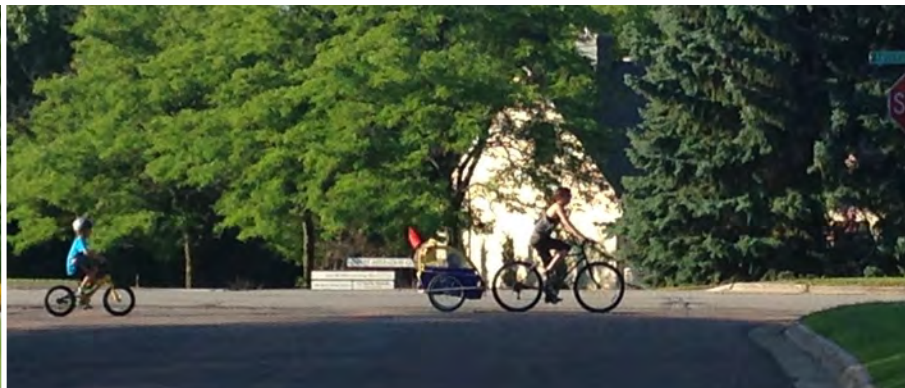




# City of Eden Prairie Pedestrian and Bicycle Plan



Adopted by the Eden Prairie City Council  
December 2, 2014



## Acknowledgements

We gratefully acknowledge the participation and support of Eden Prairie staff, residents, and organizations, and of those who helped organize, publicize, and host sessions for the work described in this report, including:

- City of Eden Prairie Pedestrian and Bicycle Plan Internal Working Group (IWG);
- Early Childhood Family Education Parents Group;
- Eden Prairie Senior Center; and
- Residents and friends of Eden Prairie who attended and participated in the open house and other engagement opportunities.

Thank you for your participation and for sharing your ideas, visions, and aspirations for walking and biking in Eden Prairie.

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## Foreword

Eden Prairie has, over many years of thoughtful planning and investment, developed a robust and extensive system of sidewalks, off-road paths, and trails - one of the best among cities in our state. The city's network provides links to neighborhoods, park and recreation areas, commercial areas, schools, and other city amenities. Much of the city's network offers a comfortable environment for walking and biking for children and families. Several gaps and key barriers, however, decrease the connectivity of these comfortable routes and make walking and biking trips to many useful and important everyday destinations uncomfortable or impossible for large segments of the city's population.

City staff and leadership recognize the importance of improving conditions for walking and biking as foundational elements for Active Living and quality of life in the city. This Pedestrian and Bicycle Plan is the result of Eden Prairie's proactive commitment to this goal, and of a strong, productive and forward-looking partnership between the city and Hennepin County.

The recommendations in this Plan provide a vision for the city's future walking and biking network, and approaches for making use of the city's extensive walking and biking assets while addressing the key barriers that exist today.

Looking to the future, it is easy to envision Eden Prairie as a model city for integrating walking and biking within the context of a developed suburban jurisdiction - a city where children can safely walk and bike to school, where seniors feel safe and free to walk along and across streets, where residents and visitors walk and bike to access employment, retail businesses, transit services, and to visit parks and get exercise.

Getting there will require a sustained, long-range effort and commitment. This Plan is offered as a roadmap for that journey.



## Executive Summary

Walking and biking are basic and sustainable forms of transportation and, when adequately accommodated, provide healthful and enjoyable mobility options for persons through a wide range of ages and abilities. Walkable and bikeable places provide convenient, comfortable and useful conditions for walking and biking and provide benefits to individuals and communities.

This Plan offers recommendations for improving walking and biking conditions across Eden Prairie, with the purpose of making walking and bicycling more convenient, comfortable and enjoyable choices for travel in the city.

### I. Vision

“Eden Prairie will be a community where walking and biking are safe, comfortable, inviting and convenient everyday activities and where people choose to walk or bike to nearby destinations and to easily access the new Southwest Light Rail Transit line and the SouthWest Transit bus system.”

### II. Approach

This Plan is based on an Active Living approach that seeks to create conditions that invite more Eden Prairie residents to more often choose to walk or bike to their destinations, to use transit, and to easily include physical activity as part of their daily routines.

### III. Plan Components

The Plan includes several components to support implementation of this vision. Recommendations are based on study of the city and its existing network, as well as comments and guidance from residents and city staff.

The Plan:

- Presents a recommended pedestrian and bicycle network to address system gaps and enhance overall connectivity;
- Identifies specific corridors and improvements for those corridors;

#### Purpose and Users of this Plan

The purpose of this Plan is to improve conditions for pedestrians and bicyclists in Eden Prairie by improving the city’s pedestrian and bicycle transportation infrastructure, reducing hazards, and inviting more residents, employees, and visitors to incorporate walking and bicycling into their daily travel habits.

This Plan is intended as a guide for City staff, local residents, and agencies working with Eden Prairie to aid selection and implementation of walking and biking improvements.

#### Why Walking and Biking Matter

Walking is the most basic mode of travel, and is accessible to people through the widest range of ages, income levels, and physical abilities. Bicycling is an inexpensive, convenient and enjoyable way of accessing community destinations and assets.

Walking and biking are healthful and economical travel options that improve community health, increase access to local destinations, foster community connection, and help sustain healthy and prosperous local economies.

Places where walking and biking are comfortable and inviting are places where people want to live, work, and visit. Creating “Complete Streets” or “Living Streets” that are safer, more comfortable and accessible for pedestrians and bicyclists also makes for safer, more comfortable and predictable streets for all users of a city’s street and roadway network.

- Makes specific recommendations for on-road and off-road pedestrian and bicycle facilities;
- Provides recommendations for addressing road intersections and multi-use path crossings;
- Provides guidance for selecting walking and bicycling treatments for specific contexts;
- Offers a range of programming and policy recommendations, including considerations for zoning modifications, operations and maintenance, user education, promotion and encouragement, school walking and biking programming, and end-of-trip facilities, among others; and
- Includes a set of Performance Measures to track progress in implementation.

## IV. Guiding Principles

The following goals and principles guide the recommendations included in this Plan:

### Improve Comfort and Safety

Proactively address existing hazardous conditions, assign dedicated space for use by pedestrians and cyclists, improve intersections and crossings and improve visibility of pedestrians and bicyclists to improve safety and comfort for all users of Eden Prairie's walking and biking network.

### Connect to Local and Regional Destinations

Provide safe and convenient connections to recreational, commercial, employment, education, and transportation destinations within Eden Prairie and neighboring communities.

### Leverage Future Light Rail Transit Investment

Capitalize on the upcoming Southwest Light Rail Transit (SW LRT) investment and existing SouthWest Transit and leverage existing and planned Eden Prairie walk/bike assets to extend the

range of destinations available to Eden Prairie residents, workers and visitors.

### Comfortable and Convenient Routes

A successful pedestrian and bicycle transportation network responds to user needs for safety, comfort and convenience, and invites users of all ages, physical abilities, and skill levels.

### Walking and Biking as a Base for Community Health and Active Living

Facilities and programs that invite more people to choose to walk and bike more often as part of their daily routines improves community health and facilitates active living.

### Walking and Biking as a Useful Transportation Option in Eden Prairie

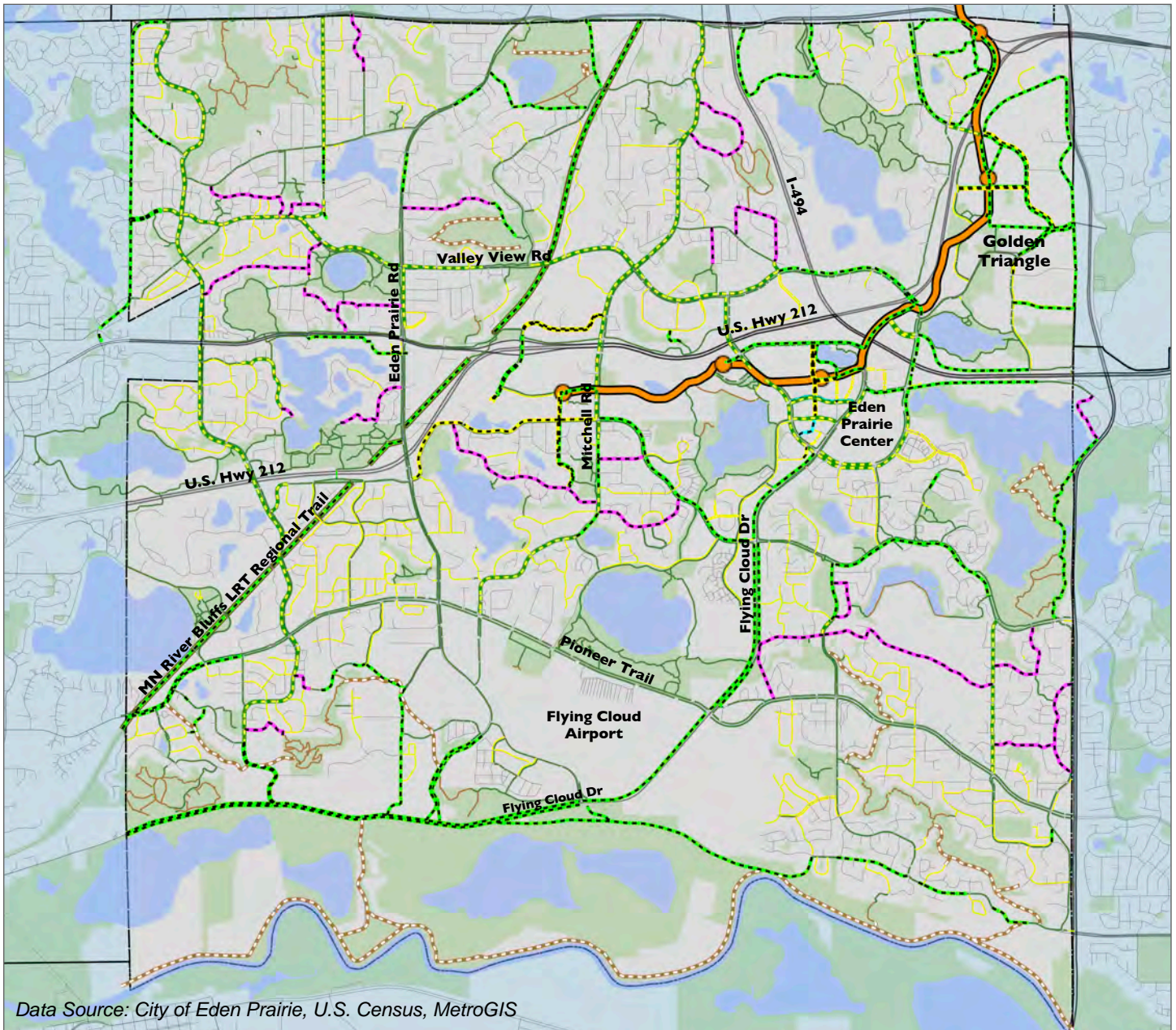
A high quality pedestrian and bicycle transportation network will make it easier and more convenient for more people to choose to walk or bike for their transportation and mobility needs in Eden Prairie.

## V. Recommended Walking and Biking Network

A Recommended Low-Stress Walking and Biking Network as well as an On-Street Bicycle Lane Network (shown on the next pages) were developed based on public comments, guidance from city staff, and network analysis and modeling, site observations, and current best practices.

The Recommended Low-Stress Network leverages existing facilities and includes new routes and links to address system gaps and improve overall network connectivity for pedestrians and bicyclists. This Plan strongly supports Eden Prairie's efforts to continue to expand and improve its network of sidewalks, off-road sidepaths, and other shared-use paths. Additional details about recommended networks is provided in Chapter 4 of the Plan.

## V.1- Recommended Low-Stress Walking and Biking Network



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

### Walking and Biking Network

#### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

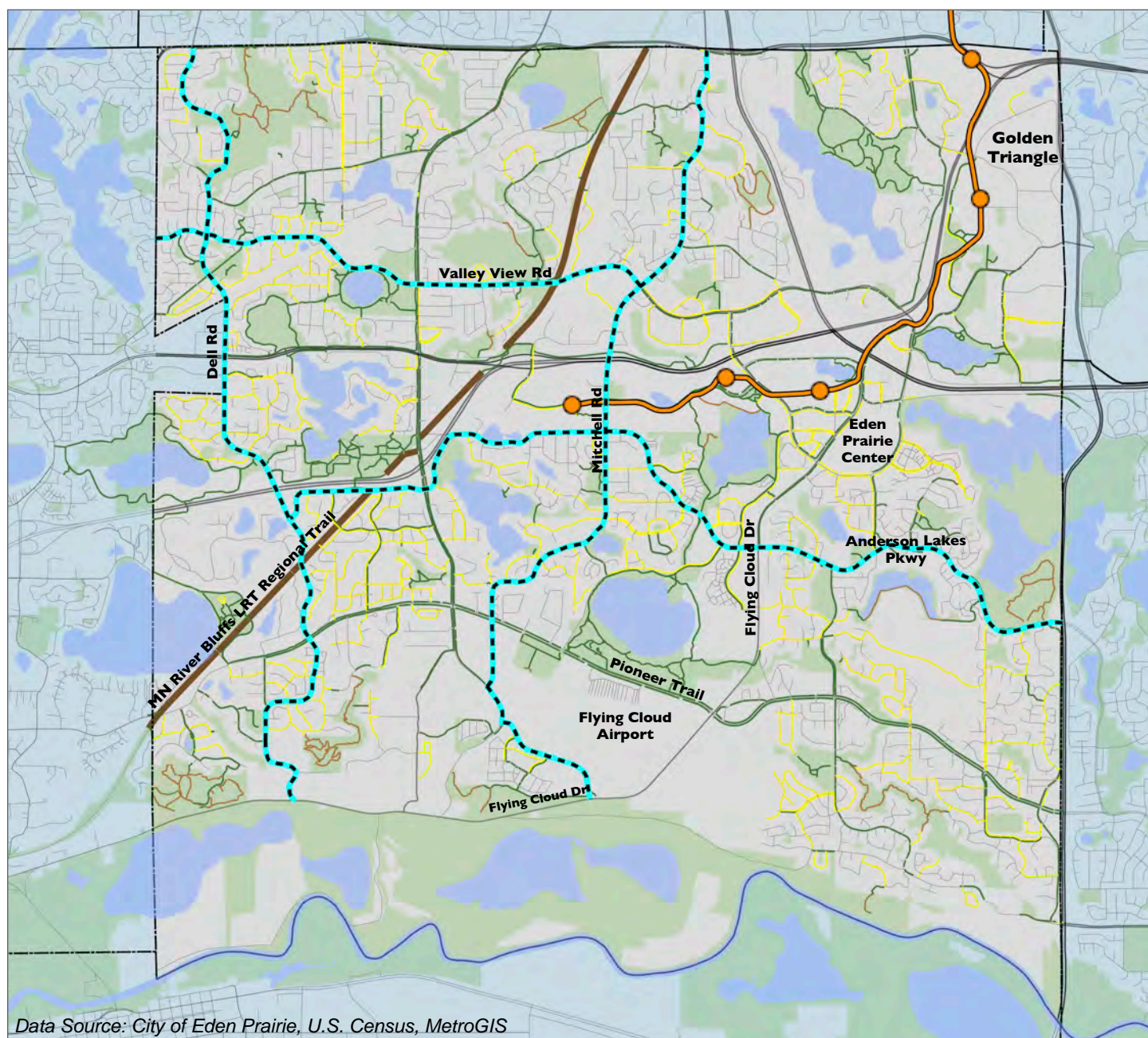
#### Recommended

- New Paved Shared-Use Path
- Upgrade Sidewalk to Shared-Use Path
- On-Street Neighborhood Slow Street
- On-Street Bicycle Lane
- Sidewalk
- Unpaved Nature Trail

#### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.

## V.2 - Recommended On-Street Bicycle Lane Network



### Walking and Biking Network

#### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- MN River Bluffs LRT Trail

Proposed Southwest LRT Alignment

Proposed Southwest LRT Stations

#### Recommended

On-Street Bicycle Lane





## Background



*This section includes background information with implications for pedestrian and bicycle planning and mobility in Eden Prairie.*

### **In this section**

- 1.1 - Purpose of this Plan
- 1.2 - Regional Context
- 1.3 - Urban Form and Development Patterns
- 1.4 - Demographics and Population Characteristics
- 1.5 - Relevant Policies and Plans

# 1.1 - Purpose of this Plan

Eden Prairie staff and leadership recognize the importance of walking and biking as basic forms of mobility and foundational elements for active living and quality of life in the city. A range of walking and biking amenities exist across the city, and residents and visitors alike walk and bike frequently for recreation and transportation.

The purpose of this Plan is to provide practical guidance for the City of Eden Prairie to continue to build from its existing walking and biking assets to develop a safe, continuous, comfortable, and convenient network, with facilities that invite people of all ages and abilities to walk and bike more often as part of their daily travel and routines.

## 1.1.1 - Approach

This Plan is based on an Active Living approach that seeks to create conditions that invite more Eden Prairie residents to more often choose to walk or bike to their destinations, to use transit, and to easily include physical activity as part of their daily routines.

## 1.1.2 - Vision

**“Eden Prairie will be a community where walking and biking are safe, comfortable, inviting and convenient everyday activities and where people choose to walk or bike to nearby destinations and to easily access the new Southwest Light Rail Transit line and the SouthWest Transit bus system.”**



*Enjoying Eden Prairie’s extensive network of off-street trails and sidepaths.*

### What is Active Living?

Active living is a way of life that encourages and includes moderate physical activity - such as walking or biking - as part of a person’s daily routine.

Active living is important because it improves physical and mental health, reduces household expenses, improves air quality, builds strong and safe communities, and can help reduce the burden of common chronic conditions like diabetes, asthma, and heart disease.

Policy and design choices can result in built environments that encourage active living. The likelihood of walking to the grocery store, riding a bike to school, or meeting friends in the park depends on the environment in which they are attempted.

By making improvements in its current infrastructure, policy, and programming approaches, Eden Prairie can leverage its existing assets and become a model Active Living community.

## 1.2 - Regional Context

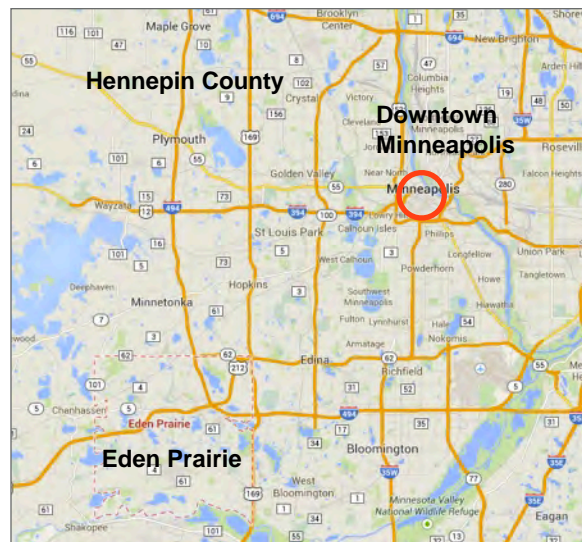
The City of Eden Prairie is an outer-ring suburban jurisdiction located approximately 15 miles southwest of Minneapolis in Hennepin County. The city has a land area of approximately thirty-five square miles and a population of 60,797 residents, according to 2010 U.S. Census data.

Eden Prairie is an important regional employment and commercial center. Over 2,500 employers are located in the city; the “Golden Triangle” in the city’s northeast corner is an important employment center. About 51,000 persons are employed within Eden Prairie. Eden Prairie Center is one of several regional shopping destinations in the city. The Southwest Transit Station also serves commuters in the city.

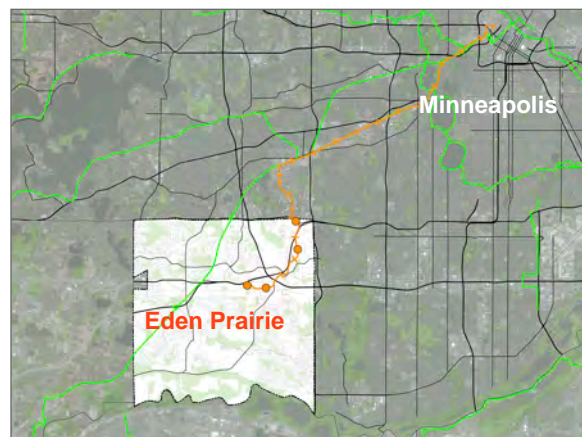
The Southwest (SW) Light Rail Transit (LRT) / Green Line Extension is currently in advanced planning stages. The line will provide light rail transit service connecting Eden Prairie with neighboring Minnetonka, as well as to Hopkins, St. Louis Park, and Downtown Minneapolis. Five Southwest LRT stations are planned in Eden Prairie.

The city is well connected to the region’s road network. US Highway 169 runs along the city’s eastern boundary, US Highway 212 and Minnesota State Highway 5 traverse its northern half, and Minnesota State Highway 62 and Interstate 494 cross Highway 212 in the city’s northeast corner to form the city’s “Golden Triangle.”

The Minnesota River Bluffs LRT Regional Trail runs through the city’s northwestern corner, connecting Eden Prairie with Chaska and other destinations to the southwest, and Hopkins, Minneapolis, and other destinations to the northeast.



**Eden Prairie is located in southern Hennepin County. Downtown Minneapolis is identified in red.**



**Eden Prairie is connected to the regional bicycle network (green), and will soon connect to the future SW LRT line (orange).**

# 1.3 - Urban Form and Development Patterns

First settled in 1852, Eden Prairie can be characterized as a fully-developed outer-ring suburb hosting a mix of residential and non-residential development, including office, industrial, retail, and others. Many streets are winding, and single family residential development on larger lots predominates. Land uses are generally separated from one another.

Residential uses are primarily single-family in nature, but multi-family residential developments are present throughout the city. Residential neighborhoods are generally separated from other land uses and served by quiet local roads. The city has several high-volume and wide arterial roads, such as Flying Cloud Drive and Eden Prairie Road. These streets generally include adjacent shared-use sidepaths, but movement across these roads presents important challenges for walking and biking in Eden Prairie.

## 1.3.1 - Present Land Uses

### Residential Uses

Residential uses make up about 31% of the total area of Eden Prairie: 24.5% low density residential (less than 2.5 units per acre), 5.8% medium density (2.5 to 10 units per acre), and 0.8% higher density (greater than 10 units per acre).

### Commercial and Industrial

Commercial office, industrial, and retail destinations exist in Eden Prairie, including several prominent locations in the city’s northern half, including the Golden Triangle area, in and around the Eden Prairie Center, and between Valley View Road and Technology Drive along U.S. Highway 212. These areas make up almost 11% of the city’s land area.

### Parks and Recreation

Parks and open space areas make up over 14% of the city’s land area. This includes local and regional recreation areas,



*Eden Prairie Center (left) and the Golden Triangle (right) are predominantly single-use commercial and office space.*



*A bicyclist on Valley View Road in the Golden Triangle. Industrial and commercial development, set back from the street, predominates in the area.*

and the land between Flying Cloud Drive and the Minnesota River along the southern boundary of the city.

## Other Land Uses

Remaining land uses in the city include institutional uses such as schools, churches, and cemetery, airport, open water, road right-of-way, and golf courses.

### 1.3.2 - Connectivity

Highways 5, 169, 212, and Interstate 494, along with several arterial streets (some of which are under the jurisdiction of Hennepin County) provide important regional and local connections for motor vehicle travel in and through Eden Prairie. These roads, however, in many cases create barriers and network gaps for those wishing to make walking and biking trips across Eden Prairie. Wide, multi-lane intersections can be perceived as barriers by pedestrians and bicyclists, and can lower accessibility to neighborhoods or commercial areas, even if otherwise comfortable route facilities like sidepaths or trails are provided.

### 1.3.3 - Transit System

SouthWest Transit provides express bus service to Downtown Minneapolis and the University of Minnesota from Eden Prairie, as well as from Chanhassen and Chaska. Local circulator routes within these communities are provided by SouthWest Transit as well. See 1.3.6 for a map of existing SouthWest Transit stops.

### 1.3.4 - Future Land Use

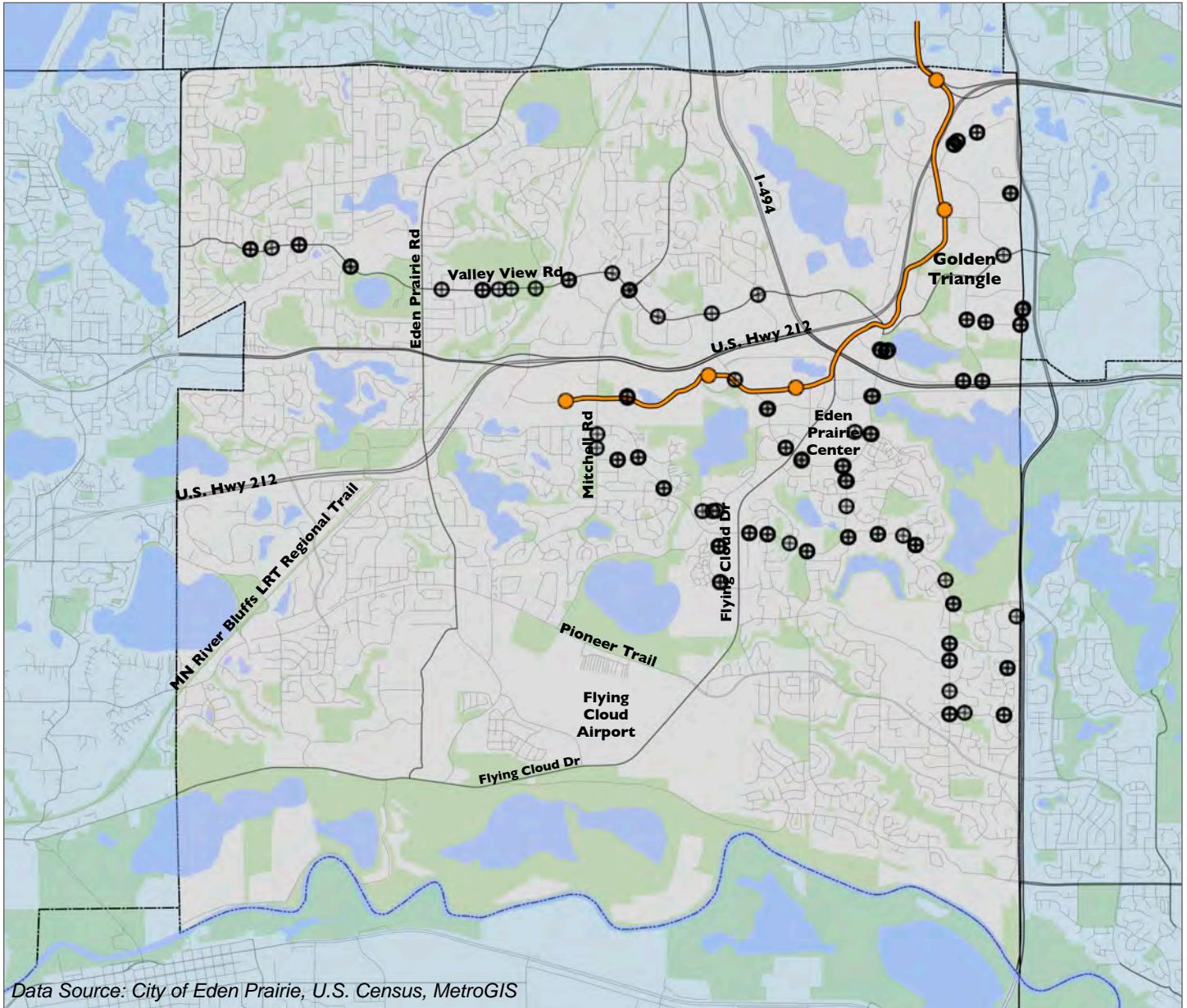
According to the City of Eden Prairie's 2009 Comprehensive Plan, only 3% of the developable land in the city is vacant. Future shifts in land use are anticipated in the form of redevelopment in the Golden Triangle, and in the Eden Prairie Center area, termed the "Major Center Area."

The 2006 *Major Center Area Study* calls for "A core area clustered between Singletree Lane and Lake Idlewild, identified as 'Town Center,'" and "... a compact, walkable, mixed-use downtown (Town Center) around Singletree Lane with a new grid system of streets and urban amenities with a pedestrian friendly design. The Town Center should emphasize residential, retail and mixed-use development types. These redevelopment areas are centered around future Southwest LRT station platforms proposed for the city.

### 1.3.5 - Implications For This Plan




- Mitigating barriers to network connectivity, including crossings of multi-lane roadways, will help create a more comfortable environment for walking and biking in the city;
- Walking and bicycling connections to schools, commercial and employment centers, and parks will expand travel options for residents and visitors for transportation and recreation trips;
- The Major Center Area should be a priority for enhanced multi-modal connections.

### 1.3.6 - Existing SouthWest Transit Bus Stops



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Transit System

-  Current SW Transit Stops
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

# 1.4 - Demographics and Population Characteristics

## 1.4.1 - Population Density and Households

The 2010 U.S. Census counted 60,797 people in Eden Prairie and 23,930 households across thirty-five square miles. This yields a population density of 2.7 people per acre and 1.1 households per acre. By comparison, Hennepin County has an overall population density of 3.0 people per acre and 1.2 households per acre.

Of the 23,930 Eden Prairie households in 2010:

- 59% were 1 and 2 person households;
- 69% (16,517) were family households;
- 2.53 was the average household size;
- Nearly 78% of these (18,547) were built since 1980.

Over 42% of family households included children under 18 years of age.

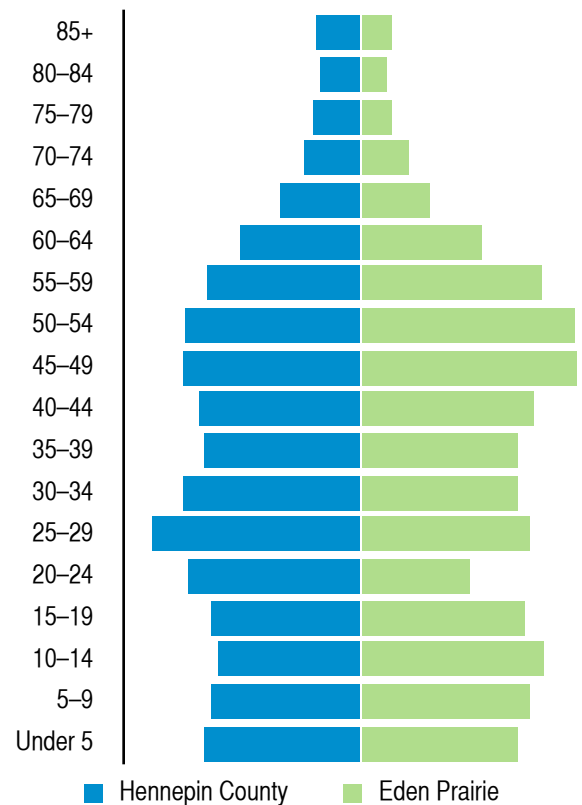
## 1.4.2 - Age Distribution

Over one quarter of Eden Prairie’s population (26.4%) is less than 18 years of age, and about 20% of its population is of school age (between 5 and 18 years of age). Almost 9% of the population are senior adults 65 years of age or older. The median age for the city is 37.6 years.

## 1.4.3 - Income Levels

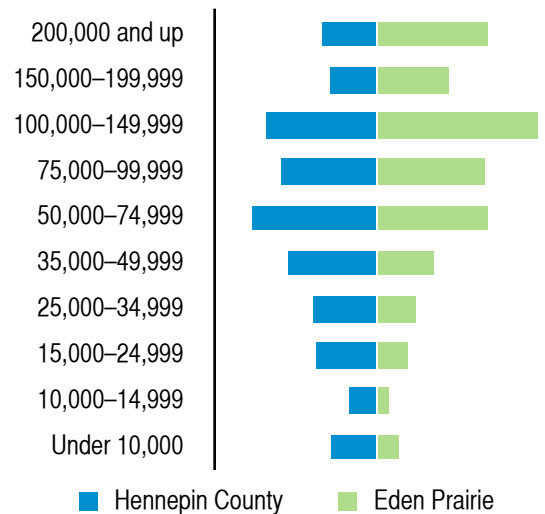
At the time of the 2008-2012 U.S. Census American Community Survey 5-Year Estimates, median household income in Eden Prairie was \$93,828, and 5% of residents had incomes below the poverty level. By contrast, Hennepin County has a mean household income of \$63,559 and 13% of residents had incomes below the poverty level.

### Age Distribution



*Eden Prairie has slightly more school-age children, and slightly fewer elderly residents than Hennepin County on a whole.*

### Income Distribution



*Income levels in Eden Prairie are higher than Hennepin County as a whole.*

### 1.4.4 - Population and Employment Trends

Eden Prairie’s population has grown significantly over the last forty-five years since 1970, going from 6,938 persons according to the 1970 Census to 60,797 according to the 2010 Census. 2013 U.S. Census estimates put the population of Eden Prairie at 62,603 persons. The Metropolitan Council projects the population of Eden Prairie to be 84,800 in 2040 with 34,000 households.

The Metropolitan Council estimates 50,948 jobs in Eden Prairie in 2013, and forecasts 70,000 jobs in 2040.

### 1.4.5 - Commuting and Travel Patterns

A total of 6,276 residents of Eden Prairie (about 21% of total employed Eden Prairie residents) also work in Eden Prairie, according to 2011 figures from the US Census Center for Economic Studies. This means that Eden Prairie is the most popular destination for Eden Prairie commuters among all locations for employment. These Eden Prairie residents travel to locations in the core employment areas of the city: the Golden Triangle, Eden Prairie Center, and the Technology Drive/Highway 212 corridor.

A total of 23,780 residents (79% of total employed residents) live in Eden Prairie but work outside of the city. Of these residents that commute to destinations outside of Eden Prairie, 4,585 work in Minneapolis, and 6,916 work in the neighboring communities of Bloomington, Minnetonka, and Edina. The remaining residents commute to other locations, including St. Louis Park, Chanhassen, St. Paul, Golden Valley, Plymouth, and others.

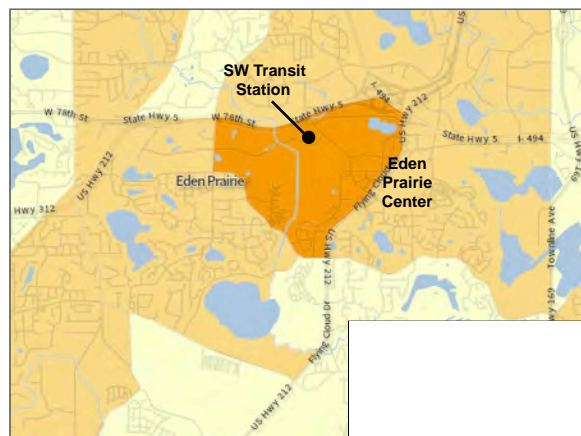
U.S. Census 2008-2012 American Community Survey 5-Year Estimates can be used to determine the mode of travel among commuters. According to these figures, nearly 33,000 Eden Prairie residents are employed. A total of 538 or 1.6% of Eden Prairie commuters walked to work, while 117 (0.4%) biked to work. By comparison, according to the same data, 6.4% of Minneapolis commuters walked to work, and 4.1% biked to work. Portland, Oregon leads the nation

#### How do Eden Prairie Residents Get to Work?

This is how employed Eden Prairie residents arrive to work, according to the US Census 2008-2012 ACS Estimates:

Drove alone	26,598	81.5%
Carpooled	2,099	6.4%
Public transit	1,078	3.3%
Walked	538	1.6%
Biked	117	0.35%
Other	119	0.35%
Work at home	2,080	6.4%

US Census 2008-2012 American Community Survey (ACS) 5-Year Estimates.



The area around the existing SouthWest Transit Station in Eden Prairie has the most people who walk to work, according to data from the 2008-2012 U.S. Census American Community Survey. The data displayed here is shown at the Census Tract level.



among large cities with about 6% of employees biking to work. Small and mid-sized cities are experiencing significant increases in the rates of bicycling. Many of the cities that lead the nation in the rate of biking (and walking) to work are small cities between 20,000 and 100,000 people.

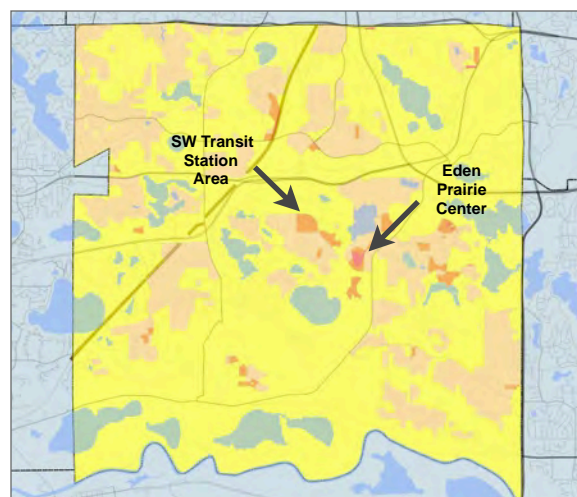
### 1.4.6 - Implications For This Plan

- Over one quarter of Eden Prairie’s population is under the age of 18. Providing safe, comfortable, and convenient walking and biking connections to schools, parks, and recreation centers is an important focus for this Plan.
- Growth of over 20,000 persons and 20,000 jobs is projected between now and 2040, and is likely to be accommodated in currently developed locations. The city has plans for mixed-use redevelopment in the Major Center and Golden Triangle Areas, particularly around proposed Southwest LRT stations. Population and employment growth, combined with mixed-use redevelopment, means increased demand for walking and biking trips to connect to destinations in these areas. Integrated safe, connected, and comfortable facilities for walking and biking to and within these areas can support important increases in walking and biking trips.
- Over 20% of workers from Eden Prairie commute to jobs in Eden Prairie itself. Providing safe, comfortable, and convenient walking and biking connections to Eden Prairie employment destinations will ensure that these residents have additional travel options when making these relatively short daily trips.

#### Did You Know?

- Almost one quarter (24%) of trips made by Dutch seniors 65 or older are made by bicycle
- Almost one out of every five trips (18%) made by German seniors are by bicycle
- About 0.2% of US senior trips are by bike

Source: John Pucher and Lewis Dijkstra, *Promoting Safe Walking and Cycling to Improve Public Health: Lessons from the Netherlands and Germany*. *American Journal of Public Health*, Vol. 93, No. 9, September 2003.



**Areas of higher population (shown in darker orange) are mostly located near the Eden Prairie Center and SW Transit Station area.**

# 1.5 - Relevant Policies and Plans

Current local, state and federal policies offer strong support for making improvements that benefit pedestrian and bicycle mobility throughout the Twin Cities metropolitan region. The following plans and policies have had implications for walking and bicycling in Eden Prairie.

## 1.5.1 - The Local Context

### Origin of Trails Planning and the 2003 Park and Open Space Plan

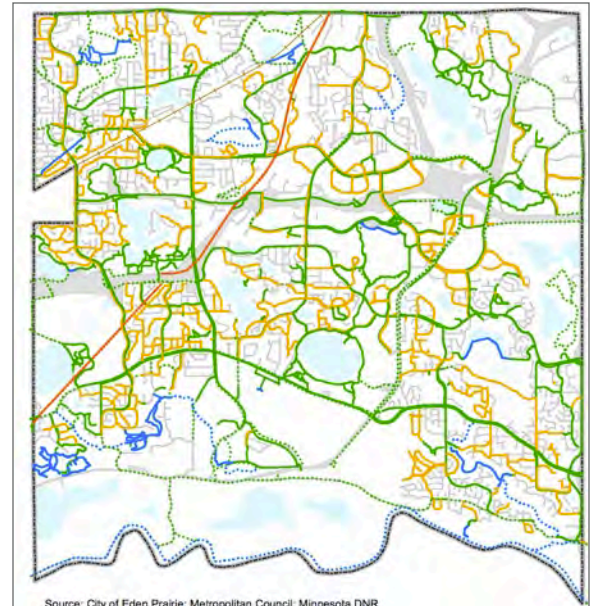
A report completed by the Hikeway/Bikeway Task Force in the 1970s confirmed strong community desire for a walking and biking trail network in Eden Prairie. The Hikeway/Bikeway Task Force recommended specific roadways where trails should be provided. These recommendations gave rise to the city’s initial, and then expanded, system of walking and biking routes.

The 2003 Park and Open Space Plan reviewed the trail system network relative to the needs of Eden Prairie residents and included policy considerations and design and construction guidelines for transportation, recreation, nature, and other trails. The plan also made recommendations for specific walking and biking improvements.

### Comprehensive Plan

The 2008 Eden Prairie Comprehensive Plan establishes the city’s direction for new development and redevelopment projects. Development of a Town Center within the Major Center Area (MCA), the addition of mixed-use development within the Golden Triangle, expansion of senior and affordable housing, and addressing light rail implementation are prominent priorities.

The Comprehensive Plan establishes the goal of planning for and promoting pedestrian and bicycle connections throughout the city, with several supporting policies. Specific recommended walking and biking facilities are



Source: City of Eden Prairie; Metropolitan Council; Minnesota DNR

**The 2008 Comprehensive Plan includes recommendations for walking and biking improvements in Eden Prairie, and builds on the work of the 2003 Park and Open Space Plan.**

### Original Eden Prairie “Spine” Trails

The original “spine” trails of the Eden Prairie walking and biking system were first identified in the 1970s, and included the followings roads:

- County Road 4;
- County Road 1;
- Valley View Road;
- Duck Lake Trail; and
- Scenic Heights Road.

Additional “spine” trails have been developed since then, including along:

- Baker/Mitchell Road;
- Anderson Lakes Parkway;
- Dell Road;
- Homeward Hills Road; and
- Highway62/Crosstown Highway.

Source: 2003 Park and Open Space Plan and 2008 Comprehensive Plan

provided. Furthermore, the plan recommends that the city continue to work to promote longer bicycle trips, particular for commuting. Potential approaches include establishing more bicycle connections, targeting certain routes for higher levels of maintenance, adding on-street bicycle facilities, providing covered and secure bicycle parking, and establishing connections to surrounding communities.

### Transit-Oriented Development Zoning District

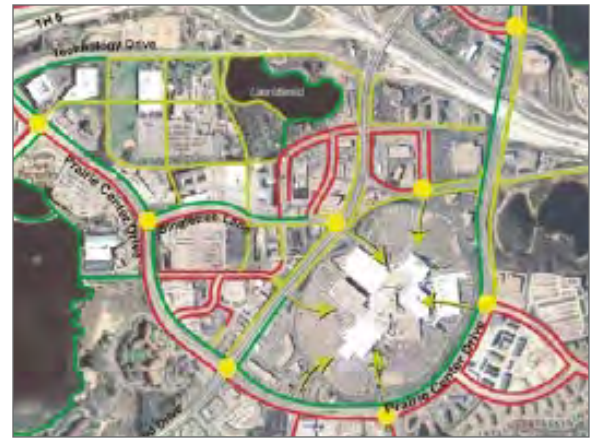
A TOD Zoning Ordinance is currently under development. It will provide development standards for walkable, mixed-use housing and employment centers near future SW LRT station areas.

