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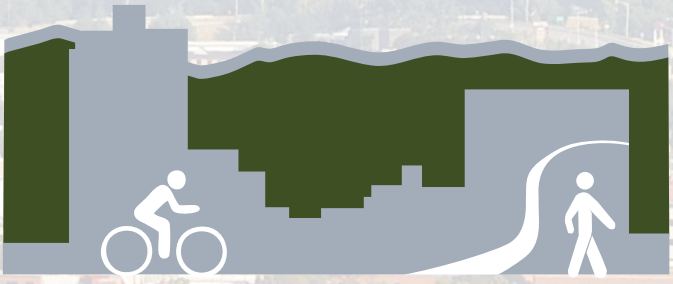
BILLINGS AREA



BIKEWAY + TRAILS

MASTER PLAN UPDATE

BILLINGS - YELLOWSTONE COUNTY MPO METROPOLITAN PLANNING ORGANIZATION

SPRING 2017

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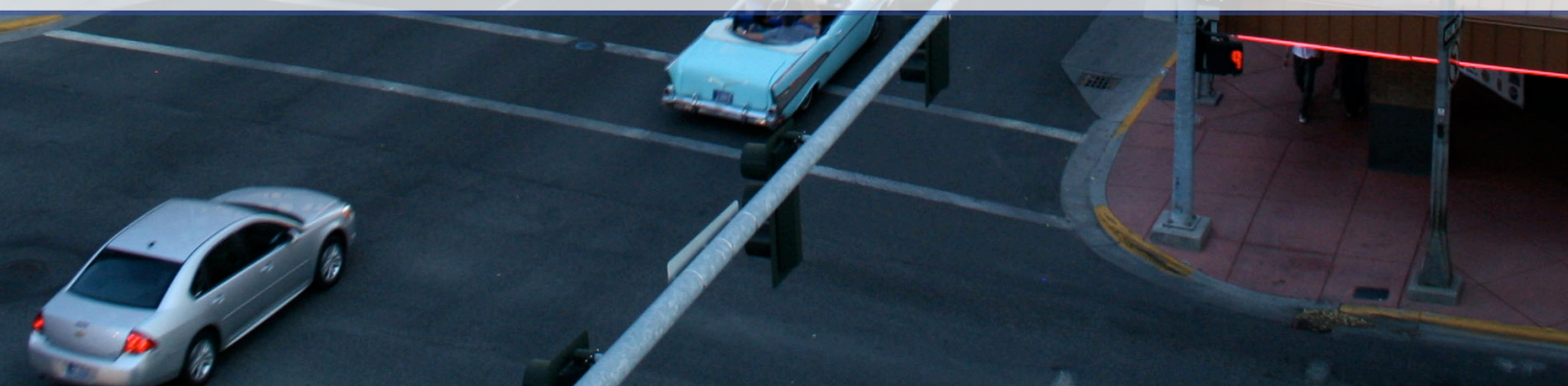
EXECUTIVE SUMMARY



The Billings Area has a well established system of trails. This Plan seeks to build upon these assets and develop new on-street bikeway connections.

EXECUTIVE SUMMARY

The Billings Area Bikeway and Trail Master Plan establishes both a long-term vision and defined, achievable short-term actions to improve mobility and recreation opportunities in the Billings Area. This plan has undergone a robust public process and builds upon multiple past and current planning efforts. The plan is organized into the following chapters:

1

Chapter 1: Vision, Goals, and Objectives
Establishes the plan's vision and goals which provide detail and basis for many of the recommendations.

2

Chapter 2: Existing Conditions
Reviews existing conditions in Billings as of 2016, in terms of infrastructure and the existing planning/policy context

3

Chapter 3: Needs Assessment
Provides detailed analysis of public needs, preferences and the potential benefits of meeting those needs

4

Chapter 4: Recommendations
Provides the policy, program and engineering recommendations needed to achieve the proposed network and the vision and goals outlined in Chapter 1.

5

Chapter 5: Implementation
Provides greater detail on implementation including cost estimates and project prioritization

Significant emphasis was placed in the plan on evaluating and identifying roadways within the study area for compatibility with various types of on-street facilities. This emphasis reflects the fact that the on-street bikeway network is less developed than trail network and has significant importance in accommodating transportation based bicycling trips. This plan seeks to maximize opportunities to efficiently implement bikeways and trails through leveraging existing roadway maintenance, future private development and other capital projects.

With respect to projects within the city limits, adoption by the Billings City Council acknowledges that this plan's policies and facility recommendations are being committed to with the full support of the City of Billing's Engineering Division, Parks, Recreation & Public Lands Department, and the Billings MPO.

The following items are of importance to MPO, MDT and City staff and elected officials:

- Bikeway and trail facilities will be considered at all levels of government and through all related policies, processes and standards that encourage and enhance walking, bicycling, and other trail-related activities in the Billings area.
- As is done now by the City-County Planning Division and City Engineering Division, a subset of the Plan's recommended projects will be included annually with the City's Capital Improvement Project process.
- Implementation strategies and recommendations in this plan will be used when designing and identifying funding for new transportation projects.
- This plan recommends a network of 'Bicycle Boulevards' which utilize and improve local streets as comfortable alternatives to collector and arterial roadways. Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle and pedestrian travel priority. Bicycle boulevards use wayfinding signs, pavement markings, and speed and volume management measures to discourage additional through trips by motor vehicles.
- This plan recommends on-street bike lanes on many of Billing's collector and arterial roadways. If implemented, some of these bike lanes would require some degree of on-street parking loss or travel lane narrowing/removal. Some projects, including some of the bike-lane segments, are classified as 'long-range visionary' projects to be explored if a major reconstruction is advanced where no simple solution exists today.
- The city is currently being directed to provide shared use paths along arterial construction projects. This document also recommends on-street bike lanes along these corridors as an option or in conjunction with the shared use paths, as is recommended by the American Association of State Highway Transportation Officials (AASHTO).
- Available federal funding has decreased in recent years. This plan supports a greater local funding commitment and recommends creation of a 'bikeway and trail account' with funds to aid implementation of programs and projects.
- Additional funding will be required to meet long-term capital operations and maintenance for both on-street bikeways and trails recommended for development in this plan.
- To address installation of on-site improvements and off-site mitigation measures, the plan recommends that new private development projects finance and install bikeway and trail facilities as appropriate.
- This plan provides a framework to provide bicycle parking with new commercial development and as infill and retrofits to downtown public spaces and for existing commercial areas. Funding will need to be identified to support implementation of bike parking in public facilities and spaces.
- Install wayfinding signage along all bicycle boulevards and trails to assist with wayfinding and to increase awareness of bicyclists and other trail users. Capital and O/M funding increase will be needed.

Implementing the Plan

Implementing the facility recommendations within the Billings Area Bikeway and Trail Master Plan will require an improved program framework within the City of Billings.

Priority Projects – Short-term projects that serve important north-south and east-west corridors have been matched to planned resurfacing and capital projects. Some of these projects have been identified in the Appendix and will be included in the 5-year Capital Improvement Program. Other projects are also likely to be implemented, but will require additional funding to be completed. The short-term projects focus on facilities that will be widely used and serve key connections, such as safe routes to schools.

Annual Focus – The City of Billings will review opportunities to fund projects annually, with a focus on cost effective projects that fill key network linkages.

Include Active Transportation with Other Planned Projects – The City of Billings should evaluate other capital road construction projects and roadway resurfacing projects to determine appropriate Active Transportation facilities in accordance with the Billings Area Bikeway and Trail Master Plan.

Maintenance Expansion – The City of Billings currently conducts significant maintenance activities annually.

Roadway Restriping – The City focuses on vehicle centerline, lane line and lane stenciling and marked crosswalks first and tries to refresh as much striping every year as possible. Additional resources will be required as the roadway and bikeway network grows.

Street Sweeping – The City currently sweeps arterial and collector roadways between one and two times per month during the summer and tries to sweep residential streets three times per year.

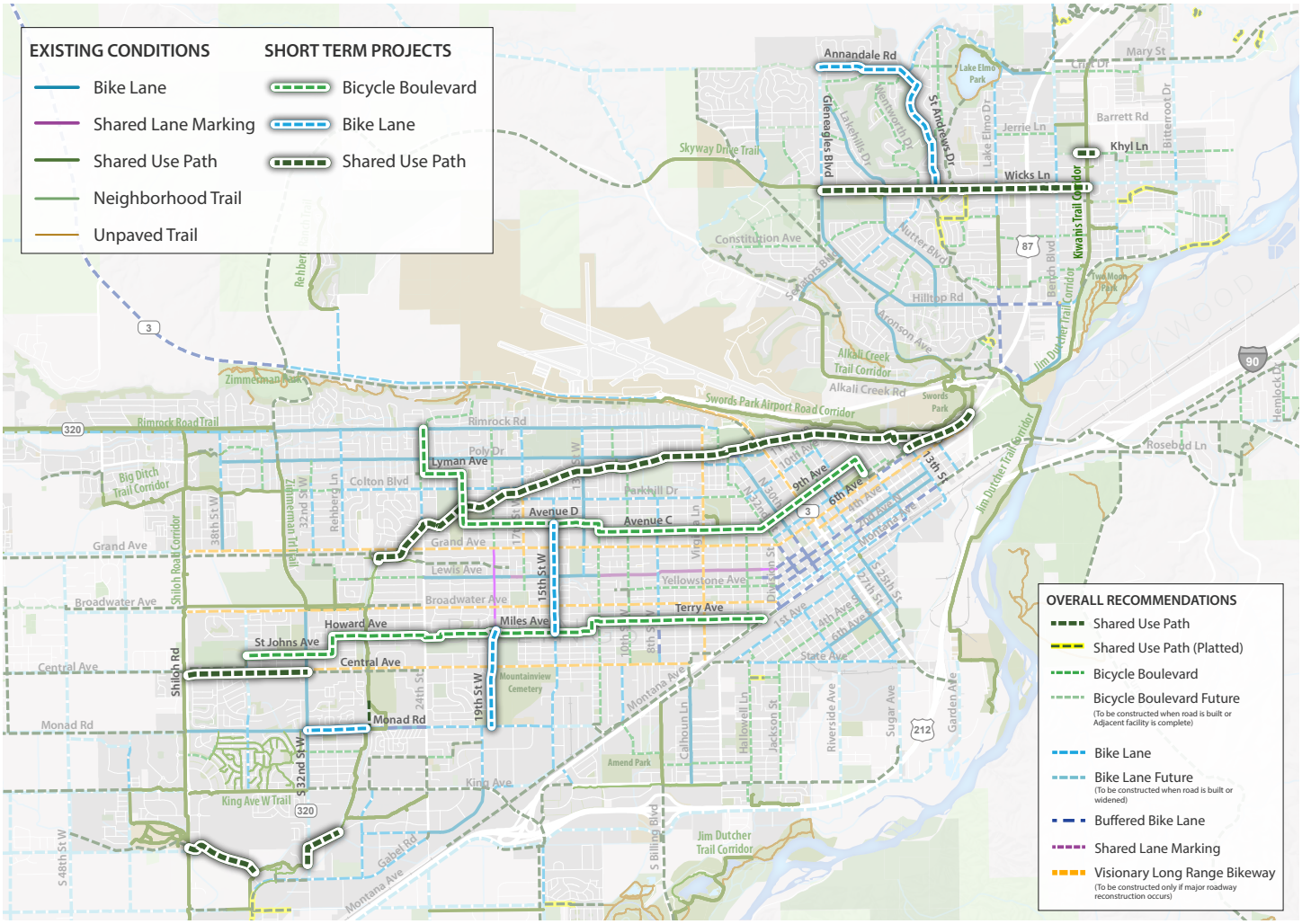
Snow Plowing/Removal – The City currently plows arterial and collector roadways. Bike lanes on arterial roadways are plowed. Many Collector roadways are cleared by pulling snow to the middle of the street with the bike lanes being plowed on the outside. Trails within the street right-of-way are cleared within 36 hours of the storm ending.

Short Term Project List

The City of Billings Engineering Division has identified the following projects as likely candidates for short-term implementation and integration into the 5-year CIP. These projects are intended to show how an effective network could be developed over the short term by identifying potential projects. This priority list could be included in the next 5-10 year CIP, resulting in a systematic program. In addition to these projects, some of the priority connections consistent with the safe routes to school improvement program, could be implemented with the annual city budget.

Project Name	Project Notes
6th Ave N Shared use Path	From Expo to 13th
Khyl Lane – Shared use Path	Connecting the street to the Kiwanis Trail
Howard / Terry Bicycle Boulevard	Striping and signage
Lyman/ Ave D / Ave C/ 9th and 24th / Arvin Bicycle Boulevards	Striping and signage
19th St W – Miles to Monad Bike Lanes	Add striping
15th St W – Miles to Ave D Bike Lanes	Through overlay project
BBWA Canal – 6th Ave N to Shiloh Rd	Start the process, full project will take longer than 5 years
Annandale / St Andrews – Bike Lanes	Add striping
Wicks Lane – Gleneagles to Kiwanis - Shared use Path	Add shared use path to south side of the street
Central Ave – 32nd to Shiloh – Shared use Path	With road project
Monad Rd – 32nd to 29th – Bike Lanes	Through overlay project

SHORT TERM PROJECT MAP



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CHAPTER 1:
VISION, GOALS + OBJECTIVES

BILLINGS BIKEWAY + TRAILS MASTER PLAN UPDATE VISION

The Billings community envisions a safe, convenient, and connected active transportation network consisting of streets, trails, sidewalks, and on-street bicycle facilities that are accessible to people of all ages and abilities for trips of all purposes and improve the economic and physical health of the community and its citizens.

1.1 GOALS AND OBJECTIVES

1. Complete Streets: *Improve, expand and consider active transportation and recreation facilities within the Billings Urban Area.*

- Continuously implement a complete network of separated and conventional bike lanes, low-stress bicycle boulevards, and complimentary bike route signage, which serves all bicycle user groups, including both recreational and commuter riders.
- Continuously implement an accessible network of pedestrian supportive infrastructure, including boulevard sidewalks, curb ramps, roadway crossing improvements, and trails to facilitate all types of pedestrian trips.
- Provide a bicycle, pedestrian, and trail network that is safe and attractive and meets the needs of all ages and abilities.
- Prioritize the implementation of bike facilities based on the recommended projects in this Plan when performing street resurfacing or restriping projects.
- Include priority active transportation projects within the 5-year Capital Improvement Program.
- Prioritize the closure of gaps in the bicycle network, as identified in this Plan, to improve connectivity between destinations.
- Require new private development projects to finance and install bicycle facilities, sidewalks, and multi-use trails where recommended in the Billings Area Bikeway and Trail Master Plan, as part of on-site improvements and off-site mitigation measures as appropriate. Such requirements should be addressed through updates to the Subdivision Regulations and the Site Development Ordinance.
- Adopt and adhere to existing and future standards established by manuals including, but not limited to the National Association for City Transportation Officials (NACTO) *Urban Bikeway Design Guide*, the Federal Highway Administration (FHWA) *Separated Bike Lane Planning and Design Guide*, the American Association of State of Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*, the Americans with Disabilities Act (ADA), and the *Manual of Uniform Traffic Control Devices* (MUTCD).
- Adopt roadway design standards that support Complete Streets principles.
- Continue to implement the 2016 City of Billings Complete Streets Policy.

2. Implementation: ***Consider the implementation of active transportation facilities at all levels of government and through all related policies, processes, and standards that encourage and enhance walking, bicycling, and other trail-related activities in the Billings area.***

- Adopt and implement the Billings Area Bikeway and Trail Master Plan Update.
- Continue to fund a dedicated staff member of the City of Billings/Yellowstone County for the coordination of non-motorized transportation.
- Expand sources for funding construction and maintenance of trails and bikeways beyond Billings TrailNet, G.O. Bond, Transportation Alternatives Program (TAP), and the Lockwood Pedestrian Safety District tax levy.
- Create a sustainable, dedicated source of bikeway funding within the annual City and County budgets.
- Continue to encourage bikeway and trail advocates, business leaders, health professionals, and other interested citizens to serve on government boards and committees.
- Pursue public-private partnerships in the planning and implementation of bikeway and trail projects.
- Prioritize the preservation of potential pathway corridors for future use including rail corridors, canals/ditches, utility rights-of-way, and natural corridors identified in this Plan.
- Continue to advance the Chamber of Commerce's and MPO plans to construct the 26-mile "marathon" loop trail that would surround the Billings urban area.
- Review this plan to ensure consistency with other planning efforts, such as the Billings Urban Area Long-Range Transportation Plan, the Growth Policy, and Safe Routes to School Study and local neighborhood plans as they are updated.

3. Evaluation: ***Monitor the implementation of the Billings Area Bikeway and Trail Master Plan***

- Continue and expand annual trail scanner counts, ensuring that the same locations are counted at the same time annually, so that accurate comparisons can be drawn. Continue to perform manual counts to monitor on-street bicycle use both on existing bikeways and as before/after data collection on future on-street bikeways.
- Present bicycle and pedestrian data annually to the City Council and County Commissioners to highlight trends and emphasize the importance of improving bicycle and pedestrian facilities.
- Monitor bicycle and pedestrian collision data annually to identify safety issue hot spots. Seek the continuous reduction in bicycle and pedestrian collision rates by making improvements at these locations.
- Track public opinion about walking and bicycling through surveys such as the National Citizens Survey, and surveys conducted annually by the bicycle and pedestrian coordinator.
- Continue to update the Billings Complete Streets Benchmarking Report on a three-year cycle. Cycles will continue in 2019, 2022, etc.

4. Transit Integration: ***Integrate bicycling and walking into the Metropolitan Transit System (MET)***

- Provide access and bicycle support facilities to transit through the development of bikeways that serve transit stations and transit hubs.
- Continue to accommodate bicycles on all transit vehicles.
- Provide safe end-of-trip facilities (bike parking, etc.) at all transfer stations.
- Partner with MET Transit when developing educational and outreach programs.

5. Maintenance: ***Ensure bicycle and trail facilities are clean, safe, and accessible.***

- Continue to incorporate bicycle network repair and maintenance needs into the regular roadway maintenance regime as appropriate, paying particular attention to sweeping, snow removal, and pothole repair on priority bicycle facilities.
- Continue to implement policies and guidelines for people bicycling and walking during construction. This policy should address pedestrian and bicyclist safety during construction and maintenance activities by providing safe, convenient, and accessible routes for bicyclists and pedestrians through construction zones.
- Implement an "Adopt-a-Trail" or "Adopt-a-Mile" program as a way to assist the City and County with maintaining trails.
- Establish routine maintenance program that encourages citizens to report maintenance issues through the City website that impact bicyclist and trail safety. Consider contracting with a vendor who provides an application where maintenance issues can be submitted wirelessly.
- Institute a sustainable funding stream for maintenance activities that is sufficient to keep both existing and future bikeway and trail facilities in good condition. Continue to fund the Lockwood Pedestrian Safety District tax levy for construction and maintenance.
- Continue to use the Complete Streets Policy as a guide, prioritize interdepartmental and interjurisdictional cooperation with regard to bikeway and trail maintenance to maximize efficiency.

6. Education and Encouragement Programs: ***Implement comprehensive education and encouragement programs targeted at all ages and abilities.***

- Continue education programs, such as Kids in Motion, Take the Hi Road, and Lights On!, to inform the general public on bicycle and walking safety issues and encourage non-motorized transportation with programs that target pedestrians, bicyclists and motorists.
- Install wayfinding signage along on-street bikeways and trails to improve wayfinding and to increase awareness of bicyclists and other trail users.
- Continue to support Safe Routes to School and other efforts, including educational and incentive programs to encourage more students to bicycle or walk to school, through a partnership with the school districts, residents, and other interested parties.
- Encourage employers to provide incentives and support facilities for employees that commute by bicycle, such as the national Bicycle Benefits program.
- Continue to partner with trail and bicycling advocacy groups, the medical and health community, MET transit, bike shops, businesses, museums, and outlying communities on education and encouragement programs.
- Promote bicycling and walking through City-sponsored events.
- Educate professional drivers (transit drivers, delivery drivers, etc.) on bicyclist rights and safe motoring behavior around bicyclists.
- Encourage large employers, colleges and universities, activity centers, and major transit stops to provide secure bicycle storage facilities and racks and promote their efforts.
- Require bicycle parking and other end-of-trip facilities within new commercial development and retrofit public facilities with bicycle parking where it is absent.
- Continue to increase participation in Bike to Work Month annually, and organize other events that

promote bicycling in the community. Examples of such events are Slow Roll and Tour de Fleur.

7. Enforcement: ***Increase enforcement on City/County streets, trails and bikeways to make interactions between motorists, bicyclists, and pedestrians safer.***

- Increase attention by law enforcement officers to bicycle-related violations by both motorists and bicyclists. Law enforcement officers should be recruited to participate in educational programs in schools.
- Institutionalize the positive reinforcement of safe bicycling behavior by rewarding bicyclists with coupons or other incentives to continue practicing safe riding habits ("caught being good" program).
- Continue code enforcement efforts to prevent the obstruction of dedicated bikeways and walkways, especially during construction projects.
- Reduce aggressive and/or negligent behavior among drivers, bicyclists, and pedestrians.
- Ensure that all bicycle or pedestrian collisions are accurately recorded into a collision database for future analysis and monitoring. Review this crash data annually, and make improvements to reduce crash occurrences.
- Reinstate volunteer patrols on trails and continue the Downtown Resource Officers program, who

8. Health and Safety: ***Encourage healthy activities through increased access and safe infrastructure for bicyclists and pedestrians.***

- Continue to collaborate with Billings' medical community to develop programs that promote the health and wellness benefits associated with walking and bicycling, such as Kids in Motion and Trails Rx.
- Continue Safe Routes to Schools efforts in all Billings Area School Districts to encourage healthy walking and bicycling habits and education at an early age.
- Provide events and encouragement activities to provide opportunities for residents to increase physical activity that promotes social interaction, safe use of facilities and overall wellbeing.
- Reduce the numbers of crashes involving bicyclists and pedestrians by at least 30 percent by 2021, from 62 in 2016 to 43 by 2012.
- Increase helmet use among bicyclists.
- Increase the use of reflective clothing for both bicyclists and pedestrians during low light hours.
- Increase access for the mobility impaired.
- Continue updating curb ramps for compliance with Public Rights-of-Way Guidelines (PROWAG) and the ADA.

Intersection crossing treatments, such as the Rectangular Rapid Flash Beacons and the pedestrian refuge island that have been installed where the Lillis Park Trail crosses Broadwater Ave., provide a comfortable crossing experience for a wide range of non-motorized users. Prioritizing the implementation of crossing treatments like this and dedicated facilities will help to increase rates of bicycling and trail use in the community.

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CHAPTER 2:
EXISTING CONDITIONS

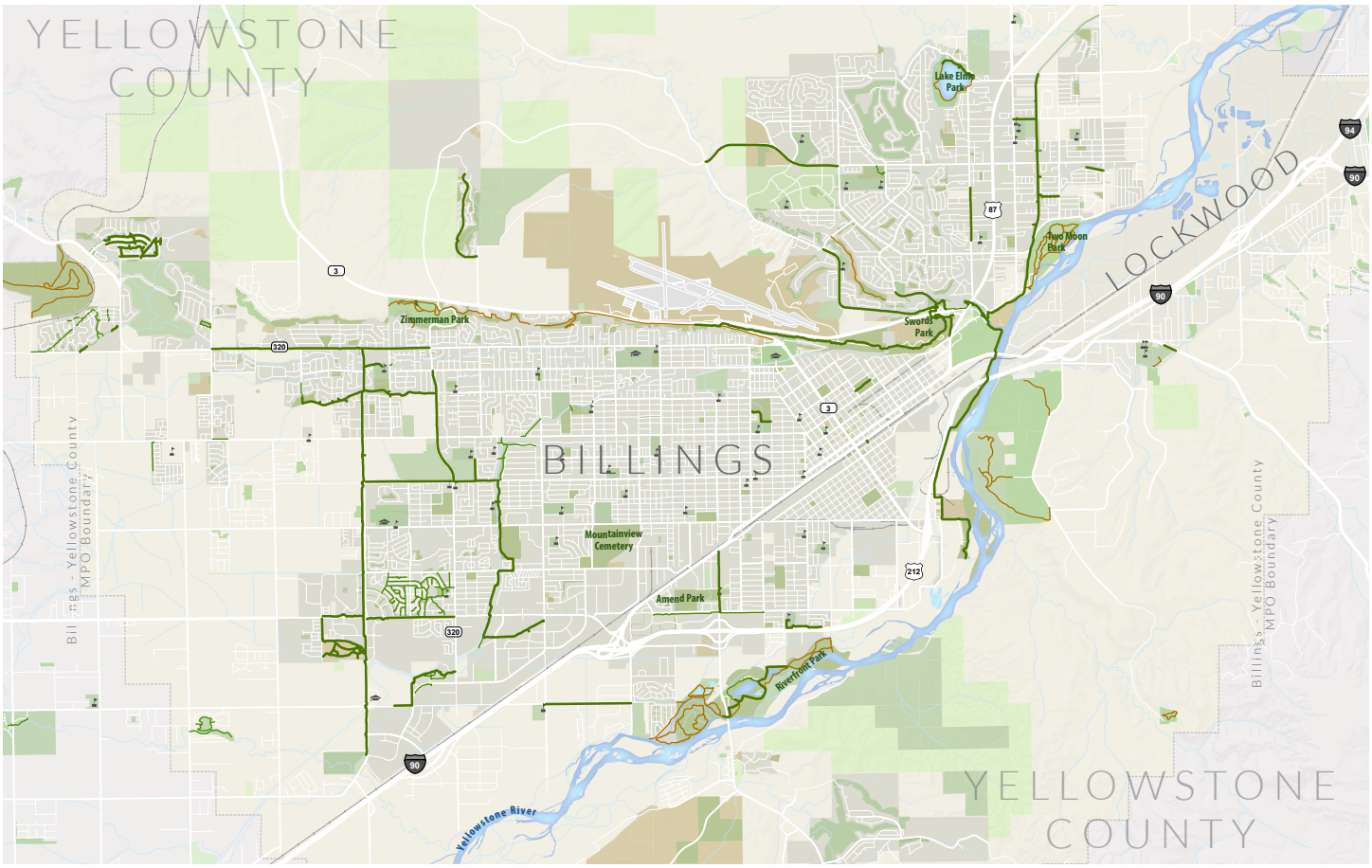
2.1 INTRODUCTION

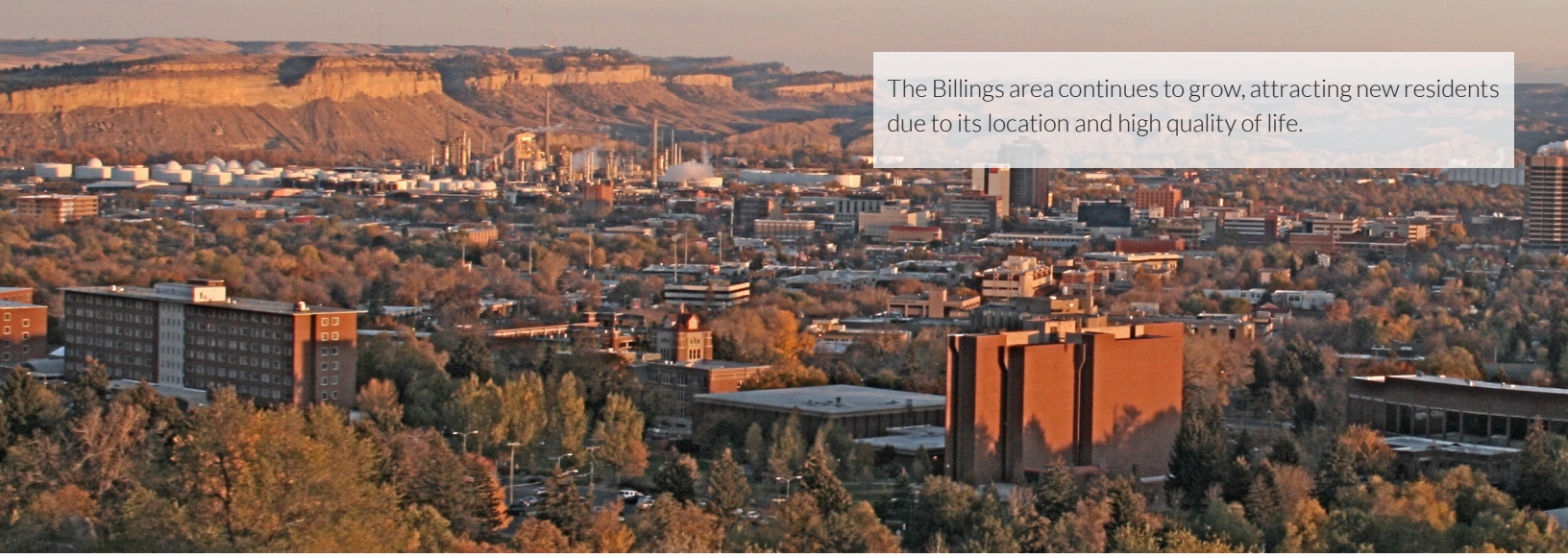
In recent years, communities across the country have begun to redesign streets and construct robust trail networks to make active transportation, or human-powered modes of transportation such as walking and bicycling, more viable. In addition to providing low-cost forms of transportation, walking, and biking offer many additional benefits to communities that invest in developing comprehensive active transportation systems. The Billings area is well positioned to realize many of these benefits, including improved quality of life for residents, enhanced community health, and many forms of economic benefits.

The Billings area has a long history planning and implementing dedicated active transportation facilities. The first planning effort that focused on active transportation, the *BikeNET Plan*, provided numerous recommendations to improve bicycle and trail facilities in the community and shape a culture that supported walking and bicycling. This plan, which was adopted in 1996, expedited the implementation of miles of trails and on-street bikeways. In 2004, this plan was updated as the *The Heritage Trail Plan for Greater Billings*, and this plan was subsequently updated in in 2011 as the *Billings Area Bikeway and Trails Master Plan*. This report expanded upon the scope of the Heritage plan, including a more focused emphasis on planning on-street bikeways to facilitate commuter bicycle travel. Numerous other planning efforts have been conducted, which have also included recommendations to improve bicycle and pedestrian conditions at the county, city, and neighborhood levels.

Since these plans were published, the miles of paved trail in the Billings Area grew from less than 5 miles to more than 50 miles today, and the miles of on-street bicycle facilities expanded from no facilities prior to 2004, to more than 26 miles in 2016. Progress continues to be made, and Billings, a League of American Bicyclists Bronze-Level Bicycle Friendly Community, is increasingly becoming a more comfortable and safe community to walk, bicycle and

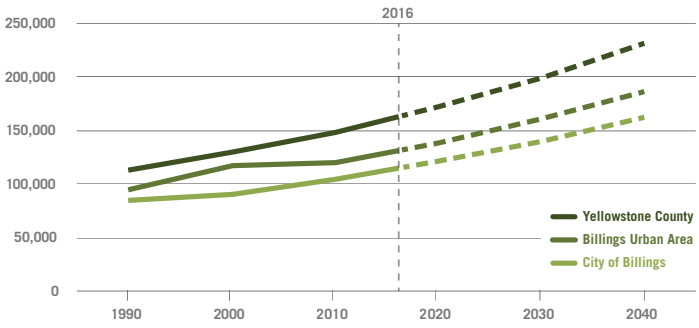
MAP 2.1 STUDY AREA





The Billings area continues to grow, attracting new residents due to its location and high quality of life.

POPULATION GROWTH 1990 TO 2040

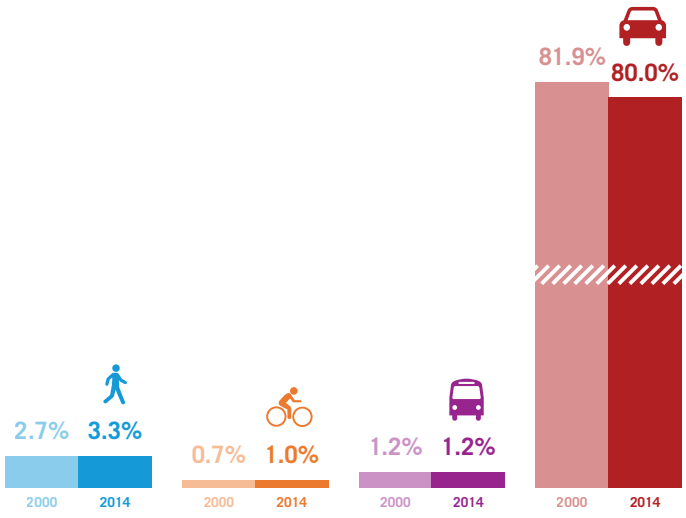


Source: 2014 Billings Urban Area Long Range Transportation Plan

The population of the Billings Area has consistently grown since the 1990s, and it is projected to continue to grow in the future. This growth is spurred by employment opportunities, a high-quality of life, and access to the outdoors.

2000 TO 2010 MODE SHARE COMPARISON

COMMUTE TO WORK MODE - CITY OF BILLINGS



Source: Census 2000 Summary File; 2010-2014 ACS

Like most North American cities, the great majority of people in Billings drive alone to work. The percentage of people walking and bicycling has increased slightly since 2000. More detailed analysis of travel choices is provided in Section 2.2

enjoy trails. Though the growth in both the trail and on-street bikeway network has been consistent, improvements can still be made to grow the network and make it more accessible to residents. This chapter explores the existing conditions for the trail system and the on-street bicycle network today. It includes several key elements, which together, create a complete picture of the progress the community has made and will serve as the basis for identifying areas that need improvement. The six sections of this chapter include:

- 2.1 Past Plan Review: This section provides a chronological review of planning efforts that have been conducted since the late 2000s, which have included recommendations related to active transportation and trails.
- 2.2 Demographic Analysis: This section highlights key demographic data related to the primary mode people take to work, travel times for the Billings Area, and other pertinent information that assesses how people in Billings currently move.
- 2.3 Inventory of Existing Facilities: This section includes an inventory of existing bicycle and trail conditions in the city, and provides information about the development of both networks.
- 2.4 Counts Analysis: This section provides a review of the non-motorized count program that the Billings area administers, with particular focus on data collected over the past five years.
- 2.5 Existing Programs: This section highlights the various programs in the Billings Area that continue to shape a culture that supports active transportation.
- 2.6 Crash Analysis: This section details locations in the Billings Area that pose a high crash risk for bicyclists and pedestrians, and identifies themes in terms of where, when and why these crashes occur.

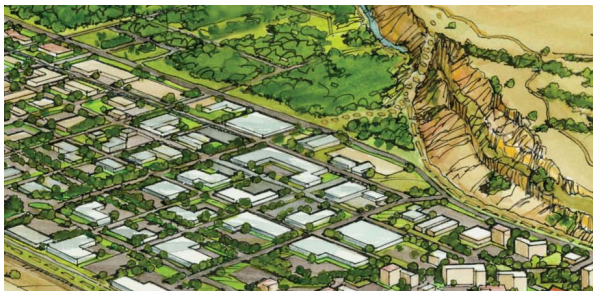
2.2 PAST PLAN REVIEW

For the Billings Bikeway and Trails Master Plan Update, a total of thirteen plans were reviewed, including neighborhood specific, city-wide and regional plans. Ten of the plans were published between 2009 and 2015, and three are still ongoing. This section presents brief summaries of each plan, organized chronologically. A more detailed summary of each plan is included in the Appendix.

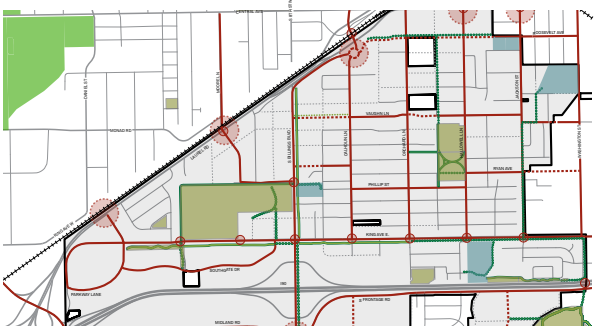
2009

East Billings Urban Renewal District Master Plan (2009)

The plan area is east of downtown Billings, generally bounded by 22nd Street, 6th Avenue N, MetraPark, and Montana Avenue. The primarily industrial area has been identified as a natural progression of the revitalization of Billings' downtown. The plan sets forth a vision for development of a multi-faceted district, mixing clean industry, residential, commercial, and tourism.



2012



South Billings Master Plan (2012)

The plan focuses on an area south of Laurel Road and State Avenue to the City of Billings' southern boundary and includes four neighborhoods, Orchard, Optimist, Amend Village, and Four Corners. The goal of the plan is to create a long-term strategy to improve the community through infrastructure, place-making, and social programs.

2013

Billings Complete Streets Benchmark Report (2013)

In 2011, the City of Billings officially adopted a Complete Streets Policy to systematically integrate all modes of transportation into all transportation projects in Billings to improve the health, safety, and well-being of Billings' residents and visitors. Two years after the policy's adoption, the Complete Streets Benchmarking report was undertaken to assess the effectiveness of the complete streets policy over time.

