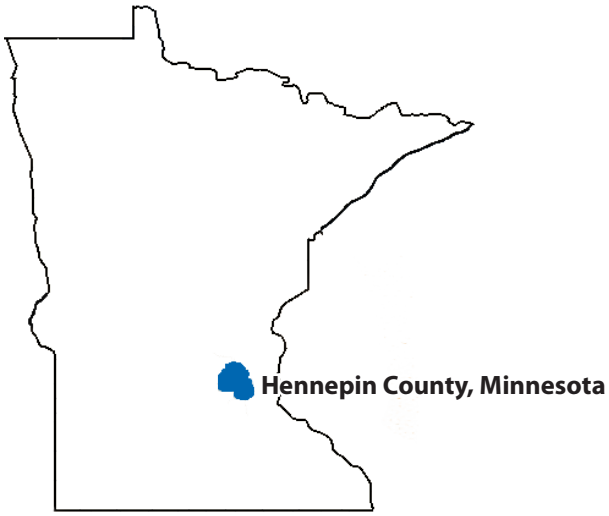
Hennepin County
2040
Bicycle Transportation Plan:
Making bicycling safe and comfortable

April 14, 2015

Hennepin

ThreeRivers
PARK DISTRICT



Hennepin County
Hennepin County (county), Minnesota encompasses 544 square miles within the Twin Cities metropolitan region, and its geography ranges from the dense urban core of Minneapolis to smaller suburban communities and rural conditions. It is the most populous county in Minnesota, home to 1.15 million residents, and the 35th most populous county in the nation. Nearly one third of county residents live within the City of Minneapolis, the largest city in Minnesota. The mission of county is to enhance the health, safety and quality of life of its residents and communities in a respectful, efficient and fiscally responsible way.

Three Rivers Park District
Three Rivers Park District (park district) is a special park district that serves the west suburban Minneapolis/St. Paul metro area of Minnesota, including western Hennepin County. The Minnesota State Legislature established the park district as an independent, special park district in 1957 with the charge of acquiring, developing and maintaining large park reserves and regional parks and trails for the citizens of suburban Hennepin County, the metro area, and the state. The park district manages almost 27,000 acres of park reserves, regional parks, regional trails, and special-use facilities. The name "Three Rivers" comes from the park district's geography, situated within the watersheds that flow into three significant rivers to this region: the Mississippi, the Minnesota and the Crow. The mission of Three Rivers Park District is to promote environmental stewardship through recreation and education in a natural resources-based park system

The Hennepin County 2040 Bicycle Transportation Plan Partnership
The county and park district collaborated on this planning process to update the county's 1997 bike plan as well as the park district's regional trail master plan. The partnership is a natural fit given the long-standing collaboration between the agencies on bikeway implementation projects. This partnership illustrates a commitment of the agencies to work together to continue to develop a world class bikeway system, and it formalizes the relationship by starting to work together earlier in the bikeway development process.

Hennepin County

2040 Bicycle Transportation Plan: Making bicycling safe and comfortable

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Contents

Tables

Figures

Appendices

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“We don’t own a car so biking is how we get around.”
Alexander H.
Sheva B.

Executive Summary

Hennepin County bicycling vision:

Riding a bicycle for transportation, recreation, and health is a comfortable, fun, routine part of daily life throughout the county for people of all ages and abilities.

Bike plan purpose

Hennepin County envisions a future where residents are healthy and successful, living in safe and vibrant communities. A robust on- and off-street bikeway system serving all ages and abilities that complements other transportation modes and land use will play a significant role in achieving this vision, promoting economic strength, quality of life, and community vitality.

The Hennepin County Bicycle Transportation Plan updates the 1997 Bicycle Plan to guide how, where and when the county and Three Rivers Park District build bikeways and support facilities. It sets the expectation that all people should be comfortable and safe while biking.

Why bicycling?

Bicycling accounts for 2.5 percent of all trips in Hennepin County, more than double the national average. Ridership is increasing rapidly while driving nationwide has been steadily decreasing since 2007.

With the expectation that these trends will continue, the county and park district are committed to creating a bicycle environment that meets the needs of people currently biking and those who will be new to biking. A robust, well-used bicycle network benefits far more people than just the person bicycling today.

A good bikeway system creates the following benefits:

Safety: The bikeway system will help reduce crashes by providing a more interconnected network with fewer gaps and more separation from motor vehicles.

Livability: Increasing transportation options helps achieve broader community goals such as improved access to jobs, neighborhood schools, and community services.

Mobility: Bicycling increases mobility and allows people of all ages to reach more destinations throughout the county.

Economic sustainability: Bicycling is an affordable transportation option that reduces the cost of transportation for everyone, including the one-third of people who do not drive, seniors, people with disabilities, children, and low-income populations.

Health: Bicycling provides an opportunity for residents to make physical activity a routine part of daily life.

Clean air: Bicycling helps reduce Hennepin County's carbon footprint, improve air quality and reduce harmful pollutants.

Recreation: Bicycling remains among the top three desired recreation activities in Metropolitan Council surveys, especially among older residents.

Parking and congestion alleviation: Bicycling benefits more than just the person biking, it also benefits those who drive.

Regional economic competitiveness: Supporting bicycling helps keep and attract talented residents who seek to live, work and play in a vibrant community that embraces their values. Bicycling infrastructure also brings in tourism spending.

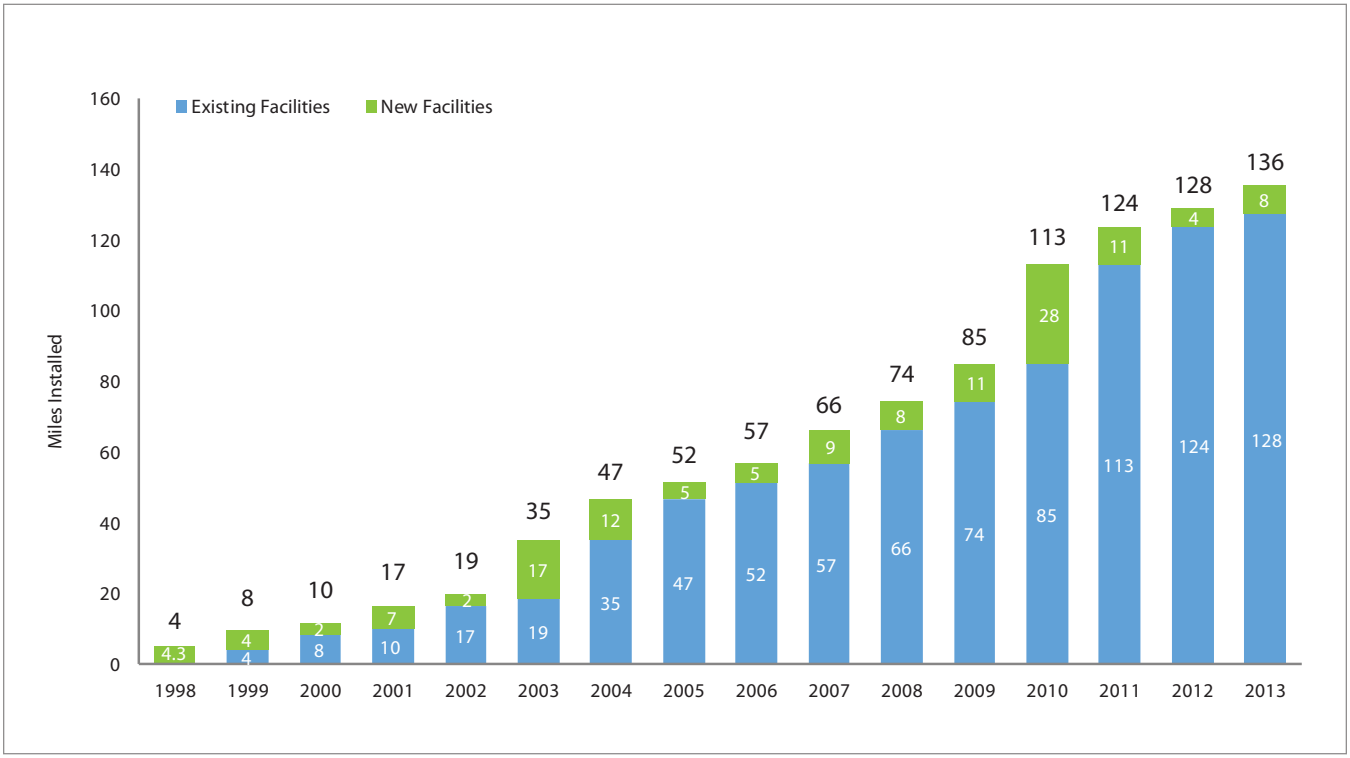


Figure i. Bikeway system implementation by Hennepin County, 1998-2013

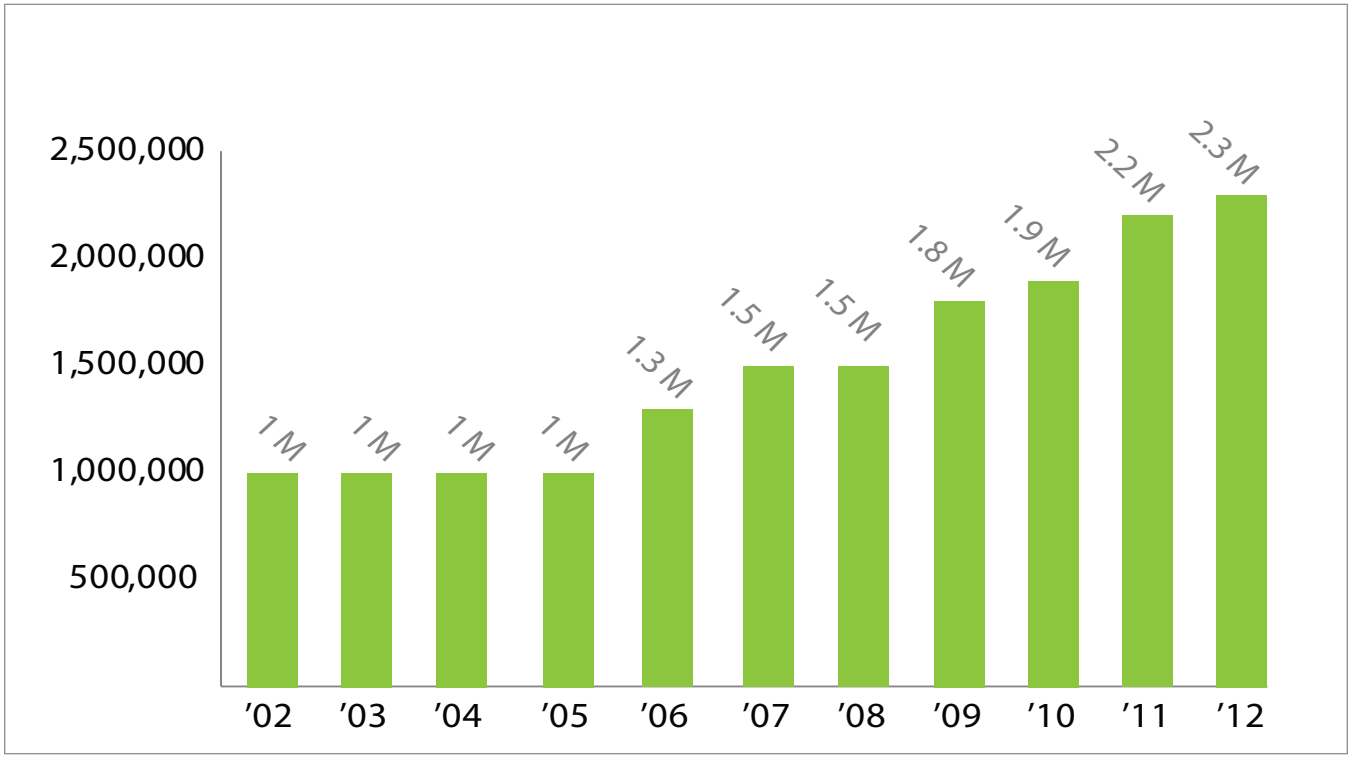


Figure ii. Three Rivers Park District regional trail visits by bicycle, 2002-2012.

The county and park district take great pride in the current bikeway system and will continue to improve it by pursuing the following goals:

RIDERSHIP GOAL

Promote the bicycle as a mode of transportation that is **practical, convenient, and pleasant** for commuting, health and exercise, and outdoor recreation.

BIKEWAY SYSTEM GOAL

Collaboratively build an **integrated county bicycle system** that allows bicyclists of varying skills to **safely, efficiently and comfortably connect** to and between all destinations within the county.

SAFETY AND COMFORT GOAL

Create a **safe and comfortable** county bikeway system.

SUSTAINABILITY GOAL

Implement bikeways and support facilities as an essential tool in **realizing environmental, social and economic sustainability**.

MAINTENANCE GOAL

Protect the county's and the park district's **investments** in the bikeway system and **reduce seasonal hazards** through partnerships.

By 2040, Hennepin County and Three Rivers Park District will…

Quadruple the number of **bicycle commuters** from 2010's 12,000 people to **48,000** people by 2040.

Halve bicycle crashes per capita from 2010 levels by 2040 and move **toward zero deaths** on bicycle.

Bring the ratio of **bike commuters** who are **women** to half.

Complete an average of **20 miles** of the bikeway system **each year**.

Will have a bikeway within **½ mile** of **90 percent** homes in Hennepin County.

What People Want

Hennepin County and Three Rivers Park District reached out to 2,700 people to get their opinion on how to improve bicycling in Hennepin County. They said:

» Overcome physical barriers to bicycling, such as rivers, highways, gaps and railroads.

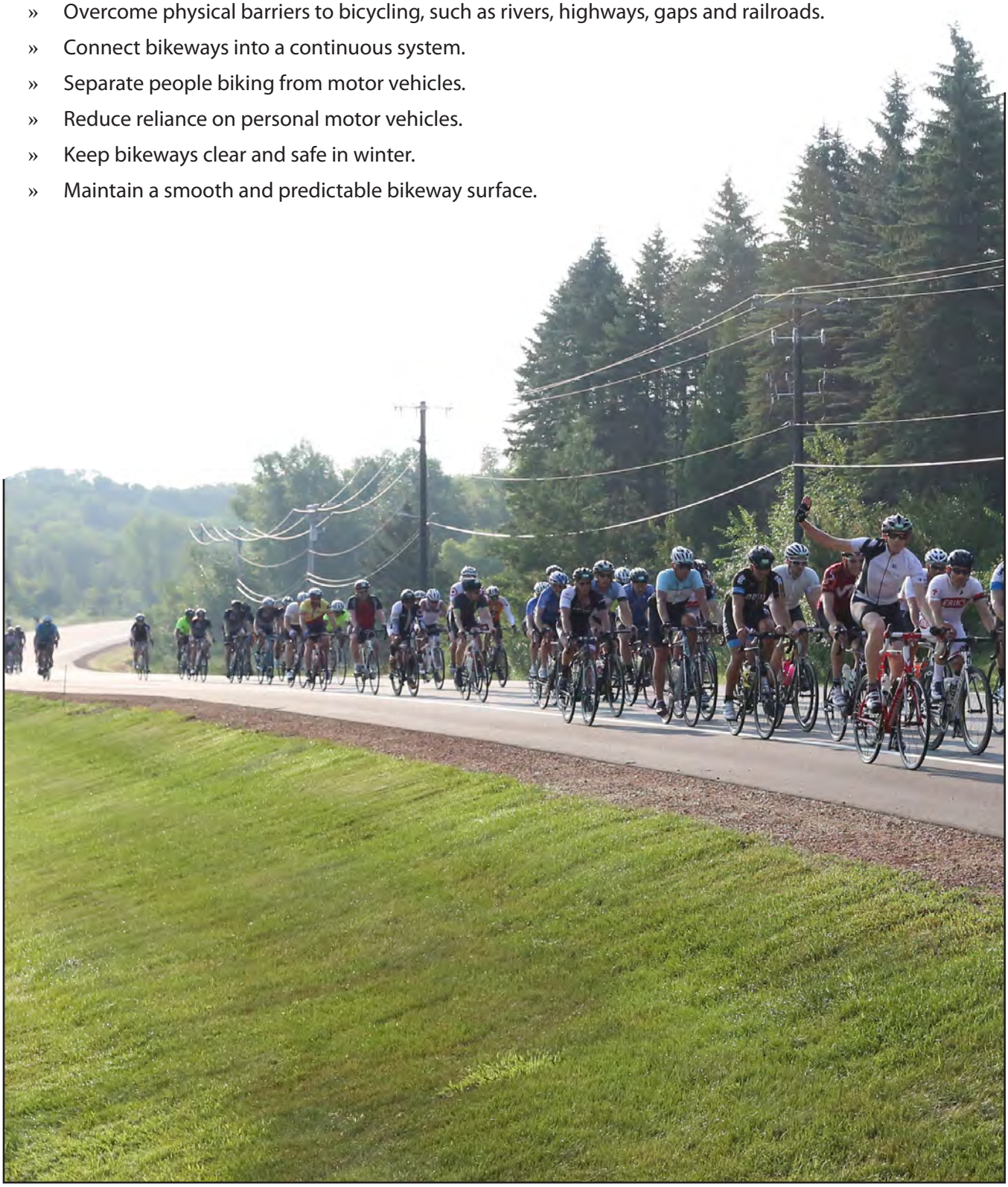
» Connect bikeways into a continuous system.

» Separate people biking from motor vehicles.

» Reduce reliance on personal motor vehicles.

» Keep bikeways clear and safe in winter.

» Maintain a smooth and predictable bikeway surface.

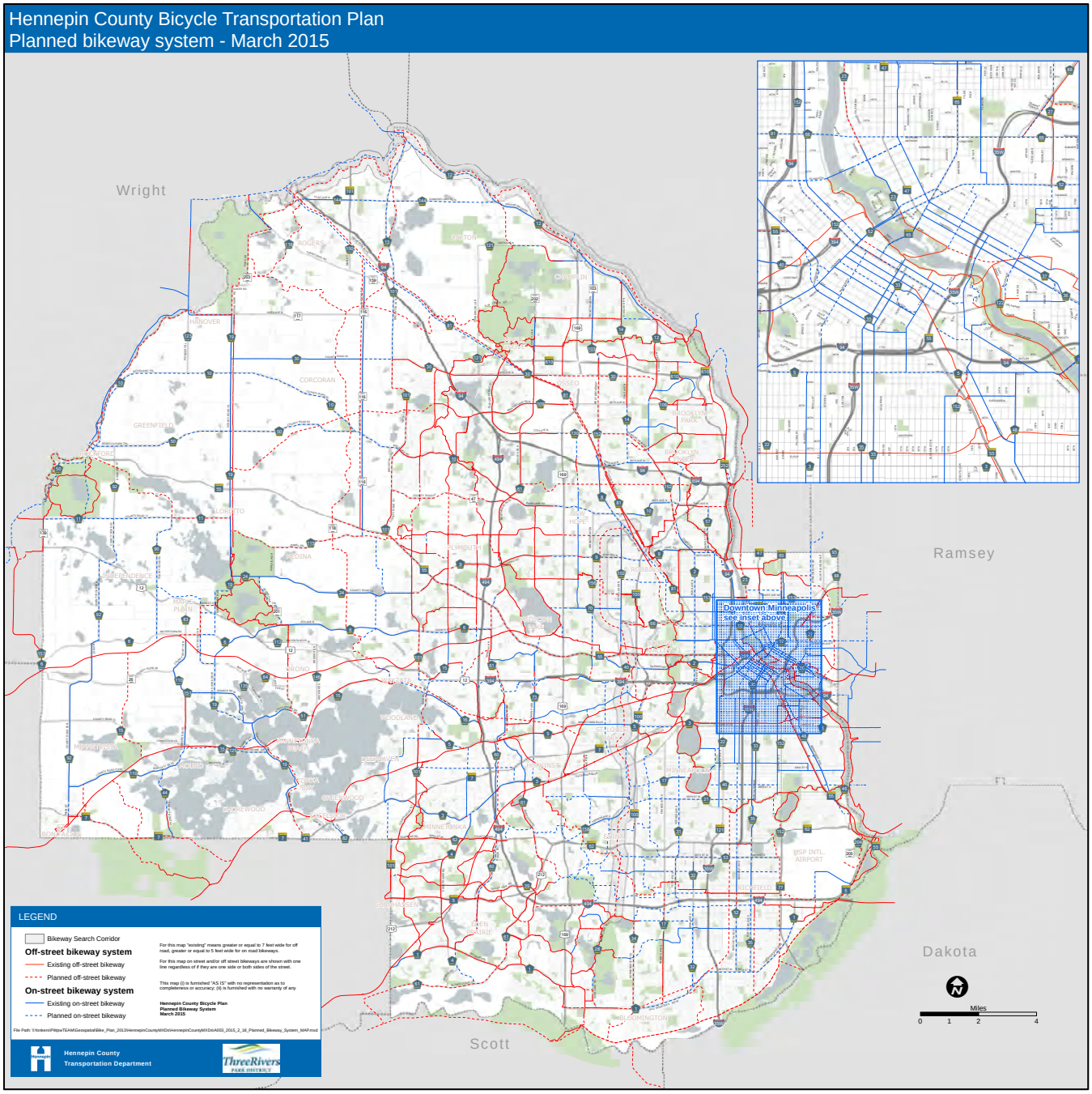


Hennepin County 2040 Bikeway System

The existing bikeway system includes 651 miles of on- and off-street bikeways. The 2040 Bikeway System includes 540 miles of new planned bikeways, with almost half of the added system off-street. Implementing the 2040 Bikeway System will require ongoing political and public support to build an average of 20 miles of bikeway each year.

Table i: Annual mileage target for full system build-out

	Three Rivers Park District	Hennepin County	Planned system
Off-street bikeways	7.2	1.9	***9.1***
On-street bikeways		11.5	***11.5***
Total	***7.2***	***13.4***	***20.6***



"We bike to get places."

Jonathan T.


BLAZING SADDLES
SAN FRANCISCO
SCHWINN
PANADERIA

1. Vision, Goals, Context and Purpose

Hennepin County bicycling vision:

Riding a bicycle for transportation, recreation, and health is a comfortable, fun, routine part of daily life throughout the county for people of all ages and abilities.

Hennepin County's overall vision is for a future where residents are healthy and successful, living in safe and vibrant communities. A robust on- and off-street bikeway system serving all ages and abilities that complements other transportation modes and land use will play a significant role in achieving this vision, promoting economic strength, quality of life, and community vitality.

To help achieve the county's vision, the 2040 Hennepin County Bicycle Transportation Plan explores attitudes and perceptions about bicycling across the entire population, as opposed to focusing solely on the needs and desires of existing bicyclists. This plan will create a safe, comfortable and efficient bicycling system that will encourage a broad range of current and future bicyclists. Riding a bicycle should feel like — and actually be — a safe way to get from one place to another. Additionally, it is important that people view bicycling as an efficient and easy option (in terms of time and cost) compared with driving and walking. In support of the overall county vision, the county has established the bicycling vision shown to the left.

This plan updates the 1997 Hennepin County Bicycle Transportation Plan to provide a framework for the future of bicycling in the county based on community input, the benefits the system will yield, and the county's ridership characteristics. It strengthens the collaboration between Hennepin County and Three Rivers Parks District, and charts a course for the agencies and their partners to advance bicycling for transportation and recreation through 2040.

The plan establishes an updated, aspirational vision that builds upon the successes of the 1997 plan. It envisions bicycling in Hennepin County to be a convenient, safe option for many types of trips for transportation and recreation. The emphasis is on enhancing transportation facilities and programs to support and encourage a broad range of current and future bicyclists.

While the plan focuses on addressing the needs of new bicycle riders, the plan's recommendations will also benefit the many people already biking. The plan is designed to serve the entire community, whether they have been riding for years or are beginning their first journey.

The plan will guide how, where and when the county and park district build bikeways and support facilities. It sets the expectation that all people should be comfortable and safe biking. The plan will be used to prioritize investments, guide design and set county and park district policy for the provision of bikeways and support facilities.

The value of a bikeway system

This is a bike plan not just for bicyclists, but for everyone. A robust, well-used bicycle network benefits far more people and principles than just the person bicycling today. In many areas the bikeway system will be multiuse, creating opportunities for walking, jogging, skating, pushing a stroller and the like. Exclusive bikeways also will benefit these activities by removing much of the bike traffic from pedestrian areas.

Safety: The 2040 bikeway system will help reduce crashes by providing a more interconnected network with fewer gaps and more separation from motor vehicles and pedestrians. Increasing the number of people bicycling has been shown to lower crash rates over time due to higher expectation of bicycles presence on the street by motorists.[1] A well-designed bikeway system can also reduce conflicts between bicyclists, transit vehicles, motor vehicles and pedestrians, resulting in a safer transportation system for all users.[2]

Livability: Bicycling is a quiet, clean and fun way to travel. It increases social interaction because people biking travel at a pace that enables them to communicate with people around them. Increasing transportation options can help achieve broader community goals such as access to jobs, neighborhood schools, and community services. It can also increase the affordability of living in the region by lowering transportation costs.[3]

Mobility: Bicycling increases mobility and allows people of all ages to reach more destinations throughout the county. Mobility benefits are especially important for those who cannot or choose not to drive.

Health: Sedentary lifestyles contribute to the rapid increase in obesity, which is associated with many preventable diseases and raises health care costs.[4] Bicycling provides an opportunity to make physical activity a routine part of daily life.

Finances: For most households, transportation is the second largest expense after housing, consuming up to 25 percent of income in auto-dependent communities.[5] Bicycling is an affordable transportation option that reduces the cost of transportation while extending the reach and viability of transit.

Economic sustainability: Lack of nonmotorized transportation options disproportionately affects seniors, people with disabilities, children, and low-income populations, many of whom are among the one-third of people who do not drive. Bicycling extends transportation options to people of all socioeconomic backgrounds.

Clean air: Bicycling helps reduce Hennepin County's carbon footprint. Replacing motorized trips with bicycling trips improves air quality and reduces harmful pollutants.[6]

Recreation: Bicycling remains among the top three desired recreation activities in the Twin Cities, especially among older residents. As Hennepin County's population ages, the bikeway system will meet expanding needs for both nonmotorized transportation and recreation.

Parking and congestion alleviation: Bicycling benefits more than just the person biking, it also benefits those who continue to drive. Nearly half of all trips are less than three miles long, a distance more appropriate for a bicycle than a car. Biking these trips alleviates traffic congestion and reduces the space needed for parking.

Regional economic competitiveness: Supporting bicycling helps keep and attract talented residents who seek to live, work and play in a vibrant community that embraces their values. Bicycle-friendly communities attract businesses, tourism and new residents. Millennials, those born in the 1980s and 1990s, are mobile, educated, and interested in living in communities that provide transportation options, especially biking, walking and transit.[7]

Bicycling infrastructure also brings in tourism spending: according to the U.S. Travel Association, bicycling is now the third most common vacation activity.[8] A 2009 report by the League of American Bicyclists reveals that bicycling brings in $1 billion a year to Colorado's economy, while bicycle-related activity in Portland, Oregon, contributes $90 million to the local economy and supports 850 to 1,150 jobs.[9]

Building the bicycle plan

Recognizing the value that bicycling brings to the county, it's also important to understand who rides, who doesn't and why. This understanding of ridership characteristics, both from research and community engagement, is the basis for the goals of this plan and allows the county to better build a bicycle transportation system that serves all users.

