improve bikeway connectivity and support facilities from public bikeway infrastructure to increase local access to schools, businesses and services, including bikeways through parking lots and direct and separated connections between bikeway facility and major entrance points into the destination.
6. Up and Down the Hill
 - Provide wayfinding through mapping, signage and pavement markings on routes that have easier hill climbs.

- Add bike rails to public stairways, where streets or ramps do not existing and that provide key connections to and/or between bikeways.
 - Include bike transporting as part of any study examining the feasibility improving getting up & down the hill in Duluth, whether it be gondola or funicular infrastructure.
7. Take into extra consideration intersections as well as design of the bikeway when placing bikeway facilities on streets, with high traffic speeds, higher traffic volumes, along door zones, angled parking, roads with regularly truck deliveries.
 8. Policy - Design for multimodal, including bikes, can only exclude bike infrastructure based on limited exceptions – must prove that there is no other way. Instead of making the case to include bicycle infrastructure, the case must be made to exclude it.
 9. Streets with high demand for bicycle ridership should not be re-routed. Improvements to these roads should be done in ways that makes them practical to use for commuting by bicycle.
 10. Streets with low demand for bicycle ridership, it is acceptable to re-route the bike route to a parallel or equivalent route or segment, even if it means its less direct if it is more feasible to do so.
 11. Develop a functional classification system for bikeways
 12. Review all traffic signal systems to ensure bicycle detection is present and effectively working.

13. Overall preference for bikeways is a separated facility. Except for low volume, low speed streets, goal is to have a separated from motor vehicle traffic bikeway facility.
14. Most direct route as possible regardless of motor vehicle volumes. This means that main thoroughfares are more preferred than side streets.
15. Provide bikeway transportation facility route alternatives to trail corridors that are particularly used for recreation. Lakewalk is a route where bicyclists currently take it but would prefer another route instead.
16. Bicycle Advisory Committee – with at minimum every other month meetings. Consider a city structure, particularly with the two largest cities where bicycle issues arise more frequently, Duluth, MN and Superior, WI.
17. High quality bicycle parking- consider user when deciding on parking:
 - Short term visitors, generally not everyday – bike racks located near front doors, with natural surveillance and visibility. Do not place bike racks behind buildings in hidden corners. Encourages theft.
 - Bike parking should be available at all public places.
 - Bike parking shelters – at schools, and other places where large numbers of people bike frequently and leave bikes for longer periods of time.
 - Identify hot spot areas where bicycles are frequently stolen or vandalized and devise solutions to address this issue, including but not limited too installing bike racks that are more vandal resistant and relocating bike racks to a more visible area with better natural surveillance
 - Secure bike parking options – provide options for secure bike parking including lockers, secure entry area.
 - Major event movable/temporary bike racks – for major events have a set of bike racks available to be moved.

18. Drainage Grates – replace all drainage grates along bikeways with bike friendly grates.
19. Railroad Crossings – all bikeways should cross perpendicular to the tracks. Identify all locations where this is not the case and propose a timeline for fixing this issue.

Performance Measurement

This plan while long range in vision, is meant to provide a method in which to track progress as well as provide flexibility to learn through trial and error. A number of key indicators should be annually be tracked including:

- Level of Traffic Stress – perform analysis on the bikeway system. This grading system will provide jurisdictions an objective score. Improvements over time.
- Total bicycle network mileage, including high speed roads bike facilities and the mileage of all ages and abilities network.
- Level of Use – conduct an annual bike count in September (following the National Bike and Ped Documentation Project protocols) focusing on trends (changes over time) and before and after changes with new and/or improved bikeway infrastructure.
- Level of Use – count number of bicycles parked at all schools each month.
- Total percent of students who have a high quality, all ages and abilities bikeway to school.
- Crash Rates – serious and fatalities – track and improve reporting of cyclists crashes.

- Sidewalk Riding – track percent of people who bicycle riding on sidewalks
- Gender & Children Gap – track the number gender and age of people who bicycle.
- Bicycle parking – track the total number of publicly available bicycle parking available to ensure people have a secure and legal place to park their bicycle. Public and private.

Future Plan updates

As is the case with all planning documents, this plan will require future updates to remain useful and relevant. The current state of bicycle planning nationwide is rapidly evolving and U.S. cities are embarking on an age of experimentation with new bicycle facilities. Cities are beginning to design and build new types of bikeways that were relatively unknown as little as five years ago. It is anticipated that bicycle planning innovations will continue to accelerate. It is recommended that this plan be reviewed annually to take advantage of new opportunities, new innovations, and new trends. It is likely that over the coming years, new priorities or strategies will emerge, and new initiatives and programs will be desired.