The report highlights the growing body of evidence indicating the health, economic and environmental benefits of active transportation and better transit access. The majority of the report focuses on infrastructure improvements that have been made specifically for pedestrians, bicyclists and transit riders.

Figure 4.1 Yearly Bike Lane Mileage Added & Total (Pre-2004 to 2012)

Data Source: City of Billings

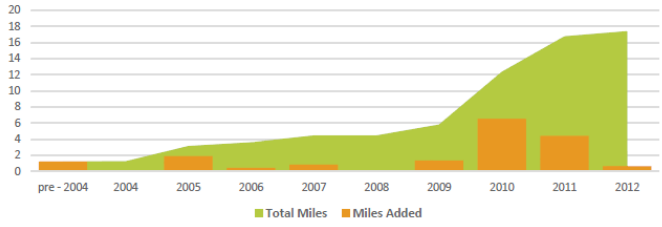
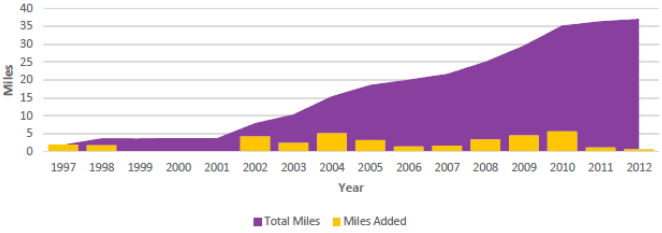


Figure 6.1 Yearly Multi-use Path Mileage Added & Total

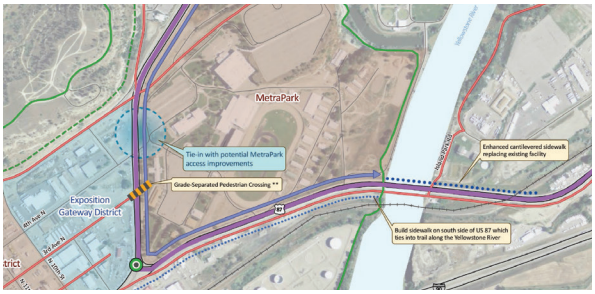
Data Source: City of Billings

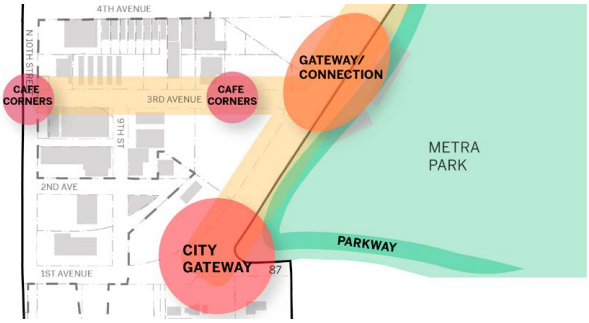


2013

City of Billings Hospitality Corridor Planning Study (2013)

The plan's focus area is the corridor along US Highway 87, Main Street, and Exposition Drive and is intended as a transportation study compliment to the Exposition Gateway Master Plan, which focused on land use. The study focuses on five key points along the corridor, and it seeks to enhance the streetscape and improve pedestrian access and safety in this area.





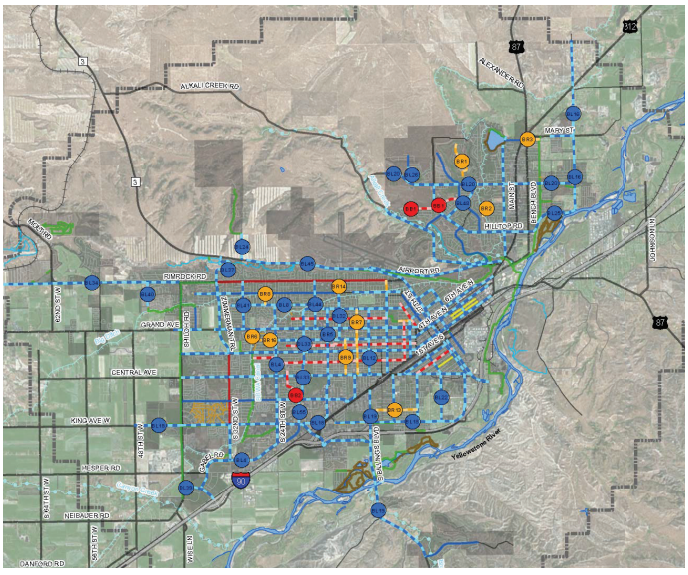
Billings Exposition Gateway Feasibility Study (2013)

The Exposition Gateway planning area encompasses properties both within and adjacent to the eastern-most edge of the East Billings Urban Renewal District. The plan addresses recommendations for revitalization of the area through storm water management, connections to MetraPark, attraction of hospitality businesses and gateway enhancements.

2014

Billings Urban Area Long-Range Transportation Plan (2014)

The plan focuses on long-range multimodal transportation systems for the Billings Urban Area, which includes the City of Billings and a 4.5 mile radius beyond. The study includes all modes of transportation in the area: vehicular, transit, bicycle/pedestrian, freight, and rail—and has a twenty-year forecast. The goals of the plan include development of a safe, efficient, and effective multimodal transportation system that is environmentally and economically sustainable, and it identifies a prioritized list of projects to reach these goals. For bicycling, the plan identifies a regional goal of having the most comprehensive bicycle and trail networks in the state and a Bicycle Friendly Community rating of Gold by 2020.

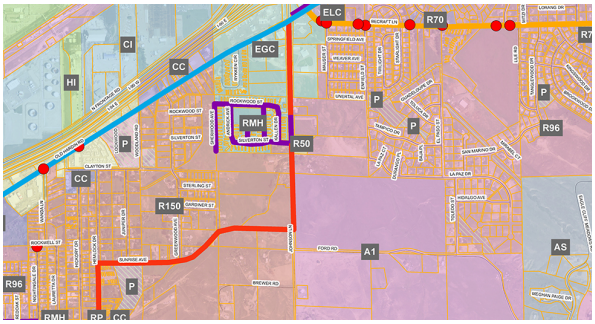


2014

ZooMontana to Riverfront Park Trail Feasibility Study (2014)

The study evaluates options for a trail connection from ZooMontana to Riverfront Park to take advantage of land development occurring in the area. Potential trail segments are identified along existing rights of way, streets, or other land use elements within each sub-area.

2015

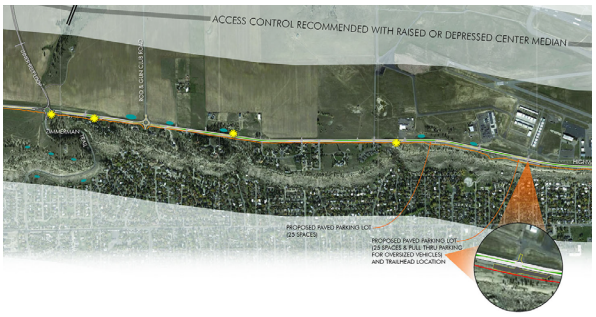


Lockwood Pedestrian Safety District Plan (2015)

The plan seeks to eliminate pedestrian fatalities and serious injuries caused by vehicles within the Lockwood Pedestrian Safety District area. While focused on pedestrian infrastructure, the plan does identify bicycle and trail infrastructure improvements that should be implemented in tandem with pedestrian improvements.

Highway 3 Corridor Study (2015)

The goals of the study, focused on North 27th Street to the Apache Trail along Montana State Highway 3, included identifying the highway's impact on adjacent land development, traffic patterns (both vehicular and non-motorized), stormwater management, and recommending roadway improvements along the corridor.



Rimrocks to Valley Bike/Pedestrian Feasibility Study (2016)

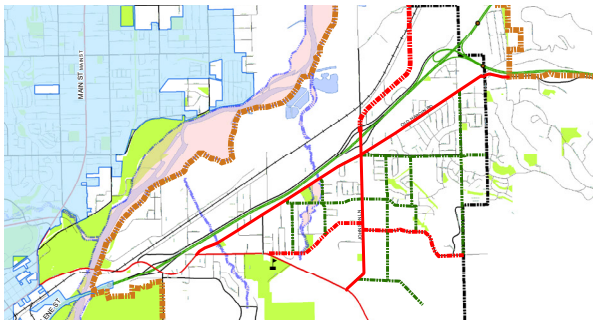
This study outlines options for separated bicycle and pedestrian facilities along Highway 3, which extends from the Rimrocks cliff formation to the valley below, and connects to the Marathon Loop Trail. Because of the terrain, few feasible locations exist within the study area, especially that would conform with ADA.

2016

2016

Community Transportation Safety Plan (2016)

The purpose of the plan was to determine the transportation safety issues in Billings using a data-driven approach and to reduce fatal and serious injuries as a result of motor vehicle crashes. Short-, mid-, and long-term strategies to address safety issues are being developed, according to four themes: Education, Engineering, Enforcement and Emergency Medical Services. The planning process includes a robust analysis of data and extensive public engagement.

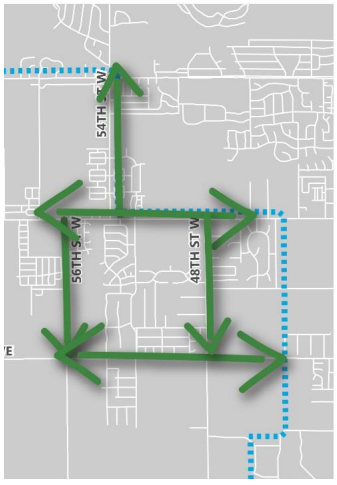


Growth Policy Update (City and Lockwood adopted in 2016; County adoption ongoing)

This planning process aims to update the 2008 Growth Policy for the City of Billings and Yellowstone County. A number of potential growth scenarios are being evaluated with regards to infrastructure investment, housing options, mobility and access requirements, place-making, community characteristics, and neighborhood needs.

West End Multi-Modal Planning Study (2016)

This planning effort focuses on land development at the west end of Billings, generally bounded by Rimrock Road to the north, 64th Street West to the west, Neibauer Road to the south, and 48th Street West to the east. The project focuses on modeling the impact on transportation patterns due to current and future development projects. The intent of the plan is to prioritize recommendations that mitigate projected traffic impacts caused by development in the study area. The project recommended bicycle and pedestrian improvements ranging from shoulder widening to seperated bike lanes, sidewalks, and side paths along Grand Avenue and Shiloh Rd. The plan also recommended the installation of new sidewalk connections to facilitate pedestrian travel, as well as pedestrian crossing enhancements on Grand Avenue, 54th St West, and Rimrock Rd/54th St.



2.3 DEMOGRAPHIC ANALYSIS

American Community Survey Journey To Work Data

The American Community Survey (ACS) Journey to Work data measures changes in mode share, or the percentage of a geographic area commuting by a specific travel mode, over time. ACS only collects transportation information about the main mode of transportation for trips from home to work. It excludes trips made by those outside of the workforce, including children, retirees, unemployed residents, and stay-at-home parents. It also excludes trip purposes such as shopping, going to and from school, and recreational outings. Lastly, it only represents the primary mode of transportation to work and does not reflect the mode choices of people who use more than one mode of transportation weekly, or who link multiple modes to complete a single trip.

Though it does have limitations, it is useful for comparing general preferences for the primary commute to work mode. Emphasis should be placed in the future on creating more granular data sets that provide better insight into mode choice, such as travel surveys. In 2017, the Billings MPO is developing a travel survey to understand mode choice patterns.

Commuting by Census Block

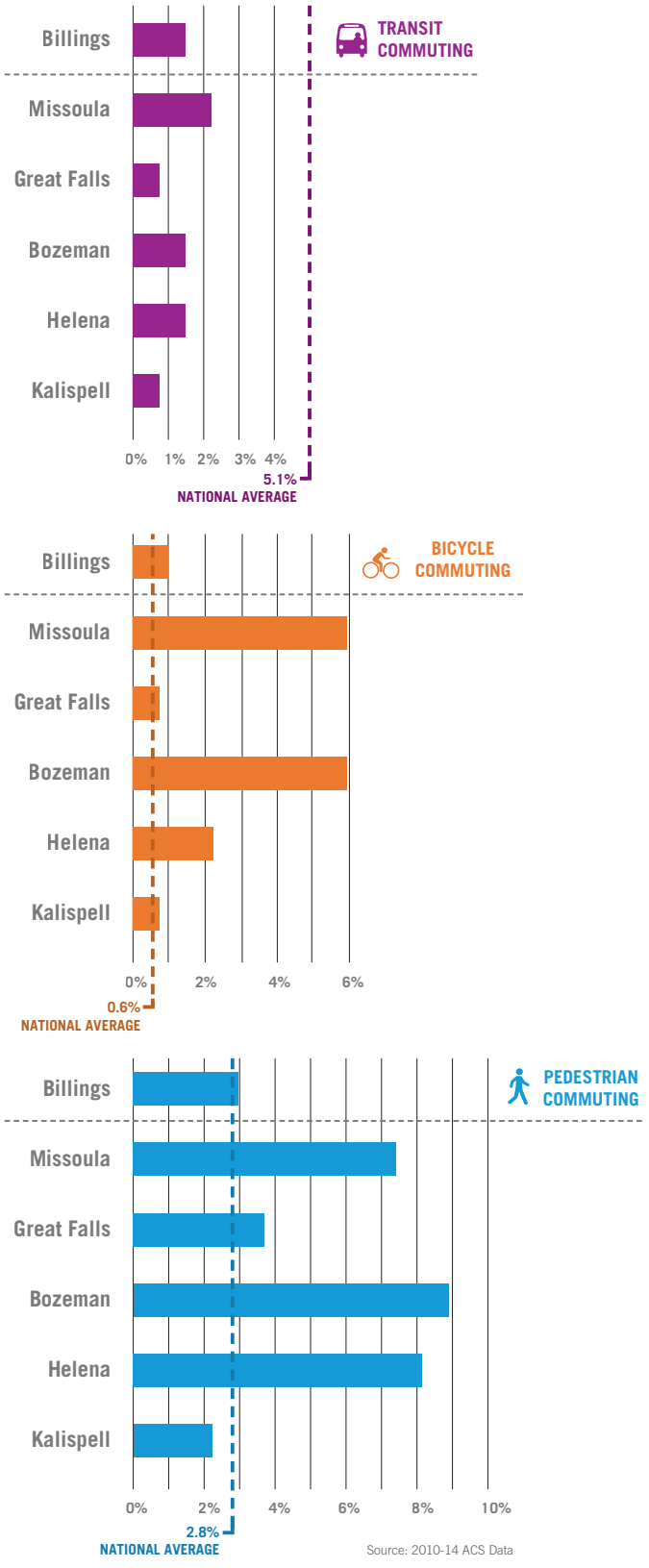
Nationally, commute mode choice is often dependent on neighborhood context and distance to one's place of employment. Map 2.2 depicts non-automobile based commuting for the various census blocks around Billings. It is clear that multimodal commuting varies considerably depending on neighborhood. The highest rates of multimodal commuting are near downtown Billings, to the west and east of N 27th St. In this vicinity, between 14 and 19 percent commute to work using transit, walking or bicycling.

Maps 2.2 to 2.6 display commuting patterns by mode for the census blocks around Billings. These maps indicate that neighborhood context influences mode choice to a significant degree, and that in general, the further one lives from downtown, the lower the likelihood they will use active modes of transportation or transit.

- The highest bike mode shares, or around 3 percent, are found in downtown Billings, north of Interstate 90.
- The highest walk mode shares, ranging between 8 and 12 percent, are found in downtown Billings and between Broadwater Ave and Grand Ave.
- The highest transit mode shares, ranging from 3 to 5 percent, are found around downtown, and west of downtown between Rimrock Rd and Grand Ave.
- The lowest drive alone mode shares, ranging from 59 to 70 percent are found in Downtown Billings. Some of the highest drive alone rates are found just west of downtown.

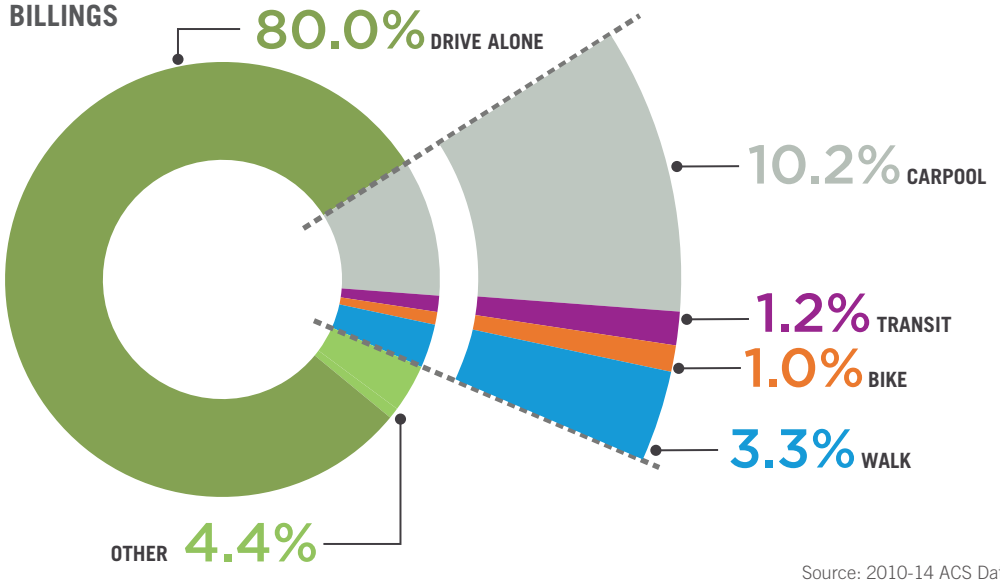
COMPARATIVE MODE SHARE

BILLINGS VS OTHER JURISDICTIONS



MOBILITY IN BILLINGS - A SNAPSHOT

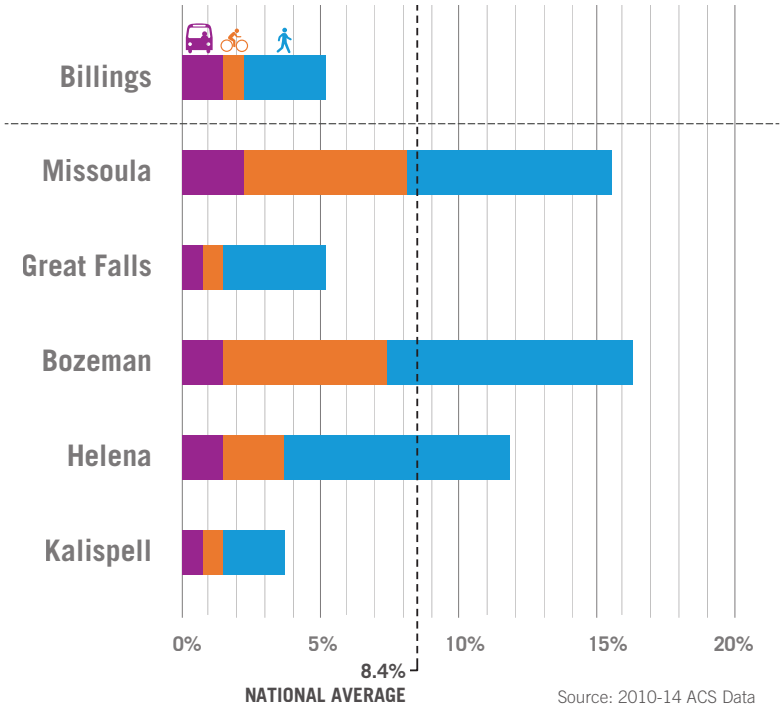
COMMUTE MODE SHARE IN BILLINGS



Source: 2010-14 ACS Data

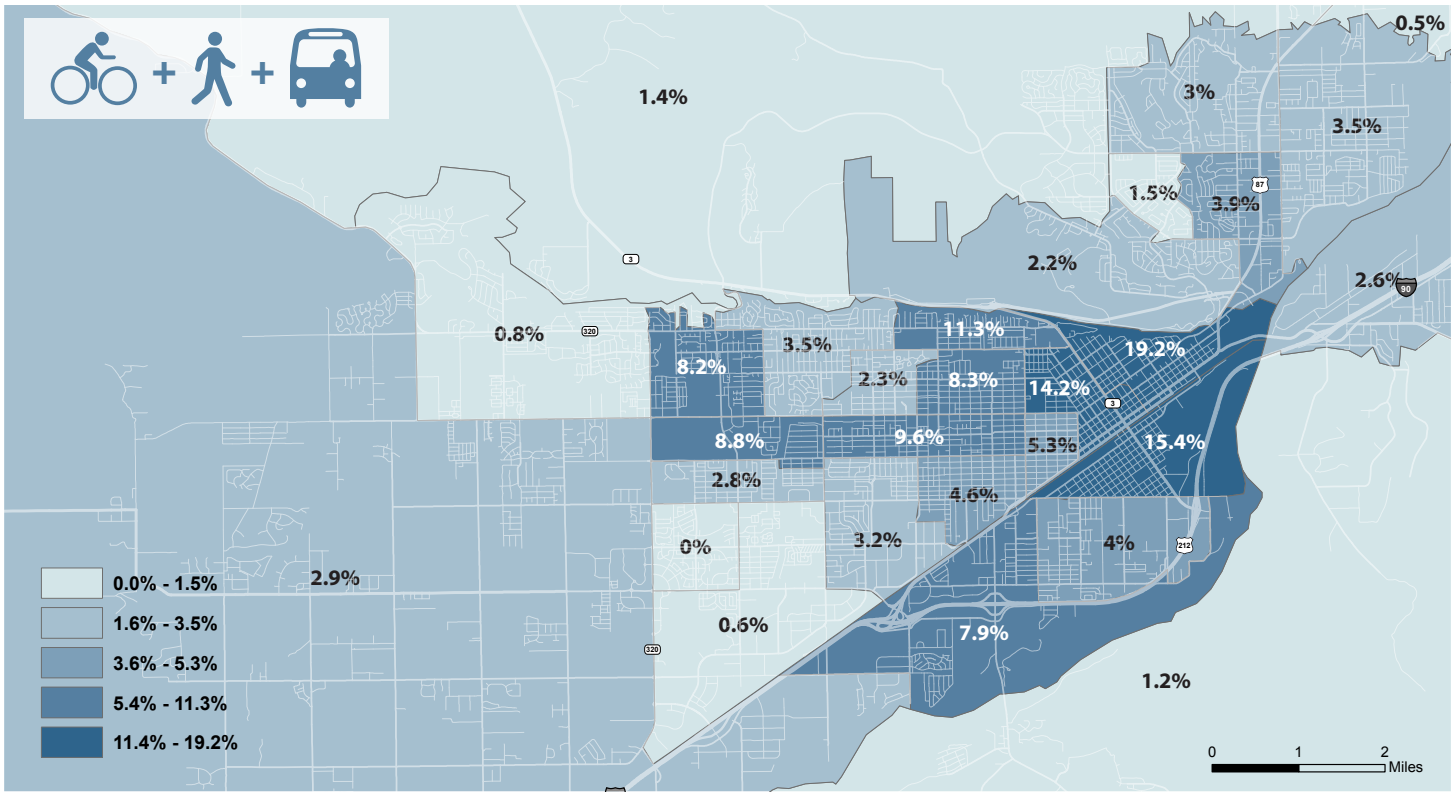
MULTIMODAL TRANSPORTATION RATES

BILLINGS VS. OTHER JURISDICTIONS

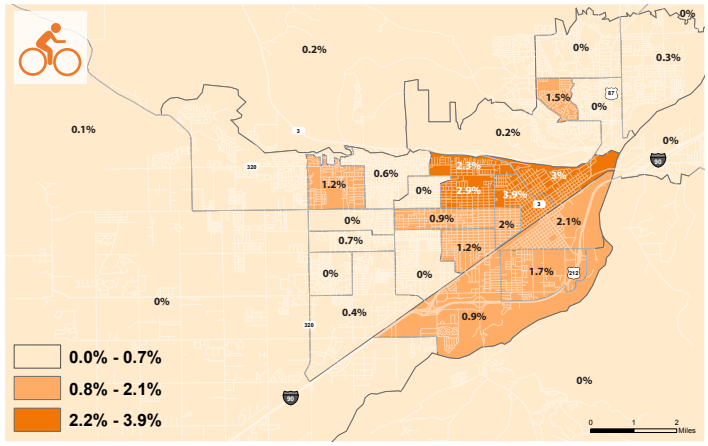


Source: 2010-14 ACS Data

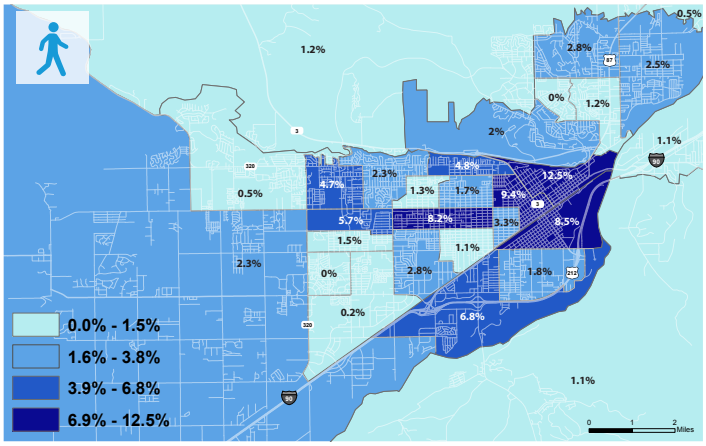
MAP 2.2: ACTIVE TRANSPORTATION MODE SHARE



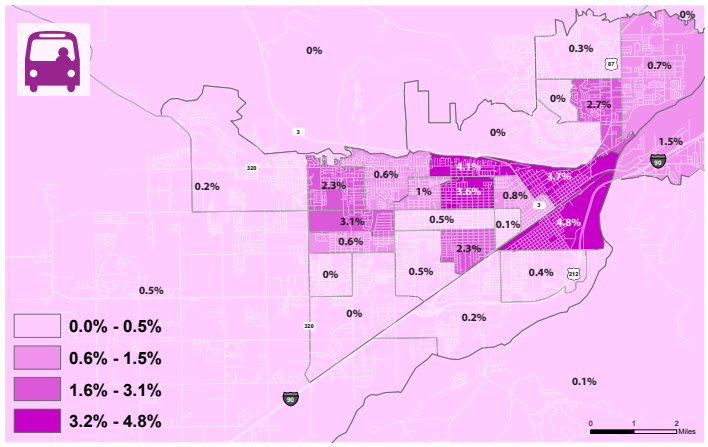
MAP 2.3: BICYCLE MODE SHARE



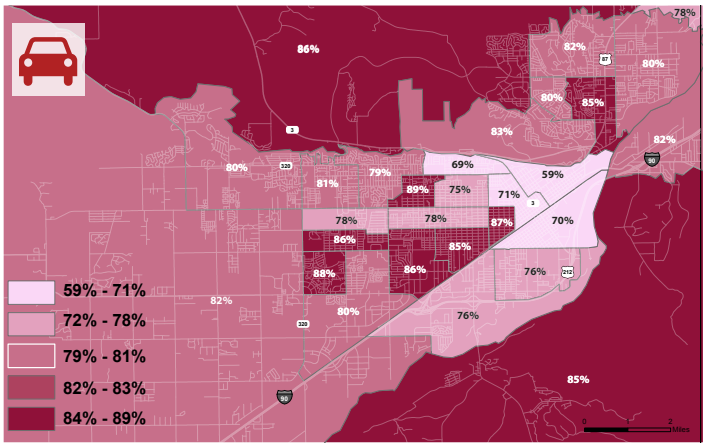
MAP 2.4: WALKING MODE SHARE



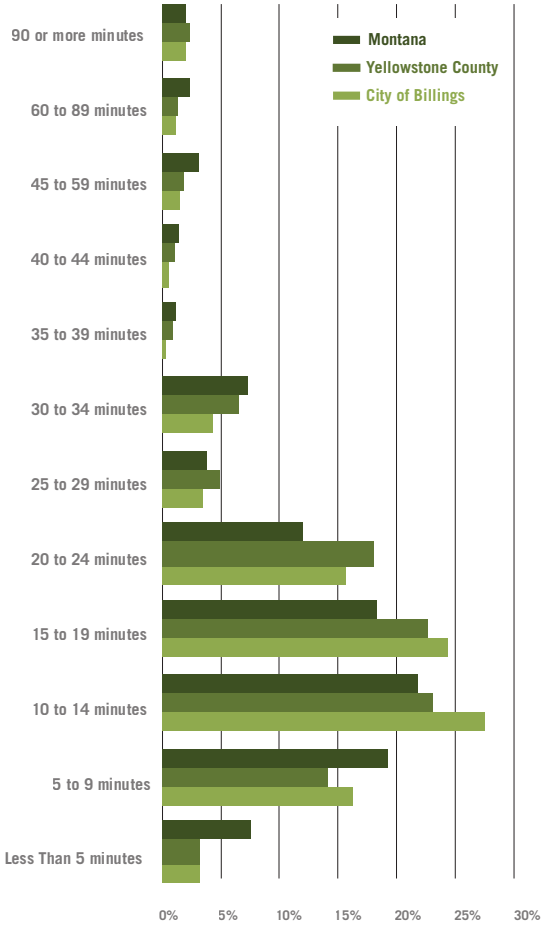
MAP 2.5: TRANSIT MODE SHARE



MAP 2.6: DRIVE ALONE MODE SHARE



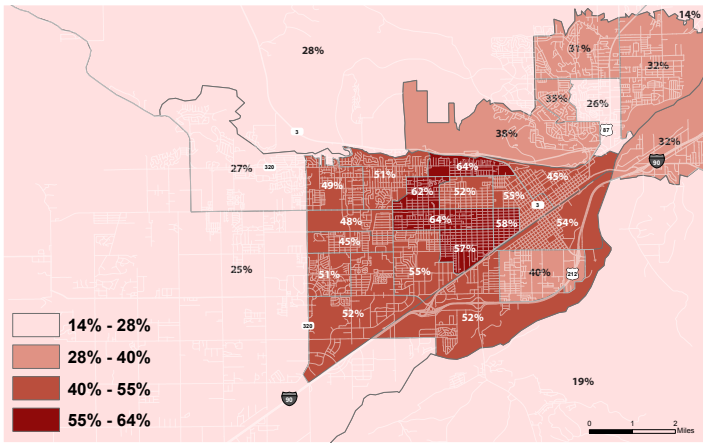
TRAVEL TIME TO WORK: ALL MODES OF TRANSPORTATION



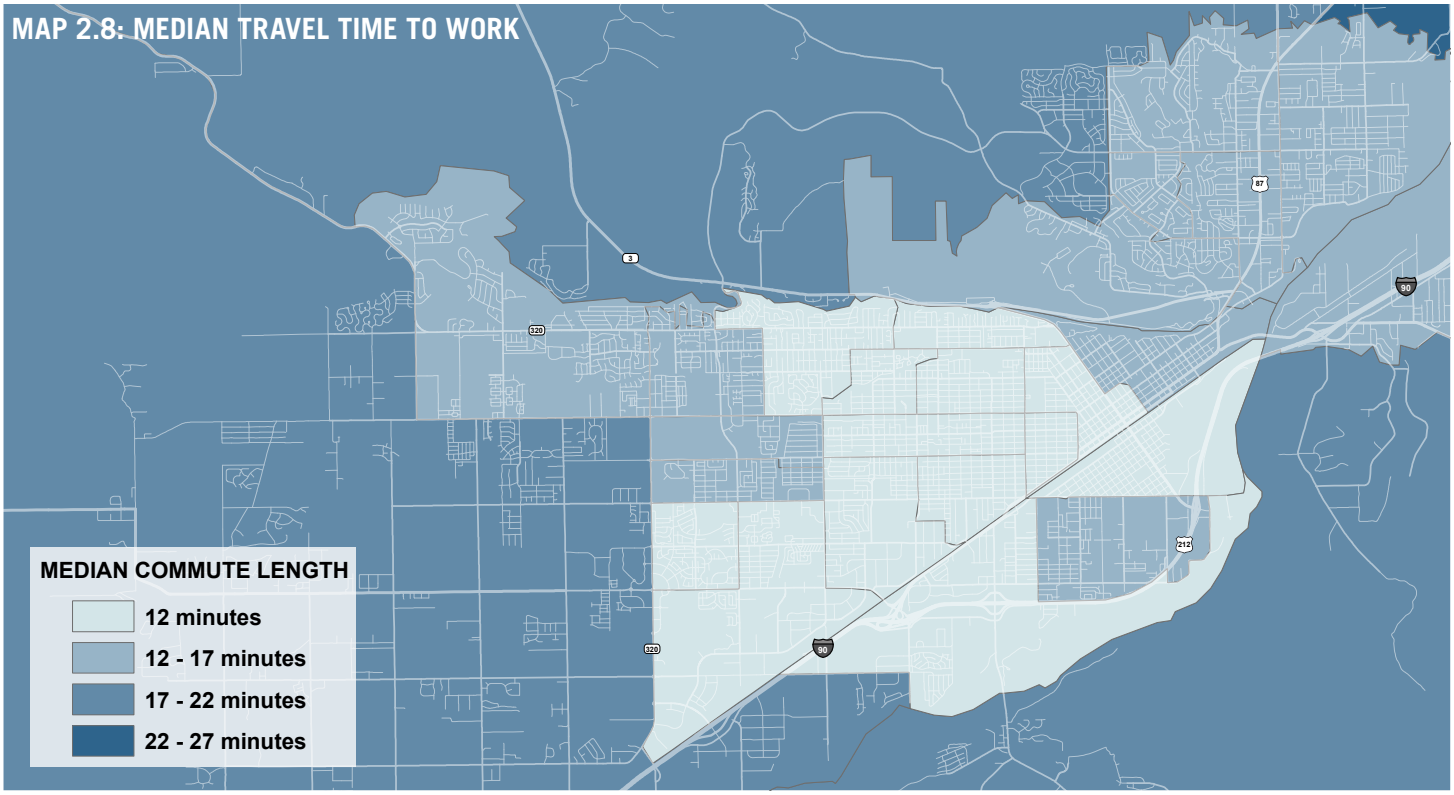
Travel Time to Work

Mode choice is also influenced by the amount of time it takes to travel to work. Shorter commute trips can be more easily completed via active modes of transportation. As a percentage of all trips, in Montana, Yellowstone County, and the City of Billings relatively few are longer than 35 minutes, and the majority range between 5 and 20 minutes long, as shown in the chart at left. As indicated in Map 2.8, the closer one lives to downtown Billings, the shorter their commute time is. The median trip length for the majority of the City of Billings ranges from less than 12 minutes to 17 minutes. Map 2.7 shows the percentage of trips within each census block that are less than 15 minutes. This percentage decreases the further one lives from downtown. Fifteen minute commute trips are important, because in urban contexts, a 15 minute vehicle trip could be completed via bicycle within a similar time frame, especially when the time it takes to park a vehicle and access the final destination is included.

MAP 2.7: PERCENTAGE OF TRIPS LESS THAN 15 MINUTES



MAP 2.8: MEDIAN TRAVEL TIME TO WORK



2.4 EXISTING ON-STREET BIKEWAY FACILITIES AND TRAILS

The Billings Area has been committed to implementing on-street bicycle facilities and trails for more than fifteen years. Since the publication of the *BikeNET Plan* in 1996, the rate of bikeway and trail implementation has steadily increased, as shown on page 2-12.

2.4.1 On-Street Bikeways

Billings currently boasts 24 miles of on-street bike lanes and two miles of shared lane markings.

Bike Lanes

This type of facility provides a dedicated space within the roadway for bicyclists to travel, and uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists, and have been found to decrease stress levels for both groups.[1] Billings currently has about 24 miles of bike lanes built throughout the city, which are displayed on Map 2.9.

Shared Roadways

Shared roadways are designated by signage and/or shared lane markings. Shared lane markings are pavement markings that indicate the position within a roadway where bicyclists should ride. They also provide wayfinding guidance to bicyclists, and indicate to motorists to be aware that bicyclists will be travelling in the roadway. Streets marked with shared lane markings, or sharrows, are intended to be shared streets, with motorists and bicyclists sharing the travel lane. Sharrows are an appropriate treatment for low-volume (ideally less than 3,000 vehicles per day), low-speed (ideally less than 30 miles per hour) streets, such as neighborhood streets. They are also used along bike routes that are too narrow to accommodate bike lanes. Sharrows are not an attractive feature for the vast majority of bicyclists when applied on streets with multiple travel lanes, or higher speeds and/or volumes. In Billings, sharrows have been installed along Lewis Ave and Bench Blvd.