Attitudes toward bicycling

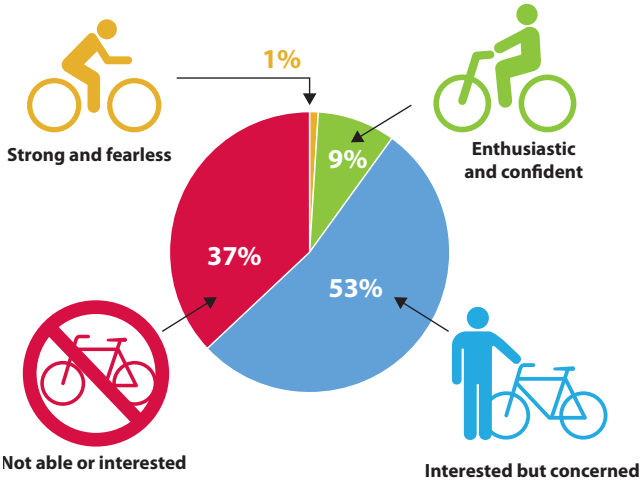
Many communities, Hennepin County included, have succeeded in attracting experienced and confident bicyclists to bike for transportation. The challenge moving forward is to encourage the majority of people who are less comfortable with the current system to ride, particularly for short trips. This makes it important to understand general attitudes toward bicycling, as they provide clues as to which strategies are more likely to succeed.

The Oregon Transportation Research and Education Consortium[10] identified four general attitudes and perceptions about bicycling, which are expanded upon below. These groups are imprecise and fluid; someone might behave in a manner consistent with one category one day and another the next based on purpose, with whom they are biking, familiarity or whim. As people gain experience biking, they often change their attitudes and perceptions.

Strong and fearless — about 1 percent of people

This group generally is undeterred by any roadway conditions or design. They often define themselves by their bicycling activity, and maintaining their identity as a bicyclist is important to them — they will bike for the sake of biking. They usually take the shortest route when biking for transportation, and will seek challenges when biking for recreation. These riders prefer separation from pedestrians more than they do from motor vehicles. They tend to wear specialized bicycle gear and ride high-performance bikes. Their passion for bicycling can make them vocal bicycle advocates, but it is important to consider their bicycling experience is far different from that of most people.

Strong and fearless



- Minimum bikeway: none different from those serving motor vehicles
- Preferred bikeway: shoulders or bike lanes
- Support facilities: fewer stops, signals timed to be compatible with bicycling speed, signals that detect bicycles, secure bicycle parking
- Education needs: rules of the road for when biking and when driving

Enthusiastic and confident — 9 percent of people

People in this group are comfortable sharing the road with auto traffic, but prefer bikeways and will go a little out of their way for a better bikeway. Bicycling often is a secondary part of their identity and they will bike to maintain this status. They might wear clothing that works well for biking but also is wearable as everyday clothing.

Enthusiastic and confident

- Minimum bikeway: slow streets, shoulders, bike lanes or roadside trails
- Preferred bikeway: buffered bike lanes, cycle tracks, bike boulevards, off-street trails all in a continuous network
- Support facilities: secure bicycle parking, drinking water, intersection treatments that delineate bicycle space, trip planning
- Education needs: how and where to safely operate a bicycle, rules of the road when biking and driving, advanced bicycle repair

Interested but concerned — 53 percent of people

This is the biggest group in the population; Hennepin County and Three Rivers Park District must attract them if this plan is to be successful. This group includes people who prefer off-street paths for recreation and will ride for transportation where there are bikeways that make them feel safe.

Interested but concerned

Comfort is a priority for them when biking and they often have cushier bikes with an upright riding position. They do not identify themselves as bicyclists and would not feel guilty if they never biked again. Their motivation for biking typically is to have a good time. One or two uncomfortable experiences can discourage these residents from getting back on their bikes for weeks or months. Many are on the cusp of falling into another group. A good bikeway network will nudge some of them into the enthusiastic and confident group, while a poor bikeway network will push others into the not able or interested group.

- Minimum bikeway: quiet neighborhood streets, buffered bike lanes, off-street trail, cycle tracks
- Preferred bikeway: greenway with few motor vehicle interactions
- Support facilities: bike parking, drinking water, rest rooms, benches, trip planning, wayfinding
- Education needs: how and where to safely bike, how to bike commute, biking with kids, securely parking a bicycle, rules of the road when biking and driving, basic bicycle repair

Not able or interested — 37 percent of people

This group includes people who have no current interest in bicycling at all for a variety of reasons, or they are unable to bike. Some in this group could transition into the interested but concerned group if environmental or personal circumstances change. They still will enjoy the benefits of a bicycling region.

Not able or interested

- Bikeways: none needed, but a safe and connected system over time could encourage them to give biking a second look; they would typically start with short recreational rides
- Education needs: rules of the road for driving and bicycling if they drive, awareness of biking

The greatest opportunity to increase bicycle ridership is with the half of people who are interested but concerned. This group needs a significantly better connected, safer, and more comfortable bikeway system if they are to bike for transportation. They also need education and encouragement to bike with confidence.

The research underlying this framework was done in Portland, Ore., and the extent to which these attitudes hold true for the rest of the country or Hennepin County is unknown. However, the descriptions are consistent public participation for this plan. More than 2,700 residents articulated their attitudes toward bicycling, facilities and their travel behaviors in Hennepin County.

Community engagement themes

Across the spectrum of engagement activities, the following key themes emerged:

- People recognize and appreciate the many assets for bicycling already in place
- People ride bicycles for transportation and recreation and want opportunities to do both
- 55 percent report using a bicycle for commuting to work or school two or more days a week
- 58 percent report using a bicycle for recreation two or more days a week
- People prefer bikeways with buffer space or barriers between them and motor vehicles
- People want better conditions for bicycling throughout the county, specifically citing the following needs:
    - *Improve connections from neighborhoods to regional trails and local destinations*
    - *Continue to address gaps in the trail network, intersections, and trail crossings*
    - *Improve coordination between jurisdictions*
    - *Improve education and enforcement of traffic laws*
    - *Provide consistent ongoing maintenance for bikeways*
    - *Address challenges that exist on county roadways such as intersections and high volume roads*
    - *Address safety from motor vehicles, safety from crime and perceived safety to address barriers to biking*
    - *Improve end of trip facilities (e.g. secure bike parking)*
    - *Separate bicycles from other modes (including pedestrians) where possible*

Please refer to appendix A (Community facilitation and engagement for the Hennepin County Bicycle Transportation Plan) for a full report on engagement activities and results.

Among survey respondents, bicycling routinely is used for transportation in addition to being a popular form of recreation. Respondents also identified what discouraged them from biking more often in Hennepin County. The most commonly cited barriers were:

- Too much traffic or too high speed on roads
- Snow in on-street bikeways or trails
- Lack of connections to destinations

Survey respondents and public workshop participants also rated their level of comfort biking on the photographed facility types below from one to nine (higher values are more comfortable). Figure 1 shows results of this outreach.

Participants overwhelmingly preferred images of protected bikeways physically separated from motorized traffic, rather than on-street bikeways. The cycle track images and off-street shared-use trail (images A through F), scored highest. The least preferred bikeway images were of streets without clearly defined space for bicycling (images O, Q and R) or with shared lane markings (image P). However, an image of a low-volume residential street without any markings (image J) was cited as somewhat comfortable by most respondents. This is consistent with research that shows bicyclists are more comfortable sharing the street with motor vehicles when travel speeds and volumes are low.

These results informed the recommended types of bikeway design treatments and formed the basis for the goals of this plan.

Participants overwhelmingly preferred images of protected bikeways physically separated from motorized traffic, rather than on-street bikeways.

Figure 1: Results of user preference image survey

Goals

The county's five bicycle goals create a means to achieve the vision and monitor progress. Each goal includes quantifiable targets toward the goal and indicators, which are not easily measured but which still indicate progress at some level. Data sources follow the figures in parentheses; indicators do not have data sources, as the information typically is not currently available but can be anecdotally observed.

RIDERSHIP

Promote the bicycle as a mode of transportation that is practical, convenient, and pleasant for commuting, health and exercise, and outdoor recreation.

The county, park district, and their partner agencies play a critical support role in bicycling for transportation through their projects and programs that make bicycling an easy and logical choice. Foremost, bicycling for transportation requires a coherent, continuous bike network throughout the county, and strong programs to support bicycling and to encourage people to ride.

Eighty-one percent of those surveyed as part of public engagement for this plan said at least some physical barriers (rivers, highways, railroads, and bikeway gaps) kept them from bicycling more. Most of the physical barriers identified by respondents are at least influenced by county practices,

Hennepin County bicycling vision:

Riding a bicycle for transportation, recreation, and health is a comfortable, fun, routine part of daily life throughout the county for people of all ages and abilities.

including connectivity, gaps, snow/ice removal, maintenance, and interactions with motor vehicles.

Targets

- Quadruple the number of bicycle commuters from 2012's 12,000 people to 48,000 people by 2040. Meet interim targets of a 25 percent increase by 2020 and a 100 percent increase by 2030. (American Community Survey)
- Double the Hennepin County mode share of bicycling to work from 1.8 percent in 2012 to 3.6 percent by 2040. Meet interim targets of 2 percent by 2020 and 2.5 percent by 2030. (American Community Survey)
- Double the percentage of Hennepin County employees commuting by bicycle three or more days a week. Meet interim targets of a 25 percent increase by 2020 and a 50 percent increase by 2030. (Employee Health Survey)

Indicator

- Bicycling among women, children, older adults, low income and ethnic groups increases to a level proportionate to their population.

BIKEWAY SYSTEM

Collaboratively build an integrated county bicycle system that allows bicyclists of varying skills to safely, efficiently, and comfortably connect to and between all destinations within the county.

A bikeway system that is safe, seamless and easy to use regardless of who owns and operates each facility. In fact, forty-nine percent of those surveyed ranked better connections in the bikeway system in their top five priorities for improving bicycling in Hennepin County. The county, Three Rivers Park District, and local partners should therefore collaborate to build a high quality system that closes gaps and ensures residents throughout the county have convenient and safe access to the network. The county and Three Rivers Park District, as regional agencies, should play a leadership role in coordinating bikeway system development among local jurisdictions to provide this access and continuity.

The Hennepin County complete streets policy (adopted in 2009) guides the county to develop and maintain a safe, efficient, balanced, and environmentally sound county transportation system. Creating a safe and inclusive transportation system is especially important for people biking, who are more vulnerable in crashes with motor vehicles. For people biking, safety technology resides not in their vehicles, but largely in the transportation system design. Improvements to the design, operation and maintenance of transportation system as well as user education will be critical to reducing the number and severity of bicycle crashes.

Targets

- Complete an average of 20 miles of the bikeway system each year. (Internal data)
- Close an average of five bikeway gaps each year. (Internal data)
- Achieve an access level where 90 percent of homes in Hennepin County are within ½ mile of a bikeway or within a mile of the enhanced bikeway network. Meet an interim target of 80 percent within ½ mile by 2030. (Internal data)

Indicators

- The Twin Cities region, including Hennepin County, continues to be recognized as a world-class bicycling region.
- The region leads the nation in bicycle-friendliness and rates of bicycling.

SAFETY AND COMFORT

Create a safe and comfortable county bikeway system.

People want to bike where they feel safe — generally on bikeways protected from motor vehicle traffic and on low volume streets. Studies show improving the quality of a bikeway system directly correlates with increased bicycling rates. Survey respondents heavily favored bikeways with physical separation from motor vehicle traffic — the top six preferred bikeway types are protected from motor vehicles while the three lowest-scoring images are of shared spaces without clear mode delineation.

Policies and programs improve bicycling operation and behavior, contributing to a safe bikeway system for people biking, driving and walking. Public safety campaigns, community events, law enforcement, and wayfinding create an attractive system in which people are comfortable, competent and confident bicycling. Conflicts between people biking and walking, particularly on regional trails, will be addressed through education, enforcement and mode separation. Implementing this plan entails the county and Three Rivers Park District increasing the comfort and safety of all users on bikeways.

Targets

- Move toward zero bicycle deaths. (Department of Public Safety crash statistics)
- Halve bicycle crashes per capita from 2010 levels by 2040. Meet an interim target of a 2.5 percent reduction each year. (Department of Public Safety crash statistics)
- Complete 90 percent of the enhanced bikeway system by 2040. (Internal data)
- Bring the ratio of bike commuters who are women to half. (American Community Survey)

Indicators

- Resident satisfaction with bicycling conditions improves (fewer reported issues, more positive feedback through surveys, 311 systems, media, etc.).

SUSTAINABILITY

Implement bikeways and support facilities as an essential tool in realizing environmental, social, and economic sustainability.

Bicycling is an important part of a sustainable community. By providing an alternative to the motor vehicle for shorter trips, bicycle-friendly communities are inherently more efficient. This reduces transportation costs for both people and jurisdictions. Increased bicycle use also reduces pollutants in the air and water, supporting other community goals related to climate change and social equity.

Finally, bicycling helps to enable greater land use intensity, which creates a more energy efficient development pattern and preserves open space. It can also spur economic development by attracting new businesses and development from investors who view livability as a marketing tool, as evidenced by the boom in high-density housing development along the Midtown Greenway.

Bicycling promotes social and economic sustainability by creating transportation options for many of the approximately 400,000 Hennepin County residents who do not drive a motor vehicle due to age, physical ability, income, or by choice. Thirty-four percent of survey respondents in community outreach for this plan indicated they do not own a motor vehicle.

Targets

- Reduce per capita vehicle miles of travel (VMT) 20 percent from 2000 levels by 2040. (MnDOT)
- Contribute to greenhouse gas emission reductions from 2007 levels by 30 percent by 2025 and 80 percent by 2050. (Internal data)

Indicators

- Increase in number, quality and prominence of bicycle support facilities offered by employers, housing developments, retail establishments and others in the private sector.
- Seamless integration of bicycles in to the transportation system.

MAINTENANCE

Protect the county's and the park district's investment in the bikeway system and reduce seasonal hazards through partnerships.

Maintenance is an important consideration for people choosing whether to bike for a trip, especially if they are interested but concerned about bicycling. Often the most significant determining factor for people deciding whether to bike is their sense of safety. A well-maintained system, both seasonally and for long-term pavement management, will be safer and more comfortable for people to bike on, while an ice-covered or rough bikeway will be less comfortable and may deter riders. Maintaining the system protects county and park district investments, increases the system's utility and encourages people to bike.

Forty percent of those surveyed put snow removal from on-street bikeways in their list of top five priorities for improving bicycling in Hennepin County, behind two issues related to separation from motor vehicles, and better connections. Snow and ice removal concerns factored heavily in the

decision by 49 percent of survey respondents to not bike at all during winter. Poor riding surface was cited by 25 percent of survey respondents as a barrier to them bicycling more.

Targets

- Double the ratio of bike commuters who bike through winter. Meet interim targets of 25 percent increase by 2020 and a 50 percent increase by 2030. (To be measured once year round counters are installed as part of the overall county bicycle counting program)

- Ensure 67 percent of on-street and off-street bikeways meet the transportation system plan's present serviceability rating of good or better. (Internal data)

Indicators

- Provide detour notifications that are timely and effective.

- Ensure detour routes are efficient, safe and on a comparable facility type.

- Create tracking system for reported maintenance issues and documenting response time for fixing problems.

- Consider formation of a regional trail authority to care for the existing and future trail system.

- Implementation of recommendations from winter maintenance study with partner agencies to be undertaken in 2015.

Existing bicycling conditions

Hennepin County offers an outstanding trail network that is the envy of other communities throughout the United States. The on-street bikeway system has grown rapidly and contributed significantly to the increase in ridership and the region's bicycling profile. This section examines some of these local and national trends and research that underlie the strategies and actions in the plan described in chapters two through five.

Local ridership

People in Hennepin County bike significantly more than those in all but a handful of U.S. counties. Bicycling accounts for 2.5 percent[11] of all trips in Hennepin County, more than double the national average.[12] Twenty-one percent of county residents report bicycling for transportation purposes at least once a week.[13] Bicycling is most prevalent in Minneapolis, where 4.5 percent of trips to work are made by bicycle. Countywide, 1.8 percent of commuters bike — that is three times the national average of 0.6 percent and more than double the statewide average of 0.8 percent (Figure 2). In 2012, almost 12,000 people biked to work daily in Hennepin County.

A growing body of research shows that the proportion of female bicyclists is a key indicator of the comfort and safety of a bikeway system. Women tend to be more risk-averse and are therefore less likely to bicycle when conditions are perceived to be unsafe.[15] Nationally, only one in four bike commuters are women, which would indicate a lack of perceived safety on bikeways.

Hennepin County commute patterns are more encouraging; women now make up more than one third of commuters bicycling. Even more encouraging, of the 5,876-person increase in bike commuting between 2005 and 2012, almost half (48.5 percent) were women. Female ridership is a key indicator by which to measure the success in implementing this plan for a safe and comfortable bikeway system. Figure 3 shows the progress and work that remains to close the bicycling gender gap in Hennepin County.

Three Rivers Park District has experienced a substantial increase in bicycling on the regional trail system. Between 2002 and 2012, bicycling on the trail system more than doubled, to more than 2.3 million visits per year (figure 4).

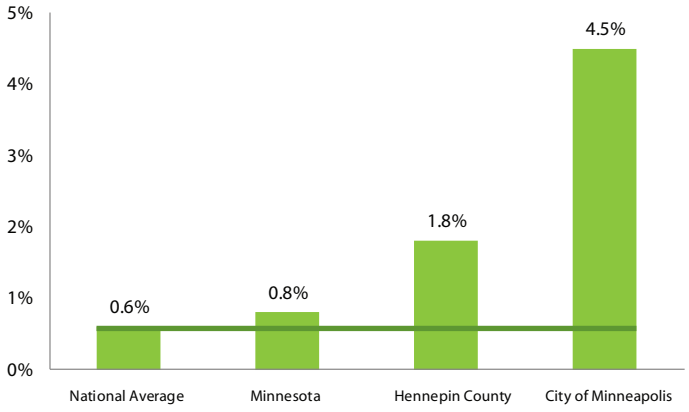


Figure 2: Bicycle commute to work mode share 2012[14]

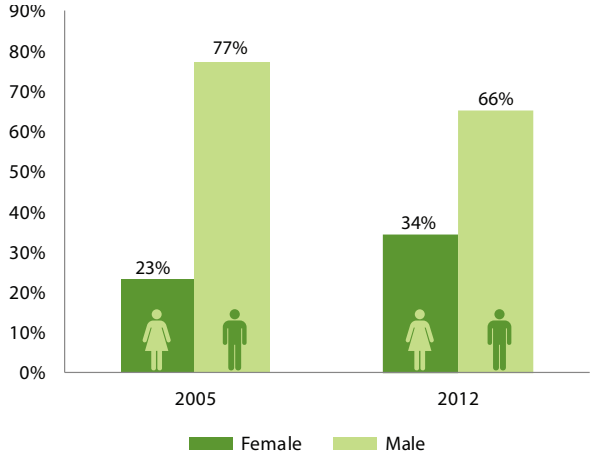


Figure 3: Hennepin County bicycle commute gender gap 2005 - 2012[16]

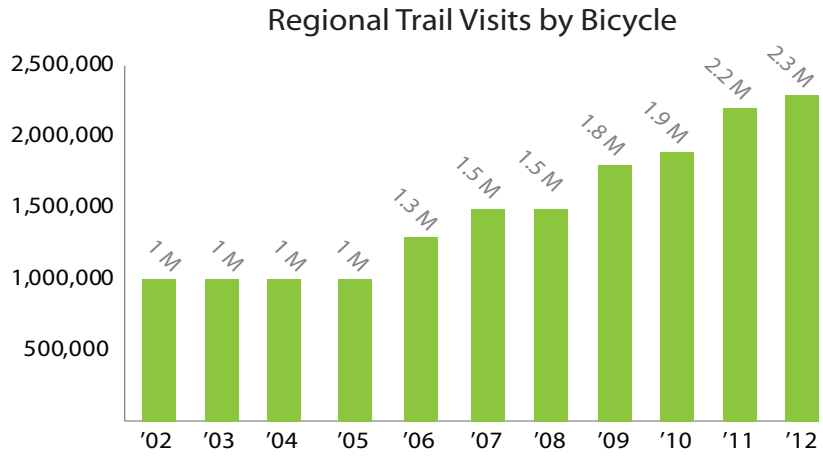


Figure 4: Three Rivers Park District regional annual trail visits by bicycle[17]

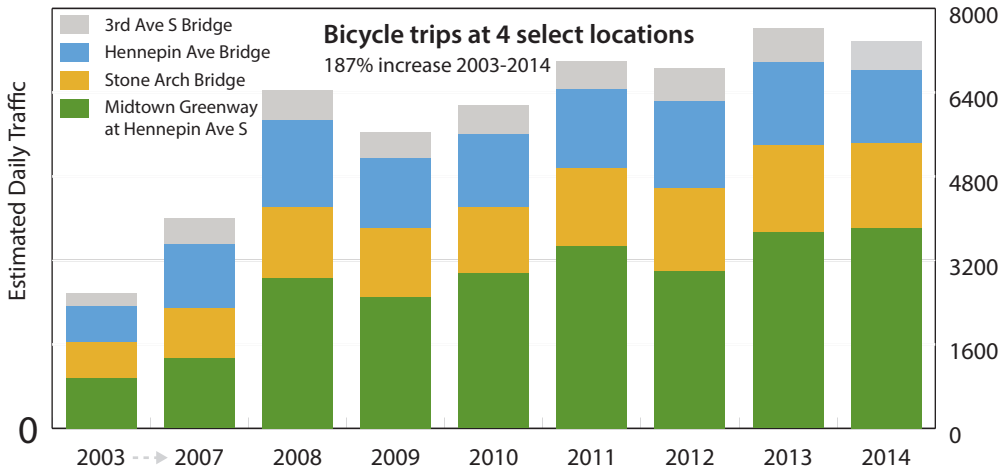


Figure 5: Key findings from the Minneapolis pedestrian and bicycling 2013 count report

Bicycling in Minneapolis has grown substantially since the early 2000s. The city has partnered with agencies and volunteers to track these increases through an annual counting program that tracks ridership at 30 benchmark locations. The 2014 Minneapolis Bicycle and Pedestrian Count Report highlights three key findings:

1. Between 2007 and 2014, the number of people bicycling at 30 benchmark locations increased 73 percent.

2. Between 2013 and 2014, the number of people bicycling at 30 benchmark locations increased 1 percent.

3. At the top five biking locations, the estimated number of people biking per day ranged from 3,620 to 7,370.

Figure 6: Existing bikeway system

Existing bikeway system

The current Hennepin County and Three Rivers Park District bikeway system includes 651 miles of on- and off-street bikeways, 140 miles of which are regional trails operated by the park district. The bikeway system is well developed and provides coverage across the county. Table 1 and Figure 6 show existing system on- and off-street mileage.

Table 1: Existing Hennepin County bikeway system mileage

2014 Existing System	Miles
Off-street bikeway	425
On-street bikeway	226
Existing bikeway system	**651**

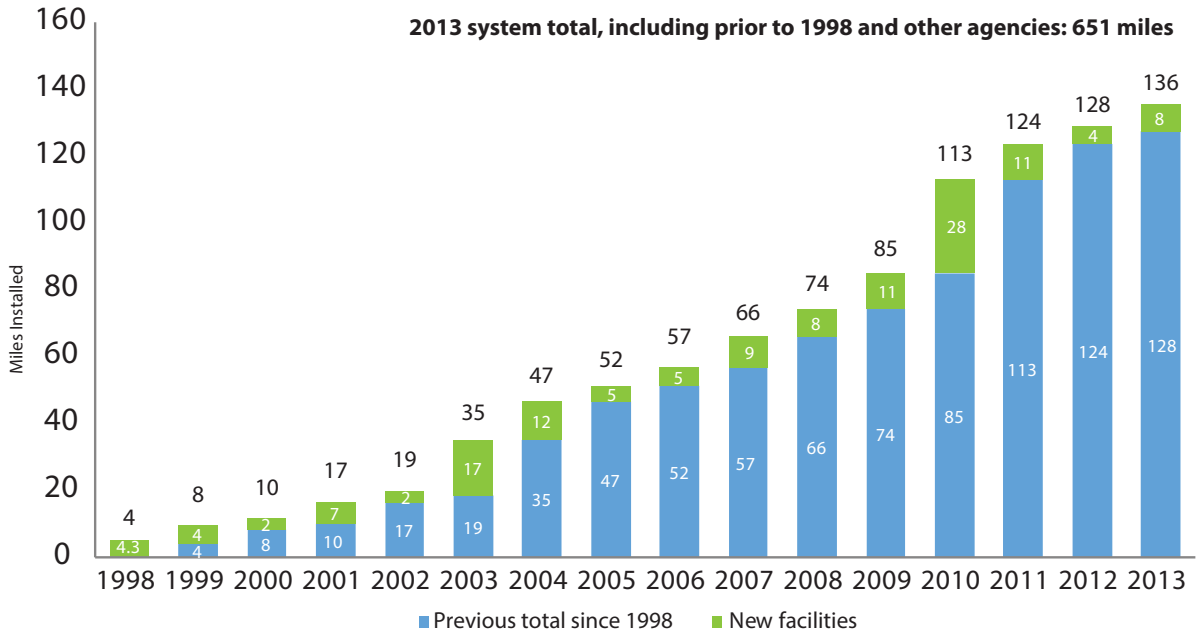


Figure 7: Bikeway system implementation by Hennepin County, 1998-2013, cumulative and single-year

Hennepin County's role

Hennepin County plays a key role in providing bikeways. County roads are continuous routes that bridge barriers such as railroads, rivers, areas lacking a supportive street network, and interstates. Bicyclists need to surmount these barriers, and county roads often are the only option. The county partnered with local communities and park agencies to implement the 1997 bike plan and to date has completed 55 percent of this network. The county will continue to partner to build and maintain the 2040 bikeway system, which includes bikeways on county, local and state roadways.

The county will also play a role in coordinating the efforts of local and regional agencies to implement the policies and programs identified in this plan.

Background: The 1997 Hennepin County bicycle transportation plan

The 1997 bike plan created a vision for a bikeway system that would provide full accommodation for users of all levels of riding expertise. From its inception, the plan was envisioned to be a living document, to be used daily for design guidance, reference, and system monitoring. Over the years, many updates and amendments have been added to the bikeway system map, and periodic refinements have been made to the design guidance. Although the bikeway system focused on the county roadway system, it was unusual in that it also included other significant regional bikeways planned by cities and park districts.

As the bikeway system matured and the county completed 55 percent of the identified network, the county turned its focus to closing gaps and crossing natural and artificial barriers. In 2002, the county bicycle gap study identified system gaps and prioritized the 25 most critical gaps. About half of these critical gaps have now been addressed and 59 total gaps have been closed. The gap removal program continues, with an average of four or five gaps addressed every year. Figure 7 shows the total miles of new bikeways built from 1998 to 2013.

Three Rivers Park District's role

Much of Hennepin County's reputation as a premier bicycle destination can be attributed to the extensive Three Rivers Park District trail system, which attracted 2.3 million bicycle visits in 2012.

Three Rivers Park District owns and operates more than 140 miles of regional trail. These trails largely are a result of a 1972 concept plan for a countywide trail system. The concept examined opportunities and challenges of developing a comprehensive trail system and set the stage for the world-class trail system enjoyed today in Hennepin County.

Trail development in Hennepin County was increased significantly in the 1970s when the Hennepin County Regional Railroad Authority purchased an extensive system of abandoned rail corridors. Although these corridors are set aside ultimately for future potential transit service, the county has a longstanding collaborative arrangement with Three Rivers Park District to design, construct, operate, and maintain off-street trails as an interim use on many of these former rail corridors.

The regional trail network originated as a series of recreational routes connecting people to natural areas. These trails still are important destinations for recreational bicycle trips, but user surveys indicate they have also become an essential part of the transportation network, enabling people to connect to destinations throughout the county.

Cities' roles

There are 45 municipalities in Hennepin County. Each plans for bicycling as part of their comprehensive plans required by the Metropolitan Land Planning Act. Comprehensive plans define development density, land uses and connectivity of the transportation network, all of which profoundly impact bicycling for transportation.

Municipalities lead planning, implementation and maintenance of their local bikeway networks. Hennepin County collaborates with municipalities in planning and implementing the county bikeway system to ensure connectivity to local networks. In some cases, the 2040 bikeway system extends along local roads; the county will work with local governments to implement these corridors.