### Major Center Area Study

The 2006 Eden Prairie *Major Center Area (MCA) Study* provides a twenty-five year vision for planning and development within the MCA and calls for the creation of a walkable Town Center within the existing commercial core. Components of that vision includes: realigning streets and providing a high-density, mixed-use community; improving streetscape design and investing in improvements; integrating mass transit options into the street network; improving pedestrian and bicycle accessibility, comfort, and connectivity; building additional green space with improved trail connections, and establishing an MCA identity through urban design and wayfinding signage.

### SW LRT TSAAP

As part of the future Southwest Light Rail Transit project, a set of *Transitional Station Area Action Plans (TSAAP)* were developed. This plan envisions the Eden Prairie Town Center station area as a transit-oriented mixed-use town center with pedestrian, bicycle, and transit connections. Numerous streets and intersections are specified for additional pedestrian and bicycle treatments. Station Area recommendations are included in Chapter 4.4.



Recommendations for walking and biking connections and improvements (shown in yellow) from the 2006 Eden Prairie Major Center Area Study. Existing sidewalks are shown in red and existing off-road shared-use paths are shown in green.



Access and circulation plan developed for the Eden Prairie Town Center Station as part of the TSAAP process.

### 1.5.2 - Metropolitan Council

The Metropolitan Council explicitly supports improvement and provision of bicycle facilities as part of transportation investments in cities within its jurisdiction.

### 2030 Transportation Policy Plan

The Metropolitan Council’s 2030 Transportation Policy Plan includes several policies that strongly recommend provision of pedestrian and bicycle facilities. Support for pedestrian and bicycle improvements are evident in the following policy:

#### Policy 15: Develop and Maintain Efficient Pedestrian and Bicycle Travel Systems

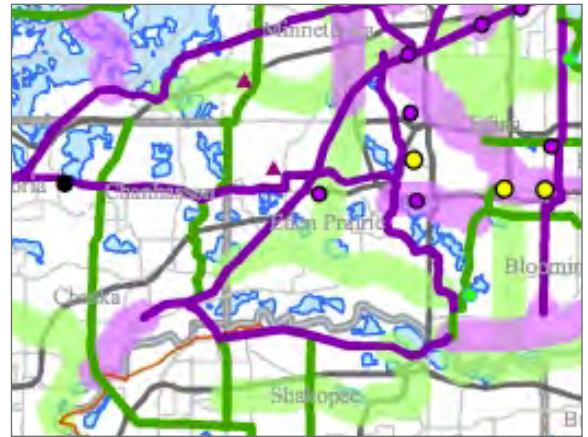
*“Safe, high-quality, continuous, barrier-free pedestrian and bicycle facilities must be developed, maintained, and improved to function as an integral part of the region’s transportation system. Compact, mixed-use development with facilities for pedestrians and bicyclists helps reduce short automobile trips ... As recognized in the federal surface transportation law, well-developed pedestrian and bicycle systems help promote energy conservation, reduce the pressure on the highway system, and preserve the environment. In addition, recent research indicates that residents of places designed with accommodations for bicyclists and pedestrians are more active and therefore healthier than residents of other areas.”*

### Twin Cities Regional Bike System Study

The Metropolitan Council completed a *Twin Cities Regional Bicycle System Master Study* in April 2014, which proposed a set of Priority Regional Bicycle Transportation Corridors. It also developed a set of guiding principles for identifying regional bicycle corridors.

Priority Regional Bicycle Transportation Corridors identified in Eden Prairie include:

- Minnesota River Bluffs LRT Regional Trail Corridor;
- Valley View Road/Highway 5 Corridor; and
- Shady Oak Road/Bryant Lake Drive/Prairie Center Drive/Anderson Lakes Parkway Corridor.



Priority Regional Bicycle Transportation Corridors (shown in purple) identified in the Metropolitan Council Twin Cities Regional Bicycle System Master Study.

**To learn more about the Metropolitan Council’s Bicycle System Master Study**  
 A copy of the *Twin Cities Regional Bicycle System Master Study* can be found at <http://www.metrocouncil.org/Transportation/Planning/Transportation-Resources/Regional-Bicycle-Master-Study-Introduction.aspx>.

**To learn more about the Hennepin County Bike Plan**  
 A draft copy of the *Hennepin County Bike Plan* can be found at <http://www.hennepin.us/bikeplan>

## 1.5.3 - Hennepin County

### Complete Streets Policy

Eden Prairie is located within Hennepin County, which was the first county in Minnesota to adopt a [Complete Streets Policy](#). Adopted in July 2009, the purpose of the policy is to ensure that streets under the county's jurisdiction are designed and operated to assure safety and accessibility for all roadway users - including pedestrians, bicyclists, transit riders and motorists.

### Hennepin County Pedestrian Plan

The Hennepin County Pedestrian Plan was adopted in September 2013. The Pedestrian Plan is part of the County's overall 2030 Transportation Systems Plan, and supplements the county's Complete Streets Policy. Sections of central and northern Eden Prairie were identified as a medium to medium-high priority by the County for pedestrian improvements along county roads.

### Hennepin County Bicycle Plan

Hennepin County is working with Three Rivers Park District to update the 1997 Hennepin County Bicycle Plan to reflect current and growing use of bicycling in the region. A final version of the plan is expected in 2015. The Eden Prairie Pedestrian and Bicycle Plan will be consulted by Hennepin County as they implement their own plan. The Hennepin County plan will also be updated over time as local municipalities refine and update their own plans.

Existing local trails proposed by the Plan for Three Rivers Park District "Regional Status" include:

- Dell Road corridor;
- Bryant Lake Regional Park into the Golden Triangle; and
- Pioneer Trail corridor.

Planned facilities include those on the following routes:

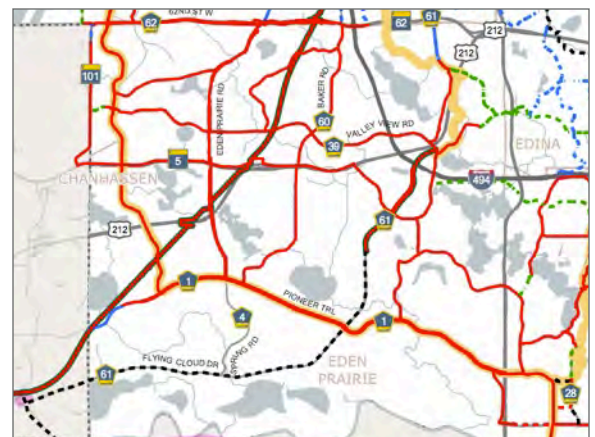
- County 61/Flying Cloud Drive;
- West end of County 39/Valley View Road;
- MN Highway 101; and
- Routes on county facilities in the Golden Triangle.

### Did You know?

Hennepin County dedicates funds every year as part of its capital budget to support the development of Complete Streets along its road network and bicycle system:

- **For sidewalks:** \$200,000 annual budget, providing up to 25% of the cost of a sidewalk along a county road.
- **For bikeways:** \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system plan or gap map.
- **For bikeway gaps:** \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system gap map.

Several important streets in Eden Prairie are part of the Hennepin County road network, including Flying Cloud Drive (CR 61), Eden Prairie Road and Spring Road (CR 4), Baker Road (CR 60), and sections of Valley View Road (CR 39), Mitchell Road (CR 60), and Shady Oak Road (CR 61).



**Routes proposed for Three Rivers Park District Regional Status are shown in yellow and planned facilities are shown as dashed lines.**

### 1.5.4 - At the State Level

#### Minnesota Complete Streets Law

On May 15, 2010, Governor Tim Pawlenty signed the Minnesota transportation policy bill, which made Complete Streets part of Minnesota law. As defined under Minnesota Statute 175.74, Complete Streets is the “planning, scoping, design, implementation, operation, and maintenance of roads in order to reasonably address the safety and accessibility needs of users of all ages and abilities.”

Minnesota’s Complete Streets laws and policies direct state transportation agencies to design and operate Minnesota roads to enable safe access for all users, including pedestrians, bicyclists and motorists.

#### Other Minnesota Statutes

##### Chapter 174, Minnesota Transportation Goals

*Promote and increase bicycling as an energy-efficient, non-polluting and healthful transportation alternative; Provide safe transportation to users throughout the state; [and] Provide multi-modal and inter-modal transportation that enhances mobility, economic development, and provides access to all persons.*

##### Chapter 116D, State Environmental Policy

*State government shall use all practicable means to: Assure safe, healthful, and aesthetic surroundings for all citizens; Maintain variety of individual choice; [and] Encourage styles of living that minimize environmental degradation.*

#### Lowering speed limits in Minnesota cities

Minnesota statutes currently allow cities and other jurisdictions to **lower speed limits to 25 miles per hour without need of any additional engineering or traffic study if a bicycle lane is provided.**

According to Minnesota Statute 160.263, Bicycle lanes and ways, Subdivision 4, Speed on street with bicycle lane:

*“Notwithstanding section 169.14, subdivision 5, the governing body of any political subdivision, by resolution or ordinance and without an engineering or traffic investigation, may designate a safe speed for any street or highway under its authority upon which it has established a bicycle lane; provided that such safe speed shall not be lower than 25 miles per hour. The ordinance or resolution designating a safe speed is effective when appropriate signs designating the speed are erected along the street or highway, as provided by the governing body.”*

### Minnesota Department of Transportation (MnDOT) policies

The Minnesota Department of Transportation (MnDOT) is a national leader in Context-Sensitive Solutions (CSS) and is recognized for policies that strongly advocate for the provision of adequate facilities for pedestrians and bicyclists.

### Americans with Disabilities Act Transition Plan

The MnDOT Americans with Disabilities Act Transition Plan, updated in July 2011, states: *“The success of making our transportation system fully accessible depends on the coordinated efforts of all levels of government, the public, and the policies and strategies outlined in this plan. MnDOT will continue to look for opportunities to involve citizens, stakeholders and partners in the implementation of this plan, future updates to the plan, and in policy decisions affecting accessibility. Together, we can realize a shared vision of an accessible, safe, efficient, and sustainable transportation system.”*

### Minnesota Go Long-Term Comprehensive Transportation Plan

MnDOT is currently in the process of developing a comprehensive multi-modal statewide transportation plan. The Statewide Bicycle System Plan, currently underway, is a part of that larger plan. Pedestrian and transit focused plans are also anticipated to guide the Department’s transportation vision for the next fifty years.

### MnDOT Reference Documents

The following list of reference documents have been prepared by MnDOT and are related to bicycle and pedestrian travel:

- 2007 Bikeways Facility Design Manual;
- 2013 Minnesota’s Best Practices for Pedestrian/ Bicycle Safety; and
- 2013 Best Practices Synthesis and Guidance in At-Grade Trail-Crossing Treatments.

## 1.5.5 - Federal Policies

### AASHTO guidance

The American Association of State Highway and Transportation Officials (AASHTO) is a standards-setting body that publishes specifications and policies guiding highway design and construction practices throughout the United States. Its policies strongly support accommodation of bicyclists and recommend the provision of adequate bicycle facilities:

*“All highways, except those where bicyclists are legally prohibited, should be designed and constructed under the assumption they will be used by cyclists. Therefore, bicycles should be considered in all phases of transportation planning, new roadway design, roadway construction and capacity improvement projects, and transit projects.”*

In 2012, AASHTO released a new bicycle planning guide (Guide for the Development of Bicycle Facilities, 4th Edition). Developed with guidance obtained through the NCHRP (National Cooperative Highway Research Program), it supplements other guides such as:

- 2009 Manual on Uniform Traffic Control Devices;
- 2011 Policy on Geometric Design of Highways and Streets, 6th Edition, “Green Book” (AASHTO);
- PROWAG (a formal set of public rights-of-way accessibility guidelines); and
- 2010 Highway Capacity Manual.

The new AASHTO guide covers paths and on-road bikeways and features bikeway level of service (LOS) considerations for roadway design. The guide:

- Authorizes the narrowing of motor vehicle lanes - down to and including 10 feet and 11 feet widths - in order to better accommodate pedestrian and bicycle needs;
- Provides nuanced guidance on bike lane design

- Is consistent with all applicable Federal / FHWA guidance, so that all projects designed in accordance with the 2012 AASHTO Bicycle Guide will be acceptable for and eligible for receiving federal funding; and
- Provides greater flexibility in the design process in order to better accommodate bicycling in urban contexts.

AASHTO’s 2004 pedestrian planning guide (Guide for the Planning, Design, and Operation of Pedestrian Facilities, 1st Edition) is being revised and should be published in 2015-2016. Other potentially helpful reference manuals from AASHTO include: the 2014 Guide for Geometric Design of Transit Facilities on Highways and Streets, 1st Edition and the 2004 Guide for Park-and-Ride Facilities, 2nd Edition.

**Federal agencies**

The [Bicycle & Pedestrian Program](#) of the Federal Highway Administration's (FHWA) Office of Human Environment promotes bicycle and pedestrian transportation use, safety, and accessibility. They issue guidance and are responsible for overseeing that requirements in legislation are understood and met by the States and other implementing agencies.

FHWA also sponsors resources such as the [Pedestrian and Bicycle Information Center](#) to provide information on a wide variety of engineering, encouragement, education, and enforcement topics. The Center was established with funding from the US DOT and is operated by the University of North Carolina Highway Safety Research Center.

The FHWA also grants Interim Approval of new traffic control devices, a revision to the application or manner of use of an existing traffic control device, or a provision not specifically described in

the MUTCD. Of recent significance is the FHWA’s Interim Approval of the optional use of green colored pavement in marked bicycle lanes and in extensions of bicycle lanes through intersections and other traffic conflict areas (see [Interim Approval document IA-14](#)).

**Federal law**

MAP-21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), was signed into law by President Barack Obama on July 6, 2012. Funding surface transportation programs at over \$105 billion for fiscal years 2013 and 2014, MAP-21 is the first long-term highway authorization enacted since 2005. Although the law reduces direct Federal funding for biking and walking projects, it presents a mechanism for funding these projects through state and local governments to fully utilize available funds to make biking and walking safer and more convenient.





## Community Engagement



*This section summarizes community outreach methods and the public feedback that shaped recommendations within this Plan.*

### **In this section**

- 2.1 - Introduction
- 2.2 - Engagement Activities
- 2.3 - Summary of Overall Results and Themes

## 2.1 - Introduction

Engagement with Eden Prairie residents and city staff served as the foundation for the recommendations in this Plan. Working with the Eden Prairie Public Works Department and members of the Plan’s Internal Working Group, a community engagement process was planned and facilitated that:

- Offered multiple opportunities for participation;
- Offered a combination of in-person and online engagement activities;
- Sought the participation of under-represented and health-disparity communities;
- Took engagement activities to places where residents were already gathering; and
- Provided useful guidance for development of the Plan, including guidance on policy priorities, Plan vision, network development, and facility designs.

Several hundred people provided comments or directly participated in activities held specifically for this Plan. The comments, questions and ideas generated through that engagement inform the recommendations presented and developed in this project.

**This section provides a summary of engagement activities and results. A full report detailing all community engagement activities and results received is included in this Plan’s Appendix.**

### With whom did we meet?

These are the in-person meetings that were held as part of this work:

Event	Date
City of Eden Prairie Internal Working Group	1/28/2014
Public Open House Eden Prairie City Hall	4/7/2014
Listening Session Early Childhood Family Education (ECFE) Parents Group	4/29/2014
Listening Session Somali Moms Group	5/15/2014
Listening Session Eden Prairie Senior Center	5/27/2014

### By the numbers

Eden Prairie residents were invited to share their experiences and ideas for pedestrian and bicycle improvements online and in person. This is how the general public participated across all outreach forums:

- **162** people filled out the **online survey**
- **199** unique users entered a total of **281** geo-specific comments on the **WikiMap**
- Over **70** individuals attended one of the Plan’s **in-person** events

## 2.2 - Engagement Activities

A variety of in-person and online activities were available to gather resident guidance and comments. A brief description is provided in this section.

### 2.2.1 - In-Person Engagement

In-person engagement included the following activities:

#### Public Open House

We held one large format public workshop to share project information with residents and to gathering their comments and ideas for improving conditions for walking and bicycling in the city. The open house included several activities to gather different types of ideas and recommendations from participants.

#### Community Listening Sessions

We held three community listening sessions with members of under-represented and health-disparity communities residing in Eden Prairie. These sessions included small-group activities and discussion.

#### Internal Working Group

We held recurring meetings with Eden Prairie’s Pedestrian and Bicycle Plan Internal Working Group (IWG). The IWG included staff from the city’s Public Works, Fire, Police, Community Development, and Parks and Recreation Departments. Members of the IWG brought forward concerns or issues related to their departments as well as issues they had received from residents. The IWG managed the work of this Plan, and provided guidance and direction to the project team. During the IWG’s January 2014 meeting, members participated in a listening session convened to gather their detailed comments and guidance.



*At a Listening Session with Somali parents. Translation was available at this meeting, and was arranged by the City of Eden Prairie.*



*Participants at the April 29 Early Childhood Family Education Listening Session provide comments on the Comfort Continuum Evaluation boards.*



*Participants working on the Assets, Barriers, and Opportunities activity at the April Public Open House.*

## 2.2.2 - Online Engagement

### Project Website

A public website was created for the project ([www.edenprairiepedbikeplan.org](http://www.edenprairiepedbikeplan.org)) to serve as a repository for project information, updates, and online engagement activities. The website was launched in late March 2014 and included direct links to the online survey and online interactive map, described below.

### Online Survey

A survey was made available on the project website. The survey was provided to allow all interested Eden Prairie residents to offer comments and ideas for the Plan without needing to attend in-person workshops. Survey questions closely mirrored in-person engagement activities, and offered the ability for a respondent to answer solely walking-related questions or biking-related questions, or both.

### Online Interactive Map

A online WikiMapping tool was developed and made available for public comment at the project website. The tool was intended to gather participant comments regarding current walking and biking routes and destinations, barriers, and gaps in the network.

The tool allowed respondents to place dots and lines on the map, upload photos, and write comments associated with each of the features they added. All locations and description information provided by participants were digitized and transcribed into a geographic information systems (GIS) database and are summarized in 2.3.2.

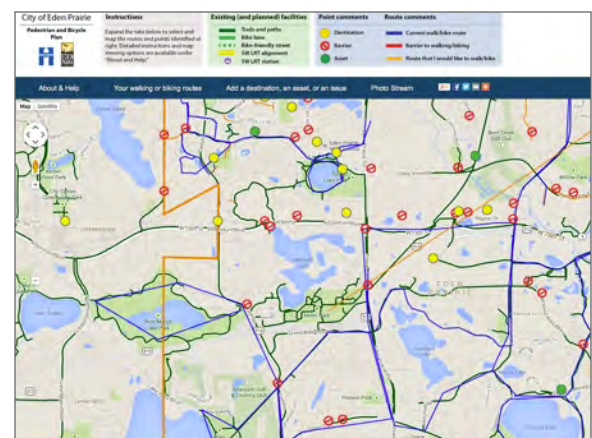
**This section provides a summary of engagement activities and results. A full report detailing all community engagement activities and results received is included in this Plan’s Appendix.**



*The Plan’s public website ([www.edenprairiepedbikeplan.org](http://www.edenprairiepedbikeplan.org)).*



*A sample question from the online survey asking about frequency of walking to different destinations.*



*The online mapping tool allowed participants to identify specific walking and biking routes, assets, and barriers.*

## 2.3 - Summary of Overall Results and Themes

This section presents a summary of results from mapping and survey activities across all in-person and online engagement. Additionally, overall results and themes from the public engagement effort are discussed.

### 2.3.1 - Results from Mapping

Map comments pertaining to walking and biking assets, barriers, destinations, and routes in Eden Prairie were received at in-person engagement sessions and through the online WikiMap. The mapping exercise was facilitated at the January 28 IWG Meeting, April 7 Open House, and May 27 Eden Prairie Senior Center Listening Session.

Instructions for the mapping exercise were consistent across engagement opportunities, yielding results that can be aggregated. Aggregating all of the results (online and in-person) on a single map yields a “heat” map of destinations, assets, barriers, and routes. This map can be useful as an approximation of general patterns in how people view and interact with the pedestrian and bicycle network in Eden Prairie.

Additionally, the map indicates locations where key route connections may be needed. These results inform plan recommendations for spot improvements and for enhancing overall network connectivity.

The conceptual “heat” map on the next page depicts identified assets, barriers, destinations, and routes (both desired and current routes) with wide transparent dots and bands of color. Where dots and bands overlap (i.e., where there are multiple

instances of a corridor being identified), darker areas are shown.

Assets identified across all mapping exercises included the following, among others:

- Existing off-road trails; and
- Infrastructure improvements that have improved walking and biking.

Destinations identified included the following, among others:

- Eden Prairie Community Center area;
- Prairie Village Shopping Center;
- SW Transit Station;
- Eden Prairie Center; and
- City Parks.

Barriers identified included the following, among others:

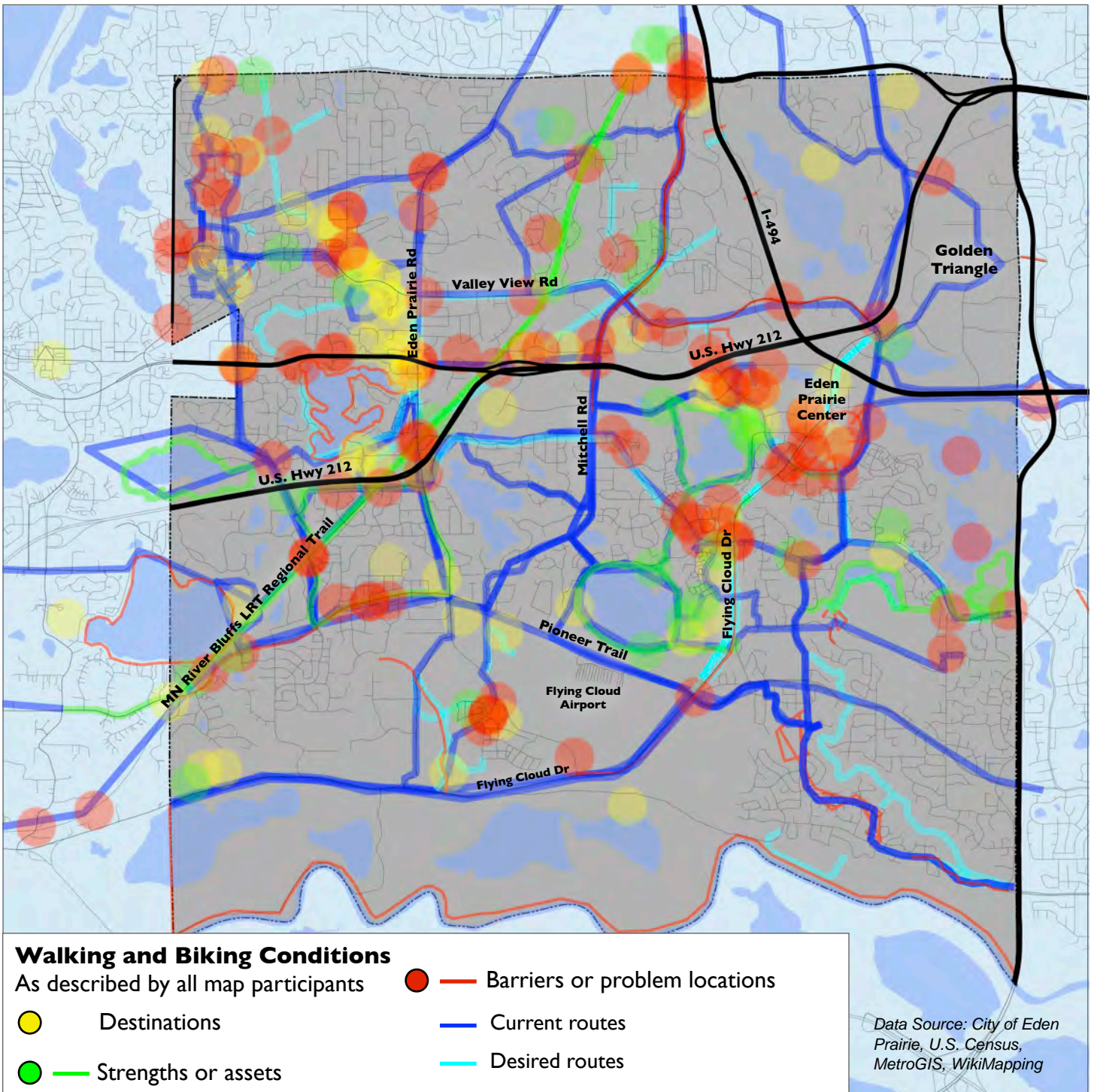
- Areas of potential conflicts with motor vehicles;
- County Road 60/Baker Road;
- County Road 39/Valley View Road;
- Minnesota Highway 5;
- Eden Prairie Center area;
- SW Transit Area; and
- Area near Flying Cloud Drive and Anderson Lakes Parkway.

Routes (current and desired) identified included the following, among others:

- Pioneer Trail;
- Mitchell Road;
- Eden Prairie Road; and
- Minnesota River Bluffs LRT Regional Trail.

All data points, and specific text comments given with each point and line depicted can be viewed in the GIS shapefiles of the mapping activity data.

### 2.3.2 - Aggregate of All Mapping Results - Walking and Biking Destinations and Barriers



### 2.3.3 - Overall Themes

Several themes emerged from engagement with Eden Prairie residents, including:

#### There are many assets for walking and biking in place today

Participants had strong positive opinions about the city’s pedestrian and bicycle network, and about ease of access to recreational destinations. The city’s extensive network of off-road trails and sidepaths was identified as a prominent asset.

#### Many have concerns about safety and prefer separation from motor vehicles

Most participants expressed a preference for greater separation from motor vehicles when walking and biking. Many participants also identified bike lanes and other designated on-road facilities as needed improvements. Concerns about safety and perception of safety when walking and biking near motor vehicles was a predominant theme in all comments received.

#### There are several key opportunities for improving conditions for walking and biking

Despite generally positive opinions about walking and biking conditions in the city, participants also identified several issues as key opportunities for improvement. These include:

##### Address gaps in the network

Frequently, participants mentioned routes where sidewalks or sidepaths were not provided, or roads that are uncomfortable to bike or walk on, or connections to key destinations that are missing.

##### Intersections and trail crossings

Many participants identified intersections and trail crossings with high motor vehicle volumes, multiple

travel lanes, and wide crossing distances as barriers to walking and biking.

##### Education and enforcement of traffic laws

Participants frequently mentioned the need for improved driver awareness, and improved education and enforcement of traffic laws for all users.

##### Year-round maintenance

Ice and snow removal was identified as an opportunity to improve year-round walking and biking.

##### Public safety are barriers to walking and biking

Participants cited the need for improved safety measures along trails and other facilities, particularly at night. Improved lighting was mentioned as a potential area of improvement.

##### Access to local destinations

Walking and biking access to useful destinations like grocery stores, schools, and others was cited as an opportunity for improvement. Large parking lots were mentioned as a barrier for pedestrian and cyclist access to businesses. Increased bicycle parking at destinations is desired as well.

##### Improved signs and way finding

Participants identified need for signing and wayfinding improvements to orient users to walking and biking routes and destinations.

**This section provides a summary of engagement activities and results. A full report detailing all community engagement activities and results received is included in this Plan’s Appendix.**



## Existing Conditions, Analysis, Summary of Issues to Address, and Conceptual Foundation



*This chapter includes an evaluation of existing conditions for walking and bicycling in Eden Prairie, analysis of the issues, and a foundation for recommendations.*

### **In this section**

- 3.1 - Introduction
- 3.2 - Existing Conditions
- 3.3 - Analysis - Understanding How Users Interact with the Existing Walking and Biking Network
- 3.4 - Network Vision
- 3.5 - Goals and Guiding Principles



### 3.1- Introduction

This chapter summarizes key learnings from:

- Information collected from site visits;
- Issues received from city staff;
- Issues received from Eden Prairie residents;

and combines it with modeling and analysis completed to:

- Understand underlying patterns of demand;
- Determine the suitability of existing facilities to address the walking and biking needs of Eden Prairie residents, even if they are not currently regular users of the walking and biking network; and
- Identify areas where attention should be focused to maximize connectivity gains and improve overall conditions for walking and biking in the city.

The end products of this chapter are:

- A set of guiding principles to guide recommendations for improvement;
- A list of issues, routes, locations and intersections to be addressed; and
- A conceptual connectivity framework to guide recommendations provided in the subsequent chapters of the Plan.

This chapter is the starting point for the recommendations included in this Plan, which begin on Chapter 4 (the next chapter in the Plan).



**Railroad tracks are located between Eden Prairie High School and a nearby neighborhood. Here, desire lines indicate a location where students often cross the railroad tracks to travel to and from school.**



**A young bicyclist moves across six lanes of traffic to complete a crossing movement.**

## 3.2 - Existing Conditions

This section describes Eden Prairie's existing network of walking and biking facilities. Understanding of the existing network serves as a foundation for analysis (in this chapter) and recommendations (provided in subsequent chapters).

### 3.2.1 - Existing System Overview

Walking and biking in Eden Prairie are accommodated by a system of sidewalks, paved and unpaved off-road recreational shared-use paths/trails, and shared-use sidepaths provided along many roadways throughout the city, including several arterial roads.

The current pedestrian and bicycle network provides connectivity within neighborhoods, to schools, and to parks, cultural, community, and recreational destinations. However, the continuity of many existing facilities is compromised at intersections with high-volume and/or high-speed roadways. In addition, some route segments are not currently provided. Wayfinding signage providing directions to destinations is present only at a limited number of locations.

The city's neighborhoods generally offer low-volume, low-speed streets, and are well-served by sidewalks. The Minnesota River Bluffs Regional LRT Trail runs through the northwest corner of the city and provides regional connections. Several underpasses provide trail connectivity under highways and other roadways across the network.

Several intersections and crossings present difficulties for pedestrian and bicyclist movement due to high motor vehicle speeds and/or volumes, and wide crossing distances that include multiple motor vehicle travel lanes. These roadway intersections act as barriers for network connectivity. Land uses are separated (not intermixed) and at relative distance from each other, making walking and biking travel for daily destinations less convenient.

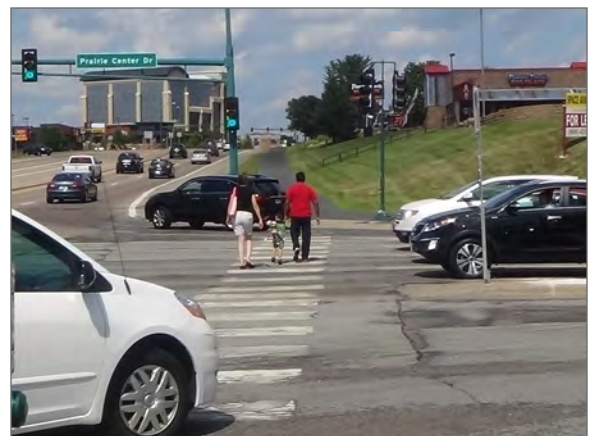
A concentration of commercial and industrial uses in the Golden Triangle, as well as in and around the Eden Prairie Center and SW Transit Station attract residents and visitors for jobs, shopping, and other purposes.



*Shared-use facilities along Technology Drive.*



*A tunnel along Three Rivers' Minnesota River Bluffs Trail.*



*Intersection crossings can be difficult in many locations because of wide crossing distances and high traffic volumes, like at Prairie Center Drive and Flying Cloud Drive, shown here.*

### 3.2.2 - Sidewalks

Sidewalks are provided in residential areas and within Eden Prairie Center, while sidepaths (described below) are provided along major roadway corridors in the city. In general, sidewalks or sidepaths are consistently provided throughout the city. In some locations, however, pedestrian facilities are located on only one side of the street, or not at all.

### 3.2.3 - Sidepaths, Shared-Use Paths, and Trails

Eden Prairie's extensive network of shared-use roadside paths make up a significant portion of its existing pedestrian and bicycle network. Paved sidepaths are located on one or both sides of many major corridors in Eden Prairie and connect users to neighborhood parks and local recreation destinations. Roadside paths provide separation between sidepath users (pedestrians and bicyclists) and automobile traffic. However, there are sometimes conflicts between different types of sidepath users, especially in heavily traveled areas.

Many of Eden Prairie's paved sidepaths eventually connect to one or more of the city's off-road trails. Off-road trails include lake loops and park trails. While these facilities are connected to the larger bicycle transportation network, these trails have greater orientation to recreational purposes.

In general, sidepaths, shared-use paths and trails provide comfortable low-stress connections to various destinations in Eden Prairie. However this low-stress network breaks down where shared-use paths cross intersections, driveways, and other motor-vehicle roadways.

### 3.2.4 - Surface Streets

Minnesota law allows bicyclists to ride on all streets and roadways except for limited access highways. However a number of factors influence the level of comfort and sense of safety that bicyclists experience while utilizing surface streets, and work against their potential use by a significant portion of the city's population. These factors include



**Prop Food shelf was identified as an important location during community engagement. Sidewalks would allow pedestrians to reach this destination more safely and comfortably.**



**Posted speed limit is 30 mph, but wide lanes invite higher driving speeds.**



**A bicyclist waits at the intersection of Prairie Center Drive and Technology Drive.**

(primarily) traffic speeds and volumes, and the availability of a designated space for bicyclists separated from automobile traffic.

Paved shoulders are available on many city streets, and are used by some bicyclists. Most neighborhood streets in the city offer traffic speeds and volumes low enough for children and hesitant bicyclists to comfortably use. However, areas comfortable for bicycling are separated from one another by busy roadways. These busier roads have traffic speeds/volumes and crossing distances/configurations that require more skill to safely and comfortably navigate. The result is that areas with relatively comfortable riding (and walking) conditions are isolated from one another and from potentially useful destinations.

### 3.2.5 - Regional Connections

The Minnesota River Bluffs LRT Regional Trail (Minnesota River Bluffs Trail) is an aggregate-surface shared-use trail located in the northwest region of Eden Prairie. Existing sidewalks and trails in Eden Prairie are well connected to the Minnesota River Bluffs Trail. The trail provides a link to Chaska (to the southwest) and connects to both the Cedar Lake LRT Regional Trail and the North Cedar Lake Regional Trail in Hopkins (to the northeast). Through its connections to regional trails in neighboring communities, the Minnesota River Bluffs Trail provides valuable bicycle connections to St. Louis Park, Minneapolis, and the greater Twin Cities area.

The trail is located within an abandoned railway corridor, and provides a high degree of separation from automobile traffic, with relatively few roadway crossings compared to other shared-use trails in the area. Attention to roadway crossings where they do occur is critical, as many crossings take place at uncontrolled intersections.

### 3.2.6 - Intersections and Trail Crossings

Between its extensive network of shared-use sidepaths and low volume residential streets, Eden Prairie has a great foundation for a low-stress pedestrian and bicycle mobility network. The challenging locations in the network, as it currently stands, are at trail crossings and intersections.



**A family rides on the sidewalk along Braxton Drive.**



**Pioneer Trail is uncomfortable to cross at Braxton Drive, making it difficult for students to walk to Cedar Ridge Elementary School.**

Many corridors that have low vehicle speeds and volumes cross roadways with high vehicle speeds and volumes, isolating pockets of comfortable, low-stress bikeability. Improving conditions at key intersections and critical crossings will facilitate connections between areas that are more comfortable for biking and walking.

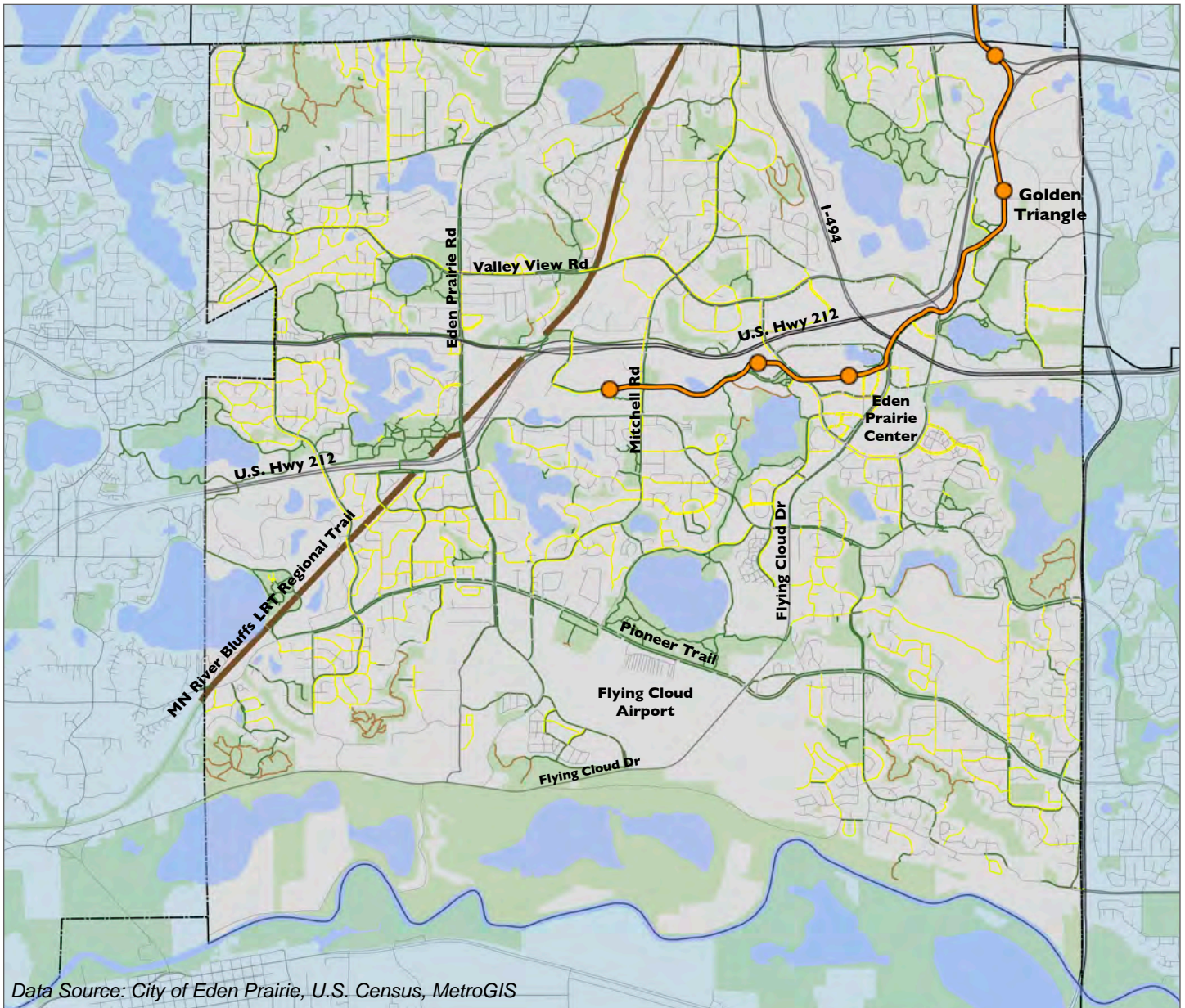
### 3.2.7 - End of Trip Facilities

A limited number of bicycle parking racks and walking and biking amenities such as benches and water fountains are provided in the city. Some commercial establishments and key civic/cultural destinations include bicycle parking racks. Some destinations such as the SW Transit Station have several benches for pedestrians.



***Sign alerting motorists of the Minnesota River Bluffs LRT Regional Trail crossing of Venture Lane.***

### 3.2.8 - Existing Walking and Biking Network



#### Walking and Biking Network

Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- MN River Bluffs LRT Trail

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

### 3.3 - Analyzing and Understanding How Users Interact with the Existing Walking and Biking Network

To develop and provide useful recommendations for enhancing the city's existing pedestrian and bicycle network, it is important to understand how current residents and current users of the system perceive and experience it. Guidance from the city's IWG, as well as information and comments received through the project's community engagement efforts were an important contributor to this understanding. Data-based modeling (for demand and suitability) and several site visits (including walking and biking assessments) were also an important contributor to the project team's understanding of conditions in the city.

An overview and results of activities completed to develop an understanding of conditions in the city, as well to develop initial concepts for improvement, are provided in the following sections:

- Determination of Walking and Biking Focus Areas (3.3.1);
- Level of Traffic Stress Analysis for Bicycling (3.3.4);
- Site Visits (3.3.7); and
- Engagement with the Public and City Staff Internal Working Group (3.3.8).

Results from these activities provided a foundation for the recommendations presented in this Plan.



***A family waits to cross the street in Eden Prairie.***



***Enjoying a shared-use sidepath along Anderson Lakes Parkway.***

### 3.3.1 - Determination of Walking and Biking Focus Areas

Focus areas were identified to help prioritize necessary intersection and route improvements for walking and biking.

Areas with high concentrations of destinations within a close proximity to the highest number of residences are assumed to have the greatest potential for transportation-oriented (and recreational) walking and bicycling trips. Priority focus areas for walking trips are presented in Figure 3.3.2, and priority areas for biking trips are presented in Figure 3.3.3.

There is strong overlap between priority focus areas for walking and biking, and these areas were treated as one area during analysis. Selected priority improvements fall within these focus areas and aim to connect areas with lower motor-vehicle speeds and volumes.

Focus areas delineated by quarter and half-mile boundaries around destinations were overlaid with residential density information, traffic stress analysis results, public comments, and project team priorities to identify and guide priority route recommendations.

Removing barriers to walking and bicycling in locations that have a high concentration of trip origins and trip destinations will have the greatest potential impact for increasing the number of people walking and biking, and for benefitting the greatest number of individual trips that can be made on foot or by bike.