Example of an existing bike lane on Rimrock Rd. in Billings

Example of an existing shared roadway on Lewis Ave. in Billings

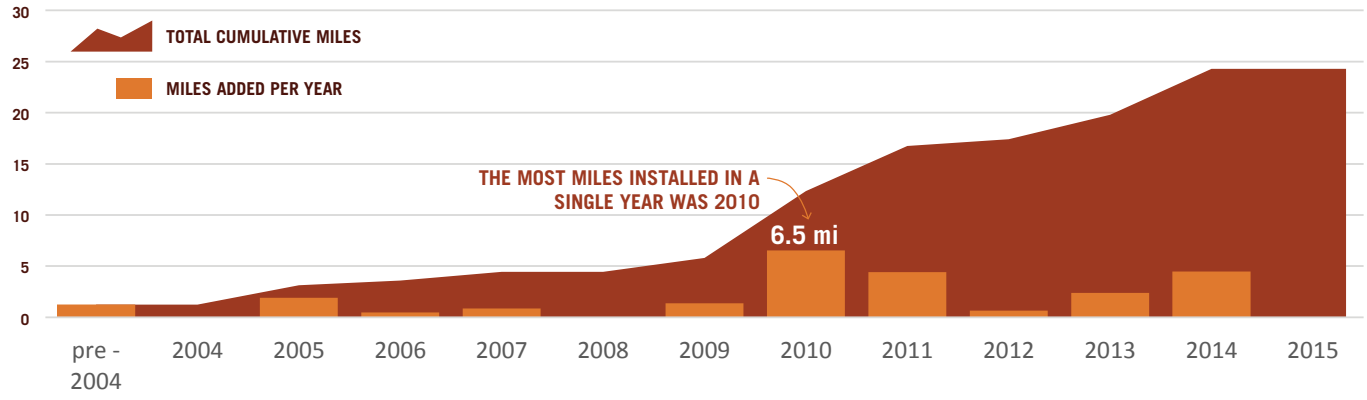
Growth of the Bikeway Network

Page 2-12 provides several graphics that show the growth of Billings bikeway network. This data shows that the network has consistently expanded since 2004. The average rate of bike lane implementation per year has stayed essentially consistent before and after the plan's completion. When all roads are considered, only about four percent are equipped with bicycle facilities. Implementing a wider variety of on-street bikeway treatments would make bicycling more comfortable for a wider range of bicyclists

1 *http://www.peopleforbikes.org/blog/entry/car-users-would-prefer-separated-bike-lanes-too-study-finds*

BIKE FACILITIES IN BILLINGS - A SNAPSHOT

YEARLY BIKE LANE MILEAGE ADDED & TOTAL (pre-2004 to 2015)



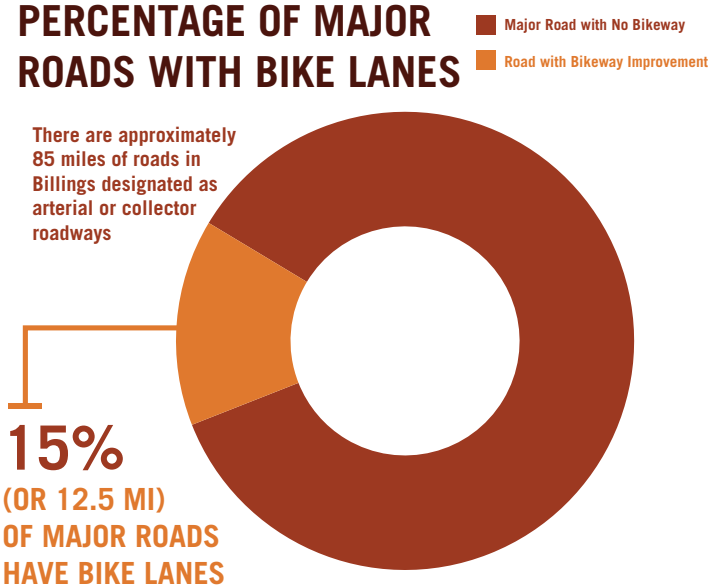
BIKE LANE IMPLEMENTATION RATE

PRE-2012: 1.86 miles per year

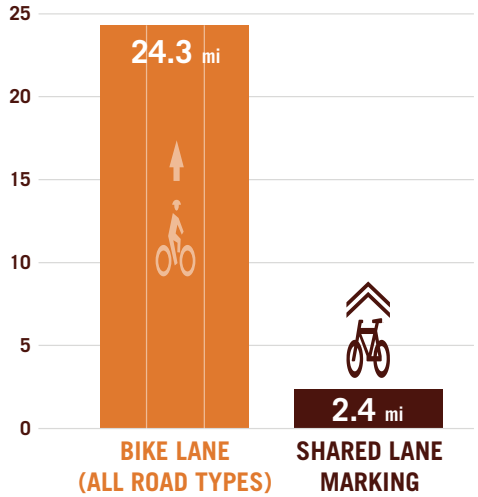
POST-2012: 1.89 miles per year

The rate of bike lane implementation
HAS REMAINED ESSENTIALLY CONSTANT
before and after the publication of the 2011 Billings Bikeway and Trails Master Plan

PERCENTAGE OF MAJOR ROADS WITH BIKE LANES



EXISTING ON-STREET BIKEWAY IMPROVEMENTS

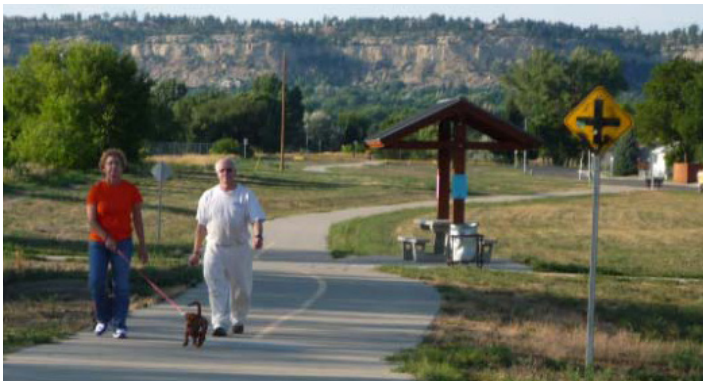


2.4.2 Trails

The Billings Area is fortunate to have numerous trails located throughout the community. The types of trails include shared use paths, neighborhood connector trails, soft surface trails, and natural surface trails. Since 1997, more than 50 miles of paved trail has been installed in the Billings Area. This network of paved trails is complemented by more than 24 miles of soft surface trails. Each of these trail types are described in this section, and page 2-14 provides a graphic summary of how the trail network has evolved. A Parks and Recreation Comprehensive Master Plan will be completed in the summer of 2017, and it includes information related to the community's demand for trails.

Shared Use Paths

Shared use paths allow for two-way, off-street travel by bicyclists, pedestrians, skaters, wheelchair users, runners, persons with limited mobility, and other non-motorized users. Shared-use paths are wide, hard-surface trails frequently found in parks, along rivers, and linear greenways, and typically have few conflicts with motor vehicles. They can also be located adjacent to the roadway as a "sidepath." When located within a roadway right-of-way, sidepaths must be designed to enhance safety and minimize conflict with motor vehicles, particularly at unsignalized intersections and other motor vehicle crossings. More than 40 miles of multi-use trails exist in the Billings Area today, representing a 17 percent increase from the total miles of multi-use trails in 2011.



Bannister shared use path

Neighborhood Connectors

In addition to nearly 40 miles of paved multi-use trails, Billings also has more than 10 miles of "Connector" trails, representing a 25 percent increase compared to the total miles of connector trails in 2011. These trails are also paved but are less than 8 feet wide, making them too narrow for comfortable passing of multiple user groups. These trails complement the network of multi-use trails and are useful connections for a variety of users, especially for neighborhood residents.

Soft Surface Trails

Billings also enjoys 11 miles of unpaved soft surface trails, representing a 1 mile increase over the miles of soft surface trail in 2011. These trails provide a variety of experiences for recreational users, and can also serve as commuter routes for some individuals.

Soft Surface Trail

Single Track Trails

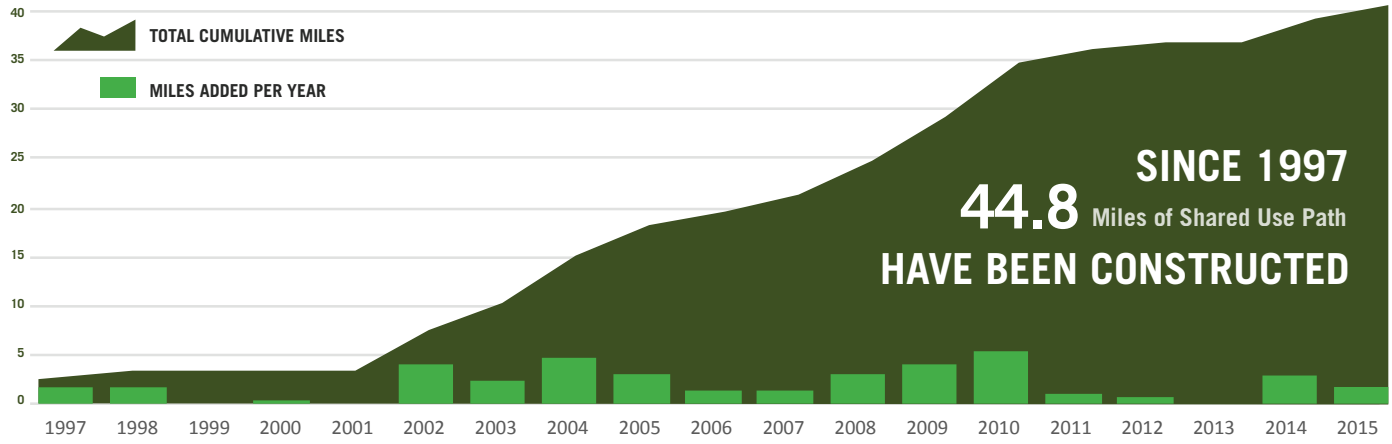
The Billings Area is also home to more than 13 miles of natural surface trails, including dirt, mulch, and gravel trails. Many more miles of this trail type exist, but have not been mapped because they are informal or cross private-property. These trails are primarily oriented for recreational users, and tend to be more narrow and rugged that the other types of trails described in this section. These trails enable people to explore the landscapes around Billings and access more sensitive environmental habitats.

Hiking trail in Zimmerman Park (Image Source: Billings 365)

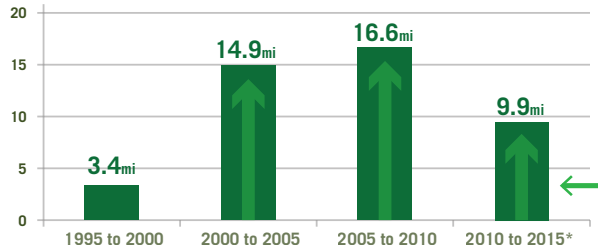
Neighborhood Connector Trail

TRAILS IN BILLINGS - A SNAPSHOT

YEARLY SHARED USE PATH MILEAGE ADDED & TOTAL (1997 to 2016)



MILES OF SHARED USE PATH CONSTRUCTED EVERY FIVE YEARS: 1995 TO 2015



*Includes trails built in the first half of 2016

EVERY FIVE YEARS, THE TOTAL MILES OF TRAIL CONSTRUCTED HAS SIGNIFICANTLY INCREASED.

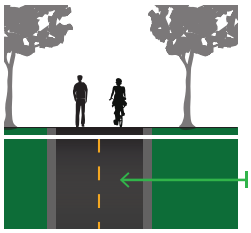
From 1995 to 2000, 3.4 miles were installed.

From 2000 to 2005, 14.9 miles were installed.

From 2006 to 2010, 16.61 miles were installed.

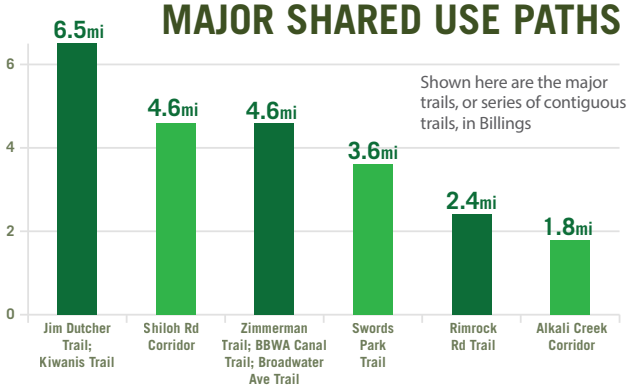
From 2010 to 2016 9.9 miles were installed.

WHAT IS A SHARED USE PATH?



Hard surface trail (concrete or asphalt) designed for multiple non-motorized user groups; minimum 8' width required, permitting two-way travel

MAJOR SHARED USE PATHS

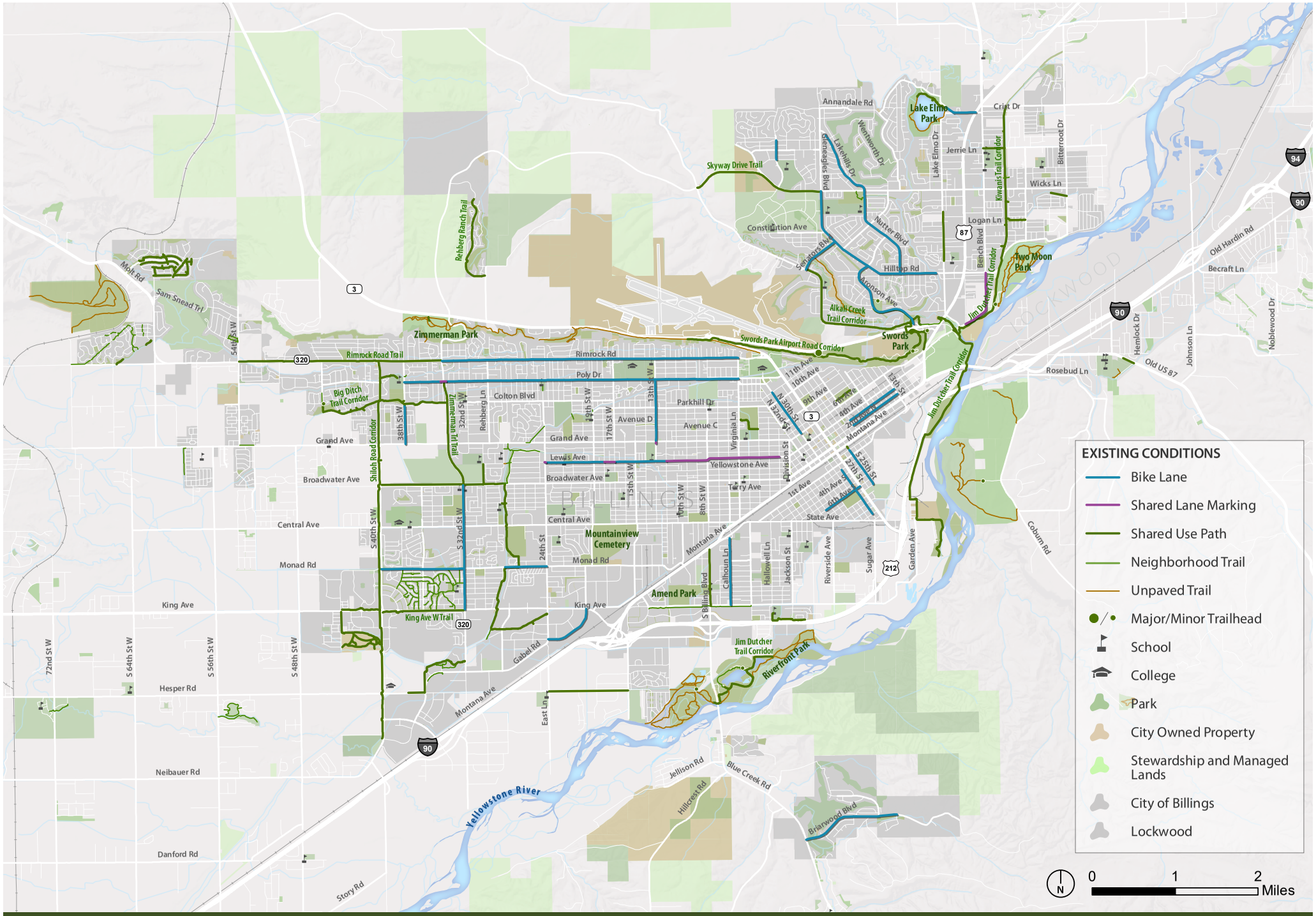


Shown here are the major trails, or series of contiguous trails, in Billings

TRAIL MILES BY SURFACE TYPE

CONCRETE or ASPHALT (50.3 mi)

SOFT SURFACE TRAILS (24.6 mi)



MAP 2.9: EXISTING BIKEWAY AND TRAIL FACILITIES

2.5 BICYCLE AND PEDESTRIAN COUNTS

A formalized bicycle and pedestrian counting program makes it easier to study the trends and growth of walking and bicycling. The Billings area began collecting trail data as part of its 2003 Trail Census Program, which used volunteers to manually count trail users at five locations across the City. Over time, the program has evolved to include automatic counting systems replacing manual count data.

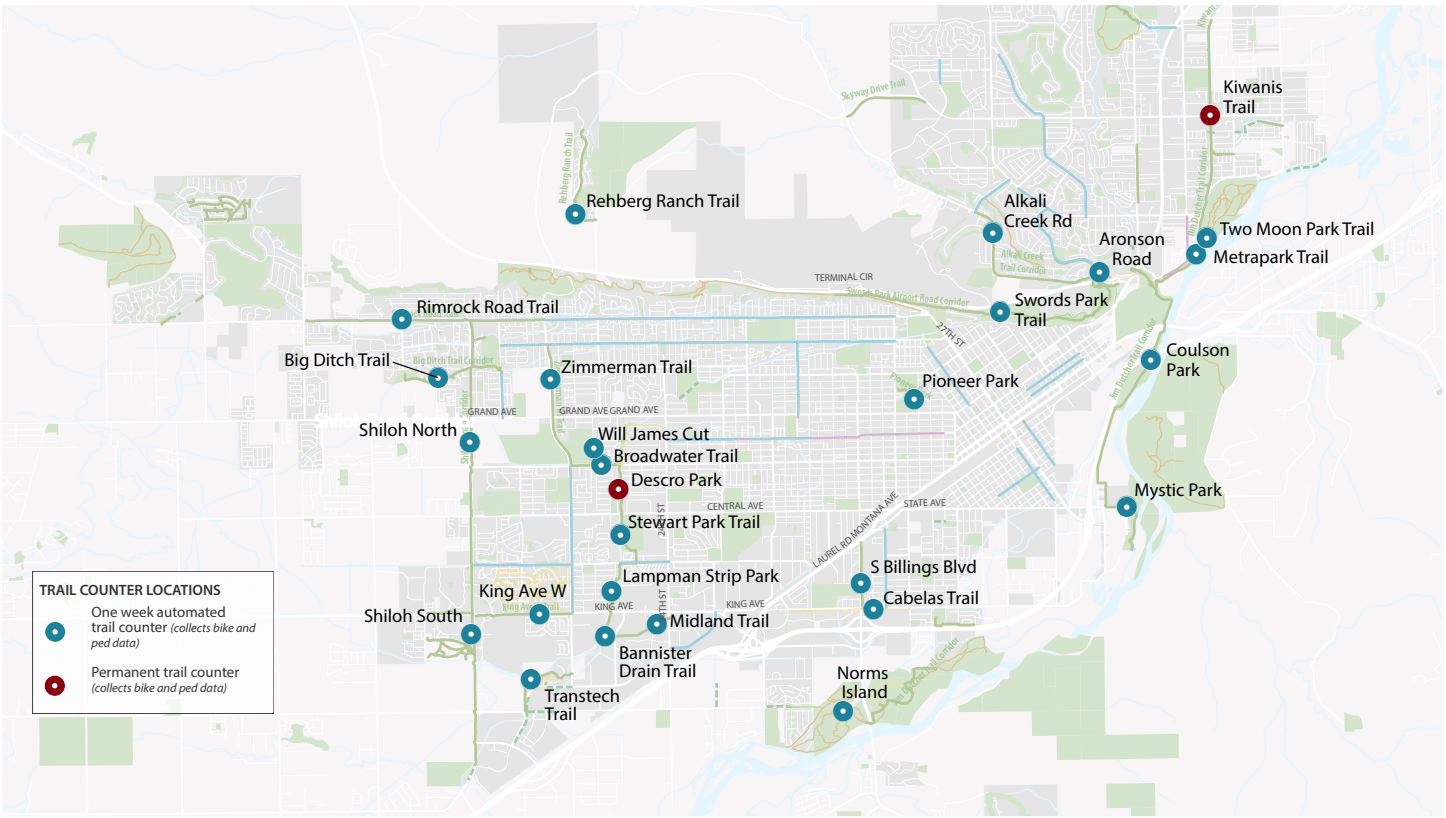
The City/County currently uses two methods to count people walking and biking. In the first method, the City uses automated trail counters that continuously count people walking and bicycling. Automated counters are typically left alongside a trail for one week before moving to a new location and are rotated so that the same location is counted during the same time frame each year, making year-to-year comparisons possible. These locations are shown in Map 2.10. Two of these locations use permanently installed counters along shared-use paths. Additionally, Billings acquired a permanently installed, on-street counter capable of distinguishing between cars, bicycles, and pedestrians. In the second method, volunteers manually count passing bicyclists and pedestrians. The location of these counts are displayed in Map 2.12, and are primarily located in the downtown.

2.5.1 Automated Count Program

The automated trail scanner program has grown to twenty-six locations as of 2015. Although not every location has been counted since the program's launch, the City/County has succeeded in obtaining multi-year data along most of Billings' major trails since 2010. Map 2.10 displays the location of the counters in relation to the area's growing trail network. The multi-year trail data is useful for analyzing rounded three year averages for daily users.

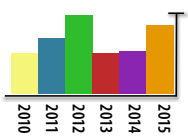
Trail scanners, such as the one shown here, are deployed throughout the Billings Area to collect trail user data.

MAP 2.10: TRAIL SCANNER LOCATIONS



Map 2.11 presents daily average walking and bicycling counts from 2010 to 2015. During this period, most of the 26 locations were consistently counted using trail scanners. In Map 2.11, the blue circles represent rounded three year averages for daily volumes (pedestrians and bicyclists) based on one-week counter deployment. The bar graphs represent yearly increases and decreases in trail usage rates from 2010 to 2015.

Trail Scanner Counts - 2010 to 2015



(Highest recorded volume, 2010 to 2015)

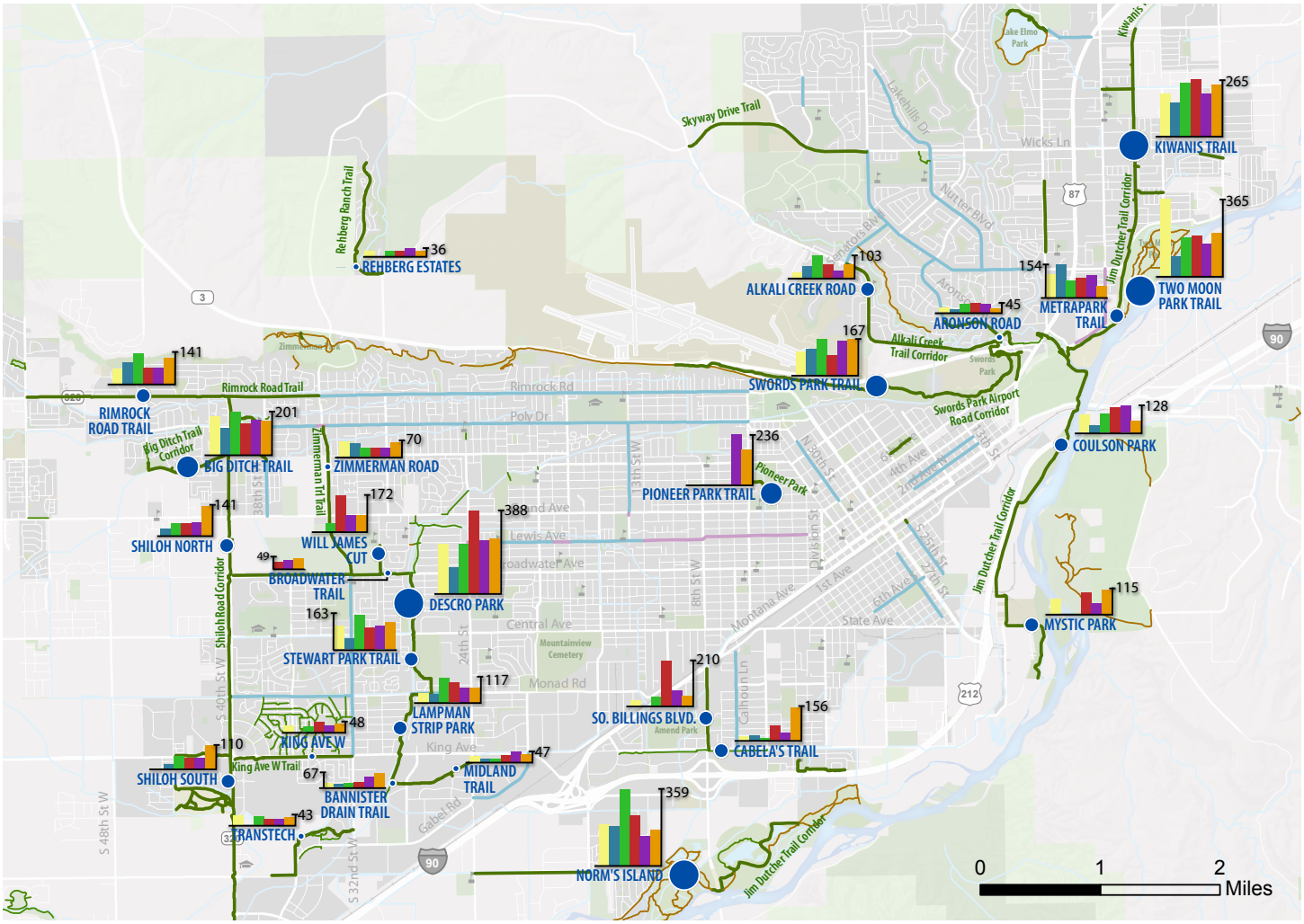
Daily Average Trail Count per Year

Three-Year Average Trail Count

(2013 to 2015; scaled proportionally)

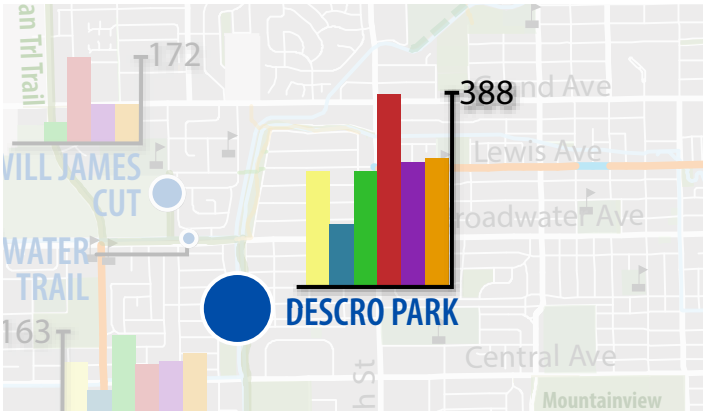
- Bike Lane
- Shared Lane Marking
- Multi-Use Trail
- Neighborhood Trail
- Unpaved Trail
- School
- College
- Park
- City Owned Property
- Stewardship and Managed Lands
- City of Billings

MAP 2.11: DAILY AVERAGE TRAIL COUNTS PER YEAR (2010 TO 2015)



Permanent inductive loop and infrared counter being installed at Kiwanis Trail

The Kiwanis Trail permanent counter after installation



The trail scanner location with the highest recorded three year average volume was Descro Park, with an average daily volume of 236 people.

Despite some scanners measuring a dip in year-to-year percent change of trail volumes, when measured as a whole since 2010, trail volumes have increased by 57 percent across the city. The growth in the total volume of users counted since 2010 is shown graphically on page 2-19.

The counting location at Descro Park recorded the largest three year average of daily trail users (2013 to 2015), with an average daily user count of 236 people. The counting location shows a much higher three year average than nearby counting locations at Will James Cut, Broadwater Trail, and Stewart Park Trail.

The City currently uses two permanently installed bicycle and pedestrian counters that collect data over the course of a full year (365 days). One counter is installed at Kiwanis Trail and the other at Descro Park. The images on page 2-18 show the Kiwanis Trail device during installation. Cuts in the pavement show the placement of diamond-shaped, bicycle-specific inductive loops, while the wooden posts house infrared devices used to count pedestrians. Although the infrared devices detect bicyclists, these users are erased from the devices' total counts when the data is transferred to the City's online data portal.

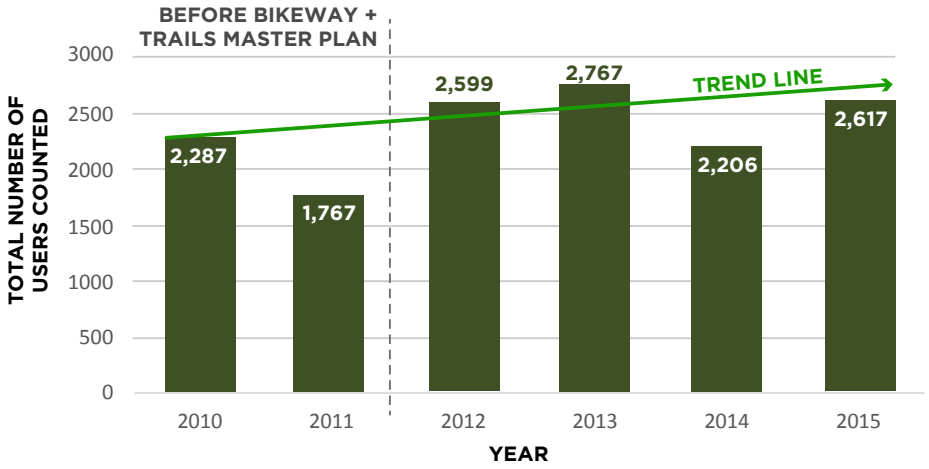
Since April 2014, the permanently installed Descro counter has recorded an average daily user count of 225 people. The Kiwanis Trail counter was also installed in April 2014 and has recorded an average daily user count of 169. The counters' daily averages are continuously updated via an online portal. For comparison, the averaged counts from 2014 and 2015 all short-term trail scanner locations, when averaged, was ninety-eight people.

The City recently installed an on-street mixed traffic counter on N 30th Street to measure transportation users in a location without bicycle-specific infrastructure (i.e., no bike lanes or sidepath). The counter was installed in mid-May 2016, and captured an average of thirty-five bicycles per day during its first week.

NON-MOTORIZED COUNTS IN BILLINGS - A SNAPSHOT

TOTAL TRAIL SCANNER DATA BY YEAR:

PEOPLE WALKING AND BIKING (2010 - 2015)



WALKING AND BIKING ON BILLINGS' TRAILS HAS INCREASED BY

21%

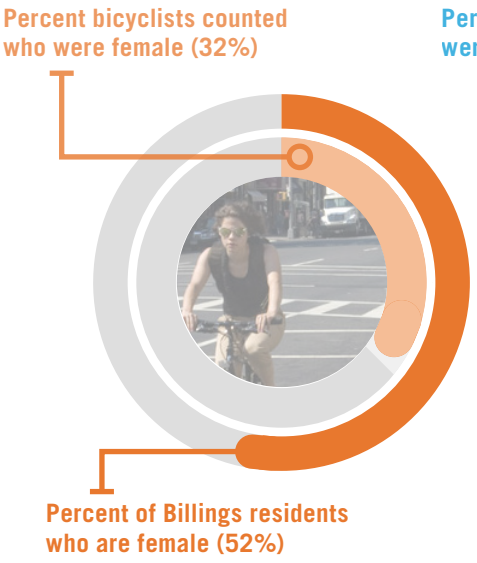
FROM 2010-2015

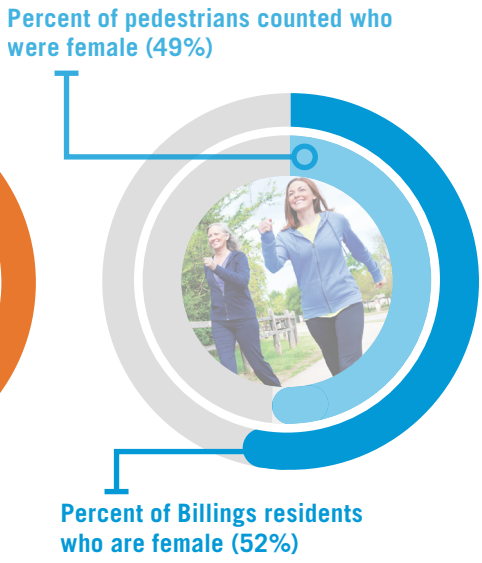
**Twenty-five locations were counted between 2010 and 2015. Actual data collected at each of these sites is totalled annually in the chart. If a location was not counted in a particular year, the average daily volume was interpolated using the average volume from the years that data was collected.*

GENDER PARITY IN WALKING AND BIKING COUNTS

The presence of women riding bicycles is often used as an indicator of how bicycle friendly a community is. In some European countries such as Germany, Denmark, and the Netherlands, women take slightly more than half of all the bicycling trips. In the United States, this number is approximately 24 percent[1]. Comparing data from various US cities and western European cities has indicated some correlation between a city having better bicycle infrastructure and more women bicycling.

Manual count data from 2014 and 2015 tabulated the genders of people walking and biking. Women make up almost 52 percent of Billings' population. Women are nearly accurately represented in walking counts (49 percent), but, similar to other communities, are underrepresented in bicycling counts (32 percent).



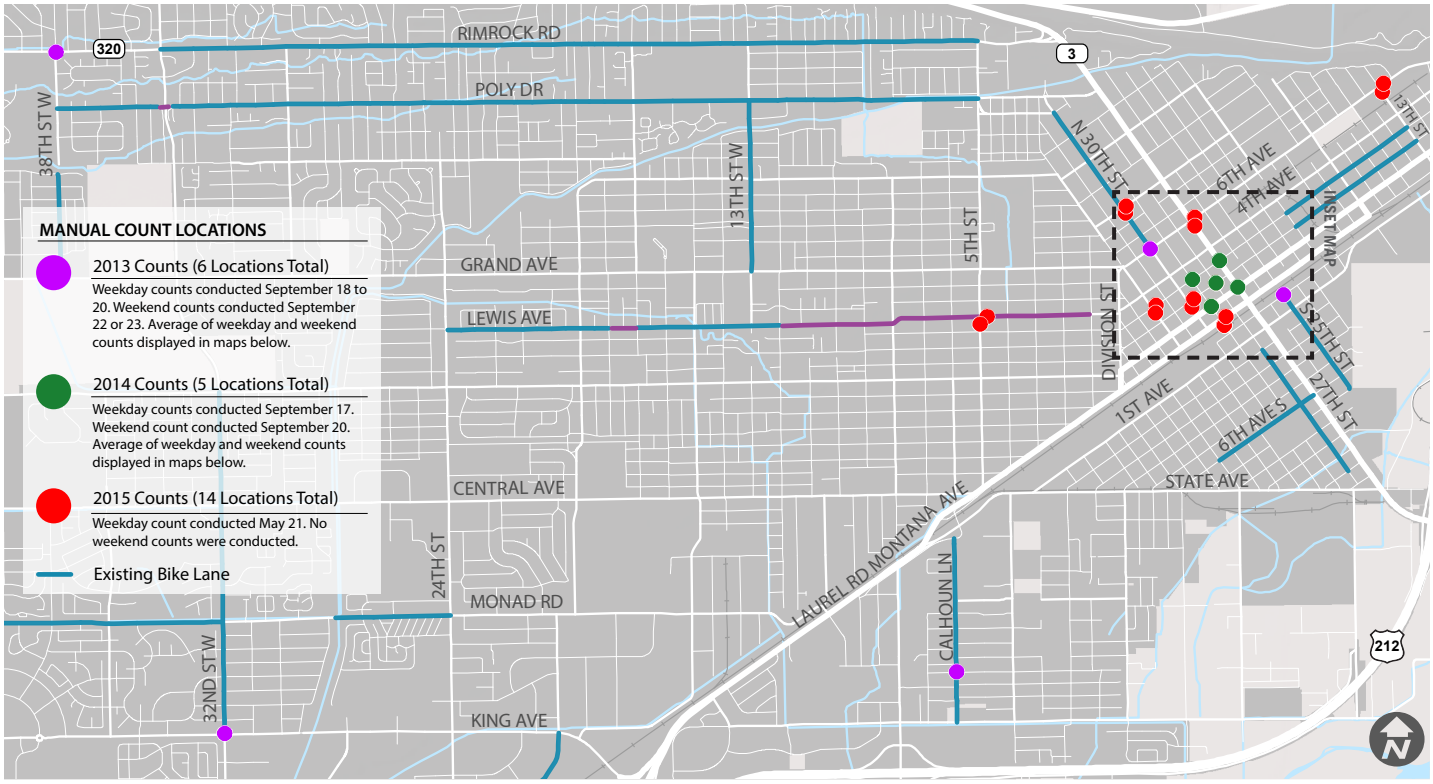


1 *Pucher & Buehler, City Cycling, Massachusetts Institute of Technology, 2012*

2.5.2 Manual Counts

Since 2013, the City and County of Billings have been conducting manual counts at key locations throughout the area to better understand bicycle and pedestrian transportation patterns. The counts have been conducted according to guidelines set by the National Bicycle and Pedestrian Documentation Project (NBPD), which ensures that bicycle and pedestrian data collection is standardized across the nation. Between 2013 and 2015, counts were conducted at twenty-five different locations, shown in Map 2.12. No one location was counted twice. The majority of the counts were concentrated in Downtown Billings. The average volumes for the counts conducted in Downtown were the highest, and the relative pedestrian and bicycle volumes for these locations are displayed in Map 2.13 and 2.14. Since the locations were not counted annually, no year-to-year comparisons can be drawn.

