This chapter describes the approach that guides the plan's "All Ages and Abilities" recommendations - from the types of users it envisions to the approach for ensuring its recommendations are part of a comprehensive set of initiatives that grow walking and biking in the city.

4.1 User types

This plan addresses the needs of pedestrian and bicycle riders in Edina. Although both modes have much in common with each other (as active, non-motorized modes with a high degree of interconnectedness and exposure to the surrounding environment, including motor-vehicle traffic), there are significant and important differences in the characteristics of each mode and the needs of their users.

Pedestrians

Pedestrians include people of all ages and abilities - including people with physical or cognitive disabilities, and those who depend on mobility devices like wheelchairs or walkers - who are walking, rolling, pausing, sitting and resting within Edina's streets and other public spaces.

Designing for pedestrians means making streets accessible to all, and providing safe and comfortable spaces with continuous, unobstructed and attractive sidewalks, safe and comfortable intersections and travel across roadways, and a supportive environment that provides comfortable separation from motor-vehicle traffic as well as visual variety, engaging building frontages, connection to natural elements, and design for human scale and needs.

Accommodating people with disabilities

Pedestrians may have cognitive disabilities (like limited vision) or physical disabilities that require use of wheelchairs or walkers for their travel. Adhering to the guidance of the American with Disabilities Act (ADA) and the Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) will help ensure Edina's pedestrian facilities address the needs of the widest range of users.

Pedestrians include people using wheelchairs, walkers and strollers, and people with sight and other cognitive impairments

Spatial characteristics for pedestrians using wheelchairs

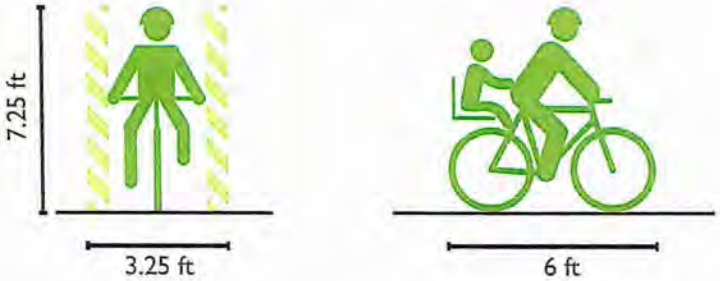
Bicycle riders

Bicycle riders include adults, children and seniors using conventional, tandem and tag-along bicycles, cargo and utility bicycles and tricycles - whether conventionally-powered, or as is becoming more commonplace, assisted by electric power (e-bikes).

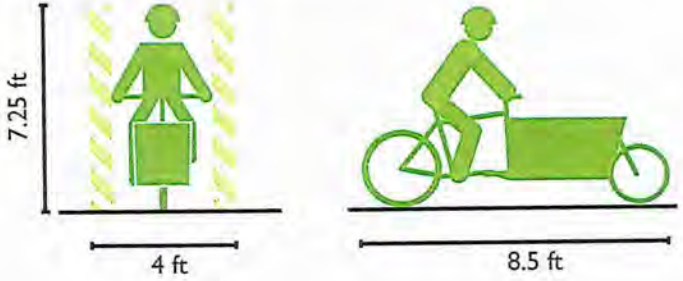
Designing for bicycle riders means providing facilities that are safe, comfortable, direct, clearly marked and understandable, and part of a cohesive, connected network to encourage use by Edina residents of all ages and abilities. Facilities that provide comfortable separation from motor-vehicle traffic as well as safe and comfortable travel through busy intersections, and supportive elements like wayfinding, connections to transit, and parking and other end of trip facilities will support growth of bicycle travel in Edina.

Bicycle riders include seniors, children and adults using a variety of types of bicycles or tricycles.

Spatial characteristics for conventional bicycles



Spatial characteristics for cargo bicycles



4.2 All Ages and Abilities: Building a plan for a variety of users

The Edina pedestrian and bicycle network will provide safe, comfortable, and inviting routes and places for walking and biking.

Growing walking and biking in the city will hinge on not only improving the network for those currently walking and biking, but also on attracting new users (those who would like to walk or bike today, but feel uncomfortable or unsafe using the current system).

Attitudes toward walking and bicycling

One useful system for understanding the varying needs and comfort levels of existing and potential bicycle riders (and which can help understand solutions to issues also affecting pedestrians) is the "Four Types of Bicycle Riders" framework first developed by the City of Portland and since then validated in cities across the United States.

In general, it establishes that a city's population includes three main groups of potential bicycle riders:

Interested but concerned (about 60% of adults)

This is the largest group of potential bicycle riders in a community, but also the least likely to regularly ride a bicycle because the type of facilities generally provided in most US cities today exceed their tolerance for traffic stress.

"I like the idea of biking, but I don't bike much (or at all) now. If I do bike, I often stick to the trails. Comfort is my highest priority."

Facilities that will invite members of this population into biking provide greater separation from motor-vehicle traffic and simplified crossing maneuvers for safely getting across intersections.

Enthusiastic and confident (about 7 to 9% of adults)

People in this group can share the road with motor vehicle traffic, but prefer to ride on bike lanes or other designated bikeways. Members of this population account for the increase in bicycle riding in communities that have invested in bicycle lanes.

"I will bike for transportation or recreation. I feel best riding on bike lanes, but will take the lane if necessary."

The minimum facility that will invite them into biking regularly is designated bicycle lanes.

Strong and fearless (about 1% of adults)

People in this population are regularly riding, even when no facilities or minimal facilities are provided. Their experience and expectation for their riding environment is different from that of the majority of other current or potential riders.

"I feel comfortable riding with cars and taking the lane on any street."

Separation from people walking or slower bicycle riders may be as important to these riders as separation from people driving.

Not able or interested (30% of adults)

This group includes people who have no current interest in bicycling, or who are physically unable to bike. Some members of this group could transition into the "interested but concerned" group if general conditions or their personal circumstances changed.

Pedestrians also respond to conditions of user comfort in their surroundings - long crossings or sidewalks adjacent to traffic are often named as barriers - even if crosswalks or pedestrian signals are provided. Image: in Eden Prairie, along Flying Cloud Drive.

4.3 The 6 E's of pedestrian and bicycle planning

The most effective approach for growing walking and biking in a community is to work comprehensively to combine on-the-ground improvements with a wide range of supportive social, educational and enforcement campaigns (also known as non-infrastructure or "programs" measures).

There is a framework for pedestrian and bicycle planning that does exactly this, and it's the framework that this plan uses to organize all its recommendations.

This framework is known as the 6 E's. All the recommendations in the Edina Pedestrian and Bicycle Master Plan are organized by the each of the six topic areas (or E's) below:

Engineering
Engineering recommendations focus on "on-the-ground" improvements - including the planning, design, construction, and maintenance of infrastructure or facilities - like roads, sidewalks, bikeways, intersection treatments, signage, and end-of-trip facilities.

Education
Education programs share information about how to access and use existing facilities and amenities, about the rules of the road, and about benefits associated with walking and biking investments. Education initiatives include network maps, pedestrian and bicycle safety trainings, and educational campaigns, among others.

Encouragement
Encouragement programs inspire more people to try walking or biking through fun and inviting activities including friendly competitions, incentive programs, inclusive group rides, and community-wide events like Open Streets.

Enforcement
Enforcement programs often include participation from local law enforcement with a focus on enforcing traffic safety laws like speed limits, parking regulations, and safe roadway behavior from all users.

Evaluation
Evaluation programs measure the success of investments at achieving desired outcomes. Evaluation takes place before and after programming and infrastructure improvements to establish a baseline and measure progress overtime. Examples of performance measures that may be evaluated include public perception, behavioral changes and modal shifts, and network safety.

Equity
Equity focuses on distributing facility and programming improvements fairly throughout a community to ensure that residents of all neighborhoods and population groups have equal access to high quality facilities and programs. Equity includes intentional efforts for engaging specific diverse populations, and implementation of infrastructure and programs throughout a community to overcome economic, geographic, social, and physical barriers to walking and biking.

Chapter 5
Engineering

Engineering recommendations focus on "on-the-ground" improvements - including the planning, design, construction, and maintenance of infrastructure or facilities - like roads, sidewalks, bikeways, intersection treatments, signage, and end-of-trip facilities.

5.1 Approach and overview

An incremental approach

Edina has many assets for walking and biking in place today. The goal of recommendations in this chapter is to address gaps in the network, increase user comfort for existing and future facilities, and provide a supportive framework for maintaining current assets and for future planning and policy actions that will increase walking and biking in the city.

One key component of the plan's approach for future improvement is to identify smaller, incremental steps that can be quickly implemented and tested and prepare the foundation for future, permanent improvements.

Recommendations are based on network analysis, site visits, best practices, and engagement with the Project Management Team and the general public.

Please note: Additional investigation and design for each specific project must be completed by a licensed engineer prior to implementation.

Goals for ***ENGINEERING*** recommendations

Improve routes, facilities, policies and practices to:

- Fill gaps in the existing network
- Address the concerns of Edina residents who currently walk or bike in the city
- Attract new users by developing a safe, comfortable, and inviting network
- Provide connections to important destinations including schools, neighborhood parks, commercial areas, employment, transit, and regional corridors
- Efficiently and cost-effectively maintain the city's facility investments
- Support new models for sustainable, efficient and healthy mobility, and provide supportive policy and planning recommendations