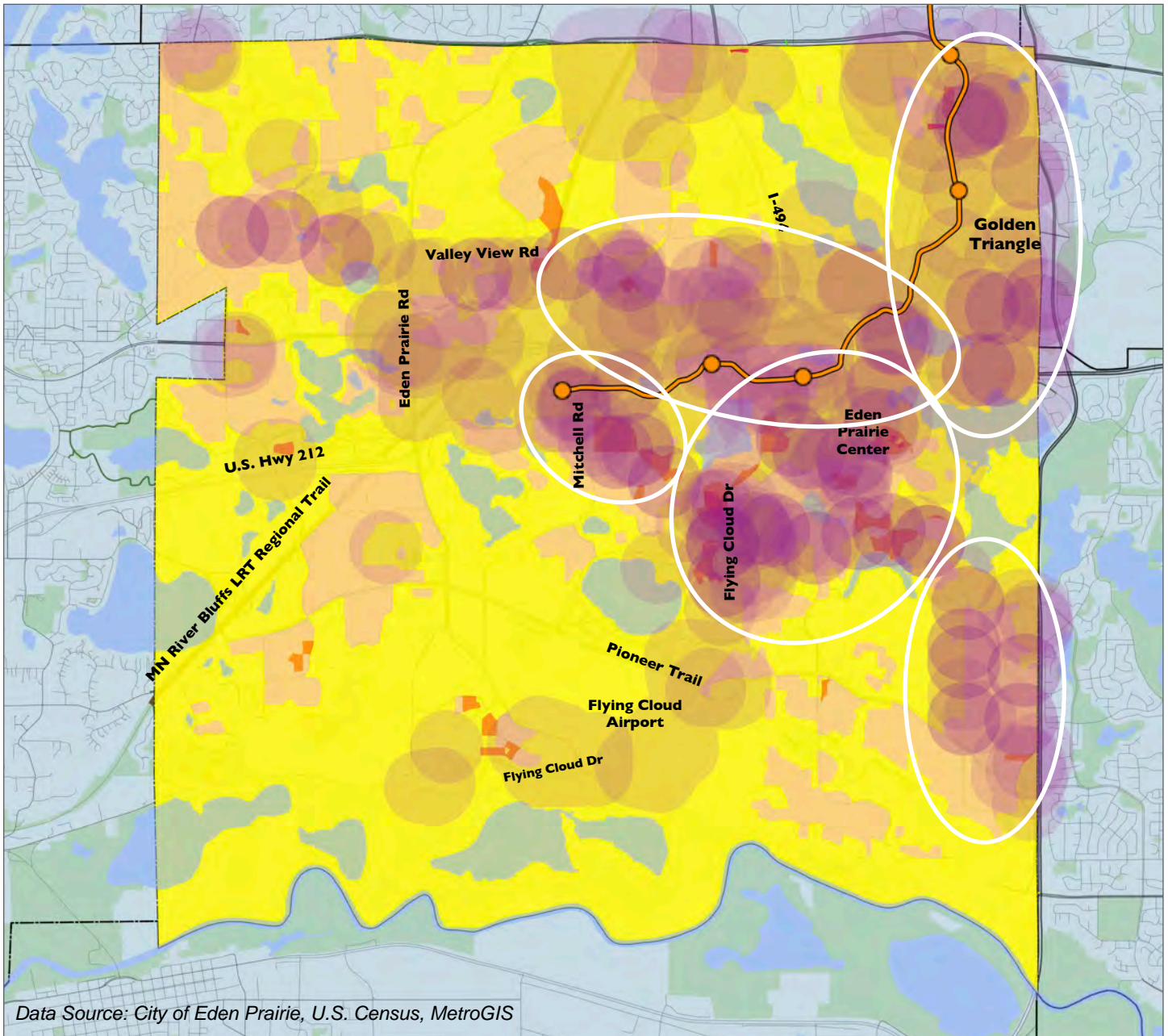
#### Focus Areas for Walking and Biking

Priority focus areas were determined based on:








- Proximity to key destinations, such as schools, employment destinations, current and future transit stations and stops, and points of interest (trip end); and
- Proximity to medium and high-density residential areas (trip origin).



### 3.3.2 - Focus Areas for Walking Improvements

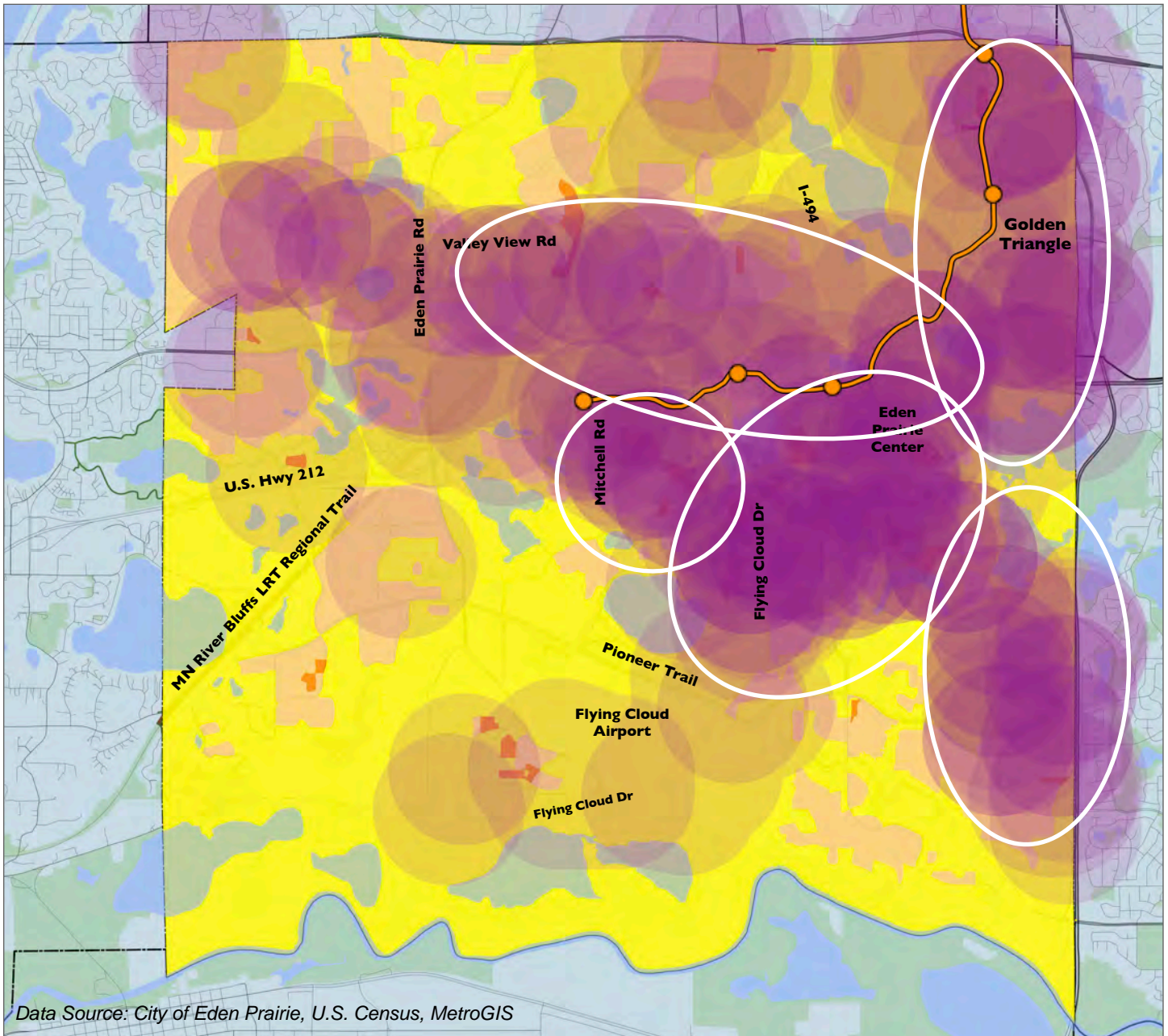


Data Source: City of Eden Prairie, U.S. Census, MetroGIS








- |                                                                                     |                            |                                                                                     |                                         |
|-------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------|-----------------------------------------|
|  | Low Density Residential    |  | 1/4 Mile Buffer Around Key Destinations |
|  | Medium Density Residential |  | Proposed Southwest LRT Alignment        |
|  | Medium Density Residential |  | Proposed Southwest LRT Stations         |
|  | High Density Residential   |                                                                                     |                                         |

*Note: 1/4 mile buffers are approximate estimations of a 5 minute walk "as the crow flies." Actual walking times and distances will vary based on routes and facilities.*

### 3.3.3 - Focus Areas for Biking Improvements



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

	Low Density Residential		1/2 Mile Buffer Around Key Destinations
	Medium Density Residential		Proposed Southwest LRT Alignment
	Medium Density Residential		Proposed Southwest LRT Stations
	High Density Residential		

*Note: 1/2 mile buffers are approximate estimations of a 3 minute bike ride "as the crow flies." Actual riding times and distances will vary based on routes and facilities.*

### 3.3.4 - Level of Traffic Stress (LTS) Analysis for Bicycling

Level of Traffic Stress (LTS) is a roadway classification system that seeks to respond to the traffic stress tolerance of the general population. Each LTS level corresponds to the suitability of that roadway segment or intersection for use by a particular segment of the general population.

The LTS approach used for this analysis is based on the Mineta Transportation Institute's 2012 *Low-Stress Bicycling and Network Connectivity* report, and on the rider categories developed by Roger Geller.

Level of Traffic Stress	Suitable for use by
1	Most children
2	Mainstream adult population
3	"Enthusied and confident" population
4	"Strong and fearless" population

### General Methodology

An LTS score was calculated for roadway and off-road sidepath and trail segments in Eden Prairie, based on the criteria and scoring method reported in the Mineta Institute's Low Stress Connectivity Bikeway report. While the 2012 Mineta Institute report provides direction for classification of on-street bicycle facilities, all facilities that provide a separated facility for bicyclists are ranked as suitable for all users. This analysis builds on the LTS concept and aims to consider in more depth the quality of Eden Prairie's off-road sidepath and trail system, which is a significant portion of the city's existing bicycling infrastructure.

The higher (worst) LTS score was applied to each trail and roadway segment. For example, if a roadway was ranked LTS 2 and a proximate intersection was ranked LTS 3, the roadway received a score of LTS 3. Signalized intersections are not graded, so each proximate roadway is ranked based only on its segment score. The primary tables that were used for the Eden Prairie analysis are included below.

### What is Level of Traffic Stress (LTS) Analysis?

Level of Traffic Stress (LTS) Analysis is a recently-developed methodology that responds to bicyclists' needs and preferences for direct routes between origins and destinations (school, shopping, parks) that do not include links that exceed their tolerance for traffic stress.

Using existing data and GIS modeling, this analysis developed an understanding of connected low-stress "islands" that can be, through strategic investments, joined with other low-stress locations to quickly grow a network that is useful and inviting to a wider range of bicyclists in Eden Prairie.

Roadways were scored primarily based on posted speed and number of lanes, as criteria for presence of on-street bicycle facilities did not apply to Eden Prairie (no on-street bicycle facilities are currently provided in the city). During scoring, it was noted that the GIS data for posted speed on local roadways was consistently reported as 35 mph. Given that the actual value on a number of local roadways was 30 mph, this modification was made for all roadways classified as ‘local’. Based on this assumption and the scoring criteria shown below, most roadways in Eden Prairie are classified as LTS 2. Roadways classified as LTS 3 or 4 interrupt connectivity in the city and create disconnected pockets (“islands”) where roadway conditions would otherwise offer acceptable conditions for most adult cyclists.

Data inputs for the sidepath/trail LTS analysis include width, setback from the roadway and the quality (availability of signals, number of lanes to cross, turning conflicts) of intersection crossings.

### Scoring Table

**Table 1: Roadway - Mixed Traffic Criteria**

Speed Limit (mph)	Number of Vehicular Lanes		
	2-3	4-5	≥ 6
≤ 25	LTS 1 or 2 *	LTS 3	LTS 4
30	LTS 2 or 3 *	LTS 4	LTS 4
≥ 35	LTS 4	LTS 4	LTS 4

\*: Use the lower value for streets with unmarked centerlines or classified as a local roadway with no more than two lanes.

### Findings

Maps 3.3.5 and 3.3.6 show Level of Traffic Stress (LTS) for roadways and for sidepaths/trails separately. The roadway LTS analysis illustrates that a number of areas in Eden Prairie already feel relatively safe and comfortable for the average adult and child bicyclist. 3.3.5 and 3.3.6 show that these “low-stress” roadways and sidepaths/trails are typically associated with local residential streets. Residential areas are often bounded by arterial and collector roadways like Technology Drive and Flying Cloud Drive which disrupt biking (and walking) connectivity and contribute to an ‘island effect’ or small pockets of comfortable roadways for bicycling.

The disconnected nature of these safe and comfortable “bicycling islands/pockets” makes it challenging to ride long distances in Eden Prairie or to connect to shopping, services or social events between neighborhoods. However, the analysis also shows clearly that a focused strategy for intersection improvements at key locations along arterials could develop key links in the city that can join these isolated pockets and expand them into a significantly larger “low-stress” connected bicycle network.

Currently, a number of roadways are identified as LTS 3 or 4, meaning that only a small percentage of the adult population would consider them comfortable and viable options for bicycling. Some of these roadways, such as Pioneer Trail and Spring Road, do include adjacent sidepaths/trails which offer bicycling accommodations that would be found comfortable by the majority of the general population. However, and

despite the generally favorable conditions provided by these separated pathways, their numerous intersections with high-volume and high-speed roadways greatly increase the level of stress and discomfort experienced by bicyclists. Many of these crossings require the bicycle rider to cross four or more lanes of motor vehicle traffic, making the overall bicycling experience uncomfortable and much less of an attractive option for residents who may otherwise be open to considering bicycling for at least some of their trips.

The sidepath/trail and roadway analyses should be viewed in combination to inform the opportunities for developing a connected network for riders of all ages and abilities in Eden Prairie.

In general, developing a solution for the intersections of otherwise comfortable sidepath facilities with frequent driveways and intersections with major roadways is a key opportunity for leapfrogging current conditions and greatly improving the city's orientation to bicycle travel.

### Another way of looking at Eden Prairie's sidepath network

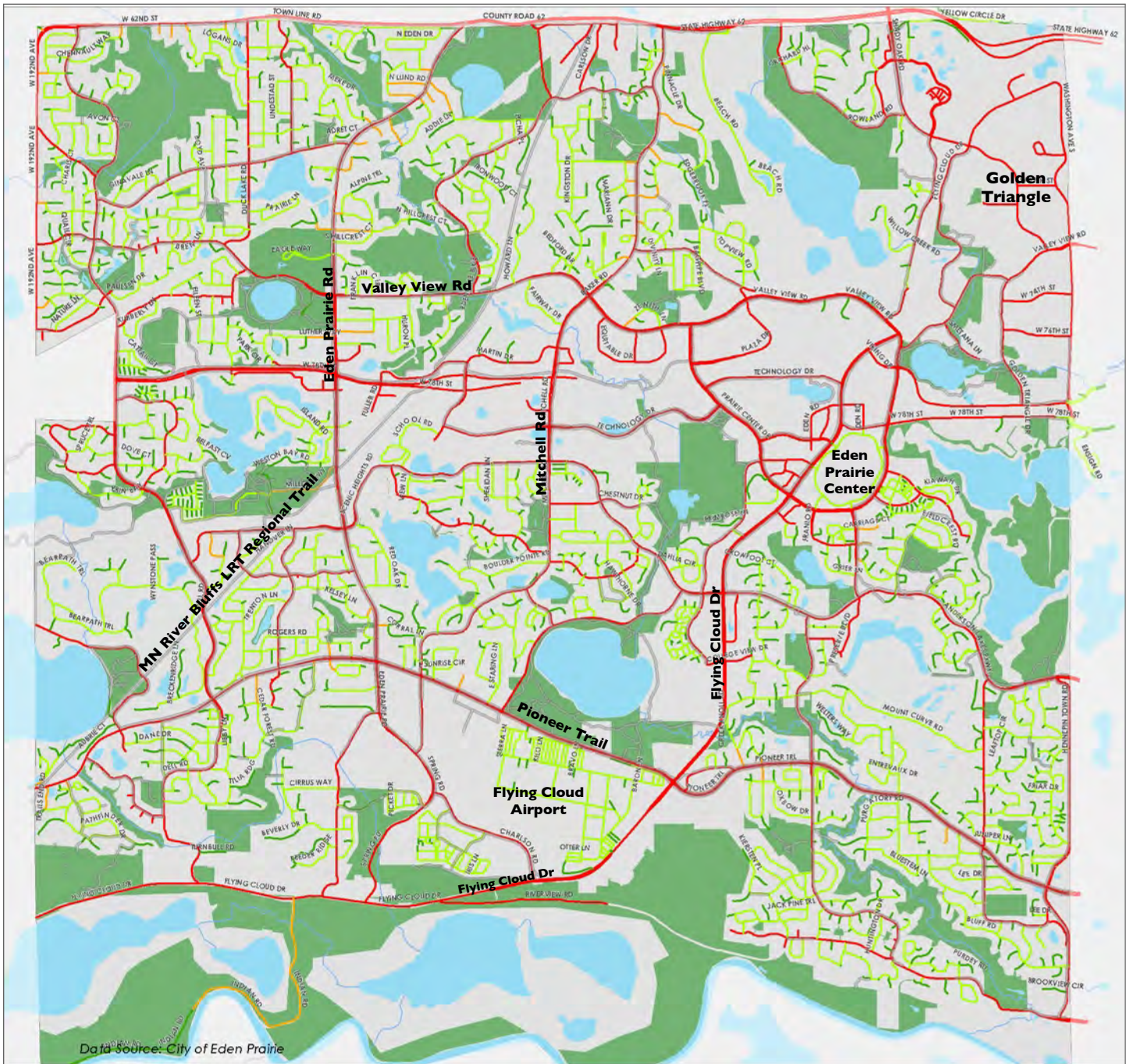
Many of the city's roadways, especially those along major motor-vehicle corridors, include adjacent sidepaths/trails which offer a barrier-separated facility for bicycle travel. While on the sidepath, bicycle riders enjoy a comfortable, well-maintained facility for their travel.

Conditions break down, however, when they encounter intersections with major roadways, and with frequent driveways along their path. Pleasant riding conditions while on the path can become intimidating, frustrating, or unsafe-feeling when arriving at an intersection.

Eden Prairie's extensive sidepath network has the potential of functioning as a cycletrack or "protected bicycle lane" network - the first of its kind in the US (along its length, a cycletrack is not much different from a sidepath - what is different is how intersections are treated).

The key to getting there, and realizing the great potential that such a network has for greatly expanding the use of bicycling in the city, is to solve the issue of the sidepath intersections - several suggestions are included under the EPIIC ("Eden Prairie Improved Intersection Crossings") concept in Chapter 5.5.

### 3.3.5 - LTS Analysis: Road Network



Data source: City of Eden Prairie

#### Level of Traffic Stress (LTS)

##### Existing

— Trail

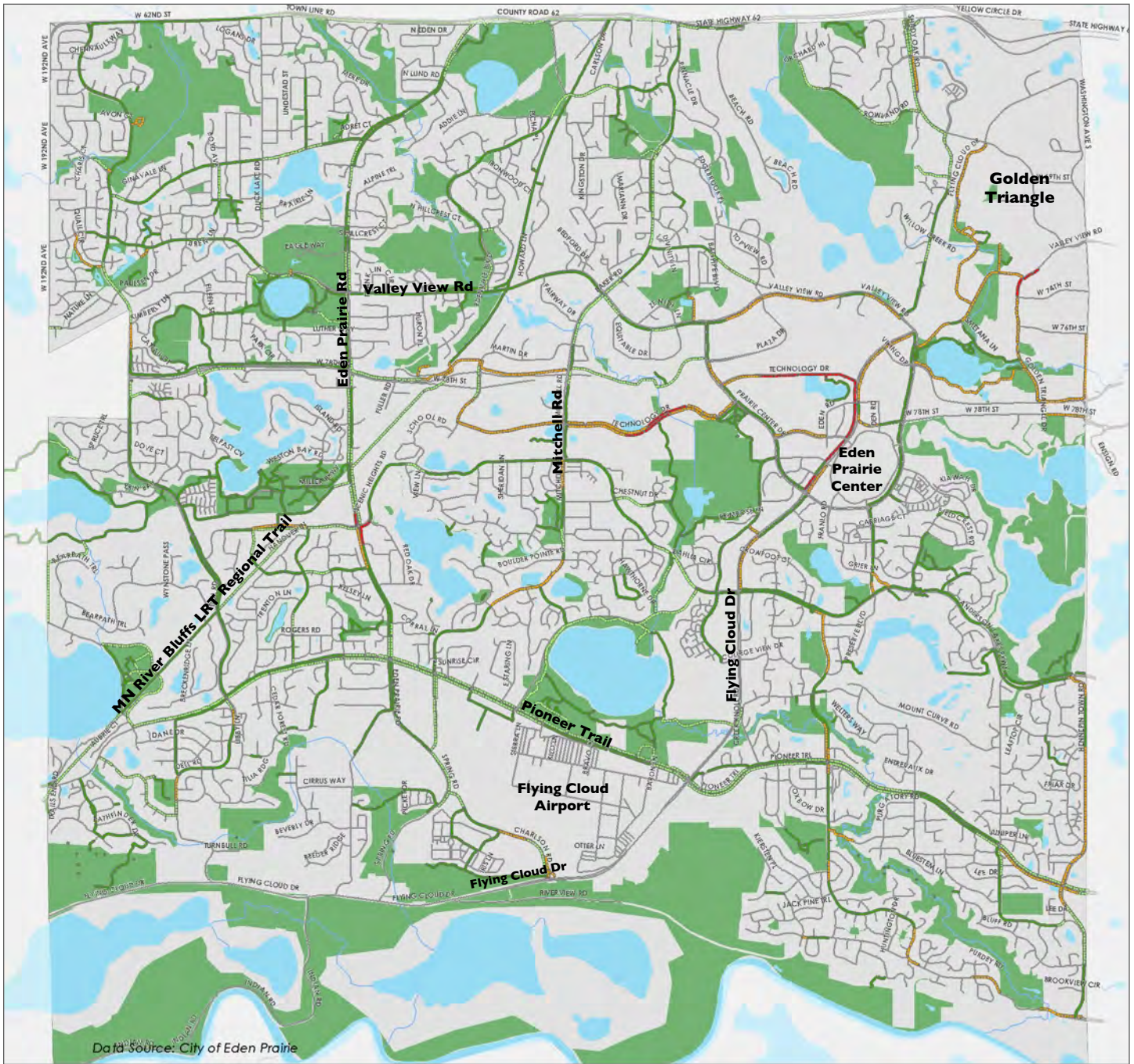
##### Road Level of Traffic Stress

- LTS 1
- LTS 2
- LTS 3
- LTS 4

Level of Traffic Stress (LTS) is a classification system for the traffic stress tolerance of the bicycling population. Each LTS corresponds to a particular group of the population.

- LTS 1 = Most children
- LTS 2 = Mainstream adult population
- LTS 3 = “Enthusied and confident” population
- LTS 4 = “Strong and fearless” population

### 3.3.6 - LTS Analysis: Sidepath and Trail Network



#### Level of Traffic Stress (LTS)

##### Existing

— Roadway

##### Trail Level of Traffic Stress

- LTS 1
- LTS 2
- LTS 3
- LTS 4

Level of Traffic Stress (LTS) is a classification system for the traffic stress tolerance of the bicycling population. Each LTS corresponds to a particular group of the population.

- LTS 1 = Most children
- LTS 2 = Mainstream adult population
- LTS 3 = “Enthusied and confident” population
- LTS 4 = “Strong and fearless” population

### 3.3.7 - Site Visits

Several site visits helped inform and confirm understanding of the existing network conditions and identification of locations in need of improvement. Please see the Appendix to this report for a summary of observations from site visits.

### 3.3.8 - Engagement with the Public and City Staff Internal Working Group

Comments and recommendations received from Eden Prairie city staff and residents were essential to understanding where improvements to the walking and biking network are necessary. These comments serve as a primary foundation for this Plan's recommendations. Comments were received through in-person meetings, and the Plan's on-line interactive mapping tool. Regular meetings with the city's project Internal Working Group occurred throughout this Plan's development. The engagement process is discussed in Chapter 2 of this Plan.

Walk/bike barrier locations identified through comments received through engagement were combined with barrier locations identified through other analysis. A documentation of these problem/barrier locations is included in 3.3.9 and 3.3.10 on the following pages.



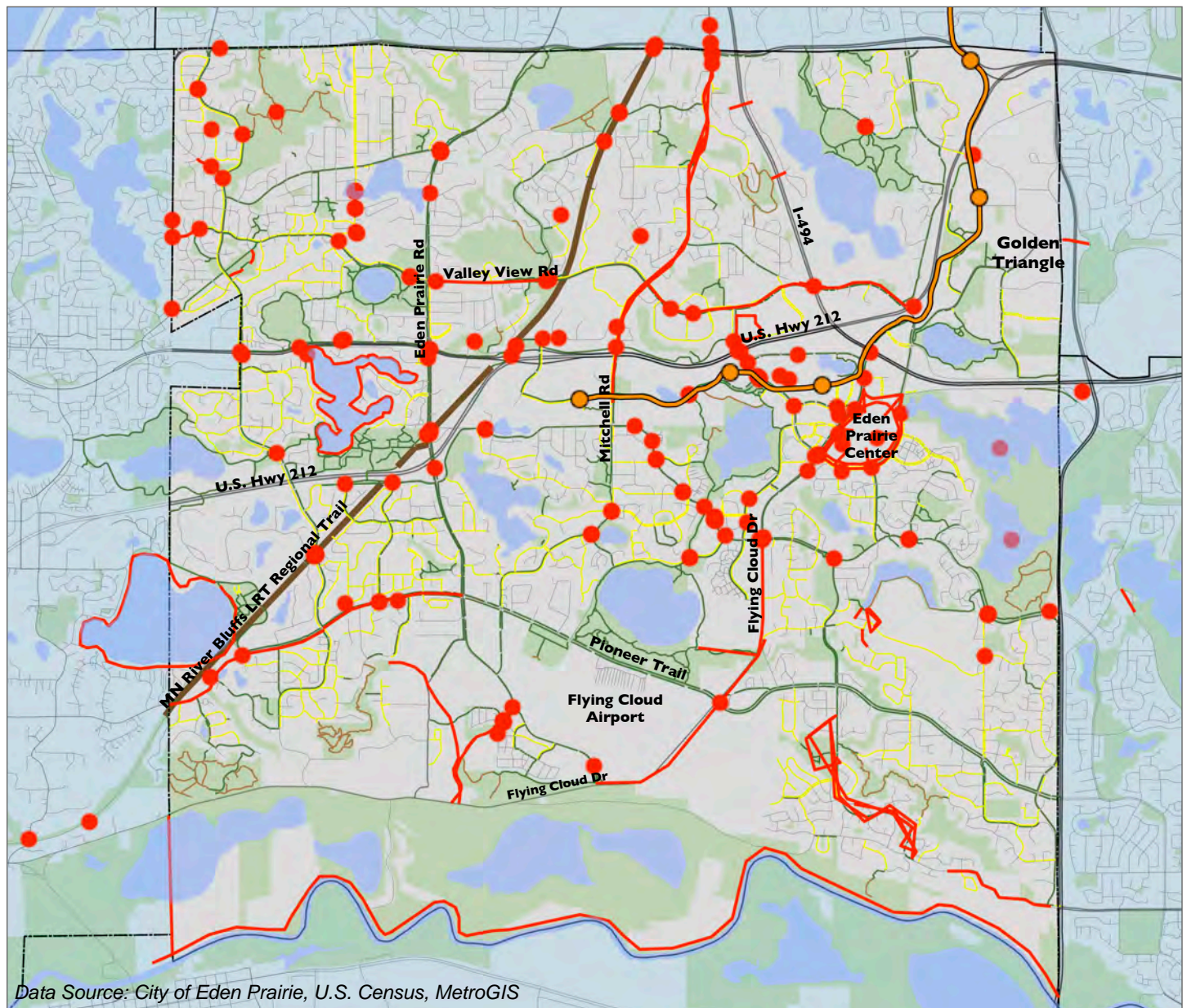
***Eden Prairie staff provided valuable guidance in understanding walk/bike issues and conditions in the city as they are deeply familiar with both local conditions and walk/bike best practices. Image: Eden Prairie staff at a May 2014 PROWAG (Public Rights-of-Way Accessibility Guidelines) training held by the city for its staff. Photo courtesy of Robert Ellis, Eden Prairie Public Works Director.***



***The staff Internal Working Group participates in an initial mapping discussion at a January 2014 IWG meeting.***



### 3.3.9 - Barrier Locations as Identified by City Staff and the Public



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- MN River Bluffs LRT Trail

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations
- Barrier Locations Identified

### 3.3.10 - Summary of Barrier Locations as Identified by City Staff

Location
Spring Road south of Prospect Road
Flying Cloud Drive / Singletree Lane (including mall loop road)
Eden Prairie Road / Duck Lake Trail
Dell Road / HCLRT Regional Trail
Edenvale Boulevard / HCLRT Regional Trail
Venture Lane / HCLRT Regional Trail
Staring Lake Parkway / Trail Crossing West Side of Purgatory Creek
Anderson Lakes Parkway / Garden Lane
Scenic Heights Road / School Road
Duck Lake Road / Eden Lake School Entrance / South Shore Lane
Anderson Lakes Parkway / Franlo Road
Anderson Lakes Parkway / Center Way
Anderson Lakes Parkway / Carmody Lane
Anderson Lakes Parkway / Chestnut Drive
Mitchell Road / Twin Lakes Crossing
Mitchell Road / Boulder Pointe Road / Cumberland Road
Dell Road / Pleasantview Road
Rowland Road / Raspberry Hill Road
Valley View Road / Community Center / Round Lake
Technology Drive / West side of Purgatory Creek (St. Andrew's Church Drive)
Valley View Road / West side of Edenvale Boulevard

## 3.4 - Network Vision

A conceptual network was developed based on an initial analysis of existing conditions, destination nodes, and general circulation opportunities. The conceptual network was used to guide more specific route recommendations, which are presented in Chapter 4.

### 3.4.1 - Connectivity Framework

A hierarchy of conceptual connections was developed as an initial step for making recommendations on overall network connectivity (please note that many conceptual connections already exist and provide walking and biking facilities). Nevertheless, developing this conceptual network provides an opportunity for thinking about overall network connectivity and what that network should achieve.

A map of conceptual links is provided in 3.4.2 (next page). Conceptual links include:

#### Regional Route Connections

Regional route connections (shown in dark green) are those that provide connections through Eden Prairie and from the city to destinations in adjacent communities. The Minnesota River Bluffs LRT Regional Trail serves this function in the city. Providing connections to this trail is critical to serve those who wish to travel to farther destinations, such as commuters.

#### Primary Route Connections

Primary route connections (shown in blue) are those that provide connections to key city destinations like the employment centers. Primary routes mimic the city's arterial road system.

#### Secondary Route Connections

Secondary route connections (shown in magenta) provide connections on a local scale within neighborhoods and from neighborhoods to key city destinations and primary routes.



*The Minnesota River Bluffs LRT Regional Trail provides regional connections between Eden Prairie and surrounding communities.*

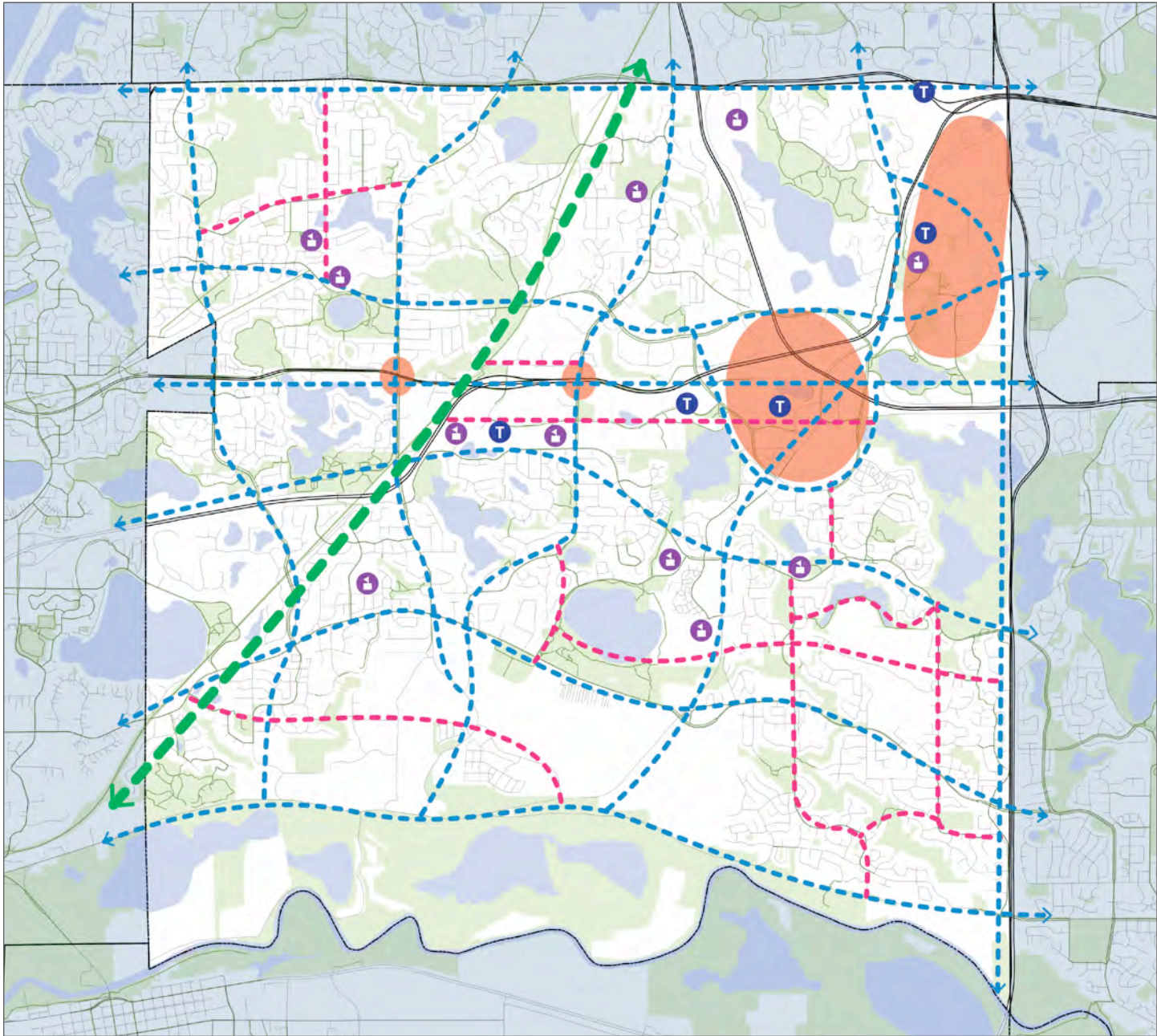


*The shared-use path along Valley View Road near Round Lake Park connects key city destinations along the corridor.*









*The shared-use path along Technology Drive connects key city destinations such as the SW Transit Station and surrounding commercial areas.*

### 3.4.2 - Pedestrian and Bicycle Conceptual Connectivity Framework



**Network Connectivity**

-  Regional Routes
-  Primary Routes
-  Secondary Routes
-  Transit Station
-  School
-  Commercial / Employment Node

Data Source: City of Eden Prairie, U.S. Census, MetroGIS

## 3.5 - Goals and Guiding Principles

Several principles guide the recommendations for routes and infrastructure treatments presented in this Plan. These principles are derived from work with the Internal Working Group, system analysis including Level of Traffic Stress, and from public comment.

- 1) Leverage the assets within the existing network to increase connectivity and comfort of Eden Prairie's pedestrian and bicycle network to facilitate non-motorized transportation and encourage active living among residents of all ages and abilities;
- 2) Prioritize the creation of comfortable and convenient routes and connections to schools, libraries, parks, and community facilities, and to commercial, employment, and transit destinations with special attention to Eden Prairie Center and areas near the SW Transit Station;
- 3) Provide low-stress walking and biking options for residents to connect through and between neighborhoods, and to parks, trails, and community facilities;
- 4) Provide safe and convenient connections to neighboring communities and destinations outside of Eden Prairie;
- 5) Develop continuous routes for recreational walking and biking in and around Eden Prairie to recreation and community destinations;
- 6) Recommend practical infrastructure treatments at priority intersections/crossings to increase the comfort and accessibility of the walking and biking network;
- 7) Recommend route connections and practical infrastructure treatments to enhance the connectivity of the overall route network; and
- 8) Recommend additional infrastructure and policy/programming recommendations to invite greater use of facilities and to integrate walking and biking improvements into the overall culture and policy systems of the city.



***A young person rides on a shared-use path along Anderson Lakes Parkway.***



***Pedestrians wait to cross the street at Columbine Road and Prairie Center Drive.***



## Recommendations



*This chapter includes recommendations for improving conditions for walking and bicycling in Eden Prairie and that invite more people to incorporate walking and bicycling into their daily mobility habits.*

### **In this section**

- 4.1 - Introduction
- 4.2 - Recommended Walking and Biking Route Network
- 4.3 - Priority Recommendations
- 4.4 - Southwest LRT Station Circulation

## 4.1 - Introduction

Eden Prairie has an extensive set of assets in place for becoming a premier location for walking and bicycling in our state. Some existing issues and barriers, however, work against this potential. The recommendations in this chapter are meant to address these issues, leverage Eden Prairie’s existing assets, and support the city’s ongoing transformation to a community where walking and bicycling are safe, comfortable, convenient and inviting everyday activities.

This chapter includes recommendations for developing the city’s walking network, for addressing intersections, and for improving route and network connectivity.

Recommendations are based on engagement with city staff and the general public, as well as network analysis, site visits, and best-practices. In-depth description of tools for selecting treatments, as well as policy and encouragement initiatives, are provided in Chapter 5.



*Recommendations presented in this chapter aim to make walking and biking in Eden Prairie more comfortable and accessible for users of all ages and abilities.*

**Walking and Biking Network Goals**

Recommended route improvements are meant to achieve the following goals:

- Fill gaps in the network;
- Address concerns of those already walking and biking in Eden Prairie;
- Improve conditions to attract new users and greater use of the city’s walking and biking assets;
- Connect and expand areas of low-stress travel conditions;
- Update existing facilities;
- Build on the existing network;
- Provide convenient and comfortable access to SW LRT and other transit assets such as SW Transit
- Provide key connections; and
- Include routes that connect to regional, city, and local neighborhood destinations.

## 4.2 - Recommended Walking and Biking Route Network

Recommendations in this section are organized as follows:

### 4.2.1 - 4.2.5 - Low-Stress Walking and Biking Network

These maps display the existing and recommended network of routes for Eden Prairie’s walking and biking system. The focus for route recommendations on these maps is on low-stress off-road shared-use sidepath, shared-use trail, on-street Neighborhood Slow Street facilities, and additions to the existing sidewalk network.

Recommendations leverage existing facilities, and include new routes and links to address system gaps and improve overall network connectivity for pedestrians and bicyclists. Recommendations show the long-term, developed transportation and recreation non-motorized mobility network for Eden Prairie. Prioritized route connectivity and intersection improvements are presented in Section 4.3 “Priority Recommendations” to offer guidance about which improvements to address first to achieve greatest results.

Overall, this Plan strongly supports Eden Prairie’s efforts to continue to expand and improve its network of sidewalks, off-road sidepaths, and other shared-use paths.

Recommended routes respond to public comments, guidance from city staff, and network analysis, including Level of Traffic Stress (LTS) Analysis.



*A connected network allows walkers and bikers of all ages and abilities to connect to key destinations.*

### 4.2.6 - Additional Identified Sidewalk Improvements

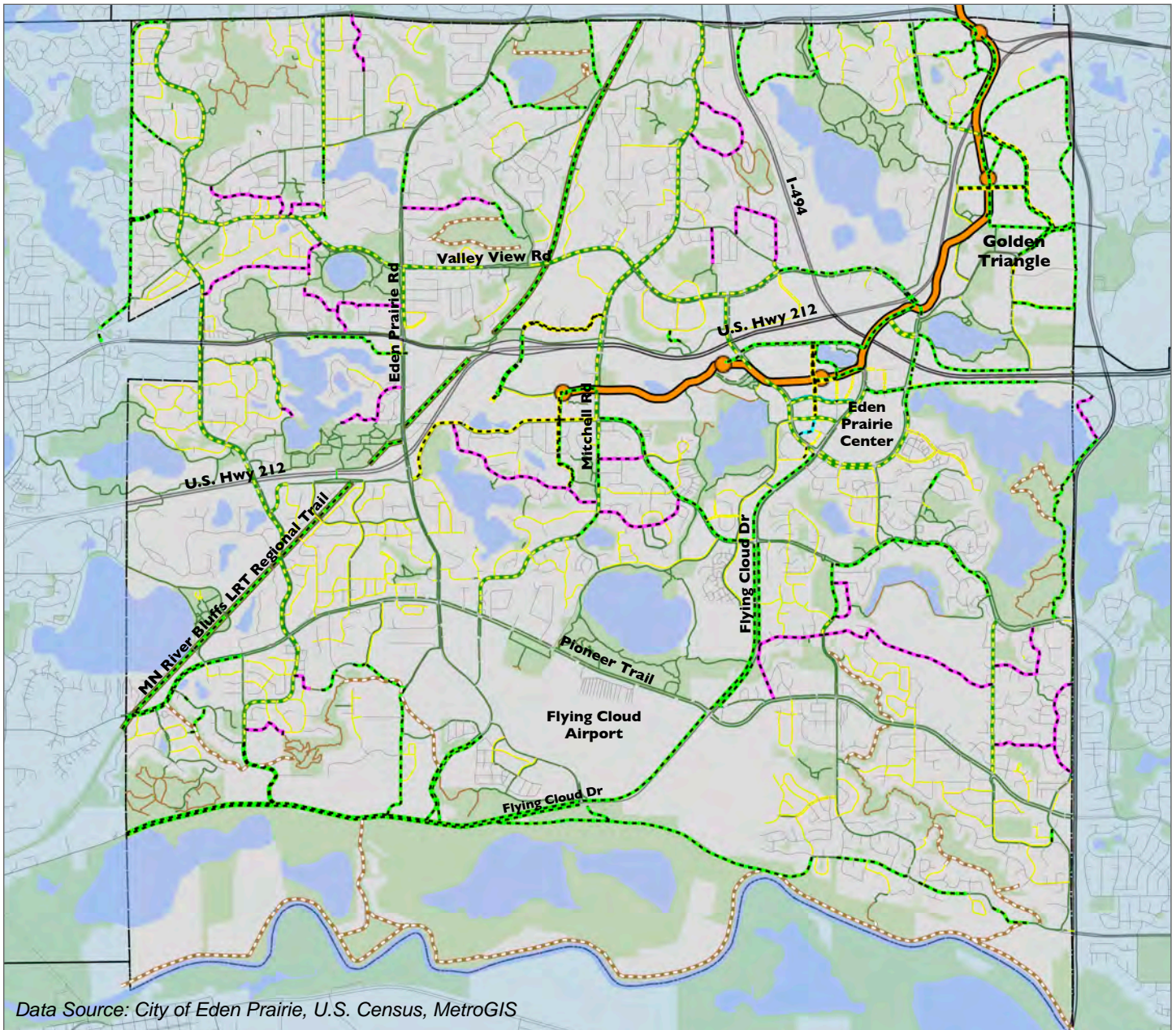
These sidewalks have been identified by the City of Eden Prairie as being necessary to fill specific gaps in the network. Most of the sidewalks shown on this map serve more local, neighborhood streets. Additional recommended sidewalks are shown on Maps 4.2.1 - 4.2.5.

### 4.2.7 - Recommended On-Street Bicycle Lane Network

This is a network of routes recommended for on-street bicycle lanes, in addition to the network that is recommended for lower stress, off-road facilities. On-street bicycle lanes are in general less comfortable (less inviting) than off-road facilities to members of the general mainstream population, but are sometimes preferred by bicycle commuters or other experienced bicyclists who prefer to ride on the road and at higher speeds.