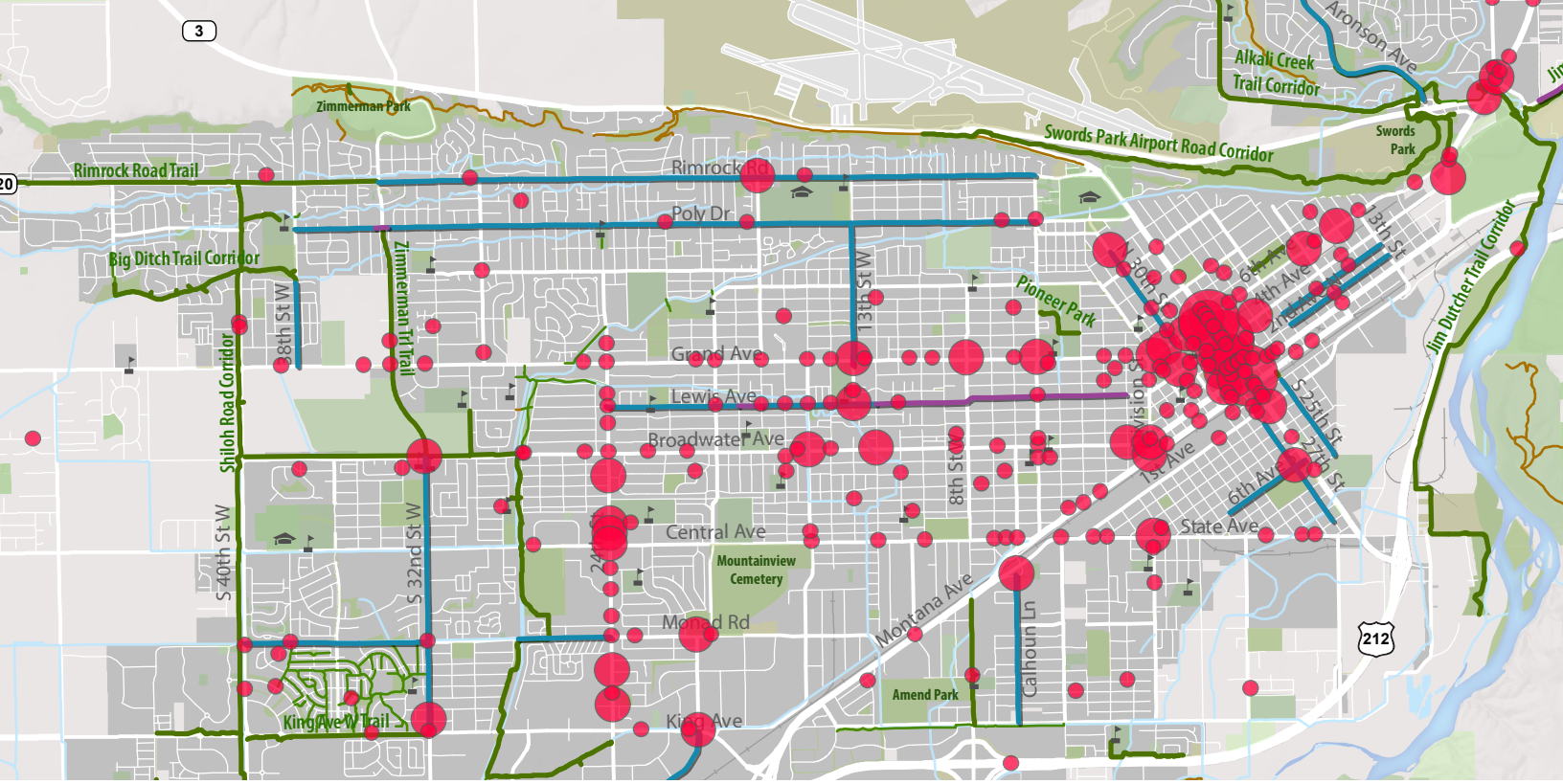
MAP 2.12: MANUAL COUNT LOCATIONS



MAP 2.13: MANUAL COUNT LOCATIONS - Pedestrian Average Volumes*

MAP 2.14: MANUAL COUNT LOCATIONS - Bicyclist Average Volumes*

*maps display the average of the total weekday and weekend volumes for each location



2.6 PEDESTRIAN + BICYCLE COLLISIONS

Safety is a major concern for residents when making the choice to bike or walk for transportation or recreation. This section reviews motor vehicle collision data involving pedestrians and bicyclists from 2011 through 2015 to understand when and where collisions frequently occur and to identify risks to bicyclists and pedestrians. The data presented in this section were provided by the Montana Department of Transportation.

Between 2011 and 2015, 362 motor vehicle collisions with pedestrians and bicyclists were reported. Of these crashes, pedestrians were involved in 55 percent of the collisions, with an average of 40 pedestrian collisions per year. Bicyclists comprised 45 percent of the collisions, with an average of thirty-two bicycle collisions per year.

Collision severity varied over the course of the five-year period analyzed. While a majority of the collisions resulted in minor injuries or property damage, several collisions resulted in major injuries. Pedestrians were most affected by severe collisions. Seven collisions resulted in pedestrian deaths, and 16 percent of the pedestrian collisions resulted in an incapacitating injury. Bicyclists were not involved in any fatal collisions; 7 percent of the bicycle collisions resulted in an incapacitating injury.

TOTAL COLLISIONS WITH MOTORISTS (2011-2015)

SEVERITY OF COLLISIONS (2011-2015)

	TOTAL	% OF PED CRASHES	TOTAL	% OF BIKE CRASHES
FATALITIES	7	4%	0	0%
SERIOUS INJURIES	31	16%	12	7%
MINOR INJURY/ DAMAGE	161	81%	151	93%

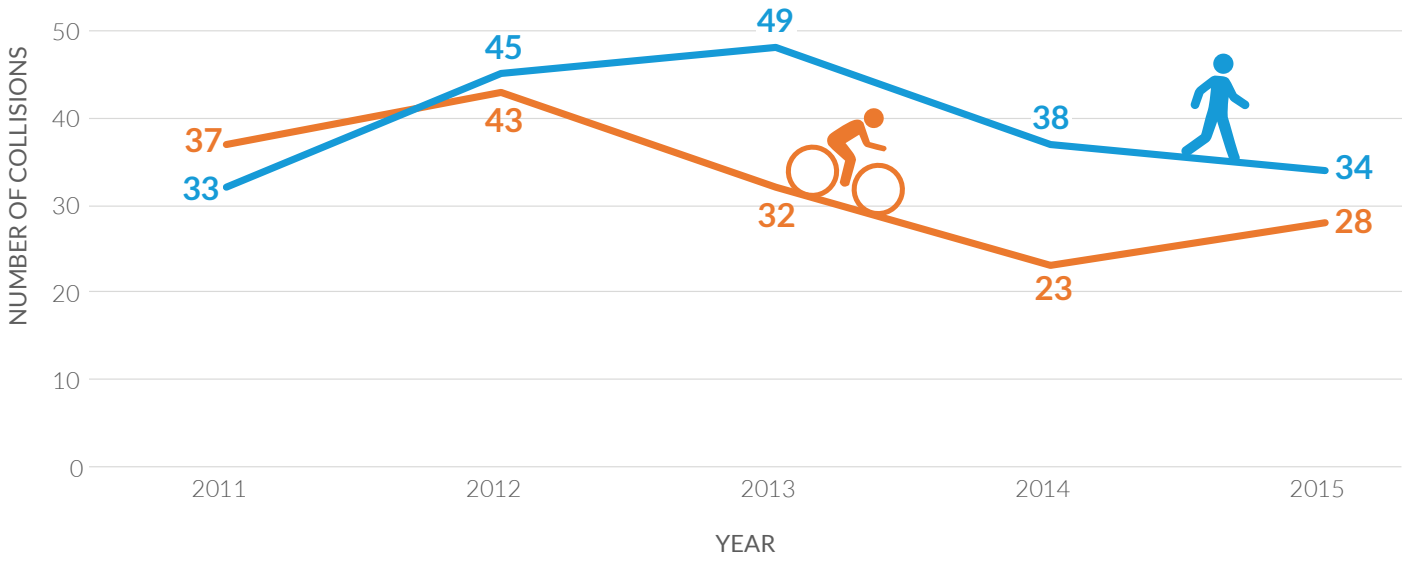
2.6.1 When do collisions occur?

The frequency of motor vehicle collisions with pedestrians and bicyclists was similar between the 5 years analyzed, with pedestrians having a slightly higher number of collisions than bicyclists in all years except 2011. Motor vehicle collisions with pedestrians peaked in 2013 and have been declining in recent years. Between 2013 and 2015, pedestrian collisions decreased by 29 percent. Motor vehicle collisions with bicyclists peaked in 2012, and the frequency of collisions decreased by 47 percent between 2012 and 2014. Recently, however, collisions with bicyclists have increased slightly.

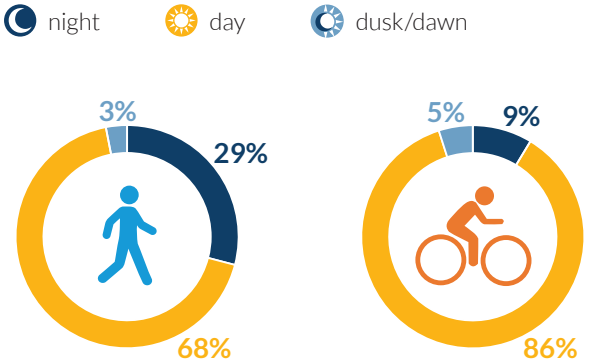
Motor vehicle collisions with pedestrians and bicyclists occur most frequently during the day, and least frequently at dawn and dusk. Pedestrians had a significantly higher rate of collision with motorists at night compared to bicyclists, with nearly 30 percent of all pedestrian collisions, and only 10 percent of bicycle collisions, occurring at night.

Day of the week data provided no conclusive patterns. The majority of pedestrian collisions with motorists occurred during the week on Tuesday, Thursday, and Friday. The majority of bicycle collisions also occurred during the week, but on Monday, Tuesday, and Thursday. The lowest frequency of collisions for both pedestrians and bicyclists occurred on weekends.

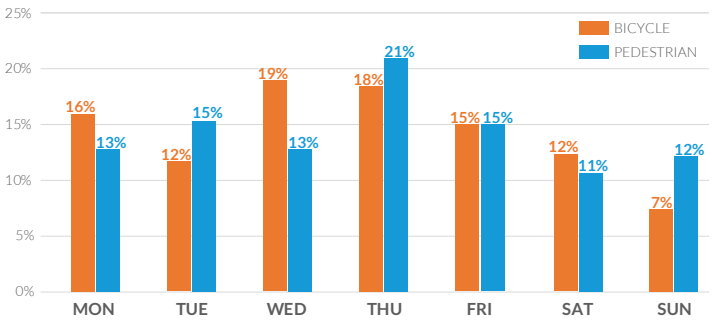
ANNUAL COLLISIONS WITH MOTORISTS (2011-2015)



TIME OF DAY COLLISIONS OCCURRED (2011-2015)



DAY OF WEEK COLLISIONS OCCURRED (2011-2015)



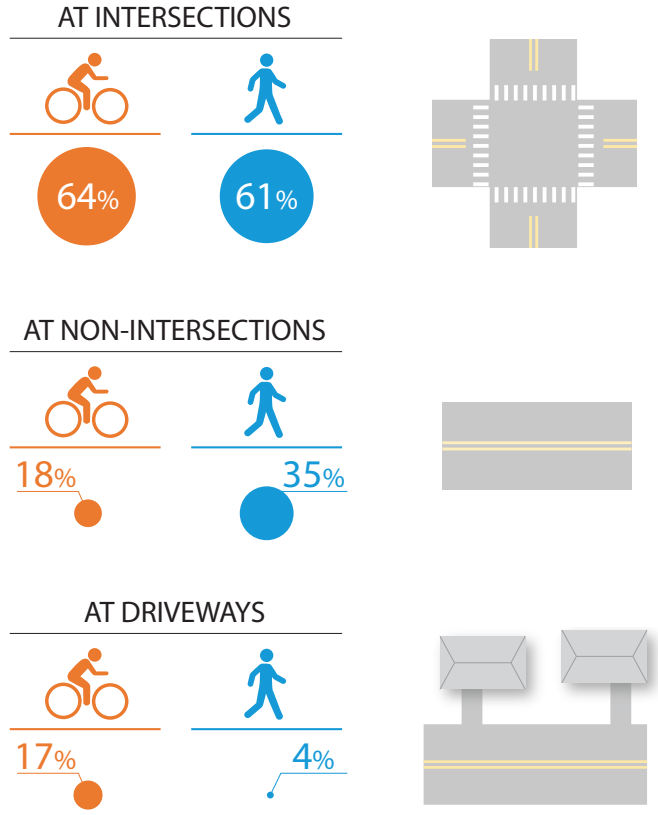
2.6.2 Where do collisions occur?*

The majority of motorist collisions with both bicyclists and pedestrians occurred at intersections. Collisions involving bicyclists were equally proportioned at driveway/alley entrances as they were at non-intersections. Pedestrians, however, were more likely to be involved in a collision with a vehicle at non-intersections compared to driveway/alley entrances.

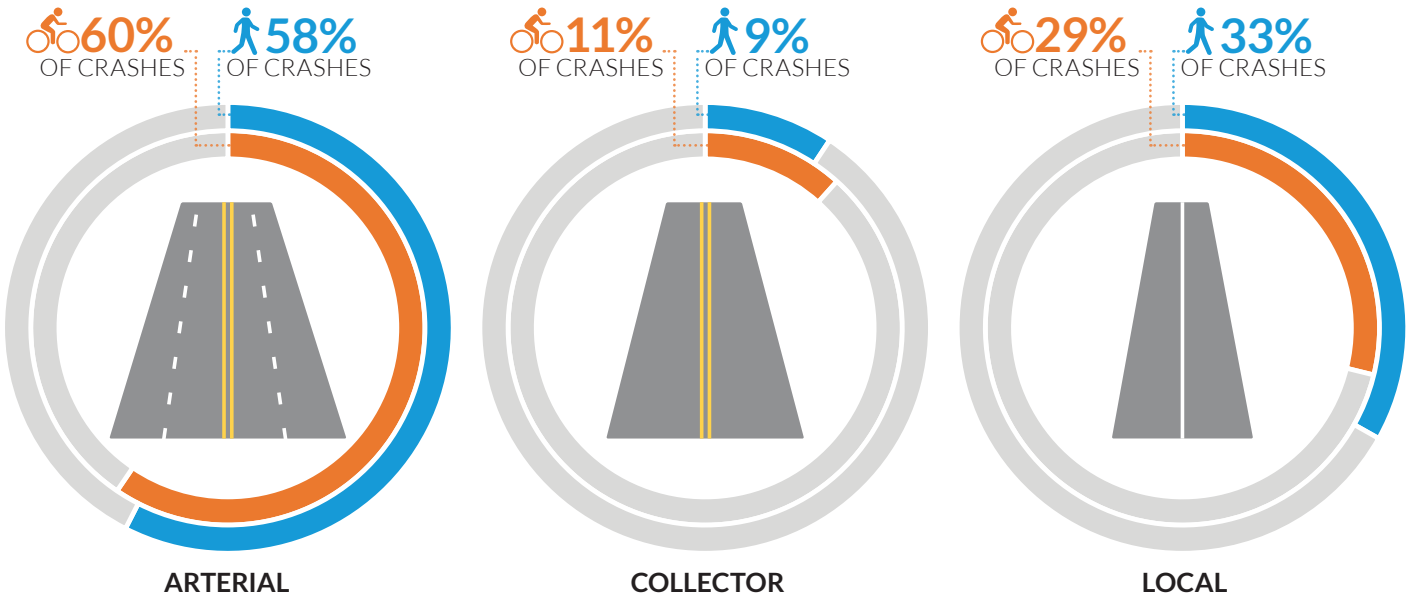
Motorist collisions with bicyclists and pedestrians occurred most frequently on arterial roadways. With regard to functional classification, the majority (about 60 percent) of all bicycle/pedestrian and motor vehicle collisions occurred on arterials. Approximately 30 percent of motorist collisions with both pedestrians and bicyclists occurred on local roads.

Motor vehicle collisions with pedestrians and bicyclists from 2011 through 2015 were highly concentrated along 31st, 29th, and 27th Streets between 1st Avenue S and 7th Avenue N. Several collisions also occurred along 24th Street between King Avenue and Grand Avenue. Map 2.15 displays all the bicycle and pedestrian crashes that occurred in the Billings Area over the period analyzed (2011 to 2015).

LOCATION OF COLLISIONS ALONG ROADWAYS

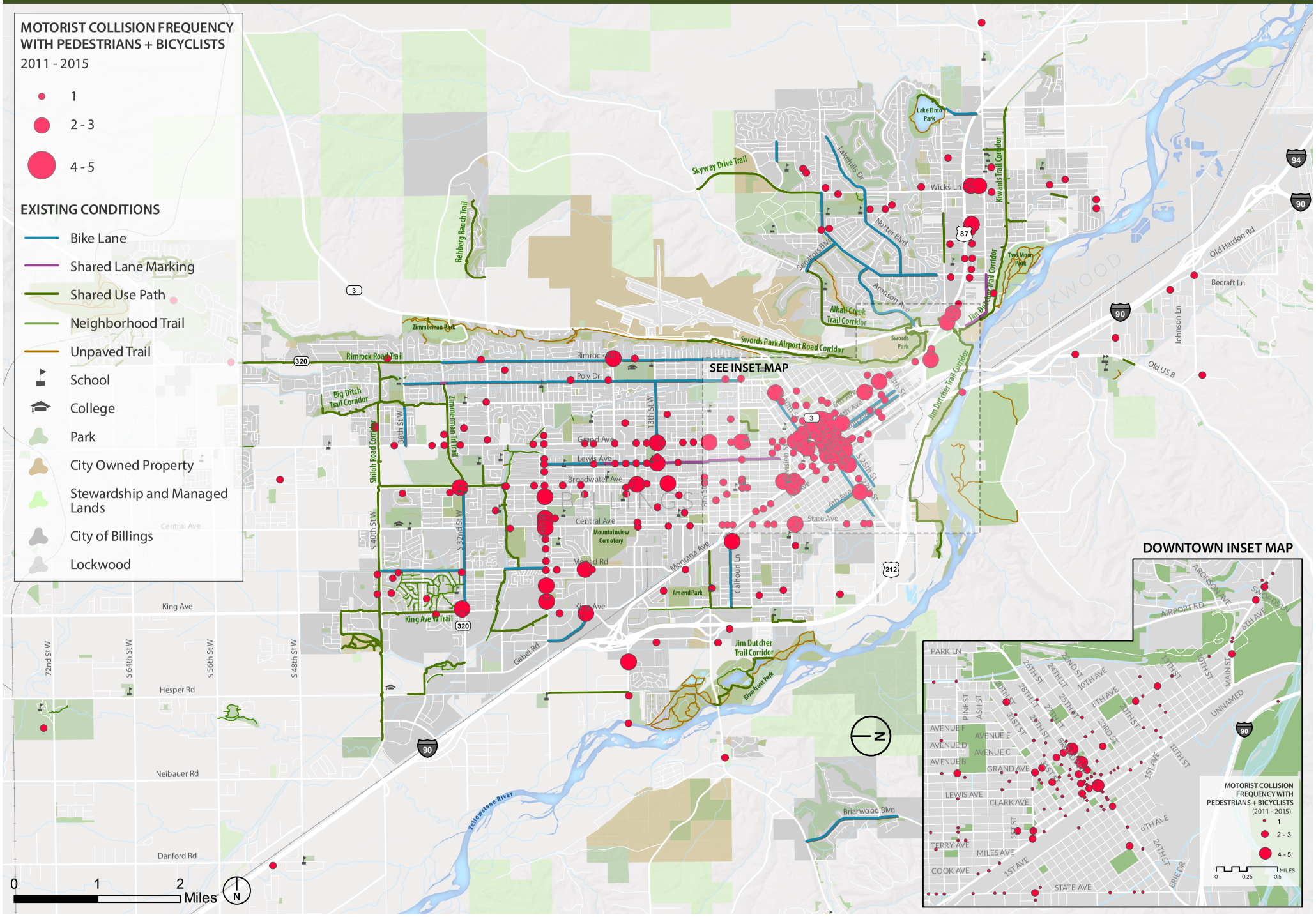


COLLISIONS BY ROAD TYPE



**Crash data is presented for informational purposes only. Conclusions regarding relative crash rates are not possible as bicycle/pedestrian use and route preferences are not known.*

MAP 2.15: MOTORIST COLLISION FREQUENCY WITH PEDESTRIANS AND BICYCLISTS



2.7 ACTIVE TRANSPORTATION PROGRAMS

The Billings area boasts a large number of programs that support active modes of transportation. This section presents these existing programs.

KIDS IN MOTION

BIKE BILLINGS

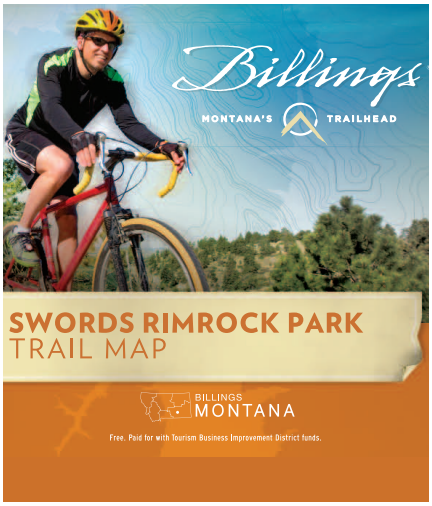
TAKE THE HI ROAD

TOUR DE FLEUR

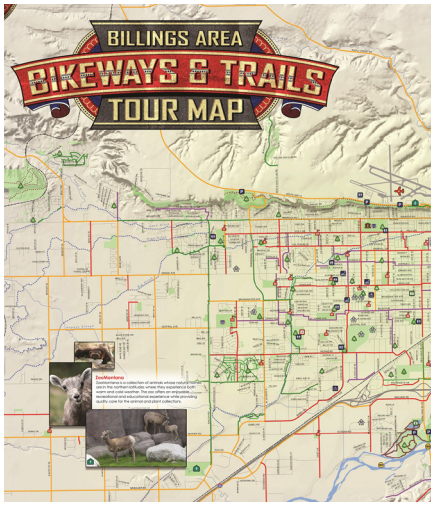
LIGHTS ON! SAFETY PROGRAM

COMMUTER CHALLENGE

CHAMBER OF COMMERCE TRAILS COMMITTEE



BIKE TOUR MAP



BIKE TO SCHOOL DAY

TABLE 2.1: ACTIVE TRANSPORTATION PROGRAMS

Committee/Organization/ Event	Program Description	Website URL
Bike Billings	Central storehouse on the City/County website for information on bicycling in Billings, including bike routes, bike parking options, biking to school, specific tips for women bicyclists, bicycling for families, and other topics of interest. Bike Billings provides information to the public by including a direct mailer in the water/sewer bill. Post cards are distributed as well.	http://ci.billings.mt.us/index.aspx?nid=2158
Bicycle and Pedestrian Advisory Committee	The Bicycle and Pedestrian Advisory committee provides recommendations the city council, mayor, the county commissioners, Planning Board, and all departments and boards of the city and county with regard to non-motorized transportation matters in the community. The group meets monthly, on the fourth Tuesday of every month. The group is comprised of three city representatives, three country representatives, and one planning board representative.	http://ci.billings.mt.us/index.aspx?NID=1302
Lockwood Pedestrian Safety District Advisory Committee	In 2014, Lockwood residents created a special tax district to pay for pedestrian, path and bicycle safety improvements in the district. The $10 million levy raises approximately $213,000 per year to fund programs improvements. The committee works with both residents and the school district to target improvements.	http://www.co.yellowstone.mt.gov/LockwoodSafety/index.asp
Chamber of Commerce Trails Committee	This group includes approximately twenty representatives from influential organizations within Billings, including one County Commissioner. The mission of the group is to develop Billing's trail system for the economic and healthy community benefits that result from active transportation. The committee is currently working on developing a marathon loop trail. The committee is also focused on making improvements to the Yellowstone Kelly Interpretive Site. Other responsibilities of the group include negotiating easements and managing communications with landowners.	http://www.billings-chamber.com/sitemap-2/pdf-archive/trails/
Volunteer Bike Patrol Unit	In 2010, a Volunteer Bicycle Patrol Unit (VBPU) was approved by the police administration. The VBPU patrols the city's bike trails and parks. The VBPU also lead bike patrols in identified hot spot areas to report suspicious activities for crime prevention measures.There are approximately sixty individuals, who are primarily retired, who volunteer for this patrol unit.	http://ci.billings.mt.us/index.aspx?NID=1575
Kids in Motion	Collaborative effort between St. Vincent's Healthcare, School District #2, Education Foundation for Billings Public Schools, the City of Billings, and other community partners to provide volunteer coordinated bicycle tune-up clinics. Program is also supported by AmeriCorps VISTA resources. Program also involves the development of curriculum for grades 4 to 8, with a focus on STEM subjects and teaching bicycle skills.	http://kidsinmotionvolunt.wix.com/kimbillings
Take the Hi Road	Take the Hi Road is a cycling and driving etiquette campaign that encourages Billings residents to practice empathy, lawfulness, and respect when traveling on the road. Billings TrailNet led the program, with funding provided by the City of Billings. The programs included the development of commercials and signage to communicate the rules of the road to the public. It provided recommendations for both drivers and bicyclists based on five themes, including: Be Visible, Be Predictable, Be Lawful, Be Courteous, and Be Understanding.	https://billingstrailnet.org/take-the-hi-road/
Lights On!	The purpose of this program is to encourage the use of bicycle lights. Outreach is done through multiple media outlets, including bike maps, the program's website, and handouts.	http://ci.billings.mt.us/index.aspx?NID=2176
Waves and Wheels	The Better Billings Foundation organizes this program, which was initiated to encourage safety and fun while enjoying all that the outdoors has to offer during the summer. The programs teaches safe swimming and bicycling skills, and also includes helmet and bicycle giveaways.	http://billingsoasis.com/waves-and-wheels
Tour De Fleur	This all-women bicycle ride, organized by Billings TrailNet, had its inaugural event in May 2016. The purpose of the event is to empower mothers, sisters, daughters and friends, to enjoy riding bicycles on the streets of Billings, and provides a network for women to meet and ride together. Bikes are adorned with flowers, and attendees complete a three mile ride, and upon returning, the riders are showered with flowers by spectators.	https://billingstrailnet.org/events/tour-de-fleur/
Bike Month	Advocates, volunteers, and local businesses collaborate during bike to work month to promote bicycling in Billings. Specifically, a commuter challenge is organized, and periodic breakfasts are served to commuters. A celebration kicks-off bike month, and there is also a finish party at the end of the month. St. Vincent hospital has donated resources to support bike to work month.	--
Bike/Walk to School Days	Both School District 2 and Lockwood School District participate in bike/walk to school days.	--
Cycling Savvy Classes	CyclingSavvy is a program of American Bicycling Education Association, Inc. (ABEA) that teaches people how to safely ride in mixed traffic situations. Three courses are offered in total, and these courses are offered periodically in Billings	http://cyclingsavvy.org/
Bicycle Give-a-Ways	Local businesses and organizations, including Kiwanis Club, Billings TrailNet, Lockwood PTA, Merrill Lynch, and Edward Jones, among others, collaborate to provide funding to give-away bicycles to the community. These events have proved to be very popular.	--

TABLE 2.1: ACTIVE TRANSPORTATION PROGRAMS (CONT.)

Committee/Organization/ Event	Program Description	Website URL
Helmet Give-a-Ways	Working with local funds and donations from local hospitals, bicycle helmets are given away at various events throughout the Billings area. The most common receiver of the helmets are children, although adult helmets have been given away as well.	--
Reflective Band Give-a-Ways	The Lockwood Pedestrian Safety District has been giving away reflective arm and pant bands in order to promote visibility during low-light hours. The bands have been received from MDT and also purchased by the LPSD. The bands are placed at local businesses and distributed in the schools. The Yellowstone County Sheriff's Department will have some in their police cars to give to Lockwood pedestrians starting in the fall of 2016.	--
Educational Outreach	The LPSD in conjunction with the Lockwood School District publishes a short article about walking or bicycling in their monthly newsletter. The articles are focused on educational aspects of walking and bicycling.	http://www.lockwood-school.org/
Coloring Book Distribution	Lockwood Schools distribute the A to Z by Bicycling coloring book that discusses proper bicycling techniques and practices. The books are purchased by the LPSD and distributed by the school to early elementary students	--
Bicycle Tour Map	This map, developed by the City/County, resides on the city's website, and thousands of copies have also been printed and distributed throughout the community. The map displays bicycle routes in the community, grouped into three tiers based upon roadway type and traffic volumes: Primary Bike Routes (collectors/arterials with moderate to heavy traffic) Secondary Bike Routes (local streets with moderate traffic volumes) and Arterial Bike Routes (arterial streets with heavier traffic volumes, best for experienced riders). People using the map can choose to take the routes that are best suited to their experience levels. Destinations are also noted on the map, and a newer version includes educational graphics.	http://ci.billings.mt.us/DocumentCenter/View/27779
Go Play Map	The 'Go Play Billings Trails' pocket map delineates trails and bike paths throughout the city and highlights economic, safety and health aspects of walking and bicycling. During the 2006-2007 school year, students from Montana State University (MSU) in Billings created the community-wide "Go Play" campaign to increase community awareness of, and participation in, bicycling and walking for transportation, thereby creating a safer environment for kids to walk and bike to and from school. The "Go Play" maps continue to be updated and distributed at the Billings Area Chamber of Commerce, RiverStone Health and Billings TrailNet.	http://www.saferoutesinfo.org/program-tools/success-stories/billings-montana-go-play-billings-montana
Healthy by Design	In 1994, Billings Clinic and St. Vincent Healthcare- and the City-County Health Department RiverStone Health joined forces to improve community-wide health issues. They integrated their resources to create and sustain programs that improve the health of the community. In 2006, Healthy by Design was created to address those community-wide health issues, which brought together a valuable coalition of professionals with expertise in infrastructure, engineering and planning; the largest medical hub in a 500-mile radius; and a strong network of non-profits and community action groups.	http://www.healthy-bydesignyellowstone.org/
Billings TrailNET	Billings TrailNet, (formerly BikeNet) is a non-profit, grass-roots organization that supports urban trails in and around the Billings community. The organization increases awareness and encourages use of the trails in the community, and raises money to use as matching funds for trails. To date, Billings TrailNet has provided the City of Billings with more than $375,000 for trail building and maintenance.	www.billingstrailnet.org

Kids in Motion has been successful in educating youth about the merits of walking and bicycling, and practicing safe walking and bicycling habits.

2.8 EXISTING BIKE PARKING CONDITIONS

The City Billings nor Yellowstone County has a codified bike parking policy. Efforts have been taken in recent years to install more bike parking, and standardize the types of racks and placement practices; however there is no requirement for new commercial or residential development or redevelopment projects to include bicycle parking as a condition of approval. While some new racks have been installed since the 2011 Plan, the quantity of public bike parking does not currently meet community demand.

Rack Types

For short term parking, the city has unofficially adopted a blue staple rack, also known as an inverted U. This is the ideal rack type for short term bicycle parking, as it provides two bike parking spaces (on either side of the rack) and provides two points of contact for bicycles, making them less susceptible to falling-over. These racks have also used a consistent blue color. Having a standardized rack helps the community to brand its public bike parking, and ensures that quality racks are installed. The racks that have been installed by the city are fabricated locally, are durable, and can be manufactured for a competitive price (approximately $100/rack).

In addition to these racks, other community groups and some local businesses have installed racks independently. These racks typically do not conform to the city standard, and some are inferior rack types that do not provide two points of contact for the bicycles. One of the reasons businesses have installed unique racks is to allow advertising on the racks. The lack of standardization in bike rack implementation is an opportunity for improvement.

Rack Implementation

The City has led the implementation of racks in the community. Racks installed by the City have primarily been concentrated in the downtown and have been placed based upon requests by businesses and existing demand for bike parking. Other organizations and businesses have installed racks independently from the City's installation program as well. Overall, racks in-and-around Billings have been installed ad-hoc, absent of an overall strategy, guiding document or defined policy. City staff recognize the opportunity to standardize and expand bike parking in and around Billings.

Community Demand

While bike parking data is not available, anecdotally, there is strong demand in the community for bike parking. The City is frequently asked by businesses to place racks in the public right-of-way (typically on sidewalks). Additionally, some individual businesses have assumed the cost of installing bike parking on private property, which also emphasizes that demand exists.

Overall, there is more demand for bike parking than there are racks available. In-and-around Billings, this imbalance is evidenced by bikes frequently being locked to polls, signs and other street furnishings because bike parking is not available. Bikes attached to these objects can result in bicycles blocking the public right-of-way, which can become a fire and ADA hazard. Providing more racks would help to reduce the need for people to lock their bikes to these fixed objects and improve the safety and aesthetic of areas where bikes are parked. The Bicycle Pedestrian Advisory Committee and Billings TrailNet are collaborating with City/County Planning, Engineering, Facilities, Parking Division and Downtown Billings, to provide a comprehensive downtown bike parking plan that will be completed in 2017.

The City of Billings has started to install a standard blue staple rack. Existing racks are consistently well utilized.

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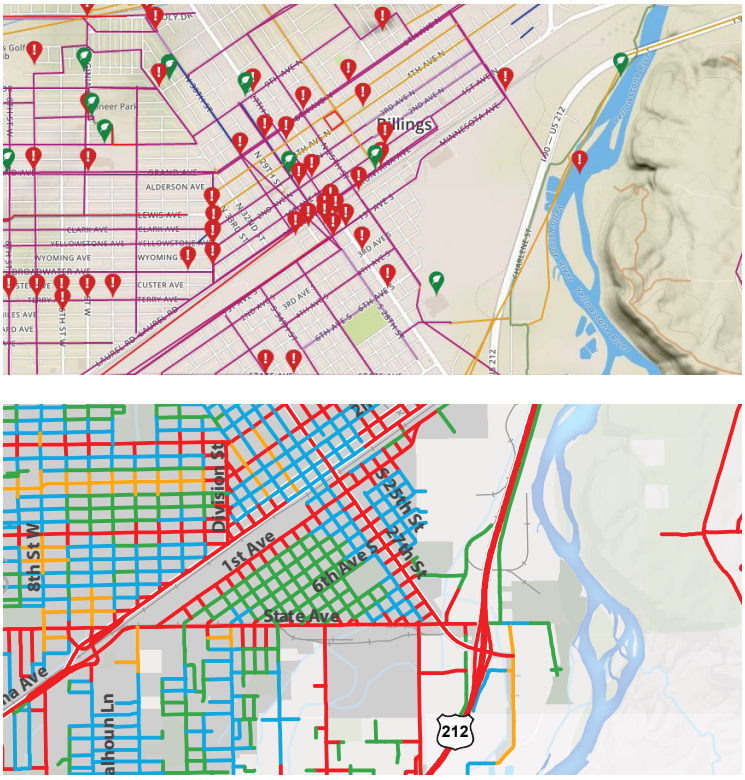
CHAPTER 3:
NEEDS ASSESSMENT

3.1 NEEDS ASSESSMENT INTRODUCTION

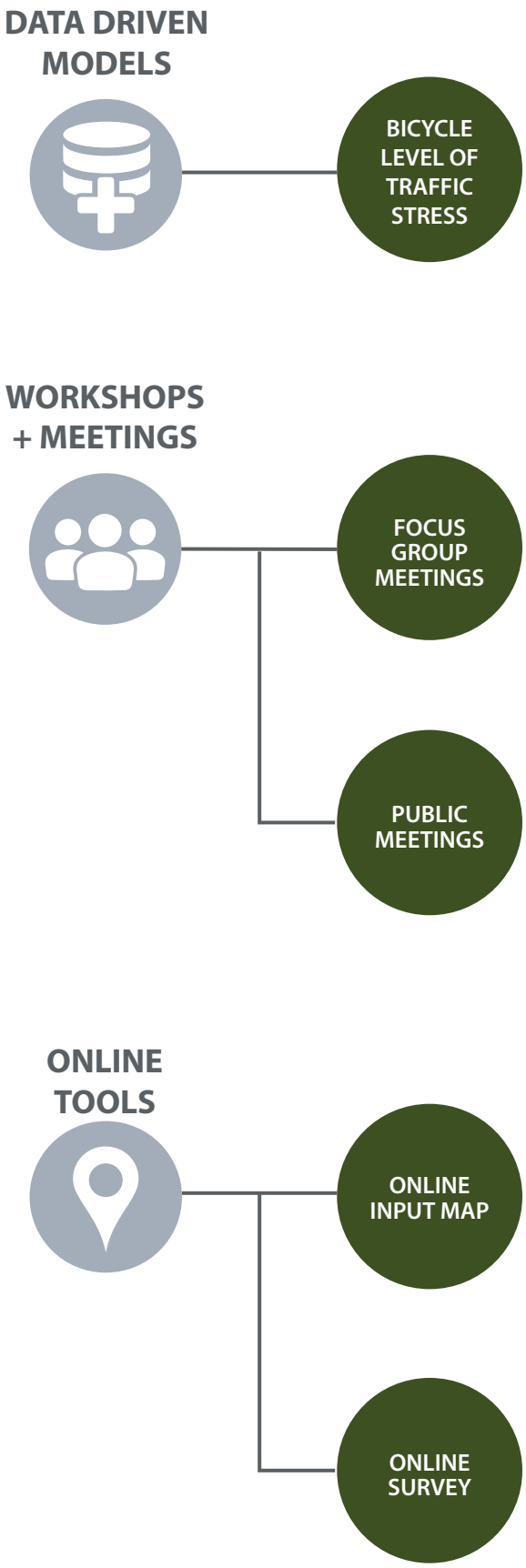
The existing conditions chapter created a baseline for the current status of bikeway and trail infrastructure in Billings area. The Needs Assessment chapter builds on this foundation and assesses the supply of bicycle and trail facilities in the Billings area to determine how well the supply meets the needs of bicyclists and trail users. The assessment of the supply of bikeway and trail infrastructure was informed by several layers of information, including a data-driven bicycle level of stress model and qualitative data collected through in-person meetings and online tools. These layers are described in detail, including a summary of the Bicycle Level of Traffic Stress model and the results of the online tools and in-person meetings. Combined, these layers illustrate where the most significant needs for improvements exist.