5.2 Framework for the city's walk / bike network

An All Ages and Abilities Network

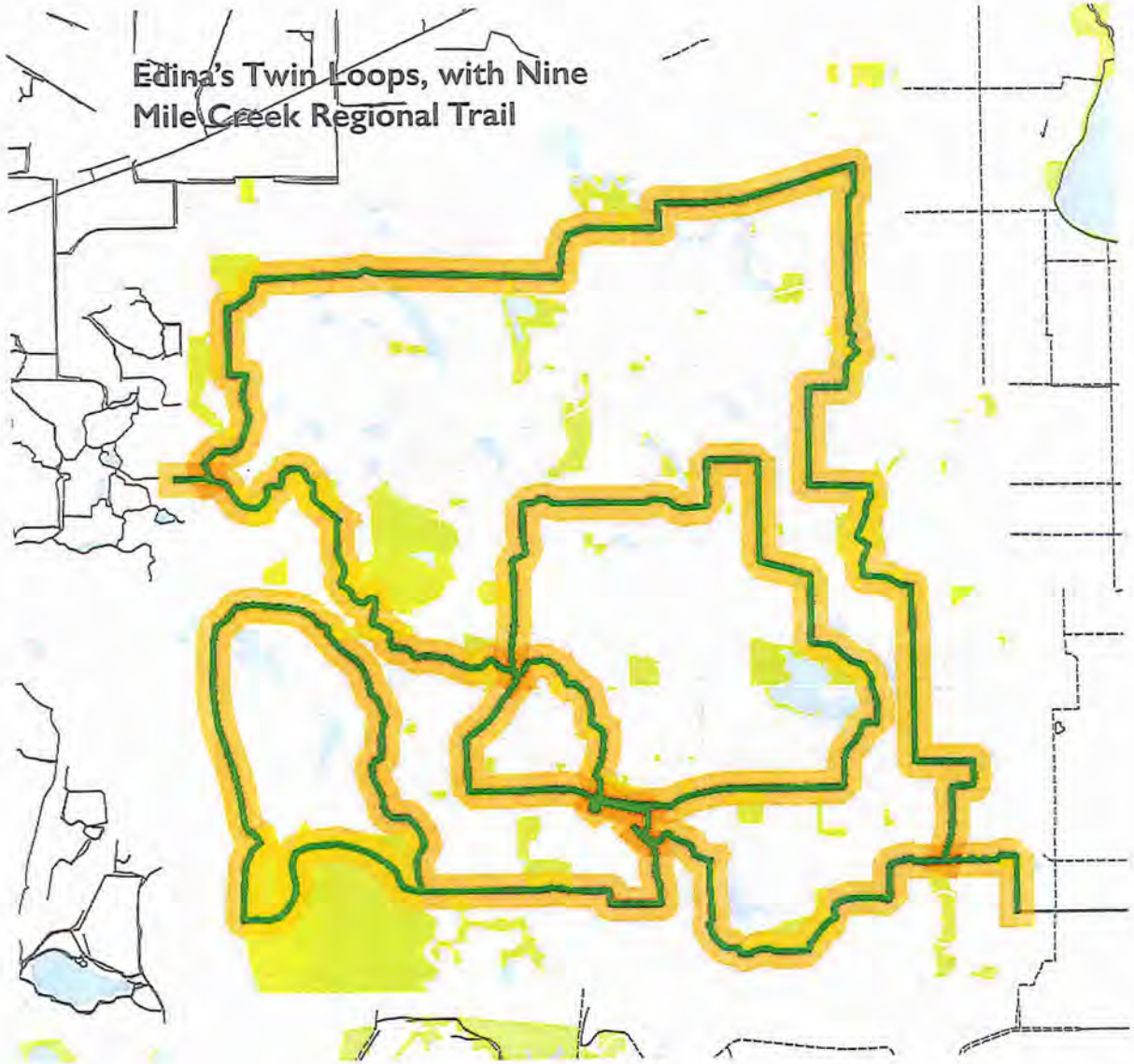
Guidance from Edina residents was very clear: connecting to schools, parks and neighborhoods with safe and comfortable facilities is a key priority.

This plan follows that guidance to propose a "Twin Loops" framework connecting key assets in the city through a high-comfort, high-amenity walk / bike system.

The Inner Loop provides a high quality connection tying all four city quadrants and within close proximity of Edina schools and community destinations.

The Outer Loop, first identified in the 2015 Edina Strategic Park Plan, provides high-quality connections to Edina parks, regional destinations, and adjoining communities.

Together with the new Nine Mile Creek Regional Trail, these Twin Loops form the "backbone" of Edina's walk / bike network and organize a secondary network of pedestrian and bicycle routes connecting to neighborhoods throughout the city.



What could it look like?

Indianapolis Cultural Trail.


Edina Promenade.


University of Minnesota Transitway.

Indianapolis Cultural Trail.

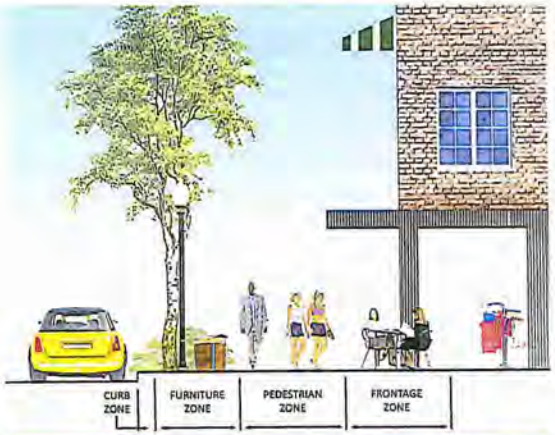
A brief introduction to pedestrian and bicycle facilities

Numerous types of facilities and treatments exist for addressing the needs of people walking and biking in our cities. Four facility types are discussed here as they make up the majority of facilities recommended in this plan. **Please note that a "Toolbox of Pedestrian and Bicycle Treatments and Best Practices" detailing all facilities with potential application in Edina is included in this Plan's Appendix.**

Sidewalks

Applicability: Pedestrian network

Sidewalks are paved concrete or asphalt paths designed for pedestrian use. A well-connected sidewalk network is the foundation of pedestrian accessibility, with the quality of connections between sidewalks (across roadways) determining the overall usefulness of the walkways provided. High quality sidewalks provide level and unbroken surfaces, ADA-compliant curb ramps, and comfortable separation from motor vehicle traffic. Trees and plantings, and additional facilities like benches, waste receptacles, and public art provide additional user comfort and interest.



Sidewalk in a mixed-use district

Shared-use paths

Applicability: Pedestrian and bicycle networks

A shared-use path (SUP, often also known as trail) provides a shared space for people walking and biking that is separate from motor vehicle traffic. Shared-use paths work better when they include fewer intersections with motorized traffic.

Shared-use paths are often provided along busier roadways when on-street bicycle facilities are not feasible, and at locations along streams and railroads, and through parks. SUPs provide increased separation from motor vehicle traffic, and are also used at parks and natural assets to provide more scenic routes. Striping of shared-use paths helps to clarify passing lanes, and identify separate lanes for people walking or biking in high use areas.

The Edina Promenade is a shared-use path.

Neighborhood Slow Streets

Applicability: Bicycle network

Neighborhood Slow Streets (also sometimes known as Neighborhood Greenways or Bike Boulevards) are residential streets that are lightly modified to calm motor-vehicle traffic and prioritize bicycle travel. They can include some or several types of traffic-calming elements: bump-outs, traffic circles, speed tables, or others.

Neighborhood Slow Streets make walking and biking easier and safer by reducing motor-vehicle speeds and by improving safety for users of all modes. Route signage, pavement markings, and stop sign orientation can help highlight the street as a bikeway.

Traffic circle at a neighborhood intersection helps calm through traffic and make conditions better for people walking and biking.

Bicycle lanes

Applicability: Bicycle network

Bicycle lanes designate a portion of the roadway for preferential use by bicycle riders. Lanes are defined by striping, pavement markings and signage. Bike lanes separate bicyclist and motorist travel flows and increase bicycle rider and driver comfort.

Three types of bicycle lane facilities are recommended for consideration in Edina:

» Separated or protected bicycle lanes

» Buffered bicycle lanes

» Conventional bicycle lanes

Separated / protected bicycle lanes can be quickly and inexpensively deployed using plastic bollards and paint.
Image: the Saint Paul Grand Round.

Separated / protected bicycle lane
Separated / protected bike lanes are on-street facilities that offer a designated space for bicycles and that are separated from motor-vehicle travel lanes by a buffer distance and by vertical elements like bollards, planters, or concrete walls.

This type of facility offers the highest level of traffic separation and user comfort, and invites greater use of bicycling by a wider range of the population. This is the type of facility that is generally recommended for Edina's on-street bicycle network.

Buffered bicycle lane
Buffered bike lanes are on-street facilities that offer a designated space for bicycles and that are separated from motor-vehicle travel lanes by a buffer distance.

When provided next to on-street parking, they sometimes also include a buffer space between the bicycle lane and parked cars.

This is the minimum type of facility that is required in order to create conditions that attract members of the "interested but concerned" population into biking.

Conventional bicycle lane
Conventional bicycle lanes are on-street facilities that offer a designated space for bicycles and that are adjacent to motor-vehicle travel lanes.

5.3 Pedestrian network recommendations

Recommendations for Edina's pedestrian network respond to these two priorities:

- Address safety and user-comfort issues at priority intersections identified through analysis, community engagement and consultation with Edina staff
- Identify a pedestrian network that incorporates and responds to the facilities included in the following adopted city planning policies and documents
  - 2014 Sidewalk Facilities Map and Pedestrian Facilities Comprehensive Plan Amendment,
  - 2015 Living Streets Plan
  - 2013 Active (Safe) Routes to School (SRTS / ARTS) Comprehensive Plan
  - Analysis, community engagement and consultation with Edina staff

The goal is to support the continued development of a well-connected, dense, and equitably distributed network of sidewalks and shared-use paths providing safe and comfortable crossings and connections to everyday destinations.

Inventory of existing and proposed facilities

Facility Type	Miles		
	Existing	New	Total
Sidewalk	85.0	49.0	122.0*
Shared-use path	18.8	9.0	27.8
Total pedestrian network	**96.3**	**57.6**	**149.8***

** Totals are not arithmetic addition as they include the conversion or upgrading of some existing facilities into other types that offer greater user comfort.*

Connecting to Edina's All Ages and Abilities Network

Edina's Twin Loops (Chapter 5.2) provide the organizing structure for identifying priorities for implementation of sidewalk facilities.

Sidewalks and trails connecting neighborhoods and destinations to the Twin Loops are identified as Primary connections, while other pedestrian links are identified as Secondary.

Priority intersection improvements

Several intersections were identified as locations where safety and user-comfort issues exist.