### 4.2.1. Recommended Low-Stress Walking and Biking Network



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

-  Sidewalks
-  Paved Trails and Sidepaths
-  Unpaved Trails
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

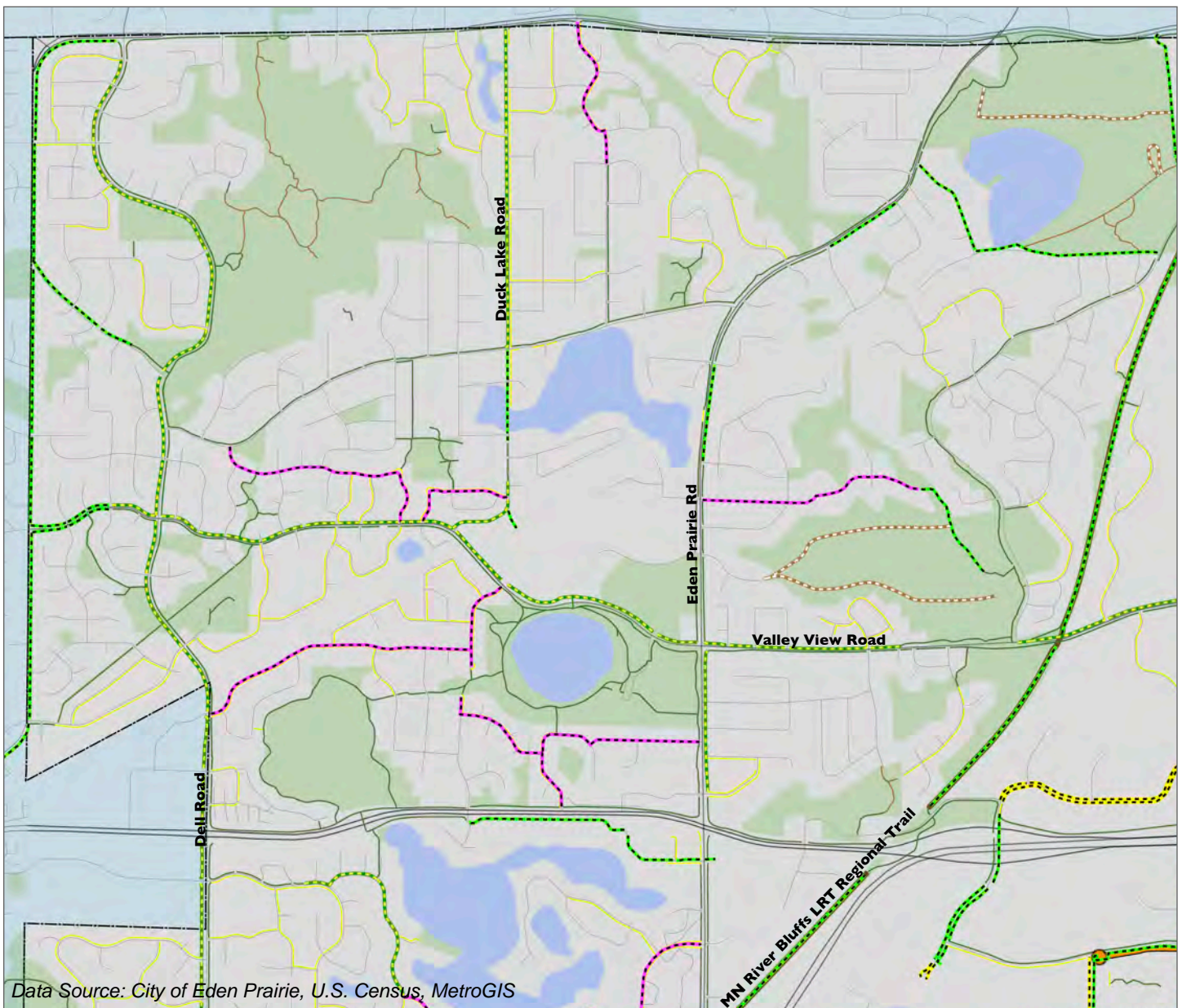
##### Recommended

-  New Paved Shared-Use Path
-  Upgrade Sidewalk to Shared-Use Path
-  On-Street Neighborhood Slow Street
-  On-Street Bicycle Lane
-  Sidewalk
-  Unpaved Nature Trail

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.






### 4.2.2. Recommended Low-Stress Walking and Biking Network - Northwest Quadrant








Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

-  Sidewalks
-  Paved Trails and Sidepaths
-  Unpaved Trails
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

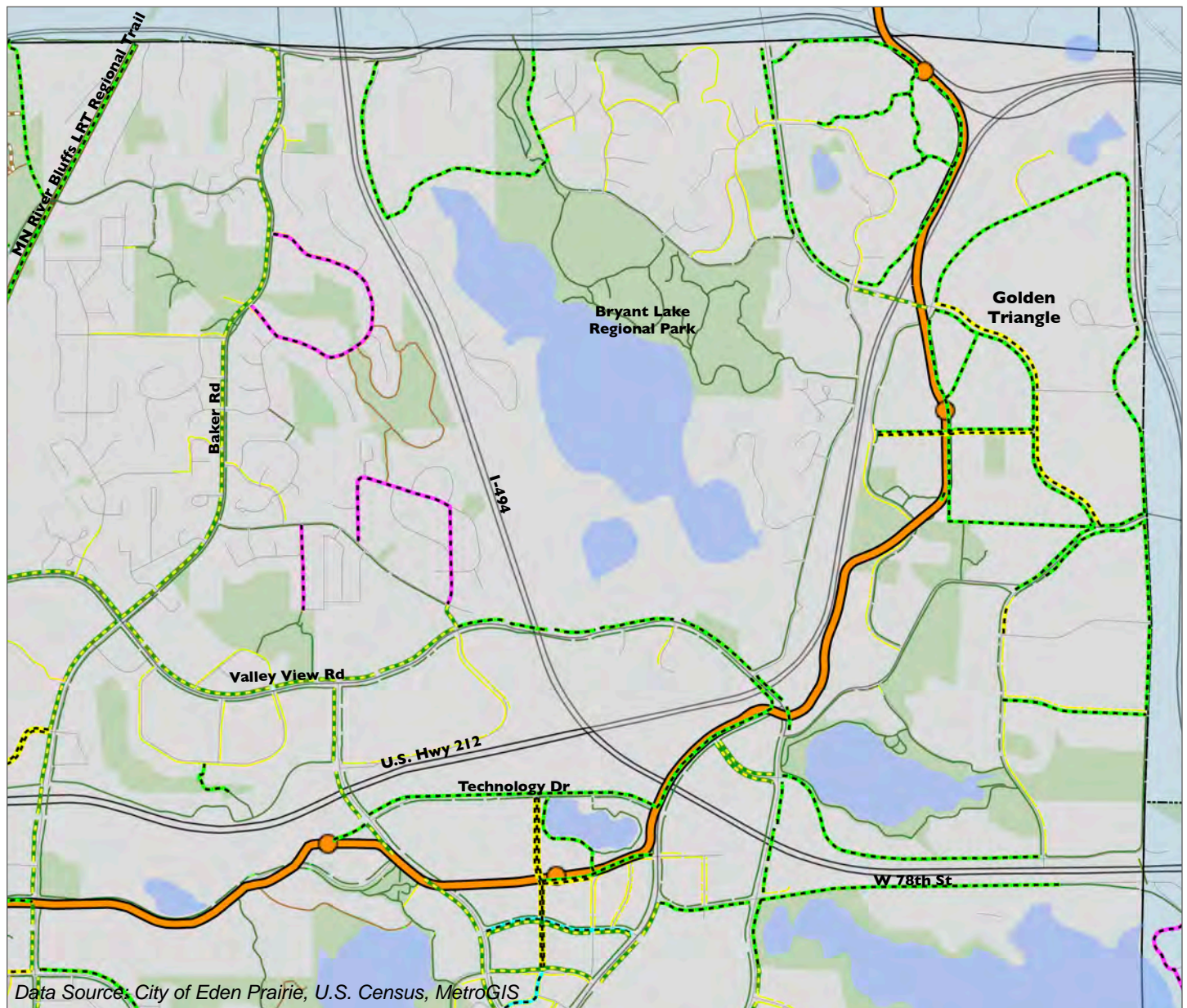
##### Recommended

-  New Paved Shared-Use Path
-  Upgrade Sidewalk to Shared-Use Path
-  On-Street Neighborhood Slow Street
-  Sidewalk
-  Unpaved Nature Trail

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.

### 4.2.3. Recommended Low-Stress Walking and Biking Network - Northeast Quadrant



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

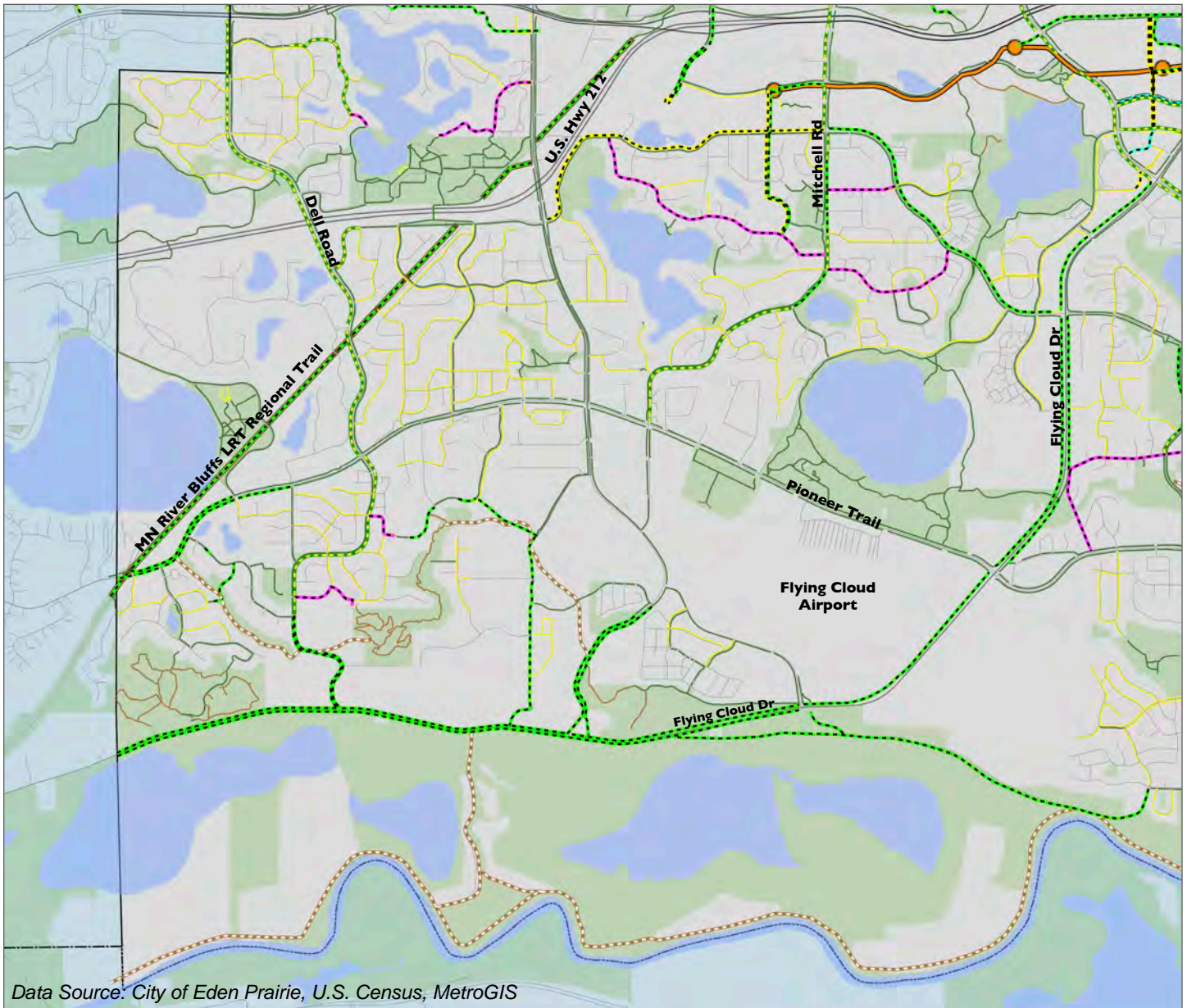
##### Recommended

- New Paved Shared-Use Path
- Upgrade Sidewalk to Shared-Use Path
- On-Street Neighborhood Slow Street
- On-Street Bicycle Lane
- Sidewalk

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.






### 4.2.4. Recommended Low-Stress Walking and Biking Network - Southwest Quadrant



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

-  Sidewalks
-  Paved Trails and Sidepaths
-  Unpaved Trails
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

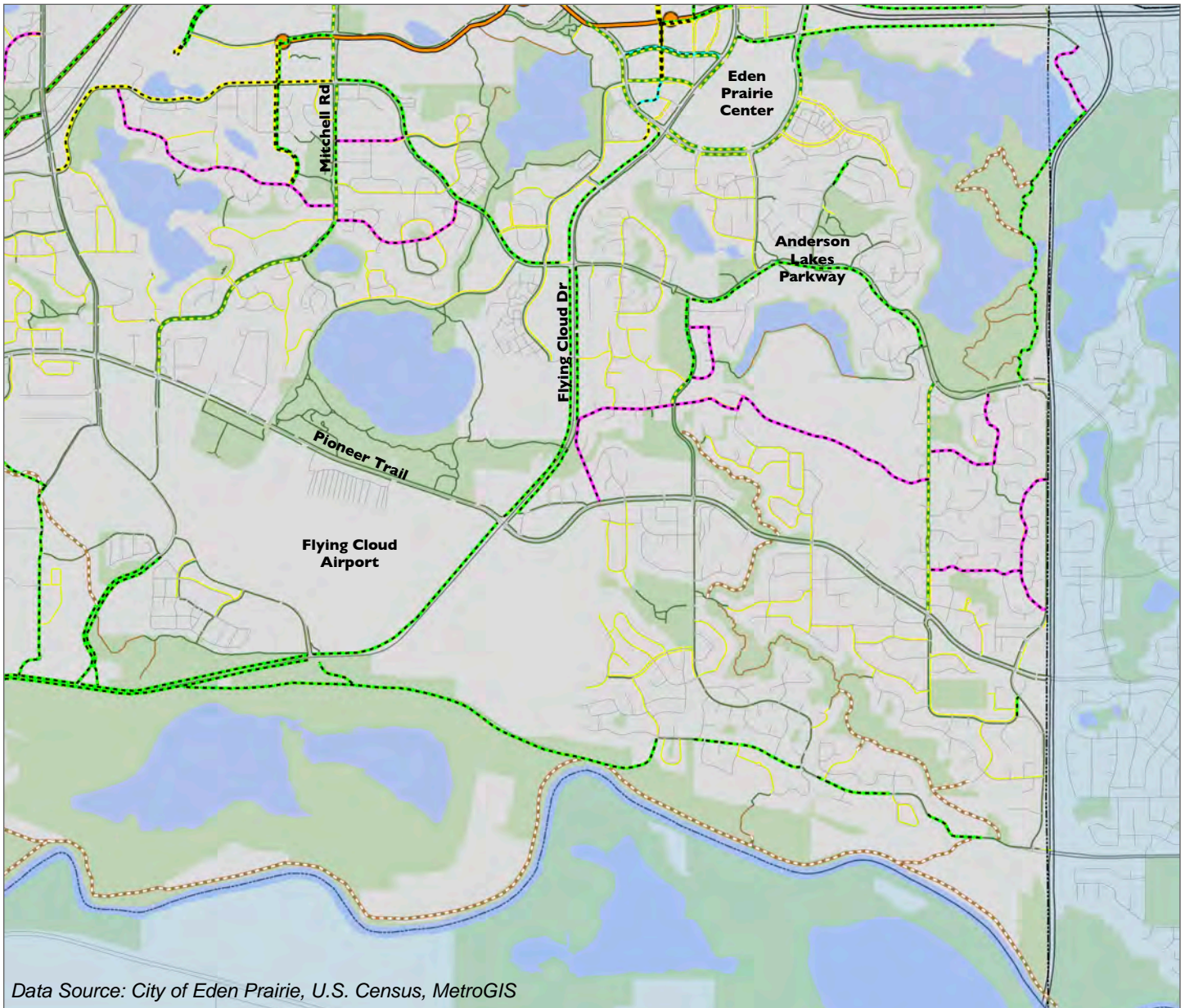
##### Recommended

-  New Paved Shared-Use Path
-  Upgrade Sidewalk to Shared-Use Path
-  On-Street Neighborhood Slow Street
-  On-Street Bicycle Lane
-  Sidewalk
-  Unpaved Nature Trail

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.

### 4.2.5. Recommended Low-Stress Walking and Biking Network - Southeast Quadrant



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

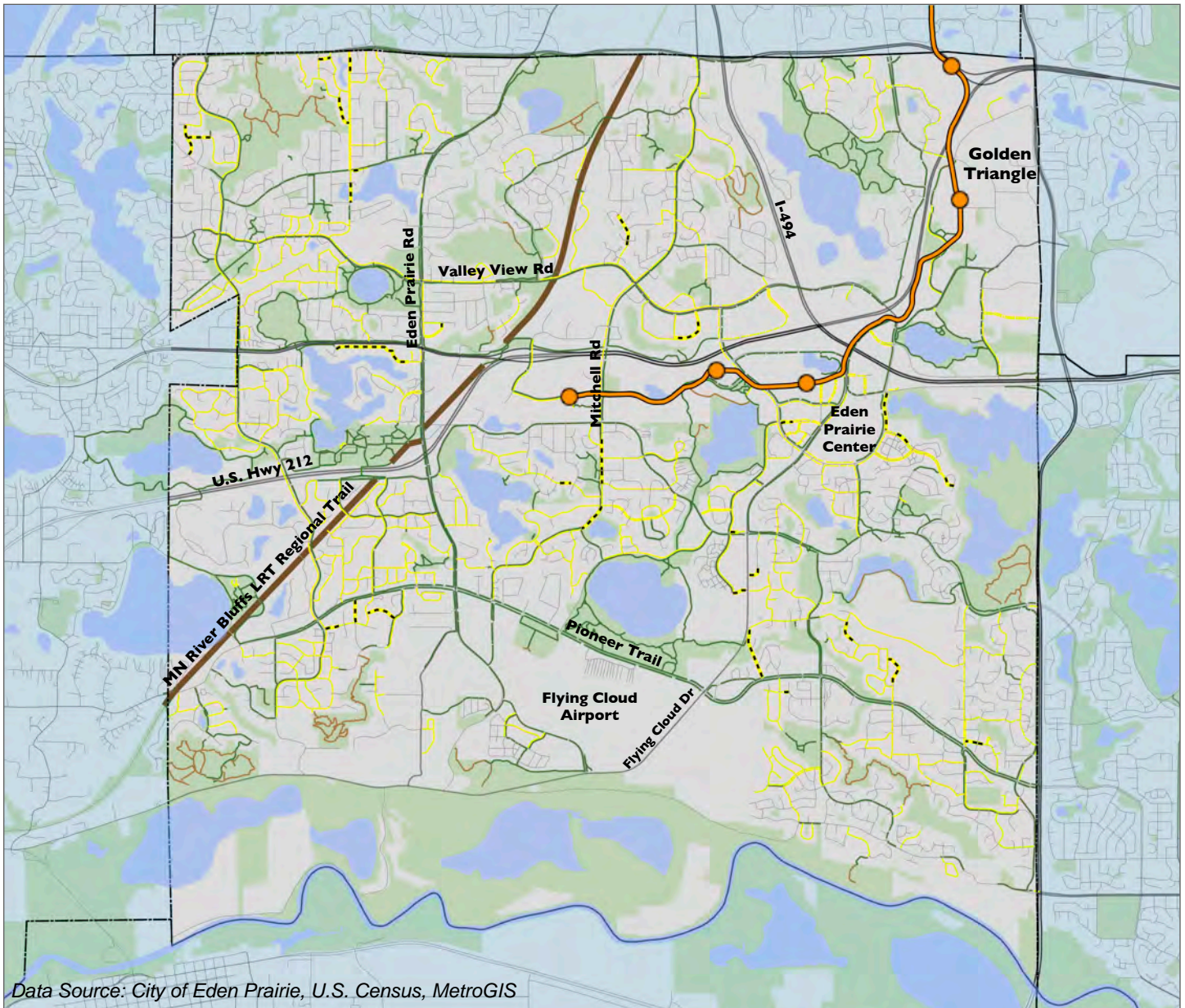
##### Recommended

- - - New Paved Shared-Use Path
- - - Upgrade Sidewalk to Shared-Use Path
- - - On-Street Neighborhood Slow Street
- - - On-Street Bicycle Lane
- - - Sidewalk
- - - Unpaved Nature Trail

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.

### 4.2.6. Additional Identified Sidewalk Improvements



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

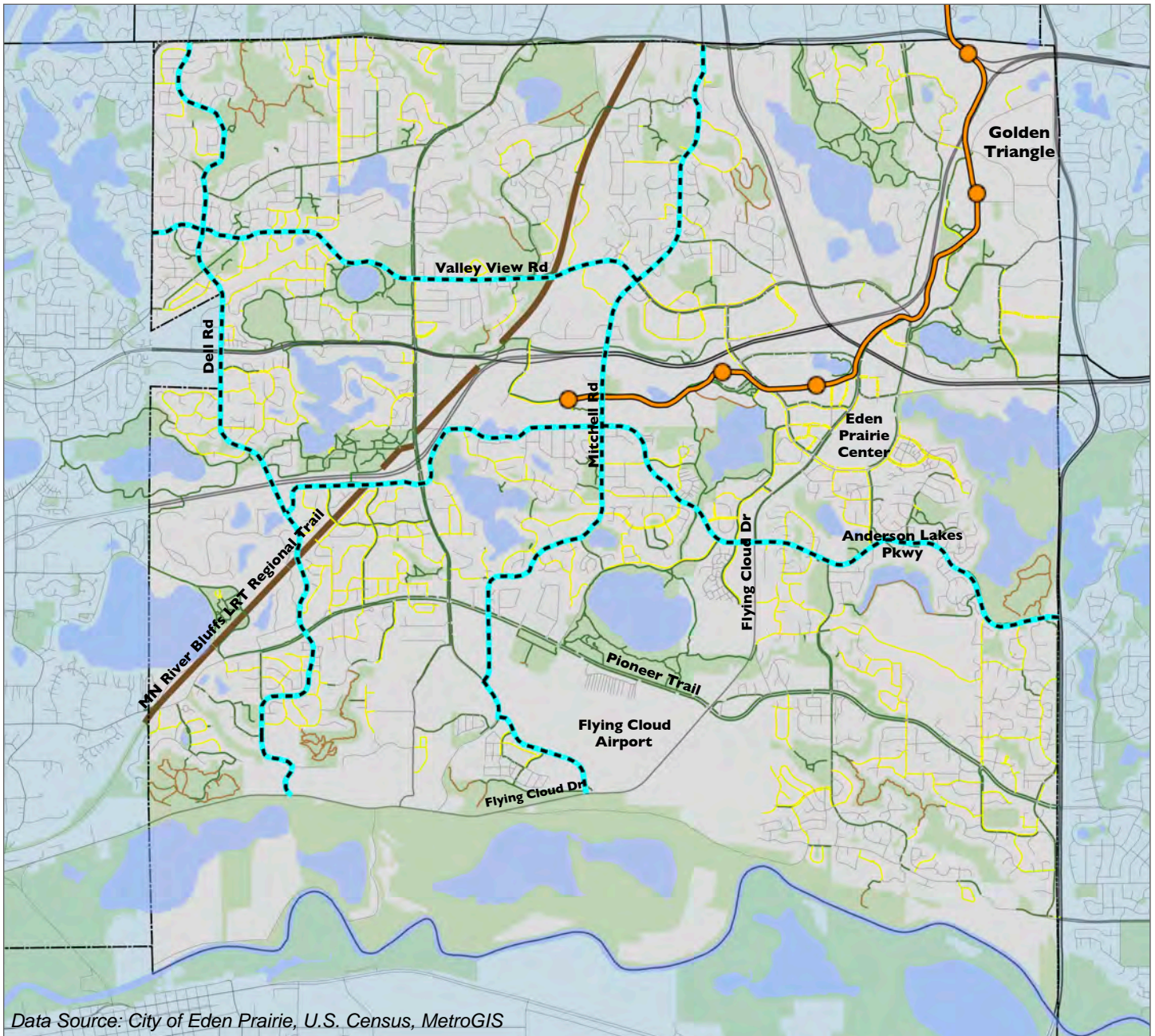
- Sidewalks
- Trails/Shared-Use Paths
- Unpaved Trails
- MN River Bluffs LRT Trail

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations
- - - Recommended Sidewalks

##### Notes:

- The recommended sidewalks shown are identified sidewalk improvements necessary to fill specific gaps serving mostly local, neighborhood streets.
- Additional recommended sidewalks are included on Maps 4.2.1 - 4.2.5.

### 4.2.7. Recommended On-Street Bicycle Lane Network



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- MN River Bluffs LRT Trail

— Proposed Southwest LRT Alignment

● Proposed Southwest LRT Stations

##### Recommended

- - - On-Street Bicycle Lane

## 4.3 - Priority Recommendations

The infrastructure recommendations in this section provide guidance about which improvements to prioritize in order to invite more Eden Prairie residents to walk and bike.

Recommended priority intersection/crossing and route improvements were determined based on the following:

- Location in or near priority walking and biking focus areas;
- Comments and suggestions received from city staff and the public about problems, assets, destinations, and routes; and
- Remove barriers to better connect areas of low Levels of Traffic Stress.

### 4.3.1 - Priority Intersection and Crossing Improvements

The following intersections were identified as high priority locations for making improvements to conditions for walking and biking:

- Valley View Road and Eden Prairie Road;
- Flying Cloud Drive and Anderson Lakes Parkway;
- Baker Road and Valley View Road;
- Preserve Boulevard/Mall Entrance and Prairie Center Drive;
- Anderson Lakes Parkway and Garden Lane;
- Anderson Lakes Parkway and Center Way;
- Eden Prairie Road/County Highway 4 and Arboretum Boulevard/Highway 5; and
- Duck Lake Road and Eden Prairie High School across the Twin Cities and Western railroad tracks.

For many of these intersections, pedestrians and bicyclists approach on shared-use sidepath facilities.

### Focus Areas for Walking and Biking

Priority focus areas were determined based on:

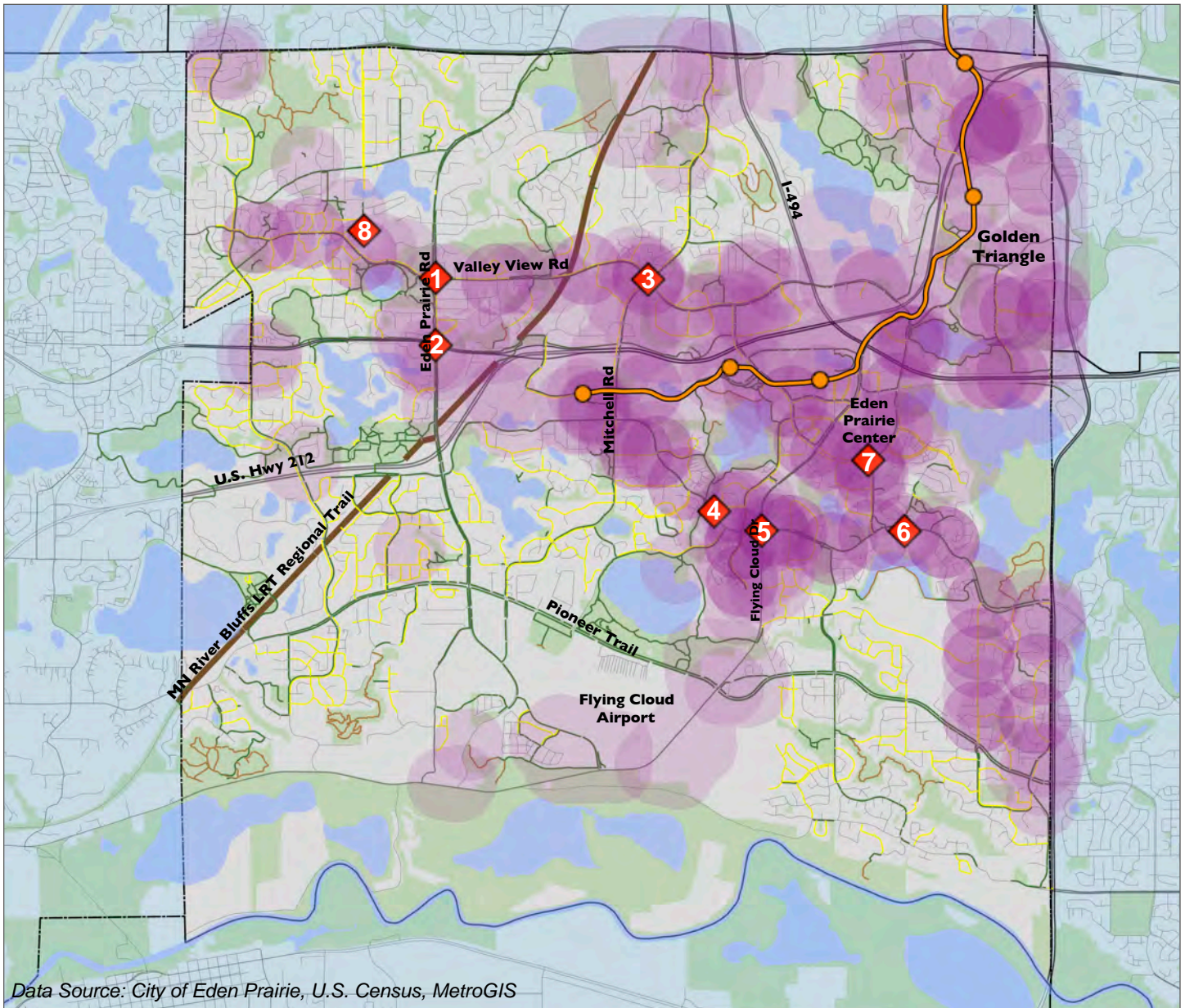
- Proximity to key destinations, such as schools, employment destinations, current and future transit stations, and points of interest (trip end); and
- Proximity to medium and high-density residential areas (trip origin).

**4.3.2 - Map of Priority Intersection / Crossing Improvements** (next page) identifies the location of these priority intersections, and

**4.3.3 - Summary of Priority Intersection / Crossing Improvements** (following) lists the location of the priority intersections, as well as proposed treatments.









### 4.3.2 - Priority Intersection / Crossing Improvements



Data Source: City of Eden Prairie, U.S. Census, MetroGIS


#### Walking and Biking Network

##### Existing

-  Sidewalks
-  Paved Trails and Sidepaths
-  Unpaved Trails
-  MN River Bluffs LRT Trail
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

 1/4 Mile Buffers Delineating Priority Focus Areas

##### Recommended

 Recommended Priority Improvements  
Please refer to ID on next page

### 4.3.3 - Summary of Priority Intersection / Crossing Improvements

ID	Intersection	Potential Treatment
1	Valley View Road and Eden Prairie Road	Implement best practices and recommendations outlined in this document for intersections/crossings. Consider: <ul style="list-style-type: none"> <li>• Reduce turning radii where practical;</li> <li>• Install high-visibility crosswalks;</li> <li>• Install refuge islands that extend beyond crosswalks and into the intersection;</li> <li>• Provide countdown timers and allow for enough time for intersection crossings;</li> <li>• Consider leading intervals for pedestrians and bicyclists;</li> <li>• Reduce the number of travel lanes;</li> <li>• Reduce the width of travel lanes; and</li> <li>• Minimize differences of grades of shared-use paths at intersections and crossings.</li> </ul>
2	Eden Prairie Road/County Highway 4 and Arboretum Boulevard/Highway 5	
3	Baker Road and Valley View Road	
4	Anderson Lakes Parkway and Garden Lane	
5	Flying Cloud Drive and Anderson Lakes Parkway	
6	Anderson Lakes Parkway and Center Way	
7	Preserve Boulevard/Mall Entrance and Prairie Center Drive	
8	Duck Lake Road and Eden Prairie High School across the Twin Cities and Western railroad tracks	Consider a pedestrian/bicycle bridge or other crossing treatment in this heavily travelled corridor

### 4.3.4 - Priority Route / Connectivity Improvements

The following routes were identified as high priority locations for making improvements to conditions for walking and biking:

- Minnesota River Bluffs LRT Regional Trail;
- Valley View Road;
- Shady Oak Road and Valley View Road in the Golden Triangle;
- Access to the Eden Prairie Center Mall from Flying Cloud Drive and Preserve Boulevard;
- Flying Cloud Drive; and
- Prairie Center Drive.

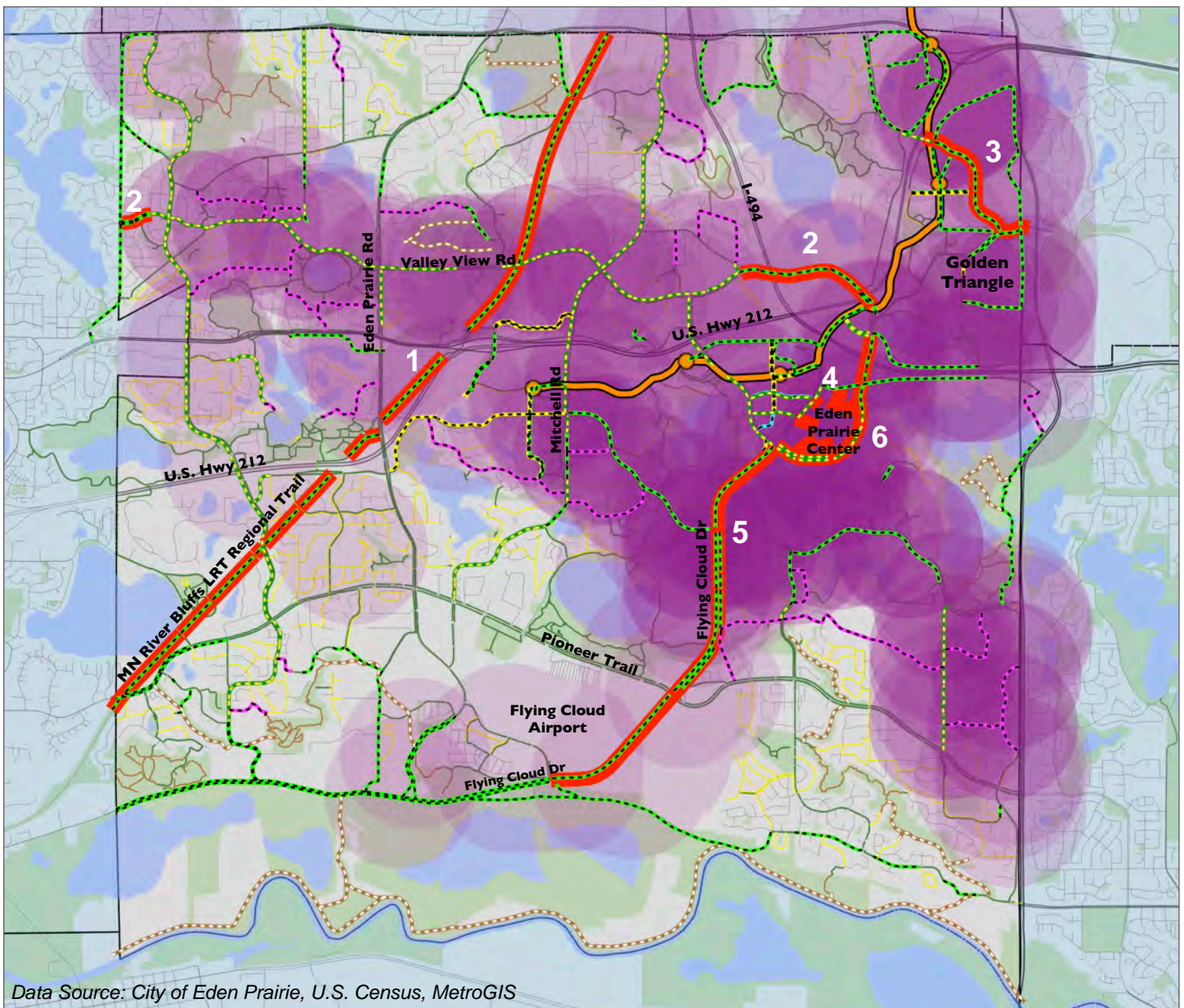
**4.3.5 - Map of Priority Route Improvements** (next page) identifies the location of these priority routes, and

**4.3.6 - Summary of Priority Route Improvements** (following) lists the location of the priority routes, as well as desired improvements.



*On Valley View Road at Round Lake Park.*

### 4.3.5 - Priority Route Improvements



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations
- 1/2 Mile Buffers Delineating Priority Focus Areas

##### Recommended

- Recommended Priority Improvements  
*Please refer to ID on next page*
- - - New Paved Shared-Use Path
- - - Upgrade Sidewalk to Shared-Use Path
- - - On-Street Neighborhood Slow Street
- - - On-Street Bicycle Lane
- - - Sidewalk
- - - Nature Trail

##### Notes:

- For all streets where on-street bicycle facilities are recommended and walking facilities are not present, sidewalks are recommended at least on one side of the street.
- It is recommended that that the MN River Bluffs LRT Regional Trail be paved.

### 4.3.6 - Summary of Priority Route Improvements

ID	Location	Desired Improvement
1	Minnesota River Bluffs LRT Regional Trail	Pave the regional trail through Eden Prairie to facilitate connectivity and invite a wider range of users, and to more easily accommodate bicycling commuting trips. Gravel in wet weather can create problematic trail conditions for users.
2	Valley View Road	<ul style="list-style-type: none"> <li>• Install 8 foot shared-use sidepaths on both sides of the street from Highway 101 to Tartan Curve; and</li> <li>• Install 8 foot shared-use sidepaths on both sides of the street from Plaza Drive to Flying Cloud Drive.</li> </ul>
3	Shady Oak Road and Valley View Road in the Golden Triangle	Install 8 foot shared-use sidepaths on both sides of the street to provide access to the Golden Triangle Station.
4	Access to the Eden Prairie Center Mall from Flying Cloud Drive and Preserve Boulevard	Install specific walking and biking routes designated with separate facilities, and signage to the primary mall access points
5	Flying Cloud Drive	<ul style="list-style-type: none"> <li>• Install 8 foot shared-use sidepaths on both sides of the street from Charlson Road to Pioneer Trail; and</li> <li>• Install 8 foot shared-use sidepaths on both sides of the street from Pioneer Trail to Viking Drive.</li> </ul>
6	Prairie Center Drive	Install 8 foot shared-use sidepaths on both sides of the street from Flying Cloud Drive to Viking Drive

## 4.4 - Southwest LRT Station Circulation

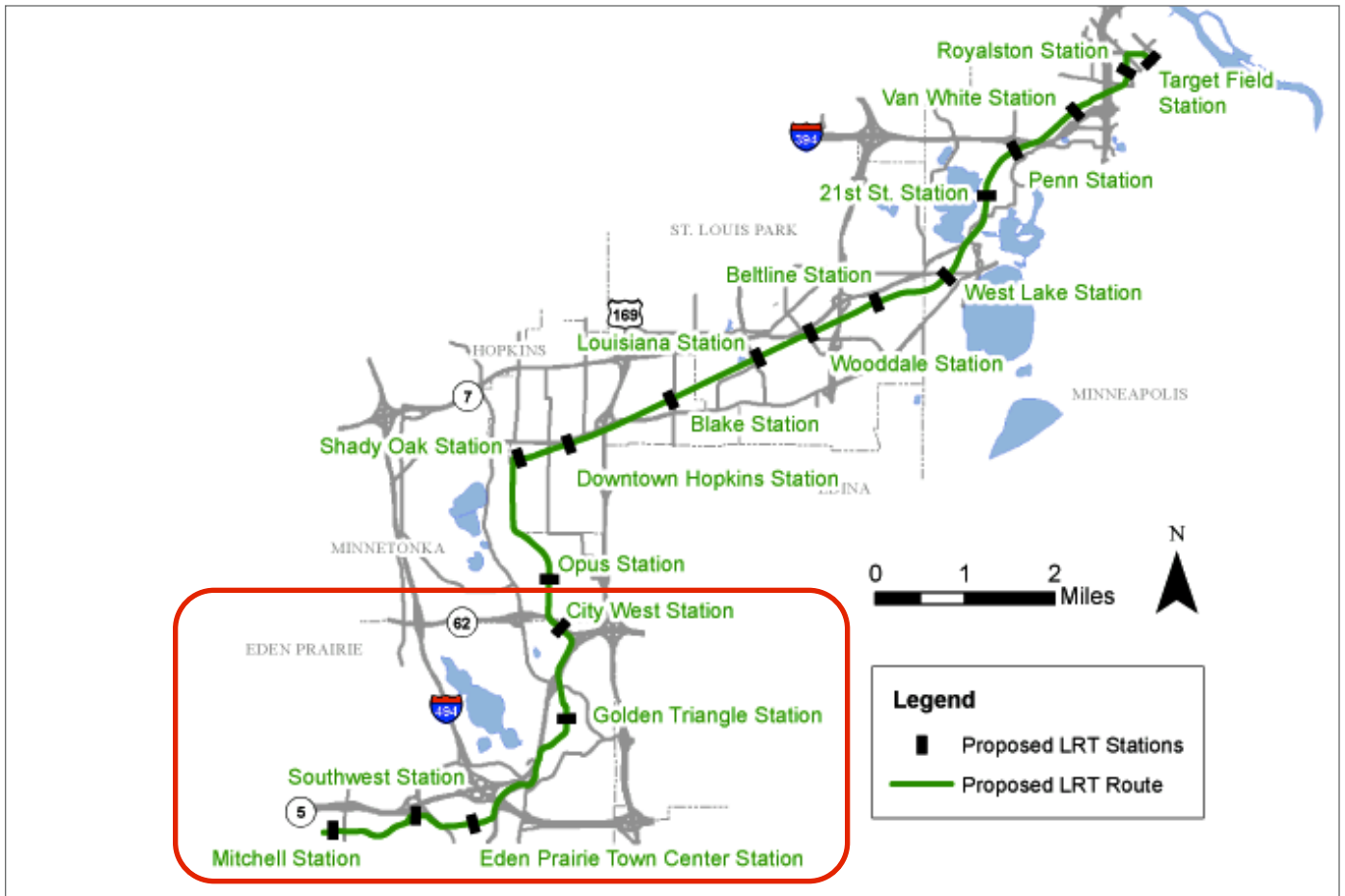
The new Southwest Light Rail Transit (SW LRT) project (Green Line Extension) includes five stations within Eden Prairie: Mitchell Station, Southwest Station, Eden Prairie Town Center Station, Golden Triangle Station, and City West Station. The SW LRT line will connect people in Eden Prairie, Minnetonka, Hopkins, St. Louis Park, and Minneapolis to employment and recreational destinations along the corridor.

This section provides a closer view of recommended walking and biking routes near each station. Routes shown include selections from the Transitional Station Area Action Plan (TSAAP), and guidance from the City of Eden Prairie.