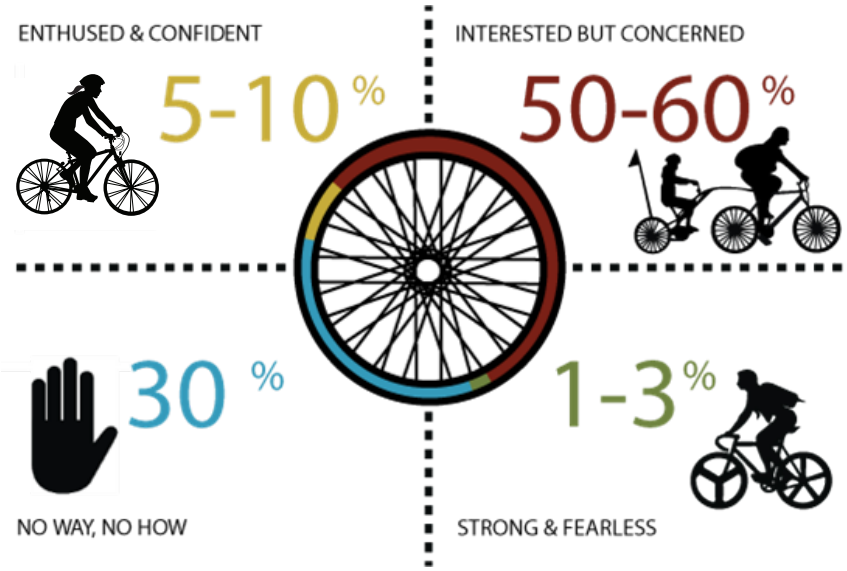
Additionally, this chapter provides an overview of the benefits that could be realized if the community were to increase the rate of implementation of trail and bikeway infrastructure, which in turn would increase the rates of people walking and bicycling in the community. These benefits include health, economic and environmental benefits, and are presented as low, medium and high estimates to model different levels of growth in walking and bicycling rates.

The chapter concludes with a summary of innovative bikeway designs that have been implemented in recent years in many North American cities, including cities in Montana.



Both quantitative and qualitative sources of data and information were analyzed to assess the needs for multimodal transportation in Billings area.





Research into bicycling mode choice has indicated that all Billings area residents generally fall into four categories: Strong and Fearless riders, who will ride despite challenging traffic conditions (1-3%); Enthused and Confident riders, who will ride in most traffic conditions but prefer dedicated bicycle facilities (5-10%); Interested but Concerned Riders, who would ride but only if comfortable bicycle facilities are provided (50-60%); and those who will never ride a bicycle, for personal or physical reasons (30%). This research indicates that the majority of people in the United States (56-73%) would bicycle if dedicated bicycle facilities were provided. However, only a small percentage of Americans (1-3%) are willing to ride if no facilities are provided.

Source: Roger Geller, City of Portland Bureau of Transportation. Four Types of Cyclists. http://www.portlandonline.com/transportation/index.cfm?&a=237507. 2009; 2 D ill, J ., McNeil, N . F our Types of Cyclists? Testing a Typology to Better Understand Bicycling Behavior and Potential. 2012.

3.2 BICYCLE CONDITIONS-LEVEL OF TRAFFIC STRESS ANALYSIS

A bikeway and trail network is likely to attract a large portion of the population if its fundamental attribute is low-stress connectivity. In other words, a network should provide direct routes between origins and destinations that do not include links that exceed one's tolerance for traffic stress. Each user is different and will tolerate different levels of stress in their journey, so this analysis should be used as a general guide rather than an absolute.

The methods used for the Level of Traffic Stress Analysis were adapted from the 2012 Mineta Transportation Institute (MTI) Report 11-19: *Low-Stress Bicycling and Network Connectivity*. The approach outlined in the MTI report uses the following variables to classify roadways:

- Posted speed limit
- The number (and width) of travel lanes
- The presence of bicycle lanes

In Map 3-1, road segments are classified into one of four levels of traffic stress (LTS) based on these factors:

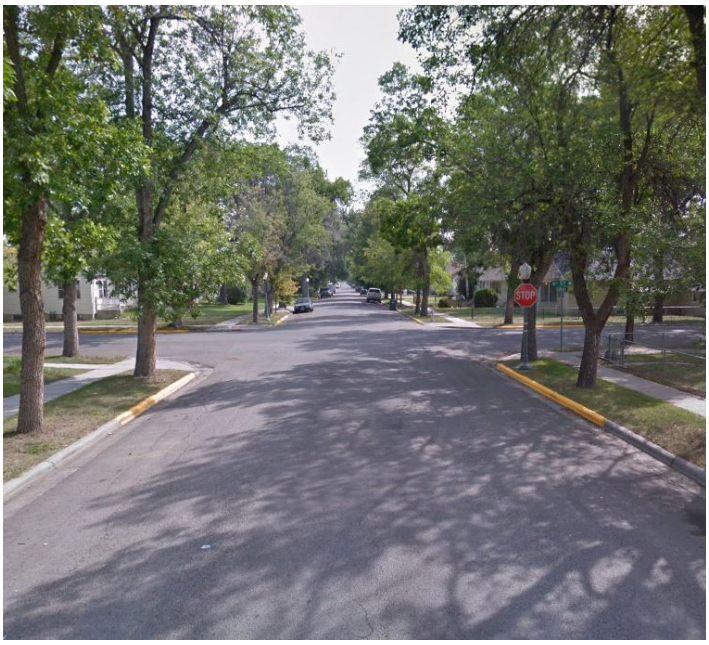
- LTS 1 is assigned to roads that would be tolerable for all ages and abilities, including children and elderly adults, to ride
- LTS 2 roads are those that could be comfortably ridden by the average adult population
- LTS 3 is the level assigned to roads that would be acceptable to current "enthused and confident" bicyclists
- LTS 4 is assigned to segments that are only acceptable to "strong and fearless" bicyclists, who will tolerate riding on roadways with higher motorized traffic volumes and speeds. Sometimes, even the presence of a dedicated bicycle lane is not sufficient to make a high-speed and volume roadway comfortable to a significant portion of the population.

Images displaying LTS scores 1 to 4 in Billings area are displayed on page 3-3.

In general, streets with separated bicycle facilities or streets with low volumes and speeds would qualify as a low-stress (LTS 1) bikeway, while roadways shared with motor vehicle traffic operating at high speeds and volumes would receive a higher-stress score. The results of the LTS analysis help to identify existing areas with a high level of service, as well as focus areas for improvement. The LTS analysis is specifically focused on the street environment. Adjacent shared-use paths (if present) offer a more comfortable facility type that is not reflected it the LTS score.

LTS provides an intuitive framework to describe the benefits of bicycle infrastructure and demonstrates that some roadways may require more intervention than others to provide a truly comfortable experience. For example, the only time a standard bike lane is considered acceptable for all ages and abilities is a 6-foot-wide facility on a roadway with posted speed of 30 mph or lower, and the best score achievable on a roadway with four or more travel lanes without installing a separated bike lane is LTS 3.

LTS 1



Residential streets, such as Yellowstone Avenue, are low-volume and low-speed (25 MPH speed limit) and are comfortable for a wide range of bicyclists, including children and older adults, even without dedicated facilities.

LTS 2

Streets with bicycle lanes and low to moderate speeds and volumes can be attractive for the mainstream population, as in this example on Lewis Avenue at 24th St.

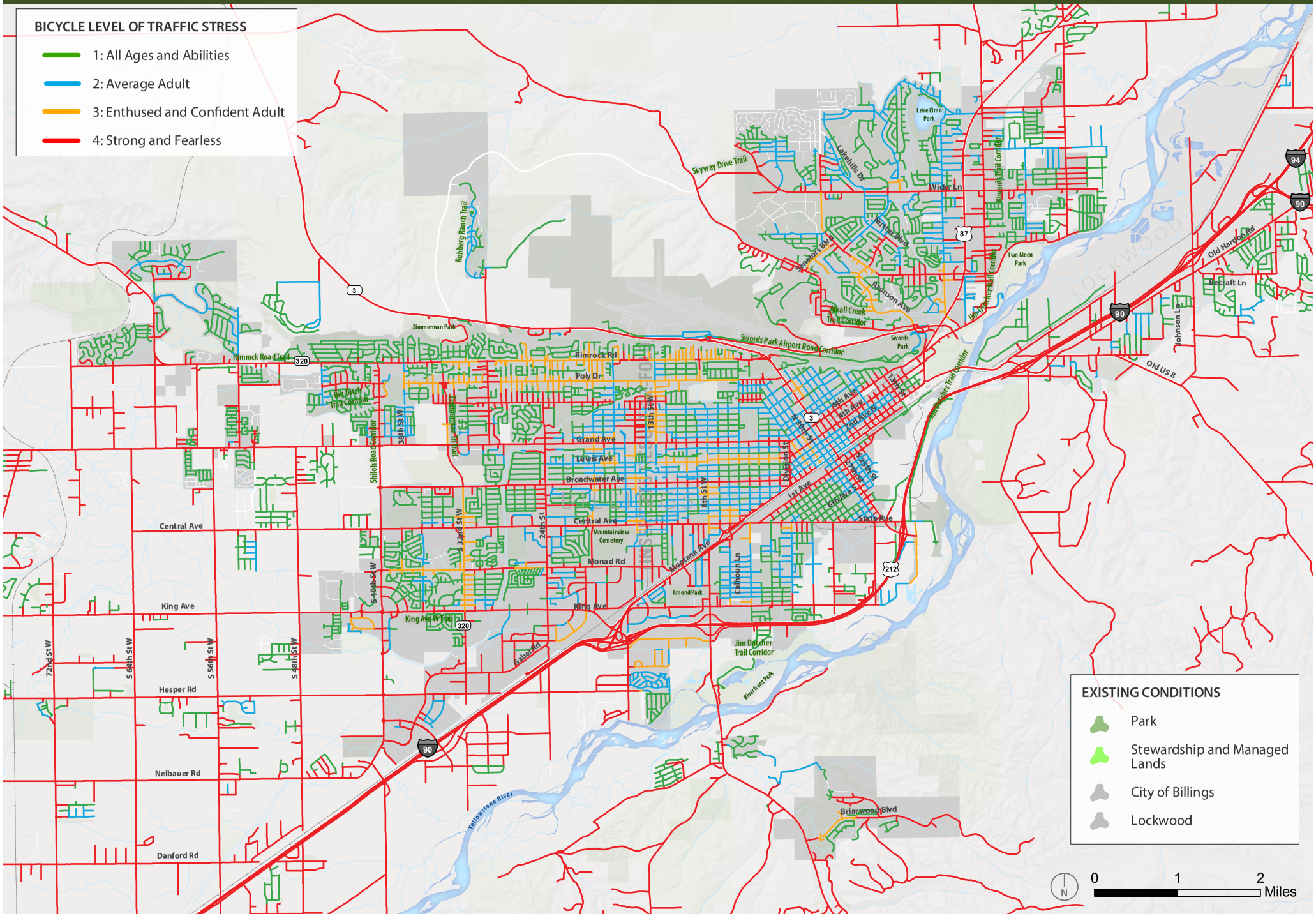
LTS 3

Collector roadways tend to carry more traffic and have higher speeds, making riding along them more stressful and comfortable only for more confident bicyclists. This example on Midland Rd provides no dedicated facility for bicyclists.

LTS 4

Sharing the traffic lane or riding in the shoulder on streets with high traffic volumes and speeds is not comfortable for the majority of bicyclists, such as this example on 13th St.

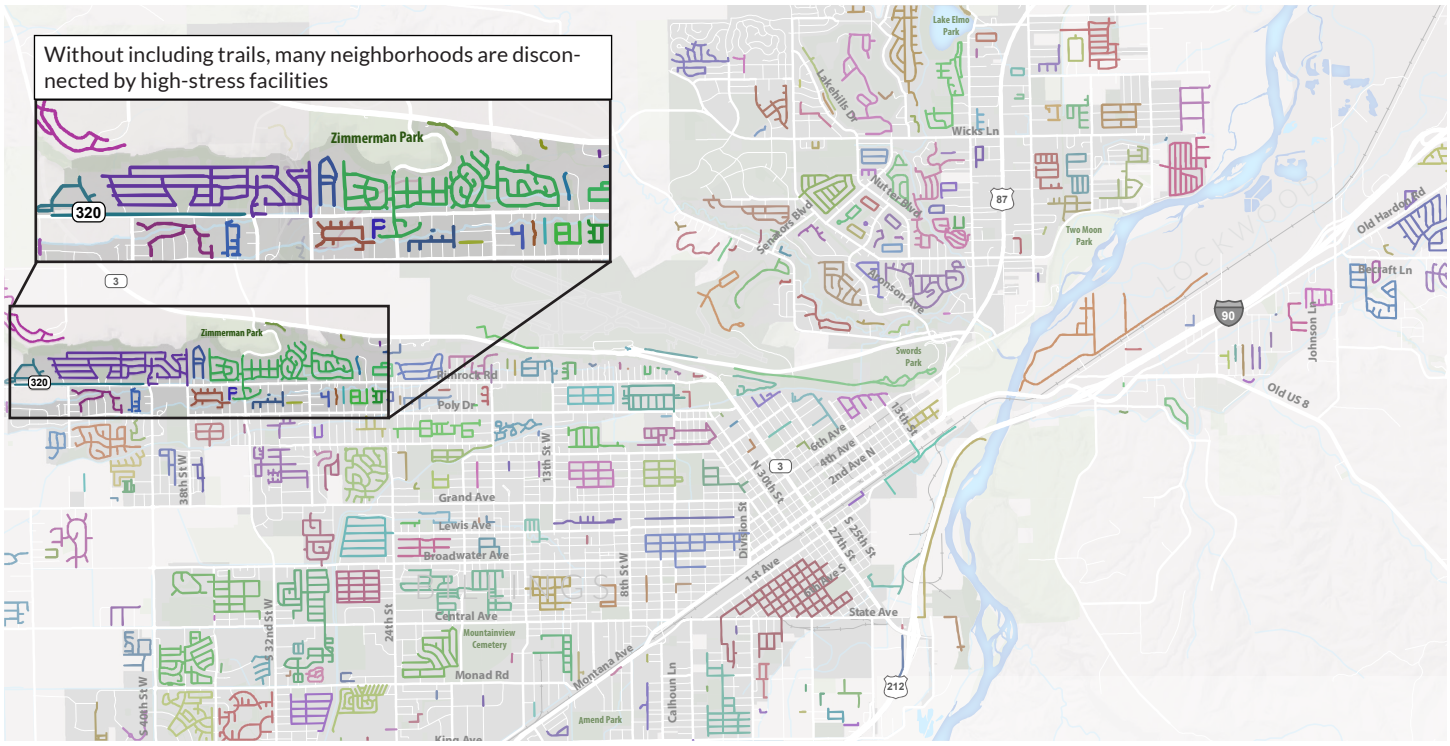
MAP 3.1: BICYCLE LEVEL OF TRAFFIC STRESS



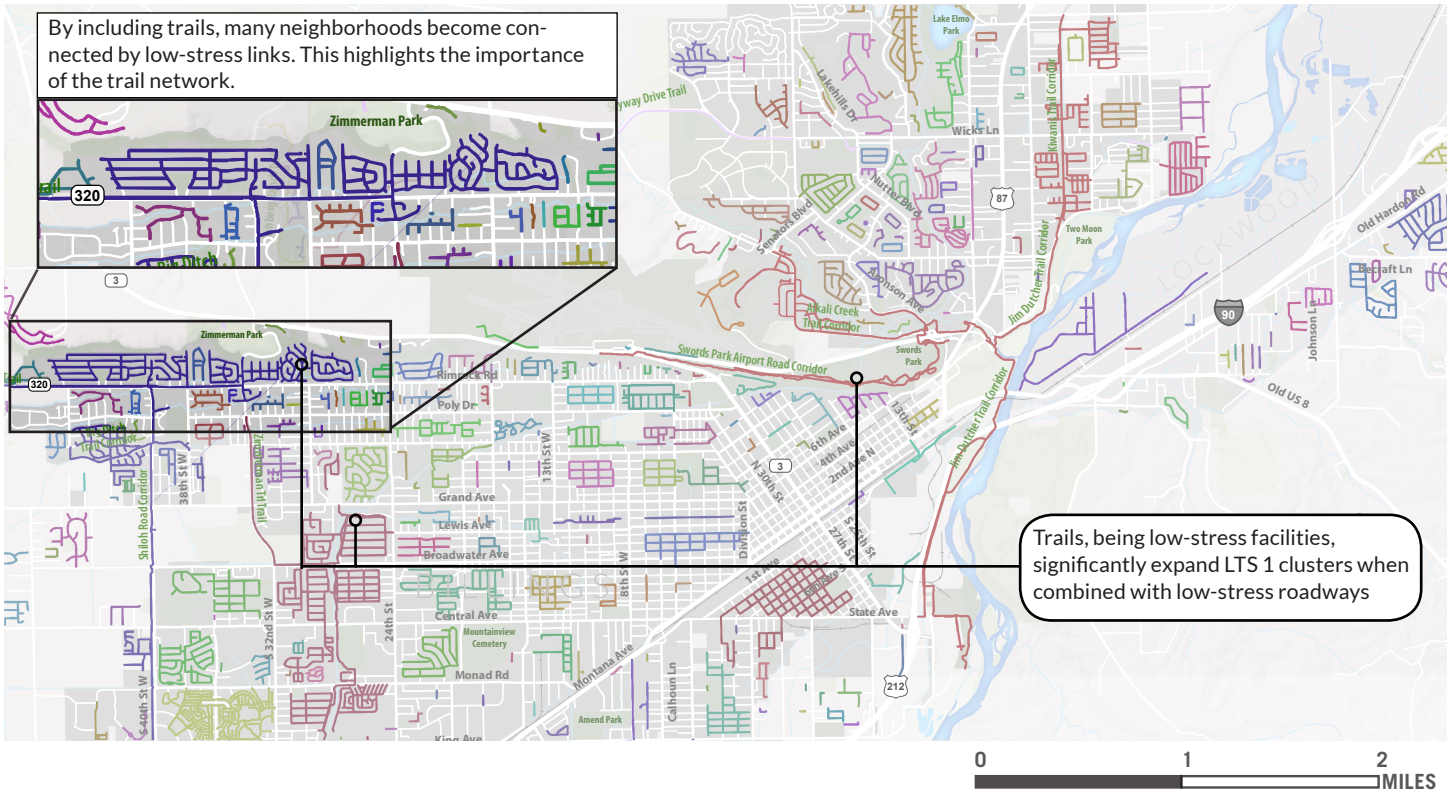
3.2.1 Low-Stress Network Connectivity

Connectivity clusters depict connectivity of roadways classified as suitable for all ages and abilities. The top map depicts connectivity clusters on public roadways that score as an LTS 1. The bottom map includes paved trails in addition to the roadways. Each color represents a cluster that is connected. Trails increase network connectivity and result in fewer disconnected islands of facilities.

MAP 3.2: LTS 1 ROADWAYS



MAP 3.3: LTS 1 ROADWAYS + PAVED TRAILS



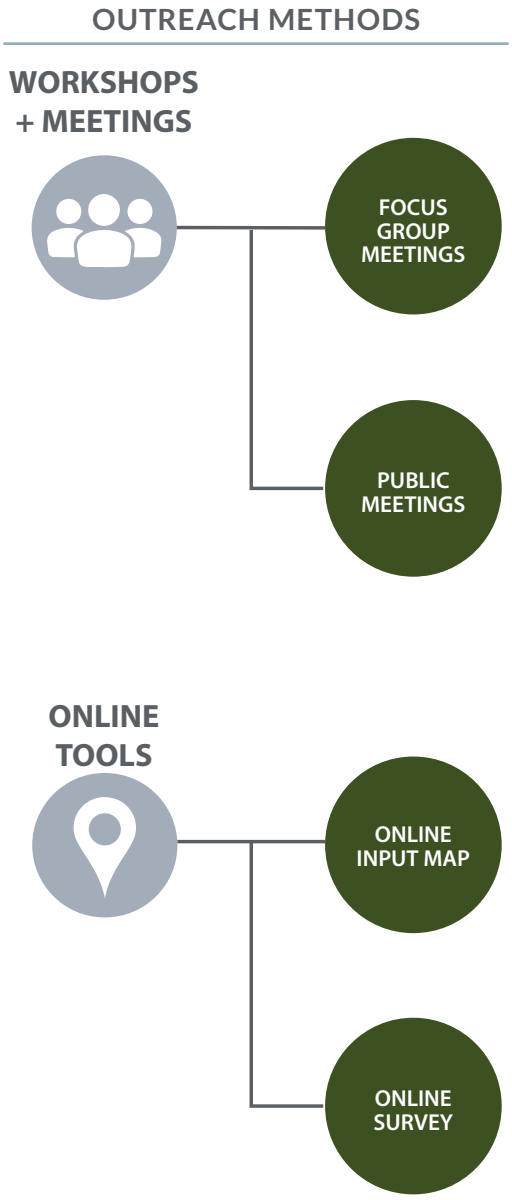
3.3 PUBLIC INVOLVEMENT SUMMARY

The Bikeway and Trails Master Plan update incorporated a robust public involvement process to solicit input about existing bicycling and trail conditions in the community, where improvements should be focused, and how infrastructure should be funded. Several outreach methods were used to ensure a wide cross-section of the public was engaged through the planning process. These methods included a public open house, focus group meetings, online public input map, and an online survey. Each of these methods provided different information, but generally, consistent themes were identified. This section summarizes the input collected through the outreach process.

3.3.1 Public Open House

On Wednesday, July 29, the project team facilitated a public open house, which provided a forum where people could learn about the project and provide input about how bicycling and trails could be improved in the community. The meeting kicked-off with a presentation about existing bicycling and trail conditions in the community. Attendees were then invited to work over maps, and document challenges to bicycling and trail use, and opportunities to improve conditions. More than fifty people attended the meeting, and feedback gathered through it was used to guide the plan's recommendations.

At the Open House, the public had the opportunity to document opportunities and challenges to bicycling and trail use in the community.



3.3.2 Focus Group Summary

In July, the project team facilitated a series of focus group meetings with stakeholders in the community to understand perceptions surrounding bicycling and trail use in the Billings area, and areas where improvement is needed. In total, four focus group meetings were held, and each meeting was oriented towards different groups of stakeholders. The groups were: 1. Equity Service Providers, which included representatives from agencies that assist at-risk youth or adults, people with physical disabilities, and the elderly; 2. City/County Staff, which included representatives from different governmental departments from the City and Yellowstone County; 3. Community Advocates, which included representatives from organizations in the city that advocate for improved bicycle and pedestrian accommodations; and 4. Business Leaders, which included representatives from employers in-and-around Billings. Questions were asked to each group. Some of the questions were general, while others were targeted towards each group.

A summary of the responses to these questions is provided in the Appendix. All responses were collected anonymously so that the conversations remained open. In total, the team met with more than fifty representatives from different organizations in-and-around Billings, and collected a wealth of information that was used to inform the plan's recommendations. A high level summary of the major themes consistently identified across the groups is provided on page 3-7.

FOCUS GROUP SUMMARY - A SNAPSHOT

CONNECTIVITY + ACCESS

- Limited direct and comfortable routes to access destinations
- Bikeway and trail system has critical gaps
- People frequently need to drive to access trails
- Better integration of transit and non-motorized network needed

DESTINATIONS

- Prioritize links to destinations and develop a network that better serves commuter trips
- Identify key employment areas for traditionally underserved populations
- Provide secure bicycle parking at employment centers
- Identify resources for commuters to "freshen up" prior to the start of a workday

SAFETY

- Interactions between people driving, bicycling and walking can be tense
- Need for consistent law enforcement of all modes
- Clarification of the law on bicycle riding on sidewalks needed
- Intersections along desirable routes are barriers to connectivity

INCLUSION

- The development of infrastructure in the community should cater to a wide range of users, young and old, able-bodied and disabled
- Education programs should be broad-based, highlighting the needs of all non-motorized roadway users, including those with mobility impairments

INFRASTRUCTURE

- The South Side Neighborhood requires more dedicated facilities – could become case study area for implementation and education programs
- The Rims, River and Canals are major opportunities to install trail facilities
- Improvements need to be made at intersections to facilitate active transportation
- The busy streets in downtown deter people from walking/biking downtown

EDUCATION

- Very important component – critical need for more education in the community
- Education should focus on the interactions between different modes
- Education should teach all users how to understand the rules of the road to make walking, bicycling and driving more predictable
- Enforcement needs to be increased to support the education programs
- A variety of non-traditional media sources needs to be used for the education programs, such as social media and internet radio stations

RECREATION VS. TRANSPORTATION

- Most bicycling in the community is perceived to be recreational bicycling
  - The percentage of those commuting via bicycle appears to be increasing
- Providing infrastructure that facilitates recreational and commuter bicycling is important for the community's employers
  - It will help them to attract and retain talent, as these features are important to the Billing's "Quality of Life Package"

FOCUS GROUPS - BY THE NUMBERS

4 MEETINGS THAT INCLUDED MORE THAN

50 REPRESENTIVIES FROM OVER

25 BUSINESSES, ORGANIZATIONS + DEPARTMENTS

3.3.3 Community Surveys Summary

In 2016, various departments and organizations in the community distributed several statistically valid surveys, which included questions relevant to this Plan. Answers to questions provide insight into recreation, walking and bicycling conditions, and health in the community. Additionally, these surveys help to identify what the community's priorities are for improvement. The surveys include the National Citizen Survey (2016), the Parks and Recreation Needs Survey (2016), and the Community Health Needs Assessment (2016), and key responses from these surveys are summarized on pages 3-8 and 3-9. The responses support the notion that there is a need and community desire to improve trail and bikeway facilities in the Billings area. Key responses from the National Citizen Survey are summarized on this page.

TRANSPORTATION

RANKED AS THE #2

MOST PRESSING ISSUE

FOR THE CITY OF BILLINGS

FIVE OF TEN RESIDENTS THINK THE EASE OF WALKING IS GOOD OR EXCELLENT

THREE OF TEN RESIDENTS THINK THE EASE OF BICYCLING IS GOOD OR EXCELLENT

SIX OF TEN RESIDENTS THINK RECREATIONAL OPPORTUNITIES ARE GOOD OR EXCELLENT

THREE OF TEN RESIDENTS THINK TRAFFIC ENFORCEMENT IS GOOD OR EXCELLENT

Source: All data presented on this page was developed from the National Citizen Survey: Billings, MT Community Livability Report. Published 2016.

Like communities across the country, the majority of Yellowstone County residents could stand to get more physical activity. Data provided through locally administered, statistically valid surveys highlight this need. Low levels of physical activity is a contributing factor to higher rates of obesity, which is linked to other negative health outcomes. By improving trail and bikeway facilities in the community, more people could potentially reach the daily activity levels recommended by the Centers for Disease Control.[1]

YELLOWSTONE COUNTY RESIDENTS NEED MORE PHYSICAL ACTIVITY

OF ADULTS:

18% REPORTED NO LEISURE TIME ACTIVITY

76% DO NOT MEET RECOMMENDED PHYSICAL ACTIVITY LEVELS
As defined by the Centers for Disease Control

OF CHILDREN:

29% DO NOT MEET RECOMMENDED PHYSICAL ACTIVITY LEVELS
As defined by the Centers for Disease Control

Source: 2016-17 Yellowstone County Community Health Needs Assessment.

LOW LEVELS OF PHYSICAL ACTIVITY HAVE CONTRIBUTED* TO HIGH LEVELS OF OBESITY

66% OF ALL ADULTS ARE OVERWEIGHT

34% OF ALL ADULTS ARE OBESE

29% OF ALL CHILDREN ARE OVERWEIGHT

**Many factors contribute to one's health outcomes, including diet, genetics and levels of physical activity.*

Source: 2016-17 Yellowstone County Community Health Needs Assessment.

MOST PEOPLE GET ACTIVITY THROUGH ACTIVE TRANSPROTATION

MORE THAN 50%

OF RESIDENTS WALK OR BIKE FREQUENTLY*

INSTEAD OF DRIVING

*Frequently = those who responded always/sometime or more than once a month

Source: National Citizen Survey: Billings, MT Community Livability Report. Published 2016.

MOST IMPORTANT FACILITIES

BASED ON RESIDENTS' TOP FOUR CHOICES

From the Community Interest/Opinion Survey

WALKING & BIKING TRAILS	54%
SMALL PARKS	50%
LARGE PARKS	23%

HIGHEST PRIORITY FOR INVESTMENT

BASED ON RESIDENTS' CHOICES AND UNMET NEEDS

WALKING AND BIKING TRAILS

Source: 2016 City of Billings Community Interest and Opinion Survey

1 *The Centers for Disease Control recommends 150 minutes of moderate intensity activity (i.e., brisk walking) every week for adults and 60 minutes of aerobic activity every day for children*

3.3.4 Online Survey Summary

In addition to the statistically valid surveys completed recently, the Billings Bikeway and Trail Master Plan included an independent survey to assess filling gaps in the trail and bikeway system, funding non-motorized improvements, and barriers to walking and bicycling more. The answers to the seven questions are summarized in Graphic 3.1. Respondents expressed the expansion of the bikeway and trail network should be roughly split between recreational and commuter routes, and they were supportive of investing to expand the bikeway and trail network. Development fees were identified as the most popular local funding source for growing the system, and the top priority for investment noted was expanding the trail system. The most frequently identified barrier to walking/bicycling more was lack of continuity in existing facilities. While not statistically valid, the online question and answer survey was completed by 168 Billings area residents and provides some insight into the needs and preferences of participating individuals.

GRAPHIC 3.1: ONLINE SURVEY SUMMARY

WHERE SHOULD IMPROVEMENTS BE FOCUSED?

RECREATIONAL SYSTEM 56.3%

COMMUTER ROUTES 43.8%

TOP SEVEN MOST CRITICAL GAPS IN THE SYSTEM

1. RIVERFRONT TRAILS ALONG THE YELLOWSTONE RIVER (34.8%)
2. CONNECTIONS FROM WEST BILLINGS TO DOWNTOWN (20.7%)
3. CONNECTION ATOP THE RIMROCKS FROM 27TH ST TO ZIMMERMAN TRAIL (15.9%)
4. CONNECTION FROM BILLINGS HEIGHTS TO DOWNTOWN (13.4%)
5. CONNECTION FROM THE RIVER/LOCKWOOD TO DOWNTOWN (6.1%)
6. CONNECTION FROM THE RIMROCKS TO DOWNTOWN (5.5%)
7. CONNECTIONS FROM SOUTH BILLINGS TO DOWNTOWN (3.7%)

ALLOCATING LOCAL TRANSPORTATION FUNDS

3 OF 4 RESPONDENTS SUPPORT ALLOCATING LOCAL FUNDS TO EXPAND THE BIKEWAY AND TRAIL NETWORK

ADDITIONAL TAXES OR FEES FOR BIKEWAYS/TRAILS

SUPPORT 66.1%

NEUTRAL 7.1%

OPPOSE 23.9%

FUNDING SOURCE PRIORITY RANKING

The following funding sources are ranked by order of popularity (based upon average weighted scores) as ways to fund bikeway and trail improvements in-and-around Billings:

1. DEVELOPMENT FEES
2. GAS TAX
3. LOCAL OPTION SALES TAX
4. GO BOND
5. SPECIAL TRANSPORTATION DISTRICT
6. PROPERTY TAX

TOP THREE RANKED PRIORITIES FOR INVESTMENT

#1 PRIORITY — EXPANSION OF TRAIL NETWORK

#2 PRIORITY — MAINTENANCE OF EXISTING BIKEWAY AND TRAIL NETWORK

#3 PRIORITY — EXPANSION OF EXISTING ON-STREET BIKEWAYS

THE TOP THREE BARRIERS THAT PREVENT RESPONDENTS FROM WALKING/BICYCLING MORE

CONTINUITY OF FACILITIES 32.5%

DISTANCES FROM HOME TO DESTINATIONS 26.3%

PERCEPTION OF SAFETY ALONG BUSY STREETS 22.5%

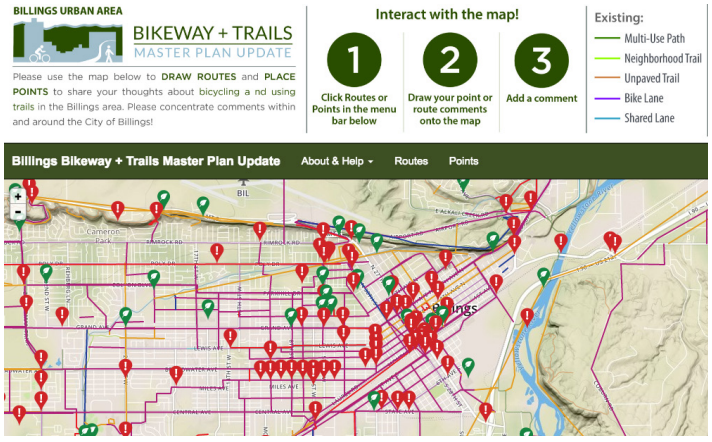
3.3.5 Online Input Map Summary

The online mapping software, Wikimapping, allows users to draw lines and drop points within an online map, and add comments to other people's input. Subsequent visitors can add additional comments and agree or disagree with existing comments, which provided the planning team with an understanding of the relative interest of each recommendation. The online input map used for the Plan included the following base layers: existing street, bikeway and trail infrastructure. In total, the map recorded 668 individual interactions, including lines being drawn, points being placed and people commenting on lines and points that others had drawn.

People were asked to identify comfortable existing bike routes, existing bicycle facilities that needed improvement, desired on-street bicycle facilities, and desired off-street bicycle facility/trails. The categories that recorded the greatest number of miles drawn using the online map were desired *on-street* bicycle facilities (217 miles) and desired *off-street* bicycle facility/trails (120.3 miles), showing a preference for the implementation of new connections.

Users were also asked to place points representing two categories, including locations where bicycle and pedestrian crossing improvements were needed and where better trail access was desired. Participants placed 127 points indicating where crossing improvements were needed, and 57 points where trail access could be improved. Key statistics representing interactions with the online input map are displayed in Graphic 3.2.

Maps 3.4 and 3.5 on page 3-12 display the line and point comments collected via the online input map. Specifically, Map 3.4 shows the line features that were drawn indicating where linear improvements are desired. Map 3.5 shows the location of desired spot improvements by category. This tool resulted in a robust dataset that the planning team referenced throughout the development of the plan's recommendations.