Underlying influences on biking

Additional factors beyond the county's control greatly influence the biking environment. Land use intensity, mix of uses, fuel costs, federal funding priorities and residents' resources all play significant roles. This plan cannot address every issue, particularly since the county has a limited role. Still, the county and park district will work with other agencies and residents to advance biking.

What has changed since 1997

Since adoption of the 1997 bike plan, Hennepin County's transportation system has changed dramatically, with increased mobility and access to mode choices throughout the county.

1997 plan cover

1. *Major federal funding*

In 2005, Minneapolis was among four communities selected nationwide for a federal grant under the Nonmotorized Transportation Pilot Program (NTPP). The program, known locally as Bike Walk Twin Cities administered by Transit for Livable Communities, allocated $28 million to Minneapolis and adjacent cities for bicycle and pedestrian infrastructure and programs. The pilot sought to "demonstrate the extent to which bicycling and walking can carry a significant part of the transportation load." The program added more than 100 miles of on- and off-street bicycle facilities, 1,504 bike parking spaces, provided start-up funding for Nice Ride bike share, a community partners bike library, and two new bicycle centers in Minneapolis. The program also funded bicycle planning, education, enforcement, and evaluation. These investments contributed to a 78 percent increase in bicycling at pilot area benchmark locations between 2007 and 2013.[18]

2. *Bike sharing*

In 2010, Minneapolis became the first U.S. city to launch a large-scale bike share system, dubbed Nice Ride Minnesota. Funded jointly through the NTPP and by Blue Cross Blue Shield of Minnesota, the system began with 700 bicycles at 70 stations in and around downtown Minneapolis. As of 2014, the system has expanded to more Minneapolis neighborhoods and to downtown Saint Paul with more than 1,500 bikes and 170 stations. Ridership during the April to November season when the bikes are available grew from 100,000 trips in 2010 to more than 300,000 in 2013. The presence of bike sharing has been transformative where it is available in Hennepin County, both in terms of increasing the visibility of on-street bicycling, and in providing new opportunities for people to bike.

3. *Transit-bicycle compatibility*

In 1997, transit in Hennepin County was limited to fixed-route buses. The county now has two light rail lines, commuter rail, and bus rapid transit. The county's bicycle advisory committee was formed in 1987 to comment on the integration of bikes

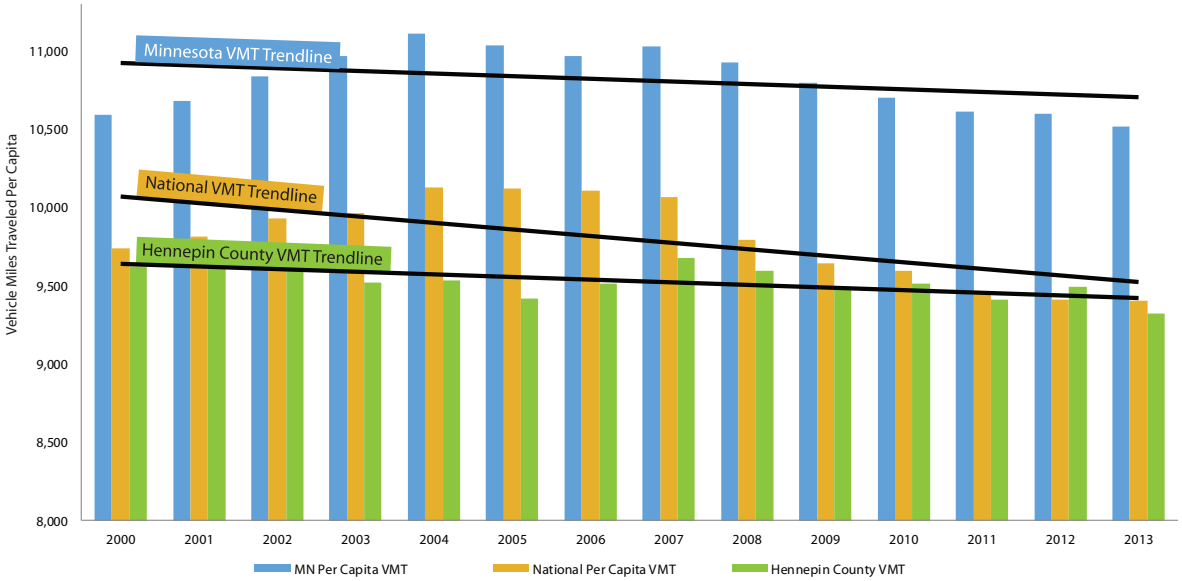


Figure 8: Annual per capita motor vehicle miles traveled, 2000 to 2013[19]

and light rail. This advocacy extended to Hennepin County and Minneapolis working with Metro Transit to ensure every transit vehicle is equipped to carry bicycles — up from zero in 1997. Bike parking now is routinely included at transit stations and park and rides, including 268 bike lockers installed and maintained by Metro Transit. From 1997 to 2012, Metro Transit ridership increased 30 percent, serving 20 million new annual trips. Transit ridership and the bike-transit connection are forecast to continue increasing during this plan's timeframe, particularly with the planned two additional light rail lines and bus rapid transit that could be operational by 2020.

4. *More people are biking*

Bicycling has rapidly increased in Hennepin County for more than a decade in sheer numbers and in rider diversity. People bicycling have begun to better reflect the population as a whole, including increases in bicycling among nonwhite groups, women and older people. Women, who are underrepresented in bicycling, accounted for almost half of new bicycle commuters since 2005. Anecdotally, more people bicycling are wearing everyday clothes on average bikes — people are biking for transportation because it works for them.

5. *Driving habits are changing*

When the 1997 bike plan was published, for decades the U.S. had experienced steady, unrelenting increases in annual vehicle miles traveled. A few years after the plan was released, an unprecedented trend began — Americans drove fewer miles each year. Initially, theorists hypothesized it was a result of higher gas prices and economic downturn, but the trend has continued through economic recovery. Minnesota's driving habits have mirrored the nation's. Figure 8 shows the trend for annual per capita VMT in the United States, Minnesota, and Hennepin County as reported by the Federal Highway Administration and the Minnesota Department of Transportation. National per capita VMT has declined 7.2 percent from its peak in 2004. In Minnesota, VMT has declined 5.3 percent along all Minnesota roadways since peaking in 2004. Minnesota's per capita VMT in 2013 was 10,500 miles a year, compared with 11,100 in 2004. Per capita VMT on all roadways in the county decreased 4 percent after peaking at 9,700 miles in 2001.

This trend is consistent for motor vehicle travel on the county roads in Hennepin County where per capita VMT for the county system has declined 6.5 percent since reaching a peak in 2004 (figure 9).

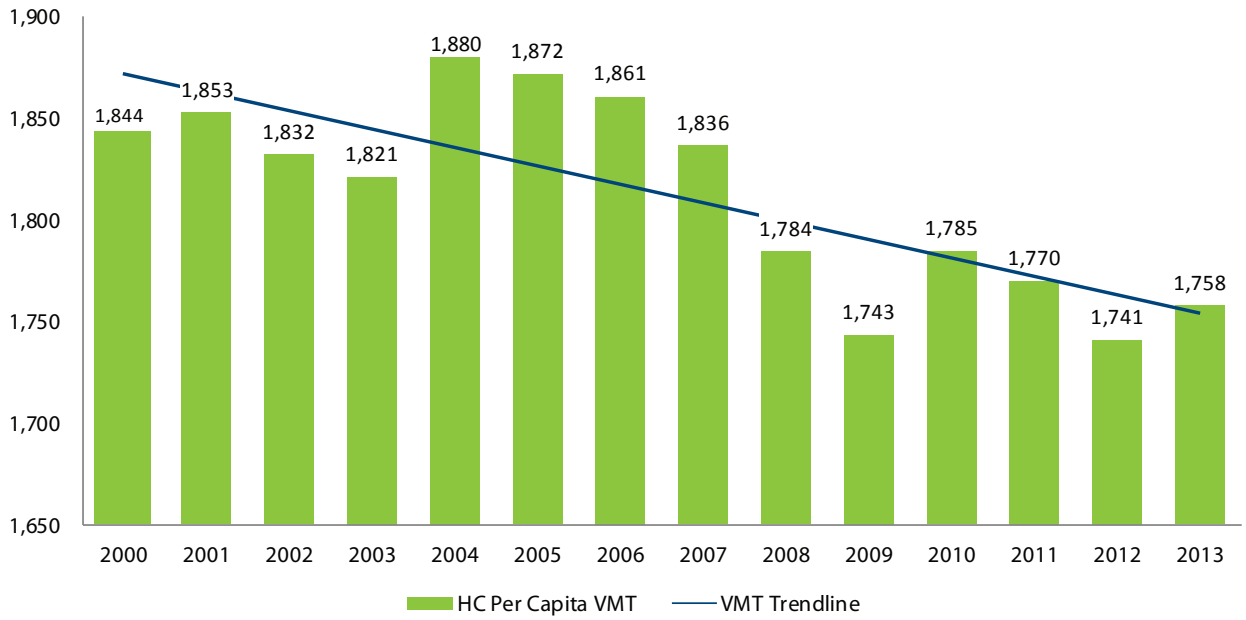


Figure 9: Annual per capita motor vehicle miles traveled on the county highway system 2000-2013

National data reveal that people 34 and younger more often choose modes other than driving and are at least partly responsible for this trend. From 2001 to 2009, the average number of vehicle miles traveled decreased 23 percent among 16- to 34-year-olds — from 10,300 miles to 7,900 miles a year. During the same period, this cohort made 24 percent more bicycling trips, 16 percent more walking trips, and 40 percent more trips on transit.[20]

6. *People use the regional trail system differently*

Use of the Three Rivers Park District regional trail system has increased steadily over the past decade and become important for transportation as well as recreation. Commuter use of regional trails in Hennepin County has tripled. In 2008, there were more than 200,000 bike commutes on Cedar Lake LRT and North Cedar Lake regional trails alone.

7. *The county's approach to bicycling is changing*

Hennepin County has focused on improving conditions so people can bike for transportation, recreation and health. As a result of these efforts and the 1997 bike plan, bikeways have become a routine part of project development. The county has integrated design strategies such as buffered bike lanes and bike boxes. Furthermore, Hennepin County formally committed to bicycling and active transportation with the adoption of a Complete Streets Policy in 2009. It was recognized as a top policy in the U.S. and has become a national model.

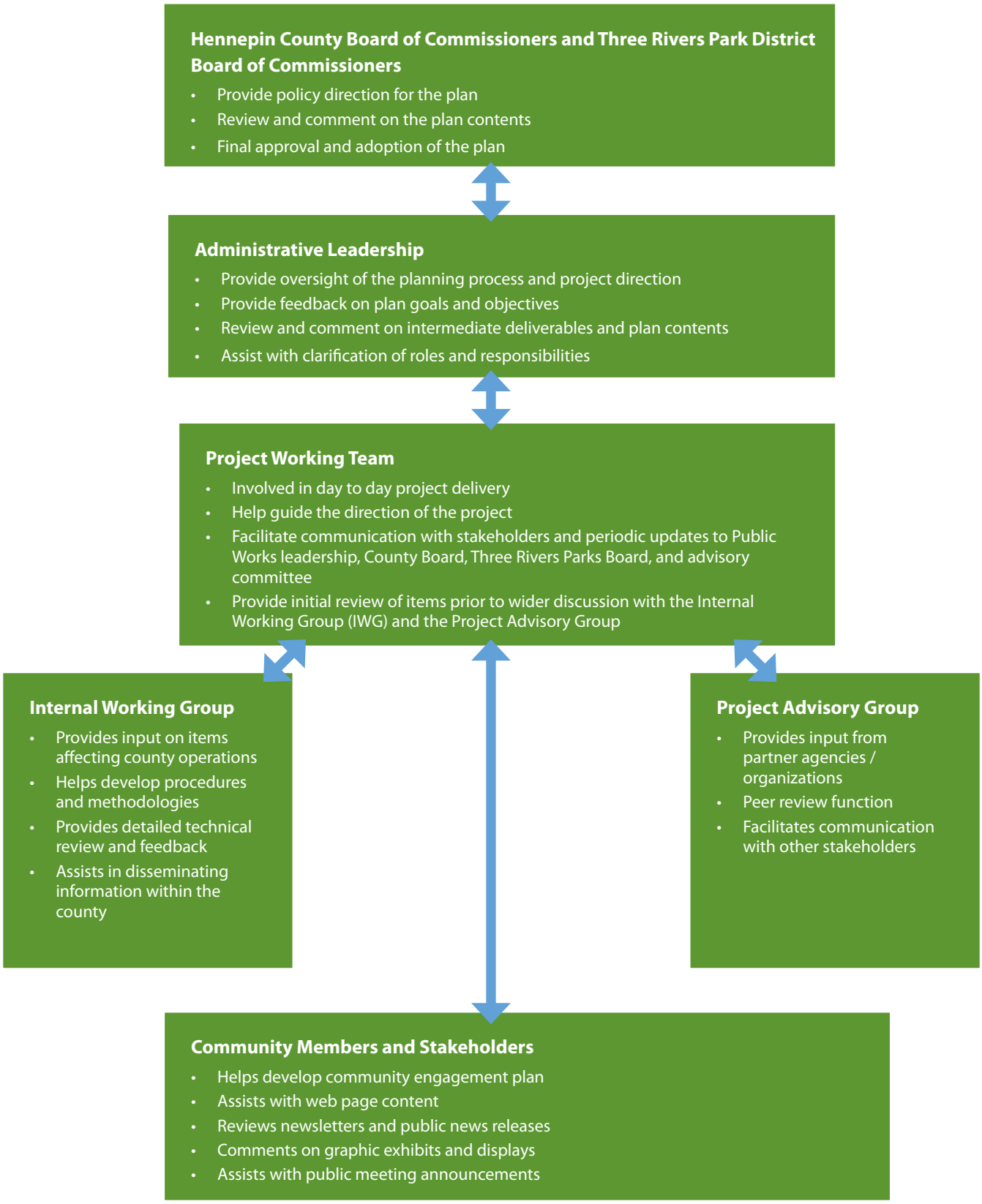
The above seven factors have changed the fundamentals of how people travel and how the county facilitates that travel. There is strong and increasing support for bicycling as an everyday mode of transportation, especially among those who are interested but concerned about bicycling. Research suggests that meeting the safety and comfort needs of these nascent bicyclists will yield big returns in ridership, safety, access, mobility and livability. The results of the Nonmotorized Transportation Pilot Program specifically demonstrated that an increase in investment leads to an increase in ridership. These underlying factors combined with the county's vision led to the creation of this plan and shaped the goals and strategies therein.

Planning process

The Hennepin County bicycle transportation plan effort started in June 2013. Hennepin County and Three Rivers Park District collaborated on this plan as an update of the county's 1997 bike plan. During the 16-month planning process, the county, Three Rivers Park District, and other partners conducted analyses, surveys, public engagement, and regular meetings with the following advisory groups:

- Internal working group (IWG) composed of county and park district staff from a variety of departments, as well as staff from the Minneapolis Public Works Department
- Project advisory group (PAG) composed of local agency representatives from municipalities, government agencies, and bicycle advocacy groups
- Hennepin County Bicycle Advisory Committee (BAC) composed of seven appointed members and seven alternates (representing each of the county commissioner districts), and ex-officio members who represent biking organizations, governmental agencies and other groups

Hennepin County bicycle transportation plan project organization structure



- Project working team (PWT) composed of Hennepin County staff, Three Rivers Park District staff, a BAC representative, and the consultant team

The project working team reviewed previous and current planning efforts to ensure this plan complements other efforts by the county, park district, Metropolitan Council, the state, and other agencies. The policy framework chapter clarifies how this plan relates to other initiatives.

Community engagement and participation

Working together, Hennepin County and Three Rivers Park District developed and implemented community engagement to identify characteristics and attitudes of residents regarding bicycling. This outreach provided a wealth of information, including guidance on policy priorities, vision, network development, and preferred bikeway design treatments. More than 2,700 people contributed to this plan.

Public workshops

Three large format public workshops across the county yielded public guidance.

Community listening sessions

Ten community listening sessions with focus populations (including health-disparity populations) included small-group activities and discussion with assistance from community organizations.

Online engagement

A public website (www.hennepin.us/bikeplan) shared updates on engagement and project information. An online survey and an interactive map were engaged stakeholders who preferred those options or who could not attend events.

Community events and other in-person engagement

Feedback was gained during community festivals and meetings, including Minnehaha Open Streets, Lowry Open Streets, the Richfield Farmer's Market, and at meetings of the Northwest Hennepin County League of Municipalities and the Hennepin County Bicycle Advisory Committee.

Please refer to appendix A for a full report on engagement activities and results.

Living document/plan updates

The plan will be a living document continually evaluated and updated to meet evolving community needs and innovations. Minor updates will occur regularly and may address:

- Bikeway system map
- Gap map (top prioritized gaps)
- Measures / statistics (system mileage, miles built per year, gaps removed, etc.)
- Design guidelines — typical sections
- Appendices — any references to current capital improvement or paving projects

Major plan updates generally will follow a 10-year schedule to align with Metropolitan Council review of comprehensive plans. The plan update will likely precede the update of the county's transportation plan and its comprehensive plan. Due to emerging concepts and bikeway system maturity, it may be prudent to initiate a partial revision at five years. Comprehensive plans will be completed in 2018, so this plan could be revised in 2017-2018. The Hennepin County bicycle transportation plan and updates will be posted at www.hennepin.us/bike. Major plan updates may address:

- Policies (via board adoption)
- Vision, goals, objectives
- Strategies
- Cost participation policies
- Bulk of the Hennepin County bicycle transportation plan document text

Chapters two, three, four, and five provide information on strategies and actions necessary to implement this plan. A detailed list of the plan strategies and actions (including roles and implementation time frames) is in appendix B. The strategies and actions provide a road map for Hennepin County and Three Rivers Park District to follow to realize the plan vision and achieve the plan goals. Below are strategies listed by chapter.

Chapter 2: The 2040 Bikeway System

2.1 Provide elements that increase safety along corridors and at intersections.

2.2 Address network gaps and barriers.

2.3 Plan and designate an enhanced bicycle network composed of high comfort bikeways that provide physical separation from motor vehicles (e.g., protected bike lanes, cycle tracks, off-street trails, and other innovative designs).

2.4 Work with partners to develop and implement support facilities to make bicycling a transportation mode of choice.

2.5 Work with transit partners early in the planning phase of corridor and station area planning to incorporate bicycle supportive facilities at key transit locations.

2.6 Work with major transit providers and local communities to provide direct bicycle connections to transit stops and stations, and increase secure bicycle parking and storage to meet demand.

2.7 Support local bike sharing program(s).

2.8 Collaborate with partners on planning, design, and funding for bicycle infrastructure that helps to complete, or complement the county bikeway system.

2.9 Secure necessary right-of-way to accommodate future expansion of the bicycle system.

2.10 Continue refining the plan and implement the system of interconnected on- and off-street bikeways that link all significant destinations within the county.

Chapter 3: Programs

3.1 Promote the recognition of the county's bicycle-friendly nature.

3.2 Educate the public about bicycling as a sustainable mode of transportation that saves money, promotes healthy lifestyles, and reduces greenhouse gases and other pollution emitted into the air.

3.3 Support efforts to make bicycling a more attractive option for those populations underrepresented on bicycles.

3.4 Work with partners to develop activities and events for potential bicyclists on topics like bicycling in professional clothes, bicycle maintenance, hauling cargo, and other barriers that could be overcome by rider knowledge.

3.5 Support and encourage the expansion of Safe Routes to School (SRTS) programs, including additional funding.

3.6 Support programs and efforts to encourage employers to increase understanding and awareness that bicycling is a viable commuting option.

3.7 Establish safety evaluation programs and processes to address user conflicts.

3.8 Provide a systematic and consolidated means for residents and visitors to identify areas of concern or report issues (i.e., bicycle crash "close calls").

3.9 Promote and participate in bicycle education programs through partnerships with community organizations and businesses.

3.10 Work with partners to expand driver's education and coursework for motorists, bicyclists and youth about the rights and responsibilities of all road users.

3.11 Work with partners such as public safety officials, cities, and school districts to promote safe bicycling, driving, and walking practices and encourage enforcement by the presiding agency.

3.12 Continue to collaborate with local agencies and other partners to address wayfinding in a comprehensive, coordinated way.

3.13 Provide trip planning resources in multiple formats, including print and digital.

Chapter 4: Policy framework

4.1 Support and encourage interdepartmental coordination and develop actions and programs that complement other county initiatives and planning efforts.

4.2 Increase internal and external support so that bikeways are eligible expenses for the lifecycle of transportation funding, including planning, design, development, operations, and maintenance.

4.3 Support and encourage coordination among Hennepin County and partner agencies and municipalities. Develop actions and programs that complement aligned efforts at the state, region, or municipal level.

Chapter 5: Implementation

5.1 Prioritize projects to implement. In order to efficiently and strategically invest in the bikeway system, the county must develop a prioritization process to identify a priority projects list for implementation.

5.2 Develop and maintain a bikeway design toolkit including a matrix of bikeway options, technical design sheets and typical sections for both new construction and retrofit projects, based on local and national research and best practices. Consider the development of guidelines in conjunction with other modal guidelines, forming the basis for future complete streets design manual.

5.3 Provide for continuing education for county and park district staff about new bikeway types, planning, design and bicycle-related issues that may arise.

5.4 Monitor and consider emerging transportation planning, design, and implementation practices.

5.5 The county and park district should budget for ongoing, consistent sources of revenue to complete planned network routes and to close gaps in the network.

5.6 Leverage other projects to include bikeways or take advantage of partnership opportunities outside of the normal solicitation schedule, and consider budgeting for unplanned opportunities.

5.7 Obtain funding for bicycle education and enforcement programs.

5.8 Explore the creation of a regional trail authority (similar to a watershed district) for a consistent funding stream for longer term maintenance and operations.

5.9 Continue county routine maintenance and pavement management of the on-street bicycle system tied to overall roadway maintenance plans.

5.10 Explore partnering with local cities to improve routine maintenance and pavement management practices on Hennepin County off-street bikeways.

5.11 Establish and implement a policy for the closure and detour of on- and off-street bicycle bikeways that provide safe and direct alternatives when bikeways must be closed.

5.12 Maintain current programs and partnerships that provide routine maintenance (e.g., park district Adopt-a-Trail Program). Current, routine maintenance programs and partnerships should be maintained or enhanced.

5.13 Continue the park district's pavement management program for regional trail maintenance.

5.14 Investigate and consider a prioritized, phased snow removal policy for on- and off-street bikeways.

5.15 Regularly evaluate the performance of new and existing bikeways to determine the effectiveness of designs and treatments.

5.16 Implement a system for collecting bicycle counts and measuring the share of trips that are taken by bicycle within the county.

5.17 Continue to gather feedback from users and the general population on a regular basis.

5.18 Create a working group of advisors to monitor the implementation of the bike plan.

5.19 Develop/enhance strategies to house, maintain, and communicate important information and data on the bikeway system.

2. The 2040 Bikeway System

Summary:

Complete 20 miles of the bikeway system each year and bring bikeways within 1/2 mile of 90 percent of homes.

Defining the system

A central goal of this plan is to identify the 2040 bikeway system — a system of bikeways and support facilities that connect important destinations and serve the needs of current and future bicyclists in Hennepin County. This chapter identifies that system, which includes:

- Existing and proposed bikeways along county roads
- The Three Rivers Park District regional trail system and other regional bikeways
- Some bikeways already included in locally adopted plans
- Some proposed bikeways on state roads

While the county does not have jurisdiction or direct responsibility to implement bikeways on state and local roads, these routes were included because they provide better connections for bicycling compared to adjacent county roads or connect to a destination of regional importance. For example, a bicycle boulevard on a local street may be more comfortable compared to riding on a high-speed county road nearby. Where state and local roadways are identified as part of the 2040 bikeway system, the county will seek to partner with the local community, park agencies, or the Minnesota Department of Transportation (MnDOT) to implement the bikeway.

The primary factors used to identify proposed routes for the 2040 bikeway system include:

- **Continuity —** eliminates gaps in the network, connects with other major bikeways in the county, or provides important connections to neighboring jurisdictions
- **Access to destinations —** links to major trip generators and destinations (transit facilities/ stations, schools, employment centers, etc.)
- **Network density —** maintains reasonable network spacing, with a denser network in urban areas and a less-concentrated network in suburban and rural areas
- **Concurrence with regional plans —** aligns with the Twin Cities Regional Bicycle System Study issued by the Metropolitan Council in April 2014
- **County or park agency rights-of-way —** the planning process emphasized routes on county roadways, regional trail search corridors, or transitway corridors. Some bikeways on local streets were included in the 2040 bikeway system, but only if they were part of an adopted local plan and had regional significance, meaning that they support the criteria above.

Hennepin County and Three Rivers Park District are committed to advancing and supporting the implementation of the 2040 bikeway system. Routes that are designated as part of the system will receive special consideration, including:

- Eligibility for county bikeway and gap capital improvement program funds
- Special consideration during county plat and site plan reviews
- Incorporation into roadway and transit capital improvement program projects
- Higher priority for retrofit consideration during roadway resurfacing and/or restriping projects
- Eligibility for funding partnerships for grant opportunities

Plans for the 2040 bikeway system are not static and should be updated and refined based on emerging local plans, redevelopment efforts, and ongoing discussions with cities, parks agencies and other agencies such as MnDOT and the Minnesota Department of Natural Resources (MnDNR). During implementation of the 2040 bikeway system, final routing and design decisions will require collaboration and consultation with these agencies and others.

Bikeway types

The county bikeway system is composed of many types of bikeways, ranging from bike lanes to paved shoulders and multi-use trails. The county bikeway system typically does not include roadways that do not need bike-specific treatments. While biking is welcome on all roadways where it is not prohibited, "plain" roadways are not included on the county network. The right facility type for each location depends on a number of factors, including the available right-of-way, motor vehicle speeds, and traffic volumes among other considerations. Roadway conditions and land uses also change along the length of a corridor over time. At times, this may result in the need to transition to a different bikeway type.

Table 2 summarizes types of bikeways that make up the 2040 bikeway system. More information on these bikeways is provided in the bikeway design toolkit in appendix C.

Table 2: Overview and characteristics of bikeway types

	Bikeways				Protected bikeways		
	On-street				*On- or off-street*		*Off-street*
Treatment	**Bicycle Boulevard**	**Shoulder**	**Bike lane**	**Buffered bike lane**	**Protected bike lane**	**Cycle track**	**Multi-use trail**
Land use context	Urban/ suburban	Suburban/ rural	Urban/ suburban	Urban/ suburban	Urban/ suburban	Urban/ suburban	Urban/ suburban/ rural
Level of separation from motor vehicle traffic	None	Low	Low to moderate	Moderate to high	High	High	High
Traffic volume (motor vehicles)	Low	Low to moderate	Moderate	Moderate to high	High	Moderate to high	N/A
Posted speed limit	25-30 mph	35-55 mph	Varies	Varies	Varies	Varies	N/A
Street type	Local or collector	All**	All**	All**	All**	All**	Independent right-of-way along minor or principal arterial
Minimum widths	N/A	5'-8' (width based on vehicle speed)	5' (with parking), 6' (curb adjacent)	5' (with parking) 6' (curb adjacent), 2' buffer	5' lane/3' buffer (one-way); 10' lane/3' buffer (two-way)	5' with 2' clear zone each side (one way); 10' with 2' clear zone each way (two-way)	8' with 2' clear zone each side (one-way); preferred 10' with 2' clear zone each side (two-way)
Construct new or as part of pavement maintenance (re-striping)	Both	Both	Pavement maintenance	Pavement maintenance	Both	New	New

* Traffic volume (average daily traffic): Low is less than 3,000 ADT; Moderate is 3,000-15,000 ADT; High is above 15,000 ADT

**All = Streets where bicycle use is not prohibited.

Bikeway types will vary based on roadway and land use context

A buffer is a delineated space between the bikeway and travel lane. A clear zone is a space free of obstructions.

These guidelines are based on national guidance.