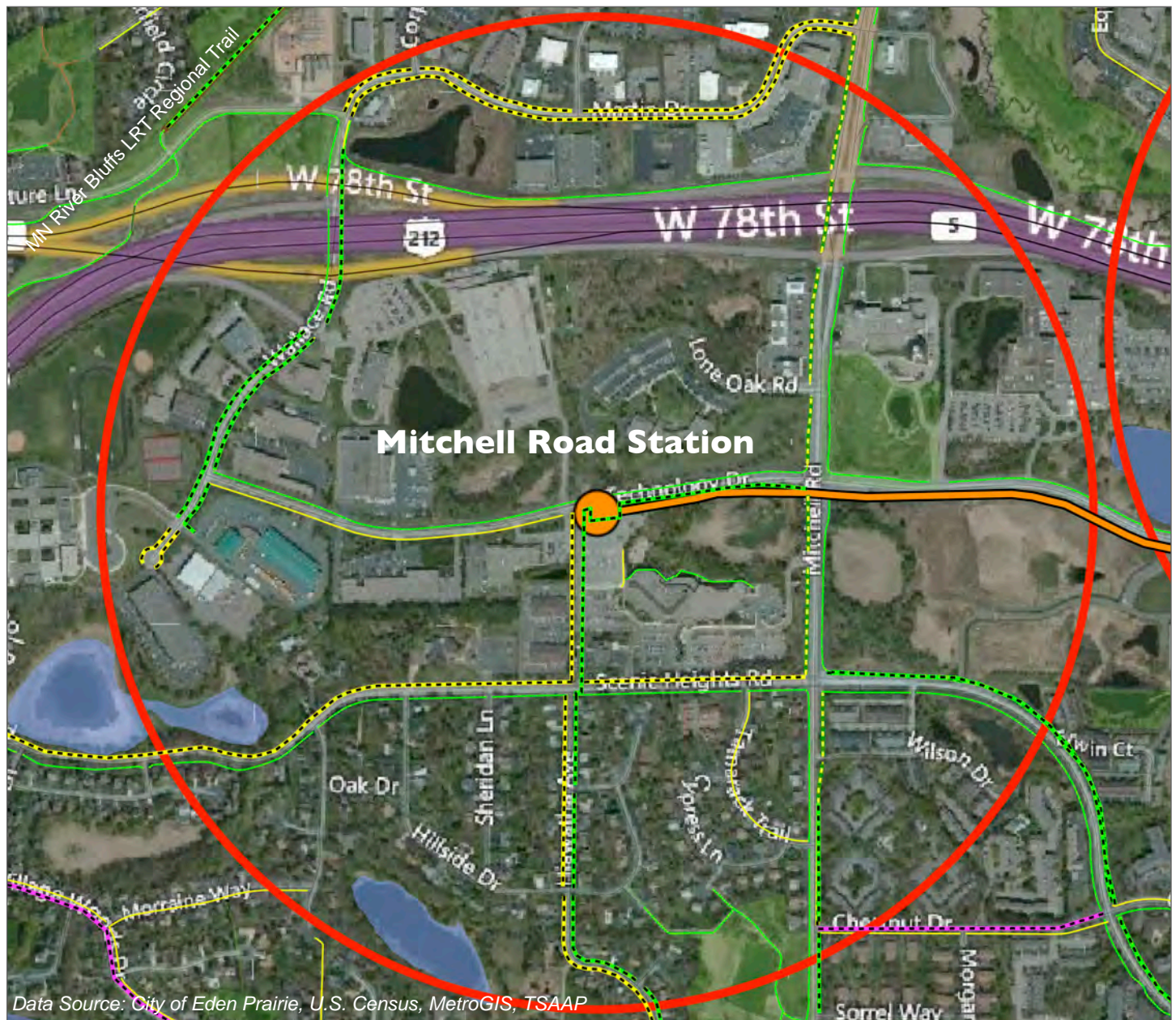
The current SouthWest Station houses bus transit, and will include a SW LRT station in the future.

### 4.4.1 - Proposed SW LRT Alignment and Station Locations



The new Southwest LRT line operates between Eden Prairie and Minneapolis. Five of the 17 planned stations (identified within the red box) are located within Eden Prairie. Image courtesy of Metropolitan Council.

### 4.4.2 - SW LRT Station Area Pedestrian and Bicycle Improvements



Data Source: City of Eden Prairie, U.S. Census, MetroGIS, TSAAP

#### Walking and Biking Network

##### Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

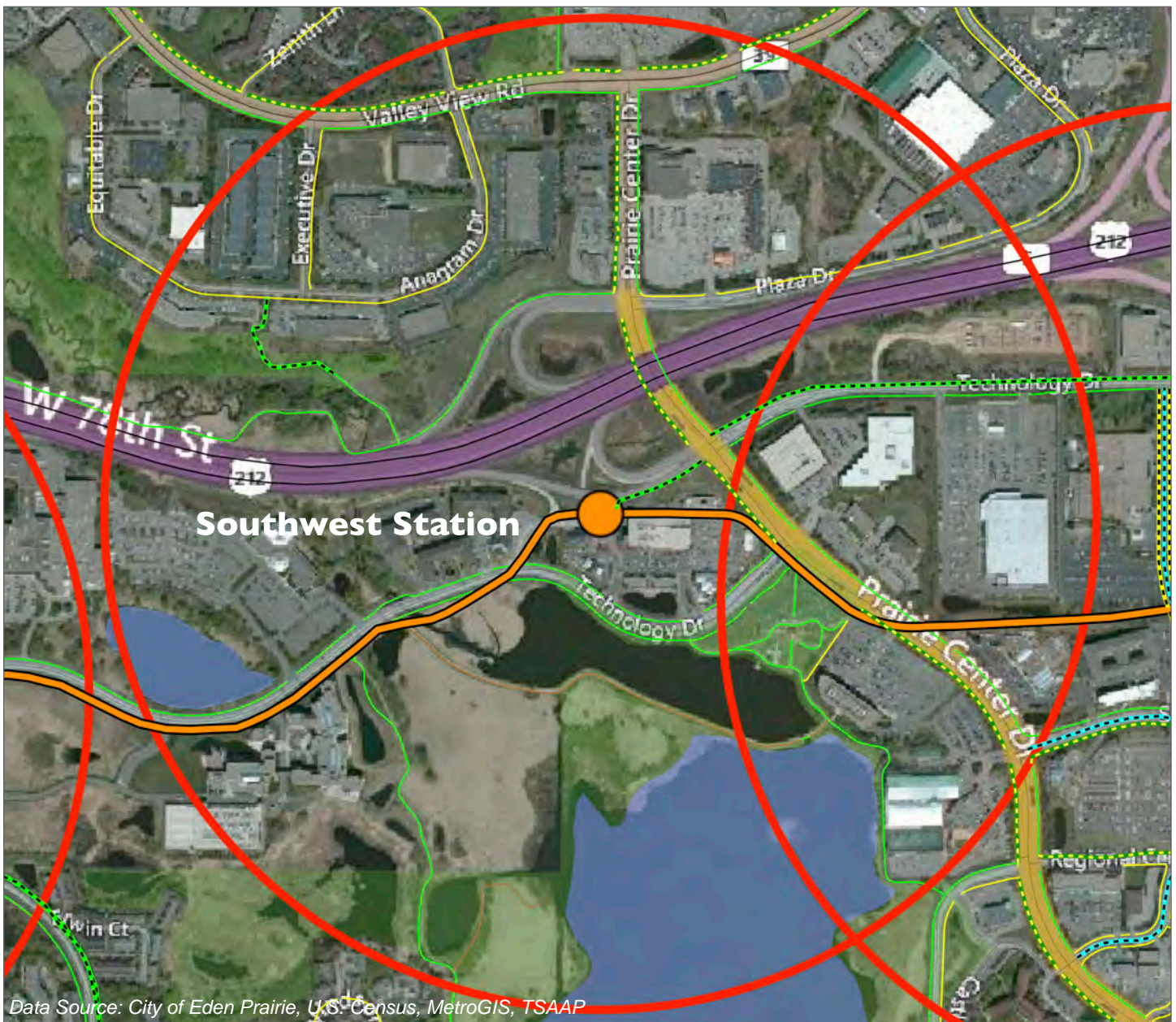
##### Recommended

- New Paved Shared-Use Path
- Upgrade Sidewalk to Shared-Use Path
- On-Street Neighborhood Slow Street
- Sidewalk

1/2 Mile Buffer from proposed SW LRT Station

Note:  
 • It is recommended that the MN River Bluffs LRT Regional Trail be paved.

4.4.2 - SW LRT Station Area Pedestrian and Bicycle Improvements (cont.)



Data Source: City of Eden Prairie, U.S. Census, MetroGIS, TSAAP

**Walking and Biking Network**

Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

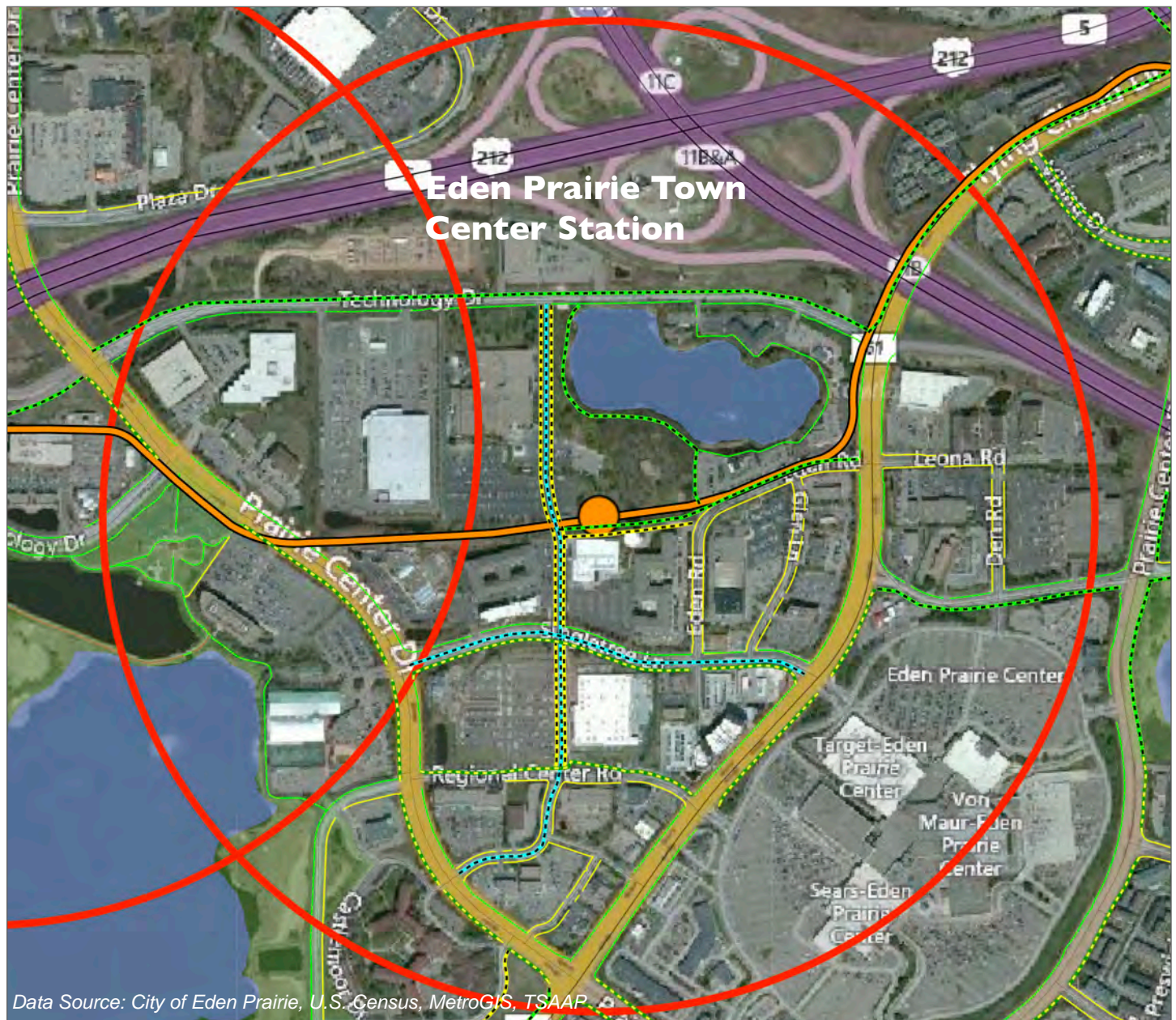
Recommended

- - - New Paved Shared-Use Path
- - - Upgrade Sidewalk to Shared-Use Path
- - - On-Street Bicycle Lane
- - - Sidewalk

○ 1/2 Mile Buffer from proposed SW LRT Station








4.4.2 - SW LRT Station Area Pedestrian and Bicycle Improvements (cont.)







Data Source: City of Eden Prairie, U.S. Census, MetroGIS, TSAAP.


**Walking and Biking Network**

Existing

-  Sidewalks
-  Paved Trails and Sidepaths
-  Unpaved Trails
-  Proposed Southwest LRT Alignment
-  Proposed Southwest LRT Stations

Recommended

-  New Paved Shared-Use Path
-  Upgrade Sidewalk to Shared-Use Path
-  On-Street Bicycle Lane
-  Sidewalk

 1/2 Mile Buffer from proposed SW LRT Station

4.4.2 - SW LRT Station Area Pedestrian and Bicycle Improvements (cont.)



Data Source: City of Eden Prairie, U.S. Census, MetroGIS, TSAAP

**Walking and Biking Network**

Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails

- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

Recommended

- New Paved Shared-Use Path
- Sidewalk

- 1/2 Mile Buffer from proposed SW LRT Station

4.4.2 - SW LRT Station Area Pedestrian and Bicycle Improvements (cont.)



Data Source: City of Eden Prairie, U.S. Census, MetroGIS, TSAAP

**Walking and Biking Network**

Existing

- Sidewalks
- Paved Trails and Sidepaths
- Proposed Southwest LRT Alignment
- Proposed Southwest LRT Stations

Recommended

- - - New Paved Shared-Use Path

- 1/2 Mile Buffer from proposed SW LRT Station



## Toolbox



*This section includes a set of tools - from facilities to encouragement, enforcement and evaluation - for better integrating and leveraging walking and bicycling investments in Eden Prairie.*

### In this section

- 5.1 - Introduction
- 5.2 - Selecting Treatments
- 5.3 - Facilities
- 5.4 - Tools for Addressing Intersections and Trail Crossings
- 5.5 - Eden Prairie Improved Intersection Crossings (EPIIC)
- 5.6 - Illustrative Concepts
- 5.7 - Signs, Signals, and Wayfinding
- 5.8 - Transit Integration
- 5.9 - Ancillary, End of Trip, and Rest Facilities
- 5.10 - Operations and Maintenance
- 5.11 - Education, Encouragement, and Promotion
- 5.12 - Policy Suggestions / Alternatives
- 5.13 - Enforcement
- 5.14 - Evaluation and Performance Measures
- 5.15 - Potential Funding Sources
- 5.16 - Estimating Implementation Costs

## 5.1 - Introduction

A variety of tools, treatments and approaches will be useful to address and improve conditions for walking and biking in Eden Prairie. This chapter provides a toolbox made up of components, approaches, and considerations that can be deployed to address existing needs, leverage current city assets, and achieve the success that is envisioned by city staff, residents, and other project partners.

### 5.1.1 - A Combination of Engineering and Programming Approaches

Communities working to increase walking and biking often focus exclusively on facility and infrastructure (engineering) approaches. Plan recommendations in Chapter 4 respond to the primary importance of the availability of safe, comfortable, convenient and inviting infrastructure as a necessary precondition for inviting more people to walk or bike.

Beyond that, this Plan recognizes that programming strategies (including education, promotion and encouragement, enforcement, and planning and evaluation) are also essential for improving conditions for walking and biking. In fact, combining both approaches will result in much greater gains than working singly on either approach.



***Walking and bicycling are accessible to people through a wide range of ages, incomes, and physical abilities.***



***Walking and biking for transportation are easy ways to integrate physical activity into the day.***

## 5.2 - Selecting Treatments

Numerous types of facilities exist for accommodating pedestrian and bicyclist needs. The characteristics of the treatment selected for a specific route or location will determine the safety and perception of safety (comfort) experienced by users of that facility.

This section provides a discussion of user needs as well as tools to guide the selection of specific pedestrian and bicycle facilities in a specific given context.

### 5.2.1 - Addressing User Needs and Comfort

One of the determinants of whether a system will be successful or not is if it takes into account the needs of its users.

Research and experience from cities that have improved rates of walking and biking show that more residents walk and bike for everyday travel when two requirements are observed:

- 1) Facilities are comfortable and inviting, and not only provide safe connections and conditions for their users, but also *feel* safe. It is hard to overestimate the importance of this second condition - perception of safety is a key component for inviting new users into a city's non-motorized transportation network.
- 2) A continuous, connected and useful network is provided that offers reasonably direct connections to useful everyday destinations and is made up of routes that are safe and feel safe, and do not exceed the mainstream adult population's level of tolerance for traffic stress.



*Office workers walking on their lunch break.*



*A pedestrian enjoys a sidepath along Prairie Center Drive.*

### **5.2.2 - Selecting Treatments to Improve Conditions for Walking**

The following detailed guidance is provided to assist in selecting treatments to improve the conditions for pedestrians in Eden Prairie. Specific recommendations responding to this guidance can be found in Chapter 4, Recommendations.



***A pedestrian crosses Singletree Lane near the Glen Lane intersection.***

### 5.2.2.a - Criteria for Crossing Treatments at Uncontrolled Locations

*(adapted from the City of Boulder Pedestrian Crossing Treatment Installation Guidelines)*

Roadway Configuration	# of lanes crossed to reach a refuge (1)	# of multiple threat lanes per crossing (2)	Roadway ADT and Posted Speed															
			1,500 – 9,000 vpd				9,000 – 12,000 vpd				12,000 – 15,000 vpd				>15,000 vpd			
			≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph	≤ 30 mph	35 mph	40 mph	≥ 45 mph
2 Lanes (one way street)	2	1	A	B	C	E	A	B	C	E	B	B	C	E	B	C	C	E
2 Lanes (two way street, no median)	2	0	A	B	C	E	A	B	C	E	B	B	C	E	B	C	C	E
3 Lanes w/ Raised Median	1 or 2	0 or 1	A	B	D	E	A	C	D	E	B	D	D	E	C	D	D	E
3 Lanes w/ Striped Median	3	0 or 1	C	C	D	E	C	C	D	E	C	C	D	E	C	D	D	E
4 Lanes (two way street, no median)	4	2	A	D	D	E	B	D	D	E	B	D	D	E	D	D	D	E
5 Lanes w/ Raised Median	2 or 3	2	A	B	D	E	B	C	D	E	B	C	D	E	C	C	D	E
5 Lanes w/ Striped Median	5	2	D	D	D	E	D	D	D	E	D	D	D	E	D	D	D	E
6 Lanes (two way street with or without median)	3 to 6	4	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F

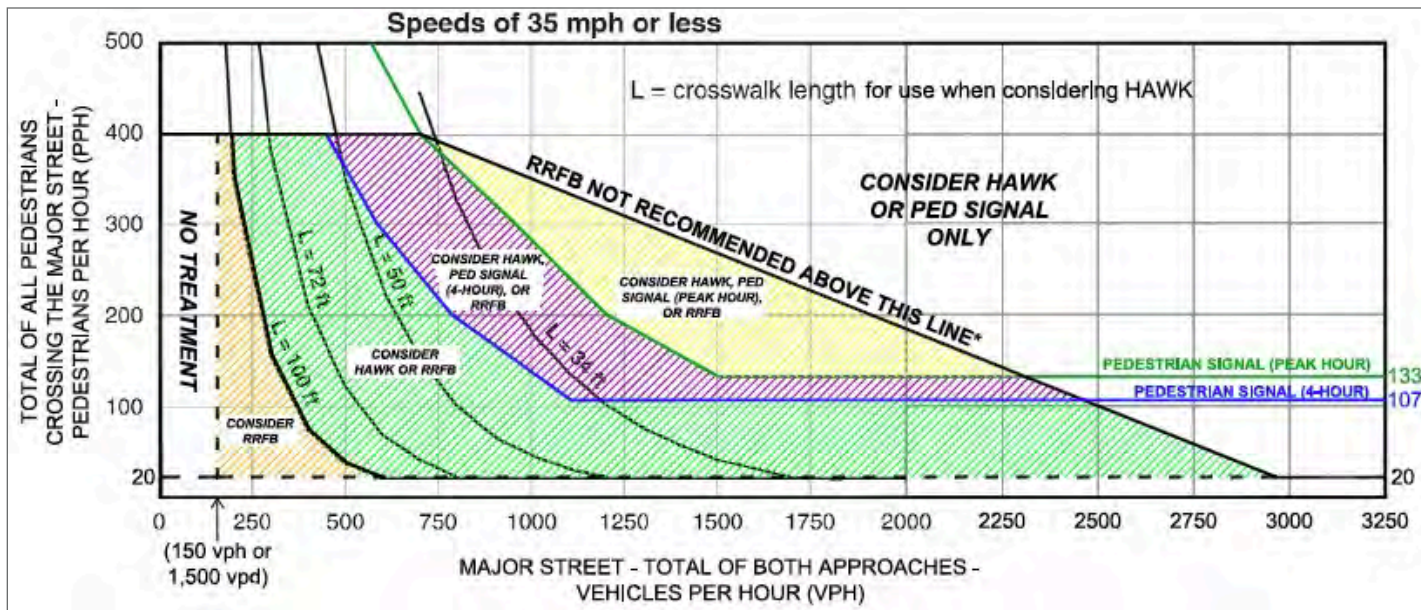
NOTES: Painted medians shall not be considered a refuge for a crossing pedestrian. Similarly, a 4 foot wide raised median next to a left turn lane can only be considered a refuge for pedestrians if the left turning volume is less than 20 vehicles per hour (meaning that in most cases the left turn lane is not occupied while the pedestrian is crossing).  
 A multiple threat lane is defined as a through lane where it is possible for a pedestrian to step out from in front of a stopped vehicle in the adjacent travel lane (either through or turn lane).

**Treatment Descriptions**

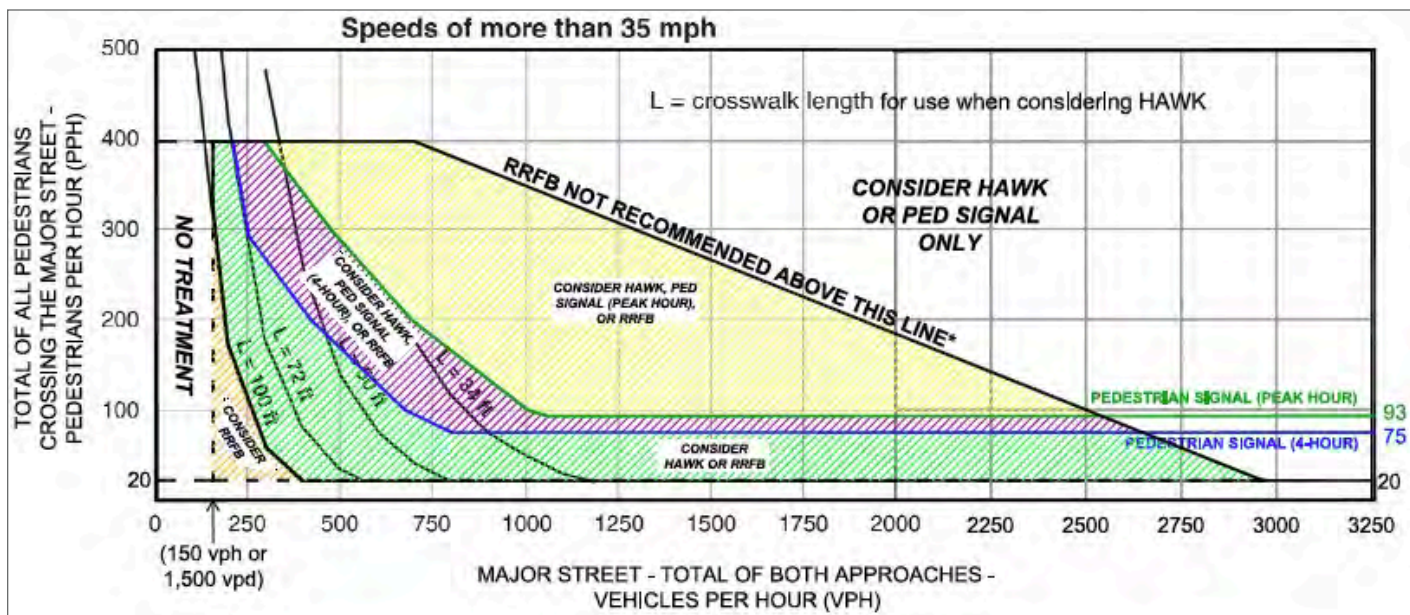
- A Install marked crosswalk with enhanced road-side signs  
 Specific Guidance: Install marked crosswalk with “State Law – Yield to Pedestrian” signs mounted on the side of the roadway with standard (W11–2) advance pedestrian warning signs; use S1–1 signs for School Crossing locations.
- B Install marked crosswalk with enhanced road-side and in-roadway (bollard mounted) signs  
 Specific Guidance: Install marked crosswalk “State Law – Yield to Pedestrian” signs mounted on the side of the roadway and on in-roadway bollards; use standard (W11–2) advance pedestrian warning signs; use S1–1 signs for School Crossing locations.
- C Install marked crosswalk with enhanced signs and geometric improvements to increase pedestrian visibility and reduce exposure  
 Specific Guidance: For 2 or 3-lane roadways, install marked crosswalk with “State Law – Yield to Pedestrian” signs mounted on the side of the roadway and on in-roadway bollards or median mounted signs; use standard (W11–2) advance pedestrian warning signs; use S1–1 signs for School Crossing locations. Add neckdowns or median refuge islands to shorten the pedestrian crossing distance and increase pedestrian visibility to motorists.
- D Install marked crosswalk with enhanced signs, pedestrian activated RRFBs, and geometric improvements to increase pedestrian visibility and reduce exposure.  
 Specific Guidance: Install raised median refuge island (unless it is a one-way street or one already exists) to shorten the pedestrian crossing distance and increase pedestrian visibility to motorists. [If a median refuge cannot be constructed on a two-way street, go to Scenario F]. Install marked crosswalk with “State Law – Yield to Pedestrian” signs WITH pedestrian activated RRFBs mounted on the side of the roadway and on median mounted signs; use standard (W11–2) advance pedestrian warning signs; use S1–1 signs for School Crossing locations. Consider adding neckdowns at the crossing if on-street parking exists on the roadway and storm drain considerations will allow. [Note: If pedestrian volume falls above the RRFB limit line in 5.2.2.b and 5.2.2.c, consider HAWK beacon, pedestrian traffic signal, or grade-separated crossing.]
- E Do not install marked crosswalk at uncontrolled crossing. Determine if the speed limit can be effectively reduced to 40 mph AND a raised refuge median can be installed. If so, utilize Scenario D criteria above. If this is not possible, or if pedestrian volume falls above the RRFB limit line on 5.2.2.b and 5.2.2.c, consider HAWK beacon, pedestrian traffic signal, or grade-separated crossing.  
 Specific Guidance: Consider HAWK beacon, pedestrian traffic signal or grade-separated crossing; application of these treatments will consider corridor signal progression, existing grades, physical constraints, and other engineering factors.
- F Do not install marked crosswalk at uncontrolled crossing with 3 or more THROUGH lanes per direction or where the speed limit is ≥ 45 mph and/or there is not a median refuge on a 5-lane crossing. Consider HAWK beacon, pedestrian traffic signal, or grade-separated crossing.  
 Specific Guidance: Consider HAWK beacon, pedestrian traffic signal or grade-separated crossing; application of these treatments will consider corridor signal progression, existing grades, physical constraints, and other engineering factors.



**5.2.2.b - Guidelines for the Installation of Pedestrian Hybrid (HAWK) Beacons, Pedestrian Signals, or Rectangular Rapid Flash Beacon (RRFB) Signs on Low-Speed Roadways**  
*(Adapted from the City of Boulder Pedestrian Crossing Treatment Installation Guidelines)*



**5.2.2.c - Guidelines for the Installation of Pedestrian Hybrid (HAWK) Beacons, Pedestrian Signals, or Rectangular Rapid Flash Beacon (RRFB) Signs on High-Speed Roadways**  
*(Adapted from the City of Boulder Pedestrian Crossing Treatment Installation Guidelines)*



Note: 5.2.2.a, 5.2.2.b, and 5.2.2.c are from the 2011 City of Boulder, CO *Pedestrian Crossing Treatment Installation Guidelines*

### 5.2.3 - Selecting Treatments to Improve Conditions for Bicycling

The following detailed guidance is provided to assist in selecting treatments to improve the conditions for bicyclists in Eden Prairie. Specific recommendations responding to this guidance can be found in Chapter 4, Recommendations.



**A bicyclist uses the pedestrian crosswalk to get across the intersection of Singletree Lane and Flying Cloud Drive.**



**A bicyclist traveling on Valley View Road.**

## 5.2.4 - Levels of Separation for Bike Facilities

### Off-Street Bike Facilities (Shared-Use Facilities Shared with Pedestrians)



*Shared-use sidepath*



*Shared-use path/trail*

### On-Street Bicycle Facilities Not Shared with Motor Vehicles



*Roadway shoulder*



*Bike lane*



*Buffered bike lane*



*Cycletrack*

### On-Street Bicycle Facilities Shared with Motor Vehicles



*Neighborhood Slow Street / Bicycle Boulevard*



*Sharrow (shared-lane arrow)*



Increasing Separation from Motor Vehicles



Increasing Separation from Motor Vehicles

### Note on Application of Facilities

In general, bicycle routes where higher motor vehicle traffic speeds and volumes are present should offer riders greater separation from motor vehicles. This will result in facilities that offer greater perception of safety and comfort to current and potential bicycle riders and will invite use by larger number of riders and through a greater range of ages and abilities.

## 5.2.5 - Selecting the Appropriate On-Street Bicycle Facility

### 5.2.5.a. - Bikeway Design Selection for Rural (Shoulder and Ditch) Cross Section

Motor Vehicle ADT (2 Lane)		<500	500-1,000	1,000-2,000	2,000-5,000	5,000-10,000	>10,000
Motor Vehicle ADT (4 Lane)		N/A	N/A	2,000-4,000	4,000-10,000	10,000-20,000	>20,000
Motor Vehicle Speed	25 mph	PS = 4 ft* or SL	PS = 4 ft* or SL	PS = 4 ft* or WOL	PS = 4 ft*	PS = 4 ft*	N/A
	30 mph	PS = 4 ft* or SL	PS = 4 ft* or WOL	PS = 4 ft*	PS = 4 ft*	PS = 6 ft	PS = 4 ft*
	35-40 mph	PS = 4 ft* or SL	PS = 4 ft* or WOL	PS = 6 ft	PS = 6 ft	PS = 6 ft	PS = 8 ft
	45 mph and greater	PS = 4 ft*	PS = 4 ft*	PS = 6 ft	PS = 8 ft	PS = 8 ft	SUP or PS = 10 ft
<p>*See discussion in Section 4-3.1 of the MnDOT Bikeway Facility Design Manual regarding rumble strips on 4 ft shoulders.                  PS = Paved Shoulder; SL = Shared Lane; SUP = Shared-Use Path; WOL = Wide Outside Lane</p>							

### 5.2.5.b. - Bikeway Design Selection for Urban (Curb and Gutter) Cross Section

Motor Vehicle ADT (2 Lane)		<500	500-1,000	1,000-2,000	2,000-5,000	5,000-10,000	>10,000
Motor Vehicle ADT (4 Lane)		N/A	N/A	2,000-4,000	4,000-10,000	10,000-20,000	>20,000
Motor Vehicle Speed	25 mph	Neighborhood Slow Street	Neighborhood Slow Street	Neighborhood Slow Street (2 Lane only)	Neighborhood Slow Street (2 Lane only) or BL = 5 ft	BL = 5 ft	N/A
	30 mph	Neighborhood Slow Street	BL = 5 ft	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft
	35-40 mph	BL = 5 ft	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft	BL = 6 ft or PS = 8 ft
	45 mph and greater	BL = 5 ft	BL = 5 ft	BL = 6 ft	BL = 6 ft	BL = 6 ft or PS = 8 ft	SUP or PS = 10 ft
<p>BL = Bicycle Lane; PS = Paved Shoulder; SUP = Shared-Use Path; NSS = Neighborhood Slow Street</p>							

**Notes:**

- While the minimum widths for bike lanes are presented here, it is recommended that wider bike lanes be considered when the following conditions exist: an on-street facility with greater protection/separation from vehicles (such as buffered bike lanes or cycletracks) is warranted based on local road conditions, destinations, and expected and desired bicycle ridership.
- The preferred ADT for Neighborhood Slow Streets is 3,000 or lower, maximum is 4,000.
- This guidance is adapted from MnDOT, AASHTO, and NACTO guides.

## 5.3 - Facilities

This section provides an overview and additional locality-specific details for a selection of facilities recommended for application in Eden Prairie.

A “Toolbox of Pedestrian and Bicycle Treatments and Best Practices” report detailing all facilities with potential application in Eden Prairie is included in this Plan’s Appendix.

### 5.3.1 - Sidewalks

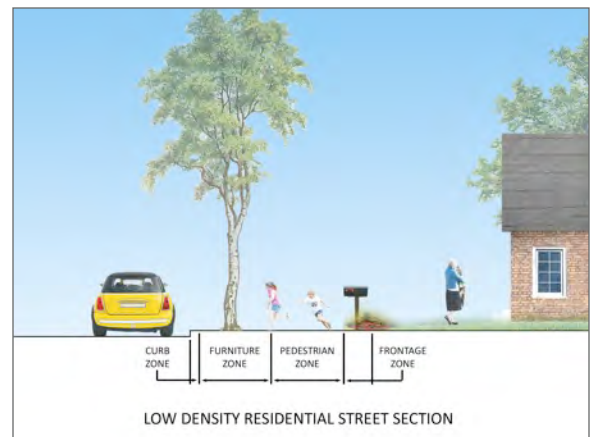
Sidewalks designate space for the use of pedestrians, and are a foundational element of pedestrian mobility. They are also a vital component of healthy commercial districts, providing access to businesses, space for street furniture and plantings, and for the casual interactions that support community interpersonal connections.

#### Sidewalks: Recommendations for Eden Prairie

Eden Prairie has an extensive network of off-road shared-use paths and sidepaths that provide connections for pedestrians. Sidepaths are provided on many of the city’s busier streets, and provide connections to key destinations and between neighborhoods. Sidewalks provide local connections within neighborhoods and access to specific destinations.

Important considerations related to sidewalks in Eden Prairie include:

- Sidewalks should be considered on both sides of the roadway on all residential and commercial streets where shared-use sidepaths do not exist;
- A minimum width of 5 feet is recommended;
- If a shared-use facility is used instead of a sidewalk, it should be a minimum of 8 feet wide to safely accommodate use by pedestrians and bicycle riders; and
- The need for sidewalks should be considered and reviewed on all new roadway construction and reconstruction projects.



Example of the four sidewalk “zones” in a residential area.

#### Sidewalk zones

Current sidewalk design considers four distinct “zones” that allow them to function in different contexts, with dimensions that respond to the land uses and locations they serve. The four zones are:

- **The pedestrian zone** is where people walk. Its width in Main Street / commercial districts should be between 6 to 8 feet, while in residential districts it should be at least 5 feet.
- **The frontage zone** is the portion of the sidewalk that provides access to businesses or other uses adjacent to the sidewalk.
- **The furniture zone** is the portion of the sidewalk where trees, newspaper stands, benches, signs and trash receptacles are placed. This zone increases the distance between the pedestrian zone and moving motor vehicles, increasing the comfort for people on foot.
- **The curb zone** is the outermost edge of the pedestrian realm and provides a defined and safe separation between automobiles and pedestrians.

### 5.3.2 - Sidepaths, Shared-Use Paths, and Trail Facilities

Currently, the primary facility for both pedestrians and bicyclists in Eden Prairie is the paved and unpaved shared-use path and trail network. Off-road shared-use paths/trails connect to and through many recreation destinations, while paved shared-use sidepaths run along many of the city’s roadways. This sidepath network is the “backbone” of the city’s non-motorized transportation network and should continue to be the focus of ongoing improvements and enhancements, in conjunction with the improvement of sidewalks, intersections, and the addition of complementary on-road bicycle facilities.

Though users of shared-use paths are separated from automobile traffic, they still encounter potential conflicts with motor vehicles at intersections, and are also subject to conflicts with other users within the facility. For example, a family walking to the park, an inline skater, a child riding a bike, a jogger with a dog, and an experienced fitness cyclist may have to share the same space simultaneously. To allow a broad range of users to safely and comfortably share the same space, close attention should be paid to facility width and context, and include markings, striping, and signage.

Shared-use sidepaths may exist on one side of the street, or both. To avoid potential issues for users crossing busy roadways to access destinations, facilities should be provided on both sides of roadways, particularly along primary travel corridors such as Prairie Center Drive where pedestrians and bicycle travel volumes are expected to be high, or where key trip destinations or generators are located on both sides of the street. Sidepaths should be considered for marking as facilities to be shared by both pedestrians and bicyclists. Signage and striping should be considered to indicate whether the path accommodates bicycle travel in one direction, or in both directions.

#### Width and Context

Recommended width for shared-use paths is dependent on the context, volume, and mix of users. The typical paved



*The center line changes from solid to dashed, indicating it is safe to pass.*



*High-volume shared-use spaces with adequate width benefit from three lanes.*

width for shared-use paths intended to accommodate two-way bicycle travel and pedestrians ranges from 10 to 15 feet. Wider paths are recommended in areas with higher pedestrian use (at least 30% of all users), or higher user volumes in general (three hundred or more users at peak hour). Wider paths allow for a high level of service (i.e. optimal conditions and a high quality user experience) when used frequently by pedestrians, bicyclists, and other users. Additionally, wider shared-use paths make maintenance and snow removal easier.

For most cases in Eden Prairie (unless user volumes are very high), segregation of user types is not necessary as the expected volume of users allows for the safe navigation of users around each other.

A minimum sidepath width of 8 feet is recommended when facilities are provided on both sides of a roadway. Where they are provided on only one side of a roadway, a minimum width of 10 feet is recommended.

### Centerline Striping

Centerline striping within a path provides directional separation and also indicates to users when passing is permissible. Pedestrian and bicycle symbols and arrows on shared-use paths can also be utilized to indicate a shared facility and clearly mark the direction of travel. Options for centerline striping consideration include:

- A dashed yellow center line should be considered on priority shared-use paths where two-way travel occurs. Bike and pedestrian stencils should be used to indicate that both modes are expected to share the same lane in the same direction.
- For paths with extremely heavy user volumes, it is recommended that consideration be given to separating users further:
  - One option is to provide three separate lanes within a single path including two one-way lanes for bicycle travel and one bidirectional lane for pedestrian travel. A pathway width of at least 15 feet is recommended for such a configuration to allow 5 feet for each lane; and

## Recommended Separation Between Shared-Use Paths and Roadways

### Roadway With No Curb

Speed Limit (mph)	Separation (ft)
40 mph or less	20 ft (desired) 10 ft (minimum)
45 mph or greater	24–35 ft
Freeway	50 ft (minimum)

### Roadway With Curb

Speed Limit (mph)	Separation (ft)
30 mph or less	5 ft (minimum) 3 ft (minimum, if parking allowed)
35–40 mph	5 ft (minimum)
45 mph or greater	10 ft (desired) 5 ft (minimum)
Freeway	50 ft (minimum)

*Source: 2007 MnDOT Bikeway Facility Design Manual*

- The second option is to physically separate users by providing a distinct pathway for pedestrians.

### Signage

Trail speed limit signs should be considered along shared-use paths with high volumes of bicycle users. Typical speed limits for shared-use paths range from 10 to 15 miles per hour. Speed limit considerations may include user visibility, pathway curvature, and user volumes. In areas with high volumes of both pedestrian and bicycle users, additional signage reminding users of passing etiquette (warn when passing slower trail users) and illustrating proper lane use are recommended to reduce conflict.



*In advance of a tunnel entry with restricted visibility, signage directs users to keep right and slow down.*

### Off-Road Shared-Use Facilities: Recommendations for Eden Prairie

- On primary corridors (such as Prairie Center Drive) shared-use facilities should be installed on both sides of the roadway;
- Signage and/or pedestrian and bicycle stencils should be considered along shared-use paths and sidepaths indicating their use by pedestrians and bicyclists;
- If there is a shared-use path on only one side of the roadway, consideration should be given to signing and striping (with dashed yellow lines) it as a two-way facility, and consideration should be given to making it at least 10 feet wide; and
- Intersections of sidepaths and shared use paths and trails with roadways, and with high-speed high-volume roadways in particular, should be designed with extra care and according to current best practices, guidance included in this Plan, and guidance from the Three Rivers Park District.



### 5.3.3 - On-Street Bicycle Facilities

This Plan recommends continued emphasis on improving and expanding the sidepath / shared-use path network within the city, while also developing a complementary system of on-street bicycle facilities. On-street bicycle facilities are a relatively low-cost improvement that can increase the number of people biking to destinations across the city.

Although on-street bicycle facilities offer lower levels of separation and user comfort than off-road facilities, they are appropriate on roadways with lower vehicle volumes and travel speeds and are sometimes preferred by commuters and other experienced bicyclists for longer-distance or higher-speed travel. On-street bicycle facilities allow bicyclists to travel at grade with motor vehicles, removing “dip down” obstacles at intersections and crossings (unlike what currently occurs for users on shared-use sidepaths).

Different types of on-street bicycle facilities exist, from “Neighborhood Slow Streets” that can be implemented on low volume / low speed residential streets, to bike lanes, to buffered bicycle lanes and cycletracks, which offer additional distance or barrier separation from motor vehicles.

Selecting the appropriate treatment, and designing the specific treatment along a given route depends on a number of factors, including:

- Speed of the roadway;
- Motor vehicle volume (AADT) of the roadway;
- Land use context/nearby destinations;
- Number of vehicle travel lanes;
- Width of existing pavement and existing right-of-way;
- and
- Current and expected ridership.

Please refer to Chapter 5.2.3 for guidance on selecting bicycle facilities. Recommendations for on-street bicycle facilities in Eden Prairie can be found in Chapter 4. An overview of use and design considerations for each type of on-street bicycle facility is included below.



**A bicyclist travels in an on-street bicycle lane. Image courtesy of [pedbikeimages.org](http://pedbikeimages.org), Jennifer Campos.**

## On-Street Bicycle Lane

Bike lanes designate a portion of the roadway for preferential use by bicyclists. Lanes are defined by striping, pavement markings and signage and should be a minimum of 5 feet wide, with at least 4 ft outside of the gutter pan. Bike lanes separate bicyclist and motorist travel flows and increase cyclist and driver comfort.

On some roads, the curb-to-curb width of the road pavement may be a constraint and expanding pavement may not be possible. There are some solutions that can address this issue and allow for on-street bicycle facilities. These include:

- Implementing a “road diet” where excess road capacity exists - for example converting a four-lane roadway to three lanes (two lanes each direction with a center turn lane);
- Removing on-street parking; and/or
- Decreasing the width of travel lanes (down to 11 feet or 10 feet in urban settings).