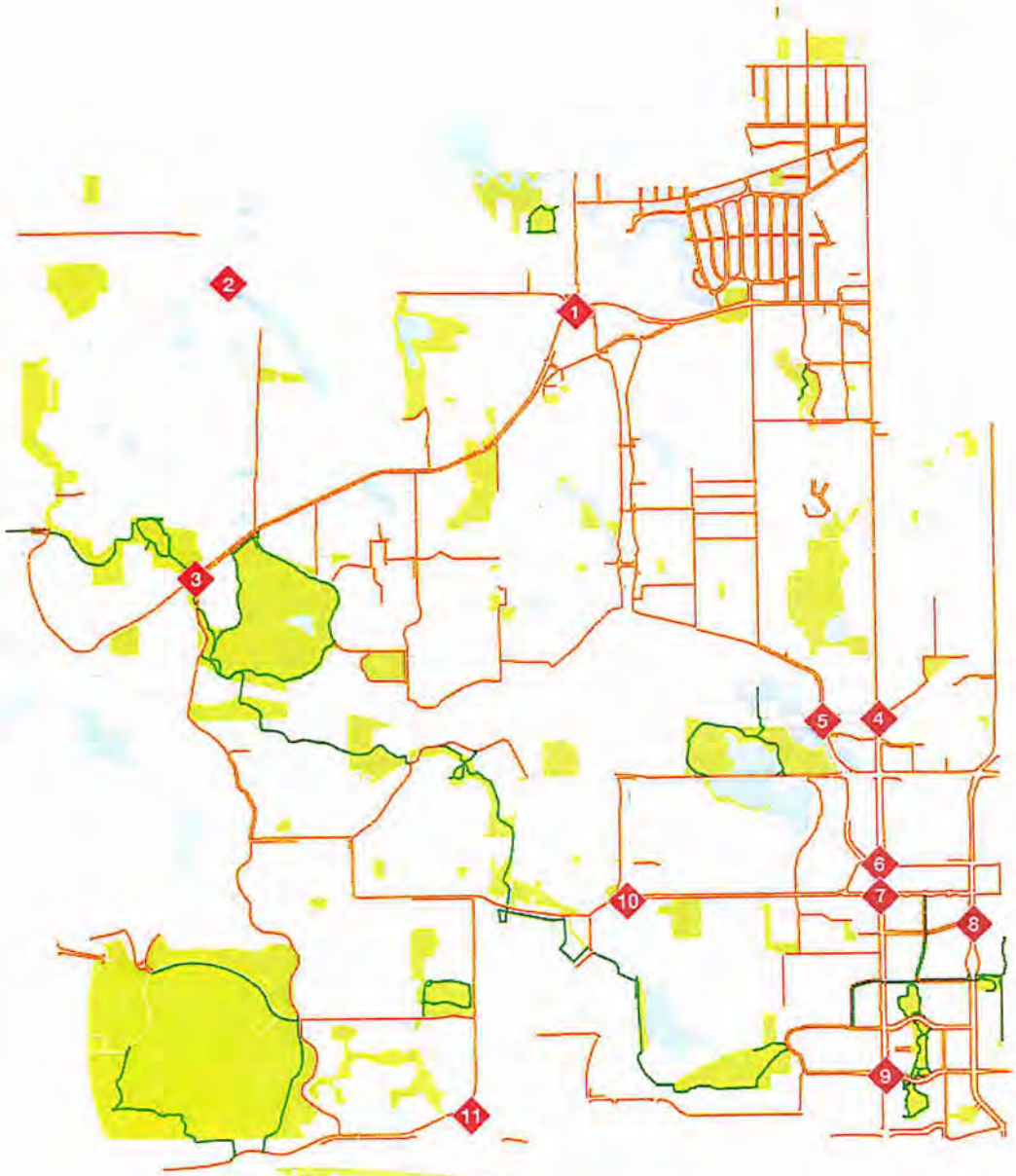
The intersections noted here are recommended for additional investigation and improvement.

Recommended Facilities

- Priority intersection
  See table on the following page for ID-specific recommendations

Existing facilities

- Existing sidewalks
- Existing park trail



ID	Intersection	Recommended Improvements
1	Interlachen and Vernon	Implement best practices and recommendations outlined in the Infrastructure Toolkit (Appendix A) for intersections and crossings. Several of the treatments below are already present at some of the intersections listed, but not at others. Consider: • Reduce turning radii where practical • Install high visibility crosswalks and forward stop bars • Install refuge medians that extend beyond crosswalks and into intersections • Provide countdown timers and extend crossing time as needed • Consider leading intervals for people walking or biking • Reduce the width or number of motor vehicles travel and turn lanes as possible • Install ADA compliant curb ramps and signals • Modify channelized right turn lanes to prioritize safety and comfort of people walking or biking • For intersections also along designated bicycle routes: install bicycle signal detection (loop or camera detection) or bicycle push buttons
2	Blake and Interlachen	
3	Gleason and Vernon	
4	France and Highway Hwy 62	
5	Valley View and Hwy 62	
6	France and 69th	
7	France and 70th	
8	Hazelton and York	
9	France and 76th	
10	70th and Hwy 100	
11	78th and Cahill	
12	Valley View and Hwy 169	

Proposed pedestrian network

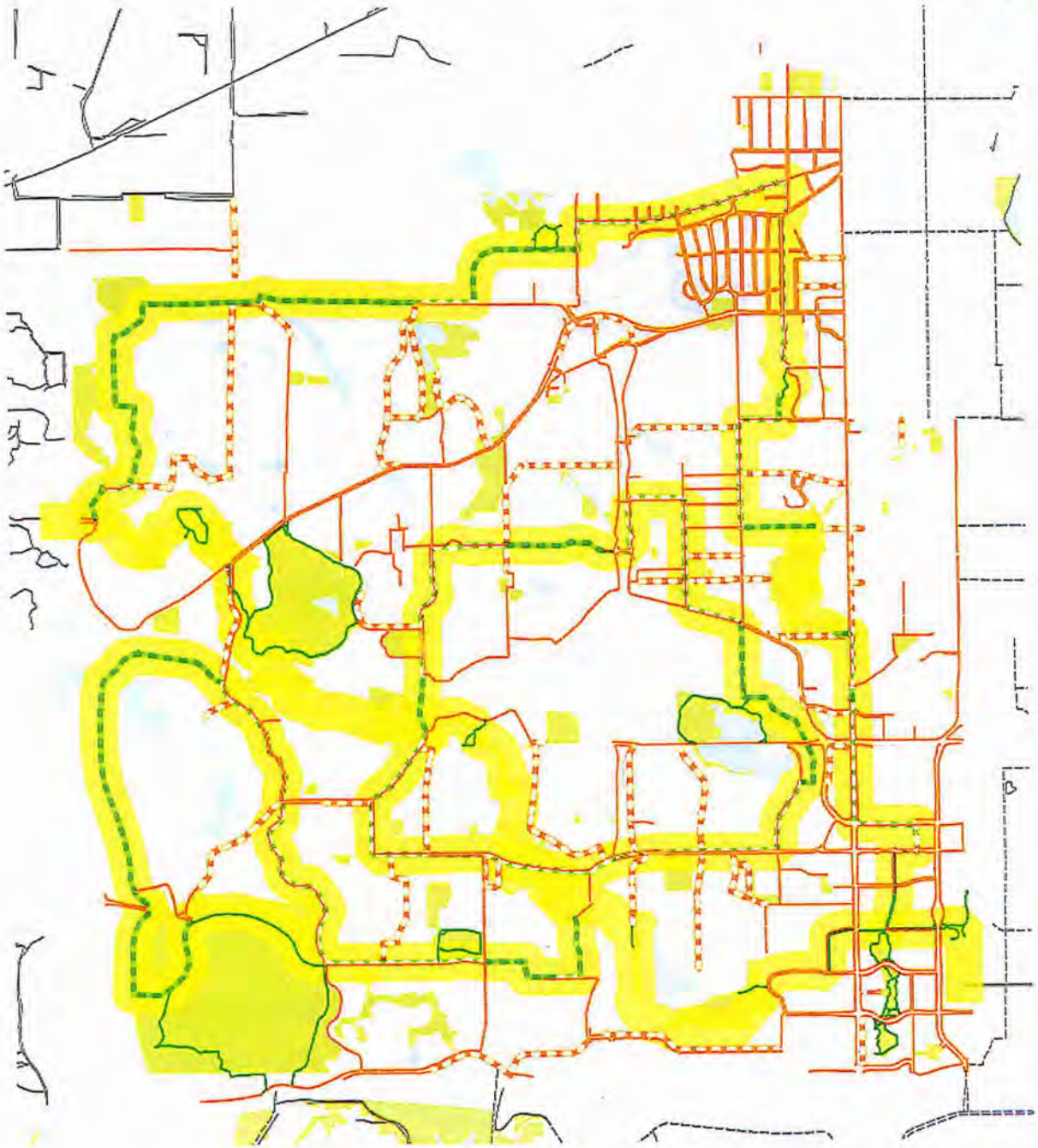
Sidewalks and trails connecting neighborhoods and destinations to Edina's Twin Loops are identified as Primary connections, while other pedestrian links are identified as Secondary.

Recommendations

- Edina Twin Loops - All Ages and Abilities Network
- New Primary sidewalk
- New shared-use path
- Upgrade existing sidewalk to shared-use path
- New Secondary sidewalk

Existing facilities

- Existing sidewalks
- Existing shared-use path/trail
- Existing network in neighboring community
- Planned network in neighboring community



Additional recommendations for walkability

Facility Type	
Street crossings / intersections	• Reduce unsafe crossing behavior by providing safe, marked opportunities for people walking to cross the street at least every half-mile along minor arterials, and every quarter-mile in neighborhoods, commercial or retail districts, schools, parks, and along transit routes. • Install ADA-compliant curb ramps at all marked and unmarked crosswalks. • Establish guidelines for use of raised crosswalks and median refuge areas for crossing areas. • Install curb extensions (bump-outs) where possible, including commercial districts, neighborhoods and where on-street parking is permitted. • Design intersections with minimum allowable turning radii to slow traffic speeds, to allow perpendicular curb ramps to be positioned parallel to crosswalks and perpendicular to curb, and to shorten overall crossing distance. • Design channelized turn lanes and median refuges with attention to walking and biking movements. • Avoid multiple turning lanes when possible. • Implement advanced stop bars to deter motorists from encroaching into crosswalks when stopped, and to decrease possibility of "hidden threat" crashes.

Facility Type	
Sidewalk furnishings	• Consider street trees, vegetative buffers, and street furnishings to control stormwater and provide shade. • Accommodate necessary utility infrastructure. • Provide for facilities that enhance the pedestrian environment including pedestrian-scaled lighting, public art, wayfinding, vegetation, and others. • Accommodate commercial activities that invite walking and add activity and interest to the area.
Pedestrian crossing signals	• Continue updating pedestrian crossing signals to countdowns until all units have been converted. • Include user-activated technologies for traffic control including Rapid Rectangular Flashing Beacons (RRFB), Pedestrian Hybrid Beacon (PHB or HAWK), and others. • Consider implementation of Leading Pedestrian Intervals. • Ensure that clearance intervals are properly timed.
Driveways	• Limit the width, number, and location of driveways through consolidation and other means.
Requirements for sidewalks in new and existing developments	Consider modifying the City Sidewalk Policy to: • Allow greater flexibility in implementation • Include goal of providing sidewalks on at least one side of local streets including new development and retrofits on existing streets, including dead-ends that provide cut-throughs or park/trail connections.