Bicycle boulevard

A bicycle boulevard is typically suited for a local low-speed, low-volume street. A bicycle boulevard prioritizes biking by turning stops signs to prioritize bike movements, giving bicycles the right of way, and using traffic calming (i.e., bump outs or traffic circles), vehicle diverters, enhanced signage for bicycling and other means. They are intended to improve safety and comfort and to provide an alternative to higher speed roadways that may be more intimidating for those with less experience or confidence biking.

Roadway characteristics

- Urban/suburban context
- No separation from motor vehicles
- Low vehicle traffic volumes
- 25–30 MPH (posted speed)
- Local or collector street
- Best for interested but concerned population
- Also serves enthusiastic and confident as well as strong and fearless populations

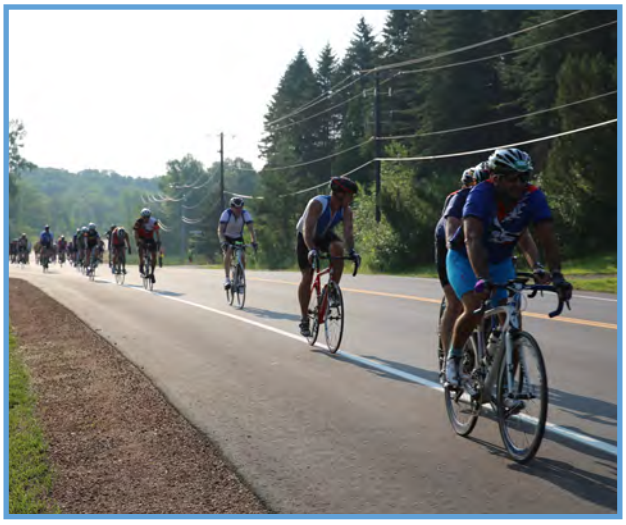
Bicycle boulevard

Shoulder

A paved shoulder can be appropriate along low- to moderate- volume roads in suburban and rural areas with long distances between intersections and access points. A paved shoulder improves connections where bike lanes would be inappropriate and a shared use path would be prohibitively expensive. Shoulders' drawbacks, including frequent interruption by turn lanes or bypass lanes and ambiguous legal standing, make them less appropriate for areas with higher bike traffic or more complex environments.

Roadway characteristics

- Suburban/rural context
- Low separation from motor vehicles
- Moderate to high vehicle traffic volumes
- 35-55 MPH (posted speed)
- Minimum width 5 feet (width should be determined based on motor vehicle speed)
- Best for strong and fearless
- Also serves some of the enthusiastic and confident, depending on context



Shoulder

Bike lane

Bike lanes provide a dedicated space for bicycling alongside motor vehicle traffic. Bike lanes can be a low-cost option when adequate right-of-way is available, and often can be incorporated into roadway repaving or restriping projects.

Roadway characteristics

- Urban/suburban context
- Low to moderate separation from motor vehicles
- Moderate vehicle traffic volumes
- Speed limit varies
- Minimum width 5 feet (parking adjacent) to 6 feet (curb adjacent)
- Best for enthusiastic and confident; and strong and fearless groups
- Also serves interested but concerned group for critical connections, depending on context

Bike lane

Buffered bike lane

Buffered bike lanes enhance traditional bike lanes with additional striped or buffered space between people biking and motor vehicles. A buffer can be incorporated to the right of the bicycle lane, protecting people biking from the door zone of parked vehicles, to the left of the bicycle lane, protecting people biking from motor vehicles, or both. This application is most appropriate on urban/suburban streets with moderate motor vehicle volumes. Often, right-of-way is limited and creating space for the buffer means narrowing or removing parking or space from other lanes. Similar to bike lanes, buffered bike lanes can be a low-cost retrofit as part of paving or restriping.

Roadway characteristics

- Urban/suburban context
- Moderate to high separation from motor vehicles
- Moderate to high vehicle traffic volumes
- Speed limit varies
- Minimum width 5 feet (parking adjacent) to 6 feet (curb adjacent), minimum buffer 2 feet
- Best for enthusiastic and confident; and strong and fearless groups
- Also serves interested but concerned group and older children

Buffered bike lane

Public support for protected bikeways

Throughout the engagement effort the county and park district continuously heard requests for a network of enhanced bikeways that are separated from moving vehicle traffic. There was strong support for adding more off-street bikeways, but also a recognition that there are limited opportunities to add new trails in the developed areas of the county. This plan recognizes the need to expand the range of facility types to provide opportunities for low stress bikeways in urban and suburban areas, such as cycle tracks and other types of protected bike lanes. New bikeway design guidelines have been developed as a part of this plan to address the need.

Protected bikeways may be on-street or off-street, but all have one essential characteristic: they provide physical separation from motor vehicles.

The 2040 bikeway system includes three types of protected bikeways:

1. **Protected bike lanes**
2. **Cycle tracks**
3. **Multi-use trails**

Protected bike lane

Protected bike lanes are built at street level and separate people biking from motorized traffic using a physical barrier such as flexible bollards, parked vehicles, a jersey barrier, or a concrete median. Protected bike lanes can be designed to accommodate two-way bicycling on one side of the roadway.

Roadway characteristics

- Urban context
- High separation from motor vehicles
- High vehicle traffic volumes
- Speed limit varies
- Minimum width 5 feet with 3 foot buffer (one-way); Minimum width 10 feet with 3 foot buffer (two-way)
- Best for interested but concerned group
- Also serves enthusiastic and confident; strong and fearless groups and older children

Protected bike lane

Cycle track

A cycle track is a high-priority protected bikeway that is separated from adjacent motor vehicle travel lanes by a curb. Cycle tracks typically include operational features to address conflicts at intersections, for example by providing traffic signal phases that are exclusively for people biking.

Roadway characteristics

- Urban/suburban context
- High separation from motor vehicles
- Moderate to high vehicle traffic volumes
- Speed limit varies
- Minimum width 5 feet with 2 foot clear zone on each side (one-way) ;
- Minimum width 10 feet with 2 foot clear zone on each side (two-way)
- Best for interested but concerned group
- Also serves enthusiastic and confident; and strong and fearless groups as well as children

Cycle track

Multi-use trail

Paved multi-use trails provide a shared space for bicycling, walking and other non-motorized uses. They offer a high quality bicycling environment preferred by people in the enthusiastic and confident bicycling group and the interested but concerned group.

Some multi-use trail facilities provide designated lanes for bicycles and pedestrians, especially where there are higher volumes. Sometimes multi-use trails are outside of the street right-of-way, and often are sited along abandoned or active rail corridors, waterways or through parks. There are many cases in Hennepin County where multi-use trails are situated along roadways to both increase the comfort of the bikeway for all users, especially families and to increase safety along major county roads in suburban and rural settings where motor vehicle speeds and volumes make on-street bikeways less appropriate.

The county system currently has a robust network of off-street multi-use trails that provide complete separation from motor vehicle traffic and minimal intersections with roadways. One example is the Cedar Lake LRT Regional Trail.

Characteristics

- Urban/suburban/rural context
- High separation from vehicles
- Minimum width 8 feet with 2 foot clear zone on each side (two-way)
- Preferred width 10 feet or greater with a 2 foot clear zone on each side (two-way)
- Best for interested but concerned group and children
- Also serves enthusiastic and confident; and strong and fearless groups
- Might not serve the enthusiastic and confident or the strong and fearless groups riding if the trail is poorly maintained, has a soft surface, does not take a direct route, or has high pedestrian volumes

Multi-use trail

The 2040 bikeway system

The 2040 bikeway system includes 540 miles of new planned bikeways. Full implementation of this plan will increase county bikeway system mileage by 81 percent, with almost half of the added system off-street (44 percent off-street; 41 percent on-street and 15 percent not determined).

The process for developing the 2040 bikeway system relied heavily on an analysis of bicycle elements from current comprehensive plans and related planning documents from cities in Hennepin County. As stated previously, only locally planned bikeways with regional significance, meaning those that met some of the criteria described at the beginning of this chapter, were included as part of the 2040 bikeway system.

The 2040 bikeway system builds upon the 1997 bike plan map and subsequent updates, incorporating many of the bikeways recommended in the 1997 bike plan that have not yet been built. During the almost two decades of implementation that have occurred since the adoption of that plan, a number of conditions and assumptions have changed. For instance, the 1997 bike plan included planned bikeways on some rail corridors, anticipating a continued decline of rail freight activity. However, this trend has since somewhat reversed, and alternate routes have been added to the updated system until rail corridors are available.

A summary of the planned system coverage is provided in Table 3 and shown in the planned bikeway system map (Figure 10).

The 2040 planned bikeway system identifies 238 new miles of off-street bikeways to be implemented as multi-use trails or cycle tracks, either along roadways or in independent alignments (i.e. rail, utility or riparian corridors). The planned system includes 298 new miles of on-street bikeways. For planned on-street bikeways, the plan identifies the route where the bikeway should be implemented but not the specific facility type (i.e. shoulder, bike lane, protected bike lane, or cycle track). Selecting the appropriate facility type will occur either during discussions with cities at the time of development, during the project development process, or prior to a major maintenance effort. In all cases, the decision will be based on the local context, roadway characteristics, community input, and county bikeway design guidance.

Table 3: Hennepin County bikeway system mileage 1997 and 2040

	Planned system in 1997	The 2040 planned system
Existing miles	350	651
Planned miles	480	540
Total miles	**830**	**1191**

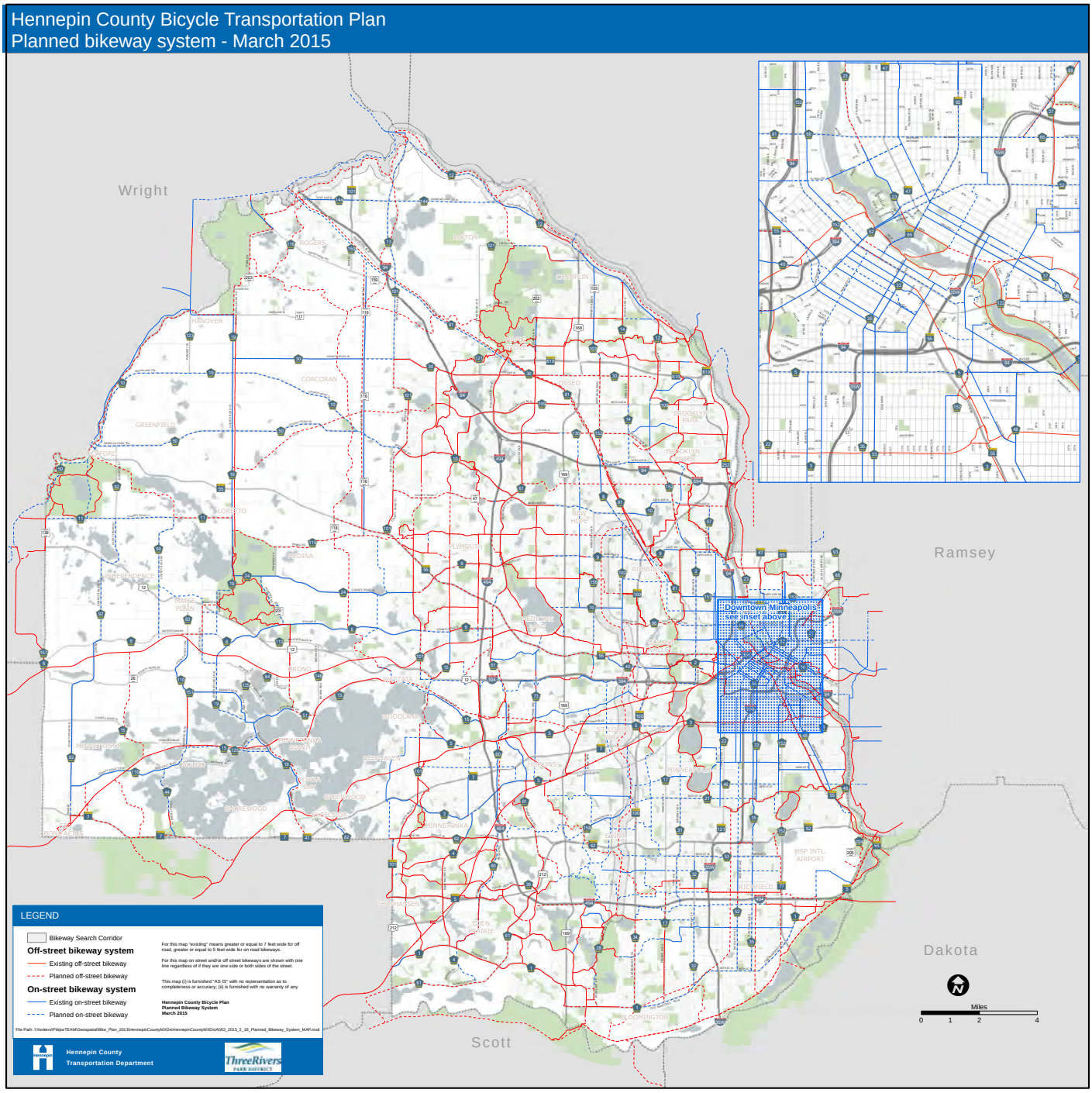


Figure 10: 2040 bikeway system

Table 4: Hennepin County bikeway system mileage

	Existing System	Planned System
Off-street planned bikeway	425	238
On-street planned bikeway	226	302
Total 2040 planned system	**651**	**540**

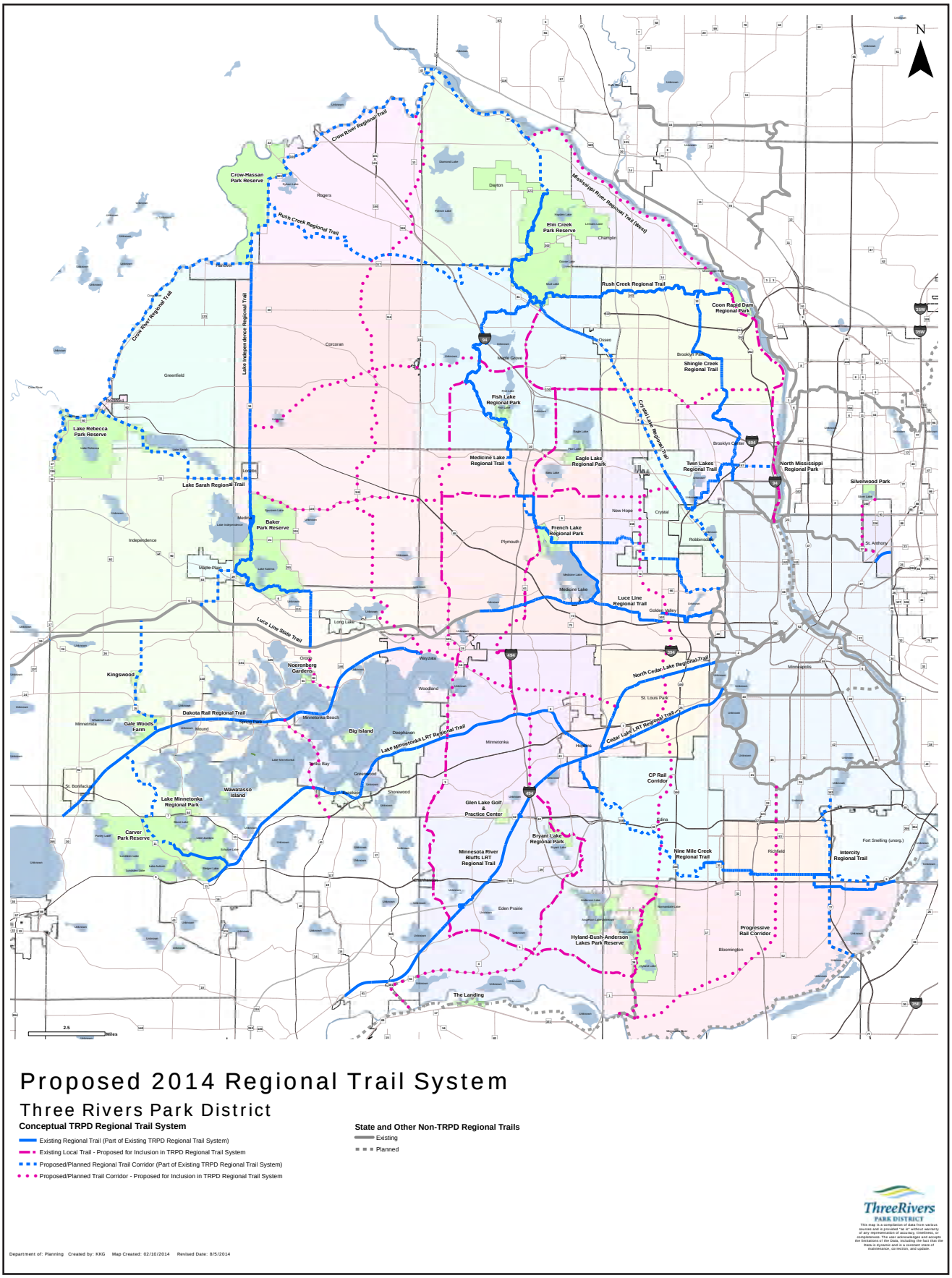


Figure 11: Three Rivers Park District proposed regional trail system

Summary of Three Rivers Park District regional trail system

Full implementation of this plan will also achieve significant gains for the Three Rivers Park District regional trail system. The 2040 bikeway system, when implemented, will increase the planned regional trail system to 395 miles. There are 200 miles of trails in the existing regional trail system. There are an additional 60 miles of local trails that are being considered for inclusion in the regional trail system (these are existing trails that have already been constructed). An additional 195 miles of proposed new trails are included in this plan. Table 5 summarizes the planned Three Rivers Park District regional trail system, and figure 11 shows the existing and planned trails.

Bikeway corridors and gaps

The safety of people when biking is a fundamental principle at the core of this plan. Continuity of the bikeway network is essential to ensure bicycle safety, therefore gaps and barriers must be addressed. The quality of the bicycling environment is also a key to safety. Geometric design and traffic controls at intersection crossings must accommodate bicycle movements. With these issues in mind, strategies 2.1 and 2.2 highlight the basic elements necessary to support increased bicycling. These strategies are supported by a number of specific actions that are identified in the summary chart at the end of this chapter.

All of the planned segments that make up the 2040 system have been sorted into corridors and gaps.

Bikeway corridors

Planned bikeway corridors will expand the coverage and connectivity of the overall system. These corridors are longer (1/2 mile or more) and provide key connections to local bikeway networks. Ninety-six percent of the planned bikeway mileage is in bikeway corridors (518 of 540 total miles). Table 6 summarizes the planned bikeway corridors by type and mileage. The top 25 bikeway corridors are in Table 13 and a full corridor list is in appendix D.

Bikeway gaps

Locations classified as bikeway gaps are short (1/2 mile or less) connections that are needed to ensure continuity in the bikeway system. Completing gaps can be particularly challenging, as they are usually caused by barriers that are difficult or costly to cross, such as highways, waterways, rail corridors, or pinch points where right-of-way is limited. The county has a dedicated funding source called the bikeway gap fund that is tied specifically to closing gaps identified in this plan. Figure 12 shows the gap locations and Table 6 summarizes the gaps by planned bikeway type and mileage. A full list of the identified bikeway gaps by project ID is included in appendix E.

Strategy 2.1 *Provide elements that increase safety along corridors and at intersections.*

Strategy 2.2 *Address network gaps and barriers.*

**see the chart at the end of the chapter for specific actions that will be taken to support the strategies.*

Table 5: Three Rivers Park District existing and planned trail system mileage

Proposed Three River Park District regional trail system	Mileage
Existing regional trail system	140
Existing trails proposed to be added to the regional trail system	60
Planned additions to the regional trail system	195
Total	**395**

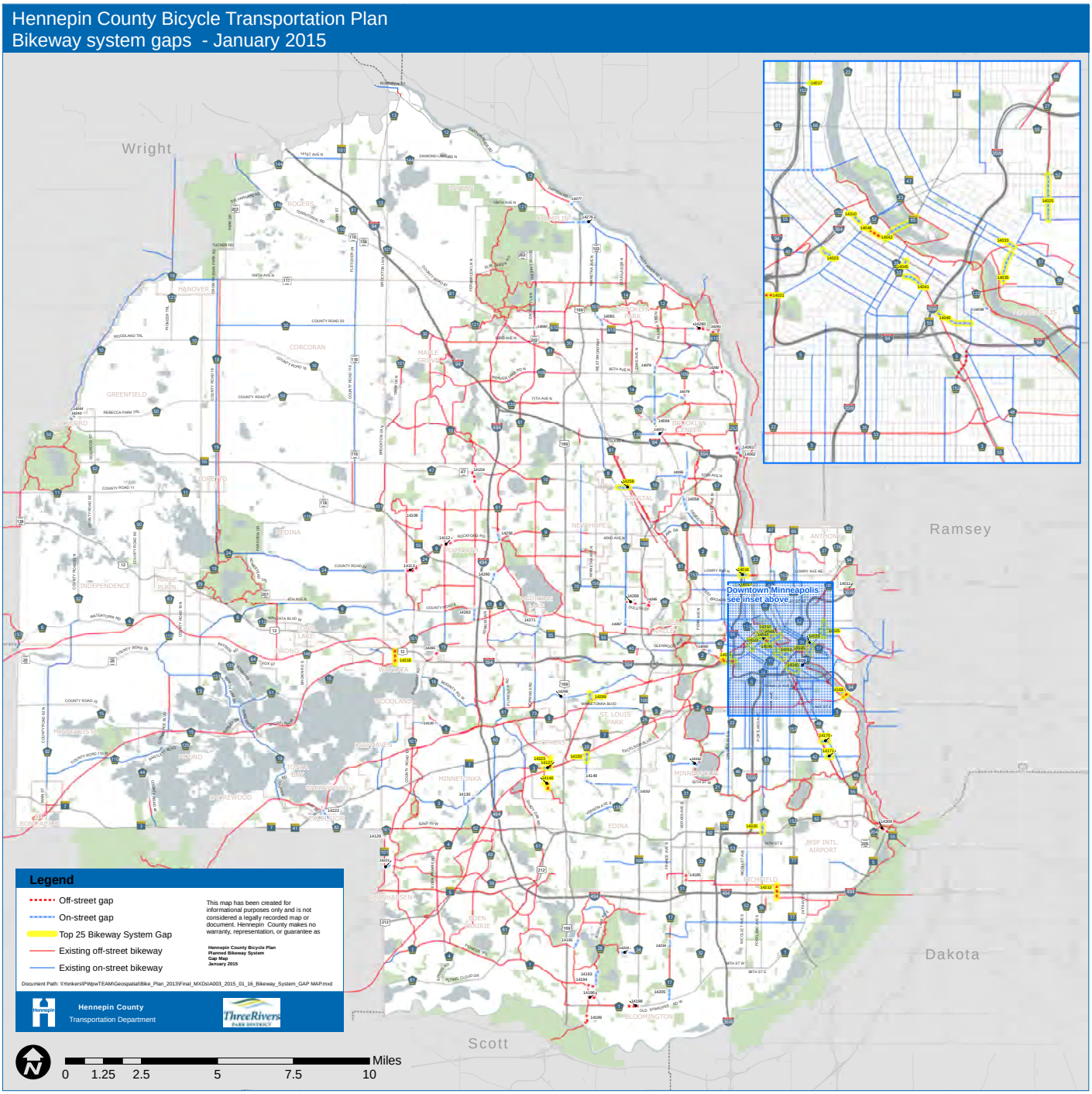


Figure 12: Bikeway system gaps

Table 6: Total 2040 Planned Bikeway System

	Corridors		Gaps	
	Number	Miles	Number	Miles
Off-street planned bikeway	68	231	25	7
On-street planned bikeway	165	287	56	15
Total 2040 planned system	**233**	**518**	**81**	**22**

Building a bikeway system to serve all users

As described in chapter one, there is a significant portion of the population that does not currently ride a bike but would be interested in biking if conditions were safer or more comfortable. Building a bikeway system that works for the interested but concerned population will require more than just the implementation of the routes described in this chapter. This section outlines six key areas that will complement the bikeway system, including:

- Designation of an enhanced bikeway network
- End of trip support facilities
- Better connections between transit and bicycling
- Bike share programs
- Integration among county, local and regional bikeways
- Refinements to the system over time

A discussion of each strategy area is below. A summary chart showing all recommended strategies and actions is at the end of this chapter.

Designate an enhanced bicycle network

A consistent theme that emerged from this plan's public engagement was a strong preference for bikeways that provide a higher level of safety and comfort. Throughout this plan's engagement process, the project team heard from people of all ages and abilities who do not feel comfortable riding adjacent to fast motor vehicle traffic, even when bike lanes are provided. While buffered bike lanes were viewed as a significant improvement, increased separation from motor vehicles with a physical barrier was the most desirable bicycle facility type. This is supported by recent research on bicycling preferences in other communities.

Other local and regional bikeway studies follow a similar approach. The Metropolitan Council recently completed a regional bicycle system study,[22] which notes that some bikeways are more significant from a regional standpoint and should provide a higher quality of service. For this reason, the study defines a priority system within the bikeway network. At the same time, the City of Minneapolis has initiated a near-term plan for a protected bikeway system that will provide a higher level of safety and comfort.

Based on these related initiatives and community feedback, strategy 2.3 highlights the need to define an enhanced network within the countywide bikeway system providing enhanced safety and comfort for users. Criteria should be established to determine if a bikeway is eligible for the enhanced network. Examples may include bikeways that are:

Strategy 2.3 *Plan and designate an enhanced bicycle network composed of high comfort bikeways that provide physical separation from motor vehicles.*

- Classified as an off-street trail, a cycletrack, or a protected bike lane
- Part of the proposed Minneapolis "protected" bikeway network
- Within a "priority" regional bikeway corridor as defined by the Metropolitan Council
- Part of a route that spans major barriers (rivers, railroads, highways, etc.)
- Connect to major activity centers, commercial areas, institutions, or transit hubs
- Built according to accepted design guidelines

This concept is recommended for further investigation. Future work on this issue should be incorporated into the Hennepin County bicycle transportation plan as an addendum.

Attention to detail

Greater attention to detail must be paid to biking infrastructure for people to bike comfortably. Pavement type, stormwater drains, seams, maintenance activities, ramp grading, ramp diversion, utilities, signs and whether to grade-separate with a bridge or a tunnel all impact the comfort and safety of people biking. Hennepin County and Three Rivers Park District recognize the importance of these details and will use this plan's strategies to improve bicycling comfort and safety.

Support facilities

There are a number of additional "end-of-trip" support services that are essential to make bicycling a viable transportation option. This includes adequate and secure bike parking (short and long term), and support services such as restrooms, water fountains, and showering and changing facilities. Strategy 2.4 highlights the need for these facilities.

Strategy 2.4 *Work with partners to develop and implement support facilities to make bicycling a transportation mode of choice.*

Bicycle parking

Secure, abundant, well-designed bicycle parking is a crucial component of the bicycle system. Bicycle parking encourages people to ride to their destination knowing that they will have a safe and convenient place to lock their bike. Providing adequate prominent bicycle parking at businesses, schools, libraries, and other destinations sends a message that bicycling is an accepted and encouraged transportation option.

Concurrent with this plan update, Hennepin County staff developed county bicycle parking guidelines. The creation of the guidelines demonstrates the county's commitment to bicycling as a mode of transportation. The guidelines will help to improve the quality and quantity of bicycle parking in Hennepin County. They are intended to be applied specifically to transit oriented development (TOD) projects, transit expansion and station area planning, Hennepin County property services projects, road design or multi-use path projects, and any other site planning or construction efforts conducted by Hennepin County. Considering the need for bicycle parking early in projects will ensure bicycle parking needs are not overlooked.

The bicycle parking guidelines specify separate guidelines for short-term versus long-term bicycle parking. The following is a summary of key recommendations in the bike parking guidelines. The full guide including illustrations of parking types and sample sites is in appendix F.