The Institute of Transportation Engineers (ITE), in *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*, a report sponsored by the Federal Highway Administration (FHWA), recommends using a roadway's target (or desired) speed as guidance for the width of travel lanes provided. Consistent with AASHTO guidance and design flexibility, the study finds that 10 feet travel lanes are suitable for local and collector streets with operating speeds to 30 mph, while lane widths from 10 to 11 feet are suitable for use in arterials with operating speeds to 35 mph.



**On-street bicycle lane on a roadway's paved shoulder.**

### **Neighborhood Slow Street / Bicycle Boulevard**

A Neighborhood Slow Street (also sometimes known as a Neighborhood Greenway or Bike Boulevard) is a neighborhood residential street modified to calm automobile traffic and discourage cut-through traffic to make walking and bicycling on those streets more comfortable.

Neighborhood Slow Streets are appropriate for residential streets with a maximum vehicle volume of 4,000 ADT (preferred is 3,000 or less). Neighborhood Slow Streets are typically located a block or two away from a major thoroughfare with high traffic volumes, and provide an alternative for travel in that same direction.

Traffic-calming elements are introduced to maintain target speeds of 20 to 25 mph for motor vehicle traffic. Neighborhood Slow Streets are an effective way of creating lower stress connections for bicycles in the network and are appropriate for several residential streets in Eden Prairie that connect with other routes.

### **Bicycle Use of Paved Shoulder**

Eden Prairie has numerous shoulder facilities on its road network. There are opportunities to reconfigure these shoulders into bicycle lanes (and potentially buffered-bicycle lanes) by re-stripping travel lanes. Additional bike route signage and designation of shoulder facilities as bicycle lanes would improve the safety and comfort of bicyclists who wish to travel on the street network.

When turning paved shoulders into bicycle lanes, curbs used to divert storm water into catch basins should have bicycle-compatible designs. Pavement overlays and storm water catch basins should be designed to avoid leaving an abrupt edge within the riding area. In areas where an edge or significant seam is present, the bicycle lane should measure at minimum of 5 feet, with at least 4 feet outside of the edge or seam.



**Green paint can help direct bicyclists and alert motorists when there is a transition from an on-street to an off-street bicycle facility.**



**A Neighborhood Slow Street / Bicycle Boulevard in Northeast Minneapolis.**

### 5.3.4 - Protected Bicycle Facilities

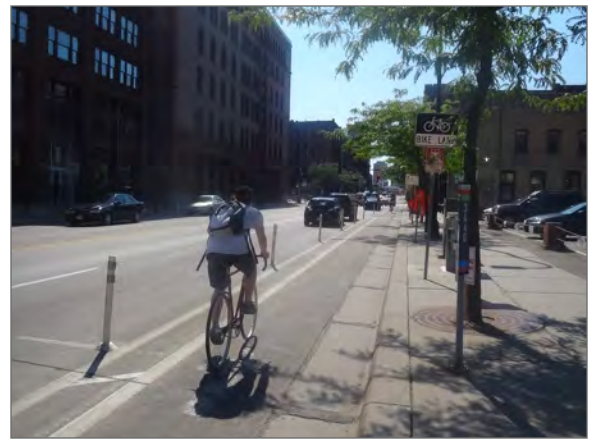
Physical separation from motor vehicle traffic increases comfort for a significant population of existing and potential riders in a community (it has been estimated that approximately 60% of a community’s residents would be interested in riding a bicycle more often if stresses related to interactions with motor vehicle traffic could be significantly reduced). As a result, more and more communities are implementing separated / protected bicycle facilities to establish on-road routes. These facilities offer a similar experience to bicycling on an off-road shared-use path. They include:

#### Buffered Bicycle Lanes

Buffered bike lanes provide cyclists with extra space between the bike lane and moving traffic, increasing their comfort. Buffers can provide cyclists with adequate room to pass without having to merge into automobile traffic. Buffered bicycle lanes are appropriate anywhere a traditional bicycle lane is proposed and where the right-of-way is available. Buffered bike lanes may provide a safer and more comfortable designated bicycling space for parents with schoolchildren than conventional bike lanes and should be considered for routes serving school locations.

#### Cycletracks (Protected Bikeways)

A cycletrack is an exclusive lane for cyclists separated from motor vehicle traffic by a painted buffer and/or physical barrier (such as a curb, parked cars, or bollards), and separate and distinct from the sidewalk. Different forms of cycletracks include one-way protected cycletracks, raised cycletracks and two-way cycletracks. Cycletracks require more space and infrastructure than conventional bike lanes, and require special design attention at intersections. Cycletracks have been shown to significantly increase bicycle ridership for people of all ages and experience levels because the significant separation from motorized vehicles greatly increases rider comfort. **Eden Prairie’s existing and extensive network of sidepaths can, with improvements at intersections, provide all of the benefits of cycletracks - this is a key opportunity identified by this plan.**



*Cycletracks are a type of on-road bicycle facility that offer separation between bicyclists and motor vehicle traffic.*



*This University of Minnesota cycletrack offers physical separation from motor vehicles (on the right), and from pedestrian circulation and building entrances (on the left).*

**What about sidepath and cycletrack intersections?**  
The Eden Prairie Improved Intersection Crossings (EPIIC) Concept includes several solutions to improve sidepath and cycletrack intersections in the city. Please consult Chapter 5.5 for more information about intersection improvements.

## 5.4 - Tools for Addressing Intersections and Trail Crossings

Intersections and trail crossings were frequently identified by the general public as prominent barriers to comfortable walking and biking across Eden Prairie.

Sidewalks, off-road shared-use paths/trails, and shared-use sidepaths through the city intersect many high-volume and high-speed arterial and collector streets. These, in combination with long crossing distances, make crossing on foot or bike difficult or not inviting.

Intersections and crossings identified as highest priority for improvement are identified in Chapter 4 of this Plan. This section offers guidance for improvements that can be made at any intersection to make conditions more comfortable for pedestrians and bicyclists. Improving conditions for walking and biking at identified priority intersections and other intersections across the city will significantly improve qualities of comfort and convenience for the overall walking and biking network.

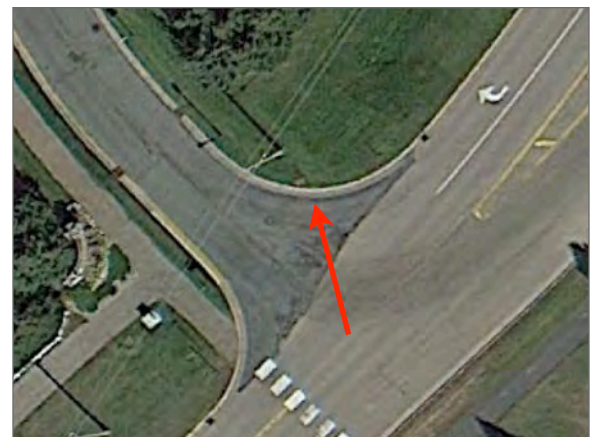
Several factors contribute to the actual and perceived safety of pedestrians and bicyclists at intersections:

- Crossing distance and time available for crossing;
- Traffic speed;
- Traffic volume; and
- Visibility to motorists.

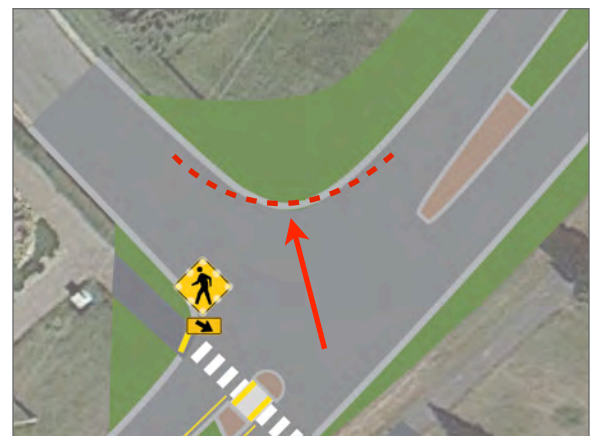
Several approaches to infrastructure improvements can be considered for addressing these factors. Three strategies are described below.



***Pedestrians waiting to cross Mitchell Road at Lone Oak Road in Eden Prairie. This intersection has a good high-visibility crosswalk, but would benefit from a “bull-nose” extension of the median beyond the crosswalk to create a refuge island, as illustrated on the next page.***



***Starting condition: wide corner radius.***



***By reducing corner radius, motor vehicle turning speeds are moderated, and pedestrians and bicyclists can cross more comfortably.***

## STRATEGY 1: Shorten and Break Up the Crossing Distance

### Refuge Islands

Refuge islands facilitate pedestrian crossing movements across wide or multi-lane roadways by allowing pedestrians to focus on crossing one direction of traffic at a time. Refuge islands also provide a traffic calming benefit by visually narrowing the roadway and reducing the turning radius of left-turning vehicles. Traffic calming benefits of medians can be increased with vegetation (as long as it does not block pedestrian visibility) and other design features.

Most major intersections in Eden Prairie already include traffic medians, though few of them currently function as pedestrian refuges. These existing medians should be considered for extension beyond crosswalks to create “bull-nose” refuges providing additional protection to pedestrians and bicyclists crossing a roadway. In cases where shared-use paths cross intersections, refuge islands should be wide enough to accommodate pedestrians and bicyclists.

### Curb Extensions

Curb extensions are the extension of the sidewalk and curb into the roadway at corners. These features (also known as bump-outs) improve pedestrian safety by increasing the visibility of pedestrians to motorists, by slowing down right-turning motorists, and by reducing crossing distance, thus decreasing a pedestrian’s exposure to moving traffic and the time it takes to travel across an intersection. Curb extensions are typically applied on streets with on-street parking.

Curb extensions should be considered in areas with high volumes of pedestrians such as around schools and commercial destinations. Curb extensions should not extend into bicycle travel lanes.



***A “bull-nose” refuge island extends the median beyond the crosswalk and provides additional protection to pedestrians.***



***A curb extension (in Grand Rapids, MN) reduces the distance a pedestrian has to travel when crossing the road.***

## STRATEGY 2: Reduce Traffic Speed and Shorten Crossing Distance

### Reduce Corner Radii

Minimizing corner radii is an intersection design solution that can benefit pedestrians and bicyclists by reducing traffic speeds and reducing crossing distances.

Smaller corner radii encourage motorists to turn at slower speeds, and also reduce crossing distances for pedestrians. Corner radii in Eden Prairie should be re-evaluated and updated where feasible, and new roadway projects should follow minimum turning radii recommendations based on best practice guidelines according to AASHTO with careful consideration of the design vehicles selected.

### Modify Road Configurations

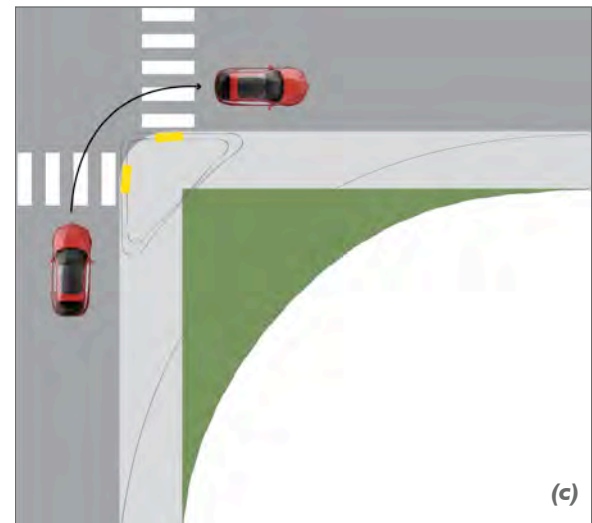
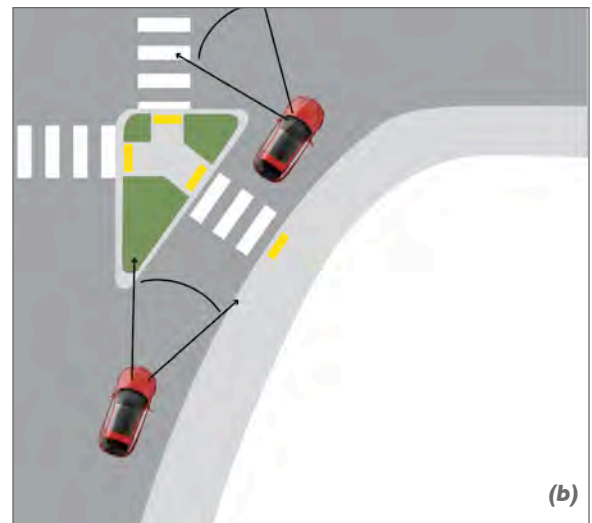
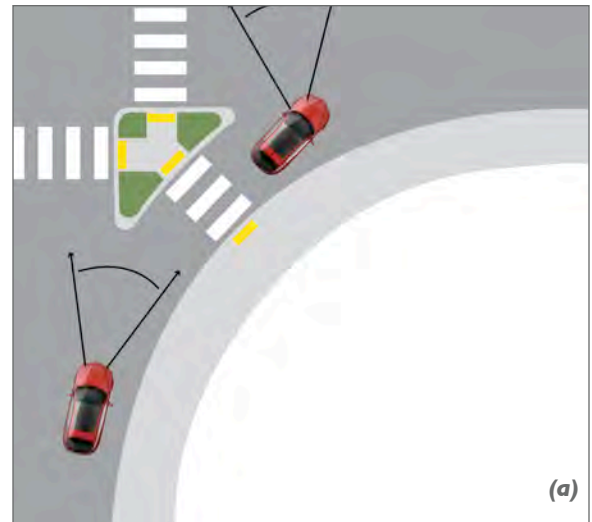
Roadways can be modified to calm motor vehicle traffic, and/or to provide the necessary space for on-street bicycle accommodations without the expansion of road pavement.

Typical roadway modifications include:

- Where excess roadway capacity exists:
  - Considering a “road diet” that reduces the number of through lanes for motor-vehicles; and/or
  - Removing turn lanes at intersections.
- Reducing the width of motor vehicle travel lanes. Ten or eleven foot travel lanes are adequate for roadways with target speeds up to 35 mph.

### Right-Turn Slip-Lane Design

Slight changes in the design of right-turn slip-lanes and “pork chop” islands can transform them from high-speed turn lanes into traffic-calming pedestrian refuges. Straightening and elongating the entry angle, reducing the width of the turn lane, and reducing the turning radius at the exit help improve drivers’ visibility of pedestrians and oncoming traffic when merging. Crossings in high-priority areas can be enhanced by installing raised crosswalks to elevate and improve visibility of users, and further calm traffic. In central commercial areas, the City of Eden Prairie may wish to consider removing slip-lanes when possible to increase pedestrian and bicyclist convenience.



**The first slip lane configuration (a) prioritizes vehicle speed; the second configuration (b) improves pedestrian safety while also improving driver sight lines; removing the slip lane (c) maximizes pedestrian space and minimizes traffic speeds.**

## STRATEGY 3: Make Pedestrians and Bicyclists More Visible at Intersections and Crossings

### High Visibility Crosswalks and Vehicle Stop Bars

High-visibility “continental” or “ladder” crosswalks with vehicle stop bars should be considered for all fully-controlled intersections where sidewalks exist (all-way stop signs or traffic lights). Eden Prairie currently considers high-visibility crosswalks at all signalized intersections. Where absent, consideration should be made for upgrading pavement markings at intersections, particularly those undergoing reconstruction, identified priority intersections, and locations with high pedestrian and traffic volumes.

Additionally, green paint can be added to locations where bicycle facilities cross roadways to enhance bicyclist visibility. The city should consider green paint for intersections that include off-road or on-road bicycle facilities, particularly in priority areas or areas with potential turning conflicts.

### Signage and Signals

Signage is an important element in crossings, particularly where off-road paths/trails cross streets at mid-block locations. Adding signals and modifying the timing of existing signals can increase comfort for pedestrians and bicyclists at intersections and crossings. A few approaches involving signage and signals relevant to Eden Prairie are discussed below.

Signage should be prominent and visible to oncoming motor vehicle traffic from both directions. Advance warning crossing signage should be considered, and when provided it should be consistent with MN-MUTCD guidance.

#### a) Countdown Timers

Countdown timers should be considered at all signalized intersections to alert pedestrians and bicyclists of the time they have available for crossing. Consider extending crossing times to better accommodate pedestrians, and consider implementing leading pedestrian intervals (LPI) to allow for pedestrians and bicyclists to begin crossing the street before motor vehicles are given the green light.



**A continental crosswalk and vehicle stop bar at Martin Drive and Mitchell Road in Eden Prairie.**



**Green painted lanes can help increase the visibility of bicyclists in intersections.**



***b) Rectangular Rapid Flash Beacon (RRFB) and High-Intensity Activated Crosswalk (HAWK) Beacons***

RRFBs and HAWKs are signals that can be used at mid-block crossings or at crossings where no signal is present. These signals result in a high level of motor vehicle yielding to pedestrians crossing the street. Guidance for the installation of HAWKs and RRFBs is provided in Figure 5.2.2.b and 5.2.2.c.

**Treatment Guidance and Selection Criteria**

The Three Rivers Park District’s “Guidance for Three Rivers Park District Trail Crossings” should be followed for crossings of the Minnesota River Bluffs LRT Regional Trail with Eden Prairie streets. The city is working with the park district on examining potential improvements of the crossing of the trail with Dell Road.



***Signage and a high-visibility crosswalk help to mark this Minnesota River Bluffs LRT trail crossing along Venture Lane.***

## 5.5 - Eden Prairie Improved Intersection Crossings (EPIIC) Concept

Shared-use sidepaths make up a significant portion of Eden Prairie's extensive network of pedestrian and bicycle facilities. Sidepaths intersect all types of roadways in the city: from major arterial roadways to numerous side streets and driveways providing access to large business and residential concentrations.

These locations introduce numerous potential conflicts between pedestrians and bicyclists traveling along a path, and motor vehicles queueing to proceed or turn. Often, pedestrians' and bicycle riders' paths are blocked by motor vehicles preparing to enter a main road; in addition, the recurring change in elevation at corners (where sidepath elevation is lowered to match the roadway) and jarring bumps in pavement transitions severely degrade the experience of users and the overall quality of the city's pedestrian and bicycle network. More seriously, issues relating to visibility of sidepath users, and their arrival into the intersection from directions unexpected by motorists and without signal protection (in the case of sidepaths with two-way travel) work against safety and the perception of safety experienced by users of the facility.

These issues are key barriers limiting the use and usability of Eden Prairie's existing sidepath / shared-use path network, and impeding the city's extensive physically-separated network of protected walking and biking paths from reaching its full potential.

The Eden Prairie Improved Intersection Crossings (EPIIC) concept aims to address these key issues by identifying a package of measures that can, when deployed in combination, address and mitigate these conditions.

**Please note that the concepts presented here are preliminary ideas to stimulate exploration of solutions to this issue - all intersections are unique, and there is**



*A bicycle rider using the sidepath network is blocked by a motor vehicle at a major intersection.*

### A Foundation for Improvement: The City's Sidepath Network

Eden Prairie's existing and extensive network of pedestrian and bicycle facilities includes a significant portion of sidepath facilities, separated from and located adjacent to roadways, and which function as shared-use paths.

These facilities offer physical separation from motor-vehicle traffic, which is an important requirement for meeting the "sense of safety" threshold for most adults, and which creates positive conditions for inviting greater use of walking and biking transportation in the city.

Numerous user preference surveys, including those conducted for this project, as well as others recently conducted for the Hennepin County Bicycle Transportation Plan and the Minnesota Department of Transportation's Statewide Bicycle System Plan, confirm the general population's preference for barrier-separated / protected bicycle facilities, and explain the multiple initiatives currently ongoing throughout the United States to implement "cycletrack" facilities as primary elements of many cities' bicycle networks.

*(continues on next page)*

**no single typical design that can serve all needs.** Signalization, lane configuration and user volumes all have an effect on vehicle throughput, delay and safety. **Each intersection will require close review by a registered Professional Engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety for all users.**

Two general EPIIC concepts are introduced here:

- Typical Arterial Intersections, and
- Typical T Intersections with driveways or residential roads

Further discussion is provided in the sections below.

### 5.5.1 - T Intersections

T-intersections are discussed first here as they present a simpler case and opportunity to describe key EPIIC concepts.

Typical issues encountered at T-intersections include:

- Pedestrians’ and bicyclists’ paths blocked by motor vehicles preparing to turn into the main road;
- Elevation changes at corners / through the intersection;
- High motor-vehicle speeds as they turn from the main road and travel across the sidepath crossings.

The EPIIC concept addresses these issues by identifying a package of measures that can, when used in combination, address these conditions. In general, the EPIIC concept for T-intersections sets back sidepath crossings about 20 feet from the parallel street (to provide a space outside of the sidepath crossing for motor vehicles waiting for a gap in traffic), and provides a continuous path at a constant elevation for the pedestrian and bicycle path.

In addition, other components and configuration elements (including turning radius, medians, signs and markings) reduce the probability of drivers blocking the path of pedestrians and bicyclists, and provide traffic-calming benefits near the sidepath crossing.



**Motor vehicle driver waiting for a gap to turn into the main road at a T-intersection.**

*(Continues from previous page)*

Cycletrack facilities, which are barrier-separated bicycle lanes, have been operating for multiple decades in many contexts, and are the backbone elements of successful bicycle transportation systems in all European cities with double-digit modal share for bicycle travel.

Eden Prairie shares this element of user separation from motor vehicles with successful bicycle cities - but as is evident by experience and data, the share of travel by bicycle in the city is still very small. What explains this lower rate of bicycling given the potentially advantageous configuration of the city’s facilities? And what can be done to leverage Eden Prairie’s existing asset of physically-separated bicycle facilities and capture the potential to exponentially grow bicycle travel in the city?

Undoubtedly, many factors play a role. However, a key to understanding what is holding back the city network’s potential is to look beyond the sidepath facility itself to what occurs when a user of the sidepath network arrives at an intersection.

*(continues on next page)*

For the EPIIC concept to function best, all of the following components should be considered:

**Crossing is pulled back 20 feet from parallel street**

- Allows room for one vehicle to queue up, without blocking pedestrian or bicycle travel, to wait for a gap in traffic; and
- Allows sufficient distance for motor vehicles turning from the parallel roadway to see pedestrians or bicyclists using the crossing and to react and stop if needed.

**Crossing is raised**

- Addresses the issues of elevation changes affecting wheelchair users, pedestrians and bicycle riders at crossings;
- Calms traffic by functioning as a speed table, giving motorists more time to notice approaching pedestrians or bicyclists; and
- Discourages motorists from stopping on the crossing, maintaining a clear travel-way for sidepath users.

**Medians and islands are provided, and include mountable curbs**

- Channelize and calm motor-vehicle traffic while allowing access for freight trucks and emergency vehicles.

**Crossing is visible and legible**

- Crossing location is visible and understood by all users of the road and path (appropriate pavement markings and signs are used); and
- Maintains clear and unobstructed sight lines at corners.

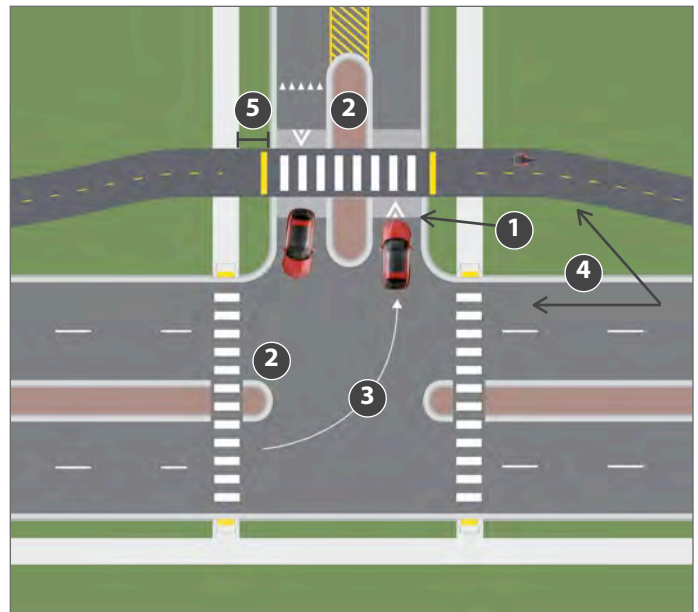
**Turning radius is reduced**

- Tightens corner radii and includes installation of median extensions to slow motor vehicles turning into and out of the intersection to/from all directions; and

*(Continues from previous page)*

Sidepaths in the city intersect major arterial roadways, residential roadways, and numerous side streets and driveways providing access to large business and residential concentrations. Numerous potential conflicts at these locations between sidepath users and motor vehicles work against providing a safe, comfortable and inviting experience to current and potential users of the city’s system.

These issues are key barriers that limit the use of Eden Prairie’s existing sidepath / shared-use path network, and impede the city’s extensive physically-separated network of protected walking and biking paths from reaching its full potential. The Eden Prairie Improved Intersection Crossings (EPIIC) concept aims to address these issues by identifying a package of measures that can address and resolve these conditions and thus support greater utilization of the city’s existing pedestrian and bicycle assets.



**The EPIIC concept for T-intersections includes realigning the sidepath so that it is set back from the parallel road to allow room for one vehicle beyond the point where the path crosses the side street. Some important considerations include: 1) Speed table for the crossing; 2) Medians and median extensions; 3) Reduced turning radius; 4) Clear sight triangle between motorists and sidepath users; and 5) 6 feet waiting zone.**

- Accommodates freight vehicles and emergency vehicles with mountable curbs.

**Additional Design Considerations**

Additional design considerations for improved safety and functioning of crossings include:

- Speed table slope should be 1:10 except on emergency or freight routes when it can be lowered to 1:25;
- 6 feet waiting zone for path users between perpendicular path and curb; and
- Maintain a clear sight triangle between motorists and sidepath users at crossing approach.

Each intersection/crossing has its own unique challenges. EPIIC concepts should be considered and implemented on a case by case basis. Special consideration for implementation should be given to priority locations identified in 4.3.2 and 4.3.5.

**5.5.2 - Arterial Intersections**

Arterial intersections carry large volumes of motor vehicle traffic. Conventional geometric design for arterials, which focused on optimizing traffic flow for motor vehicles and did not fully consider the needs of other users, has negative implications for the safety, comfort and experience of people walking or biking through an intersection.

At intersections where bicycle and pedestrians are prioritized (for example, at those locations providing access to SW LRT stations or other transit investments, or where primary pedestrian and bicycle routes are provided) several strategies and design approaches can be used to improve walking and biking conditions.

At these locations, the roadway designer should strive to eliminate conflicts completely if possible, or to modify roadway designs to reduce motor vehicle speeds and make them more compatible with pedestrian and bicycle rider speeds (10-15 mph) at locations where conflicts cannot be avoided.

**Supplementary Programming**

Educational and enforcement programming should be deployed in tandem with EPIIC concept implementation to help pedestrians, bicyclists, and motorists adjust to new facilities.

**Education**

- Target path users (especially children) with educational materials regarding safe crossing behavior; and
- Educate motorists on where to stop before and after protected crossings with signage and/or promotional materials.

**Enforcement**

- Use signage to educate drivers and discourage them from blocking the movement of path users; and
- Initiate ticketing campaign to improve driver compliance and interaction with path users.

## Elements of EPIIC Arterial Intersections

Selected characteristics of EPIIC Arterial Intersections are described below. Please refer to the diagram provided on this page for illustration of each of the numbered characteristics.

### 1) Protected-Only Left Turn Signal Phase

Exclusive left turn lanes should use protected-only signal phasing at intersections with sidepath crossings. This type of operation is recognized to provide the safest left-turn operation. Permitted-only or protected/permitted left turn phasing should not be allowed at crossings of high-priority bicycle and pedestrian routes.

### 2) Conventional Turn Lanes

Channelized turn lanes generally offer larger radius, higher speed turns than conventional turn lanes, which may pose a pedestrian and bicyclist safety issue (FHWA 2013).

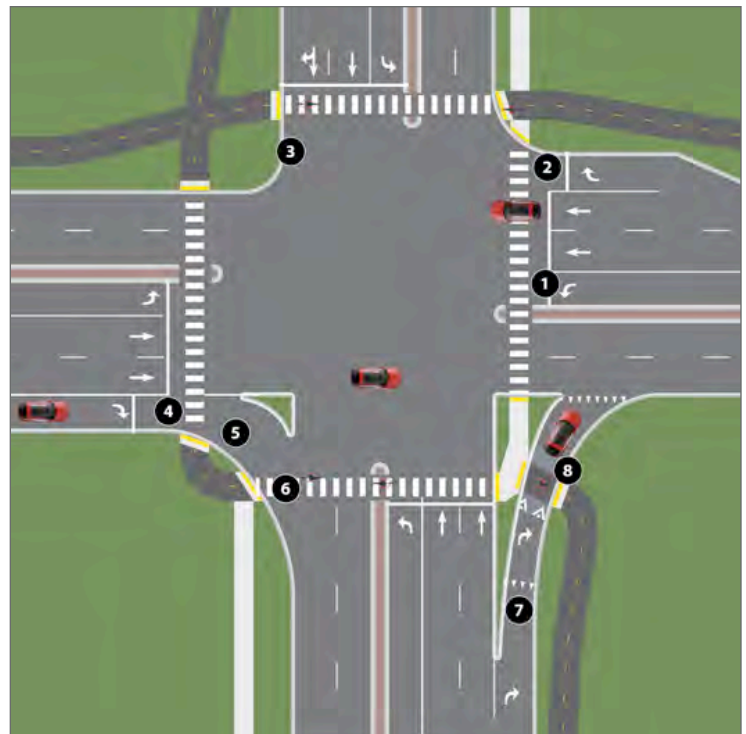
Conventional right turn lanes with smaller curb radii will reduce vehicular turning speeds, minimize pedestrian crossing distances, and reduce the potential severity of vehicle-pedestrian collisions. In situations where a right-turn lane is necessary, preference should be given to a narrow conventional turn lane with a small corner radii over a channelized turn lane.

### 3) Shared Right/Through Lane and Slow Speed Geometry

In areas with lower right turn volumes and lower speeds, a right turn only lane may not be warranted. By using a shared right/through lane in place of an exclusive right turn only lane, pedestrian crossing distance is decreased and turning speeds are reduced. The pedestrian signal commonly runs concurrently with the adjacent right/through lane. Because this creates a potential conflict between right turning

## A note on design recommendations for EPIIC intersections

Please note that signalization, lane configuration and user volumes all have an effect on vehicle throughput, delay and safety. All intersections are unique, and there is no single typical design that can serve all needs. Each intersection requires review by a registered Professional Engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety for all users.



**Components of the EPIIC Arterial Intersections concept:**  
1) Protected-Only Left Turn Signal Phase;  
2) Conventional Turn Lanes;  
3) Shared Right/Through Lane and Slow Speed Geometry;  
4) Protected Right Turn Signals;  
5) No Turn on Red;  
6) Leading Pedestrian Interval (LPI);  
7) Pedestrian-Friendly Channelizing Islands;  
8) Other Channelized Turn Lane Enhancements.

vehicles and crossing path users, it is essential to use geometric design to create a slow speed turning movement. To design for slow speed turning movements, use a very small corner radius and narrow receiving lanes. Like EPIIC intersections at T-intersections and minor streets, the crossing should be setback around 20 ft from the intersection.

**4) Protected Right Turn Signals**

At signalized intersections, right turn lanes are commonly served the circular green signal of the adjacent through lane. Assuming pedestrian signal phase occurs at this time, right turning vehicles are expected to yield for crossing pedestrians and bicyclists in the crosswalk.

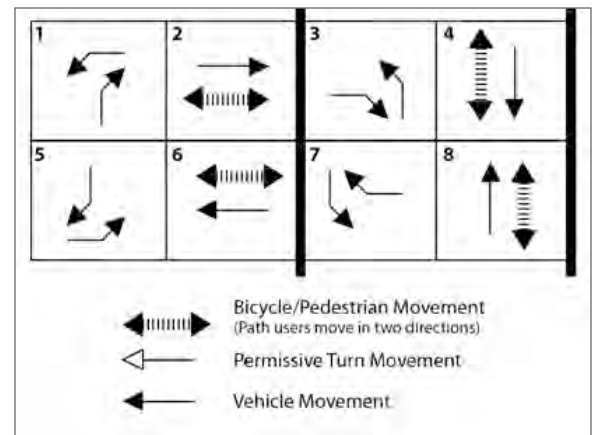
Reconfiguring the signals to offer a protected right-turn phase may allow a fully protected pedestrian signal phase, allowing efficient and safe mobility for path users. Protected right-turn signalization may be established concurrently with the left-turn signal phase of the cross street, while the pedestrian signal phase is provided concurrently with the adjacent through movement. This type of “protected but concurrent” phasing provides the benefits of protected signalization without adding additional delay to the intersection that comes with exclusive phase operation (please see diagram on this page).

**5) No Turn on Red**

The Minnesota Manual on Uniform Traffic Control Devices (MN-MUTCD) states that a No Turn on Red (NTOR) sign should be considered when an engineering study finds “an unacceptable number of pedestrian conflicts with right-turn-on-red maneuvers, especially involving children, older pedestrians, or persons with disabilities.”

Given the likelihood and desire to support high volumes of bicycle and pedestrians along priority paths, an engineering study should be performed to evaluate the potential benefits of NTOR prohibitions at path crossings.

When right-turn-on-red is prohibited, there may be more right-turn-on-green conflicts between motor vehicles and



**Simple Ring/Barrier Diagram for Protected but Concurrent Phasing.**



**Raised and colored crosswalks reduce the speed of right-turning vehicles and improve conditions for pedestrians and bicycle riders. Image: Richard Drdul - Flickr.**

pedestrians when both the right turning motorists have a green light and the pedestrian has the ‘Walk’ signal on the adjacent crosswalk. The use of leading pedestrian intervals can reduce this effect, and the use of protected signal phasing can eliminate it. Alternatives to NTOR prohibitions include “Yield to Pedestrian in Crosswalk,” “Turning Vehicles Yield to Pedestrians,” and “No Turn on Red When Pedestrians are Present.”

**6) Leading Pedestrian Interval (LPI)**

The Minnesota Manual on Uniform Traffic Control Devices (MN-MUTCD) states that “at intersections with high pedestrian volumes and high conflicting turning vehicle volumes, a brief leading pedestrian interval, during which an advance WALKING PERSON (symbolizing WALK) indication is displayed for the crosswalk while red indications continue to be displayed to parallel through and/or turning traffic, may be used to reduce conflicts between pedestrians and turning vehicles.” All path crossings at signalized intersections should be evaluated for leading pedestrian interval use where there is a desire to support high volumes of bicycle and pedestrian travel.

**7) Pedestrian-Friendly Channelizing Islands**

Whenever possible, channelized turn lanes should be avoided in pedestrian- and bicycle-oriented areas. If their use cannot be avoided, efforts should be made to mitigate their negative effects on these users.

If channelized turn lanes and yield or free-flow operation is necessary, pedestrian-friendly geometry should be used to promote slow driver speed through the channelized turn lane and promote yielding of motor vehicles to people crossing the street.

Channelizing island geometry should promote clear visibility of crossing pedestrians, and provide space

for safe yielding to pedestrian, bike and auto traffic (TRB 2014). The alignment of the turn lane should be a nearly right-angle entry to the cross street, giving the channelizing island a shape like an acute right triangle. There should be adequate length of the turn lane to store yielding motor vehicles both before and after the crosswalk area.

**8) Other Channelized Turn Lane Enhancements**

Channelized turn lanes can be particularly challenging to navigate for pedestrians with vision impairments (TRB 2010). Recommended strategies to assist these users include the use of raised crossings through the channelized turn lane to slow driver turning speeds and/or use of Rectangular Rapid Flash Beacons (RRFB) to improve yielding rates. These improvements also greatly benefit sighted users and should be considered where possible.

Each intersection/crossing has its own unique challenges. EPIIC concepts should be considered and implemented on a case by case basis. Special consideration for implementation should be given to priority locations identified in 4.3.2 and 4.3.5.

**Notes and references**

- FHWA Signalized Intersections: An Informational Guide, 2013
- TRB NCHRP 780: Design Guidance for Intersection Auxiliary Lanes, 2014
- TRB NCHRP 674: Crossing Solutions at Roundabouts and Channelized Turn Lanes for Pedestrians with Vision Disabilities, 2010



## 5.6 - Illustrative Concepts

A variety of treatments and alternatives are available to address and improve conditions for pedestrians and cyclists in Eden Prairie. This section provides high-level conceptual illustrations. These illustrations are provided to assist city officials and others as they examine potential improvements in Eden Prairie.

Please note that the illustrations only depict one or two concepts out of potentially dozens that could be developed for each scenario. The range of potential solutions for a specific location will depend on its specific context and conditions, as well as available right-of-way, budget, and other factors. These concepts are for illustrative purposes only, and are not to scale. Details such as lane measurements, roadway geometries, and acceptable intersection geometries have not been determined. Detailed engineering studies will need to be completed before the changes outlined in this section can be applied.

5.6.1 - The **Illustrative Intersection and Crossing Improvements** section provides renderings depicting the application of potential treatments and alternatives for intersections.

5.6.2 - The **Illustrative Route Improvements** section includes renderings depicting the application of a variety of potential treatments and alternatives for routes.



*A draft map sparks discussion during a meeting of the Eden Prairie Pedestrian and Bicycle Plan Internal Working Group (IWG).*

## 5.6.1 - Illustrative Intersection and Crossing Improvements

### Dell Road and the Minnesota River Bluffs LRT Regional Trail

Improving this trail crossing has been identified as an important priority for the city and for Three Rivers Park District. SRF Consulting has worked closely with Three Rivers Park District to develop a set of recommendations for crossing improvements at this location, shown at right.

#### Description of Problem

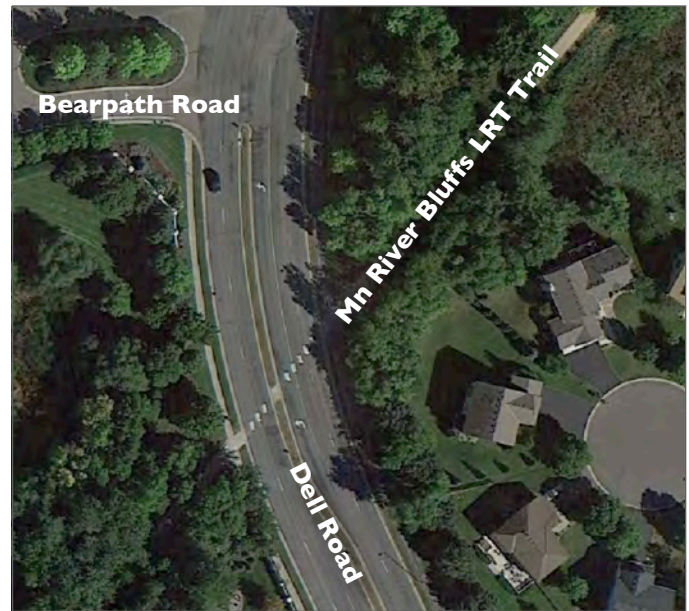
The existing road curvature and angle at which the Minnesota River Bluffs LRT Regional Trail intersects Dell Road diminishes the visibility of walkers and bikers. Motor vehicles do not properly yield.

#### Description of Potential Improvements

- Realign the trail within the existing right-of-way so that it crosses Dell Road closer to a 90 degree angle; and
- Shorten the left turn lane onto Bearpath Road to widen and extend the center median at the location of the crossing.

**Three Rivers Park District Best Practices for Trail Crossings**

Three Rivers Park District is developing a guide outlining best practices for trail crossing treatments and facilities. The document will be available from Three Rivers Park District once it is completed.



Existing condition.



**Proposed: Realigning the trail and shortening the left turn lane increases visibility and protection for those crossing at this location. Another potential element (not shown) is to add an advanced yield bar ahead of the crosswalk.**

*Image courtesy of SRF Consulting.*

### 5.6.1 - Illustrative Intersection and Crossing Improvements (continued)

#### Illustrative Scenario

This scenario is a popular crossing for pedestrians, including those wishing to access a community recreation center to the east of Road A. High vehicle speeds and a curve in Road A around this location create a situation where motor vehicles do not properly yield to pedestrians.

#### Description of Potential Improvements

- Remove the left turn lane along Road A on the west side of the intersection and install a median with a pedestrian refuge island; and
- Add enhanced pedestrian crossing signage with LEDs at the crossing location.



Existing condition.



**Alternative 1: Removing the left turn lane on the west side of the intersection allows for the addition of a center median and a pedestrian refuge island. These modifications should help reduce motor-vehicle speeds at the point of the crossing and break up the total crossing distance for pedestrians.**

## 5.6.1 - Illustrative Intersection and Crossing Improvements (continued)

### Illustrative Scenario

This scenario has pedestrians and bicycles traveling along shared-use paths in the vicinity of an intersection. Motor vehicles turn at high speeds, and there is no crossing to connect to the sidewalk that exists on the west side of the intersection.

### Description of Potential Improvements

- Remove right turn slip lane on the west side of the intersection and reduce turning radii at all corners;
- Add shared-use path connection to Street A on the NW corner of the intersection;
- Install curb ramps on the south side of the intersection;
- Add a sidewalk connection from the southwest corner to the existing sidewalk further west;
- Install advance vehicle stop bars and signage; and
- Add high-visibility crosswalks across Street A and Street B.



Existing condition.



**Alternative 1: Reducing the turning radii, removing the right turn slip lane, and adding high visibility crosswalks as well as additional sidewalk and shared-use path elements would help to enhance pedestrian and bicyclist visibility and facilitate overall connectivity.**

## 5.6.1 - Illustrative Intersection and Crossing Improvements (continued)

### Illustrative Scenario

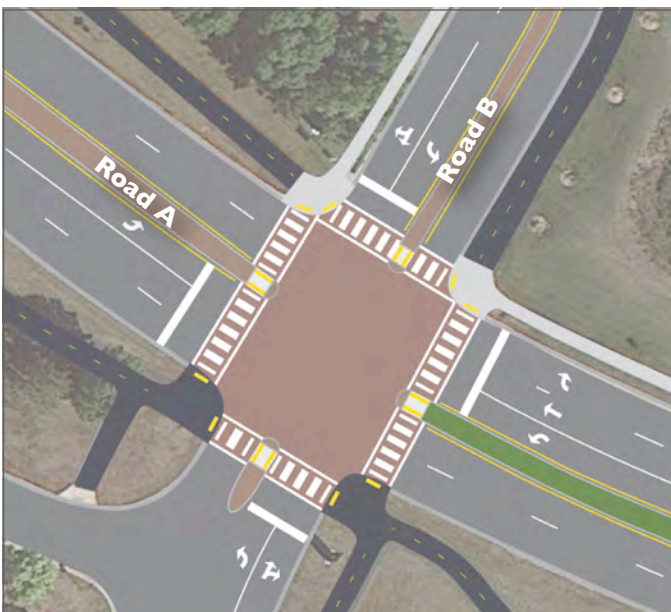
In this scenario an intersection is heavily used by pedestrians and bicyclists to access an adjacent community center, high school, and a local park. Traffic congestion at this intersection can be high, especially when school is in session. Crosswalk markings are incomplete at the intersection.