The online input map recorded over 650 individual interactions, including people drawing lines, placing points, and commenting on other user's input

GRAPHIC 3.2: ONLINE INPUT MAP SUMMARY

OVERALL INTERACTIONS

PARTICIPANTS ADDED

274 LINES & 184 POINTS

THAT GENERATED

210 ADDITIONAL COMMENTS

MILES OF ROUTE COMMENTS DRAWN

120.3 MILES — DESIRED OFF-STREET BICYCLE FACILITY/TRAIL

217 MILES — DESIRED ON-STREET BICYCLE FACILITY

21.8 MILES — EXISTING BICYCLE FACILITY NEEDS IMPROVEMENT

8.3 MILES — COMFORTABLE EXISTING BICYCLE ROUTE

NUMBER OF LOCATION COMMENTS PLACED

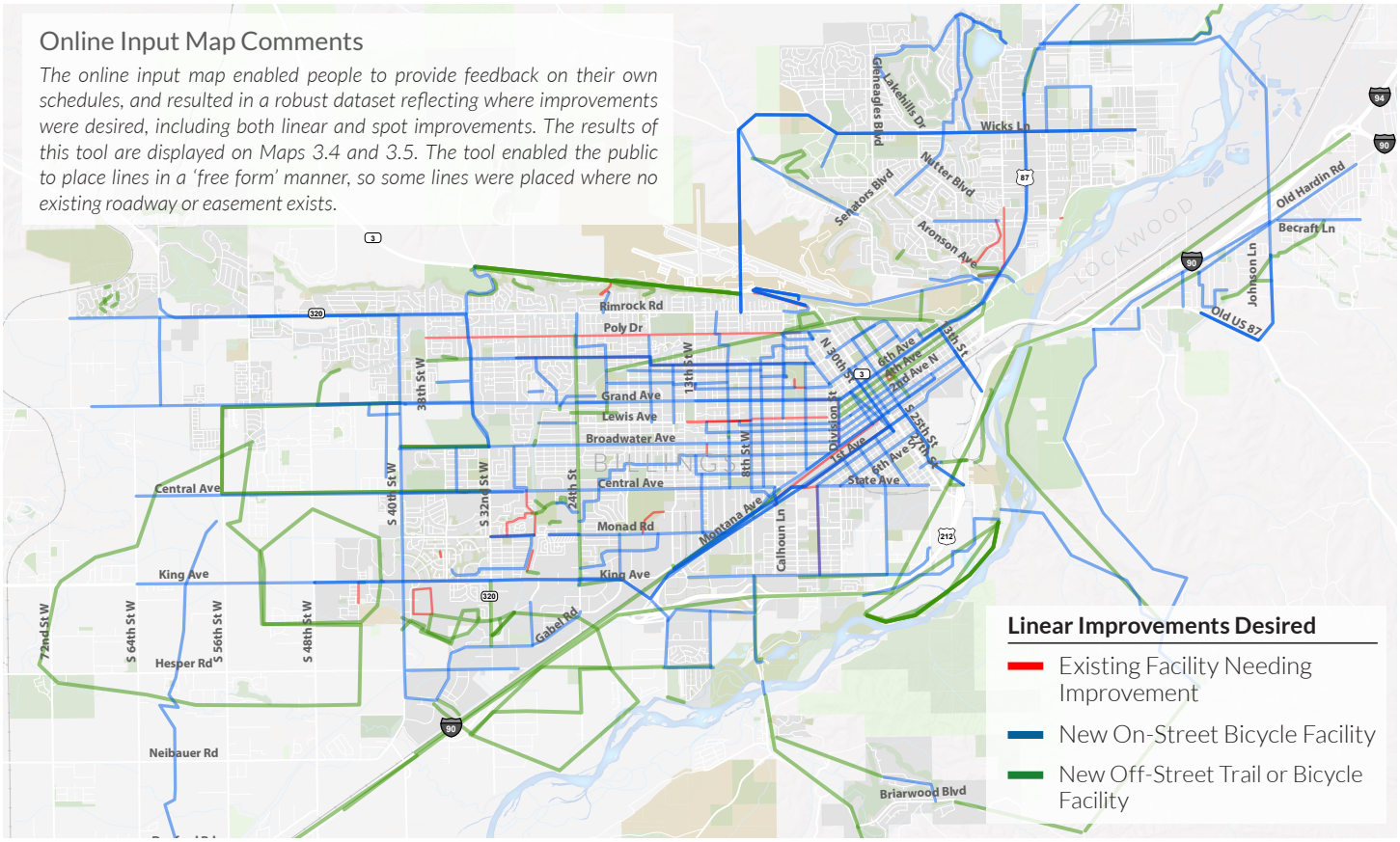
127 POINTS — BIKE/PED CROSSING IMPROVEMENT NEEDED

57 POINTS — BETTER TRAIL ACCESS DESIRED

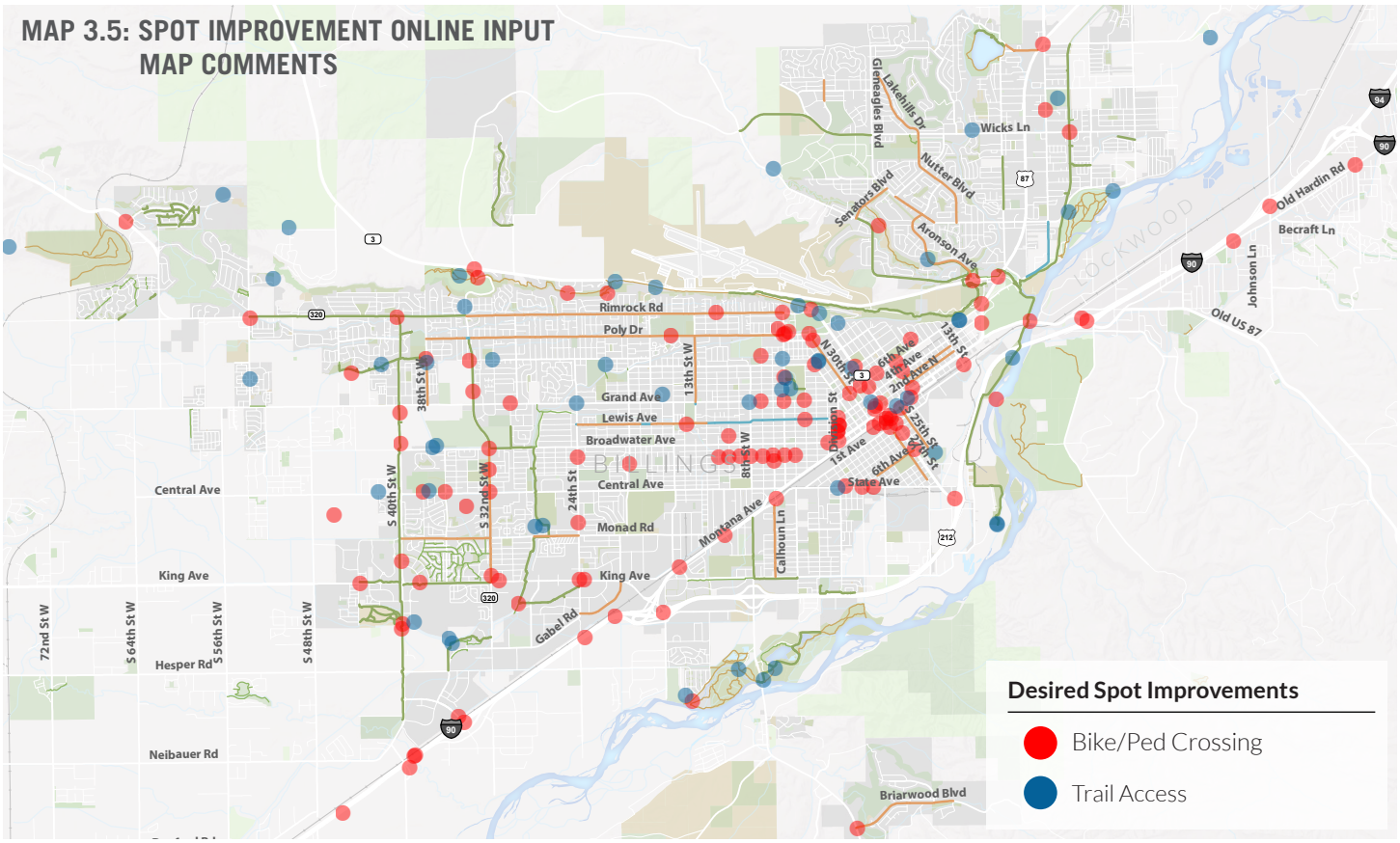
MAP 3.4: LINEAR ONLINE INPUT MAP COMMENTS

Online Input Map Comments

The online input map enabled people to provide feedback on their own schedules, and resulted in a robust dataset reflecting where improvements were desired, including both linear and spot improvements. The results of this tool are displayed on Maps 3.4 and 3.5. The tool enabled the public to place lines in a 'free form' manner, so some lines were placed where no existing roadway or easement exists.



MAP 3.5: SPOT IMPROVEMENT ONLINE INPUT MAP COMMENTS



3.4 ACTIVE TRANSPORTATION BENEFITS

Walking and bicycling produce community benefits beyond the individuals participating in these active modes. A benefits analysis was conducted using a combination of local data, data collected from communities with similar bicycle and pedestrian infrastructure to what will be proposed in the Billings area, and national sources of data such as the USDOT TIGER BCA Resource Guide (2014), the National Household Transportation Survey (2009), the National Center for Safe Routes to School travel data (2010), the American Community Survey (2010-2014), and the Automobile Association of America. For Billings, the peer communities of Boise, ID; Columbia, MO; Helena, MT; Fargo, ND; Bend, OR; Salt Lake City, UT; and Spokane, WA were analyzed.

Several types of benefits were evaluated, including health, environmental, and transportation benefits. The benefit analysis also includes projections based on the most recent five-year estimates from the ACS, which were then extrapolated through the use of various multipliers derived from national studies and quantified in terms of monetary value where appropriate. The estimated monetary values were calibrated to baseline values and compared to bicycle and walk mode commute splits of peer cities. While the results of this analysis are informative, it likely under represents the existing levels of bicycling and walking, as it is heavily influenced by the National Household Transportation Survey. A local comprehensive travel survey is recommended to provide more accurate data for Billings.

Future estimates were derived from an estimate of future mode share in Billings based on the peer city analysis. Low, mid, and high mode share growth scenarios were considered for a planning window from 2016 to 2030, the planning horizon of this plan. The growth scenarios for bicycling and walking increases are displayed in chart form on page 3-14. Billings' projected population at 2030 is included in this analysis. The estimates presented in Table 3.3 are not intended to be mode share targets or policy goals, but rather are intended to quantify some of the benefits that increasing active transportation mode share might bring.

TABLE 3.1: PROJECTED MODE SHARE

Source	Existing		Projected Low-Growth		Projected Mid-Growth		Projected High-Growth	
	Bike (%)	Walk (%)	Bike (%)	Walk (%)	Bike (%)	Walk (%)	Bike (%)	Walk (%)
Estimated Commute Mode Share (ACS)	0.93	3.18	1.18	3.46	2.22	3.78	3.50	5.88
Estimated Overall Mode Share for all Trip Purposes (ACS+NHTS)	7.85	17.4	8.86	18.51	13.02	19.79	19.03	28.19

BICYCLING AND WALKING IS GOOD FOR YOUR HEALTH:

SAFER THAN SITTING ON A COUCH

Bicycling health benefits outweigh safety risks **9 to 1**

(Source: de Hartog, 2011)

GOOD FOR THE HEART

Those who are physically active generally live longer and have a lower risk for heart disease, stroke, Type 2 diabetes, depression, some cancers, and obesity.

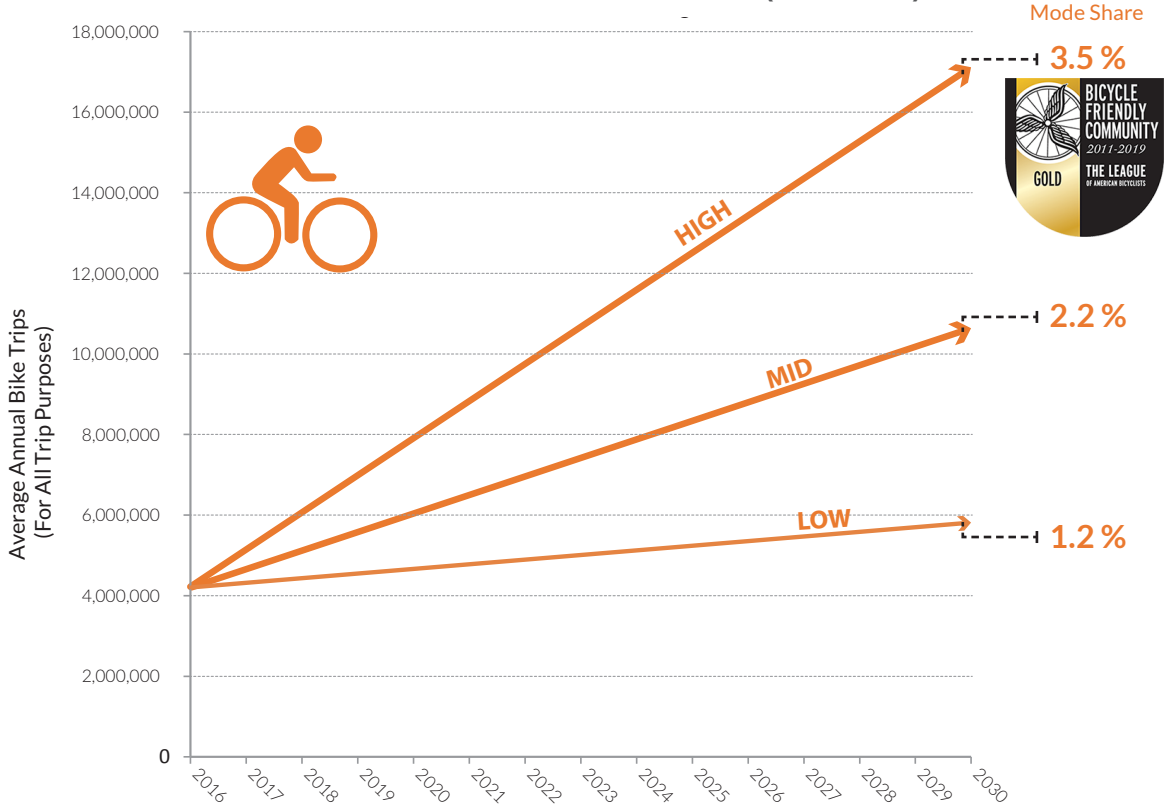
(Source: CDC, 2015)

STRONG BRAIN

Regular physical activity has been shown to reduce the risk of dementia, including Alzheimer's disease, by as much as 50 percent.

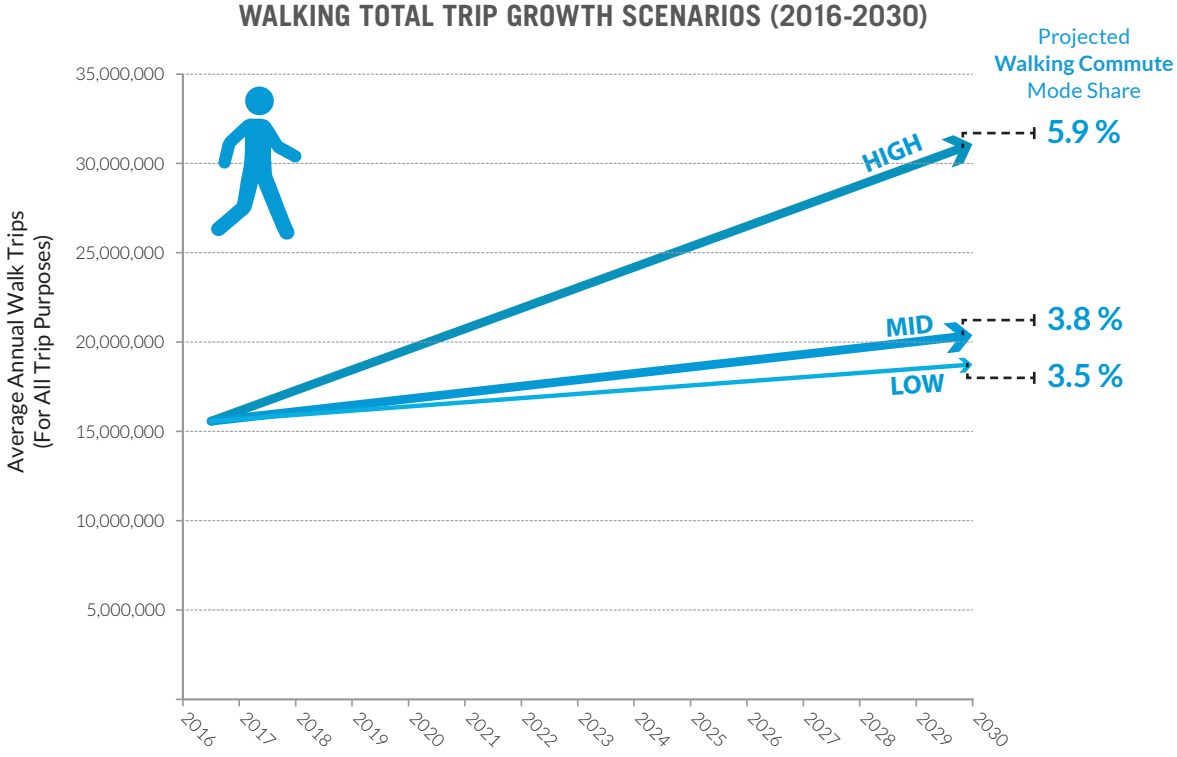
(Source: Erickson, 2013)

BICYCLE TOTAL TRIP GROWTH SCENARIOS (2016-2030)



*At a 3.5 % bicycle commute mode share, Billings would be eligible to become a **Gold Level Bicycle Friendly Community**. The League of American Bicyclists gives this designation to communities that have prioritized bicycling, exhibited by a range of factors including bicycle programs, infrastructure, and mode share.*

WALKING TOTAL TRIP GROWTH SCENARIOS (2016-2030)



3.4.1 Health Benefits

Billing's projected levels of bicycling and walking equate to a great deal of physical activity. The Benefit Impact Model quantifies the existing estimated physically active people and projected increases of mode share. Benefits include newly active people as a result of increased mode share, resulting in improved community health and reduced household healthcare spending. The primary inputs into the health components of the Benefit Impact Model were derived from 2010 to 2014 ACS journey to work data, 2009 NHTS, and historic Safe Routes to School data. Existing bicycle and walk commute data were multiplied by national trip purpose ratios to generate mode split estimates that include all trip purposes. These balanced mode split estimates were indexed against the mode split data of Billings' peer cities and multiplied by various health factors. Table 3.2 tabulates the estimated health benefits.

TABLE 3.2: HEALTH BENEFIT ESTIMATES

Source	Existing	Projected Low-Growth		Projected Mid-Growth		Projected High-Growth	
	Total	Total	Difference	Total	Difference	Total	Difference
Average Annual Bike Trips	4,245,000	5,848,000	1,603,000	10,955,000	6,710,000	17,016,000	12,771,000
Average Annual Walk Trips	15,575,000	18,841,000	3,266,000	20,690,000	5,115,000	31,679,000	16,104,000
Healthcare Cost Savings from Newly Active Persons	**$1,007,000**	**$1,377,000**	**$370,000**	**$2,471,220**	**$1,464,220**	**$3,817,000**	**$2,810,000**

3.4.2 Environmental Benefits

The existing levels of walking and bicycling provide environmental benefits to the community by not generating emissions from vehicle trips. Building off of the health benefits analysis and the mode share growth scenarios, the implications for hydrocarbon, particulate matter, nitrous oxides, carbon monoxide, and carbon dioxide emissions can be estimated. This analysis uses national methodologies to determine trip replacement. Every walking or bicycling trip is not equal to a vehicle trip. Based on a review of air emissions studies, each pound of emissions was assigned an equivalent dollar amount based on how much it would cost to clean up the pollutant or the cost equivalent of how much damage the pollutant causes to the environment. Other potential ecological services associated with the bicycle and pedestrian projects such as water regulation, carbon sequestration, carbon storage, and waste treatment exist but the quantifiable value of these services are negligible. Table 3.3 presents the estimated environmental benefits of active transportation modes.

TABLE 3.3: ENVIRONMENTAL BENEFIT ESTIMATES

Source	Existing	Projected Low-Growth		Projected Mid-Growth		Projected High-Growth	
	Total	Total	Difference	Total	Difference	Total	Difference
CO2 Emissions Reduced (lbs)	6,260,000	8,014,000	1,754,000	11,014,000	4,754,000	18,865,000	12,605,000
VOCs Reduced (lbs)	15,000	19,000	4,000	27,000	12,000	46,000	22,000
Total Environmental Benefits	**$316,000**	**$412,000**	**$96,000**	**$566,000**	**$250,000**	**$879,000**	**$563,000**

3.4.3 Transportation Benefits

Active transportation increases transportation options and access to activity centers for Billings area residents and visitors. Cost savings can be estimated from the reduced costs associated with congestion, vehicle crashes, road maintenance, and household vehicle operations. Using annual vehicle miles travelled (VMT) reduction estimates, which also determined the calculations of the health and environmental savings, transportation-related costs savings were estimated. By multiplying the amount of VMT reduced by established multipliers for traffic congestion, vehicle collisions, and vehicle operating costs, monetary values were assigned to the transportation-related benefits.

TABLE 3.4: TRANSPORTATION BENEFIT ESTIMATES

Source	Existing	Projected Low-Growth		Projected Mid-Growth		Projected High-Growth	
	Total	Total	Difference	Total	Difference	Total	Difference
Annual VMT Reduced	6,337,000	8,111,000	1,774,000	11,148,000	4,811,000	17,321,000	10,948,000
Traffic Congestion Cost Savings	$352,000	$450,000	$98,000	$619,000	$267,000	$962,000	$610,000
Vehicle Collision Cost Savings	$2,106,000	$2,693,000	$587,000	$3,701,000	$1,595,000	$5,751,000	$3,645,000
Household Vehicle Operation Cost Savings	$3,975,000	$5,082,000	$1,107,000	$6,984,000	$3,009,000	$10,852,000	$6,877,000
Total Transportation Benefits	**$6,433,000**	**$8,225,000**	**$1,792,000**	**$11,304,000**	**$4,871,000**	**$17,565,000**	**$11,132,000**

3.4.4 Total Benefits

Further improving the walking and bicycling system in Billings will result in more trips being taken via these modes. Increases in mode share can yield significant annual benefits to Billings and its residents. As summarized in Table 3.5, Billings currently experiences approximately $8.7 million in annual benefits from active modes of transportation, and based on mid-growth projections in walking and bicycling rate increases, could experience a further $1.3 to $25.5 million in additional benefits depending on population growth and varying levels of future mode share increases.

TABLE 3.5: TOTAL BENEFIT ESTIMATES

Source	Bicycling and Walking			
	Existing (2017)	Low Growth Proj.	Mid Growth Proj.	High Growth Proj.
Health Benefits	$1,007,000	$1,377,000	$2,471,220	$3,817,000
Environmental Benefits	$316,000	$412,000	$566,000	$879,000
Transportation Benefits	$7,351,000	$8,225,000	$11,304,000	$17,565,000
Total Benefits	**$8,674,000**	**$10,014,000**	**$14,341,220**	**$22,261,000**
Total Additional Benefits	**--**	**$1,340,000**	**$5,667,220**	**$13,587,000**

By 2030,

BILLINGS, MONTANA

MIGHT REALIZE

WALK TRIPS

10,354,000

MILES WALKED PER YEAR *

That's the equivalent of

395,190

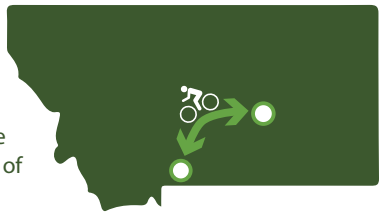
TRIPS AROUND THE PROPOSED BILLINGS MARATHON LOOP TRAIL

BIKE TRIPS

16,432,500

MILES BIKED PER YEAR **

That's the equivalent of



48,330

ROUND TRIPS FROM BILLINGS TO YELLOWSTONE NATIONAL PARK!

REDUCED HEALTHCARE COSTS

$2,471,220

IN ANNUAL HEALTHCARE COST SAVINGS

That's the equivalent of 4,900 trips to the doctor!

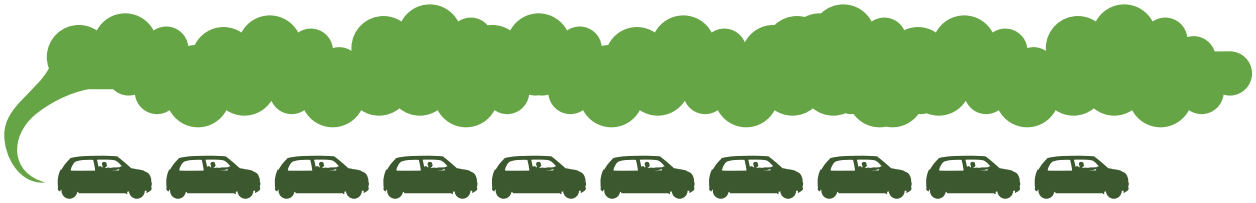
REDUCED VEHICLE CRASHES

$3,701,000

IN ANNUAL COST SAVINGS FROM REDUCED COLLISIONS

REDUCED VEHICLE EMISSIONS

11,014,000 lbs IN REDUCED CO2 VEHICLE EMISSIONS PER YEAR



*Calculated based on median trip distance of 0.5 miles http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3377942/

**Calculated based on 50th percentile score trip distance of 1.5 miles derived from National Household Travel Survey

3.5 NEW BIKEWAY TYPES

To provide low stress connections for bicyclists in areas of high traffic volumes, and increase bicyclist visibility at intersections for greater driver awareness, there are a number of new bikeway treatments that have been implemented across the country. The rapid increase in innovative bikeway design has been driven by the publication of new manuals that provide planners and engineers guidance on how to implement appropriate facilities in varied roadway contexts. The first guide focused on innovative bikeway design was The National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide (2013). This guide offered comprehensive and substantive guidance for cities seeking to improve infrastructure for bicycle transportation. The guide includes a full spectrum of bicycle facility design, from signed routes and bicycle boulevards, to protected bicycle lanes and bicycle signalization. The bikeway treatments in this design guide reflect the current state of modern practice and are found in many cities around the US and internationally.

In recent years, federal and state transportation agencies have published their own manuals providing guidance to transportation engineers and planners. The Federal Highway Administration's (FHWA) Separated Bike Lane Planning and Design Guide was the first federal guide to include national best practice of design strategies to provide separation for one way and two way bike lanes, as well as considerations at driveways, transit stops, parking and loading zones. The guide also details intersection design by specifying signalization, pavement markings, and signage.

The following pages outline bikeway treatments detailed in these guides, which could be applicable as new treatments to improve the on-street bicycle network in the Billings Area.

Missoula, MT two-way separated bike lane

Separated Bike Lanes

Of all on-street bicycle facilities, separated bike lanes offer the most protection and separation from adjacent motor vehicle traffic. Separated bike lanes are bicycle facilities that are physically separated from motor vehicle traffic by a painted buffer and physical barriers such as flexible delineators, curbs, or planters. Parking lanes can also be used as a means of separation if there is a buffer space between the bike lane and the parking lane. Separated bike lanes are ideally placed on streets with few driveways or mid-block access points for motor vehicles. Eight feet is the minimum recommended total width for a protected bike lane, five feet of bike lane and three feet of physical buffer zone.

Bicycle Boulevards

Bicycle Boulevards are local streets with low motorized traffic volumes and speeds that have been designated as bicycle routes. Bicycle boulvevards should have a maximum posted speed of 25 mph and target motor vehicle volumes of less than 1,500 vehicles per day (with a maximum 3,000 vehicles per day). Many streets in Billings exhibit these characteristics already, and minor modifications, such as the addition of signage and pavement markings, could cost-effectively designate key corridors as bicycle boulevards. These improvements, combined with modifications at major intersections, make this type of facility intuitive and comfortable for a wide range of people to ride a bicycle or walk.

Jackson Hole, WY Neighborhood Greenway

Buffered Bike Lanes

Buffered bike lanes are conventional bike lanes that are enhanced through the application of a diagonally striped buffer space. While not providing physical separation, this creates a wider buffer area between vehicles and bicyclists than a conventional six inch bike lane stripe. In areas with high parking turnover, the buffer can be located on the parking side of the bike lane to mitigate potential 'dooring' issues, when a car door opens and extends into the path of travelling bicyclists. By providing the buffer, bicyclists ride further away from vehicles, and this facility type provides a higher level of comfort compared to conventional bike lanes as traffic volumes and speeds increase.

Billings, MT Buffered Bike Lane

Intersection Treatments

There is a range of intersection treatments that can be implemented to facilitate crossings for bicycles. The keys to effective intersection design are increasing motor vehicle driver awareness that a bicyclist will be moving through the intersection, increasing the predictability of bicycle and motor vehicle movements through the intersection, and increasing the visibility of bicycles, so as they approach and move through the intersection, they remain in the sight lines of drivers. A range of bikeway intersections treatments have been developed that achieve these goals and increase safety as bicyclists move through intersections.

Missoula, MT Bicycle Intersection Treatment

CHAPTER 4:
RECOMMENDATIONS

4.1 INTRODUCTION

This chapter presents network recommendations followed by program and policy recommendations, which will support the development and maintenance of the proposed bikeways, trails, and crossing improvements.

The development of the network recommendations was an iterative and collaborative process. The bikeway and trail system must establish seamless, connected routes that link people to their destinations. Recommended improvements must consider the existing environment, as well as the planned or expected future context. The needs of all roadway users, including the safety and comfort of people using trails and travelling by bicycle, must be balanced with roadway characteristics and corridor constraints. The outcome of this collective process, which necessarily involves allocating a finite amount of overall space among roadway users, represents a practical approach to improving the Billings Area's bikeway and trail network over time. The majority of this plan's recommendations provide more detailed guidance including roadway cross-sections and various options where multiple roadway configurations may exist. For example, streets with excess road space could be configured in a number of ways, including a wide bike lane, a buffered bike lane or even a separated bike lane. Some recommendations are conceptual, and additional coordination will be needed for implementation. All recommendations are subject to change and refinement as site conditions and development patterns change, and as other adjacent or intersecting projects are implemented. Additionally, some projects may require feasibility studies to verify routing or applicability.

Linear and spot recommendations are then followed by other infrastructure recommendations that will enhance the network, including trailhead amenities and wayfinding. Recommended infrastructure improvements are then followed by program recommendations, which should continue to be implemented to maximize the return on infrastructure investments. Programs include education, encouragement, evaluation, enforcement, and equity programs. Specific detail for improving the non-motorized count program is included as well. The memorandum concludes with policy recommendations that can be implemented to ensure facilities are maintained and implemented according to best practices.

NETWORK RECOMMENDATIONS DEVELOPMENT

1 DATA COLLECTION & FIELDWORK

EXISTING FACILITIES | PREVIOUSLY PROPOSED FACILITIES | DESTINATIONS | BARRIERS

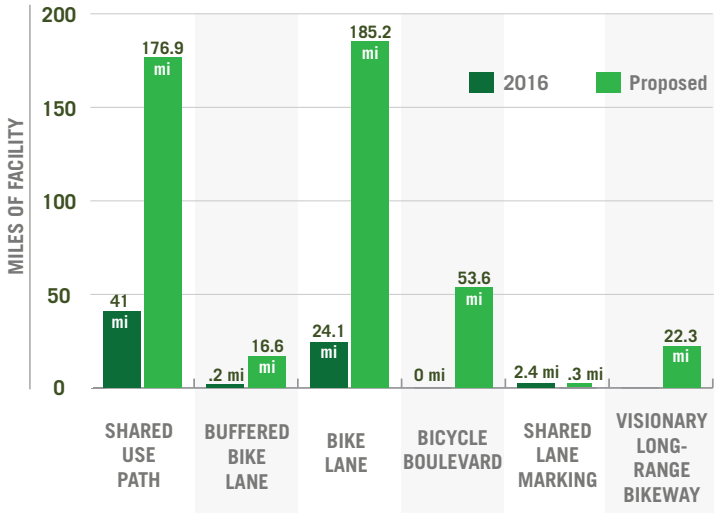
2 NEEDS ANALYSIS

MAPPING CRASH DATA | COMMUNITY IDENTIFIED NEEDS | FACILITY CONNECTIVITY GAPS | LEVEL OF TRAFFIC STRESS

3 SYSTEM DEVELOPMENT

REVISE PREVIOUSLY PROPOSED | CONNECT EXISTING FACILITIES | IDENTIFY TRAIL CONNECTIONS | ADDRESS BARRIERS

MILEAGE OF EXISTING AND PROPOSED FACILITIES



4.2 BIKEWAY AND TRAIL RECOMMENDATIONS

Overall recommendations are classified into several categories and sub-categories:

Trail Recommendations

All trail recommendations should be implemented as shared use paths, in conformance with AASHTO guidelines. Three categories are included:

- Shared Use Path (Existing Public Right-of-Way)
- Shared Use Path (Conceptual)
- Shared Use Path (Platted)

Bikeway Recommendations

Recommendations within this category are intended to be implemented on-street and include the following facility types:

- Bicycle Boulevards
- Bicycle Boulevard Future
  (To be constructed when road is built)
- Buffered Bicycle Lane
- Bike Lane
- Bike Lane Future
  (To be constructed when road is built or widened)
- Shared Lane Marking
- Visionary Long-Range Bikeway

While many of these facility types were presented in the 2011 plan or exist currently in the Billings Area, some new facility types are recommended as part of this plan, including bicycle boulevards and buffered bicycle lanes (which can also be implemented as separated bike lanes). Visionary long-range bikeways are depicted along constrained corridors where future conditions would need to change to permit implementation. The new facility types are described in section 4.2.1: New Facility Recommendations.

Spot Recommendations

Recommended intersection and crossing improvements may include signals, beacons, grade separation, bridges, or tunnels. Spot improvements will be needed to support existing bikeways as well as improve travel along new bikeways. Crash analysis showed that 64 percent of crashes involving bicycles occurred at intersections. Improving safety network-wide will require additional safety improvements and the utilization of national best practices. Common design principles leading to comfortable and safe intersections for bicyclists and trail users include the following:

- **Increase conspicuity** of bicyclist by positioning them in highly visible locations
- **Increase awareness** of potential conflicts through defined conflict areas, markings, and signs
- **Isolate conflicts** so that they can be negotiated separately from the intersection itself. Also, **reduce or remove conflicts** through geometry, signaling and other treatments
- **Clearly assign priority** so that all road users understand who has the right-of-way

Additional guidance for the design of intersection treatments can be found in the NACTO Urban Bikeway Design Guide, and the FHWA Small Town and Rural Mutlimodal Networks guide. Map 4.1 displays the proposed facility recommendations.