5.4 Bicycle network recommendations

The recommended Edina bicycle network builds on existing investments to provide a dense and equitably distributed network of All Ages and Abilities on- and off-street bicycle facilities that includes:

» Implementation of the Edina Twin Loops and expansion of the city's shared-use path network

» Upgrading of existing on-street routes and facilities to high user-comfort facilities

» Improved connections to schools, parks, commercial areas, higher-density housing, and transit corridors to facilitate bicycle travel within neighborhoods and throughout the city.

Inventory of existing and proposed facilities

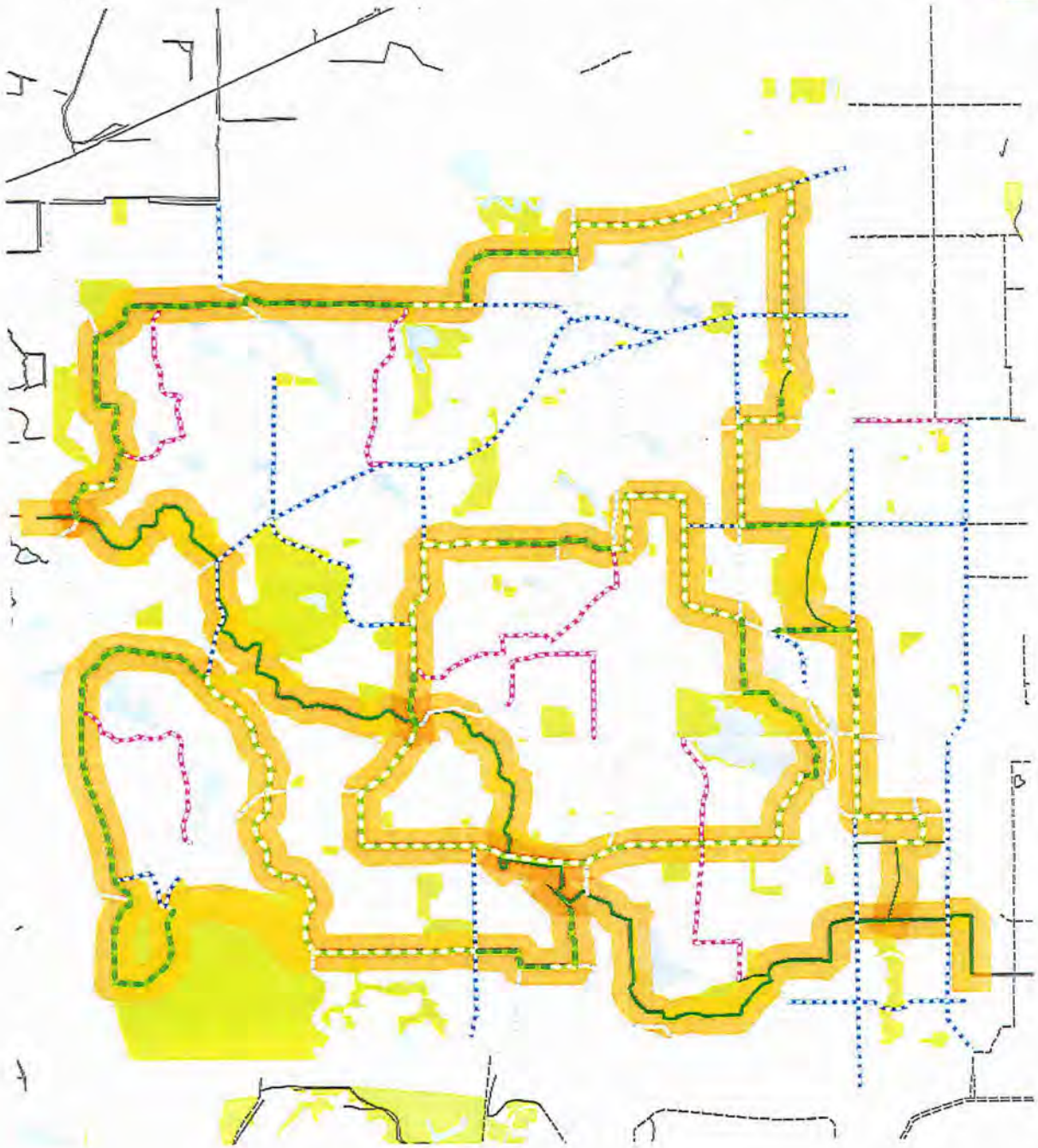
Facility Type	Miles		
	Existing	New	Total
Advisory Bicycle Lane	0.6	0	0*
Signed Bicycle Route	7.7	0	0*
Green Shared Bicycle Lane	0.4	0	0*
Neighborhood Slow Street / Bike Boulevard	3.4	7.1	7.8*
Bicycle lane	19.1	39.9	40.2*
Buffered bicycle lane (medium-term: separated bicycle lane)	0	16.5	16.5
Separated / protected bicycle lane (long-term: shared-use path)	18.8	9	27.8
Total Bicycle Network	**49.9**	**69.9**	**92.3***

** Totals are not arithmetic addition as they include the conversion or upgrading of some existing facilities into other types that offer greater user comfort.*

Proposed bicycle network

Recommendations

- Edina Twin Loops - All Ages and Abilities Network
- New separated / protected bicycle lane (long-term: shared-use path)
- New separated / protected lane or upgrade existing sidewalk to shared-use path (long-term)
- Neighborhood Slow Street / Bike boulevard
- Buffered bike lane
- Conventional bike lane
- Existing shared-use path/trail
- Existing network in neighboring community
- Planned network in neighboring community



Additional recommendations for bikeability

Facility Type	Recommendation
Bicycle treatment at intersections and trail crossings	• Mark bicycle lanes across right-turn lanes and through intersections by marking them with green paint where appropriate • Install chevrons and dashed lines across intersections where appropriate. • Install signage at conflict points where appropriate. • Establish guidelines for installing medians or raised crosswalks at trail crossings and intersections. • Install bicycle signal detection including loop detectors or camera detection along bikeways when signals are installed or updated. • More information about intersection treatments is included in Appendix A.
Lighting of trails and on-road facilities	• Establish policies for providing lighting along on- and off-road facilities, and in tunnels and other areas along trails as needed.
Facility maintenance	• Develop facility maintenance guidelines for ongoing and seasonal maintenance including street cleaning, vegetation maintenance, snow and ice removal, and re-striping. • Develop a snow and ice removal policy on- and off-street bicycle facilities, and publicize "Winter Network" identifying priority routes for snow and ice removal along pedestrian and bicycle facilities. • More information regarding facility maintenance is provided in this chapter.

Facility Type	Recommendation
Bicycle network design	• Draw on latest best practices for full selection of bikeway facilities. Sources include: 2012 AASHTO Guide for the Development of Bicycle Facilities, NACTO Urban Bikeway Design Guide, FHWA Separated Bike Lane Planning and Design Guide, MnDOT Bikeway Facility Design Manual, and others.
Bicycle parking	• Continue managing and communicating the ongoing "Request-a-Rack" program. • Adopt bicycle parking requirements for new development, and install bicycle parking at existing destinations including commercial and employment centers, recreational areas, schools, and other community destinations where people may arrive by bike. • Work with Metro Transit to provide secure, short- and long-term parking at major transit hubs including Park & Ride lots. • Consider working with adjoining jurisdictions hosting nearby Southwest LRT stations (five stations are within a mile of Edina) to provide secure, short- and long-term parking at SWLRT stations and Park & Ride lots. • Adopt and follow Hennepin County's bicycle parking guidelines: http://www.hennepin.us/~/media/hennepinus/residents/transportation/bike/bikeplan/Appendix%20F%20%20Bicycle%20Parking%20GuidelinesFINAL.pdf • More information about bicycle parking is provided in Appendix A.
Rest stops	• Establish guidelines for installation of rest stop facilities including benches, water refill stations, short-term parking, bicycle maintenance stations, trash and recycling, and restrooms.

5.5 The new mobility: Transit integration, bikeshare, and mobility hubs

The new mobility (also known as "shared-use mobility") is a term used to describe an approach to transportation that decreases the need for private automobile ownership by providing access to convenient and comfortable transportation options that are shared among users, including public transit, bikeshare, carshare, carpools, taxis and app-based ride-hailing services, shuttles and more.

Successful approaches require the integration of several systems: convenient mass transit, ridesharing services and shared bike fleets, integrated mobile apps, compact and efficient land use, and supportive walk / bike networks that, taken together, offer new options for people to get around.

Edina's potential for the New Mobility

Edina has great potential for capitalizing on these trends and offering a new way for residents and visitors to connect to destinations in and around the city.

Edina's transportation goals include reducing trips by car, reducing congestion, and reducing the need for parking while improving community health, commerce, and the environment.

New Mobility approaches can help reduce trips by car to the point where fewer cars are needed overall - for example, helping a three-car household become a two-car household, or helping a two-car household become a one-car household.

Tightly focusing shared-use mobility hubs and services and excellent walk / bike access to serve destination-rich neighborhood nodes (places that provide a mix of businesses like a grocery store, gym, coffee shop, restaurant, hair salon, etc.) can help kick-start the New Mobility in Edina while also supporting the development of denser housing and mixed-use buildings in specific districts of the city (what the 2018 Comprehensive Plan refers to as a "Nodes and Modes" approach).

This approach can help increase the efficient use of land in these districts while increasing convenient access to a range of transportation options for people living in those districts and in nearby traditional single-family neighborhoods.

Bikesharing

Bikesharing is a resounding success in our region. Nice Ride, the Twin Cities' bikeshare system, has been in operation since 2010 and has a fleet of almost 200 bikeshare stations and more than 2,000 bikes providing service in Minneapolis and Saint Paul.

And now is a great time to plan for the future of bikeshare in Edina - bikeshare in the Twin Cities is about to undergo a tremendous change as stationless bikeshare comes into the Twin Cities starting in 2018. Bikes will be interchangeable between the current station-based and the soon-to-be-introduced stationless systems, with stations outside of the urban core being well-suited for providing focused locations where bikes can be found and accessed.