### Description of Potential Improvements

- Reduce turning radii and install curb ramps at all corners;
- Install high visibility crosswalks and refuge islands at all crossing points;
- Upgrade sidewalk to shared-use path to the NW corner of the intersection;
- Add colored pavement to the intersection to enhance visibility; and
- In Alternative 2, consider removing lanes on the south side of Road A to bring in corners and further reduce total crossing distance across Road A.



Existing condition.



**Alternative 1: High visibility crosswalks and colored pavement enhance pedestrian visibility, while refuge islands break up the crossings.**



**Alternative 2: Eliminating lanes allow corners to be brought in and further reduce the total crossing distance.**

## 5.6.1 - Illustrative Intersection and Crossing Improvements (continued)

### Illustrative Scenario

In this scenario, several prominent destinations exist along Road A. High traffic volumes and four vehicle travel lanes and one turn lane make crossing Road B difficult.

### Description of Potential Improvements

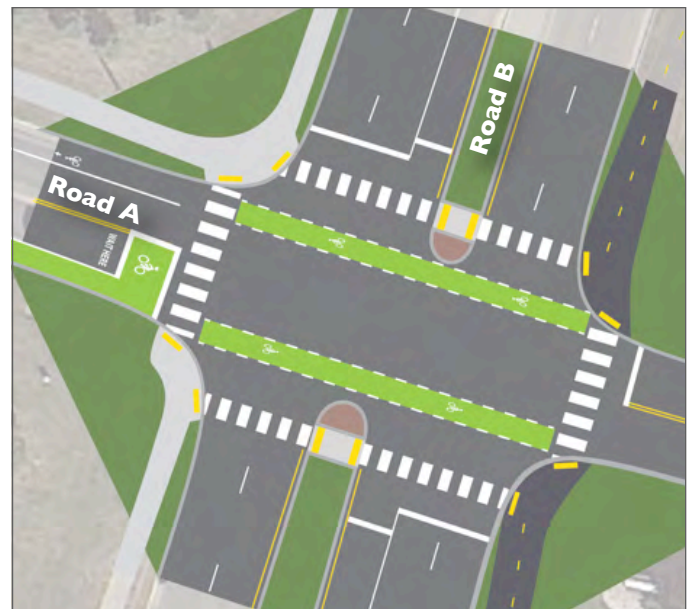
- Reduce turning radii and install curb ramps at all corners;
- Install high visibility crosswalks at all crossing points;
- Extend medians and add bull-nose refuge islands along Road B;
- Install sidewalks and/or shared-use facilities on the NW corner of the intersection along both Road A and Road B; and
- In Alternative 2, add a bike lane to Road A, and add green colored lanes and a bike box at the intersection.



Existing condition.



**Alternative 1: High visibility crosswalks, refuge islands, and vehicle stop bars are added to increase the comfort for pedestrians.**



**Alternative 2: This alternative assumes bicycle lanes are added to Road A. Green painted bicycle lanes are included to delineate the path of bicyclists through this intersection. A bike box is also included on the west side of the intersection.**

## 5.6.1 - Illustrative Intersection and Crossing Improvements (continued)

### Illustrative Scenario

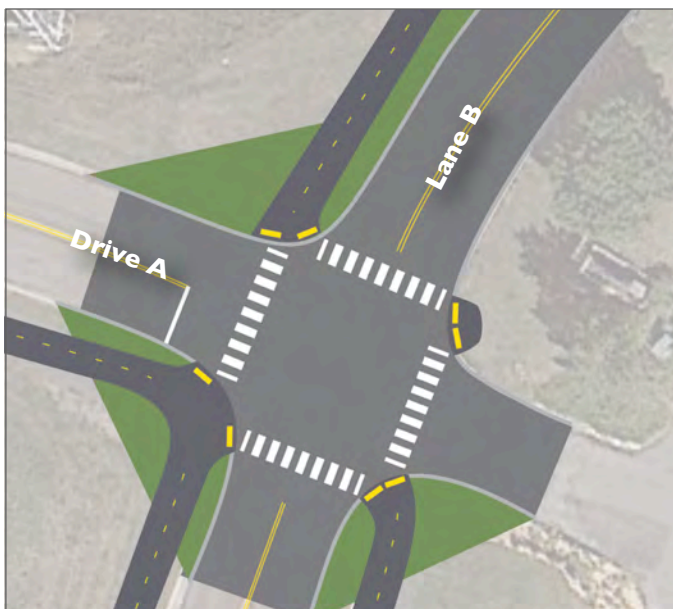
In this scenario there are several community destinations along Lane B, and this intersection lacks marked facilities for pedestrians and bicyclists.

### Description of Potential Improvements

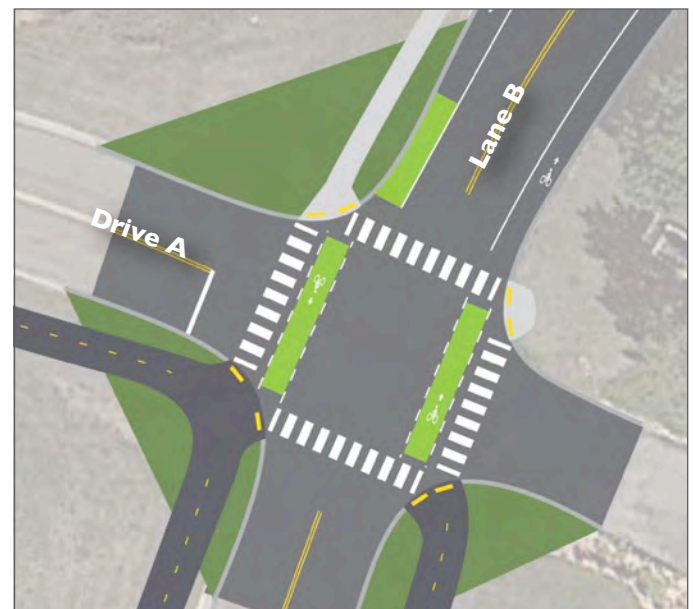
- Reduce turning radii and install curb ramps at all corners;
- Install high visibility crosswalks at all crossing points;
- Install sidewalks and/or shared-use facilities on the NW corner of the intersection along Lane B; and
- In Alternative 2, add green colored lanes at the intersection (assuming a bike lane is added on Lane B).



Existing condition.



**Alternative 1: High visibility crosswalks and curb ramps are added to all of the corners to make the crossing more prominent and comfortable for pedestrians and bicyclists.**



**Alternative 2: This alternative assumes bicycle lanes are added to Lane B. Green painted bicycle lanes are included to delineate the path of bicyclists through this intersection.**

## 5.6.2 - Illustrative Route Improvements

### Illustrative Scenario

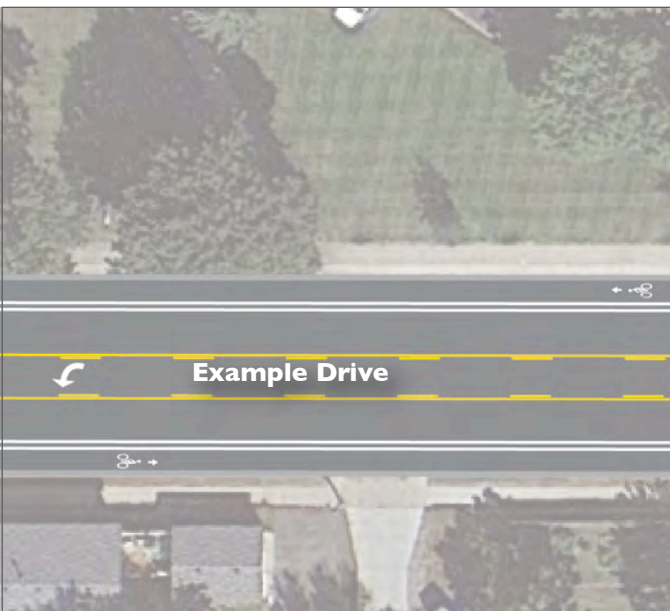
In this scenario Example Drive is a four-lane roadway. Local businesses and a community destination are located along the north side of Example Drive. No pedestrian or bicycle facilities are provided on or along the roadway.

### Description of Potential Improvements

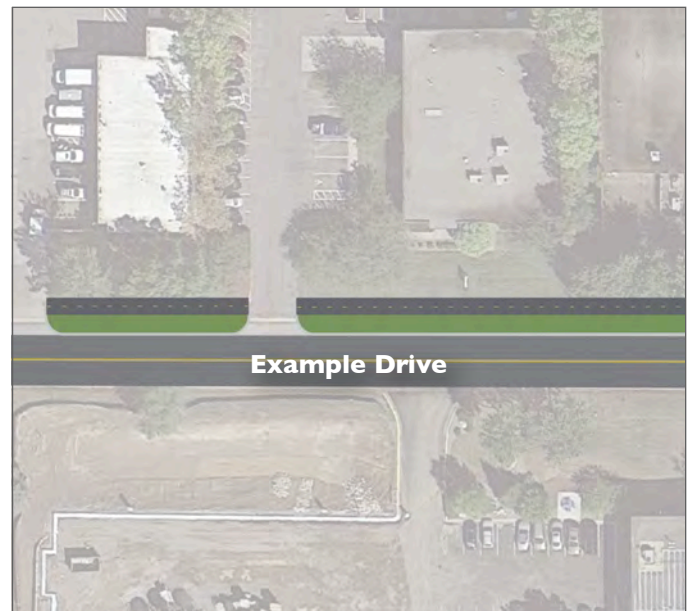
- Depending on available pavement and right-of-way, install a 8 foot shared-use facility on the north side of the street;
- Consider a “Road Diet” to reduce number of motor vehicle lanes and make space available for other uses; and
- Install an on-street bicycle lane with a buffer on a street with two travel lanes and a center turn lane (additional width for the bicycle lane may be required in situations with higher vehicle travel speeds and volumes exist).



**Existing condition.**



**Alternative 1: An on-street bicycle lane.**



**Alternative 2: A shared-use path facility on the north side of the street “Example Drive” would offer connections for pedestrians and bicyclists.**



## 5.7 - Signs, Signals, and Wayfinding

Signs, signals and wayfinding are essential components of successful pedestrian and bicycle networks. These elements help make a network understandable and usable, and encourage existing and potential pedestrians, bicyclists and transit riders to use existing walking and biking facilities. Due to the nature of Eden Prairie’s existing street system (with dispersed facilities and destinations, curvilinear roads, and cul-de-sacs), effective wayfinding, signing, and signalization will be critical components for success.

### 5.7.1 - Wayfinding and Recommended Eden Prairie Routes

A wayfinding system is a comprehensive network of signing and pavement markings indicating information about destinations along preferred pedestrian and bicycle routes. Wayfinding signage encourages walking and cycling by identifying useful information such as direction of destination, as well as time and distance to destination.

Eden Prairie has many assets that could be linked as transportation and recreation routes and loops.

The following routes could be signed and branded:

- A “greenway” or recreation route linking primary city parks such as Round Lake Park, Miller Park, Staring Lake Park, Purgatory Creek Park, Riley Lake Park, Three Rivers Regional Parks, the Minnesota River, scenic vistas, and other stops;
- A “shopping” route linking key retail destinations at the Eden Prairie Center and along the Technology Drive and Highway 212 corridor; and
- An “employment” route linking primary employment destinations in and around the Technology Drive corridor to the “Golden Triangle.”

The City of Eden Prairie has identified several existing trail “loops” that could be part of the city’s system of branded routes - these loops are shown on the next page.



**Consistent wayfinding and branding orient users and establish a route’s identity.**

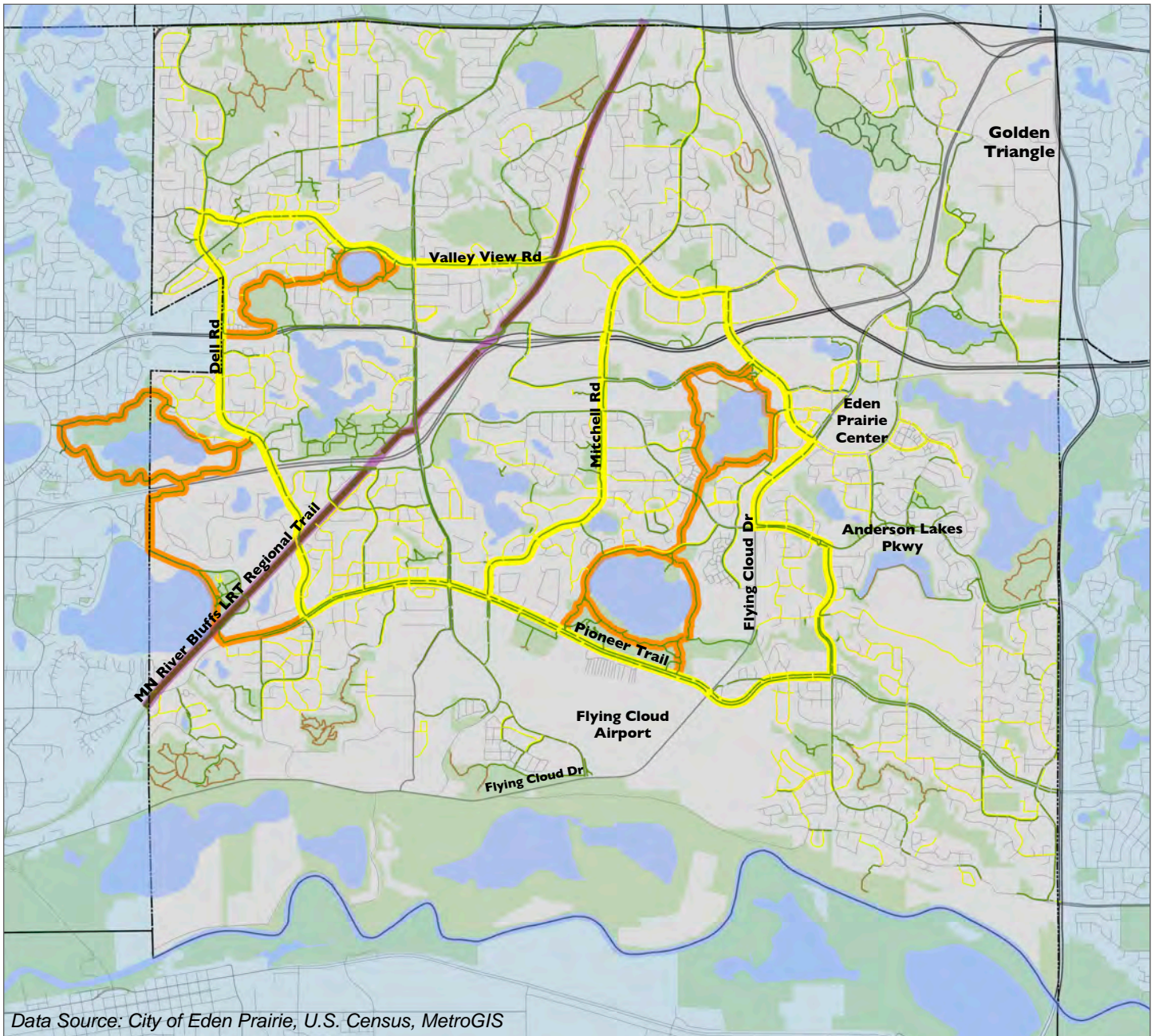


**Directional sign and map kiosk along a Three Rivers trail facility.**



**“Route dots” marked on the pavement can be used to offer route guidance in residential areas. In the case shown, the route veers to the right.**

### 5.7.1 - Way finding and Recommended Eden Prairie Routes (continued)



Data Source: City of Eden Prairie, U.S. Census, MetroGIS

#### City of Eden Prairie Existing Loop Trails

Existing

- Sidewalks
- Paved Trails and Sidepaths
- Unpaved Trails
- MN River Bluffs LRT Trail

Recommended

- City Loop Trail
- Secondary Loops
- Regional Trail Connection

## Route Signage and Branding

Providing directional wayfinding signage is an excellent opportunity to link a number of important commercial, employment, and recreation destinations in Eden Prairie. Wayfinding signage could include the Eden Prairie city or parks logo in a prominent way, and different routes could be identified or “branded” by different colors or other indicators. These routes could then be publicized for pedestrians and bicyclists to experience, establishing a sense of place, and potentially attracting visitors who wish to explore the routes and destinations.

The Town Center Design Guidelines subsection of the *Major Center Area Study* presents a vision for pedestrian oriented signage within the City Center. These guidelines may be used as a template to shape pedestrian and bicycle route signage throughout the City of Eden Prairie for the overall pedestrian and bicycle transportation network. A hierarchy of signs may include basic directional signage at key intersections, as well as comprehensive network map kiosks at major destinations or rest stops.



**The wayfinding recommendations in the 2006 Major Center Area Study should be used to guide wayfinding signage and pedestrian and bicycle route branding across Eden Prairie.**



**Sign providing destination, time, and distance information for bicyclists.**

### The 3 Ds of Wayfinding

The three main components needed for an effective wayfinding system are the “3 Ds”:

#### Distance

The distance and time component informs pedestrians and bicyclists how long their trips will be, adding a measure of certainty and convenience when planning trips. Distance should be communicated in miles, including 0.10 mile increments, as well as in time for both pedestrians and bicyclists.

#### Direction

The direction component helps users avoid obstacles such as freeways, cul-de-sacs, and dead end roads and guides them to their destinations. Direction is indicated by using an arrow symbol directing users to proceed forward or to prepare to turn.

#### Destination

The destination component orients users and helps decrease confusion or wrong turns, especially in areas where the street system does not follow a grid pattern. Rest stop information can also be included to efficiently route users to restrooms, water fountains, or view points.

## 5.7.2 - Signals

### Bicycle Signals

Bicycle traffic signals can be installed at intersections where there are high volumes of bicyclists, or where there are bicycle-only movements. They increase comfort and convenience for pedestrians and bicyclists by reducing stress and delays at intersections, and improve safety by reducing illegal and unsafe crossing maneuvers.

### Loop Detectors

Loop detectors for bicycles detect the presence of bikes on the roadway. These allow a bicyclist to activate a traffic control device without having to press a button. Pavement markings can be used to direct cyclists to the proper spot where the signal device may detect their presence. The markings also alert motorists that bicycles will be present in various locations at signalized intersections.

### Pedestrian Hybrid Beacon / HAWK signal

The pedestrian hybrid beacon (PHB or HAWK) is a pedestrian-activated red-indication signal designed for locations where a standard traffic light does not meet traffic engineering warrants. The HAWK allows pedestrians to comfortably cross busy roads at intersections or mid-block locations protected by an enforceable, red-indication signal for motorists. The HAWK remains dark until activated by a pedestrian pressing the crossing button. HAWK signals have been shown to elicit very high rates of motorist compliance.

### Rectangular Rapid Flash Beacon

The Rectangular Rapid Flash Beacon (RRFB) is a high-intensity flashing sign assembly that is placed ahead of a crosswalk. It helps alert drivers to the presence of the crosswalk. The RRFB is pedestrian-activated, and uses an irregular “stutter” flash pattern with very bright amber lights (similar to those on emergency vehicles) to alert drivers to yield to pedestrians who wish to cross. The RRFB offers a higher level of driver compliance than other flashing yellow beacons.



*A traffic signal for bicycles in Minneapolis.*



*A pavement marking to help bicycle riders to position to activate a traffic signal to cross.*



*Pedestrian Hybrid Beacon (PHB, or HAWK) at a crossing of Division Street in St. Cloud.*

## 5.8 - Transit Integration

Integrating pedestrian and bicycle networks into current and future transit networks will increase the usefulness, convenience and use of each system, and will benefit Eden Prairie residents by increasing the range of destinations for their walking and biking trips, providing additional options for work and recreation trips, and making it easier to integrate Active Transportation into their daily routines.

### 5.8.1 - Key Opportunity

The SW LRT / Green Line Extension presents a key opportunity to dramatically increase use walking and biking as a daily transportation option for Eden Prairie residents and workers. The line, currently in advanced planning stages, will provide light rail transit service to Minnetonka, Hopkins, St. Louis Park, and Downtown Minneapolis. Five Southwest LRT stations are planned for Eden Prairie. Developing comfortable and convenient connections between residential and employment areas and SW LRT stations will benefit Eden Prairie residents and workers. Improving pedestrian and bicycle access to transit station areas is a key consideration for the improvements outlined in this Plan.

### 5.8.2 - Improving Pedestrian and Cyclist Access to Transit

Providing a continuous and comfortable network of sidewalks and shared-use paths connecting residential and employment concentrations to transit stations is an effective way of supporting pedestrian access to transit. In general, marked pedestrian crosswalks should be provided along intersection legs closest to transit stops. If transit stops are not located near intersections, mid-block crossing solutions should be investigated for implementation.

### 5.8.3 - Recommendations for Transit Stops

At a minimum, all transit stops should include a paved landing area for riders to wait outside of the pedestrian/



*Five Southwest LRT stations are planned for Eden Prairie. Developing comfortable and convenient connections between residential and employment areas and SW LRT stations will benefit Eden Prairie residents and workers.*



*Inverted-U style bicycle parking would offer improved security and convenience to users of the SW Transit Station (current bicycle parking accommodations are shown).*

bicycle travel-way, and to improve ease of loading and unloading. Stops serving high numbers of riders should include covered waiting areas. Heated bus shelters should be considered at locations with high ridership.

Availability of seating increases comfort for riders while waiting for transit. Seating is strongly recommended at stops serving elderly riders, persons with physical or cognitive impairments, or families and children. Transit stops near grocery stores and shopping centers should be prioritized for shelter and seating to accommodate riders returning with goods. Transit stops and approaching walkways and crossings should be well-lit to improve rider comfort and safety, and to improve visibility of riders to transit drivers.

### **5.8.4 - Bike Parking at Transit Stops and Stations**

Providing secure long-term bicycle parking at transit stations helps reassure bike commuters that their bikes will still be there when they return from work, and will encourage bike commuting to transit. Short-term bicycle parking (which takes up less space) should also be provided at transit stops serving high numbers of riders. Typically, a mix of short-term and long-term bicycle parking should be provided at transit centers.

### **5.8.5 - Bike Stations at Transit Centers**

“Bike stations” provide cyclists with robust facilities for storage and maintenance of bicycles and are generally located near transit hubs or other major destinations. Bicyclists who ride their bikes to transit can leave their bikes to be stored and serviced as needed while they continue their commute via transit. Bike stations often include amenities such as long-term bike parking and shower and locker facilities.

A similar but smaller-scale version of the “bike station” described above is the “fix-it station.” Fix-it stations are generally installed at transit centers, and typically include a vending machine for bike parts and a set of bike tools attached to a permanent repair stand.



*The Bikestation in Washington, D.C. is a comprehensive bike facility which provides amenities such as bike parking, maintenance, changing facilities, retail services, and bicycle rentals for people who commute into the area without a bicycle. Image courtesy of [home.bikestation.com/bikestation-washington-dc](http://home.bikestation.com/bikestation-washington-dc)*



*This fix-it station provides basic bicycle repair tools and parts with a vending machine and permanent repair stand.*

### 5.8.6 - Bikeshare

A bikeshare program such as Nice Ride Minnesota can be a great way to increase the reach and effectiveness of a transit center. By siting rental kiosks at LRT stations in Eden Prairie and at locations within the city, commuters gain a new option that provides hassle-free bike access to the transit system, and to the larger bikeshare system within the Twin Cities.

SouthWest Transit’s SW Ride offers bicycles from Freewheel Bikes for rental through the summer to facilitate connections between SW Transit facilities and final destinations. Users may take bikes home with them, and rentals are available from the Eden Prairie SouthWest Transit Station and Southwest Village in Chanhassen.



***Bikeshare can increase the range and convenience of bicycle trips, especially when combined with transit.***

### 5.8.7 - Transit Integration: Recommendations for Eden Prairie

- High priority: Provide a continuous low-stress network of sidewalks and shared-use paths connecting residential and employment concentrations to SW LRT stations and the Eden Prairie SouthWest Transit Station;
- Work with SW Transit and Metro Transit to provide comfortable connections for pedestrians and bicyclists to all transit stations, and include short and long-term bicycle parking; and
- Encourage and support SW Ride and other bikeshare programs in Eden Prairie to complement transit services.



***SW Ride and similar programs should be encouraged and supported at current and future transit hubs in Eden Prairie.***

## 5.9 - Ancillary, End of Trip, and Rest Facilities

Ancillary, End of Trip, and Rest facilities are those provisions made for pedestrians and bicyclists for the beginning, end, and intermediate portions of their trip.

Bicycle parking, for example, is an end of trip facility that makes it more convenient to travel by bicycle to a destination. Provision of adequate end of trip facilities cannot be overlooked: if they are not available (e.g. if no bike parking is available), the user will next time choose a different mode for arriving or may choose another destination altogether, even if the provided routes are perfectly safe and convenient.

Provision of adequate ancillary and rest facilities, which is sometimes viewed as an optional component of a transportation or land use plan, is as important for making non-motorized travel more convenient and inviting as is providing adequate parking for automobiles when designing shopping destinations, transit Park and Ride lots, or new residential or commercial development.

### 5.9.1 - Pedestrian and Bicyclist Access to Buildings

Navigating large parking lots on foot or bike can be uncomfortable. Providing clear access from the street to the building entrance, not only from motor vehicle parking lots, but also from the routes pedestrians and bicyclists would be using to access a site, can make the destination more inviting. Cities can include requirements for these considerations (including bicycle parking and other ancillary facilities) in building and zoning codes, particularly for development at key employment and retail destinations, and transit stations. Establishing a Pedestrian/Bicycle Zoning Overlay District (please see Chapter 5.12 Policy Suggestions/Alternatives) could help Eden Prairie guide property developers to provide comfortable access to final destinations.



*Navigating across parking lots to access key destinations was mentioned by the public as being a frequent challenge for pedestrians and bicyclists in Eden Prairie.*



*Inverted-U style bicycle parking should be installed near the primary entrances to buildings.*



*Post and loop style racks are a good option where space is limited.*



## 5.9.2 - Bicycle Parking

Bicycle parking is a key element in encouraging more people to bike more often. Bicycle parking is commonly grouped into two types:

- **Short-term bicycle parking** accommodates visitors, customers, messengers and others who arrive at a destination and are expected to depart within a couple of hours. Standard “inverted U” racks, securely anchored, placed near primary entries, and protected from the elements are recommended. This type of parking is recommended for Eden Prairie’s employment and shopping districts, for transit stations, and for city parks. Eden Prairie’s Draft TOD Zoning ordinance provides specific guidance on bicycle parking volumes and pedestrian / bike access within TOD Districts.
- **Long-term bicycle parking** accommodates employees, students, residents, commuters, multi-modal (bike-to-transit) travelers, and others expected to leave their bikes unattended for more than two hours. This type of parking should be secure, weather-protected and in a visible and convenient location. It may be provided by using standard “inverted U” racks in a visible, secured or supervised location, by bicycle lockers, or by offering a locked room with standard racks and access limited to cyclists only (See Bike Stations, Section 5.8.5). Long-term bicycle parking should be provided at schools, office and employment sites, and transit stations.

### Placement and Function

Destinations where bicycle parking should be available include:

- Parks, trail heads, recreational destinations;
- Restaurants and commercial centers;
- Transit hubs (SW Transit Station and Future LRT Stations);
- Schools;
- Employment centers (e.g. Golden Triangle);
- Community and senior centers;
- Health/fitness centers; and
- Shopping destinations (e.g. Eden Prairie Center).

### Growing bicycle parking

Bike parking is an inexpensive way to make bicycle travel more convenient, and cost-sharing programs are a great tool to increase the availability of bicycle parking near business and employment destinations.

The City of Minneapolis runs a program that provides a “50/50 cost share at eligible locations” in addition to installation of bike racks free of charge for public facilities such as schools, libraries and parks. Find more information at [www.ci.minneapolis.mn.us/bicycles/parking/bicycles\\_bikeparking-rack](http://www.ci.minneapolis.mn.us/bicycles/parking/bicycles_bikeparking-rack).

### Hennepin County Guidance on Bike Parking

Hennepin County will soon publish a guide on bicycle parking in conjunction with its Bicycle Plan. The guide will offer recommendations for choosing the correct bicycle rack, placing racks, and other considerations. The guide will be available at <http://www.hennepin.us/residents/transportation/bike-walk>

Bicycle racks should be located near building entrances along the natural path of a bicyclist towards their destination, and should be placed in areas where they can be easily seen by others to reduce theft and vandalism.

Artistic and decorative elements for bicycle parking racks (including different shapes, colors and designs) can be considered, and integrated with public art and/or placemaking projects. Regardless of design, the style of parking rack selected should allow cyclists to securely lock their bike to the rack (including the frame and one wheel), and should not require the cyclist to lift the bike to properly position it. The parking rack should support the frame of the bike to keep it from falling if bumped.

### 5.9.3 - Seating and Rest Facilities

Rest facilities along popular routes invite a wider range of users (especially families with children and seniors) to travel on foot or bike by breaking up long distances into manageable segments, while also benefitting long-distance cyclists, joggers, and other trail users. Rest stops may include restrooms, seating, waste receptacles, water fountains, wayfinding kiosks, bicycle parking, and other facilities. Facilities like benches and waste receptacles can easily be grouped with wayfinding kiosks at a natural stopping point.

Rest stops allow users to rest, enjoy nature, or stop for a snack. This is especially true for rest stops at locations with scenic sight lines, in or near neighborhood parks, at locations that provide respite from traffic, or landings at the tops of hills.

Facilities should be placed off the trail for users to comfortably relax without impeding trail user travel. Transit stops may also be designed to simultaneously provide seating for transit riders, and a rest area for trail users. Eden Prairie, with its many neighborhood parks and scenic features could consider incorporating rest stop features in its off-road trail network.



**Information kiosks along the Minnesota River Bluffs LRT Regional Trail.**



**Benches offer pedestrians and transit riders places to rest.**

### 5.9.4 - Lighting of Pedestrian and Bicycle Facilities

Standard lighting should be provided on pedestrian and bicycle facilities, including underpasses, for ease of use during night hours and for personal safety reasons. Inadequate lighting can create difficulty for persons with limited vision or mobility.

### 5.9.5 - Showers and Changing Facilities

Provision of showers, changing facilities, and lockers at employment centers can encourage more employees to try bicycling to work. One example of a company providing shower facilities to its employees is Dell Incorporated, located in the Golden Triangle. Requirements for provision of showers and changing facilities should be considered for inclusion in city regulations to ensure that future office developments include them.

### 5.9.6 - Ancillary, End of Trip, and Rest Facilities: Recommendations for Eden Prairie

- Investigate the installation of benches along major pedestrian routes, major transit stations (including SW LRT), at scenic vistas, adjacent to commercial and employment areas, near senior housing, and at other anticipated stopping points; and
- Consider the development and adoption of city policies requiring the installation of convenient bicycle parking, and clear pedestrian and bicycle walkways to the entrance of final destinations. Focus bicycle parking efforts at Eden Prairie schools, near large multifamily housing and senior housing, and at commercial and employment destinations in key priority areas near Eden Prairie Center, along Technology Drive, and in the Golden Triangle, among others.



***Bicycle parking currently provided at the SouthWest Station. This style of rack does not secure a bicycle’s frame, and does not provide stable parking. “Inverted-U” bicycle parking is recommended instead.***



***Benches are provided at the SouthWest Station.***

## 5.10 - Operations and Maintenance

*This chapter provides an overview of maintenance recommendations for sidewalks and bikeways in Eden Prairie. For additional guidance and information please consult Chapter 9 (Maintenance) of the Minnesota Department of Transportation Bikeway Facility Design Manual, which is incorporated into this Plan by reference.*

Walking and biking facilities should receive adequate maintenance to protect the investments made by Eden Prairie and its partners and to ensure that they continue to provide safe, comfortable and inviting facilities for residents and visitors well into the future.



**Winter walking, running and biking are increasingly popular activities. Encouraging year-round Active Living requires year-round maintenance.**

### 5.10.1 - User Needs

#### Pedestrians

Pedestrians or wheelchair users depend on having a level, slip-resistant surface for their travel. Walking surfaces that are free from unexpected bumps, holes or cracks, and free from ice or other slippery materials, are paramount for their safety and comfort. Pedestrians also depend on the ability of motorists to anticipate and respond to their presence while crossing streets or when otherwise exposed to motor vehicle traffic; therefore, signs, signals and markings should be maintained and kept in good working condition.



**Improvement to be completed on a sidepath along Anderson Lakes Parkway in Eden Prairie.**

#### Bicyclists

A cyclist rides on two very narrow, high-pressure tires. What may be an adequate roadway surface for automobiles (which have suspension and shock-absorbing systems and travel on four wide, low-pressure tires) can be treacherous for cyclists: small rocks can deflect a bicycle wheel; a crack in the pavement or a poorly-placed drainage grate can trap a wheel; wet leaves, ice, and the gravel that gets blown off the travel lane are slippery and can cause a fall.

## 5.10.2 - General Considerations

### Maintenance Budget

Preventive maintenance reduces hazards and future repair costs. Maintenance costs and responsibility for maintenance should be assigned when projects are planned and budgets developed; typical annual maintenance costs range from 3 to 5 percent of infrastructure replacement costs - for example, a \$100,000 facility should include a \$5,000 annual maintenance budget. Life-cycle cost analysis is recommended to determine the net value of using longer-lasting, higher-quality materials during construction if they reduce yearly maintenance expenditures.

### Management plans

A management plan is a tool to identify maintenance needs and responsible parties. A management plan that includes the maintenance component for a proposed facility should be in place before construction. Additionally, a management plan should include a means for users of the system to report maintenance and related issues and to promptly address them.

A facility’s management plan answers basic operational and staffing questions such as frequency of maintenance tasks and who is responsible for the following issues:

- Filling potholes;
- Removing downed or dangerous trees;
- Responding to vandalism and trespassing;
- Removing litter;
- Replacing stolen or damaged signs;
- Watering and weeding landscaping;
- Acting as the main contact; and
- Paying bills.

### User-Initiated Maintenance Requests

The users of Eden Prairie’s pedestrian and bicycle network will likely be the first parties to notice hazards, maintenance issues, or opportunities to bring improvement to the system. A formal mechanism for receiving requests for maintenance can help focus and prioritize investments, avert deterioration of the city’s infrastructure investments, provide effective



*Trail maintenance is a year-round requirement to a comfortable and convenient network of walking and biking facilities. Snow and ice can make travel difficult.*



*Many residents walk and bike in the winter. Biking along Technology Drive.*

**City Maintenance Request Program**

The City of Eden Prairie has a user-initiated maintenance request program that allows the general public to report issues in the community. The tool is available at <http://www.edenprairie.org/i-want-to/report/maintenance-issue>

management, and reinforce citizen-ownership of Eden Prairie’s non-motorized network assets. Eden Prairie currently uses See Click Fix, a tool that is integrated into its website, to allow residents to report issues directly to the city. The City should continue to utilize and promote use of this tool by the general public.

### 5.10.3 - Routine Maintenance

#### Snow and Ice Removal

Snow removal is a critical component of pedestrian and bicycle safety. The presence of snow or ice on sidewalks, curb ramps, or bikeways will deter pedestrian and cyclist use of those facilities to a much higher degree than cold temperature alone.

Seniors and other vulnerable adults will avoid walking in locations where ice or snow accumulation creates slippery conditions that may cause a fall. Curb ramps that are blocked by ice or snow effectively sever access to pedestrian facilities for wheelchair users and seniors. Additionally, inadequately maintained facilities may force pedestrians and bicyclists onto facilities that may not offer safe or adequate accommodations, or that require them to take a route that is a longer distance.

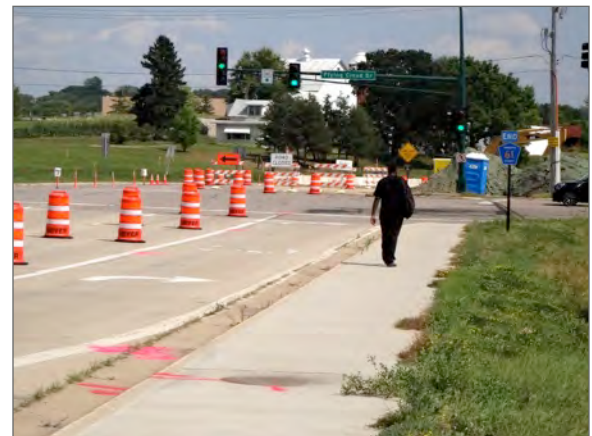
When the surface of a road is covered by snow, the pavement markings that guide and warn motorists, pedestrians and bicyclists may be difficult to see. Care should be taken to clear roads so that pavement markings are identifiable. Snow should be cleared from a roadway’s entire surface to allow pedestrians or bicyclists to travel as far as possible to the right side of the road or shoulder.

#### Prioritizing Snow Clearing Operations

A useful approach for maximizing the efficiency of maintenance investments is to identify locations where accumulation of snow or ice would significantly impede pedestrian and bicycling access and safety so that these locations are prioritized for clearing immediately after a storm event.



*Keeping sidewalks free of obstructions, or identifying detours during road construction can make pedestrian travel easier.*



*A pedestrian walking near road construction in Eden Prairie.*

The City of Eden Prairie maintains a map identifying who plows which sidewalks and trails, and which segments are not plowed by anyone. In many cases, property owners maintain sidewalks and shared-use paths. The city should consider prioritizing snow removal at Priority Locations identified in 4.3.2 and 4.3.5, and at Focus Areas identified in 3.3.2 and 3.3.3. On priority routes not maintained by the city, the city should consider working directly with property owners to encourage and/or enforce snow removal.

**A Year-Round Approach**

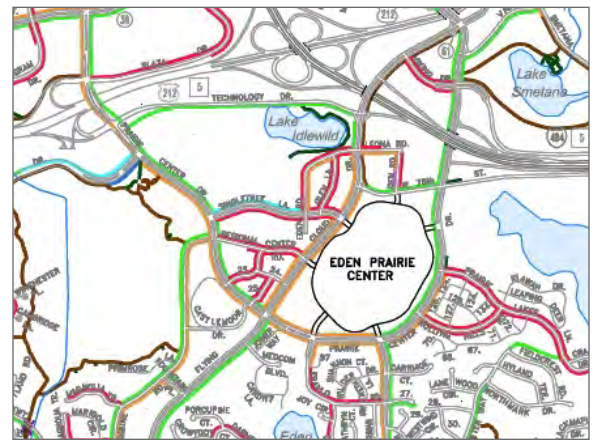
Snow and ice removal should be planned with the expectation that walking and bicycle facilities will continue to be used during winter months. Snow and ice should be cleared from sidewalks, bike lanes and shoulders used by pedestrians and bicyclists. Pedestrian and bicycle facilities including sidewalks, gutters, and curb ramps, should not be used to store snow removed from streets. Bike trails and paths should also be swept regularly.

**Sweeping**

Loose sand and debris on the surface of bicycle lanes, paved shoulders, and paved sections of shared use paths should be removed at least once a year, normally in the spring. Sand and debris will tend to accumulate on bicycle lanes because automobile traffic will sweep these materials from the automobile portions of the roadway. This is especially true for bicycle lanes that are located directly adjacent to a curb, where debris collects already.

**Surface Repairs**

Pedestrians and bicyclists are more sensitive and more vulnerable to problems in the roadway surface than motor vehicles. A smooth surface, free of potholes and other major surface irregularities, should be provided and maintained. Care should be taken to eliminate other physical problems. Requests for surface improvements could be made through the Pedestrian / Bicycle Facility Maintenance Request Program described above.



*Many shared-use paths and sidewalks that provide important pedestrian and bicycle connections are maintained by private property owners in the winter (shown in red and blue). The city should consider working with property owners to ensure that these routes are properly maintained year-round.*

*Image courtesy of <http://www.edenprairie.org/community/city-maps-and-gis/snow-removal-map>.*



*A well maintained network of walking and biking facilities can encourage year-round use.*

## Resurfacing / Pavement Overlays

Street resurfacing projects provide ideal opportunities to greatly improve conditions for pedestrians and cyclists - by narrowing automobile travel lanes, widening shoulders, or adding bicycle lanes, for example. However, if not done correctly (by, for example, leaving a ridge or a joint in a shoulder or bicycle lane), some conditions may worsen.

Items to consider on resurfacing projects that will help improve conditions for pedestrians and cyclists include:

- Gravel driveways and alleys should be paved back 5 to 10 feet from the edge of pavement or right-of-way to prevent gravel from spilling onto the shoulders or bike lanes;
- The loose gravel used during the installation process for chip seals creates hazardous bicycle riding conditions, especially in shoulder areas. Provide warning signs for bicycle riders as well as bicycle route detours during installation; and
- Avoid leaving a ridge in the area where cyclists ride, which occurs where an overlay extends only part-way into a shoulder or bike lane. If possible, the overlay should be extended over the entire surface of the roadway to avoid leaving an abrupt edge.

## Signs and Pavement Markings

Signs and pavement markings are important features of walkways, bikeways and roadways, and help ensure continued safe and convenient use of these facilities. It is critical that bikeway signs, striping, and legends be kept in a readable condition.

Some recommendations to address these infrastructure elements include:

- Regular inspection of bikeway signs and legends, including an inventory of signs to account for missing or damaged signs;

- Replacement of defective or obsolete signs as soon as possible;
- Regular inspection of striping, and prompt reapplication as needed;
- Depending on wear, bike lanes may need to be repainted on an annual basis. Bike lane stripes may wear out less often on lower traffic volume streets than on higher volume streets; and
- Consider durable cold plastic for skip-striping bike lanes across right turn lanes.

## Vegetation

Vegetation encroaching into and under a sidewalk, shared-use path, or trail crossing creates a nuisance and a hazard for pedestrians (especially for those with sight or mobility impairments) and for bicycle riders. The management of vegetation is generally considered the responsibility of city maintenance staff. To provide long-term control of vegetation, its management should be considered during design and construction. Vegetation management helps to maintain smooth pavement surface, as well as clear zones, sightlines, and sight corners to promote pedestrian and cyclist safety.

Vegetation management issues identified by users (e.g. tree roots causing heaving of sidewalk surfaces) may be reported through the Pedestrian / Bicycle Facility Maintenance Request Program described above.

## Drainage issues

Drainage facilities may change grades and deteriorate over time. Ensuring that bicycle-safe drainage grates are located at the proper height greatly improves cyclist safety; it may sometimes be necessary to adjust or replace catch basins to ensure continued safe operations and improve drainage. The small asphalt dams that are sometimes constructed on roadway shoulders to divert storm water into catch basins are a hazard to cyclists and their use should be avoided.



Event-related drainage issues (e.g. backed-up grates) and long-term drainage hazards (unsafe grates) can be reported and addressed through the Pedestrian / Bicycle Facility Maintenance Request Program, and should be proactively addressed whenever street improvements are made.