Minimum parking guidelines

The bicycle parking standards also outline guidelines for the type and quantity of bicycle parking that should be provided in various environments, from more urban to more rural areas. Tables 7, 8 and 9 indicate these guidelines.

Additional facilities

Just as motorists need rest areas to pull over and take a break, a bicycle journey can also result in a need to rest. The availability of restroom facilities, drinking fountains, benches, and facilities for servicing a bike can provide support on longer trips. The county and park district should make efforts to provide support facilities at county buildings and high-use locations along the bikeway system.

Table 7: Bicycle parking locations and considerations

	Short-term parking *(less than two hours)*	**Long-term parking** *(longer than two hours)*
Parking type	Simple bike racks (i.e. "hitch", "inverted U", "swerve" designs)	Secured and limited access (fenced in "cage," secure room or garage)
Typical locations	Commercial, entertainment, and retail facilities	Apartment buildings or multifamily residences
	Medical / health care complexes	Places of employment
	Parks and recreation facilities	Transit stations
	Libraries and civic buildings	Schools and colleges
	Community centers	Stadiums
	Schools and colleges	
Site considerations	Unsheltered (If possible, protected by existing structures such as overhangs or awnings)	Sheltered from weather by at least a roof; shelters that protect from wind, rain, and snow are preferable to fences.
	Accessible to the public (on-street, in public parking areas or other public areas)	Controlled access (users need a key, fob, or passcode to get in)
	In a high traffic area.	
	No more than 50 feet from a main pedestrian accessible entrance. If multiple entrances exist, place signage at secondary entrances to direct bicyclists to bicycle parking or install bike racks at each location.	If located outside the building, must be less than 50 feet from a main pedestrian accessible entrance.
	In a well-lit area.	In a well-lit area.
	Clearly visible from the destination (main entry).	If possible, visible surveillance cameras or nearby security guards greatly enhance security.

Showers and changing facilities

Bicycle commuters need convenient access to showers, changing facilities, and lockers. The bike parking standards include recommendations for providing these facilities to promote employee health in a number of ways.

- Encourage bicycle commuting: Employees who bicycle commute for longer distances, who encounter rainy or hot weather, or who need to change into more formal attire are less likely to commute by bicycle if there are no showers, changing facilities, or lockers at their workplace.

- Encourage daily physical activity: Showers, changing facilities, and lockers allow employees to go jogging or walking while at work. They are often offered in conjunction with fitness centers or workout rooms, increasing opportunities for different kinds of physical activity.

Employers can provide showers and changing facilities by:

- Building showers and changing facilities in new buildings and installing them in existing buildings

- Creating an agreement with a fitness center or recreational facility to allow bicycle commuters access to their showers and changing facilities

- Supporting a central bicycle parking and commuter center that provides bicycle parking and shower facilities to employees who work in the area

Table 8: Minimum bicycle parking guidelines — urban areas, first ring suburbs, ¼ mile of transit facilities

Type of use	Short-term (2 hours or less) bicycle parking	Long-term bicycle parking
Commercial	Office: 1 space for each 5,000 ft^2; minimum 2 spaces	Office: 1 space for each 10,000 ft^2; minimum 2 spaces
	Retail: 1 space for each 2,000 ft^2; minimum 2 spaces	Retail: 1 space for each 10,000 ft^2; minimum of 2 spaces
Multi-family residential	0.1 for each bedroom; minimum 2 spaces	0.5 spaces for each bedroom
Institutional / public uses (museums, libraries, hospitals, religious uses, stadiums, etc.).	1 per 2,000 ft^2; minimum 6 spaces	1 per 10,000 ft^2 or 1 space per 20 employees; minimum 2 spaces
Manufacturing / industrial	None required; consider minimum of 2 spaces at public building entrance	1 space per 10,000 ft^2; minimum 2 spaces
Transit facilities	Spaces for 1.5 percent of a.m. boardings; as space allows at walk-up stations	Spaces for 4 percent of a.m. boardings; as space allows at walk-up stations

Note: Bicycle lockers are discouraged for long term parking if more than six long term parking spots are needed. Electronic lockers (first come, first served with keycard access) are strongly recommended over lockers leased to individuals.

Table 9: Minimum bicycle parking guidelines — low density suburban, exurban or rural areas

Type of use	Short-term (2 hours or less) bicycle parking	Long-term bicycle parking
Commercial	Office: 1 space for each 20,000 ft^2; minimum 2 spaces	1 space for each 12,000 ft^2; minimum 2 spaces
	Retail: 1 space for each 5,000 ft^2; minimum 2 spaces	
Multi-family residential	0.05 per bedroom; minimum 2 spaces	0.5 spaces per bedroom
Institutional / public uses (museums, libraries, hospitals, religious uses stadiums, etc.).	1 per 5,000 ft^2; minimum 4 spaces	1 per 30 employees; minimum 2 spaces
Manufacturing /industrial	None required; consider minimum of 2 at public building entrance	1 space per 15,000 ft^2; minimum 2 spaces

Note: Bicycle lockers are discouraged, but if they are used, electronic lockers (first-come first-served with keycard access) are strongly recommended over lockers leased to individuals.

Strategy 2.5 *Work with transit partners early in the planning phase of corridor and station area planning to incorporate bicycle supportive facilities at key transit locations.*

Strategy 2.6 *Work with major transit providers and local communities to provide direct bicycle connections to transit stops and stations, and increase secure bicycle parking and storage to meet demand.*

Improve connections between transit and bicycling

For some people, bicycling is one of several travel modes that make up their daily trips. Improving the link between bicycling and transit can significantly increase mobility options for residents. It can also have the effect of expanding the service area of the transit system, by increasing the number of people who can reasonably and conveniently access transit stops and stations. As strategies 2.5 and 2.6 highlight, improving the link between bicycling and transit can be accomplished in three primary ways: building high-quality bikeways that connect to transit stops and stations; improving support facilities at those stations; and making it easy for people to bring their bicycles on transit (for example through bike racks on the front of buses). Transit corridor and station area planning processes present opportunities to address these issues.

Support bike share programs

Minneapolis and St. Paul have a thriving bike share program which is anticipated to expand over time. Nice Ride Minnesota was one of the first large-scale bike share systems to be implemented in the U.S. Launched in June 2010 in Minneapolis, the system has rapidly expanded into neighboring St. Paul. With more than 1,500 bicycles at 170 stations spanning the two downtowns and extending into adjacent neighborhoods, the program has logged more than 590,000 rides in its four years of service. As stated in strategy 2.7, the county and park district and other partners should continue to support this growing system. In 2013, the county provided funding for additional stations at key destinations around Minneapolis.

Strategy 2.7 *Support local bike sharing programs.*

Ensure integration among county, local and regional bikeways

The 2040 bikeway system is one piece of a greater bicycle network that includes local, regional and state bikeways. The regional bikeway network is comprised of a variety of bikeway types that must be coordinated across jurisdictions to ensure continuity. Coordination is needed on facility design and phasing, as well as signage, wayfinding, maintenance and the dissemination of information (i.e. maps, online information, etc.).

The county has been and will continue to be involved with cities' plans for local bikeways and facilities on county right of way. Plan maps and other content will be updated to reflect city efforts according to the schedule on page 23.

Strategy 2.8 emphasizes that partnerships are essential to accomplish a fully-connected regional system of bikeways. The county and park district must be opportunistic in their approach to land acquisition. Securing new rights-of-way is a strategic way of expanding the bicycling system.

Strategy 2.8 *Collaborate with partners on planning, design and funding bicycle infrastructure that helps to complete or complement the county bikeway system.*

Hennepin County bikeway system

As described earlier in this chapter, the county bikeway system includes regional bikeways, including all of the Three Rivers Park District and Minneapolis Park and Recreation Board regional

trail systems, bikeways along county roadways and in some instances includes alignments that follow some state and local roadways. Where local roadways are identified as part of the county bikeway system, the county will partner with the local implementation agency to provide bikeways that are consistent with bikeway design standards.

Bikeways and transit systems

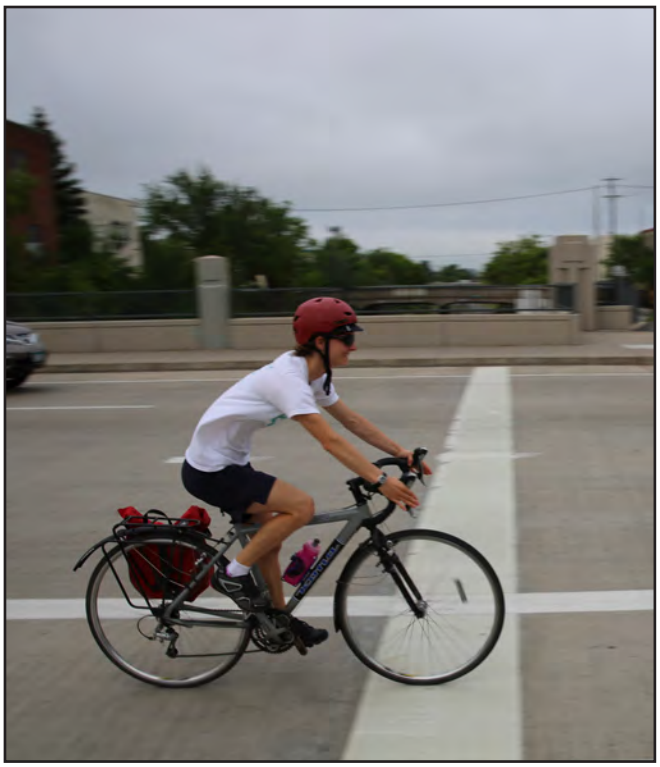
Bicycling and transit complement each other to enhance the efficacy of both. Good transit/bike connections increase the range of both modes, provide one-way trip options, reduce motor vehicle parking demand, and provide a backup mode. The 2040 bikeway system prioritizes connections to transitways. Transitways and stations should be designed and operated to facilitate these connections and to meet the needs of people biking. Bicycle plans are being developed for the Metro Blue Line and Green Line extension station areas within a three-mile radius of each station. These plans will be incorporated as future appendices to this plan.

City bikeway systems

The local bikeway systems provide more complete coverage at the local level, serving trips within and between neighborhoods and small business districts. Key local routes are also a part of the regional system. The county bikeway system is intended to connect with local routes to provide access for longer bicycle trips to more regionally significant destinations.

Adjacent bikeway systems

Many residents bike to adjacent communities (and vice versa). The county bikeway system is intended to make key connections to bikeway systems in adjacent counties. Frequently, Hennepin County and the Three Rivers Park District will partner with adjacent communities on regionally-significant bikeway projects that improve inter-county connections or overcome physical barriers, such as a river or highway crossing.



Regional trails

Regional trails (including the Three Rivers Park District system) have traditionally been planned and implemented for recreation, with much of the funding coming from dedicated park and open space sources administered by the Metropolitan Council. More recently, and particularly in the case of the park agencies, these systems are becoming integral parts of the bikeway transportation system. The collaboration of Hennepin County and Three Rivers Park District on this plan update is a critical step to better coordinate bicycle transportation and recreation systems in Hennepin County.

Metropolitan Council regional bicycle transportation network and priority regional bicycle transportation corridors

The Metropolitan Council recently conducted a study to define a regional bikeway network. The study focused on priority corridors that are intended to provide a higher level of bikeway service to critical regional destinations. Hennepin County's 2040 bikeway system includes some key elements of the priority regional bikeway system, and recommends continued coordination with regional and local agencies.

Minnesota state bikeway system

The emerging state bikeway system is focused on providing a designated network of long distance routes comprised of off- and on-street bikeways. The state bikeway system differs from the regional trail system in that it is established, developed, maintained, and operated by MnDOT. The first and only route designated is the Mississippi River Trail bikeway. It extends through Hennepin County along the Mississippi River. As the county bikeway system is implemented, the designated Mississippi River Trail route may change to take advantage of new or enhanced bikeways.

U.S. bicycle route system

The United State Department of Transportation has led the effort to establish a national system of bicycle routes that connects across state lines and functions similar to the interstate or U.S. highway systems. The first route designated in Minnesota is the Mississippi River Trail bikeway. A future U.S. bicycle route is proposed along the Minnesota River in Hennepin County.

Strategy 2.9 *Continue refining the plan and implement the system of interconnected on- and off-street bikeways that link all significant destinations within the county.*

Strategy 2.10 *Secure necessary right-of-way to accommodate future expansion of the bicycle system.*

Refine the bikeway system plan and expand the system over time

The 2040 plan is intended as a living document that should be updated on a regular basis to reflect the status of project implementation. As the region changes over time, it will be important for the bikeway system to provide new connections between communities, employment centers, retail districts, and service centers. Connecting these destinations will ultimately make Hennepin County a more appealing place to live and work, enhancing access to social, economic and recreational opportunities.

Strategies and actions

The following strategies and actions focus on building the bikeway system. Each strategy includes specific actions for the county and/or park district to undertake.

Strategy 2.1	Actions
Provide elements that increase safety along existing and new corridors and intersections.	2.1.a Promote traffic signal design and operation to allow bicyclists to make all movements through intersections in a timely fashion without requiring the detection of a motorized vehicle or use of a push-button. Implement appropriate bicycle detection systems whenever traffic signals are added or substantially upgraded.
	2.1.b Work with responsible jurisdictions to employ bicycle detection systems where possible in conjunction with scheduled signal updates at the local, county and state level.
	2.1.c Target opportunities to include bicycle detection in conjunction with accessibility improvements identified in the Americans with Disabilities Act Hennepin County Program Access and Transition Plan for County Highway Rights of Way (board adoption pending).
	2.1.d Investigate other agencies' implementation and best practices for lighting of 24-hour trails.
	2.1.e Identify and inventory lighting along trails, priority bikeways, and trail-road crossings, and evaluate candidates for improved lighting. Install lighting along routes as prioritized by candidate evaluation and as supported by the greater community.
	2.1.f Investigate opportunities to integrate sustainably powered lighting (i.e. solar), or artfully designed lighting along bikeways.
	2.1.g Evaluate demand and consider implementation of mileage markers along select regional trail corridors.
	2.1.h Develop a methodology for identifying and addressing with countermeasures the top problem intersections based on crash history, user input and geometric issues.
	2.1.i Install bicycle and pedestrian-level lighting along county road trails, cycletracks and sidewalks as part of trail construction or roadway reconstruction where appropriate.

Strategy 2.2	Actions
Address network gaps and barriers.	2.2.a Work with agency partners to identify and remove gaps in the 2040 bikeway system with the appropriate bikeway treatments.
	2.2.b Integrate gap closures in to city, county, and state reconstruction and paving projects when they are initiated.
	2.2.c Create logical termination points for new bikeways, including as part of larger roadway projects, even if it means extending the bikeway beyond the original project limits.

Strategy 2.3	Actions
Plan and designate an enhanced bicycle network composed of high comfort bikeways that provide physical separation from motor vehicles (e.g., protected bike lanes, cycle tracks, off-street trails, and other innovative designs).	2.3.a Collaborate with local stakeholders to develop an enhanced system overlay to the county bikeway system that will provide a higher level of comfort as an appendix to this plan by the end of 2015
	2.3.b Implement the enhanced bikeway system, and include a progress report on implementation within the annual tracking of the plan implementation.

Strategy 2.4

Work with partners to develop and implement support facilities to make bicycling a transportation mode of choice.

Actions
2.4.a Collaborate with partners to fund and implement facilities that support bicycling including restrooms, showers, water fountains, repair stations, and resting areas.
2.4.b Identify and prioritize locations where facilities are needed based on guidance and user feedback via an online or 311-type system.
2.4.c Work with partners to provide convenient, accessible, and secure bicycle parking, addressing location visibility and lighting.
2.4.d Work with partners to develop a downtown Minneapolis bicycle transportation center.
2.4.e Follow Hennepin County's bicycle parking standards (appendix F) for encouraging provision of bicycling supportive facilities at county/park district properties and within the public right-of-way.
2.4.f Develop and regularly update a map of county and Three Rivers Park District bicycle parking facilities, including location and type.
2.4.g Continue to inventory bike parking provided by the county and park district, and evaluate where there is additional need or opportunities to invite more people to bicycle by increasing available parking, using the parking guidelines as a baseline.
2.4.h Support educational programs to encourage local business owners to purchase and install bicycle parking in visible, accessible locations near their entrances.
2.4.i Ensure bicycle parking is considered when Hennepin County Housing, Community Works and Transit department or Metro Transit are planning major transit improvements, changes, and expansion.
2.4.j Incorporate Hennepin County bicycle parking standards (appendix F) in to the application and ranking process for county-funded projects (such as transit-oriented development grants).
2.4.k Develop support facilities guidelines for the regional trail system.

Strategy 2.5	Actions
Work with transit partners early in the planning phase of corridor and station area planning to incorporate bicycle supportive facilities at key transit locations.	2.5.a Establish a communication protocol with key transit provider staff so county staff is aware of potential projects and can suggest ways to incorporate bicycle provisions in transit projects at the appropriate phase of project planning.
	2.5.b Provide guidance and resources for evaluating appropriateness of, and installing, bicycle repair stations and short/long-term bicycle storage options at major transit hubs.

Strategy 2.6	Actions
Work with transit providers and local communities to provide direct bicycle connections to transit stops and stations, and increase secure bicycle parking and storage to meet demand.	2.6.a Partner with transit agencies to identify transit/bicycle usage patterns (such as bike boardings, or bike parking use) to prioritize bicycle improvements that increase access to transit.
	2.6.b Consider prioritizing areas for bicycle improvements based on the percentage of lower income residents within a certain distance of the transit stop.
	2.6.c Include bikeway planning for major transit stations. Transitway and station area planning efforts should address bikeway system connections and support facilities.
	2.6.d Provide county funding eligibility for bikeway system connections and support facilities for major transit stations.

Strategy 2.7	Actions
Support local bike sharing program(s).	2.7.a Support local bike sharing program(s) in their effort to expand the bike sharing network and cater to the needs of suburban users.
	2.7.b Continue to support bike sharing at county buildings, public rights-of-way, and encourage the expansion of bike sharing to include more stations at Three Rivers Park District regional parks and along regional trails.

Strategy 2.8	Actions
Collaborate with partners on planning, design, and funding for bicycle infrastructure that helps to complete, or complement the county bikeway system.	2.8.a Develop a full complete streets design manual for the county.
	2.8.b Work closely with local agencies to educate and encourage staff to use the county design toolkit in development of Hennepin County bikeway system improvements.
	2.8.c Provide consistent bikeway type (on- or off-street) when connecting with other locally-developed bicycle networks.
	2.8.d Cultivate consistent communication among agencies and staff to ensure collaboration happens early and often in the planning, design, development, and funding processes.
	2.8.e Work closely with staff and local, regional and state agencies to encourage cross-county collaboration on facility location, design, implementation and wayfinding to better link regional / seven county metro area bicycling network.
	2.8.f Support efforts to provide greater flexibility in the application of state aid bikeway standards.

Strategy 2.9	Actions
Secure necessary right-of-way to accommodate future expansion of the bicycle system.	2.9.a Reference the design toolbox typical sections during preliminary plat and site plan reviews to ensure right-of-way is preserved for future bikeways. Pursue future refinements of the design toolbox for incorporation into a proposed complete streets design manual to assist in development reviews.
	2.9.b Work with local governments interested in retrofitting roadways (road reconfigurations, repaving, etc.) to investigate opportunities to add or improve bikeways, and connect them to the county system.
	2.9.c Investigate and use new traffic analysis methodologies that better incorporate all road users when determining bikeway locations and types.

Strategy 2.10	Actions
Continue refining the plan and implement the system of interconnected on- and off-street bikeways that link all significant destinations within the county.	2.10.a Continue to engage underserved and underrepresented communities in the bicycle system planning process in order to better understand barriers, bikeway needs, and desires relative to bicycle usage and ensure that all populations receive benefits from bicycling investments.
	2.10.b Revise the entire bikeway system plan map periodically, as development and land use densities change throughout the county.


BELL
STOP

3. Programs

Summary:

Promote the bicycle as a mode of transportation that is practical, convenient, and pleasant for commuting, recreation, health and physical activity.

Realizing the vision for bicycling in Hennepin County will require more than building trails and improving roads for bicycling. Expanding the audience for bicycling also requires programs that promote bicycling as a fun and healthy way to explore the community, and educate both motorists and bicyclists to operate safely.

Chapter three focuses on the non-infrastructure, or programmatic elements of the bikeway system. The strategies presented in this chapter encourage staff to collaborate with local partners to further develop critical bicycle support systems necessary to set the stage for the 2040 bikeway system. These strategies are intended to provide Hennepin County residents with the tools and support systems they need to safely and confidently use bicycles as a means of transportation and recreation.

Education and encouragement for bicycling

The county and the park district view education and encouragement programs as opportunities to not only encourage more bicycling, but also to promote bicycling as a mainstream component of the transportation system. These programs play a critical role in encouraging other roadway users to recognize and respect the rights of bicyclists using Hennepin County trails and roadways.

Education and encouragement efforts empower people to experience bicycling, while simultaneously breaking down myths that bicycling is impractical or unsafe. These efforts are especially important for reaching minority and low income populations, who may consider bicycling as a last resort. Positive messages about the benefits of bicycling can help to break down stereotypes and increase mode shift.

There are already many education and encouragement efforts underway in Hennepin County. The intent of strategies 3.1 – 3.6 is to acknowledge these on-going efforts and identify new or expanded programs that are needed in the county. These strategies are supported by a number of specific actions that are identified in the summary chart at the end of this chapter.

To encourage riders of all ages and all abilities, it is important to target non-user audiences to understand barriers, desires, and cultural perceptions about bicycling. This information should be used to encourage underrepresented populations to experience the benefits of bicycling. For example, existing programs such as the Bike Walk Twin Cities - Bike Walk Move campaign have made inroads to encourage bicycling in traditionally underserved neighborhoods of north Minneapolis.

Open Streets events have been popular events that attract a wide variety of residents. County staff will continue to participate in the events and will explore how best to support them.

Twin Cities Bike Week encourages people to ride for transportation with events primarily in the core cities. Hennepin County will continue to participate in the events and will explore options to expand into cities that have not had events.

People who learn to ride at an early age are equipped with skills to become life-long bicyclists. It is important to invest and support Safe Routes to School so the next generation enjoys the benefits of bicycling.

Healthy living programs are becoming more common for employers throughout the county. The county and park district should build upon this growing movement by continuing to support and highlight employee benefit programs available through the county and park district, as well as other key employment centers.

Strategy 3.1 *Promote the recognition of the county's bicycle-friendly nature.*

Strategy 3.2 *Educate the public about bicycling as a sustainable mode of transportation.*

Strategy 3.3 *Support efforts to make bicycling a more attractive option for populations underrepresented on bicycles.*

Strategy 3.4 *Work with partners to develop activities and events for potential bicyclists on topics like bicycling in everyday/professional clothes, maintenance, hauling cargo and other barriers.*

Strategy 3.5 *Support and encourage the expansion of Safe Routes to School programs, including additional funding.*

Strategy 3.6 *Support efforts to encourage employers to increase understanding and awareness that bicycling is a viable commuting option.*

Programs addressing system safety

Bicycle safety is influenced by many factors, including the quality, design and availability of routes that are easy for all users to understand and navigate. Safety is also influenced by attitudes and behaviors. There is a strong need to develop programs for people of all ages and abilities.

Bicycle safety Program strategies are presented in three categories: evaluation, education, and enforcement. **Evaluation** programs are those aimed at helping the county and park district to monitor and evaluate the performance of the bicycle system. **Education** programs are focused

on educating all users (bicyclists, motorists and pedestrians) on proper travel behavior and common understanding of markings and traffic controls for safe predictable navigation of the system. **Enforcement** programs promote compliance with rules and regulations, and reinforce proper behavior through intervention (including warnings and citations as necessary).

Safety evaluation

Monitoring and regularly assessing the safety of the bikeway system is a significant challenge. There is very little available data on crashes, close calls, or potential hazards such as poor lighting, obstructions, or dangerous pavement conditions. An analysis of the data that is available on bicycle crashes in Hennepin County was conducted as a part of this plan. The results are in appendix G.

Two key factors complicate tracking bike crashes:

- Crashes are typically only reported and tracked when they occur on roadways as a result of an interaction with a motor vehicle and result in significant property damage or injury. Crashes that occur on trails or in parking lots are not typically reported.
- Crashes routinely involve a single bicyclist, multiple cyclists, or bicyclist and pedestrian and are only trackable if they include an emergency room visit. These types of crashes are not currently included in crash statistics.

Strategy 3.7 *Establish safety evaluation programs and processes to address user conflicts.*

Strategy 3.8 *Provide a systematic and consolidated means for residents and visitors to identify areas of concern or report issues (i.e., bicycle crashes and "close calls").*

Additionally there are many instances where there are safety concerns along a particular corridor, for example where close calls are common. New methods are needed to enable bicyclists to report safety issues encountered on the bikeway system.

Strategies 3.7 and 3.8 describe ways in which the county or park district will continue or enhance safety evaluation programs. New safety evaluation programs and processes will allow county and park district staff to identify, catalog, and address high-conflict areas in a timely manner. These programs are essential for the safety of all users.

One common tool for safety evaluation is a public reporting system. The county and park district are committed to providing a high level of customer service through programs that encourage feedback and enable citizens to report safety issues. Users of the bikeway system have some of the best knowledge about how the system is working and where areas of concern may exist. To evaluate bicycle system performance the county and park district need to provide a mechanism for this to occur, and to proactively identify issues that may result in future crashes.

Safety education

All roadway and trail users share the responsibility of exercising due care while traveling on public rights-of-way, regardless of travel mode. Bicyclists need to be educated about their rights and responsibilities on shared roadways, bike lanes, protected bike lanes and trails. This includes the safety and protection of pedestrians on shared use pathways and sidewalks. Motorists need to be educated about bicyclists' legal rights to use roadways and understand their responsibility to provide due care when encountering bicyclists, regardless of whether a designated bikeway is present. Pedestrian education is needed as well, including safe walking etiquette for shared use trails, and rules regarding the use of protected bike lanes (which are not intended for pedestrian use). Strategies 3.9 and 3.10 are aimed at addressing these needs.

Bicycle education programs should be a coordinated, collaborative effort with community organizations and businesses to reach a broad cross section of people throughout the county. There are a number of existing education programs offered by organizations such as the Bicycle Alliance of Minnesota and MnDOT. The county and park district should continue to support these programs where appropriate.

Motorists who operate in an unsafe manner represent a significant hazard to bicycling. Motorist education programs should be enhanced and provide clear information regarding bicycle safety. Bicyclists of all ages should be educated regarding the rules of the road and safe riding skills.

Strategy 3.9 *Promote and participate in bicycle education programs through partnerships with community organizations and businesses.*

Strategy 3.10 *Work with partners to expand motorists' education and coursework for motorists, bicyclists and youth about the rights and responsibilities of all road users.*

Strategy 3.11 *Work with partners such as public safety officials, cities and school districts to promote safe bicycling, driving and walking practices and encourage enforcement.*

Safety enforcement

Law enforcement has a critical role in ensuring roads and trails are safe for bicyclists. It is important to enforce laws that reduce bicycle/motor vehicle crashes and increase mutual respect between all roadway users. Enforcement must take a balanced approach to improving behaviors of both bicyclists and motorists. Examples of unsafe motorist behaviors include speeding, driving while distracted, passing too close to bicyclists, parking in bike lanes, and opening doors of parked vehicles in front of bicyclists. Examples of unsafe bicyclist behaviors include ignoring traffic controls, riding the wrong way on streets, and riding with no lights at night. As emphasized in strategy 3.11, enforcement priorities should be established through a collaborative process involving a variety of partners in the county.

Wayfinding and trip planning

Wayfinding and trip planning strategies are aimed at enabling bicyclists to navigate the bikeway system easily. Wayfinding provides information to the user, including signage identifying destinations by time or distance, and informational references such as mile markers and street signs. Well-designed wayfinding helps bicyclists reach their destinations without having to stop and pull out a map or ask for directions. Trip planning is focused on providing detailed route information in a variety of accessible formats such as maps or applications for personal computing devices. The goal is to enable bicyclists to plan ahead for the most suitable bicycle routes.