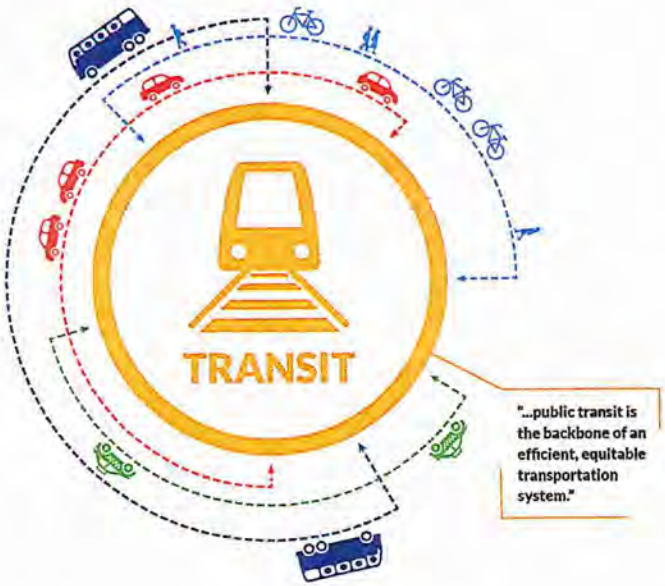
The change, which will increase the total number of bikes in the Twin Cities by literally thousands, will prompt an entire rethinking of how bikeshare is provided in the urban core (which will likely be mostly stationless bikes) and in new areas in surrounding communities like Edina (which will be well-suited to host the station-based system to concentrate bicycles near the city's future mobility hubs).

High activity areas such as 50th and France, Grandview, the Southdale area, and major recreational and trail locations (Braemer Park, Bredesen Park, and Nine Mile Creek Regional Trail) will be ideal for initial deployment of the system. There are two key considerations to keep in mind as the city moves forward toward implementation of bikeshare in Edina:

» To maximize convenience for Edina residents and increase opportunity for success of the city's system, it will be key to make sure that bikeshare memberships for Edina's system are compatible with the larger regional system, and,

» The city's All Ages and Abilities network must be in place at deployment locations *before* the system is deployed there as bikeshare works best when it allows for comfortable and casual use by members of the general adult population (the "interested but concerned" population) - this is why trail and park locations might be especially useful locations to start deployment.

Transit integration



Transit is a key component of the New Mobility. Fortunately, Edina's proactive pedestrian and bicycle planning approach offers great opportunity for improving access to transit, as nearly every transit trip will include a walking trip at the beginning, end, or both - while improving bicycle access to transit stops and stations greatly increases the number of people within transit catchment areas.

Integrating walking and biking with transit

Improving pedestrian and bicycle connections to transit can play an important role in making these modes part of daily life for more Edina residents. Easy and convenient linkages to transit will help increase the total number of trips made by walking or biking by increasing the number of destinations available, and by allowing pedestrians and bicycle riders to reach more distant destinations.

Southdale Transit Center

The Southdale Transit Center, located near York Avenue and West 66th Street, is one of our region's busiest, and an incipient mobility hub. Providing covered waiting shelters with on-demand heat, 70 surface Park & Ride spaces, electric-vehicle charging stations, and real-time departure information, this location will become even more important component of Edina's shared mobility landscape as pedestrian and bicycle access in the city (and connection to bikeshare and new mobility options) grows.

Connecting bicycles with transit

There are four main components of bicycle-transit integration:

- Allowing bicycles on transit
- Offering bicycle parking at transit locations
- Improving bikeways to transit
- Encouraging use of bicycle and transit programs

Bikes on transit

Allowing bikes on transit extends the distance that a bicycle rider may comfortably reach. Metro Transit has greatly strengthened the interconnection between biking and transit in the Twin Cities region by providing space for bikes on all of its buses and trains. On buses, this takes the from of a pull-down rack on the front of the bus. On the Metro Transit LRT trains, each train car has designated space for several bikes. Supporting public education campaigns to let potential riders know about these options and how to use them is a key way to grow use of these options.

Bike parking at transit

Providing 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.

5.6 Wayfinding

Well-designed wayfinding is an essential way to make the pedestrian and bicycle network more inviting and enjoyable. Wayfinding signage should be appropriately sized and designed on the human scale, provide distances to destinations when possible, and be continuously maintained and updated. Pedestrian and bicycle wayfinding signs should complement each other. A well-connected wayfinding network will help users identify the easiest routes to their destinations. Efforts to implement wayfinding should begin on the Edina Inner and Outer Loops and expand to connect networks in the long-term. Route destinations should not just include places of interest in Edina, but destinations in neighboring cities and networks as well.

Some wayfinding tools include: signage, pavement markings, maps, and online trip planning tools. Ensuring information is easy to find and understand for people of all ages and abilities will ensure that a wide range of people have access to the benefits of walking and biking for more of their trips. Some ways to make wayfinding accessible to all are:

Develop a robust and consistent wayfinding system

Develop an on-the-ground wayfinding system including signs and pavement markings to help people navigate the existing network. Update signage as needed to reflect new destinations and newly implemented facilities. Include wayfinding signs as a component of all projects.

Print and distribute route maps

Provide network and route maps that are accessible for all, including people who do not speak English as a primary language and those who may require larger text. Include safety tips, information about different facility types, and bicycle traffic laws.

Continue to make GIS data publicly available

Publish pedestrian and bicycle related data including planned projects, construction information, pedestrian and bicycle detours, and collision information to keep the public informed, and to allow for development of third party applications.

Additional guidance for wayfinding can be found in Appendix A.

5.7 Facility maintenance

Maintenance of pedestrian and bicycle facilities includes two key, related activities:

» Upkeep and repair of the physical condition of the facilities so they continue in service in their intended condition (e.g., repainting crosswalks to maintain visibility, or patching trail surfaces), and,

» Ensuring that environmental, climatic, and other factors don't hinder access to the facilities or to their intended functioning (e.g., removing snow from priority pedestrian corridors).

Proactive and effective maintenance of pedestrian and bicycle facilities is a key practice for successful pedestrian and bicycle systems, and a major contributor to the development of safe, comfortable and inviting non-motorized networks that grow walking and biking.

Why it's important

Providing an adequate level of maintenance to walking and biking facilities:

» Protects the investments made by the city and its partners and helps ensure that they continue to serve the needs of residents and visitors well into the future

» Reduces hazards, improves user visibility and safety, and invites greater use of facilities

» Improves reliable, year-round connectivity for users of non-motorized modes

Edina crews repairing pavement markings near Edina High School.

User needs

People walking, especially people who use mobility devices like walkers and wheelchairs, depend on level, slip-resistant surfaces for their travel. Walking surfaces that are free from unexpected bumps, holes or cracks, ice, or other slippery materials are paramount for people's safety and comfort.

Surfaces that are adequate for people driving can be hazardous for people walking or biking: gravel can deflect a bicycle wheel; a crack in the pavement or an incorrectly-oriented utility grate can trap a bicycle wheel or trip walkers; wet leaves, ice, and gravel in walkways and bikeways can result in a fall, limit mobility for people using mobility devices, create unfriendly conditions, and reduce system use.

People walking and biking also depend on motorists' ability to anticipate

and respond to their presence when crossing streets - visible and working signs, pavement markings and sign and signals help improve their safety.

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. As with roadways, typical annual maintenance costs for walk / bike facilities 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 which parties or departments are responsible for addressing issues.

Edina's proactive maintenance approach

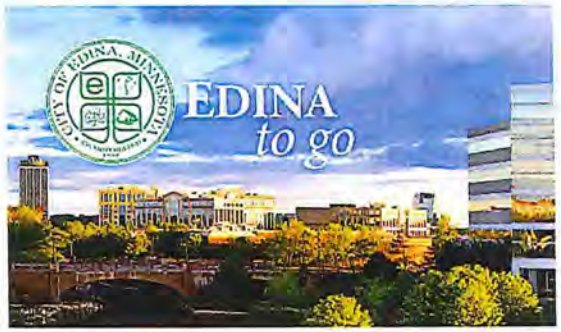
The City of Edina has developed several innovative approaches for prioritizing maintenance of pedestrian and bicycle facilities.

Current practices include:

- Dedicated resources (from the Pedestrian and Cyclist Safety (PACS) Fund) toward maintenance of non-motorized facilities
  - » New funding has allowed migration to more durable thermoplastic materials for pavement markings (previously, had to repaint about one thousand crosswalks every year, with some locations requiring two or more applications)
- Prioritization for a selection of pedestrian and bicycle routes for winter maintenance
  - » Non-motorized facilities are addressed at the same time as motorized routes (rather than after)
  - » Currently, a total of five snow plow routes (for 55 miles total) are dedicated to sidewalks only
- Considerations for the future include:
  - » How to maintain staffing and equipment capacity to meet level of service and resident expectations
  - » How to develop capacity to address new residential developments or new sidewalks added to the city's inventory
  - » How to continue to sustainably fund proactive maintenance of non-motorized network

Management plans for pedestrian and bicycle facilities have significant overlap with management plans for a city's other transportation assets. Some of the issues typically addressed include:

- Filling potholes
- Removing downed or dangerous trees
- Responding to vandalism and trespassing
- Removing litter
- Replacing stolen or damaged signs
- Watering and weeding landscaping
- Protocols for communication
- Coverage of expenses

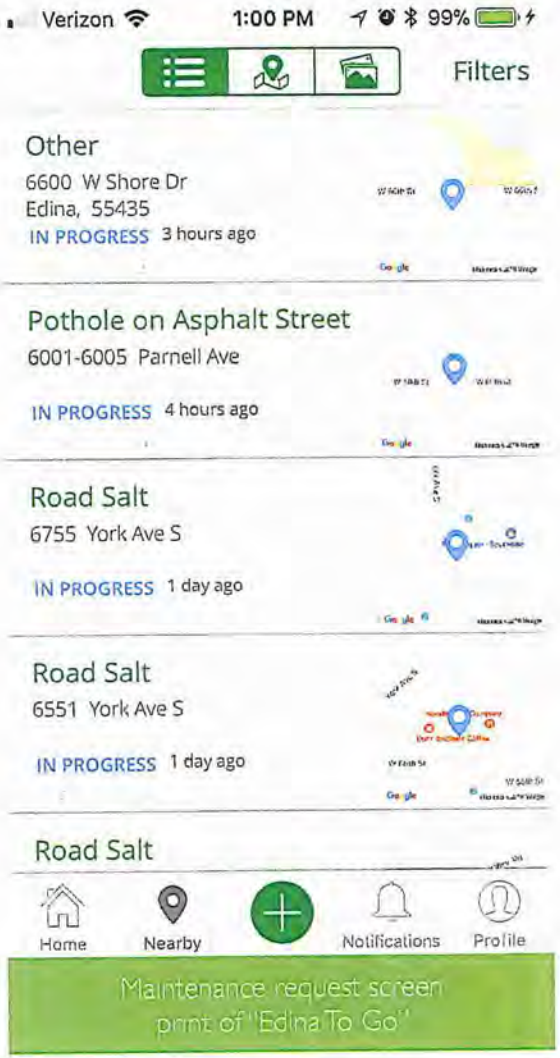


User-initiated maintenance requests

Users of Edina's pedestrian and bicycle network will often be the first to notice hazards, maintenance issues, and opportunities to improve 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 management, and reinforce resident-ownership of Edina's non-motorized network assets.