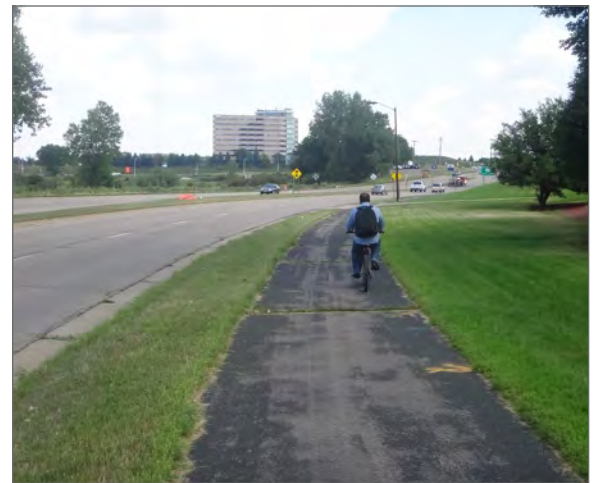
### **5.10.4 - Other Maintenance Activities**

#### **Patching activities**

Loose asphalt materials from patching operations often end up on the shoulder, where the larger particles adhere to the existing surfacing, creating a very rough surface for pedestrians and cyclists. Fresh loose materials should be swept off the road before they have a chance to adhere to the pavement.

#### **Utility Cuts**

Utility cuts can leave a rough surface for cyclists if not back-filled with care. Cuts should be backfilled and compacted so that the cut will be flush with the existing surface when completed. Extra care should be used when cuts are made parallel to bicycle traffic to avoid a ridge or groove in the bicycle wheel track. Considerations should be given to adding the above specifications to utility permit requirements.



**Grass growing in the seams of the shared-use path.**



**Construction work in Eden Prairie.**

## 5.11 - Education, Encouragement, and Promotion

Developing walking and bicycle infrastructure is only the first part of increasing walking and biking in a community, as even the best-planned walking or bicycle network will fail to live up to its full promise if potential users are unaware of its existence, or if it's difficult to figure out how to get from one destination to another. In addition, walkers, bicyclists and motorists will each do better if they learn how to consistently and courteously share road space with each other and to coexist within Eden Prairie's transportation and recreation infrastructure.

This chapter presents some ideas that may help Eden Prairie invite its residents, businesses and visitors to safely and effectively use the route network that develops from this Plan. It is titled "education and encouragement" to acknowledge that both of these activities build on each other, and that learning about safe riding and disseminating information about the city's walking and bikeway networks will lead to more people using them as part of their transportation and recreational activities.

### 5.11.1 - Inviting Users to the City's Network

#### Network Maps

People won't use a walking or biking network if they are unaware of its existence, or if they don't know how it may help them reach their routine destinations. Printing and distributing bikeway maps is a high-benefit, low-cost project that can help bicyclists locate bikeways, walkers identify better route choices for their trip, and the city promote its local businesses and festivals.

Map inserts can provide information covering such topics as Rules of the Road, bicycle safety and maintenance, and connecting with mass transit. Another low-cost and potentially helpful tool is the addition of existing web-based trip planner services to the Eden Prairie website (like



*Open Streets events offer a chance for residents to be active and engaged, and to experience city streets in a new way.*



*Special events offer a chance to take part in "tactical urbanism" and try out infrastructure treatments before they become permanent. Here, users try out a "pop-up" protected bikeway treatment at an Open Streets event.*

Cyclopath or Google Maps) where pedestrians and bicyclists type in their destination and receive one (or several) recommended routes.

### **Open Streets and Other Special Community Walking and Biking Events**

Special events offer an opportunity to bring attention to practical, fun, and healthy aspects of walking and bicycling as tools for getting places and for recreation. Because these events are community-wide and of limited duration, people are more open to participating without feeling like they have to commit to making a long-term change in their travel or recreation habits - they are just skating, walking or biking in their city once, not everyday. But sometimes that’s all that is needed to open the door to adopting new travel behaviors over the long term.

Some events and programs that can encourage participation include:

- Monthly group rides with the City Council or the Mayor or other important Eden Prairie personalities;
- Open Streets events that close a road or two to auto traffic once a month and make it a bike and pedestrian-only street;
- Parks and recreation programs that work with non-profit or bicycling advocacy groups to sponsor bicycling events and activities, especially on trails and regional bicycling routes; and
- Special bicycle commuter events that help raise the profile and potential for bicycle commuting. Bike to Work Week events, which typically include special publicity, route guidance to first-time bicycle commuters, and group breakfasts, offer an opportunity to try bicycling in a safe, relaxed and fun environment. Bike to Work Week events have been held in many Minnesota communities over the last several years.

### **Visitor Programs**

Tourist promotion materials can highlight walking and bicycling as great ways to circulate within and experience Eden Prairie’s natural and recreational assets. Several communities in Minnesota boast of their bicycling



**Effective Safe Routes to School Programs help to make biking and walking a regular part of students’ daily routine.**

**Did You Know?**

- 40% of all trips made in the United States are shorter than 2 miles in length.
- Students living 2 miles or less from school could bike to school in 20 minutes or less.
- According to the CDC, children should receive at least 60 minutes of aerobic physical activity each day.
- According to a 2010 National Household Travel Survey brief, just over 7 minutes were spent walking or biking each day by children age 5-10, and just over 14 minutes by children age 11-15.

orientation as part of their identity and as a draw for potential visitors. Addressing comfort and connectivity of Eden Prairie’s network could help bring additional visitors to the city and customers to prominent recreation areas such as Edenbrook Conservation Area and Bryant Lake Regional Park, and to retail destinations such as the Eden Prairie Center.

**Student Programs / Safe Routes to School**

Encouraging student walking and bicycling to school helps instill life-long habits of health and activity, and provides proof to students that walking and biking are serious and valid transportation options.

Some strategies and programs that could be implemented in Eden Prairie to encourage student bicycling include:

- Working with local schools to encourage students and staff to walk and bike to school;
- Working to integrate walking and bicycling education into physical education classes;
- Establishing awards and incentives programs for completion of bicycle classes, or for walking and biking to school so many times per week, etc.;
- Formally developing and supporting Safe Routes to School (SRTS) programs and planning efforts; and
- Offering discounts to area bicycle shops as prizes for outstanding students.

**Rider Incentive and TDM programs**

Increased use of walking and biking can help achieve Transportation Demand Management (TDM) objectives for workplaces and communities while improving community health and supporting local economic development. Several types of incentive programs are in use in communities throughout the United States. Among the most popular are:

- Business associations provide discounts to shoppers who arrive by bike; and
- Employers offer parking cash-out benefits, which give employees who don’t drive the cash equivalent of the parking subsidies provided to drivers.



*A bicycle rodeo and safety fair is an effective way to involve local law enforcement in promoting walking and biking among student populations. Image courtesy of newspapers-online.com/tecumseth.*

**Rules of the Road**

- Rules of the road for pedestrians, bicyclists, and motor vehicles are detailed in the Minnesota State Statutes:
  - Pedestrian: 169.21
  - Bicycle: 169.222
  - Motor Vehicle: 169.18
- The Minnesota Department of Transportation operates a “Share the Road” campaign for pedestrians and bicyclists. More information can be found at <http://www.dot.state.mn.us/sharetheroad>

**Involving the Eden Prairie Police Department**

The Eden Prairie Police Department can play a critical role in improving conditions for walking and biking in Eden Prairie, and encouraging more people to walk and bike. Active enforcement, participating in training and outreach activities centered on walking and biking, and even being seen walking and biking in the community all can play a role in improving conditions in the city.

These programs help address issues of lack of parking and increasing congestion that sometimes hinder successful commercial areas. Eden Prairie businesses could offer discounts for customers who arrive on foot or by bike.

### **5.11.2 - Learning to Ride Safely**

Walking and bicycling are health-promoting and safe activities that can become even safer with improved education. Motorists, bicyclists, and pedestrians each have much to contribute to making walking and bicycling (and other modes of travel) safer and more effective: one of the leading causes of crashes is the unexpected behavior of at least one of the parties involved. Cyclist, motorist, and pedestrian safety programs can help reduce the risk of crashes and injuries while giving new bicyclists the confidence needed to ride more regularly. In fact, safety training has been shown to be an effective and cost-efficient way of reducing collisions and encouraging bicycling.

Three main components of safety training are addressed under this section. They center on:

- Developing safe bicycling skills in children;
- Teaching adult bicyclists their rights and responsibilities; and;
- Increasing motorists’ awareness of bicyclists’ rights on the road, and teaching them how to safely share the road with bicycles.

### **For Children and Young People**

It is important to share information on safe walking and bicycling with young people from early on.

This will help them be safe and will also reinforce the message that walking and bicycling are useful and mainstream means of transport. While it is not uncommon for schools in the US to provide automobile driver education for children 16 or older, it is rare to find similar provision of bicycling education, even though most children seven and older are able to ride a bicycle and (because of

generally poor provision of separated trails) routinely ride in streets that are also used by automobiles.

In European countries where bicycling serves a much larger portion of all trips it is a given that schools provide formal training in safe bicycling for children starting in elementary school. In the Netherlands, for example, children undergo a three week training on bicycling rules and maneuvers each year. It is easy to imagine that Eden Prairie students could receive similar training, perhaps as a component within physical education classes (and one which could help promote a lifetime of safe and enjoyable physical activity). It is also a given that schools, parks and other places where young people congregate need to provide a physical infrastructure that supports children’s bicycling by making sure that adequate bike parking, and well-marked trails or lanes, are available (covered elsewhere in this Plan).

### **Some Approaches**

School children are most effectively reached when an action-oriented teaching approach and a repetitive practice process are coupled with awards and incentives. Awards and incentives can consist of certificates of completion or bicycle/pedestrian licenses, free or reduced-cost bicycle helmets and other accessories, or discount coupons for area bicycle shops.

### **Messages**

The following messages should be consistently taught:

- Wear a helmet. In the event of a bicycle crash, wearing a helmet can reduce the risk of serious head injury by up to 85%.
- Obey all traffic laws. Bicyclists have the same rights, and consequently the same responsibilities, as motorists.
- Look both ways before crossing streets.

- Always ride with the flow of traffic.
- Be predictable and always signal your intentions.
- Be visible; wear light-colored clothing and bright or reflective clothing and always use a front light and rear reflectors at night.
- In addition, very young children (seven or less) should ride with supervision.

### For Adult Bicyclists

Adult bicyclists range in skills and confidence. Some adults are comfortable riding on busy streets and mixing with traffic while others prefer quieter streets or off-street paths. There are adults who ride a bicycle only a few times a year and those who ride often but primarily for recreation. Each type of cyclist has his or her own concerns and philosophy about how bicycles fit into the transportation system - education efforts must recognize this and tailor messages to each group.

### Messages

The following messages should be consistently taught:

- Be alert. Watch for other users and sudden behavior changes. Pay careful attention to potential road hazards, such as potholes and gravel. Adjust speed to maintain control of the bicycle.
- Obey all traffic laws; bicyclists have the same rights, and consequently the same responsibilities, as motorists. Disobeying traffic laws makes it more difficult for motorists to know what to expect from bicyclists and is potentially dangerous.
- Always ride with the flow of traffic. Ride where motorists and others expect bicyclists, and never against traffic.
- Avoid riding on sidewalks. It is illegal in commercial districts in Minnesota, and puts pedestrians at risk. It also makes it more difficult for motorists to see bicyclists - research has shown that sidewalk riding is more

- dangerous than riding on the street, even in places where no bicycle facilities are provided.
- Be predictable. Signal your turns and do not weave in and out of traffic.
- Be visible. Wear light-colored, bright or reflective clothing and use front lights and rear reflectors or lights at night.
- Wear a helmet.

### For Motorists

The goal in educating motorists is to foster a broad and general public awareness and respect for bicycling. Many motorists are already occasional or regular bicyclists, and may begin riding more often if they see and feel the emphasis on providing safe conditions for all road users. Bicycle route signs and markings are also helpful for motorists because they remind them of the presence of bicyclists and of the need to share space with other users of the road. Information on the rights of bicyclists should be included as part of training for all automobile drivers.

### Messages

- Share the road. Under Minnesota law, bicyclists have the right to travel on all roads and streets except limited access freeways.
- Give room. Follow and pass at a safe distance. Never get closer than three feet to a cyclist under any circumstance. It is dangerous and illegal under Minnesota law.
- Be alert. Watch for bicyclists and other users and for sudden behavior changes. Pay attention especially at intersections.
- Obey all traffic laws. What would amount to a minor fender bender between two motor vehicles could be a serious injury for a cyclist in a bicycle-motor vehicle crash. Driving the speed limit and coming to a full stop at red lights creates a safer environment for all.
- Be predictable. Signal turns well before an intersection.

- Bicyclists have the right to take full possession of a travel lane in several situations, including when avoiding fixed or moving objects on the road (like vehicles, pedestrians or road surface hazards) and when the provided road space is too narrow to allow a motor vehicle to safely pass with three feet of clearance of the cyclist.
- Be patient and courteous with bicyclists and other users. Passing bicyclists just before a stop light or sign creates an atmosphere of unnecessary hostility.
- Do not honk unless absolutely necessary. Bicyclists can hear and see motor vehicles; honking simply jars their nerves.



*Many cities and communities in the United States apply for recognition as Bicycle Friendly Communities. Photo courtesy of The League of American Bicyclists.*

### 5.11.3 - Becoming a Bicycle Friendly Community

The Bicycle Friendly Community (BFC) Program is a program to which communities can apply based on their commitment to the five Es of bike planning:

- Education
- Encouragement
- Engineering
- Enforcement
- Evaluation & Planning

Becoming a BFC has important benefits for a community like Eden Prairie, including recognition, promotion of community amenities, enhanced eligibility for grants and technical assistance, benchmarking, and inspiration for further improvements for cycling. Eden Prairie can also partner with local businesses as a part of the Bicycle Friendly Business program.

The next review cycle deadline is in February 2015. There are two application deadlines per year, one in February and one in August. More information is available at:

<http://bikeleague.org/content/communities>



*Providing education to potential bike commuters is an important component of becoming a Bicycle Friendly Community. Photo courtesy of Bike Commute Tips.*

**Bike Friendly State Facts**

Currently, Minnesota is ranked as the #2 Bike Friendly State in the US. In Minnesota there are:

- 11 Bike Friendly Communities, including: Richfield (bronze), Edina (bronze), St. Paul (bronze), and Minneapolis (gold);
- 55 Bike Friendly Businesses; and
- 2 Bike Friendly Universities.

## 5.12 - Policy Suggestions / Alternatives

Considering and potentially implementing a range of policy changes can help create a lasting framework for facilitating walking and biking improvements in Eden Prairie.

### 5.12.1 - Adopt and Implement the City's Transit-Oriented Development Ordinance

Areas with a concentration of retail, employment, transit, and other destinations, are and will continue to be primary destinations for useful daily trips in Eden Prairie.

Development at areas near the future SW LRT stations will be guided by the future Transit-Oriented Development (TOD) Ordinance that is currently under development by the city.

As described in the *Eden Prairie Strategic Plan for Housing and Economic Development (2012-2018)*: “[the] TOD Zoning District will provide standards for development of attractive, compact, walkable, mixed-use housing and employment centers that creates a live/work/play environment for the community near LRT station areas. The purposes are to: provide a mix of higher density residential, mixed uses, and employment within walking distance of Light Rail, and a more efficient, compact and connected development pattern.”

The TOD Zoning District can help guide development occurring in the area to better accommodate pedestrians and bicyclists. The TOD Zoning District could regulate building orientation and design, the provision of walking facilities and bicycle parking facilities on building sites, and establishing certain measures to mitigate effects that motor vehicles and parking lots have on conditions for walking and biking. This includes traffic calming measures, provision of separated walking and biking facilities, landscaping, and other strategies on properties to facilitate walking and biking enjoyment, comfort, access, and circulation.



The City of Minneapolis has Pedestrian Oriented Overlay Zones in areas around LRT stations.

**Overlay or Zoning Districts**  
An overlay district or zoning district is a specific area that is designated to have a zoning classification that is more (or less) restrictive than the underlying primary zoning district. The intent of overlay or zoning districts is to protect or encourage specific types of development form and function in a particular area of interest.

**Livable Communities Transit-Oriented Development Grant**  
In 2012, Eden Prairie was awarded a \$60,000 Livable Communities Transit Oriented Development (TOD) Grant from the Metropolitan Council to hire a consultant to help the City develop a TOD Ordinance for Eden Prairie’s LRT station areas. The grant is matched with \$15,000 of City Economic Development Funds and City staff time.



### 5.12.2 - Adopt a “Complete Streets” / “Living Streets” Policy

“Complete Streets” is a design philosophy that considers the needs of all present and potential users of a community's transportation network. “Living Streets” incorporates the concepts of “Complete Streets” as well as “Green Streets.” “Green Streets” reduce the environmental impact of street design using stormwater management and green elements such as landscaping and shade trees. A “Living Streets” policy will include elements of a “Complete Streets” policy. Adoption of either policy will improve conditions for pedestrians and bicyclists.

Complete Streets laws and policies ensure that a community's roads and streets are routinely designed and operated to provide safe space and access for all users, including pedestrians, bicyclists, motorists and transit riders, and to ensure that they work for people of all ages and abilities, including older people, children, and people with disabilities.

The City of Eden Prairie has participated in the Minnesota GreenStep Cities Program, among other sustainability and “Living Green” initiatives. The adoption of a city-wide Complete Streets Policy was included as a stated goal in the city's participation in the GreenSteps program. Complete Streets policies have been adopted in the Major Center Area of the city, and Complete Streets standards are evaluated on a case-by-case basis in other areas of Eden Prairie.

Adopting a city-wide Complete Streets or Living Streets design policy will help ensure that all street construction and street improvement projects in Eden Prairie anticipate and address the needs of pedestrians, bicyclists and other users. Over the long run, embedding this Complete Streets approach into the City's normal operating procedures may do more for pedestrians and bicyclists than any one specific plan could.



**Complete Streets provide safe, comfortable, and convenient access for all users, regardless of mode, age or ability. Hennepin County was the first county in Minnesota to adopt a Complete Streets policy.**

**Complete Streets policies**

Both the state of Minnesota and Hennepin County have adopted Complete Streets policies. Using similar language in an Eden Prairie policy ensures consistency, particularly when applying for funding.

- Minnesota Statute 175.74 states that Complete Streets is the “planning, scoping, design, implementation, operation, and maintenance of roads in order to reasonably address the safety and accessibility needs of users of all ages and abilities.”
- Hennepin County was the first county in Minnesota to adopt a Complete Streets policy.
- More details about both policies can be found in Chapter 1.5 of this Plan - Relevant Policies and Plans.

### 5.12.3 - Continue to Partner with Hennepin County and Others

As facilities and right-of-way are modified, it is beneficial for the city to offer clear guidance for the type of pedestrian and bicycle improvements it envisions along roadways, at intersections, on regional trails, and on transit corridors. Even though many Eden Prairie roads are under Hennepin County jurisdiction, identifying the type and location of desired improvements and articulating them with clarity in this Plan makes it more likely that the county will implement the treatments in its projects.

Hennepin County values local Pedestrian and Bicycle Plans and looks to them for guidance when implementing improvements within a municipality. Other jurisdictions may also reference this Plan as they plan future facilities.

Recommendations for working with Hennepin County to implement pedestrian and bicycling improvements at county facilities within Eden Prairie include:

- Maintain a close working relationship with Hennepin County’s Bicycle and Pedestrian Coordinator, Bicycle and Pedestrian Planner, and Healthy Community Planning staff;
- Monitor the progress of implementation of the following county and regional plans:
  - *Hennepin County Pedestrian Plan*;
  - *Hennepin County Bicycle Plan*; and
  - *Metropolitan Council Regional Bicycle System Study*.
- Attend Hennepin County Bicycle Advisory Committee meetings, and work closely with committee members appointed by District 5 and District 6 County Commissioners, currently Randy Johnson and Jan Callison, respectively; and
- Continuing engaging with the county, as Eden Prairie has already done, in applying for and receiving grant funding for pedestrian and bicycle improvements.

Additional implementation partners for Eden Prairie include MnDOT, Three Rivers Park District, MetCouncil, and adjacent municipalities.

#### Hennepin County Bicycle Advisory Committee

This committee meets on a monthly basis at locations across the county. Appointed members serve a three-year term. More information about the committee can be found at <http://www.hennepin.us/residents/transportation/bike-walk>.

#### Did You know?

Hennepin County dedicates funds every year as part of its capital budget to support the development of Complete Streets along its road network and bicycle system:

- **For sidewalks:** \$200,000 annual budget, providing up to 25% of the cost of a sidewalk along a county road.
- **For bikeways:** \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system plan or gap map.
- **For bikeway gaps:** \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system gap map.

Several important streets in Eden Prairie are part of the Hennepin County road network.

### 5.12.4 - Form a City Pedestrian and Bicycle Advisory Committee

The City of Eden Prairie should consider creating a Pedestrian and Bicycle Advisory Committee within the City of Eden Prairie to promote recreational and commuter-oriented walking and bicycling trips, advocate for infrastructure improvements, encourage safe behavior, and involve interested residents in pedestrian and bicycle planning issues. The committee could consist of interested residents and relevant city staff. The committee could serve as an advisory committee to the Mayor and City Council, and in Community Development, Parks and Recreation, and Public Works planning decisions.

One or more members of the Pedestrian and Bicycle Advisory Committee could work closely with and also serve on the Planning Commission, and the Parks, Recreation, and Natural Resources Commission. These members could have an active role in the development, updating, and implementation of area plans, plans for the Southwest LRT, the comprehensive plan, and other planning efforts that affect transportation, parks, and the built environment in Eden Prairie.

Committee members could also work closely with members of the Hennepin County Bicycle Advisory Committee and relevant Hennepin County staff.

The Pedestrian and Bicycle Advisory Committee may elect to have a number of subcommittees.

Examples include:

- Pedestrian Subcommittee;
- Bicycle Subcommittee;
- Education, Encouragement, and Enforcement Subcommittee; and
- Engineering, Equity, and Evaluation Subcommittee.

### 5.12.5 - Hire a City Pedestrian and Bicycle Coordinator

The City of Eden Prairie should consider creating and funding a new “Pedestrian and Bicycle Coordinator” position to coordinate implementation, attend to and coordinate response to bicycle network maintenance and operations issues, and advocate for needs of pedestrians and bicyclists as other transportation and land use projects are designed and implemented.

This position may not be full time, but it should be considered for permanent funding, and allow a new or existing staff person to dedicate a minimum of 10 hours per week to pedestrian and bicycle-related issues within and around the geographic area of Eden Prairie. Tasks and responsibilities could include the following:

#### Planning

- Coordinate and integrate pedestrian and bicycle planning and network implementation with other city, county, regional parks district and state programs, agencies, and bodies;
- Review all roadway and land use plans for impacts on pedestrian and bicycle travel and conditions; make and pursue recommendations for improvement as needed before projects are constructed;
- Review traffic-calming and other roadway measures for impacts on conditions for pedestrians and bicyclists;
- Coordinate implementation of route recommendations as part of other projects (for example recommending that bicycle-friendly curb-and-gutter is specified in street reconstruction projects);
- Represent the interests of Eden Prairie’s pedestrians and bicyclists by serving as liaison with adjoining jurisdictions and regional entities during design and implementation of their

respective local and regional bicycle and general transportation infrastructure;

- Provide advice to policymakers, including members of the Eden Prairie City Council and Eden Prairie Planning Commission, on transportation and land use issues with the aim of improving conditions for bicyclists in Eden Prairie; and
- Coordinate bicycle-related transit infrastructure improvements, including provision of bike parking at key transit locations and coordinating improvements to bike parking and potential development of a bike station at major transit, commercial, and employment centers.

### **Maintenance and Operations**

- Create and administer a spot improvement / Pedestrian and Bicycle Facility Maintenance Request program to reduce roadway hazards and to quickly respond to pedestrians and bicyclists' requests for maintenance or repair of pedestrian and bicycle infrastructure.

### **Public Engagement**

- Serve as City of Eden Prairie liaison to residents' groups working on improving conditions for walking and bicycling in the city, and in the future act as a liaison to the Pedestrian and Bicycle Advisory Committee, when established.

### **Education and Encouragement**

- Provide information and conduct workshops to improve bicycling safety, including coordinating with Eden Prairie schools to include bicycle education as part of physical education programs, and coordinating community requests for training for adults; and
- Coordinate preparation and publication of Eden Prairie pedestrian and bicycle network maps.

### **Measurement**

- Collect and maintain bicycle use data, including regularly monitored bicycle counts, studies of origins and destinations, accident information and infraction data;
- Develop yearly reports detailing use of the pedestrian and bicycle facility network, identifying focus areas for improvement and tracking user counts.

### **Fundraising**

- Pursue local, state, federal, and private funds for improving pedestrian and bicycle infrastructure, for encouraging greater use of Eden Prairie pedestrian and bicycle network assets, and for conducting education and encouragement campaigns.

## 5.13 - Enforcement

Enforcement is an important strategy for making Eden Prairie safer and more comfortable for pedestrians and bicyclists. Working with Eden Prairie law enforcement will be a key step in creating a more welcoming environment for users of non-motorized transportation.

### 5.13.1 - Enforcing Speed Limits

High-speed motor vehicle traffic is an important barrier to walking and biking in Eden Prairie. Residents routinely mention their desire for separation from motor vehicles on routes and at crossings. Additionally, residents often cite conflicts with vehicles as the primary real and perceived safety concern to walking and biking.

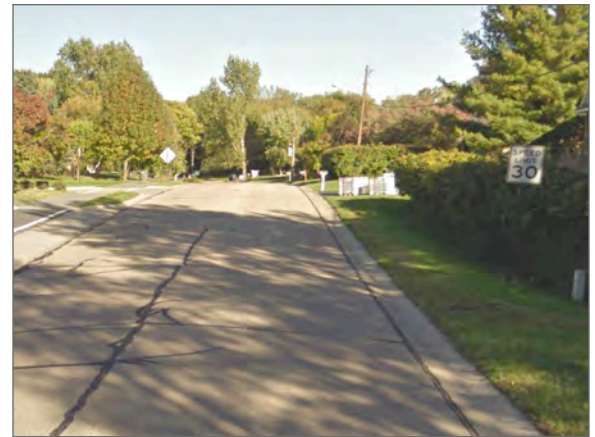
Improved walking and biking infrastructure can help to increase the comfort and visibility of non-motorized users, but enforcement is a vital component of improving the overall culture and environment in which pedestrians and bicyclists operate.

City staff recognizes that motor vehicles travel at high speeds across the city’s road network, and the police department has placed emphasis on speed enforcement. Continued focus on speed limit enforcement on road segments that are known to have speeding vehicles in priority areas and within one mile of schools and other important destinations is recommended.

### 5.13.2 - Adjusting Speed Limits

According to current Minnesota State Statutes, Minnesota cities must, in general, defer to the Minnesota Department of Transportation when setting or adjusting speed limits, even on their own road facilities.

Minnesota State Statutes, however, also reserve the right for cities to set their own speed limits on their road facilities under the following circumstances, according to Minnesota State Statutes § 169.14 and § 160.263:



**Residential streets like Sunnybrook Road may be good candidates for reduction to 25 mph with the addition of an on-street bike lane.**

**Lowering speed limits in Minnesota cities**

Minnesota statutes currently allow cities and other jurisdictions to **lower speed limits to 25 miles per hour without need of any additional engineering or traffic study if a bicycle lane is provided.**

According to Minnesota Statute 160.263, Bicycle lanes and ways, Subdivision 4, Speed on street with bicycle lane:

*“Notwithstanding section 169.14, subdivision 5, the governing body of any political subdivision, by resolution or ordinance and without an engineering or traffic investigation, may designate a safe speed for any street or highway under its authority upon which it has established a bicycle lane; provided that such safe speed shall not be lower than 25 miles per hour. The ordinance or resolution designating a safe speed is effective when appropriate signs designating the speed are erected along the street or highway, as provided by the governing body.”*

- A city may, without any additional engineering or traffic investigation, reduce the speed limit to not less than 25 mph on roads that have a designated bicycle lane;
- A city, without any additional engineering or traffic investigation, reduce the speed limit to 25 mph on a “residential roadway.” (A city street or town road whose total length is up to a half-mile);
- A city may, without any additional engineering or traffic investigation, reduce speed limits to 30 mph for a city street in an “urban district” (Any segment of a city street or town road that is built up with structures spaced less than 100 feet apart for a minimum distance of a quarter-mile); and
- A city may, with support from an engineering or traffic study, reduce the speed limit to not less than 15 mph, or more than 30 mph below the surrounding speed limit in school zones (A segment of street or highway that abuts school grounds where children have access to the roadway or where a school crossing is in place).

### **5.13.3 - Application in Eden Prairie**

- Reexamine speed limits on its streets, particularly on those adjacent to critical destinations, relative to the above provisions;
- Consider lowering the speed limit to 25 mph along routes recommended for on-street bike lanes in this Plan, to better accommodate bicyclists. This would make the environment more conducive for pedestrians as well; and
- Implement targeted speed enforcement near schools and other important destinations.



***Bicycle police can help to enforce walking and bicycling laws.***



***A bicyclists waits to cross at an intersection.***

## 5.14 - Evaluation and Performance Measures

Performance measures are instruments that help assess the extent to which progress is being made in implementing a Plan. They are a set of goals, trends or targets that are meant to be met at a certain point of time in the future - for example, to double the rate of cycling in Eden Prairie within ten years of the adoption of this pedestrian and bicycle Plan. Targets or trends can also be checked at recurring intervals, or at a closer or farther time in the future.

The performance measures recommended for the Eden Prairie Pedestrian and Bicycle System address four broad categories:

- Safety and user comfort;
- Use of facilities;
- Facilities and network; and
- Community and municipal awareness and support.

Proposed performance measures include:

### 5.14.1 - Safety and User Comfort

Pedestrian and bicycle crashes should be tracked. Fewer crashes per year would indicate an improved environment, especially if more people are walking and biking for their daily trips. Data can be obtained from the Minnesota Department of Public Safety.

#### Recommended measures

- Number of pedestrian crashes
- Number of bicyclist crashes

#### Optional measures

- Pedestrian sense of safety (intercept or general community survey)

- Bicyclist sense of safety (intercept or general community survey)
- Automobile compliance and awareness in areas with high rates of pedestrian and bicycle use (observation)

### 5.14.2 - Use of Facilities

Volunteer counts are conducted in many communities in the Twin Cities to measure how many people are walking or riding bicycles across a given corridor, or at a given intersection. Eden Prairie can work with Hennepin County to establish a bicycle and pedestrian counting program. Using volunteers this program could be implemented with a minimum of staff time. An increase in observed bicyclists and pedestrians would indicate an improved environment, especially if there are fewer pedestrian and bicyclist crashes.

#### Recommended measures

- Number of pedestrians observed at specific locations
- Number of bicyclist observed at specific shared-use paths, bicycle lanes or other facilities

### 5.14.3 - Facilities and Network

A system’s physical facilities and network provide the foundation for increasing travel by foot or bike. Measuring progress in the implementation and development of facilities will help measure success in Plan implementation, and provide additional context for understanding potential gains in user safety and facility use that may occur as new facilities are added.

#### Recommended measures

- Miles of sidewalks
- Miles of shared-use paths
- Miles of on-street bicycle facilities
- Number of new pedestrian benches
- Number of new bicycle parking spaces
- Number of gaps in pedestrian network

- Number of gaps in bicycle network
- Percent of planned facilities installed

### **5.14.4 - Community and Municipal Awareness and Support**

Effective implementation of the Plan and the realization of its goals require the participation of government and community partners, and the interest and engagement of the broader community. The performance measures included in this category describe the level to which walking and bicycle interests, attitudes, and practice have permeated Eden Prairie’s culture. Performance measures that help evaluate awareness and support include:

#### **Recommended measures**

- Adoption of a Pedestrian and Bicycle Plan
- A pedestrian and bicycle counts program is set up and maintained
- A “Pedestrian / Bicycle Coordinator” position is included in the city structure
- Pedestrian and bicycle maps and information are available to the public
- Open Streets events are held regularly
- Police regularly enforce laws that protect pedestrians and bicyclists (crosswalk enforcement, 3 foot passing law)
- Total number of staff hours spent on pedestrian and bicycling planning and engineering among city staff
- Number of public interest or advocacy clubs or organizations
- Safe Routes To School (SRTS) programs are active throughout Eden Prairie schools

#### **Measuring Neighborhood and Business Satisfaction**

Before a pedestrian or bicycle improvement project is installed, a questionnaire can be circulated to nearby neighborhood residents and/or business owners. After the project is completed, the same questionnaire can be administered to measure satisfaction with the project’s results.

In addition, a second post-project questionnaire should be given at a much later date, to track long-term satisfaction. For example, residents may initially be unsure about the introduction of traffic-calming measures in their neighborhood, but may eventually be very happy with the result!



## 5.15 - Potential Funding Sources

A variety of funding sources and programs are available to partially or wholly support the improvement of pedestrian and/or bicycle facilities in Eden Prairie. This section presents a compilation that may serve as a starting point for future efforts.

Grant or Program name	Organization	Walk? / Bike? / Both?	Program description	Additional information	Potential project
Livable Communities Development Account	Metropolitan Council	Both	Intended to link housing, jobs, and other amenities through comprehensive, well-designed networks. Projects can occur on both local and regional scales.	<a href="http://www.metrocouncil.org/Communities/Services/Livable-Communities-Grants.aspx">http://www.metrocouncil.org/Communities/Services/Livable-Communities-Grants.aspx</a>	Bike routes linking to the priority areas identified in Ch. 4.
Hennepin County Complete Streets Cost Participation Policy	Hennepin County	Both	<p>Cost participation policy to support the development of Complete Streets along Hennepin County's road network:</p> <ul style="list-style-type: none"> <li>• For sidewalks: \$200,000 annual budget, providing up to 25% of the cost of a sidewalk along a county road.</li> <li>• For bikeways: \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system plan or gap map.</li> <li>• For bikeway gaps: \$300,000 annual budget, providing up to 50% of the cost of trail or on-street bikeway identified on the Hennepin County bicycle system gap map.</li> </ul>	<a href="http://www.hennepin.us/~media/hennepinus/residents/transportation/documents/cost-part-policy-feb-2012-final.pdf">http://www.hennepin.us/~media/hennepinus/residents/transportation/documents/cost-part-policy-feb-2012-final.pdf</a>	Shared-use paths, sidewalks, or bike lanes on Hennepin County roadways in Eden Prairie.
Hennepin County Transit Oriented Development Grant	Hennepin County	Both	To be used with multi-jurisdictional projects in order to connect people with transit. This includes the provision of pedestrian and bicycle facilities.	<a href="http://www.hennepin.us/business/work-with-henn-co/transit-oriented-development">http://www.hennepin.us/business/work-with-henn-co/transit-oriented-development</a>	Shared-use paths, sidewalks, or bike lanes linking the future SW LRT stations to other portions of the city.
Hazard Elimination and Railway-Highway Crossing Programs	Federal Highway Administration (FHWA)	Both	Uses funds from Highway Safety Improvement Program (HSIP) to eliminate hazards at railroad crossings and to provide safe crossing facilities.	<a href="http://safety.fhwa.dot.gov/safeteau/fact_sheets/fsht1401d.cfm">http://safety.fhwa.dot.gov/safeteau/fact_sheets/fsht1401d.cfm</a>	Various railroad crossings throughout Eden Prairie.

Grant or Program name	Organization	Walk? / Bike? / Both?	Program description	Additional information	Potential project
National Highway System (NHS)	Federal Highway Administration (FHWA)	Both	The NHS provides a number of different grants, including some that pertain to pedestrian and bicycle safety and facilities.	<a href="http://www.fhwa.dot.gov/planning/national_highway_system/">http://www.fhwa.dot.gov/planning/national_highway_system/</a>	
Surface Transportation Program (STP)	Federal Highway Administration (FHWA)	Both	Can be used for pedestrian or bicycle facilities, or the creation of non-construction projects such as maps or education.	<a href="http://www.fs.fed.us/eng/pubs/pdf/07771814.pdf">www.fs.fed.us/eng/pubs/pdf/07771814.pdf</a>	
Congestion Mitigation and Air Quality Act (CMAQ)	Federal Highway Administration (FHWA)	Both	Intended to reduce air pollution and congestion by encouraging cycling and walking through provision of facilities or other resources such as maps and education.	<a href="http://www.fhwa.dot.gov/environment/air_quality/cmaq/">http://www.fhwa.dot.gov/environment/air_quality/cmaq/</a>	
National Scenic Byways Program (NSBP)	Federal Highway Administration (FHWA)	Walk	This grant is used for construction of pedestrian walkways along scenic byways. It requires 20% local contribution.	<a href="http://www.bywaysonline.org/grants/">http://www.bywaysonline.org/grants/</a>	
Recreational Trails Program	Federal Highway Administration (FHWA)	Both	Can be used for construction and/or maintenance of recreational trails for motorized or non-motorized transport. At least a 5% local contribution is required.	<a href="http://www.fhwa.dot.gov/environment/recreational_trails/">http://www.fhwa.dot.gov/environment/recreational_trails/</a>	Improvements / maintenance related to the Minnesota River Bluffs LRT Regional Trail.
Highway Safety Improvement Program (HSIP)	Federal Highway Administration (FHWA)	Both	Intended to increase safety and reduce fatalities on the National Highway System. This includes pedestrian and bicycle facilities. A 10% local contribution is required.	<a href="http://safety.fhwa.dot.gov/hsip/">http://safety.fhwa.dot.gov/hsip/</a>	
Transportation Enhancements (TE)	Federal Highway Administration (FHWA)	Both	Intended to provide transportation enhancements including rail-to-trail programs, 'main street' projects, and streetscape improvements among others.	<a href="http://www.fhwa.dot.gov/environment/transportation_enhancements/">http://www.fhwa.dot.gov/environment/transportation_enhancements/</a>	Sidewalk gaps throughout the city; bike lane projects.
Safe Routes To School (SRTS)	National Center for Safe Routes to School	Both	This grant provides funding for pedestrian and bicycle facilities along school routes.	<a href="http://www.saferoutesinfo.org/">http://www.saferoutesinfo.org/</a>	Improvements near Eden Prairie Schools.
Active Living Research	Active Living Research	Both	Supports studies which promote active living through policy, particularly in regards to childhood obesity.	<a href="http://www.activelivingresearch.org/grantsearch/grantopportunities">http://www.activelivingresearch.org/grantsearch/grantopportunities</a>	

Grant or Program name	Organization	Walk? / Bike? / Both?	Program description	Additional information	Potential project
Safe Kids Walk This Way	Safe Kids USA	Walk	Intended to create a safer pedestrian environment by educating motorists and children. This goal is achieved through community engagement practices.	<a href="http://www.safekids.org/coalition/safe-kids-hennepin-county">http://www.safekids.org/coalition/safe-kids-hennepin-county</a>	
Job Access and Reverse Commute Grants	Federal Transit Administration (FTA)	Both	This program aims to connect low-income residents and welfare recipients to work places via transit access and pedestrians and bicycle facilities.	<a href="http://fta.dot.gov/grants/13093_3550.html">http://fta.dot.gov/grants/13093_3550.html</a>	
Land and Water Conservation Fund (LAWCON)	Department of Natural Resources (DNR)	Both	Intended to protect local land and water resources in a number of ways including trails which promote the enjoyment and protection of resources via non-motorized transportation.	<a href="http://www.dnr.state.mn.us/aboutdnr/lawcon/index.html">http://www.dnr.state.mn.us/aboutdnr/lawcon/index.html</a>	
Rivers, Trails, and Conservation Assistance Program	National Park Service (NPS)	Both	Provides guidance to communities for the preservation of land and water as well as the development of recreational trails and greenways.	<a href="http://www.nps.gov/ncrc/programs/rta/contactus/cu_apply.html">http://www.nps.gov/ncrc/programs/rta/contactus/cu_apply.html</a>	

## 5.16 - Estimating Implementation Costs

The following tables are provided as a first step toward estimating probable costs for implementation projects. Contingency, engineering/design, construction and administration costs are not included. See additional information at [www.bicyclinginfo.org/bikecost/](http://www.bicyclinginfo.org/bikecost/) and at [http://katana.hsrb.unc.edu/cms/downloads/Countermeasure%20Costs\\_Report\\_Nov2013.pdf](http://katana.hsrb.unc.edu/cms/downloads/Countermeasure%20Costs_Report_Nov2013.pdf)

### General costs per type of facility

Facility	Unit Cost
Sidewalks (one side of the street)	\$209,100 per mile
On-street bicycle lanes on both sides of the street with on-street parking on both sides of the street	\$45,200 per mile
On-street bicycle lanes on both sides of the street with on-street parking on one side of the street	\$37,300 per mile
On-street bicycle lanes on both sides of the street with no on-street parking	\$29,400 per mile
Neighborhood Slow Street	\$108,200 per mile
Typical Intersection Improvements	\$135,700 per intersection

### Striping

Treatment description	Unit	Unit cost
Bike lane symbol (paint)	EA	\$75.00
Bike lane symbol (thermoplastic)	EA	\$200.00
Shared lane marking (thermoplastic)	EA	\$275.00
Green bike lane (paint)	LF	\$19.00
Colored pavement (thermoplastic)	SF	\$10.00

### Intersection treatments / traffic calming

Treatment description	Unit	Unit cost
Median extension for pedestrian refuge (6 ft x 8 ft)	EA	\$5,000
Curb extension / Bump-out (6 ft x 20 ft)	EA	\$12,500
Pedestrian refuge island, small (1100 sf)	EA	\$12,000
Pedestrian refuge island, large (2300 sf)	EA	\$25,000
Speed hump (raised crossing)	EA	\$2,500

## Pavement markings

Treatment description	Unit	Unit cost
4" Dashed	LF	\$0.75
6" Dashed	LF	\$1.00
8" Dashed	LF	\$1.25
4" Solid	LF	\$1.00
6" Solid	LF	\$1.50
8" Solid	LF	\$2.00
"Zebra" striped crosswalk (thermoplastic)	LF	\$120.00

## Signs, Signals and Way finding

Treatment description	Unit	Estimated Unit Cost
Wayfinding sign (including post and base)	EA	\$400
Regulatory/warning sign (including post and base)	EA	\$300
Rectangular Rapid Flash Beacon (RRFB)	EA	\$15,000 *
Pedestrian hybrid beacon (PHB / HAWK)	EA	\$100,000
Bicycle signal	EA	\$10,000
Loop detector	EA	\$1,500
* Note that RRFB estimated unit cost includes assembly of RRFB / sign on both sides of the street.		

## Other

Treatment description	Unit	Estimated Unit Cost
Bicycle parking (inverted U)	EA	\$190
On-street bicycle corral (for 10 bikes)	EA	\$1,800
Street lights	EA	\$3,700
Bollard	EA	\$150
Underpass	LF	\$4,000
ADA Curb ramp	EA	\$1,500
Concrete Sidewalk	SF	\$8



## Appendix



*The Appendix includes additional materials providing background for the work of this Plan.*

### **In this section**

- A.1 - Toolbox of Pedestrian and Bicycle Treatments and Best Practices
- A.2 - Community Engagement Full Report