Strategies 3.12 and 3.13 present key areas of action for the county and park district related to wayfinding. There have been efforts in the past to initiate wayfinding in Hennepin County with varying levels of success. It is a challenge to collaborate on a comprehensive wayfinding strategy for a county of Hennepin County's size and with so many communities, many of whom already have established styles or brands for their bikeway systems, including bikeways that are part of the county system. Moving forward, it will be important for the county to continue to collaborate with local jurisdictions to develop a coherent wayfinding strategy continuous across jurisdictional boundaries, while continuing to recognize the identity and character of the county's unique local communities.

The county-wide bikeway system map is an important resource. It not only serves as a planning document, it also provides important information for people who want to use the system. The map should continue to be updated and published in multiple venues (print form, and via websites designed to be viewed on mobile devices).

Strategy 3.12 *Continue to collaborate with local agencies and other partners to address wayfinding in a comprehensive, coordinated way.*

Strategy 3.13 *Provide trip planning resources in multiple formats, including print and digital.*

Strategies and actions

The following strategies and actions focus on the non-infrastructure, or programmatic elements of the bikeway system. Each strategy includes specific actions for the county and/or park district to undertake.

Strategy 3.1	Actions
Promote the recognition of the county's bicycle-friendly nature.	3.1.a Pursue having the county designated as a League of American Bicyclist (LAB) Bicycle Friendly Business and work with economic development departments, and business associations to establish bicycle friendly businesses/bicycle friendly districts.
	3.1.b Continue to support local communities in seeking League of American Bicyclists Bicycle Friendly Communities designation.
	3.1.c. Consider ways to promote the county's bicycle-friendly nature through advertising collateral (e.g., highlight on maps, kiosks, brochures, business windows) and public service announcements.
	3.1.d Actively participate in the Pedal MN campaign, and highlight bike-friendly destinations within the county.

Strategy 3.2	Actions
Educate the public about bicycling as a sustainable mode of transportation that saves money, promotes healthy lifestyles, and reduces greenhouse gases and other pollution emitted into the air.	3.2.a Develop promotional materials and campaigns to educate the public about transportation choices (e.g., Arlington County Car Free Diet).
	3.2.b Maintain and expand partnerships with health practitioners, community, business, and governmental stakeholders such as Active Living Hennepin County to expand interest in and access to bicycling.

Strategy 3.3

Support efforts to make bicycling a more attractive option for those populations underrepresented on bicycles.

Actions
3.3.a Reach out to populations that are not currently riding to find out why they aren't riding and what would encourage more riding through surveys, focus groups, listening sessions, etc. and, if appropriate based on the findings, implement programs to address these findings.
3.3.b Review best practices for promotion of bicycling to underrepresented minorities (e.g., the Biking Public Project in NYC, and Bike Walk Move).
3.3.c Monitor the use of emerging technologies that may provide opportunities to extend the reach of bicycling trips and expand access to those needing physical assistance while bicycling.
3.3.d Evaluate potential county role in supporting community bike centers in low-income communities with high potential ridership.

Strategy 3.4	Actions
Work with partners to develop activities and events for potential bicyclists on topics like bicycling in everyday/professional clothes, bicycle maintenance, hauling cargo, and other barriers that could be overcome by rider knowledge.	3.4.a Develop new (county) and enhance existing (park district) educational materials for encouragement/training events such as open streets, bike rodeos, or bike week.
	3.4.b Improve internal efforts to inform and increase knowledge about bicycling as a viable transportation option for county staff.
	3.4.c Develop an employee bicycle community and develop informational materials on how to bike to work at the county and include bike commuting information at new employee orientation.

Strategy 3.5 **Support and encourage the expansion of Safe Routes to School (SRTS) programs, including additional funding.**	**Actions**
	3.5.a Inventory and identify where there are missing local trail connections between schools and the regional trail system. Work with partners to fund, design, prioritize, and implement missing connections.
	3.5.b Develop standard protocol to contact area schools and city staff for input and feedback before county road improvement projects.
	3.5.c Integrate youth-targeted programming with community education and encouragement campaigns.
	3.5.d The 2040 bikeway system should be developed to include child-friendly routes, and develop targeted promotional campaigns about bicycling to kid-friendly destinations and community events to market bicycling as a fun and independent way to get around.
	3.5.e Support the state SRTS curriculum in Hennepin County partner schools.

Strategy 3.6

Support programs and efforts to encourage employers to increase understanding and awareness that bicycling is a viable transportation option.

Actions
3.6.a Develop and distribute materials to educate employers about possible healthy living incentive programs.
3.6.b Support employee and community-wide bike to work events.
3.6.c Support bicycling to work for county/park district staff, document existing efforts to do so and identify what needs improvement.
3.6.d Provide incentives, such as wellness credits, to county staff for biking to work.
3.6.e Develop outreach and orientation materials aimed at increasing county employee bicycle commuting. Information could be printed and posted to internal/external websites.
3.6.f Create a county bike commuting community and online forum for employees. Information on bicycle commuting and health incentive programs would be an integral part of the online forum.
3.6.g Partner with the Minneapolis Downtown Improvement District and educate the ambassadors on the location of bikeways and support facilities downtown.
3.6.h Partner with local organizations such as Nice Ride, ZAP, and Commuter Connection to promote biking for transportation and recreation. These organizations can provide educational sessions and maps to encourage employees to bike.
3.6.i Promote the use of bicycling for workday transportation, including trips to meetings, between worksites, and deliveries.

Strategy 3.7	Actions
Establish safety evaluation programs and processes to address user conflicts.	3.7.a Routinely perform safety reviews at high-crash rate locations or locations where known safety concerns are identified (including close-call locations where documented).
	3.7.b Track bicycle crashes by bikeway type and crossing type. Follow-up with appropriate staff to determine corrective actions for high crash rate locations.
	3.7.c Work to develop a methodology that would calculate bicycle-related crash rates. These rates would allow the identification of statistically significant problem areas and comparisons to similar locations throughout the county.

Strategy 3.8	Actions
Provide a systematic and consolidated means for residents and visitors to identify areas of concern or report issues (i.e., bicycle crash "close calls").	3.8.a Explore methodologies for users of the system to report areas of concern or close calls (e.g., Minneapolis 311, SeeClickFix, Bike Crash App).
	3.8.b Work with local law enforcement and other partners to inventory previous and ongoing conflict points.
	3.8.c Develop a system of identifying and prioritizing conflict reduction project areas and implementing programming and infrastructure improvements.
	3.8.d Based on staff review and analysis of information on system performance, the county and park district further review areas with consistent concerns, and appropriately address locations in a timely fashion.

Strategy 3.9	Actions
Promote and participate in bicycle education programs through partnerships with community organizations and businesses.	3.9.a Document existing educational efforts by the county/park district and identify what to enhance or expand with community partners.
	3.9.b Continue to administer and work with community partners such as cities and other organizations to develop additional educational programs (e.g., Three Rivers Park District Share the Trail Program) aimed at educating the public about safe riding and how to navigate the variety of bikeway types.
	3.9.c Develop or use/modify existing educational, encouragement, safety, etc. materials that county and/or park district staff can take to various community events, businesses, schools, and agency sponsored events.
	3.9.d Incorporate information on safe bicycle practices into various county and park district publications (bike map, county website, etc.).
	3.9.e Establish funding streams and partnerships to launch a cohesive bicycle and motorist educational marketing campaign.
	3.9.f Continue offering bicycling and motorist safety courses to county employees with a bicycle education module. Investigate offering specialized training for drivers of larger vehicles.
	3.9.g Develop employee-specific safety training materials and modules on bike safety for bicyclists and motorists.

Strategy 3.10	Actions
Work with partners to expand driver's education and coursework for motorists, bicyclists and youth about the rights and responsibilities of all road users.	3.10.a Partner with other organizations working on driver's education programs on the inclusion of information on multiple modes and its inclusion in the examination process.
	3.10.b Incorporate bicycle safety information in the county's defensive driving and large vehicle education programs.
	3.10.c For county motorists — alert employees to habits that lead to distracted driving, and enforce prohibitions of these types of actions.
	3.10.d Partner with other organizations to expand the availability of bicycle safety training (e.g. bicycle rodeos, Safe Routes to School, League of American Bicyclists courses.)

Strategy 3.11	Actions
Work with partners such as public safety officials, cities, and school districts to promote safe bicycling, driving, and walking practices and encourage enforcement by the presiding agency.	3.11.a Continue to evaluate current enforcement practices at the state, county, and park district levels relative to bicycle safety and encourage enhancements to enforcement programs as necessary.
	3.11.b Reach out to the Hennepin County Sheriff's Office and other local public safety partners and establish regular meetings to discuss road and bikeway safety.
	3.11.c Work with the Hennepin County Sheriff's Office and local public safety officials to improve protocol for recording and reporting crash data including improving the accuracy of recording and categorization of bicycle crash information.
	3.11.d Work with the Hennepin County Sheriff's Office and local public safety officials to educate officers on bicycle safety.

Strategy 3.12	Actions
Continue to collaborate with local agencies and other partners to address wayfinding in a comprehensive, coordinated way.	3.12.a Review existing wayfinding guidance, policies, and programs and consider adapting for a county-wide wayfinding guide.
	3.12.b Investigate opportunities to integrate additional informational/wayfinding signage along bikeways.

Strategy 3.13

Provide trip planning resources in multiple formats, including print and digital.

Actions
3.13.a The county and park district will coordinate and collaborate on the development of all county and park district bicycling system maps to ensure the most accurate information is included on the maps.
3.13.b Continue to update and publish the Hennepin County bicycle system map on a periodic basis.
3.13.c Continue to update and publish the Three Rivers Park District Regional Trail Map on a periodic basis.
3.13.d Evaluate need and, if appropriate, incorporate universal symbols that can be understood by non-English speaking users on maps.
3.13.e Seek opportunities to partner with transit service providers to develop trip planning capabilities that integrate bicycle and transit modes in the same trip, including information about on-board bicycle capacity within high use transit corridors.
3.13.f Use and promote online resources to assist in system wide trip planning. Work with web tools, including Cyclopath, Google and Metro Transit Trip Planner, so that bikeways are accurately reflected online. Promote the use of these web tools to county residents and visitors.
3.13.g Develop an online map of the Hennepin County bikeway system. Investigate a GIS application that would allow users to view various layers of information.
3.13.h Create an editable composite map of the individual city bikeways for reference purposes.

4. Policy

Summary:

Collaboratively build an integrated county bicycling system that allows people of varying skills to safely, efficiently and comfortably connect to and between all destinations in the county.

Bicycling is consistently supported in numerous county, municipal, regional, and state policies as not only an important element of the multimodal transportation system, but also as a key factor in achieving sustainability and encouraging healthy communities. This chapter discusses the policy framework within which this plan was developed, and recommends strategies and actions to improve coordination and complement other ongoing initiatives of Hennepin County, Three Rivers Park District, and other partners engaged in bicycle programs and projects in the region.

Strategies 4.1-4.3 are aimed at supporting and encouraging partnerships that are needed to implement the Hennepin County bicycle transportation plan. A full list of Implementation Strategies and Actions is at the end of the chapter.

Connection to county plans and policies

Support for bicycling is a consistent theme in many of Hennepin County's plans and policies. The county and Three Rivers Park District continue to improve coordination among agencies on bicycle issues, and their partnership to produce this plan was a key step toward maintaining this cooperative approach. Figure 13 depicts the relationship of this plan with other Hennepin County, Three Rivers Park District, Metropolitan Council, and state planning initiatives. A discussion of various plans and policies, including their relationship to this plan, follows.

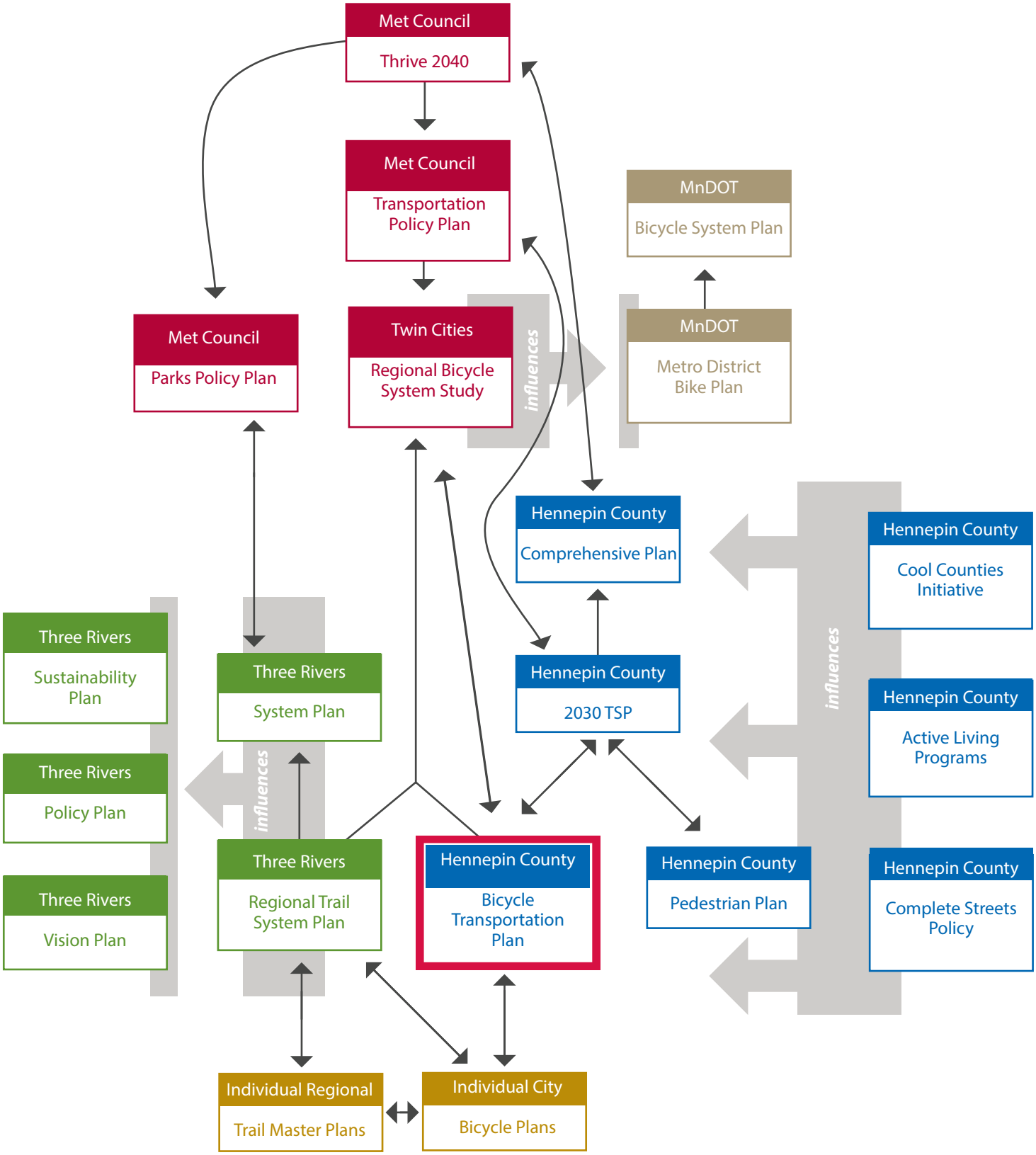


Figure 13: Policy framework

Hennepin County active living policies and partnership

In 2006, Hennepin County launched its Active Living Hennepin County initiative, which is supported by a partnership of Three Rivers Park District, cities, businesses, and nonprofits working together to increase opportunities for daily physical activity. In 2007, the Hennepin County Board of Commissioners unanimously adopted an Active Living Policy, affirming support for the county's active living principles.

Since then, Active Living Hennepin County has led numerous initiatives within the county, including encouraging local communities to adopt complete streets policies and principles and providing technical support for improving active transportation across the county. The Hennepin County bicycle transportation plan supports active living through strategies and actions that will improve the active transportation system and increase ridership amongst existing and new bicyclists of all ages and abilities.

Hennepin County complete streets policy

In 2009, the Hennepin County Board of Commissioners adopted a complete streets policy. The policy states that "Hennepin County will enhance safety, mobility, accessibility and convenience for all corridor users including pedestrians, bicyclists, transit riders, motorists, commercial and emergency vehicles, and for people of all ages and abilities by planning, designing, operating, and maintaining a network of complete streets."

The policy applies to all corridors under Hennepin County jurisdiction, and compels the county to work with other transportation agencies to incorporate a complete streets philosophy into every transportation and development project as standard practice. In 2012, the county developed a complete streets checklist that must be completed for every county reconstruction project. This plan provides strategies and actions to support the complete streets policy implementation. Specifically, the county anticipates using the design guidelines included in this plan to develop county-specific complete streets design guidelines.

Strategy 4.1 *Support and encourage interdepartmental coordination and develop actions and programs that complement other county initiatives and planning efforts.*

Strategy 4.2 *Increase internal and external support so that bikeways are eligible expenses for the lifecycle of transportation funding, including planning, design, development, operations, and maintenance.*

Strategy 4.3 *Support and encourage coordination between Hennepin County and partner agencies and municipalities. Develop actions and programs that complement aligned efforts at the state, region, or municipal level.*

**see the chart at the end of the chapter for specific actions that will be taken to support the strategies.*

Hennepin County transportation systems plan

The 2030 Hennepin County transportation systems plan (2030 HC-TSP) articulates a vision, updates previous planning work, and provides guidance for future transportation systems in the county. It is a multimodal plan, covering both motorized and nonmotorized travel. The vision and goals of the 2030 HC-TSP are strongly focused on improving mobility for pedestrians and bicyclists. It establishes five goals that speak to the need for better bicycling conditions (see sidebar), all of which support the vision and goals for this plan.

The 2030 HC-TSP is not intended to be a detailed plan specific to each mode; it generally refers to mode-specific plans (such as this one) for details.

The 2030 HC-TSP identifies 2030 targets related to bicycling, which were incorporated into the targets for this plan.

Hennepin County Transportation Systems Plan goals related to bicycling

Goal 1. Preserve and modernize the existing transportation system
"Many of [the county's] roads are old, and were not initially designed to support the land use forms desired today, are not pedestrian or bicycling friendly, and are in need of both infrastructure and land use revitalization" (2030 HC-TSP, 1-8).

Goal 2. Improve safety for all transportation users
"Providing a safe transportation system for all users is always a high priority for the county. This needs to be accomplished through a combination of engineering, education, and enforcement and needs to be targeted toward all users including drivers, bicyclists, and pedestrians" (2030 HC-TSP, 1-11).

Goal 3. Provide mobility and choice to meet the diversity of transportation needs as well as to support health objectives throughout the county
"The county's highway and bicycle trail network will be developed to provide mobility and opportunities for Active Living with reasonable coverage over the entire county as well as providing pedestrian accommodates on all urban roadways as stated in the Complete Streets policy" (2030 HC-TSP, 1-13).

Goal 4. Increase spatial efficiency of system
"While the county does not have land use authority, it is committed to working with its local partners and the private sector to leverage transportation investments to enhance livability, economic vitality, and the success of transit investments (HC-TSP, 1-15)."

Goal 5. Reduce the county's environmental footprint
"This goal is consistent with the county's Cool County initiative and reflects the objectives of reducing energy consumption, protecting the environment, and supporting a sustainable lifestyle" (2030 HC-TSP, 1-18).

Hennepin County public works strategic plan

As part of a strategic planning process within Hennepin County Public Works, the county developed a plan to guide the implementation and administration of its programs and projects. This plan provides guidance for the work of the five Public Works departments (Planning, Policy and Land Management; Environment and Energy; Transportation (Road and Bridges); Community Works; Facility Services; and Management Support). The plan specifically recognizes the importance of increasing transportation choices and supports bicycling as a means to achieve the county's seamless transportation network. The plan emphasizes the role of active living and complete streets and provides strategies and actions to further the county's commitment to these policies.

Hennepin County pedestrian plan

In 2013, the county adopted its first pedestrian plan. It is similarly geared to providing safe transportation options throughout the county. Together with the Hennepin County bicycle transportation plan, the pedestrian plan will help to further the county's complete streets initiatives, and the park district's ongoing efforts to incorporate transportation into their planning and design efforts.

Hennepin County Cool County Initiative

In 2007, the Hennepin County Board of Commissioners established the Cool County Initiative. As part of this initiative, Hennepin County pledged to reduce greenhouse gas emissions by 80 percent by the year 2050. The Cool County Initiative establishes specific goals and targets for reducing vehicle miles traveled (VMT) and greenhouse gas emissions. The Hennepin County bicycle transportation plan establishes specific goals for increasing bicycle ridership and mode shift, which can help the county achieve its greenhouse gas emission reduction goals and targets.

Connection to Three Rivers Park District plans and policies

Three Rivers Park District policy statement

The Three Rivers Park District policy statement is a guiding document that describes how the park district will execute its mission relative to 13 policy directives. It complements this plan by establishing a definition and purpose for regional trails as a component of the transportation network.

Three Rivers Park District vision plan

The Three Rivers Park District vision plan provides a vision for the park district's system:

Through leadership, advocacy, innovation and action, Three Rivers is a model of a sustainable regional system of parks and trails that meets the needs of the present while ensuring that the needs of future generations are well-met.

The vision plan acknowledges the evolving role of regional trails in the county's bicycle transportation system. The vision plan also emphasizes regional trail connections to transit to improve multi-modal travel. The Hennepin County bicycle transportation plan helps the park district achieve its vision by recommending strategies and actions to improve multi-modal travel and by establishing a long-range regional trail system plan to meet the needs of future generations.

Three Rivers Park District Policy Statement – Policy Four, Establishment of the System

Regional trails provide for recreational travel along linear pathways. Trails may be located along either natural or built features, and should be of sufficient width to enhance the enjoyment and safety of users. When possible, regional trails should link park district facilities. Non-linking regional trails that pass through outstanding natural resource areas serve as recreation destinations and are acceptable and desirable. Regional trails should also serve as an important component of the multi-modal transportation network. Adjacent land with significant features may be acquired as a means of protecting the natural environment.

Three Rivers Park District sustainability plan

The Three Rivers Park District's sustainability plan (2012) articulates sustainability goals, strategies, and targets for the park district's parks, trails, and facilities. The park district adopted specific targets for the reduction of greenhouse gas emissions for the years 2015, 2025, and 2050. This bicycle transportation system plan can help the park district reduce greenhouse gas emissions by increasing mode shift from motorized vehicles to bicycle trips.

The plan guides the park district to maximize the ability of the public to use nonmotorized transportation to connect to the regional park and trail system and to increase commuter trips on the regional trail system. The collaboration between the county and the park district to develop this bicycle transportation system plan demonstrates the integration of transportation and recreation trips on the regional trail system. The bicycle transportation system plan also includes strategies and actions for making the park system more accessible by bicycle (i.e., not needing to drive to the regional park and trail system).

Connection to local plans and policies

Local complete streets policies

As of 2014, 11 cities in Hennepin County, including Bloomington, Brooklyn Center, Edina, Golden Valley, Hopkins, Independence, Maple Plain, New Hope, Richfield, Robbinsdale, and St. Louis Park, have either a complete streets or living streets policy or resolution. Active Living Hennepin County works to support the development and adoption of complete streets policies and resolutions in active living partner cities. County staff are currently working with three additional cities towards complete streets policies.

Local community comprehensive plans and bicycle plans

All of the 45 cities within Hennepin County create comprehensive plans that guide development within their communities. Many have a bicycle component in their comprehensive plans or have adopted bicycle master plans. Local communities can use this bicycle transportation system plan as a guide for planning local networks that connect to the 2040 bikeway system. For example, this plan identifies several existing local trails that may be candidates for regional trail status and will be a useful resource for discussing regional trail designations. In turn, the county and park district will use this plan when they review local transportation and trail plans for consistency with county and park district plans.

Connection to Metropolitan Council plans and policies

Metropolitan Council transportation policy plan and Twin Cities regional bicycle system study

The Metropolitan Council, in collaboration with MnDOT, conducted a regional bicycle system study in an effort to improve the region's on-street and off-street bikeways. This study, completed in April 2014, provided a more complete understanding of how the regional bicycle transportation system functions, particularly with respect to the interaction between on-street bikeways and off-street trails. The study provided the technical basis for updating the bicycling section of the region's transportation policy plan (TPP), which is currently in progress. The timing of the study recommendations has enabled the county to align the 2040 bikeway system recommendations with regional bikeway priorities.

Metropolitan Council regional parks policy plan

The policies set forth in the Metropolitan Council regional parks policy plan (2013) are intended to guide long-term expansion, density, and development of regional parks and trails, as well as to guide appropriate use of existing parks and trails. Regional trails recognized within the policy plan are eligible for land acquisition, capital improvement project, and operations and maintenance funding

upon completion and approval of a regional trail master plan by the Metropolitan Council. The park district is working with the Metropolitan Council to include the proposed Three Rivers Park District regional trail system plan in its entirety in the 2040 Metropolitan Council regional parks policy plan.

Connection to state plans and policies

Minnesota Department of Transportation complete streets policy and work plan

The State of Minnesota adopted a complete streets policy in 2010 and continues to pursue the integration of complete streets into its transportation project planning, scoping, implementation, and operations/maintenance efforts. While the state guidance is specific to MnDOT owned/operated roads, it does impact how Minnesota jurisdictions such as cities and counties plan for integration and connections of transportation and trail systems. This plan furthers the county's complete streets policy implementation and can improve project coordination with MnDOT when county bikeways are located along or cross roadways under MnDOT's jurisdiction.

MnDOT GO Vision and statewide multimodal transportation plan

The Minnesota Department of Transportation's (MnDOT) Minnesota 50-year GO Vision (2011) is for a multimodal transportation system that maximizes the health of people, the environment, and the economy. The statewide multimodal transportation plan serves as the framework plan for MnDOT's family of plans. The principles outlined in the MnDOT statewide multimodal transportation plan (2012) fully support the goals of this bicycle transportation system plan with regard to the integration of bicycles in the transportation system.

Minnesota Department of Transportation statewide bicycle system plan

MnDOT is in the process of developing the statewide bicycle system plan, which is a modal plan that follows the completion of a statewide bicycle planning study. The plan will identify state bikeway corridors as well as regional bikeway corridors within each MnDOT district. The MnDOT metro district bicycle system plan (for the Twin Cities metropolitan area) is in the process of being developed and will build upon the work recently completed in the Twin Cities regional bicycle system study. State bikeway corridors will be implemented through a collaborative process with various road and trail authorities, users, and interest groups. This plan will help inform MnDOT's efforts to identify existing and planned bikeways that are suitable for state bikeway designation in Hennepin County.

The state's first designated U.S. Bicycle Route — the Mississippi River Trail (MRT) — follows the Mississippi River through Hennepin County. This plan recognizes the existing alignment of the MRT. Two MRT route segments, County Road 12 (Dayton River Road in the City of Dayton) and County Road 23 (Marshall Street NE in the City of Minneapolis), are designated, but not signed as the MRT since the roadway characteristics are not consistent with the county's bikeway facility guidelines. As the 2040 bikeway system is implemented the state and the county can work in to improve the conditions of the MRT route.

Minnesota Department of Natural Resources (DNR) parks and trail programs

In 2011, the DNR completed a 25-year Parks and Trail Legacy Plan. Most of the guidance is specific to the DNR in terms of park and trail planning and development, however there are numerous places where "working with partners" and "commuting" is referenced. There is a section of the legacy plan which articulates the importance of the state and regional trail system for all cyclists, including those who commute. The DNR can use the Hennepin County bicycle transportation plan in its planning and implementation efforts to better connect state trails to the 2040 bikeway system.

Additionally, funding programs such as the Local Trails Connections Program and Federal Recreation Trail Program, provide funding opportunities for municipalities, the county, and park agencies in the acquisition and development of future bikeways (specifically, multi-use trails). This plan helps demonstrate the support for the planned trail system and most DNR funding programs include criteria for having an adopted trail plan.