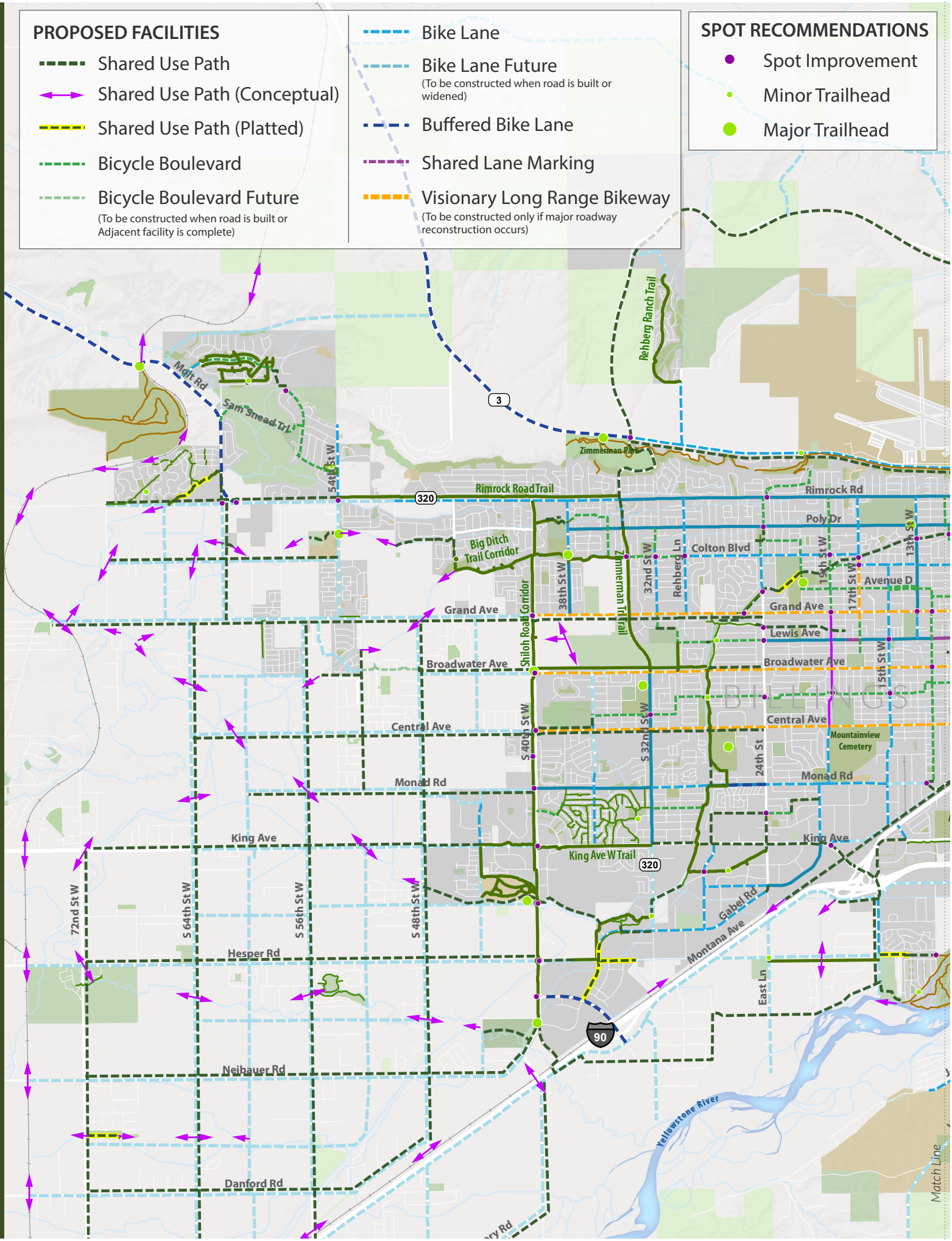
4.2.1 New Facility Recommendations

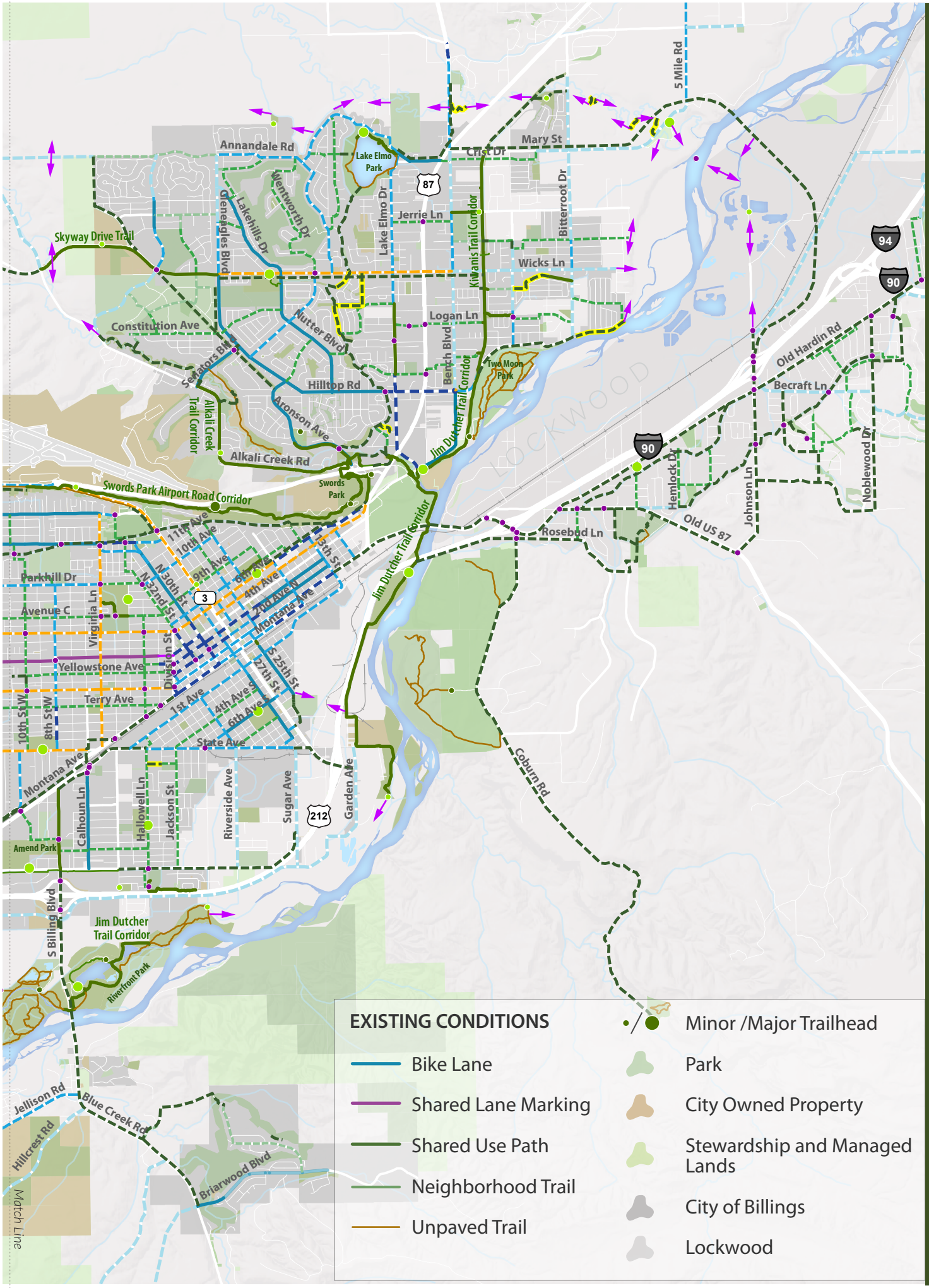
This Plan Update introduces new types of on-street bikeway facilities that have been implemented successfully in communities across the United States. These facilities include bicycle boulevards and buffered or separated bike lanes.

Bicycle Boulevards

One of the facility types with the highest potential to quickly and cost effectively expand the low-stress bikeway network is a system of bicycle boulevards. Bicycle boulevards are streets with low motorized traffic volumes and speeds, designated and designed to give bicycle and pedestrian travel priority. Bicycle boulevards use signs, pavement markings, and speed and volume management measures to discourage additional through trips by motor vehicles and create safe, convenient crossings of busy arterial streets.

Many local streets with low existing speeds and volumes offer the basic components of a safe bicycling and walking environment. These streets can be enhanced using a range of design treatments, tailored to existing conditions and desired outcomes. As the streets themselves are not expensive to designate as bicycle boulevards, it is recommended that the Billings Area designate the entire (or vast majority of the) recommended network as a single project. The community can then continue to improve the network through implementation of many of the spot improvements as resources permit.


PROPOSED FACILITIES
Shared Use Path
Shared Use Path (Conceptual)
Shared Use Path (Platted)
Bicycle Boulevard
Bicycle Boulevard Future
(To be constructed when road is built or Adjacent facility is complete)
Bike Lane
Bike Lane Future
(To be constructed when road is built or widened)
Buffered Bike Lane
Shared Lane Marking
Visionary Long Range Bikeway
(To be constructed only if major roadway reconstruction occurs)
SPOT RECOMMENDATIONS
Spot Improvement
Minor Trailhead
Major Trailhead
Rehberg Ranch Trail
Zimmerman Park
Rimrock Road Trail
Rimrock Rd
Poly Dr
Colton Blvd
Avenue D
Grand Ave
Lewis Ave
Broadwater Ave
Central Ave
Monad Rd
King Ave
King Ave W Trail
Hesper Rd
Neibauer Rd
Danford Rd
Big Ditch Trail Corridor
Shiloh Road Corridor
Zimmerman Trail
Mountainview Cemetery
Gabel Rd
Montana Ave
East Ln
Yellowstone River
Match Line
54th St W
72nd St W
S 64th St W
S 56th St W
S 48th St W
S 40th St W
38th St W
32nd St W
Rehberg Ln
19th St W
17th St W
15th St W
13th St W
24th St
3
320
90
Molt Rd
Sam Snead Trl


MAP 4.1: BIKEWAY AND TRAIL RECOMMENDATIONS
Annandale Rd
Lake Elmo Park
Mary St
Christ Dr
5 Mile Rd
Wentworth Dr
Glenedgles Blvd
Lakehills Dr
Lake Elmo Dr
Jerrie Ln
Kiwanis Trail Corridor
Bitterroot Dr
Skyway Drive Trail
Wicks Ln
Constitution Ave
Nutter Blvd
Logan Ln
Senators Blvd
Bench Blvd
Two Moon Park
Old Hardin Rd
Becraft Ln
Hilltop Rd
Trail Corridor
Alkali Creek
Aronson Ave
Jim Dutcher Trail Corridor
Alkali Creek Rd
Swords Park Airport Road Corridor
Swords Park
Hemlock Dr
Johnson Ln
Noblewood Dr
Rosebud Ln
Old US 87
11th Ave
10th Ave
9th Ave
8th Ave
4th Ave
2nd Ave N
3rd St
Parkhill Dr
N 30th St
N 22nd St
Avenue C
Virginia Ln
Montana Ave
Yellowstone Ave
Dicklon St
S 25th St
27th St
Terry Ave
1st Ave
4th Ave S
6th Ave
10th St W
8th St W
State Ave
Coburn Rd
Montana Ave
Calhoun Ln
Hallowell Ln
Jackson St
Riverside Ave
Sugar Ave
Garden Ave
Amend Park
S Billing Blvd
Jim Dutcher Trail Corridor
Riverfront Park
Jellison Rd
Blue Creek Rd
Hillcrest Rd
Briarwood Blvd
Match Line
87
3
212
94
90
90
LOCKWOOD
EXISTING CONDITIONS
Bike Lane
Shared Lane Marking
Shared Use Path
Neighborhood Trail
Unpaved Trail
Minor /Major Trailhead
Park
City Owned Property
Stewardship and Managed Lands
City of Billings
Lockwood

Jackson Hole, WY, bicycle boulevard network has been implemented economically, using signage and pavement markings.

Metrics

It is recommended that the City of Billings adopt performance metrics such that the eighty-fifth percentile speeds along bicycle boulevards do not exceed 25 mph and that the number of vehicles per day travelling over them does not exceed 1,500. The City should periodically conduct observations to assess the performance of the facilities. If speeds and volumes exceed the desired range, the City should explore implementation of various speed and volume management treatments to improve the conditions so that they provide a high-quality experience for bicyclists and pedestrians.

Needed City and County Policy Changes

Creating a network of bicycle boulevards may require changes to policies. The following actions may be required before work can begin on the design and construction of the boulevard network.

Wayfinding for Bicycle Boulevards

Signs and pavement markings comprise the basic elements of a bicycle boulevard and both provide wayfinding guidance to bicyclists. These elements differentiate the facility from other local streets and identify the bicycle boulevard as a shared street that has been optimized for bicycle and pedestrian travel.

While wayfinding should be implemented system wide in accordance with recommendations in Section 4.3: Wayfinding, distinct sign colors or branding elements could be used to distinguish bicycle boulevard wayfinding from other types of bikeway and trail signage. The implementation of bicycle boulevard signage should adhere to best practices described in Section 4.3, and could include distance to destination information, including both mileage and travel time estimates.

Pavement markings increase visibility of bicycle boulevards and reinforce that users are on a bicycle facility. Pavement markings, and the chevron arrows, can also be used to direct riders through jogs in the route. Pavement markings vary widely by jurisdiction. Some communities develop unique, custom markings to reinforce the branding of the bicycle boulevard network. However, custom marking development does require FHWA experimentation approval or acceptance of increased municipal liability. If custom markings are not desirable, shared lane markings should be used.

Separated Bike Lanes

Several of the on-street recommendations are coded as buffered bicycle lanes. These facilities could be implemented using only striping to buffer bicyclists from motor vehicles or could be enhanced through the provision of a physical barrier that provides added 'separation' between the bicyclist and motor vehicle traffic.

Separated bike lanes are protected from traffic by a physical barrier of some kind and are also distinct from the sidewalk. Some separated bike lanes are at street level, while others are raised. There are many different types of physical separation that can be used for separated bike lanes, including raised curbs, parking, stationary or flexible bollards, and other streetscape elements, such as planters. The applicability and feasibility of different types of separation depend on traffic volumes, speeds, driveway and cross street frequency, presence and type of on-street parking, maintenance capacity, and pedestrian volumes. Separated bike lanes can be configured for either one-way or two-way travel.

This Boulder, CO, one-way separated bike lane uses flexible posts and curbed intersection treatments to separate bicyclists from motor vehicles.

Trailheads

Good access to the trail system is a key element to its future success. Trailheads serve the local and regional population. They provide the public with important access points to the trail system especially near key interest points. They also provide information to help the user navigate the trail system, identify important locations and destinations, guide and orient them along the trail system.

Major Trailheads

Major trailheads are gathering points with high usage located at iconic destinations that trail users would typically drive to. They typically have a larger number of amenities that include:

- Parking including Pedestrian access
- Restrooms
- Drinking fountain
- Shelter with seating
- Bike rack
- Trail Information kiosk including: Maps, Trail rules and protocol, and an Information posting area
- ADA accessibility to the site and amenities
- Trash and pick up stations for animal waste

These trailheads would typically be located 3 to 5 miles apart along the Marathon Loop Trail system and at major centers within the City such as at Community and Regional Parks, mass transit hubs, the zoo, major shopping, employment and entertainment centers, etc.

Minor Trailhead

Minor Trailheads are gathering points at less notable locations that have less intensive usage. Trail users would typically access these locations by driving. These trailheads have fewer amenities that include:

- Limited parking
- Pedestrian access
- Bench
- Bike rack
- Trail information Kiosk
- ADA accessibility to the site and amenities
- Trash and pick up stations for animal waste

These trailheads would typically be located within 1 to 3 miles from other trailheads at neighborhood parks and other destinations such as minor points of interest, airport, ceneteries, shopping, employment and entertainment centers, etc.

4.3 WAYFINDING RECOMMENDATIONS

Wayfinding, for the purposes of this plan, is defined as a system of signs that provide navigational assistance to bicyclists, pedestrians and trail users including information about destinations, travel distances, and other information about the system.

In the Billings Area, wayfinding has primarily been implemented ad hoc by different agencies or groups, absent of a guiding document. The Signage Framework Plan, commissioned by Billings Parks, Recreation and Public Lands and completed in 2011, established a consistent aesthetic for a family of wayfinding signs for the off-street trail and park system. While this provides navigational assistance for people travelling along the community's trails and within parks, the signage was not designed for on-street application. This section includes recommendations to develop on-street signage (primarily on the bicycle boulevard network) to complement the Framework Plan signage. Additionally, this section identifies additional navigational elements that can be implemented on trails, including kiosks and pavement markings. Wayfinding should follow five wayfinding principles based on findings from research and best practices.

WAYFINDING PRINCIPLES

1. CONNECT PLACES

Facilitate travel between destinations and provide guidance to new destinations

2. KEEP INFORMATION SIMPLE

Present information simply, using clear fonts and simple designs, so that it can be understood quickly

3. MAINTAIN MOTION

Be legible and visible for people moving so that they can read the signage without stopping

4. BE PREDICTABLE

Standardize the placement and design of signs so that patterns are established and the signage system becomes predictable

5. PROMOTE ACTIVE TRAVEL

Encourage increased rates of active transportation by helping people to realize they can use the bikeway and trail network to access the places they want to go

4.3.1 Existing Conditions and Past Plans

The Framework Plan established a consistent aesthetic for a family of wayfinding signs, including gateway markers, interpretation signs, and directional signs, and was intended to result in a family of signage that would be installed across the Billings Area. The Plan established standard materials, colors, branding, fonts and design details. The signs developed through the Framework Plan are designed to be placed off-street. While this provides navigational assistance for people travelling along the community's trails and within parks, the signage was not designed for on-street application.

On-street signage should comply with guidance provided by the *Manual of Uniform Traffic Control Devices* (MUTCD). While there is flexibility allowed with the designs of signs, many basic requirements exist. The signs developed through the Framework Plan represent a positive step forward to standardize signage in the community. Additional work is needed to create on-street signage for the proposed bicycle boulevards that compliment the signs detailed in the Framework Plan.

4.3.2 Wayfinding Best Practices

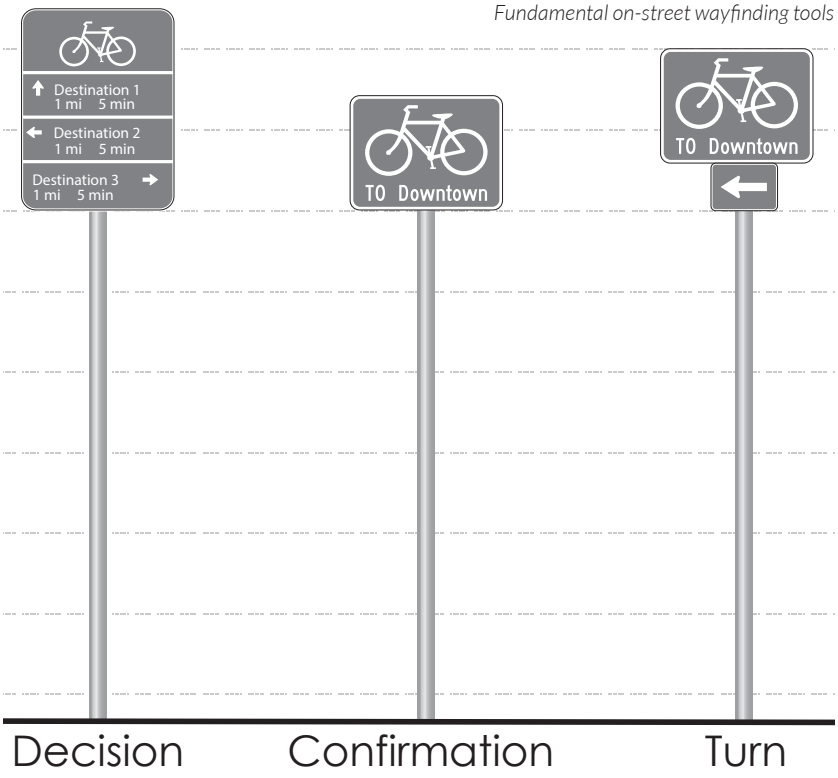
Wayfinding systems are comprised of two categories of signage: fundamental wayfinding elements and enhanced navigational elements.

Fundamental Navigational Elements

Fundamental elements consist of decision signs, confirmation signs, and turn signs. These sings are intended to be implemented on both bicycle boulevards and trails, and since they will be applied on-street, should conform with MUTCD requirements. Signage elements should include distance to destination information, including both mileage and estimated travel time.

The Signage Framework Plan established a consistent aesthetic for a family of wayfinding signs, including gateway markers, interpretation signs, and directional signs, and was intended to result in a family of signage that would be installed across the City of Billings.

Fundamental on-street wayfinding tools



Additional Enhanced Navigational Elements

The work completed in the Framework Plan can be used as a basis for the development of fundamental wayfinding elements for the Billings Area. For instance, the brown and green colors used in the Framework Plan signs are allowed by MUTCD; however, the tan color is likely too close to the restricted color yellow and could not likely be used in the development of the fundamental wayfinding elements. While the parks and recreation logo is appropriate for signs along shared-use paths and off-street routes, more generic signs are more appropriate for on-street bicycle boulevard wayfinding.

Enhanced Navigational Elements

Enhanced navigational elements provide additional wayfinding assistance beyond decision, confirmation and turn signs for on-street and off-street bikeway networks. Signs included in this category are: 1) mile markers, 2) gateway markers, 3) interpretive signage, 4) pavement markings, and 5) map kiosks.

Designs for mile markers, gateway markers and interpretive signage are presented in the Framework Plan. Designs for two additional elements, pavements markings and kiosks, should be created. Pavement markings are an ideal tool to provide navigational assistance along a bicycle boulevard or trail route, while reducing sign clutter. Map kiosks, which tend to be located at trailheads and downtown locations, provide people with information about the surrounding area, amenities, and bikeway and trail routes. Kiosks may also include orientation maps.

4.3.3 Wayfinding Next Steps

Implementing more wayfinding along trails and proposed bicycle boulevards would help people navigate the system more easily. To achieve this end, the Billings Area should develop a wayfinding plan to define wayfinding for the trail and bicycle boulevard route systems. This plan would carry forward the work and design elements completed in the Framework Plan. Key steps in the development of this plan should include:

- Identify destinations that should be signed to
- Identify trails and bicycle boulevard routes to be signed
- Adopt standard placement practices for wayfinding signs
- Install signage along priority routes

Planning and implementing a trail and bicycle boulevard wayfinding system following best practices would make Billings consistent with other cities in Montana that have developed sign designs (Missoula and Helena) and implemented on-and-off street non-motorized wayfinding signage (Bozeman).

4.4 PROGRAM RECOMMENDATIONS

Equally important as providing bikeway and trail infrastructure (or engineering improvements) is ensuring that users are familiar with the treatments and know how to use them. The additional four Es address these factors. **Education** programs targeting the community are recommended to reduce barriers to bicycling and trail use. Similar to education programs, **encouragement** programs provide incentives and benefits to increase rates of active transportation. **Enforcement** programs help to provide greater compliance to the "rules of the road," and **evaluation** programs track progress and statistics related to bikeway and trail use. This section presents the status of programs recommended in the 2011 Plan, other programs not specifically recommended in this Plan, and new program recommendations, grouped by 'E' category. For each program, the name, description, current status and future recommendation is provided. An additional 'E' category, **Equity**, is introduced in this section as well, along with existing and new programs for this category. This review of programs emphasizes that the Billings Area has been very successful in implementing programs

THE FIVE PROGRAM Es

Education programs give people of all ability levels the confidence to use bicycle facilities and trails, and teaches travelers on how to interact with each other predictably.

Encouragement programs create a culture that supports bikeway and trail use.

Enforcement programs ensure all roadway users comply with the 'rules of the road'.

Evaluation programs establish benchmarks and track statistics related to bikeway and trail use.

Equity programs facilitate equitable access to affordable and reliable transportation options for traditionally underserved populations.

TABLE 4.2: STATUS OF BILLINGS AREA EDUCATION PROGRAMS

Program Name	Program Description	Status	Future Recommendation
Bicycling Skills Courses (*2011 Plan Recommendation*)	Provide bicyclists with needed road and riding skills	Iterations of the program have been successfully implemented at the elementary school level, through the Kids in Motion, Waves and Wheels, Cycling Savvy Class and various programs by the Lockwood Pedestrian Safety District. Overall, there has been limited program interest at the adult level.	Continue to implement program for children of all ages, and make program available annually to adults. Coordinate their efforts to establish best practices and reduce administration and program development costs.
Bicycling Legal Guide (*2011 Plan Recommendation*)	Educate the public about the legal rights and responsibilities of bicycling	Pamphlets printed by Montana Department of Transportation and Bike Walk Montana, and have been distributed throughout the community.	Continue to distribute pamphlets at civic buildings, bike shops and other retail shops.
Lights On Campaign (*2011 Plan Recommendation*)	Encourage bicyclists to use lights after dark	An awareness campaign and light distribution was launched by a community partner and Lockwood has distributed lights to children	Continue campaign annually. Investigate new mediums to share information, such as social media and internet radio stations, and expand the program to the entire Billings Area.
Road User Respect Campaign (*2011 Plan Recommendation*)	Increase respectful behavior between bicyclists, pedestrians and motorists	Billings TrailNet and the City implemented the "Take the Hi Road" Campaign	Continue campaign annually. Investigate new media to share information, such as social media and internet radio stations.
Share the Trail Campaign (*2011 Plan Recommendation*)	Encourage responsible, respectful behavior by trail users	Not yet attempted	Provide information about sharing the trail at trailheads. Integrate share the trail campaign goals into Take the Hi Road Campaign.
Bicycling and Trails Website (*2011 Plan Recommendation*)	Provide Billings bicycling information on a single website	The City of Billings Planning Division hosts this information. http://ci.billings.mt.us/2158/Active-Transportation	Continue to update website with new maps, events and other information.
School Health Champions Toolkit	Create a toolkit for healthy students that includes information on Safe Routes to School and Walk/Bike to School activities.	RiverStone Health is preparing a toolkit	This program will help children to understand safe routes to school from a young age. Establishing healthy travel habits young is important to influencing life-long behavior.
Walk Bike Ambassador Programs	Walk Bike Ambassadors help people who are not yet comfortable walking and bicycling alone to learn from someone who is. These programs are appropriate for both children and for adults. Websites can be established to match ambassadors with interested citizens.	New program	This program helps to remove the psychological barriers to walking and biking by teaching people safe riding skills and building confidence. Student interns or volunteers could potentially be identified to become Walk Bike Ambassadors.

TABLE 4.3: STATUS OF BILLINGS AREA ENCOURAGEMENT PROGRAMS

Program Name	Program Description	Status	Future Recommendation
Bike Month (*2011 Plan Recommendation*)	Encouraging bicycling to work and school through fun, social activities and incentives	Targeted events throughout a month have been completed by community partners. Schools have had their own events, but they have been short in duration (i.e., lasting only a week or day)	Continue to promote and grow awareness for bike month. Encourage local businesses to support bike month by providing commute breakfast and coffee stations.
SmartTrips Program (*2011 Plan Recommendation*)	Encourages residents or employers in a target area to order customized information packets containing travel information at homes or workplaces, along with an incentive gift of their choice.	Not yet attempted	SmartTrips programs are effective when bikeway and trail infrastructure is well established. Billings existing facilities are relatively disconnected. This program should be revisited after more facilities have been implemented.

TABLE 4.3: STATUS OF BILLINGS AREA ENCOURAGEMENT PROGRAMS (CONTINUED)

Program Name	Program Description	Status	Future Recommendation
Municipal Bike Fleet (*2011 Plan Recommendation*)	Promote work-related trips by bicycle; reduce daytime auto trips	Not yet attempted	Since the 2011 Plan, Bike Share systems in the United States have proliferated. While these systems were initially implemented primarily in large U.S. cites, they are now being implemented in small to mid-size cities like Billings. Rather than implement a municipal bike fleet, the City/County should assess the feasibility of implementing a bike share system.
Bicycle Benefits Program (*2011 Plan Recommendation*)	Create incentives for bicycling by partnering with local businesses to provide discounts on purchases for registered bicyclists.	In the 2011 Plan, it was indicated that the Billings Bicycle Club had launched the program. However, in 2016, no programs are shown as active in Billings.	Bicycle Benefits program remain an effective way to encourage people to bicycle more. Community partners should coordinate to establish a bicycle benefits program in Billings. Bike shops, coffee shops, and take-out restaurants are typically willing partners of such initiatives. Bicycle Benefits could also be promoted during bike to work day and bike month to raise additional awareness of the program, and reward bicyclists.
Bicycle and Trails Map (*2011 Plan Recommendation*)	Provide route and facility information and highlighting walking and bicycling destinations	At least three different entities are distributing at least five different maps, including one on-line interactive map, hosted by Billings TrailNet.	Entities should coordinate to ensure that the maps distributed have consistent information. A meeting should be held annually to revise maps as needed. TrailNet should continue maintaining the online interactive map on their website.
Safety Equipment Use Encouragement	Encourage the use of bicycle lights, helmets and reflective clothing by promoting the use of this equipment and hosting equipment giveaways	Local donors and hospitals have partnered to give away helmets, and the Lockwood Pedestrian Safety District has distributed reflective bands.	Organizations and school districts should coordinate their efforts, sharing resources, establishing best practices and program development costs
Organized Bicycle Rides	Organize critical mass rides to raises awareness of bicyclists in the community	The Tour de Fleur, oriented towards women bicyclists, had its inaugural ride in May 2016, and the ride is scheduled to be held every spring	Rides such as the Tour De Fleur should be continued, and additional all-inclusive critical mass rides should be organized in the community
Fun Runs	Use of trails for running/walking events.	The City Parks Department is currently organizing these efforts.	Encourages use of the trails, and can provide revenue for maintenance of the system.
Exploring Billings Trails	Guided tours of various trails throughout the community.	City Parks Department Sponsors are currently promoting this effort	Encourages use of the trail system, and promote trails in the community.
Conduct walkability, accessibility and park audits	Conduct audits in the city's parks to assess accessibility conditions, lighting and improve safety	New program	To identify assets and barriers in park access, safety and connectivity to other parks
Regional Coordination of Safe Routes to School	Currently, Safe Routes to School (SRTS) programs are coordinated by individual school districts throughout the community, and other organizations. While SRTS efforts focus on transportation and behaviors at individual schools, this initiative would provide regional coordination of the SRTS activities.	New program	A regional approach for SRTS can help practitioners coordinate their efforts better, establishing best practices and reducing administration and program development costs

TABLE 4.3: STATUS OF BILLINGS AREA ENCOURAGEMENT PROGRAMS (CONTINUED)

Program Name	Program Description	Status	Future Recommendation
Commute Trip Reduction and Employer Incentives Program	Employers provide incentives for employees to ride their bicycles to work, such as an annual allowance to spend on bicycle repairs or purchasing a new bicycles	New program	Provides people with a monetary incentive to bicycle
City of Billings Bicycle Friendly Business (BFB)	Encourage employees to commute by bicycle through programs and on-site bicycle parking.	New program	Helps to emphasize that the City of Billings, which is a major local employer, is committed to supporting employees who commute via bicycle.
Open Streets Events	Identify opportunities to close down a street to motor vehicle traffic for a period on the weekend, and encourage people to walk and bike in the street	New program	Helps to build a community that supports walking and bicycling, and emphasizes that streets are public spaces for all users.

TABLE 4.4: STATUS OF ENFORCEMENT PROGRAMS

Program Name	Program Description	Status	Future Recommendation
Law Enforcement Training (*2011 Plan Recommendation*)	Educate law enforcement officers on bicycle laws and safety	Billings' bike officers attend a one-week training through LEBA (Law Enforcement Bicycle Association). Non-bicycle officers receive basic knowledge at the academy and while in field training.	LEBA training should be continued for all bike officers. LEBA training should also be given to a percentage of the overall force annually, so that more officers have the opportunity to receive the training.
Diversion Class (*2011 Plan Recommendation*)	Class can be taken in lieu of paying a ticket for a bicycle and pedestrian related traffic violations, such as a bicyclist running a stoplight or a motorist speeding through a school zone.	Not yet attempted	A pilot diversion class should be established that focuses on motorists speeding through school zones. Officers should also be placed quarterly at known locations where bicyclists do not follow traffic laws. Officers should stop bicyclists who do not follow the laws and issue them warnings. The same officers should practice positive reinforcement, giving coupons or bike lights to people who they observe obeying the traffic laws.
Volunteer Bike Patrol Unit (VBPU)	The VBPU patrols the city's bike trails and parks and leads bike patrols in identified hot spot areas to report suspicious activities. Volunteers more commonly serve as "trail ambassadors," providing a positive presence on the trail system to help people feel safe.	In 2010, a Volunteer Bicycle Patrol Unit (VBPU) was approved by the police administration. This program is currently managed through the City Parks Department. Twenty people were trained in this program in 2016, with twelve active participants.	Continue to provide support for the growth and development of this program. Encourage more volunteers to become active participants with the program.
Speed Feedback Signs	Install speed feedback signs on corridors where speeding is a documented issue, and in school zones. Refer to the City Policy on Traffic Calming.	Ongoing	Speed Feedback signs have been shown to reduce speeding, and are a cost effective way to increase speed compliance where speeding is an issue
Increasing Park Safety	Work with the design and development community to utilize Crime Prevention Through Environmental Design principles.	New program	Safer built environments was a high priority for people wanting to be active.
Increase Traffic Enforcement	Increase the budget for traffic enforcement in the City of Billings to allow additional officers to be assigned to traffic detail.	New program	The community consistently stated that traffic enforcement for all road users in the Billings Area was perceived to be minimal. More enforcement could help to mitigate this perception.

TABLE 4.4: STATUS OF ENCOURAGEMENT PROGRAMS (CONTINUED)

Program Name	Program Description	Status	Future Recommendation
Park Rangers	A 1.0 FTE has been requested by the Parks Department for a law enforcement officer in parks and trails. This FTE would have enforcement responsibilities for the trail system.	New program. A supplemental budget request has been submitted for this position in the Police Department, paid for by the Parks Department.	Parks Department should be granted the FTE to conduct patrol of the parks system

TABLE 4.5: STATUS OF EVALUATION PROGRAMS

Program Name	Program Description	Status	Future Recommendation
Bicycle-Friendly Communities Designation (*2011 Plan Recommendation*)	Assess progress and celebrate success made towards improving bicycling conditions	Billings has a bronze Bicycle Friendly Community (BFC) designation from the League of American Bicyclists (LAB) in 2016.	Billings should reapply annually for the LAB BFC designation. Billings should review feedback and continually make improvements to increase their BFC Level Designation.
Bicycle and Trails Report Card (*2011 Plan Recommendation*)	Assess progress towards achieving the goals of this Plan	The Complete Streets Benchmark Report documents achievements for the City of Billings. The Lockwood Pedestrian Safety District also evaluates the effectiveness of their strategic goals.	The City of Billings should develop an annual Bicycle and Trails report card, to be presented to City Council. The report should include total miles of bikeways and trails implemented, data on bikeway and trail use, and crash data that identifies issue areas.
Crash Reporting Policies (*2011 Plan Recommendation*)	Create reliable database of bicycle and pedestrian crashes	This was discussed during the Community Transportation Safety Program, but did not become a primary focus area of the plan	The City of Billings should continue to ensure crashes are geocoded, and review data annually for trends and hotspot issue areas.
Establish Comprehensive Counts Program	Implement the recommendations in Section 4.5 to continue collecting data on bicycling and trail use using manual and automated counters.	Program has been operational since the early 2000s	Data on walking in bicycling is necessary to track growth in these modes and determine where investments are necessary.
Bicycle and Pedestrian Advisory Committee	This committee provides recommendations to the City and County regarding non-motorized transportation matters in the community.	The group meets monthly, and is comprised of city, county, and planning board representatives.	Encourage members of the public and law enforcement officers to become active participants.
Vision Zero	The goal of the program is to reduce traffic fatalities and serious injuries to zero.	This program is being led by the Montana Department of Transportation, and the Billings MPO Community Transportation Safety Plan, which was adopted in 2016, includes a Vision Zero policy.	The implementation of the recommendations in this Plan will help to support the goals of Vision Zero.
Measuring the Street	Before and after the installation of new bikeway or trail facility, collect data on bicycle, pedestrian and motor vehicle volumes, crashes, and motor vehicle speeds.	New program	Data can be used to evaluate how effective new bikeways or trails are in achieving goals

TABLE 4.6: NEW EQUITY PROGRAM RECOMMENDATIONS

Program Name	Program Description	Status	Future Recommendation
Bicycle Giveaways	Provide bicycles, bike education, bike safety equipment, and locks to low-income children, veterans,people in substance abuse programs, and people in half-way houses.	Billings TrailNet is currently promoting this program. Other partners include Kiwanis Club, Lockwood PTA and Edward Jones, among others	Many people in Billings do not have access to private vehicles, and the transit service may not work well given their schedules. Providing bicycles to these vulnerable populations will help to increase their mobility.

TABLE 4.6: NEW EQUITY PROGRAM RECOMMENDATIONS (CONTINUED)

Program Name	Program Description	Status	Future Recommendation
Bicycling Advocacy	Educate local and state governments about the needs of active transportation users.	Billings TrailNet is currently promoting this program.	State and local governments are the primary sources of funders for non-motorized transportation. Engaging them in a conversation about the importance of non-motorized transportation can help to increase dedicated funding for infrastructure improvements.
All-inclusive Trail Events	Provide an opportunity for people with disabilities to use trails with temporary infrastructure (shelter, water stops, etc.)	New program	Trails should be available to all users, despite their ability levels. All-inclusive events help to raise awareness about the needs of people with different abilities.

4.4.1 Program Recommendations Conclusions

Both the City of Billings and Yellowstone County have been positively impacted by an increased focus on programs for non-motorized transportation. The interest in both program development and implementation has spread the responsibility throughout several community partners, each with their own focus and area of expertise. All facets of active transportation are targeted through the current program menu: bicycling, recreational trail use and walking. Further emphasis has been placed on safety in addition to encouragement and education.

The great majority of the programs recommended in the 2011 plan have already been implemented with success. Many more programs have been instituted as the community continues to mature and non-motorized transportation modes increases. At least two school districts are implementing Safe Routes to Schools programs, which within themselves, encompass the spectrum of programs. The integration of healthcare professionals into these efforts have provided evidence-based outcomes for active transportation.

Many of these programs exist without agency staff or taxpayer support. The diversity of non-profit and service organizations that are embracing their roles as advocates and active participants has increased as well. Together, these programs emphasize the community's commitment to creating a culture that supports non-motorized transportation use.

Program recommendations should be structured so that people of all ages are able to enjoy the Billings Area on foot or on bike.

4.5 BICYCLE AND PEDESTRIAN COUNT RECOMMENDATIONS

This section describes recommendations for continuing and improving non-motorized counts within the Billings Area. Recommendations pertain to 1) enhancing the existing trail count program, 2) standardizing the community's on-street count program, and 3) developing an annual counts report that can also be used within the Complete Streets Progress Report. These recommendations will result in a program that creates consistent data across the Billings Area. Data collected should be presented in an annual counts report to City Council.