The City of Edina currently uses the "Edina To Go" application for user-initiated maintenance requests. Continuing to use this tool, and developing a supportive public marketing campaign will help increase public awareness and use of the tool.



Maintenance request screen print of "Edina To Go"

Routine maintenance

Street sweeping

Loose gravel, sand, leaves, and other debris on the surface of bicycle lanes, paved shoulders, and paved sections of shared use paths should be removed at minimum once per year. It should be noted that as part of its proactive maintenance efforts, Edina currently completes two street sweeping operations per year.

Sweeping is an important activity for usability of on-road bicycle infrastructure (bike lanes, separated bike lanes, and others) as debris will tend to accumulate on bicycle lanes as 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.

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 essential that walkway and bikeway signs, striping, and legends be kept in a readable condition.

Some recommendations to address these infrastructure elements include:

- Regular inspection of walkway and bikeway signs and legends, including an inventory of signs to account for missing or damaged signs;
- Prompt replacement of defective or obsolete signs;
- Regular inspection of striping, and prompt reapplication as needed. Bike lanes may require annual re-striping if located 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 can create a nuisance and a hazard for people walking (especially for those with sight or mobility impairments) and biking. To provide long-term control of vegetation, its management should be considered during design and construction of facilities.

Vegetation management helps to maintain smooth pavement surface, as well as clear zones, sightlines, and sight corners to promote pedestrian and bicyclist safety. City maintenance staff are generally responsible for vegetation management and should inspect the trail system monthly during the growing season. Regular seasonal maintenance activities should include mowing of turf areas within the trail right of way, annual trimming of vegetation, weed control, raingarden maintenance and sweeping and blowing of vegetation and turf debris from the trail surface and root cutting as needed.

Vegetation management issues identified by users (e.g. tree roots causing heaving of sidewalk surfaces, encroachment and maintenance issues) will likely be reported through the user-initiated maintenance request program.

Winter 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 extent than cold temperature alone.

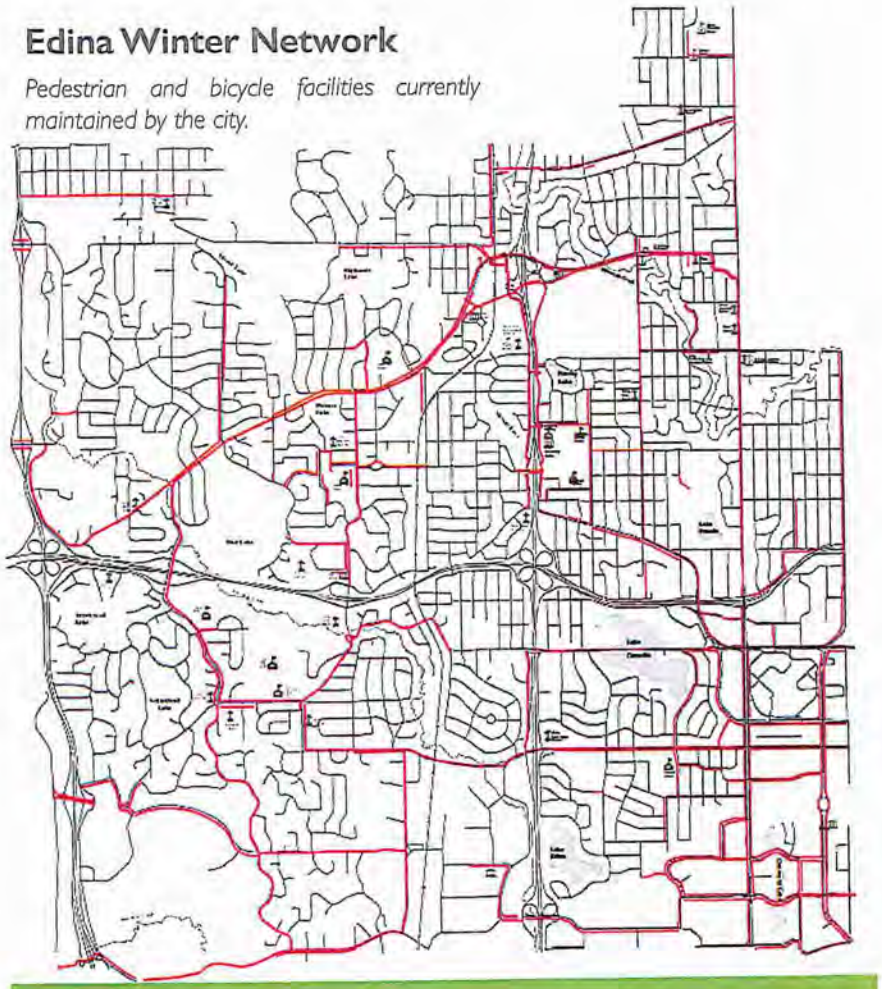
Seniors and persons with mobility issues will avoid walking in locations where ice or snow accumulation creates slippery conditions that may cause a fall. Curb ramps that are blocked by ice or snow effectively sever access to pedestrian facilities for wheelchair users and seniors. Additionally, inadequately maintained facilities may force people walking or biking to take a route that is unsafe or inconvenient - e.g., forcing pedestrians and bicyclists into the roadway or motor-vehicle lanes.

When the surface of a road is covered by snow, the pavement markings that guide and warn people walking, biking, or driving may be difficult to see. Clearing snow from the entire roadway surface will help keep pavement markings identifiable, and will provide space so people walking and biking can comfortably travel as far to the right as possible.

Walking and bicycling generally decrease during the cold winter months as slippery infrastructure and unpleasant weather conditions create barriers for pedestrians and bicyclists. However, continuing infrastructure maintenance can facilitate the convenience of walking and biking as well as provide new opportunities to encourage more people to be outside more often.

Edina Winter Network

Pedestrian and bicycle facilities currently maintained by the city.



Pedestrian and bicycle routes currently maintained by the City of Edina. Five snow plow routes, totaling 55 miles, are used to clear sidewalks and trails following snow events.

5.8 Bicycle parking

Visible, secure bicycle parking is essential for making bicycling a viable option for transportation purposes. Most people will simply not bike to locations where parking isn't available. Others will improvise by locking bikes to anything that seems secure. Attempts to lock to 'anything that doesn't move' can result in damage to fixtures including light posts and railings, and can also cause hazards to people walking.

Short-term bicycle parking

Short-term parking accommodates visitors, customers, employees, and others who arrive at a destinations with the intention of leaving within a few hours. Standard inverted-U racks, securely anchored and placed near primary entries are recommended. Short-term parking is recommended for Edina's neighborhood parks, schools, transit stations, employment centers, and commercial areas.

Long-term bicycle parking

Long-term parking accommodates employees, students, residents, commuters, and multi-modal travelers. Long-term parking should be secure, weather-protected, and in a visible and convenient location. Long-term parking may be provided using inverted-U racks in a secure and supervised area, or by bicycle lockers, bike stations, or bike rooms long-term parking should be provided at schools, major transit hubs, and office areas.

Placement and function

Parking areas should be visible and prominent, located near a building's main entry, and located clearly and conveniently along a bicycle riders' natural path to access a site.

All of Edina's schools should have secure bike parking available for students. Parks and recreational spaces such as Rosland Park, Pamela Park, Lewis Park, etc. that house sporting events. Parks such as Alden Park, Arden Park, Bredesen Park, and Todd Park have bicycle trails available at their parks and should provide bicycle parking.

Large commercial centers like Southdale Mall and the Galleria Mall should have ample bicycle parking available for mall visitors and employees. Small commercial centers such as Southdale Square, Edina Crossings, Yorktown Mall, etc. should also have bicycle parking nodes every located every few businesses for both visitors and employees.

EXPANDING BICYCLE PARKING OPTIONS IN EDINA

Compared to other infrastructure-related improvements, bicycle parking is a relatively quick and inexpensive way to make bicycling easier.

There are several steps the city can take to better accommodate bicycle riders' parking needs:

- Develop bicycle parking guidelines for straightforward installation.
- Establish a policy for including bicycle parking as part of new development and installing it at existing destinations.
- Expand communications regarding the city's existing "Request-a-Rack" program to add bicycle parking at local businesses.