Strategies and actions

The following strategies and actions will promote continued internal and external coordination among Hennepin County, Three Rivers Park District, and other partners engaged in bicycle planning. Each strategy includes specific actions for the county and/or park district to undertake.

Strategy 4.1	Actions
Support and encourage interdepartmental coordination and develop actions and programs that complement other county initiatives and planning efforts.	4.1.a Enhance coordination between all departments of Public Works to further county-wide initiatives such as the county's complete streets policy.
	4.1.b Increase communication and collaboration between the health and public works lines of business.
	4.1.c Encourage Hennepin County business lines to locate facilities in bikeable locations and to improve connections to the bikeway system when creating or updating facilities.

Strategy 4.2	Actions
Increase internal and external support so that bikeways are eligible expenses for the lifecycle of transportation funding, including planning, design, development, operations, and maintenance.	4.2.a Ensure complete streets checklist process is employed for new transportation construction. Post all completed checklists to SharePoint and ensure that all departments and interested groups are consulted early in the scoping and planning process of all road projects.
	4.2.b Create a new complete streets checklist for preservation projects (mill and overlay paving projects). Post all completed checklists to SharePoint and ensure that all departments and interested groups are consulted early in the scoping and planning process of all road projects.
	4.2.c Evaluate current capital improvement projects project funding streams for the potential to add bicycle facility criteria, points and funding.
	4.2.d Monitor and advocate for bikeway planning, design, construction, operations, maintenance, and related programming to be eligible grant/funding projects of external funding sources and programs (i.e. Metropolitan Council, MnDOT, MnDNR, State of Minnesota, Federal Transportation Bill, etc.).

Strategy 4.3	Actions
Support and encourage coordination among Hennepin County and partner agencies and municipalities. Develop actions and programs that complement aligned efforts at the state, region, or municipal level.	4.3.a Encourage local land use guidance that maximizes support for bicycling.
	4.3.b Coordinate bicycle planning and implementation with state and regional efforts. Ensure coordination is done early in the planning process for all projects.
	4.3.c Consider developing a program to celebrate/ recognize local cities that make exceptional progress in improving bicycling conditions. In conjunction, explore the possibility of establishing an annual 'bike summit' meeting in which awards could be presented and participating agencies can share upcoming biking-related plans/projects and discuss coordination opportunities, share expertise, etc.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5. Implementation

Summary:

Protect the county's and the park district's investments in the bikeway system and reduce seasonal hazards through partnerships.

The value and impact of the Hennepin County bicycle transportation plan hinges on how it is implemented over time. The implementation program will be led by Hennepin County and Three Rivers Park District. Cooperation and collaboration with cities and other state and local agencies will be central to the success of this effort.

Table 10: Mileage needed to be built annually to build out 2040 bikeway system

	Annual mileage target		
	Three Rivers Park District	Hennepin County	Planned bikeway system
Off-street bikeways	7.2	1.9	**9.1**
On-street bikeways		11.5	**11.5**
Total planned bikeway system	**7.2**	**13.4**	**20.6**

Implementing the 2040 bikeway system will require ongoing political and public support. Table 10 shows the annual miles of bikeway implementation necessary to complete the planned bikeway system by 2040. Some bikeway projects will be implemented as part of street resurfacing or reconstruction projects, while others will be implemented in concert with development or redevelopment efforts. Still others may be implemented by the county or park district as stand-alone bicycle improvements.

This chapter outlines the actions needed to implement this plan. Specific plan strategies are presented with each step in the process, and a table of implementation strategies and actions closes the chapter.

The five steps in the plan implementation process include:

1. **Project prioritization**
2. **Project design**
3. **Funding**
4. **Maintenance**
5. **Evaluation and data management**

Project prioritization

As discussed in chapter two, the 2040 bikeway system is composed of planned bikeway corridors and gaps spanning 537 miles. The planned system includes almost 200 bikeway corridors (longer bikeway connections between important destinations) while the remaining are gaps typically of ½ mile or less that address a physical barrier or complete a missing segment of the system.

With so much work to do, prioritization is paramount. Strategy 5.1 identifies the need to establish prioritization methodology, reapply that process annually, and update it every five years.

A bicycle project prioritization methodology was developed to establish a framework for identifying projects that contribute to achieving the vision and goals for this plan. Criteria were developed, drawing upon existing local, county, and regional prioritization criteria and a review of examples from select peer communities outside Minnesota. The draft criteria were then refined with input from the project advisory group and the internal working group. This process resulted in five categories of prioritization criteria, presented in Table 11. Appendix H details development.

Following the development of the criteria, the IWG, PAG and the project working team (PWT) helped staff create a prioritization methodology for all of the identified bikeway corridors and gaps in the 2040 bikeway system. Measurable factors for each of the criteria were used to calculate a score for each bikeway corridor and gap. Table 12 presents the factors and data used for the analysis. A more thorough description of the methodology and scoring results is in appendix H.

Strategy 5.1 *Prioritize projects to implement. In order to efficiently and strategically invest in the bikeway system, the county must develop a prioritization process to identify a priority projects list for implementation.*

**see the chart at the end of the chapter for specific actions that will be taken to support the strategies.*

Table 11: Project prioritization criteria

Network connectivity	Project improves system connectivity and access to key destinations, jobs, and transit.
Overcoming gaps and barriers	Project addresses a significant system gap (as identified on the Bikeway Gap Map) and/or overcomes a significant barrier (i.e., crossing a river or freeway).
Demand	Project is likely to address demand or increase the potential for new bicycle transportation trips.
Comfort and safety	Project includes a new facility or improves an existing facility to address known or perceived comfort and safety concerns. After the enhanced network is defined, additional comfort criteria should be developed.
Other considerations	Project takes advantage of opportunities, achieves long-term goals or also advances other agency goals.

Table 12: Prioritization criteria, factors and data elements

Criteria	Factor	Data elements
Network connectivity	Future population density	Percent of bikeway with ten or more persons per acre (within 0.25 mile based on Met Council 2030 population projections)
	Access to jobs	Total number of jobs per mile located within 0.25 mile of the bikeway — US Census Bureau Data's 2002-2011 LEHD Origin Destination Employment Statistics (LODES)
	Regional trail connections	Planned facility part of Three Rivers Park District or state regional trail system
	Regional bikeway network	Met Council proposed regional bicycle transportation network and priority bicycle transportation corridors proposed for the 2014 transportation policy plan update (includes access to transit and serving racially concentrated areas of poverty)
Overcoming gaps and barriers	Reported barriers to bicycling per mile	Mapped issues and or barriers identified by participants during engagement events
		Point locations identified as "barriers" using the project's interactive web-map
		Point locations identified as "barriers" using the Metropolitan Council bicycle system study interactive web-map (Summer 2013)
	Bikeway system gap	Bikeway is identified as a system gap
Demand	Reported bicycle destinations per mile	Mapped destinations identified by participants during engagement events
		Point locations identified as "destinations" using the project's interactive web-map
		Point locations identified as "Destinations" using the Metropolitan Council bicycle system study interactive web-map (Summer 2013)
	Requested bicycle trip unique origin or destination	Cyclopath user data, summarized by unique user requests for suggested bicycle routes through 2013
	Zero car households	Census Zero Car Households per mile located within .25 mile of the bikeway (2010 US Census)
Comfort and safety	Bicycle crashes per mile per mile	2003 - 2013 bicycle crash data — total crashes
	Bicycle crash injuries per mile per mile	2003 - 2013 bicycle crash data — total serious injuries
	Bicycle crash fatality per mile per mile	2003 - 2013 bicycle crash data — total fatalities
Other considerations	Opportunities with other agencies, new funding	Other agencies plan documents, funding opportunities, discussions with other agencies
	Included in previous corridor studies or planned improvements	Study documents or plans
	Undocumented safety issues, long-range planning considerations, other agency priorities	Hennepin County Transportation Systems Plan, discussion with other agencies, field assessments, other plans or efforts not directly related to transportation that can be advanced with bikeway improvements.

Table 13: Top 25 planned bikeway system corridors (not ranked; ordered by ID number)

Description	Jurisdiction	ID	Miles	Anticipated type
Franklin Avenue (CSAH-5) (Lyndale Ave. to Cedar Ave.)	Hennepin County	14001	2.11	On-street bike lane
Central Avenue NE (TH-65) (2nd Street to 18th Street N)	MnDOT	14006	1.49	On-street bike lane
Stinson Boulevard (New Brighton Blvd. to St. Anthony Pkwy.)	Minneapolis / St. Anthony	14007	0.90	On-street bike lane
Broadway Street NE (Mississippi River to Stinson)	Hennepin County	14015	2.24	On-street bike lane
W. Broadway / Golden Valley Road (Sibley to Theo Wirth Park)	Hennepin County	14018	2.47	On-street bike lane
Lyndale Avenue (Franklin Avenue to Olson Highway)	Minneapolis	14020	1.61	Protected bike lane
Hennepin Avenue E (Main Street to Hennepin Avenue)	Hennepin County	14029	0.52	On-street bike lane
1st Avenue NE (Main Street to Hennepin Avenue)	Hennepin County	14030	0.56	On-street bike lane
Stone Arch Bridge / Dinkytown Connection	Minneapolis	14032	0.61	Off-street trail
5th Street SE (13th Avenue SE to Oak Street)	Minneapolis	14034	0.57	On-street bike lane
Washington Avenue S (5th Avenue S to 11th Avenue S)	Hennepin County	14044	0.87	Protected bike lane
2nd / Marquette avenues (15th Street E to 10th Ave. S)	Minneapolis	14046	1.08	On-street bike lane
5th / 6th streets S (Hennepin Avenue to 11th St. S)	Minneapolis	14047	0.93	On-street bike lane
Penn Avenue (44th Avenue N to I-394)	Hennepin County	14051	4.56	On-street bike lane
Lake Road / Lakeland Avenue (Crystal Lake Trail)	Three Rivers Park District	14052	2.02	Off-street trail
Brooklyn Boulevard (TH-169 to Regent Avenue)	Three Rivers Park District	14066	2.86	Off-street trail
Bottineau trail corridor (Theodore Wirth Park to Rogers)	Hennepin County	14082	15.41	Off-street trail
Nine Mile Creek Trail (American Blvd. to Nokomis Parkway)	Three Rivers Park District	14160	4.68	Off-street trail
46th Street E (Hiawatha Avenue to Ford Parkway bridge)	Hennepin County	14172	0.79	On-street bike lane
Hiawatha LRT / 54th St. E (Minnehaha Parkway area)	Minneapolis	14173	1.21	Off-street trail
Old Cedar Avenue Bridge over Minnesota River	Bloomington	14209	1.00	Off-street trail
34th Avenue S (I-494 to Terminal 2 MSP Airport)	Bloomington	14213	0.89	On-street bike lane
Lake Independence Trail (along CSAH-19)	Hennepin / Three Rivers	14223	2.96	Off-street trail
Louisiana Avenue S (Minnetonka Boulevard to I-394)	St. Louis Park	14301	1.48	On-street bike lane
Fort Snelling/MSP Trail (TH-55 to MSP Terminal 1)	Hennepin County	14308	1.25	Off-street trail

The prioritization methodology creates a transparent and data-driven process that the county and park district can use to identify the projects that are most consistent with the goals of this plan. Bikeway corridors were scored independent of bikeway gap projects, since the funding sources are typically different for the two types of projects. The results of the prioritization analysis are in tables 13 and 14. The top 25 bikeway corridors are shown in table 13 and the top 25 bikeway gap projects are shown in table 14. The gap ID can be referenced on the bikeway system gap map (figure 12) presented in chapter two.

Successful project development

Project prioritization is only the first step in creating a successful project. Other critical elements include:

- Consensus among implementing agencies that a project is a priority
- Strong initial evaluations confirming feasibility
- Active policymaker support
- Enthusiastic stakeholder and public support
- Reasonable scope of improvements

Table 14: Hennepin County top 25 bikeway system gaps (not ranked; ordered by gap ID number)

Description	Jurisdiction	Gap ID	Miles	Anticipated type
Lowry Avenue (CSAH-153) (over I-94)	Hennepin County	14016	0.23	On-street bike lane
26th Avenue No. (over I-94)	Minneapolis	14017	0.08	On-street bike lane
7th Street No. (Glenwood Ave. to 1st Ave.)	Minneapolis	14023	0.16	On-street bike lane
18th Avenue SE (Elm Street SE to Hennepin E)	Minneapolis	14025	0.50	Bike Boulevard
4th Street SE (15th Ave. SE to 13th Ave. SE)	Hennepin County	14033	0.16	On-street bike lane
Pleasant Avenue SE (University Ave. to East River Road)	Minneapolis	14035	0.38	Bike Boulevard
6th Street S (LRT Trail to 20th Ave. S)	Minneapolis	14040	0.40	Bike Boulevard
4th Street S (Chicago Ave. to 11th Ave. S)	Minneapolis	14041	0.26	On-street bike lane
3rd Avenue S Mississippi River Bridge	Minneapolis	14042	0.49	Protected bike lane
Park Avenue S (Washington Ave. to 3rd Ave. S)	Hennepin County	14045	0.09	Buffered bike lane
2nd Street S (Hennepin Ave. to 2nd Ave. S)	Minneapolis	14048	0.19	Off-street trail
Excelsior Boulevard (CSAH-3) (8th Ave. to 11th Ave.)	Hennepin County	14127	0.20	Off-street trail
Nine Mile Creek Trail (77th Street Connector)	Three Rivers Park District	14146	0.30	Off-street trail
Blake Road (CSAH-20) (MN Bluff Trail to Boyce)	Hennepin County	14150	0.27	Off-street trail
38th Street E (Hiawatha Ave. to Minnehaha Ave.)	Minneapolis	14170	0.23	On-street bike lane
42nd Street E (Hiawatha Ave. to Dight Ave.)	Minneapolis	14171	0.16	On-street bike lane
Nine Mile Creek Trail (12th Ave. S. over I-494)	Three Rivers Park District	14212	0.41	Protected bike lane
Bass Lake Road (W. Broadway to CSAH-81)	Hennepin County	14258	0.37	On-street bike lane
Virginia Avenue S (Cedar Lake Rd. to N. Cedar Trail)	St. Louis Park	14299	0.26	On-street bike lane
2nd Street N (1st Ave. N to 3rd Ave. N)	Minneapolis	14310	0.16	On-street bike lane
Ferndale Road (Dakota Rail Trail to Luce Line)	Three Rivers Parks	14318	0.45	Off-street trail
Portland Avenue (60th St. to TH-62 bridge area)	Hennepin County	14320	0.29	Protected bike lane
8th Avenue N (Lake Minnetonka Trail to Cedar Lake LRT Trail)	Three Rivers Park District	14323	0.31	Protected bike lane
Midtown Greenway Extension (Mississippi River Bridge)	Minneapolis	14168	0.17	Off-street trail
Dunwoody Avenue (I-394 ramps to Hennepin Ave.)	Minneapolis	14021	0.42	On-street bike lane

Certainly the availability of funding resources is also important to implementing a successful project. However, experience has found that if the above elements are in place, project funding is usually not an impediment in the long run.

The plan development collaboration with Three Rivers Parks was initiated in order to align the county's and park district's priorities so that there is a common basis of agreement for the continued expansion of the 2040 bikeway system. The county and park district would like to use this partnership as a foundation for a larger coalition with cities and state agencies (e.g., MnDOT and MnDNR).

A realistic early determination of project feasibility is important for informing policymakers and the public as well as for laying the groundwork for any grant funding applications. Especially for federal funding programs, a strong realistic application generally receives a better evaluation and avoids future scope changes that are difficult to obtain.

The active support of elected and appointed policymakers for both agencies is critical to a project, especially during the initial phases of project development. The officials' participation helps to explain the project need to interest groups and the public when there may be concerns of potential impacts, general fears of change, or the project includes controversial components.

Building enthusiastic interest group and public support is critical, but often can require significant time. Early engagement with interest groups and the general public to discuss the proposed improvement can help generate other ideas and begin to develop general awareness. A series of public meetings are often needed to reach out to advisory committees, interest groups, neighborhoods and residents.

Maintaining a reasonable scope of improvements is often a challenge with bikeway projects. Space within county road right-of-ways is limited and requires trade-offs between a number of design elements. There often exists underlying traffic, bicycle or pedestrian safety issues which may need to be addressed as part of the project. These considerations can eventually overwhelm the initial project scope, and if not carefully managed, have led to significant cost increases. In extreme cases, these expanding scope items have led to the abandonment of the proposed project altogether.

Project design

Once a project has been prioritized for implementation and the necessary partners have agreed to proceed, the design process begins. As discussed in chapter two, the right type of facility (e.g. bike lanes, bike boulevards, cycle tracks, etc.) for each location depends on many factors. Also, for each facility type, there are decisions to make about design features, such as the exact alignment, width, surface type or pavement markings, all of which can significantly impact how the facility will function and whether people will use it. For this reason, strategies 5.2-5.4 discuss the need for bikeway design guidelines and trainings for staff on emerging best practices in design and implementation.

Bikeway design toolkit

In recognition of the need for county-specific design guidance for bikeways, Hennepin County staff launched the creation of a bikeway design toolkit that was developed concurrently with this plan (see appendix C). The toolkit provides common definitions for bikeways, details on the appropriate context for certain types of bikeways, and guidance for adapting county roads to include bikeways. It also provides information on some of the trade-offs and considerations associated with

different bikeway facility types. The toolkit can be used to implement bikeway projects as part of roadway repaving and restriping projects within existing curb lines, or during new construction or reconstruction where there are opportunities to integrate bikeways into the roadway design.

The toolkit will be used by county staff, primarily for county road retrofit striping plans and to determine future right-of-way needs. It is also recommended for use by local cities, agencies and partners. The toolkit supplements local, state, national, and international bikeway planning and design guidelines, and is intended to serve as a living document that is updated as new practices emerge. Longer-term, the county hopes to incorporate the toolkit into a future complete streets design manual, which would address all modes of transportation and their integration in the transportation system.

The toolkit includes the following elements:

- Bikeway design matrix: A quick-reference matrix of standardized definitions of various bikeway types and design treatments highlighting considerations for implementation based on roadway and land use context.

- Bikeway design technical sheets: Technical sheets providing more detailed design guidance on specific bikeway types and treatments.

Development review

One of the other uses of the toolkit is to assist with the development review process. Hennepin County reviews development and redevelopment proposals adjacent county roads, and park district staff often also review development and redevelopment proposals adjacent existing and planned regional parks and trails. When development or redevelopment is being considered, it presents a key opportunity to gain developer participation in bikeway improvements. In some cases it may be appropriate for the design and development of the bikeway to be incorporated as part of the development/redevelopment. In the short-term, a new development/redevelopment may require localized changes to road geometrics or striping, and this can provide an opportunity to include bikeways. The toolkit can be consulted to better understand what bikeway types may be appropriate.

Flexibility in design

The toolkit provides guidance rather than rigid standards. Multimodal roadway designs require sound engineering judgment and a flexible approach; there is no one-size-fits-all solution, and each bikeway should reflect the character, context, and constraints of the roadway/trail corridor.

The Federal Highway Administration (FHWA) produced a memorandum titled: Bicycle and Pedestrian Facility Design Flexibility which supports flexibility in design for bikeways and pedestrian facilities. The FHWA memo indicates that the American Association of State Highway Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities is the primary resource "for planning, designing, and operating bicycle facilities." The FHWA also recognizes the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide as an additional resource for more recent bicycle facility design and treatments. The FHWA states, "The vast majority of treatments illustrated in the NACTO Guide are either allowed or not precluded by the Manual on Uniform Traffic Control Devices (MUTCD)." Hennepin County, MnDOT and the Cities of Minneapolis and St. Paul jointly endorsed NACTO's Urban Bikeway Design Guide as an excellent reference when designing urban streets and public spaces. In addition, non-compliant traffic control devices may be piloted through the MUTCD experimentation process."

Hennepin County and Three Rivers Park District are encouraged to follow the MUTCD/FHWA experimentation process when implementing new traffic control devices. The county and park district are also encouraged to consider developing before and after studies when implementing innovative designs and experimental treatments.

Ongoing training and research

Other tools that will help Hennepin County stay at the forefront of bicycle facility design include ongoing research and professional development opportunities for staff. The field of bicycle transportation is rapidly evolving. Training and professional development on bicycle planning, design and implementation will increase staff knowledge and awareness of new approaches, helping them to better plan, develop, and maintain the bicycle system. It is also important that the county and park district continue to monitor the growing field of research on these issues.

Funding

With nearly 200 planned bikeway corridors, 130 bikeway gaps to remove, and 45 strategies with numerous implementation actions, this plan presents a comprehensive framework for developing a world-class bicycling system in Hennepin County. Without a robust investment and funding approach, the county and park district will not be able to meet the goals established in this plan. For this reason, strategies 5.5-5.8 discuss the need for ongoing and innovative funding strategies for bikeway projects and programs. For detailed actions supporting these strategies, see the table at the end of this chapter.

Below is an overview of the existing funding programs that support the county bikeway system. Following the overview, there is information on typical costs associated with improving the bicycling environment in Hennepin County.

Existing funding sources

In most communities, a combination of funding sources and approaches is needed to implement a comprehensive bikeway system. Federal, state, regional and local funds all support bikeway projects and programs, and private or philanthropic support is also a potential option. In addition to securing funding for capital improvements, the county and park district must also ensure that funding is available for operations, maintenance and support facilities (such as showers and bicycle parking) as well as for education and enforcement efforts.

Hennepin County funding sources

Hennepin County secures funding from federal, state and regional sources and provides financial support to communities and park agencies within the county. The following funding programs can provide the county and communities in the county with means to develop bikeways and support facilities that extend the county bikeway system.

Hennepin County capital improvement program: The Hennepin County capital improvement program includes two programs to explicitly support bikeway projects, namely the bikeway development participation program and the bicycle gap program. The primary goal of the bikeway development participation program is to support and enhance the county bikeway system. Designated routes on the current bikeway system map or bikeway gap map are eligible for funding under the program. The program prioritizes projects that meet the goals of this plan as well as:

- Serve a transportation purpose, increase opportunities for active living, and support the Cool County initiative to reduce greenhouse gas emissions.
- Contribute to a denser network of bikeways and complete streets within Hennepin County.
- Provide the appropriate bikeways for the context of the corridor, including on-street bikeways, off-street trails, or full accommodation (both on-street and off-street bikeways).

Strategy 5.2 *Develop and maintain a bikeway design toolkit including a matrix of bikeway options, technical design sheets and typical sections for both new construction and retrofit projects, based on local and national research and best practices.*

Strategy 5.3 *Provide for continuing education for county and park district staff about new bikeway types, planning, design and bicycle-related issues that may arise.*

Strategy 5.4 *Monitor and consider emerging practices in transportation planning, design and implementation.*

County aid to municipalities (CAM) program: Established in 1957, the CAM program provides financial assistance for roadways and bridges to municipalities with populations under 5,000. The primary purpose of the CAM program is to provide financial assistance to municipalities that are not eligible for funding through the state aid for local transportation program due to their size. For municipalities that have eligible projects, funds can be used for construction activity items such as

street, bridge, trail, or sidewalk construction. CAM funds can also be used for roadway preliminary or final design activities, or for corridor and traffic studies.

County pavement preservation program (preservation plus): The pavement preservation plus program is a new county program that provides funding for additional small construction improvements to the bicycle and pedestrian environment such as curb extensions, pedestrian refuge medians, signage, and curb ramps.

Community works program: The Hennepin County Community Works program is focused on strategic public works investments to improve quality of life, stimulate economic development, strengthen communities through connections, maintain and improve natural systems, and enhance the tax base. The community works program targets investment in specific areas based on opportunities identified through comprehensive planning and stakeholder engagement. The community works program has funded multi-use trails, bike lanes, access improvements, and bicycling support facilities.

Strategy 5.5 *Budget for ongoing, consistent sources of revenue to complete planned network routes and to close gaps in the network.*

Strategy 5.6 *Leverage other projects to include bikeways or take advantage of partnership opportunities outside of the normal solicitation schedule.*

Strategy 5.7 *Obtain funding for bicycle education and enforcement programs.*

Strategy 5.8 *Explore the creation of a regional trail authority (similar to a watershed district) for a consistent funding stream for longer term maintenance and operations.*

State aid for local transportation: State aid for local transportation (SALT) was established to administer the county state aid highway (CSAH) and municipal state aid street portions of the highway user tax distribution fund, along with federal aid highway dollars and bond funds. Bicycle paths are special items eligible for state aid if the path is in a bicycle plan and is located in permanent right-of-way or in a parallel easement. Minnesota rules chapter 8810.6000 subpart 8 defines a bicycle path as "a bicycle facility designed for exclusive use by persons using bicycles and constructed or developed separately from the roadway."

Transportation alternatives program (TAP): With the passing of the federal transportation funding act, Moving Ahead for Progress in the 21st Century (MAP 21), bicycle funding programs have been consolidated under the transportation alternatives program (TAP). TAP identifies construction of on- and off- street bikeways as eligible under the program, provided they connect at least two destinations and have a transportation purpose. Funding is allocated through the Metropolitan Council through its regional solicitation process within the seven-county metropolitan area.

Three Rivers Park District funding sources

The Three Rivers Park District also has funding programs that presently or potentially could support bikeway system implementation.

Operations funding: Operation costs for the regional trail system are currently funded primarily through the Three Rivers Park District's operating budget. The operating budget's primary source of funds is property taxes with some revenue from the state as part of the operations and maintenance fund allocations from the Metropolitan Council. Additional costs associated with surface preventive maintenance are funded from the Three Rivers Park District's asset management program, which includes revenue allocated to the Three Rivers Park District from the state as well as Three Rivers Park District general obligation bonds. All operation and maintenance costs are subject to the annual operating budget process approved by the Three Rivers Park District Board of Commissioners.

Acquisition Funding: Typically acquisition costs of the regional trail system are split between the Metropolitan Council (75 percent) and Three Rivers Park District (25 percent). The Metropolitan Council contribution is through the park acquisition opportunity fund funded by the environment and natural resources trust fund acquisition account (comprised of Metropolitan Council bonds) and the parks and trails fund acquisition account (appropriated to the Metropolitan Council from the Legislative Citizens Commission on Minnesota Resources). The park district funding contribution is generally from annual general obligation bond funds or the land acquisition, development, and betterment fund. On occasion, Hennepin County will also provide acquisition funds as part of a bikeway development grant.

Development funding: The park district strives to secure external funds to assist with developing the regional trail system. External funding sources include but are not limited to federal transportation grants (MAP-21), Metropolitan Council/State of Minnesota (Regional Parks Capital Improvement Program, Local Trails Connections Program), Federal Recreation Trail Grant Program, and Hennepin County bikeway development/gap grants. Three Rivers Park District also funds regional trail development through annual general obligation bond funds.

Cost estimates

This section presents preliminary cost estimates for the 2040 bikeway system proposed in this plan. Because the specific facility type for each bikeway is not yet determined, the cost estimates presented here are very general. They should be considered a planning level estimate of the order of magnitude of total costs. More detailed cost estimates for each project will need to be developed during implementation.

On-street bikeways can range from extremely low-cost treatments, such as bicycle boulevards that may cost $10,000-$15,000 per mile, to protected bikeways like cycle tracks that can cost up to $200,000 per mile and even higher when curb and raised median construction is involved. Cost estimates vary greatly depending on existing conditions and constraints. For off-street bikeways, multi-use trails can cost an estimated $500,000 per mile to around $700,000 per mile for more complex trail construction. For comparison, the estimated average cost for a road is $1.8 million per lane mile and $85 million-$90 million per mile for light rail transit.