Additional resources are provided in Appendix A

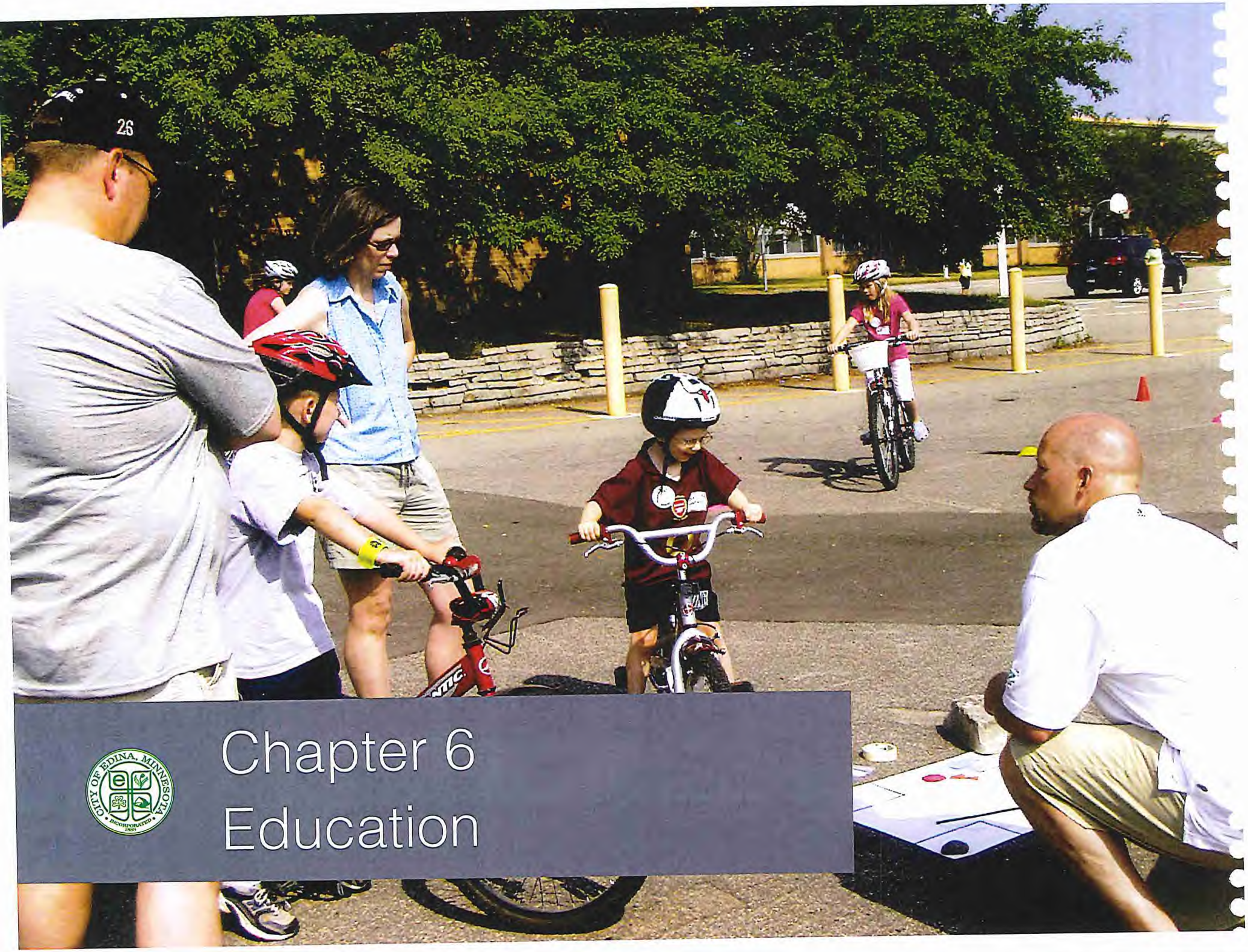
5.9 Policy recommendations

Considering and implementing a range of policy changes can create a lasting framework for facilitating walking and biking improvements in Edina.

Adopt a Transit-Oriented Development Ordinance

Commercial, employment, and transit areas are, and will continue to be, important destinations for daily trips in Edina. In anticipation of the METRO Green Line Extension, the city may explore opportunities to adopt Transit-Oriented Development (TOD) policies to help guide future development near planned Green Line stations. Station area planning is currently underway as part of the METRO Green Line Extension planning process. Developing a city wide TOD policy would provide guidance for longterm development near station areas.

TOD guidelines provide standards for the development of attractive, compact, walkable, mixed-use centers near transit stations to create live/work/play areas that provide easy access to regional transit connections. An ordinance could regulate building orientation and design, provision of pedestrian and bicycle facilities and parking, and establish measures to accommodate motor vehicles and parking in a way that minimally impedes pedestrian and bicycle mobility. This includes traffic calming measures, provision of separated walking and biking facilities, landscaping, and other strategies to facilitate walking and biking enjoyment, comfort, access, and circulation.



Chapter 6
Education

Education programs share information about how to access and use existing facilities and amenities, about the rules of the road, and about benefits associated with walking and biking investments. Education initiatives include network maps, pedestrian and bicycle safety trainings, and educational campaigns, among others.

6.1 Active routes to school (ARTS) in Edina
6.2 Other education campaigns

6.1 Active Routes to school (ARTS) in Edina

The Problem

Fewer students walk or bike to school today than in the past. Some reasons for the downward trend include traffic speeds and volumes along routes, low availability of sidewalks and sidepaths, and changes in school siting methods that result in more students living farther away from school. In 2014, 16% of Edina students live within a 15-minute walk from their school. According to the 2014 Edina Active Routes to School Plan, only 8% of students in Edina reported walking to school and 3% of students reported biking to school. The top concern mentioned in parent surveys was a lack of sidewalks or biking paths around schools.

The ARTS Programs

In 2014, the City of Edina completed an Active Routes to School (ARTS) plan to improve infrastructure and programming within the city and increase the number of students using Active Transportation to get to school. Improvements and programs were numerous and varied. Many of these improvements in infrastructure and programming have already been implemented with the help of the Public Works Department and the Edina School District.

Active Routes to School (ARTS) is a positive response to a negative cycle in which fewer students walk or bike to school as a result of land use and transportation patterns.

Infrastructure

In 2014, The Active Routes to School plan identified 3.3 miles of sidewalk to be built to create safer and more efficient connections to neighborhood schools. As of 2017, 1.4 miles of these suggested routes have been constructed.

These sidewalks have been implemented along Interlachen Avenue, Valley View Road, Cornelia Drive, and Oaklawn Avenue.

Programming

The Edina School District has identified short-term (0-2 years) and long-term (3-5 years) programming to help increase the number of students walking and biking to school.

Short-term Programming

Short term improvements include increasing the functionality and number of bike parking spaces at schools, participating in walking and biking activity days, creating a walking and biking section on the school website, and incorporating walking and biking into school wellness policies and physical education classes.

Long-term Programming

Some of the long-term goals the City has started incorporating as a result of the ARTS plan include improving school site to better accommodate walking and bicycling, narrowing the school driveways to slow automobile traffic, continuing to improve bicycle parking as funds and needs arise, and to implement more Open Streets type initiatives to get the community excited about walking and biking in Edina.

Walking and biking to school provides opportunities for students to build physical activity into their day. Walking school buses or bike trains also turn traveling to and from school into social events.

6.2 Other education campaigns

Increasing walking and bicycling in Edina will require physical improvements (filling sidewalk gaps, building trails, implementing an on-street network, etc.) along with implementation of programming strategies including education, encouragement, policy changes, and facility maintenance.

Education and encouragement programs promote increased walking and biking by educating roadway users on safe interactions, incentivizing walking and biking trips, and spreading awareness and support for non-motorized transportation options.

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 desired destinations. Printing and distributing bikeway maps is a high-benefit, low-cost way to promote walking and biking by helping people identify route choices. Network maps can also be used to promote the city's local businesses and festivals. Map inserts can provide information covering rules of the road, bicycle safety and maintenance, and connecting with mass transit. Another low-cost and potentially helpful tool is integrating web-based trip planner services (like Google Maps or Cyclopath) into the city's website or events pages. Walking and bicycling route and parking information can also be prioritized when providing directions to city events to encourage more people to arrive on foot or by bike.

Media Campaign

Edina should partner with other cities and bicycle advocacy groups to develop regional campaigns that encourage a mutual respect among all road users and encourage active transportation for residents, employees, and visitors. The Edina Street Smarts Campaign is a good example of this.

Safety education

People driving, walking, and biking all contribute to making all modes safer and more effective: one of the leading causes of crashes is the unexpected behavior of at least one of the parties involved. Safety programs for all roadway users have been shown to be an effective and cost-efficient way of reducing the risk of crashes and injuries while encouraging people to walk or bike more often. It is important to balance targeted safety campaigns like helmet and bike light promotion with comprehensive safety education that addresses the rules of the road and the individual rights of all sidewalk, trail, and roadway users.

Safety education approaches are outlined for each of the following user groups:

- Children learning the rules of the road;
- Teens and adults walking and biking; and
- Motorists interacting with people walking and biking.

For children

Share information on safe walking and bicycling at an early age on to teach important safety skills and reinforce the message that walking and bicycling are enjoyable, useful means of transportation United States schools commonly provide automobile driver education for children 15 or older, children and teens rarely receive formal safety training for walking or riding a bike. In European countries where the mode split for bicycling is much higher, schools typically provide formal training in safe bicycling starting in elementary school. In the Netherlands, children undergo an annual three-week training on bicycling rules and

STRATEGIES FOR EDUCATION PROGRAMMING

- Educate the public about walking and bicycling as sustainable modes of transportation that save money, promote healthy living, and reduce emissions and traffic congestion.
- Develop activities and events to overcome barriers to walking and biking.
- Support programs to encourage employers to support walking and biking as viable transportation options.
- Provide tools for residents and visitors to easily report issues or concerns.
- Partner with community organizations and local businesses to promote and participate in education programs.
- Work with partners to expand drivers education and coursework about the rights and responsibilities of all road users.

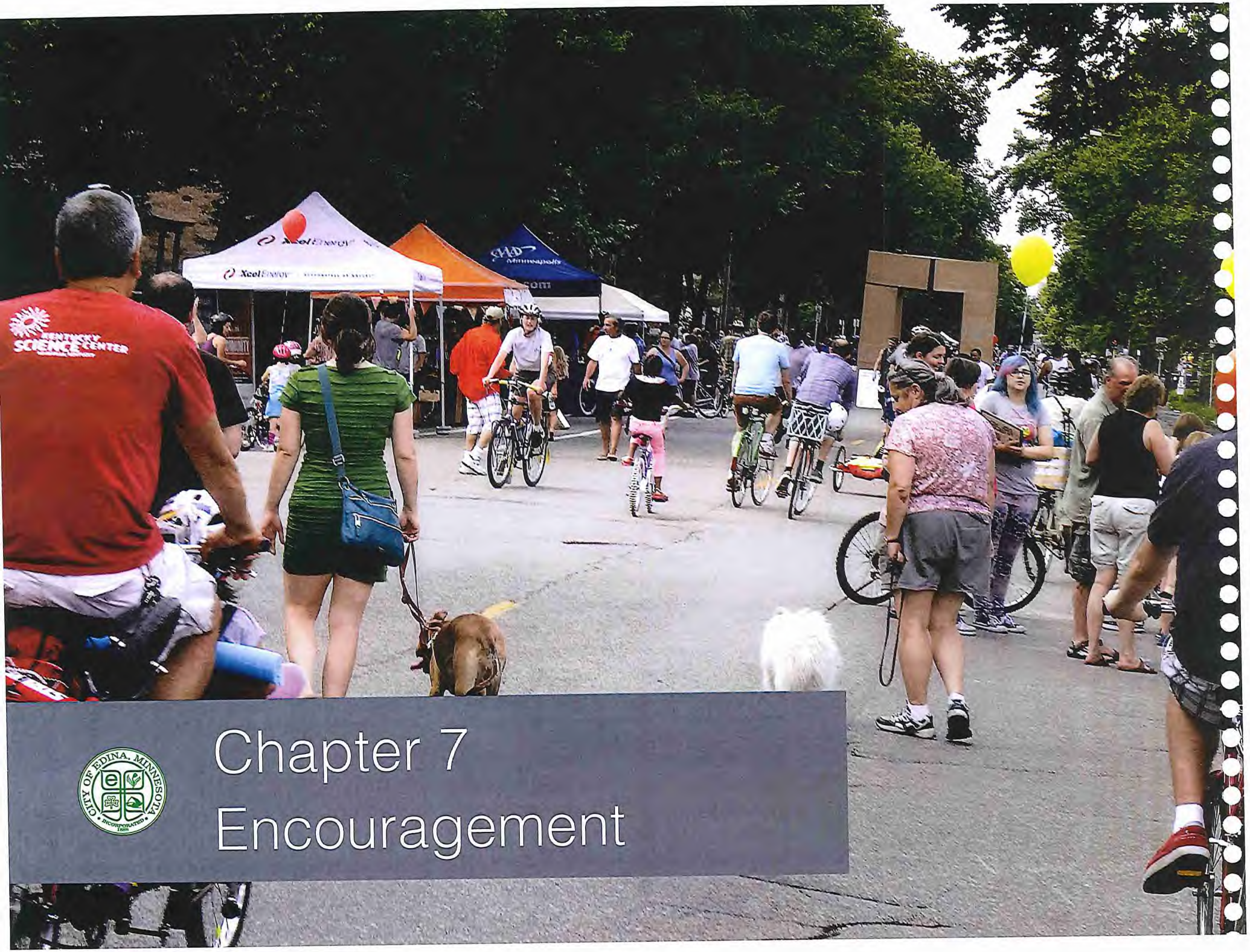
maneuvers. Similar training may be provided in Edina, potentially as a partnership between the city and school districts. The city may also include more walking and biking safety instruction in the annual summer Safety Camp. Children are most receptive to new ideas when action-oriented teaching and repetition are combined with rewards and incentives. Rewards and incentives may include certificates of completion or bicycle/pedestrian licenses, free or reduced-cost bicycle helmets and accessories, or discount coupons for area bicycle shops.

For teens and adults

Teens and adults range in bicycling skills and confidence. Some are comfortable riding on busy streets and mixing with traffic while others prefer quieter streets or separated trails. There are adults who ride only a few times a year and those who ride often but primarily for recreation. Each type of rider has their own concerns and philosophy about how bicycles fit into the transportation system. Education efforts must recognize this and tailor messages to each group. In addition, it is important to educate teens and new drivers about the rights of bibicycle riders, and how to safely interact with people walking and bicycling while operating a motor vehicle. Highlighting pedestrian and bicycle education in drivers' education courses, and featuring related questions on license exams reinforce the idea that roadways are shared spaces, and remind new drivers how to safely interact with other roadway users, whether walking, biking, or driving. Courses on winter walking and biking can be offered through Edina Community Education or other community run programming. Events like "Winter Bike to Work Day or a winter bicycle festival can also be implemented to encourage winter biking.

For people driving

The goal in educating motorists is to foster a broad and general public awareness and respect for people walking and bicycling. All people who drive are also pedestrians, and many already ride a bike at least on occasion. Bicycle route signs and markings are helpful to people biking and driving because they remind people driving that people biking may be present in the roadway. Bus drivers should also go through training programs to ensure that drivers know about laws related to walking and bicycling and understand safe vehicle operation around pedestrians and bicyclists. Metro Transit should continue to train their bus drivers about how to safety



Chapter 7
Encouragement

Encouragement programs inspire more people to try walking or biking through fun and inviting activities including friendly competitions, incentive programs, inclusive group rides, and community-wide events like Open Streets.

7.1 Open streets and community events
7.2 Travel demand management
7.3 Environmental stewardship

7.1 Open Streets and community events

Community-wide walking and biking events

Special events offer an opportunity to bring attention to practical, fun, and healthy aspects of walking and riding a bike as tools for transportation, recreation, and health. 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 – but sometimes that's all that is needed to open the door to adopting new travel behaviors over the long term.

Open Streets in Edina

Edina has offered Open Street events for the past three years. They have taken place in the 50th Street and France Avenue area. Continuing to host Open Streets will help invite new residents into walking and biking in the city.

Other potential events and programs include:

» Monthly group rides with the Edina City Council, the Mayor or other local personalities;

» 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

» Participate in walk/bike weeks. These types of events, including Walk/Bike to Work Week, often include special publicity, route guidance, group events, and pit stops for participants, and provide a fun and inviting opportunity for people to try walking or biking in their community.

Open Streets create fun, interactive community events and encourage more residents to experience the benefits of walking and biking.

7.2 Travel demand management

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.

Some of the most popular programs include:

» Bike Friendly Businesses: Developing a "Bicycle Friendly Business" program supports local businesses by marketing participating businesses and showing support for bicycling in a community. Bicycle Friendly Businesses offer discounts to customers who arrive by bicycle. The participating businesses gain exposure through their efforts and create a greater sense of community in their neighborhood.

» Parking Cash-Out Benefits: employers can offer parking cash-out benefits, which give employees who don't drive the cash equivalent of the parking subsidies provided to drivers. These programs help address parking and congestion issues that sometimes hinder successful commercial areas.

These programs help address parking and congestion issues that sometimes hinder successful commercial areas.

Other Encouragement Initiatives

» Neighborhood Programming: should encourage active transportation through walking and biking kits, coupons to local businesses, educational newsletters, and City events. Programming would encourage Edina residents and employees to find a safe route to school, work, and important destinations without using a car.

» Park(ing) Day: event held around the world where neighborhood residents, business owners, and local artists collaborate to transform existing on-street parking spaces into little parklets as temporary public space for the day.

7.3 Environmental stewardship

Improving air quality and reducing carbon emissions

Increased use of walking and biking helps reduce tailpipe emissions, which improves air quality and reduces Edina's contribution to climate change. Acknowledging this important contribution to the city's overall sustainability, and presenting walking, biking, and other city sustainability initiatives as having positive impacts on air quality, sustainability and resiliency can build excitement and incentivize the broader community to not only try but also to track their pedestrian and biking actions:

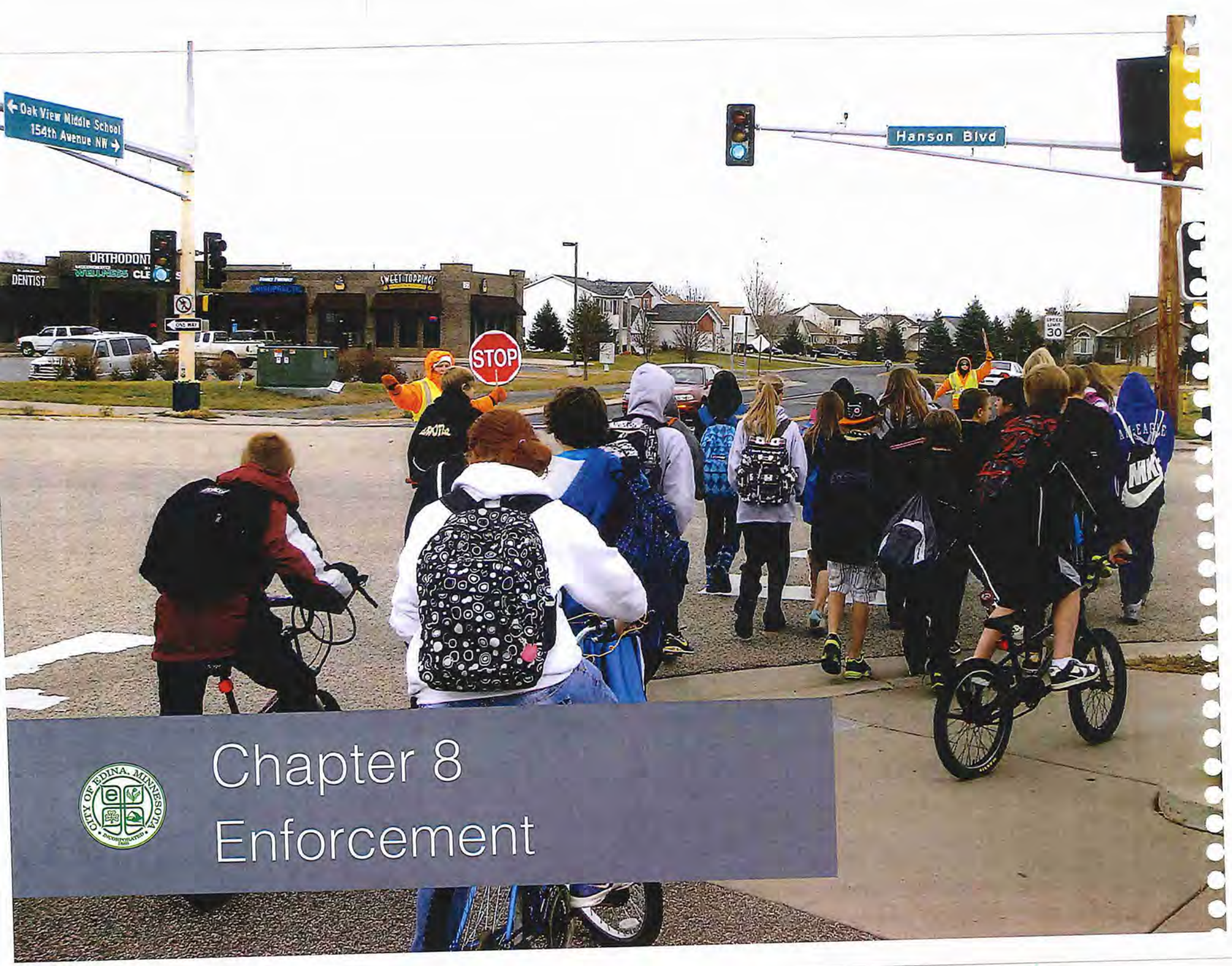
Potential events and programs include:

» Plan sustainability events in a way that is walk and bike friendly. Have meetup spots to assist transit riders or bikers who are new to commuting to connect with experienced commuters who can share routes and tips so they can arrive using sustainable modes to events

» Provide incentives or giveaways at events for participants who walked or biked

» Consider implementing a pedestrian or bicycle component within environmental events; like a family-friendly bike rodeo at an Earth Day event.

» Support use of apps like PiPs or Oroeco that track and reward walking and biking.



Chapter 8
Enforcement