A range of considerations were taken into account to estimate the cost of implementing the 2040 bikeway system. Average costs were developed for on-street, off-street, and planned undesignated bikeways (those undetermined bikeways that

may be on- or off-street), based on the following assumptions:

- The estimate assumes roughly proportional implementation of all six types of on-street bikeways (cycle tracks, bike lanes, protected bike lanes, buffered bike lanes, bicycle boulevards and striped shoulders). Cycle track costs assume that no curb, raised median or sidewalk construction is involved.
- The estimate assumes that the county will favor lower-cost approaches wherever feasible.
- The estimate assumes that off-street bikeways that are not part of the planned Three Rivers Park District system would be a combination of widening existing trails and new trail construction along roadways.
- The estimate assumes that Three Rivers Park District planned bikeways (not already existing) would all be new multi-use trails with typical trail construction conditions ($500,000 per mile).
- Undesignated bikeway costs were estimated based on the average cost of all other bikeways (assuming a wide range of potential cost implications).

Based on these assumptions and using 2013 dollars and cost data, it is estimated that full implementation of the bikeway system by 2040 will require an annual budget of $6.25 million combined for Hennepin County and Three Rivers Park District. This would allow the agencies to implement approximately 20 miles of bikeways per year. Three Rivers Park District will need $3.75 million annually to construct an average of seven miles of regional trails per year. Hennepin County will need an estimated $2.5 million annually to construct an average of 13 miles of bikeways each year. Table 15 summarizes the estimated annual budget needs for implementing the 2040 planned bikeway system. A full description of cost assumptions and a cost calculator by facility type is in appendix I.

Maintenance

The condition of bikeways has a direct impact on rider experience and the willingness of many people to ride. Irregular surfaces, potholes, debris, and seasonal conditions lead many people to decide not to ride, and may contribute to bicycle crashes. Well-maintained bikeways, on-street or off, are critical to safety and comfort and to supporting bicycling as a competitive transportation option. For this reason, strategies 5.9-5.14 outline elements central to a successful bikeway maintenance program. Detailed actions supporting these strategies are in the table at the end of the chapter.

Table 15: Average annual estimated budgeting needs to build out 2040 bikeway system

	Estimated average annual funding need (in millions)		
	Three Rivers Park District	Hennepin County	Planned bikeway system (both entities)
Off-street bikeways	$3.75	$0.8	$4.6
On-street bikeways		$0.8	$0.8
Undesignated bikeway facility		$0.8	$0.8
Total planned bikeway system	**$3.75 million / year**	**$2.4 million / year**	**$6.15 million / year**

Current Hennepin County maintenance

Hennepin County and Three Rivers Park District are involved in routine maintenance, which includes sweeping and refreshing markings in the summer and some snow clearing in the winter, and pavement management, which involves monitoring pavement conditions and timing pavement repairs and maintenance throughout the summer construction season.

Maintenance can also be broken down along bikeway type. Across jurisdictions in Hennepin County, maintenance practices are similar. Maintenance of on-street bikeways is performed as a part of regular roadway maintenance. Maintenance for off-street bikeways and sidewalks are assigned to local jurisdictions, usually a city or park district, through a maintenance agreement. The county does not currently have a specific budget or specialized equipment for off-street bikeway maintenance.

Agencies and residents who participated in this plan's public engagement regularly said winter bikeway maintenance is an area that needs major improvement if the Interested but Concerned are to bike year-round. Hennepin County and Three Rivers Park District recognize its importance and acknowledge this plan does not provide the detail necessary to adequately meet the challenge. As an outcome of this plan, the county will undertake a winter maintenance feasibility study in 2015 to identify priority winter routes and to begin improving general winter maintenance practices and funding (see action item 5.10.a).

Three Rivers Park District trail operations and maintenance

Three Rivers Park District currently operates and maintains its regional trails during spring, summer, and fall. The Park District anticipates that by 2040 they will spend an estimated $2 million per year on operations and maintenance ($800,000 in routine operations and maintenance; $1.2 million in preventative pavement management). These figures do not include reconstruction, grade separation, land acquisition, or crossings. The park district is conducting a pilot program to gauge winter demand, and to determine if cost-effective partnerships and programs can be developed to address winter maintenance. In the meantime, local communities may request a winter use permit and assume operation and maintenance responsibilities for regional trail segments.

County roadways in the City of Minneapolis

For county roadways in the Minneapolis, the county and city have an agreement to maintain crosswalk markings, street signs and signals. It is anticipated that there will be future changes to the maintenance agreement, including transferring the maintenance of all bicycle pavement markings to the county. For county roadways, the county is responsible for snow plowing (except in the downtown core) and the city is responsible for street sweeping.

Routine maintenance

Street sweeping: The county completely sweeps the roadway system in the spring and spot cleans before the first snow in the fall. At other times, sweeping is done as needed as resources are available. For county roads in Minneapolis, the city is responsible for street sweeping via the county-city cooperative agreement.

Strategy 5.9 *Continue county routine maintenance and pavement management of the on-street bicycle system tied to overall roadway maintenance plans.*

Strategy 5.10 *Explore partnering with local cities to improve routine maintenance and pavement management practices on Hennepin County off-street bikeways.*

Strategy 5.11 *Establish and implement a policy for the closure and detour of on- and off-street bicycle bikeways that provides safe and direct alternatives when bikeways must be closed.*

Strategy 5.12 *Maintain current programs and partnerships that provide routine maintenance (e.g., TRPD Adopt-a-Trail Program). Current, routine maintenance programs and partnerships should be maintained or enhanced.*

Strategy 5.13 *Continue Three Rivers Park District Pavement Management Program (PMP). The park district has a pavement management program that works well for regional trail maintenance.*

Strategy 5.14 *Investigate and consider working with local jurisdictions to develop a prioritized, phased snow removal policy for a priority system of on- and off-street bikeways.*

Markings: The county's general practice is to refresh all painted markings on an annual basis using latex-type paint. More durable epoxy paints have been used for major reconstruction projects which provide a longer three to five year lifespan. The practice for major projects using contractors, rather than in house forces, has now been expanded to include grooving the striping with epoxy paint which is anticipated to provide a lifespan of 8-10 years consistent with a typical milling and overlay improvement.

On-street bikeways and shoulders are maintained simultaneously with the rest of the roadway painting program. The county has no separate budget or specialized equipment for bicycle facility maintenance. Bike symbol painting for designated bike lanes is included within the overall striping program.

The county paints crosswalks on county roadways for all cities with populations less than 5,000. Cities with populations greater than 5,000 are assigned the responsibility for county roadway crosswalk marking maintenance. Special thermoplastic material is sometimes used for special high-use areas where improved durability is needed.

Snow and ice control: An annual program addresses policies to remove snow and ice from Hennepin County roadways from curb to curb, including any on-street bikeways. However, the program does not address snow removal outside the curbs, as that is assigned to the city or park district as part of the maintenance agreement when the trail or sidewalk is built.

The program's effectiveness is measured by average snowplow completion time. The program's goal is to achieve safe and open travel conditions and substantially bare pavement after the event's end and before the first shift is over.

While the county mainly deals with snow plowing during exceptional winters the county may assist municipalities with snow removal, which requires hauling and storing snow off-site. This assistance is provided only after all roads on the county system are clear of snow and in a reasonable and

safe condition. When snow removal assistance is requested and when sufficient support and a suitable storage site is provided by the requesting agency, scheduling for snow removal is prioritized from the most restricted roadways first.

For county roadways in Minneapolis, the county is responsible for snow plowing, except in the downtown core, as provided by the county-city cooperative agreement.

Pavement management: Hennepin County has had an ongoing pavement management program that evaluates the condition of all county roadway segments since 1996. The program focuses on two primary evaluation measures: pavement condition index (PCI) and pavement structure ride rating (PSR). PCI is evaluated every year on all county roads by driving them and measuring deviations in smoothness. PSR is evaluated every other year on each segment, where half of the system is evaluated in year one and the other half in year two. The county maintains a database of paving history and ratings for each segment.

Road resurfacing: The county typically begins assembling a preliminary program of road resurfacing candidates two years before the projected paving project year. Inclusion on the list comes from a combination of the two evaluation measures, coordination with other projects and local priorities as well as professional judgment of county staff. The county contacts the involved cities in the fall before the repaving year and the cities sometimes request changes in the road's striping in conjunction with the road resurfacing project. A reminder is also sent to the cities in the spring detailing the final paving program for that season. With just a few months before the project begins, the challenge is being able to study options and engage the public under the tight timelines.

Stormwater treatment: In most cases stormwater from bikeways is handled with existing stormsewer (roadways) or by infiltrating runoff adjacent a bikeway (typically off-street trails). More intensive stormwater management for a bikeway may be necessary in sensitive areas or areas with little pervious surface. Maintenance of these facilities

typically is handled by cities under agreement with the county, or by Three Rivers Park District. More intensive strategies often require maintenance agreements that may vary from the typical.

Off-street bikeways: Generally, all maintenance, both routine and pavement management, of off-street bikeways in the county right of way is handled by the municipality or park district. Specific responsibilities are assigned to these agencies within a cooperative agreement during a project. Other assignments are covered through individual construction permits.

If a county capital improvements project disturbs an off-street bikeway, the county will restore or reconstruct the facility as part of the project.

Work zone management for bikeways

As the bikeway system expands, there will be a growing need to manage the impact of construction and work zones on bicycling. In locations where a construction project interrupts the normal flow of bicycles on a bikeway, a procedure for temporarily rerouting users is necessary. Also, when bikeways must be closed, there should be a county and park district strategy for communicating the closure and detour options to bicyclists. In cities where detour procedures are in place (e.g. Minneapolis), the county and park district will work with the city toward a consistent procedure and bicycling experience.

Evaluation and data management

The 2040 bikeway system proposed in this plan represents an ambitious vision for both the county and park district. Success in this effort will require significant investment of time and resources to realize the full potential of the system. Identifying metrics and a process for evaluating the system over time, as presented in strategies 5.15-5.19, will allow the county and park district to assess whether their investments in bicycling achieve the intended outcomes in the county. The county should also create a working group of advisors to monitor the implementation of the plan.

Performance measures

As part of this planning process, a series of performance measures were identified and are recommended as the foundation of the ongoing plan evaluation system. In order to develop performance measures, a review of existing performance measures from other plans and documents was conducted. Table 15 summarizes the relevant measures from those plans and highlights in yellow those measures which will be the most useful for tracking progress toward implementation of the plan.

In addition to a review of existing Hennepin County performance measures, performance measures in plans from peer communities were reviewed. The peer communities were identified based on their size and urban character, as well as the extent to which their bicycle plans emphasized performance measurement. Four plans were reviewed and summarized for further consideration:

- Blue Ridge Bike Plan (Western North Carolina – Land of Sky Regional Council, 2013)
- Boston Region MPO – Memorandum Development of Performance Measures and Performance-Based Planning (2013)
- Portland (OR) Active Transportation Plan draft (August 2013)
- Seattle City Bicycle Master Plan (2013)

Strategy 5.15 *Regularly evaluate the performance of new and existing bikeways to determine the effectiveness of designs and treatments.*

Strategy 5.16 *Implement a system for collecting bicycle counts and measuring the share of trips that are taken by bicycle within the county.*

Strategy 5.17 *Continue to gather feedback from users and the general population.*

Strategy 5.18 *Create a working group of advisors to monitor implementation of the bike plan.*

Strategy 5.19 *Develop/enhance strategies to house, maintain and communicate important information and data on bikeways.*

Table 16: Summary of relevant performance measures identified in existing Hennepin County public works planning documents

Measure	Source
Number of bicycle barriers and system gaps removed	2030 TSP
Increase in the miles of bikeways	Public works strategic plan
Connectivity: Number of gaps eliminated per year	Public works strategic plan
Bicycle crash history	2030 TSP
Number of bicycle gaps closed	Public works departmental strategic plans
Percent of bikeway system completed	Public works departmental strategic plans
Reduction of crashes, fatalities for all modes	Public works strategic plan
Expanding transportation choices: number of bicycle infrastructure improvements	Public works strategic plan
Total miles of on- and off-street bikeways	Public works departmental strategic plans
Transportation mode shift	Public works strategic plan
Bicycle usage	2030 TSP
Miles of bikeways built	2030 TSP

Hennepin County bikeway system performance measures and indicators

Based on review of existing Hennepin County and peer community performance measures, this plan identifies a recommended set of bikeway system performance measures and indicators related to each of the plan goals. As described in chapter one, performance measures set specific targets for the bikeway system in the year 2040 and establish a baseline for progress. Indicators are less measurable but relate to observable criteria and are either direct or indirect outcomes of system implementation.

Performance measures and targets

Increasing ridership

- *The number of bicycle commuters will quadruple from 12,000 in 2012 to 48,000 by 2040 (baseline – 2012 ACS commute share)**
- *Double bicycle mode share from 1.8 percent in 2012 to 3.6 percent by 2040 (baseline – 2012 ACS commute share)**
- *Half of the people who are physically able to bike choose to ride for some trips. (baseline 2014 SHAPE survey)*
- *Double the percentage of Hennepin County employees commuting by bicycle three or more days a week*

**these are placeholder measures until a full countywide counting system is deployed*

Completing the bikeway system

- *Complete an average of 20 miles of the county bikeway system annually*
- *Close an average of five bikeway gaps annually*
- *Eighty-five percent of households in Hennepin County will be within ½ mile of a county bikeway; and/or within a mile of the enhanced bikeway network*

Improving bicycling comfort and safety

- *Move towards zero biking deaths. (baseline – 2010 MN Department of Public Safety)*

- *50 percent reduction in crashes per capita by 2040 (baseline – 2010 Minnesota Department of Public Safety)*

- *90 percent of enhanced bikeway system (to be identified) complete by 2040*

- *50 percent of bike commuters are women (baseline – 2012 ACS)*

Advancing sustainability

- *Bicycling can help achieve the county's goal of reducing VMT per capita 20 percent from 2000 level by 2040 (MnDOT)*

- *Bicycling can help achieve the county's goal of reducing greenhouse gas emissions 15 percent by 2015, 30 percent by 2025 and 80 percent by 2050 from county activities (baseline – 2007 DES)*

Maintaining a first-class bikeway system

- *Maintain 50 percent of ridership through the winter (counts)**

- *On-street bikeways meet the Transportation System Plan goal to have 67 percent of the system meet a present serviceability rating of good or better*

- *Off-street bikeways match the transportation systems plan goal to have 67 percent of the system meet a present serviceability rating of good or better (pavement management system, which doesn't yet exist for off-street bikeways).***

*these are placeholder measures until a full countywide counting system is deployed

**County staff is reviewing the park district's system is for tracking pavement management

Indicators

Expanding the bicycle audience

- *Bicycling among women, children, older adults, low income and minority groups will increase over time.*

Recognition as a premier bicycle region

- *The metropolitan area, including Hennepin County, is recognized as a world-class bicycling region that leads the country.*

- *Leading the nation in bicycle-friendliness and rate of bicycling (comparison to peer regions, cities, and counties).*

Community satisfaction with the bikeway network

- *User satisfaction with bicycling conditions (fewer reported issues, more positive feedback through user surveys, 311 systems, media etc.).*

Bicycle support in the community

- *Increase in number, quality and prominence of bicycle support facilities offered by employers, housing developments, retail establishments and others in the private sector.*

Minimize disruption on the bikeway system

- *Detour notifications are timely and effective; detour routes are efficient, safe and on a comparable facility type.*

- *Tracking system for reported maintenance issues documenting response time for fixing problem (online resource, see New Haven, CT - ClickFix type system).*

Three Rivers Park District performance measures

The following are a subset of performance measures specific to Three Rivers Park District (TRPD) that reflect agency-specific metrics for tracking progress while growing the regional trail system. The planned additions to the park district trail system will be implemented primarily as opportunities arise over time; thus, these measures do not include annual targets for progress.

- Increases in bicyclists using the trail system as observed through counts and surveys
- Reduction in bicycle crashes along the regional trail crossings and at trail intersections
- Percentage/miles of TRPD trails completed (master planned) and pending funding/construction.
- Percentage/miles of TRPD trails completed and open to the public.
- Number of identified high priority trail crossings addressed (see appendix J, Three Rivers Park District priority trail crossing improvements)

Collecting and managing data

In order to track performance, the county and park district will need to gather and maintain the necessary data. First, the county should implement a system for collecting bicycle counts and measuring the share of trips that are taken by bicycle within the county. This will improve the understanding of bicycle travel in different areas, including urban, suburban and rural contexts, and will help assess the needs for added capacity and safety improvements. Some area-wide data about travel habits from sources like the U.S. Census American Community Survey (ACS) are available (as referenced in chapter one), and there have been some local efforts to develop count programs, but not consistently across the county. Understanding that practices and technologies for bicycle counting are expanding rapidly, the county will need to reevaluate its count program every few years.

Hennepin County bicycle count MURP capstone project (2014)

Concurrent with the development of this plan, students from the University of Minnesota, Hubert H. Humphrey School of Public Affairs, under the direction of Professor Greg Lindsey, PhD, undertook a capstone project to develop a bicycle monitoring strategy for Hennepin County. This study proposes a data collection approach to initiate a bicycle monitoring system along county roadways using pneumatic tube counters. The outcome of this effort would be the capability to track bicycle miles travelled (BMT) along the county roadway and bikeway system, similar to the vehicle miles of travel (VMT), routinely reported for motor vehicles. The county should continue to follow up on this effort to further explore the feasibility of this bicycle counting approach.

In addition to bicycle counts, the county should continue to gather feedback and opinions on bicycling, bikeways, and support facilities from users and the general population. Providing a means for the public to give feedback on the system will help the county evaluate system performance and identify priorities for future investments. In addition, surveys and focus groups provide a means to learn about system users, which may provide insight into how that population is changing and whether new programs are reaching their target audiences.

Lastly, there is an ongoing need to maintain consistent, thorough and accurate data about the bikeway system (planned and existing). Timely and up-to-date data about the condition and status of bikeways is critical information for agency staff that need to coordinate system planning, operations and maintenance. It is also important for the general public, who increasingly rely on the data provided through websites to be current and comprehensive.

Strategies and actions

The following strategies and actions will facilitate on-going plan implementation, bikeway system evaluation and bikeway maintenance. Each strategy includes specific actions for the county and/or park district to undertake.

Strategy 5.1	Actions
Prioritize projects to implement. In order to efficiently and strategically invest in the bikeway system, the county must develop a prioritization process to identify a priority projects list for implementation.	5.1.a Re-evaluate the prioritization process every five years to ensure other county and park district goals are being met.
	5.1.b Annually update the priority projects list for implementation.

Strategy 5.2	Actions
Develop and maintain a bikeway design toolkit including a matrix of bikeway options, technical design sheets and typical sections for both new construction and retrofit projects, based on local and national research and best practices. Consider the development of guidelines in conjunction with other modal guidelines, forming the basis for future complete streets design manual.	5.2.a Use the bikeway design toolkit and employ local, state, national, and international guidance when appropriate.
	5.2.b Routinely review and update the content and guidance of the bikeway design toolkit to maintain consistency with the latest best practices, applicable standards, and innovative approaches.
	5.2.c Consider the development of guidelines in conjunction with other modal guidelines, forming the basis for the future complete streets design manual.

Strategy 5.3	Actions
Provide for continuing education for county and park district staff about new bikeway types, planning, design and bicycle-related issues that may arise.	5.3.a Encourage involvement in workshops developed and led by the county, park district or others such as the Minnesota Department of Transportation (MnDOT) and the Federal Highway Administration (FHWA).
	5.3.b Encourage involvement in webinars to increase staff knowledge on various topics related to bicycling planning, design, construction, operations, maintenance, and laws.
	5.3.c Support staff in attending relevant conferences/seminars (e.g., Pro-Walk/Pro-Bike, Transportation Research Board, Association of Pedestrian and Bicycle Professionals Professional Development Seminars).

Strategy 5.4	Actions
Monitor and consider emerging transportation planning, design, and implementation practices.	5.4.a Monitor and consider emerging traffic analysis practices that better incorporate multimodal demand in countywide analysis.
	5.4.b Survey and select innovative analysis tools to assess a streets ability to move people rather than just vehicles.
	5.4.c Work with other agencies to improve travel demand modeling to include bicycle users.
	5.4.d Investigate methods of markings removal and experimentation and develop recommendations to allow for Hennepin County to pilot innovative striping plans and tweak them when needed while not waiting for overlays for experimentation.

Strategy 5.5	Actions
The county and park district should budget for ongoing, consistent sources of revenue to complete planned network routes and to close gaps in the network.	5.5.a Refine and continue to utilize the county bicycle funding programs.
	5.5.b Consider creation of a park district land acquisition fund dedicated to regional trail land acquisition needs.
	5.5.c Consider developing a comprehensive investment approach to fund infrastructure improvements and programs associated with education, enforcement, and maintenance. This approach would include information on typical costs, funding streams, and timing of investment.
	5.5.d Support efforts to reserve federal funding for bicycle and pedestrian improvements.

Strategy 5.6	Actions
Leverage other projects to include bikeways or take advantage of partnership opportunities outside of the normal solicitation schedule, and consider budgeting for unplanned opportunities.	5.6.a Continue to fund the community enhancement program at its current level or higher for purposes of taking advantage of partnering opportunities to implement and enhance the regional trail system.
	5.6.b Create a county opportunity fund for unplanned, yet strategically important projects.

Strategy 5.7	Actions
Obtain funding for bicycle education and enforcement programs.	5.7.a Continue applying for statewide health improvement program (SHIP) or other funding opportunities for educational programs.
	5.7.b Work with partners for funding education and encouragement programs.

Strategy 5.8	Actions
Explore the creation of a regional trail authority (similar to a watershed district) for a consistent funding stream for longer term maintenance and operations.	5.8.a Research the use of a regional trail authority or similar organizations in other areas to better understand the applicability to Hennepin County, Three Rivers Park District, and partners.
	5.8.b Work collaboratively with other bikeway providers to understand long-term bikeway maintenance and operation costs, opportunities, and challenges of the entire region.

Strategy 5.9	Actions
Continue county routine maintenance and pavement management of the on-street bicycle system tied to overall roadway maintenance plans.	5.9.a Evaluate current maintenance practices to identify opportunities to modify the approach to better address bicycle maintenance as part of the existing roadway maintenance program where on-street bikeways are present, such as pre-treating the road before storms to ease removal of snow and ice from curb to curb.
	5.9.b Investigate best practices of bikeway-specific snow removal techniques in other winter communities.
	5.9.c As new bikeway types are added to the system, the county and park district will maintain, or partner with the appropriate organizations to maintain, elements such as physical barriers, striping, and bicycle signal timing.
	5.9.d Report and track the condition of bikeway-related pavement markings and signage.

Strategy 5.10	Actions
Partner with cities to improve routine maintenance and pavement management practices on Hennepin County off-street bikeways.	5.10.a Conduct a feasibility study increasing the county's involvement in routine maintenance pavement management practices of off-street bikeways.
	5.10.b Create a digital map and database of all maintenance agreements and identify locations with possible maintenance responsibility gaps in the system.

Strategy 5.11	Actions
Establish and implement a policy for the closure and detour of on- and off-street bicycle bikeways that provides safe and direct alternatives when bikeways must be closed.	5.11.a Develop work zone bicycle traffic maintenance guidance based upon best practices.
	5.11.b Design / acquire appropriate signage and other materials for easy set up and removal before and after construction.
	5.11.c Develop guidance for restoring bikeway pavement quality when it is affected by adjacent non-road construction activity (for example, by construction equipment and activity during the construction of a new apartment building or utility work).
	5.11.d Continue the process for effectively and efficiently informing the public about closures and detours (information line and on website).

Strategy 5.12	Actions
Maintain current programs and partnerships that provide routine maintenance (e.g., TRPD Adopt-a-Trail Program). Current, routine maintenance programs and partnerships should be maintained or enhanced.	5.12.a Continue partnerships with MN Conservation Corps, Sentence to Serve, and similar programs to provide seasonal, response to storm, and special project maintenance assistance.
	5.12.b Continue to oversee and permit special events along the regional trail system in a manner that protects the integrity of the regional trail corridor, minimizes the impact of the general public, and that recovers associated costs.
	5.12.c Investigate and evaluate alternative funding sources and programs to assist with the long-term routine maintenance and operation costs of the regional trail system.
	5.12.d Continue to investigate and evaluate opportunities to partner with local communities and other partners to assist with routine maintenance and operations.
	5.12.e Continue annual routine maintenance, operations, and funding of regional trail corridors.
	5.12.f Biannually review routine regional trail maintenance guidelines and update as necessary to best serve the public and maximize available resources.

Strategy 5.13	Actions
Continue Three Rivers Park District's pavement management program (PMP) for regional trail maintenance.	5.13.a Continue the implementation and funding of the park district's PMP.
	5.13.b Investigate and evaluate alternative funding sources and programs to assist with the long-term pavement management maintenance costs of the regional trail system.
	5.13.c Investigate and evaluate opportunities to partner with local communities and other partners to assist with pavement maintenance funding and implementation.

Strategy 5.14	Actions
Investigate and consider a prioritized, phased snow removal policy for on- and off-street bikeways.	5.14.a Work with cities to designate bicycle snow emergency routes and identify locations and types of bikeways that should be prioritized as part of snow removal.
	5.14.b Study the best methods for snow removal on bikeways that are located within the county right-of-way.
	5.14.c Continue and expand the park district pilot programs to determine best management practices, costs, and potential partners to providing winter maintenance.

Strategy 5.15

Regularly evaluate the performance of new and existing bikeways to determine the effectiveness of designs and treatments.

Actions
5.15.a Develop before and after studies when implementing innovative designs and experimental treatments, including a framework for routine evaluation of these treatments (consider participating in MnDOT or FHWA experimentation where relevant) that will improve understanding of how existing and/or traditional bikeways are performing to ensure treatments meet with intended use and safety performance. Where possible, partner with cities or research institutions on the evaluation.
5.15.b Maintain and annually update a bike plan dashboard that reports on the performance measures and describes progress on bikeways implementation.
5.15.c Produce annual progress report on the combined implementation of the bicycle plan, pedestrian plan, and complete streets policy.

Strategy 5.16	Actions
Implement a system for collecting bicycle counts and measuring the share of trips that are taken by bicycle within the county.	5.16.a Assess the level and quality of data currently collected and develop a recommendation for establishing a county bicycle counting program.
	5.16.b Consider establishment of an automated bicycle counting system for both the on- and off-street system.
	5.16.c Integrate bicycle counts as part of the routine vehicular traffic count program where possible.
	5.16.d Analyze and evaluate the change in ridership on a seasonal and yearly basis.
	5.16.e Report on ridership changes annually once the counting system in place.
	5.16.f Partner to develop a system to share count information among the region's agencies.

Strategy 5.17	Actions
Continue to gather feedback from users and the general population on a regular basis.	5.17.a Conduct outreach at key events and continue the use of on-line or intercept survey tools to get feedback about the overall bicycle system, specific projects/improvements, and user demographic composition, preferences, and behaviors.
	5.17.b Consider various methods to gather on-line feedback (e.g., 311, website, social media).
	5.17.c Continue the Three Rivers Park District's 5-Year Regional Trail Survey.

Strategy 5.18	Actions
Create a working group of advisors to monitor the implementation of the bike plan.	5.18.a Develop a working group action plan that includes the group goals, composition, and anticipated outcomes.
	5.18.b Identify and invite the appropriate people to become a bicycle plan implementation advisory group member.

Strategy 5.19	Actions
Develop/enhance strategies to house, maintain, and communicate important information and data on the bikeway system.	5.19.a Develop and routinely maintain an inventory including bicycle system map of existing and planned bikeways that are part of the 2040 Bikeway System.
	5.19.b Maintain and routinely update GIS database with status of gaps and barriers to track progress of eliminating system gaps.
	5.19.c Maintain and routinely update GIS database with status and attributes of existing and planned bikeways and facilities as part of the project process to actively track progress of system implementation.
	5.19.d Develop central GIS database for use by county and local agencies to reference to ensure local and county bikeways connect geographically with consistent bikeway types, and to track upcoming projects.
	5.19.e Develop and maintain an electronic library of PDFs and Microstation files of all bikeways as-builts.
	5.19.f Set up a county complete streets project website with an inventory of current and past bike, pedestrian, and complete streets projects.

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