4.5.1 Trail Counts

The Billings Area trail data collection program was initiated in 2003. Since then, the program has evolved from exclusively using manual counts to using automated trail scanners. In addition to using more sophisticated technology, the number of sites counted has steadily increased. Today, multi-year data is available for twenty-seven trail locations. The following recommendations are intended to improve Billings' trail count program.

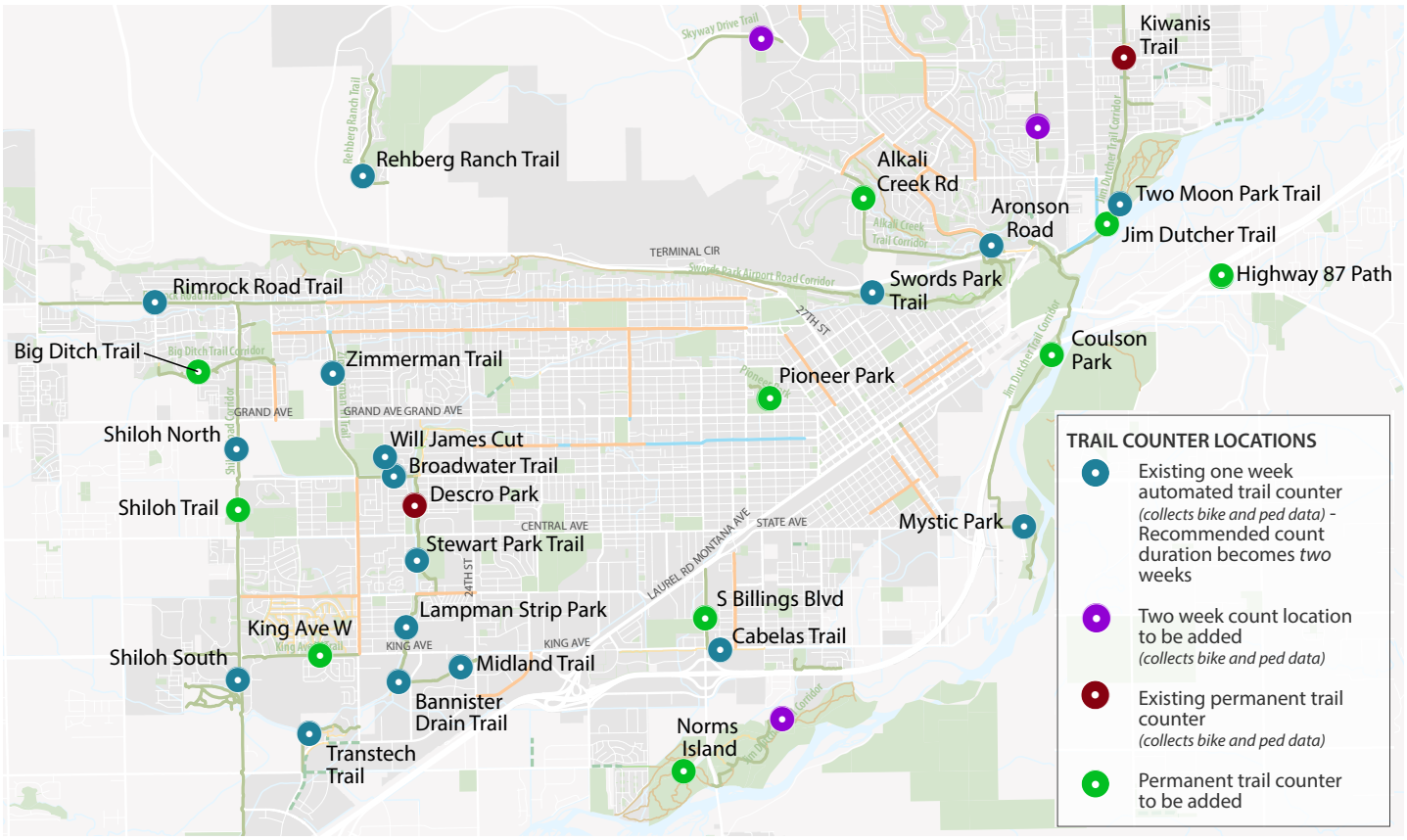
Existing Trail Counts

Today, data is collected at twenty-seven trail locations, primarily within the Billings Urbanized Area. Most of the sites are counted using rotating trail scanners, which are deployed for one week at each site. There are two locations where permanent counters have been installed, on Kiwanis Trail and Descro Park, enabling data to be collected on a continuous basis.

Trail Scanner Program: Count Location Recommendations

While the Billings Area has made significant progress improving the trail counting program in recent years, opportunities remain to continue improving the program. These opportunities include installing more permanent counters at locations throughout the community, extending the period of data collection at each site, and identifying new sites where data should be collected. Map 4.2 provides an overview of the recommendations at each site, which represent opportunities to improve the trail data collection program.

MAP 4.2: PROPOSED TRAIL COUNTER LOCATIONS



Permanent Trail Scanners

Permanent trail scanners are superior to intermittent counts because they provide continuous data, year-round. Data from these devices give a more complete understanding of bicycle and pedestrian travel behavior, and minimize the impact of short-term variations caused by weather and other factors. To improve the quality of the data collection, more permanent counters should be installed.

Population can be used to determine the appropriate number of permanent trail scanners for trail system. Based on Billings' population, six to nine permanent counters might typically be installed. Map 4.2 displays locations where new permanent counters are recommended. These sites are selected to achieve broad geographic distribution and to capture a range of expected usage levels. Placing the permanent counters at these locations will provide insight into trail use across the Billings area, and help to assess changes in travel behavior over time. While the initial investment in permanent count sites is higher than rotating scanners, upgrading key sites to permanent locations will reduce the labor needed to continuously rotate counters along the trail system. The City of Billings currently has two permanent counters installed.

Data quality and long-term cost benefits can be used to gain buy-in for the expansion of the permanent trail scanner program. Two to three permanent scanners should be installed per year in 2017 through 2019. After this period, the City and MPO should collaborate to reassess locations to add new permanent counters based on the growth of the city's trail network. As new devices are installed, the City should continue its practice of installing counters that include technology that can differentiate between bicyclists and pedestrians.

Short-Term Trail Counters

In addition to installing more permanent counters, opportunities exist to improve the short-term trail scanner program as well. The data collection period for short-term trail counts is currently one week per site. This period should be increased to two weeks per site. Using a longer count period will provide for an additional weekend of data, and minimize the impact weather can have on trail use. The four mobile counters currently owned by the City should be sufficient to cover the increased data collection period at each site.

There are no counters currently installed on the Skyway Drive Trail nor on the Jim Dutcher Trail Corridor. These two sites should be added to the rotating scanner program. These trail segments are fairly disconnected from the rest of Billings' trail corridors. Adding counts at these sites will measure ridership fluctuations over time, which may correlate to the locations' level of connection to surrounding proposed facilities and destinations.

Additional Recommendations

Each site included in Map 4.2 is to be counted during the same two-week period every year. This will result in a database that can be compared over time.

Additionally, as new trails are constructed, counts along them should be added to the count program. The construction of a new trail represents an opportunity to install a permanent counter. The installation of the counting device will represent a small percentage of the overall trail construction cost and therefore may be easier to implement.

4.5.2 On-Street Count Program Recommendations

The City of Billings manually collected on-street bicycle and pedestrian data from six locations in 2013, five locations in 2014, and fourteen locations in 2015. While the increase in the number of count locations represents progress, none of these locations were counted more than once. Thus it is not possible to conduct year-to-year comparisons and identify trends in data over time. Opportunities exist to standardize the on-street count program, ensuring that it becomes a compliment to the Billings Area's off-street trail data collection program.

Instituting the On-Street Count Program

To institute an on-street data collection program, a manual and automated count program should be implemented in tandem. The reason for this is a manual program will likely be easier to institute in the short term. Eventually, all manual data collection should be replaced by automated data collection. Additionally, video detection at signals should be upgraded or calibrated to count bikes as opportunities present. This section provides detail on how this program should be developed.

The on-street data collection program should include two primary counting methods, manual and automated. The manual count program should be established according to national best practices for manual bicycle and pedestrian counts. The National Bicycle and Pedestrian Documentation Project (NBPDP) established the standard for conducting bicycle and pedestrian counts in a consistent manner across the country. The following steps should be taken to develop a standardized on-street data collection program that conforms with NBPDP protocols.

- **Manual data collection dates and days of week**: Dates should follow the NBPDP count and survey biannual count periods, which occur in the Spring and Fall. Refer to the NBPDP website for Official National County/ Survey days. Dates are updated annually. (Since weather in the spring and fall in Billings tends to be variable, other biannual count windows could be selected. Ideally, counts would be conducted while school is in session, so alternate count windows could be early June and late August.)
- **Data collection time frames**: Volunteers should perform counts at each site for a two-hour period.
- **Data collected by mode**: Manual count volunteers are to collect both bicycle and pedestrian data using dual screenline counts. This may require two manual count volunteers per location at busy sites.
- **Volunteer training**: The NBPDP offers a presentation and volunteer forms to help municipalities train volunteers.[1]

The Bicycle and Pedestrian Coordinator should oversee the volunteer manual count program. This individual's role would be to manage the volunteers' recruitment and training, as well as modifications to the program over time.

The NBPDP website provides forms that can be used to complete screenline counts. Alternatively, the coordinator could promote the use of mobile applications that facilitate data collection and are available to the public for free download.[2] The City may elect to instruct manual volunteers who have access to mobile phones to use the application while conducting a manual count. Although the City should also give volunteers the option to use pen-and-paper to conduct counts, the application has several advantages over traditional count methods.

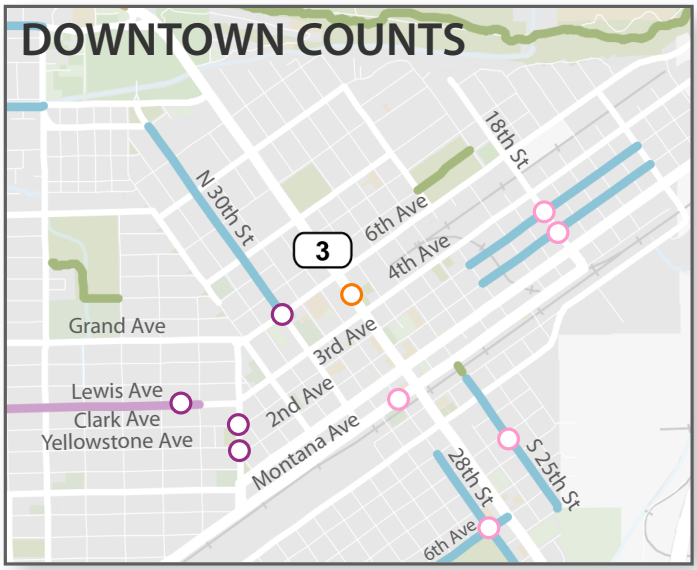
These applications store data digitally, reducing the need to digitize information collected via pen-and-paper counts, which can be time consuming. When using only pen-and-paper, collecting data on multiple modes can be challenging, especially at busy intersections. Due to these benefits, the city should consider using mobile applications as a tool when instituting the on-street data collection program.

The benefits of establishing a manual count program go beyond data. Organizing volunteers to collect data shows the community that there is support for improving bicycling and walking conditions, and the program can help to build community and encourage more people to walk and bike. Though there are benefits to manual data collection programs, there are also shortcomings.

- While two-hour AM and PM count periods provide data, planners have difficulty making annualized assumptions from this data. A single day does not represent typical travel patterns. National Cooperative Highway Research Program (NCHRP) Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection found "the error in estimating average annual bicycle traffic from two-hour, 12-hour, or even one-week counts can be up to 40%."
- The NBPDP recommends that counts occur biannually in May and September of each year. In Montana, these months tend to have variable weather, which results in depressed walking and bicycling count volumes.
- Bicyclists and pedestrians have different travel habits than motor vehicles—trips tend to be shorter and distributed throughout the day. These factors make it more difficult to reliably capture their activity with two-hour counts.
- Enlisting volunteers to staff counts and then summarize data collected is time consuming.

1 *http://bikepeddocumentation.org/index.php/downloads*

2 *The counterpoint mobile app is an example of such an application that is free to download.*



Initially, the recommended on-street data collection program should include both manual and automated sites. Over time, all manual data collection should be replaced by automated counters. The recommended strategy for developing this program is described in the next section.

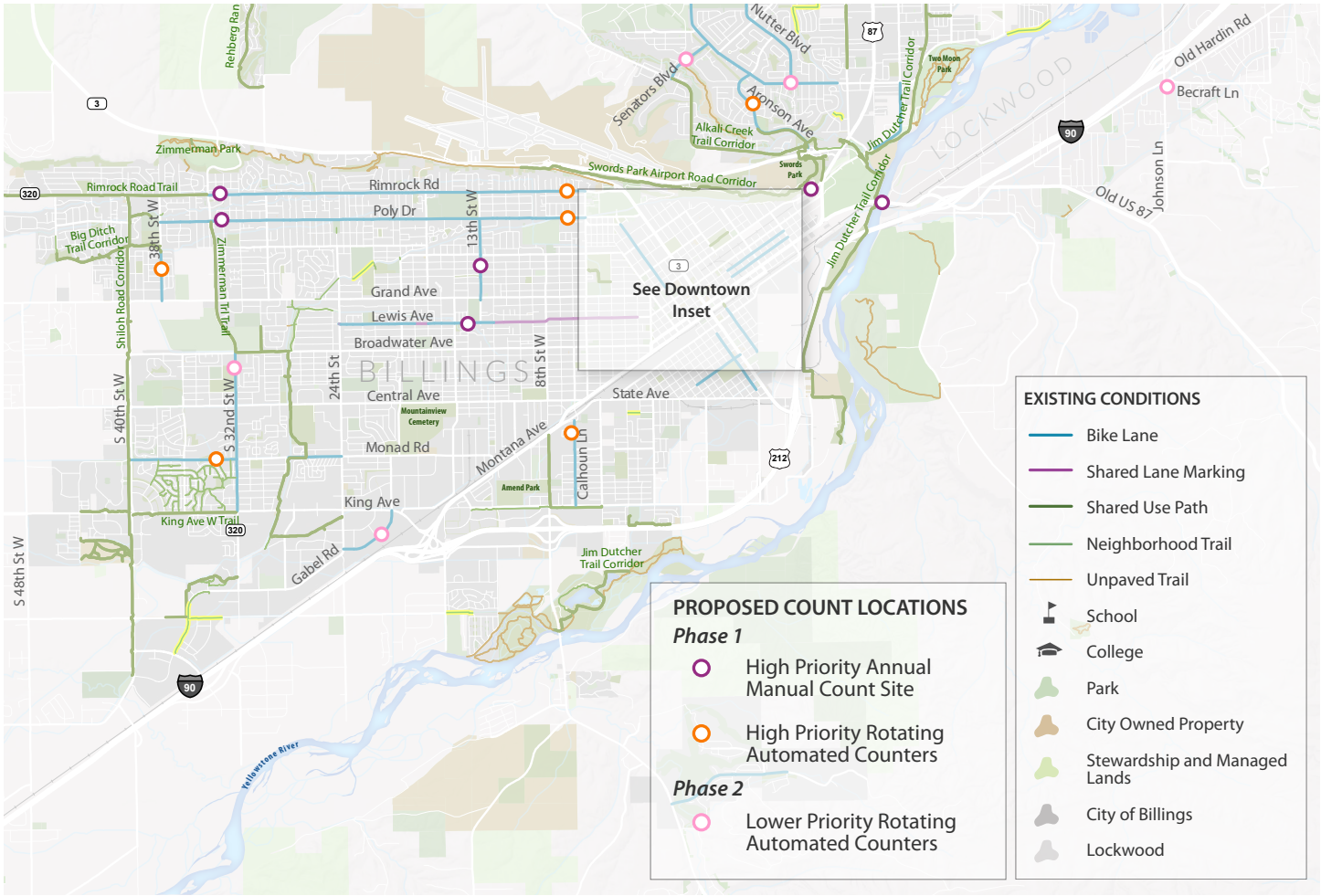
Phased On-Street Count Program

Map 4.3 identifies a plan for creating a comprehensive on-street data collection program. The program is divided into two phases that should occur in succession.

Phase I includes ten manual count sites and seven locations where automated counts should be conducted using a rotating digital device. These rotating sites should be counted once annually during the summer for two weeks each. Additional guidance for automated data collection is included in the next section.[3] Together, these manual and automated count sites will form the

3 *Note: If automated count devices are not available for the locations labeled Rotating Automated Counters in Map 4.3, these locations should be counted manually until devices are available.*

MAP 4.3: PROPOSED ON-STREET COUNTER LOCATIONS



foundation of the on-street data collection program. Phase II includes ten additional automated count sites that should be phased into the program, three in year two of the program, three in year three, and three more in the fourth year.

Rotating Automated Count Technology

Data collection technology companies are continuously evolving their product offerings to better enable automated data collection. An Alta-produced white paper, released in spring 2016, identifies several options for short-and-long term data collection. These devices enable the collection of several hours of count data at once, as opposed to two hours of manually collected data.

Devices Needed to Complete Automated Counts

The number of automated counting devices needed to complete the program as proposed depends on the following equation:

- The active summer counting period is 14 weeks.
- Seven locations will be counted for two weeks each (7 x 2 = 14 weeks)
- Using this formula, the city needs one rotating counter to collect bicycle and pedestrian data at the seven proposed sites.

Billings currently owns an EcoCounter mixed traffic pneumatic tube counter, which is capable of collecting automated bicycle data, but it does not have the capability to collect pedestrian data. To collect both bicycle and pedestrian data at the seven Phase I rotating automated counts recommended in Map 4.3, the City will need to purchase a new device. While steps should be taken to purchase a pedestrian count device, bicycle counts should be conducted at the seven rotating sites using the City's EcoCounter device even if the pedestrian counting device is not purchased. In purchasing a device capable of collecting pedestrian data, the City has the following options:

- Purchase an infrared sensor, and pair this device with the pneumatic tubes the city owns at each site.
- Purchase an infrared camera capable of collecting both bicycle and pedestrian data.

ADDITIONAL COUNT GUIDANCE RESOURCES

The following resources offer additional information about count technology options:

- **The Traffic Monitoring Guide** (TMG), Federal Highway Administration (https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/traffic-monitoring-for-non-motorized.cfm)
- **Bike Count Data Clearinghouse**, University of California- Los Angeles (http://www.bikecounts.luskin.ucla.edu/Default.aspx)
- **Exploring Pedestrian Counting Procedures**, FHWA (http://www.fhwa.dot.gov/policyinformation/travel_monitoring/pubs/hpl16026/)
- **Methods and Technologies for Pedestrian and Bicycle Volume Data Collection**, Transportation Research Board (TRB) National Cooperative Highway Research Program Report 797 (http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w205.pdf)

The City should, over time, upgrade existing manual count locations to automated count locations. Automated equipment is useful along high volume bicycle and pedestrian corridors to quantify the demand for such facilities. Additionally, automated counters can be deployed along lower volume roadways to build a representative data collection sample. As more automated count sites are added to the program, additional devices will need to be purchased.

Additionally, in the future, all counts conducted within the City of Billings and Yellowstone County for transportation planning purposes should count bicycle and pedestrian traffic where feasible.

Permanent Automated Count Location

As of 2016, the City of Billings has continued to make advancements in traffic signal operations. Over time, the City will be moving to upgrade signals to the GRIDSMART system which can also detect and count bicyclists and pedestrians. These existing technologies can be leveraged to create multiple count locations city-wide and expanded over time through planned upgrades.

Additionally it is advisable to establish automatic counters in several screenline locations that may not exist at an existing signalized intersection.

4.5.3 Annual Counts Report

The project team recommends producing an annual counts report to benchmark the levels of walking and bicycling in Billings over time. In doing so, Billings would join the ranks of numerous other cities, including Missoula, St. Louis, Raleigh, and others that have recognized the benefits of continually tracking bicycle and pedestrian data. Annual reports should use simple graphics and maps to deliver information clearly and concisely. Using a standard template can streamline the production of annual updates.

The project team recommends giving an annual data presentation to the Billings City Council to cover information such as bicycle and walking levels, crash statistics, and other metrics. The report should emphasize where growth in walking and bicycling rates has occurred, and highlight if the implementation of new facilities has impacted travel behavior in the community. Every three years, the information presented in the annual counts report should be summarized in the Complete Streets Progress Report. This summary should describe how bicycle and pedestrian movements have changed as a result of the installation of new facilities.

4.6 BIKE PARKING

People will be more likely to bicycle if safe, accessible, and convenient bicycle parking is provided. Improving short term bike parking, including covered parking, and long-term parking are integral to supporting the growth of Billing's bicycle mode share. Additionally, providing convenient parking can reduce instances of bikes being parked to objects in the public right of way, which can be hazardous to pedestrians.

This section summarizes opportunities to improve bicycle parking practices in Billings, based upon best practices that have been established in cities across the United States. Key recommendations include developing a **Bicycle Parking Code** and a **Bicycle Parking Program** to standardize the type and quantities of bike parking available to the public.

4.6.1 Bike Parking: Opportunities for Improvement

The review of existing bike parking conditions in the Billings Area, summarized in Section 2.7 of the Existing Conditions Chapter, revealed issues with current bike parking in the community. These issues include:

- There is not an adopted standard rack type, resulting in a mix of racks in the community, some of which are difficult to use.
- There is no requirement for new commercial or residential development or redevelopment projects to include bicycle parking as a condition of approval.
- There is demand for more bike parking in Downtown and at existing commercial development outside downtown, but not a well defined solution for providing it.

Solutions are available to overcome these issues, which have been successfully implemented in cities across the country. This section describes these solutions, and how they can be developed in Billings. The recommended solutions include:

- **Developing a bike parking code** as part of a future Zoning Code update to standardize rack type and placement practices, and ensure bike parking is installed with new development.
- **Developing a bike parking program**, focused on Downtown and other areas of the community, that allows the community to request the placement of racks on public lands, and property owners to request racks on their private land (otherwise, these racks may never be installed in areas where they are needed, such as auto-oriented 'strip-mall' developments in the western part of Billings).

Developing a Bike Parking Code

The bike parking code developed by Billings should be included in a future Zoning Code update and incorporate best practices that have been implemented by bike friendly cities across the country. The code should specify acceptable rack placement practices and rack types. Placement practices should conform to those described in the Association of Pedestrian and Bicycle Professionals (APBP) *Essentials of Bike Parking* (2015). To be consistent with best practices, the code should include a tiered bike parking design standard, ensuring reliable and convenient bike parking is provided in different settings, including both short-term and long-term bicycle parking. The recommended tiered approach to bike parking is included on page 4-22.

The code should also require short-and long-term bike parking for new construction and redevelopment. Minimum bicycle parking requirements hold developers accountable to provide necessary end-of-trip facilities for specific land uses.

The APBP *Bicycle Parking Guidelines* (2nd Edition, 2011) should serve as the primary reference for the development of bike parking minimums. Specifically, the code should be based upon recommendations included in pages 3-1 to 3-7 of the *Guidelines*. This section of the *Guidelines* provides minimums for urbanized areas, which would be relevant to Downtown Billings, where parking should be concentrated (see pages 3-5 to 3-7), as well as lower density areas (see pages 3-2 to 3-4). Both sections should be reviewed when developing the code so that appropriate minimums are established based upon density and other land-use characteristics. Table 4.9 identifies other criteria that should be considered in the development of the bike parking code.

TABLE 4.9: CONSIDERATIONS FOR BIKE PARKING

#	Considerations
1	**Codify City Standard Rack Type**. Codify the blue staple rack that has been installed in the Downtown as the City's official rack type, and require that all racks installed via the code comply with this rack typology. Art racks should require special review by the planning and engineering department for approval before installation.
2	**Provide minimum bicycle parking requirements for nonresidential uses** for short- and long-term use. Institute bike parking minimums (for both short term and long term parking) based upon APBP guidance included in Bicycle Parking Guidelines, 2nd Edition, 2010 (see pages 3-5 to 3-7 of guidelines). The codes requirements should match the land-use categories already present for vehicle parking requirements. Consider requiring Indoor/Garaged bicycle parking for all new buildings that require covered vehicle parking, at or above, the minimum bicycle parking requirements, especially in Downtown Billings. Prohibit property owners to forgo minimum bicycle parking requirements for non-residential uses. Differentiate and clarify short- and long-term bicycle parking requirements and add information about bicycle rack type, design, placement, security, wayfinding, and access. The city can set its own minimums that may reduce or exceed those suggested by industry resources. Reference APBP *Essentials of Bicycle Parking* (2015) for guidance.
3	**Create bicycle parking requirement for multifamily residential uses.** Based upon ABBP guidance included in Bicycle Parking Guidelines, 2nd Edition, 2010 (see pages 3-5 to 3-7), the new requirement should specify parking minimums for multi-family residential development. A minimum number of units necessary to require parking should be specified, as single family residences (with or without garages) typically do not have bike parking requirements. A mix of bicycle parking types that accommodate a variety of family-friendly bicycles for all ages and abilities and wayfinding signage to locate it should be required.
5	**Allow provision of long-term bicycle parking and/or additional short-term racks to substitute for a portion of required automobile parking.** This provision would be consistent with the Transportation Demand Management goals included in the Growth Policy.
6	**Reference illustrated design guidelines for developers and building managers** to facilitate the installation of well-designed sheltered bicycle parking, secure bicycle parking, and wayfinding signage. Illustrations to be referenced are included in APBP Essentials of Bicycle Parking (2015)
7	**Include a provision for 24/7 bicycle parking access** in requirements for long-term bicycle parking located in parking garages.
8	**Support self-service bicycle repair facilities** as part of long-term bicycle parking.

BIKE PARKING TIERS - A SNAPSHOT

PARKING DURATION -The following icons and descriptions indicate the term of the parking

SHORT-TERM PARKING

Short-term bicycle parking is generally intended to be used for short duration trips. Typical land uses where this parking is installed includes commercial or retail uses, medical/healthcare facilities, parks and recreation areas, community centers, or libraries.

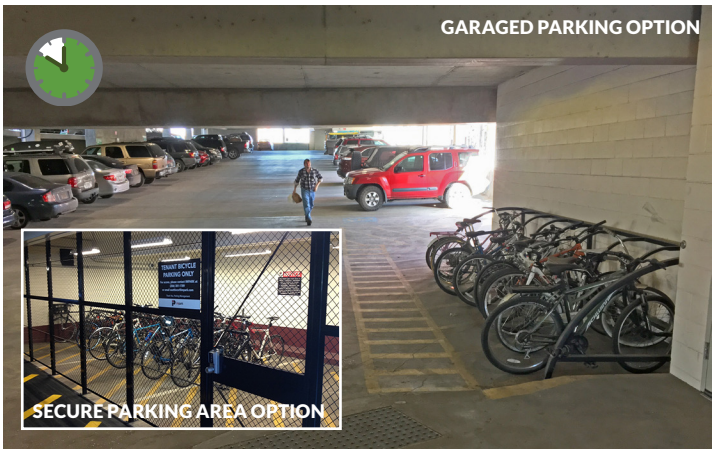
LONG-TERM PARKING

Long-term bicycle parking areas are intended to be used all day and/or night. Primary users of this parking type are employees, residents, students, or travelers leaving their bicycles at transit hubs. Typical land uses where this parking is installed includes multi-family residential uses, workplaces, transit hubs, and schools.

Tier 1: Short-Term Bicycle Parking: Short-term bicycle parking is to be placed on sidewalks in front of higher turn-over establishments, or near the entrance to buildings on private property.

Tier 2A: Bicycle Corral: On-street bicycle corrals provide high-capacity parking outside of the pedestrian zone, helping to minimize sidewalk clutter. This rack type should be installed at locations with high demand, such as near downtown entertainment areas.

Tier 2B: Covered Short-Term Bicycle Parking: For an added level of weather protection, covered bike racks are recommended at higher demand locations.



Tier 2B: Indoor/Garaged Bicycle Parking: This type of parking is installed within buildings, or enclosed areas within a larger structure (for example, an enclosed portion of a parking garage). They can be designed to be open to any user, or can be Secure Parking Areas (SPAs), which are limited access (i.e. require a key or card for entry). This type of parking is particularly useful at major destinations that attract all-day users, such as for employees at employment centers or residents of apartment buildings.

4.6.2 Developing a Bike Parking Program

While the bike parking code will help to ensure that bike parking is installed with new development and redevelopment, it will not lead to the installation of bike parking near properties that are not seeking construction permits. Demand for parking exists throughout the Billings Area, and to ensure that parking is distributed throughout the community, the City of Billings and Yellowstone County should support the development of a bike parking program. This program should be focused on two objectives:

- Providing more bike parking downtown.
- Providing more bike parking outside of downtown.

The Billings bike parking program should become the primary method for installing public bicycle parking. This program will ensure that bike racks are installed in the public right-of-way to serve commercial buildings, schools, and multi-family residential developments, and on private land if racks are requested by property owners. The program should be focused on identifying where there are gaps in the availability of bike parking, and prioritize those gaps. Racks installed through the program should adhere to the same bike rack specifications and installation standards as identified in the proposed bike parking code.

The development of the bike parking program should be a partnership between the City of Billings, Yellowstone County, and other organizations. For instance, the Downtown bike parking program could be run in partnership between the City of Billings and the Downtown Billings Alliance. Such partnerships have been successful in installing downtown bike parking in other U.S. cities. The City of Billings and Yellowstone County could consider adopting this policy as well, or alternatively, maintain the parking in coordination with other organizations. Other factors for consideration in the development of the program are outlined in Table 4.10.

TABLE 4.10: BIKE PARKING SPOT IMPROVEMENT PROGRAM CONSIDERATIONS

#	Actions
1	**Institute a Request-A-Rack Program**. Develop two programs, one focused on Downtown Billings and the other focused on areas outside Downtown, where local businesses and/or the public can make a request for a rack to be installed within the public right-of-way or on private property if requested by the property owner (for racks placed on private property, the program should fund the rack and installation, but once installed, the rack should become the responsibility of the property owner/s). Identify partners to help develop and run each program. Make requesting a rack easy, by providing a web portal where racks can be requested. Require a minimum response time to respond to rack requests. Include language that acknowledges who is responsible for the installation and maintenance of the racks, such as the City of Billings, Yellowstone County, or an other organization/agency. The program should also address rack replacement, maintenance, and abandoned bicycles.
2	**Prioritize the installation of bicycle racks and on-street bicycle corrals in high-demand locations.** High-demand locations include, but are not limited to, neighborhood business districts, community centers, libraries, universities and colleges, employment centers, parks, and schools. Determine when bicycle parking should be sheltered bicycle parking, such as at schools where students/staff will park their bicycles for extended periods of time. Ensure installation is distributed equitably throughout the city.
3	**Create a process that allows the city to use curb space or on-street parking spaces for on-street bicycle corrals.** Work with downtown and neighborhood business districts to identify locations that will replace on-street parking with on-street bicycle corrals. Install on-street bicycle corrals at strategic intersection locations where vehicle parking is not allowed, or where supported by businesses if vehicle parking is to be removed. Smaller corrals can sometimes be provided without affecting parking by using space that is unavailable for parking ,such as sight distance set backs and curb line transitions or at bulbouts.
4	**Install only the standard rack type identified in the proposed City Bike Parking Code** to develop a graphic identity and citywide branding for Billing's bicycle parking. Installation of art racks would require special review by the planning and engineering departments.
5	**Create and Maintain a Bicycle Parking Inventory.** Maintain and continually update a digital inventory of public bicycle parking locations by the City's GIS Department. Integrate bicycle parking data into city-sponsored mapping and digital applications that depict the bicycle network as it grows. This effort has already been started by the planning department.
6	**Establish Annual Program Budget**. A budget line should be added to the City budget within the proposed bikeway and trail account to fund the programming and implementation of the Bike Parking Program.

4.7 MAINTENANCE POLICY RECOMMENDATIONS

The bikeway and trail network in the Billings Area is managed by multiple entities, depending on the facility type, location and surrounding development. Shared use paths that are on publicly owned lands within City limits are maintained either by the City of Billings Parks Department or the City's Public Works Department. On-street bikeways are maintained by the City's Public Works Department. Several neighborhood trails are either maintained by the Parks Department, home owners associations (HOAs), or non-profit organizations.

In the County, neighborhood trails are either not maintained, or are part of a Rural Special District where property owners are responsible for maintenance, either individually, or through a contracted third party. HOAs have not been an entity encouraged at the County level. The City or County has no authority over a home owner association, making it difficult to ensure that any maintenance performed association meets the desired level of service.

Major Maintenance or Repair

Issue - Lack of Funding for Major Repairs: Interviews with managing agencies have indicated a need to designate a life-cycle or major maintenance repair fund. Current funding only covers regularly scheduled maintenance. Major repairs may include trail resurfacing or reconstruction as the initial construction ages. These activities would currently require a request for special contingency funds.

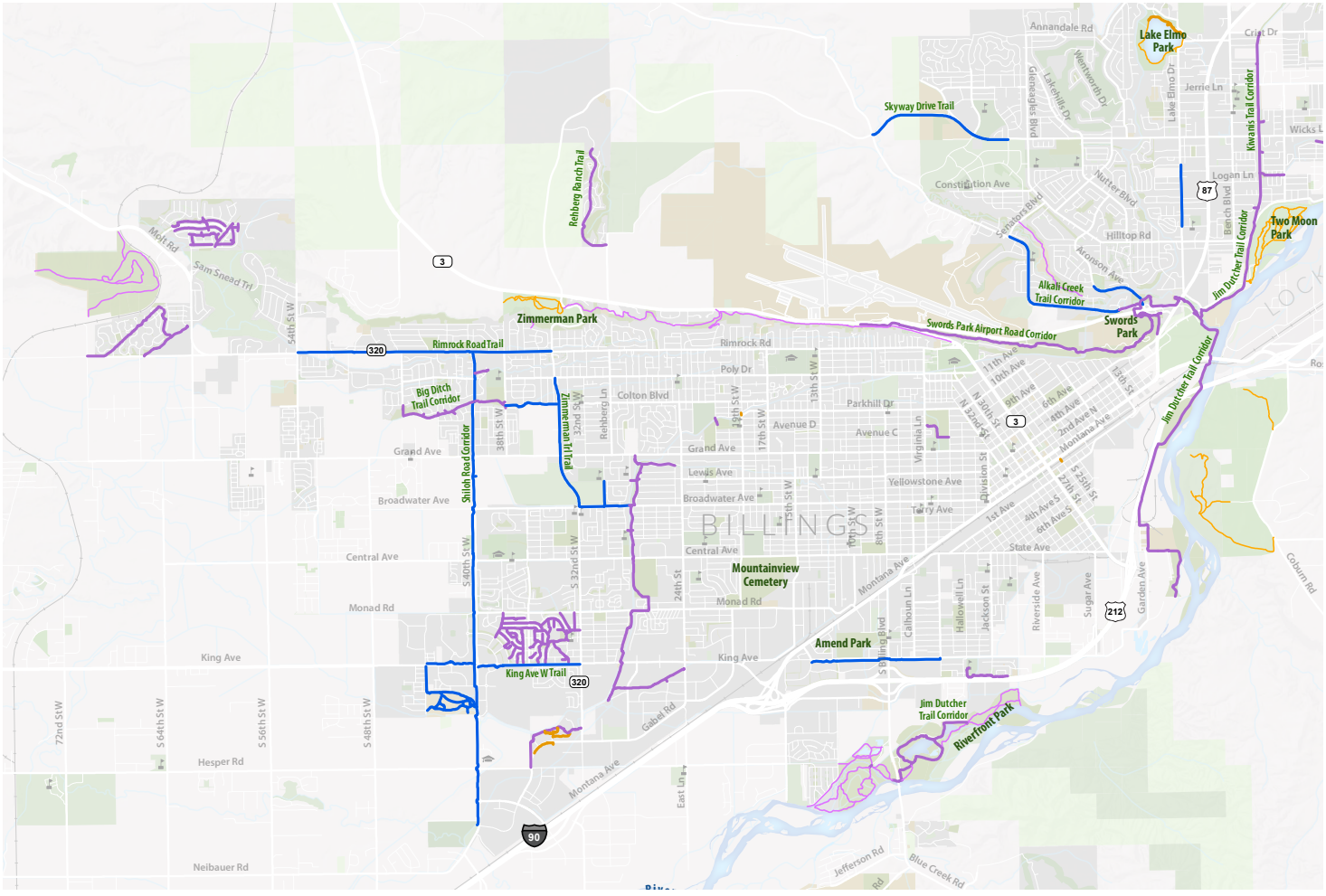
Recommended Solution:

Update the facility asset inventory initially completed in the 2011 Trail Asset Management Plan (Replacement Cost Summary, dated February 9, 2011). The first recommended trail replacement is within a ten-year horizon and should be accounted for in the time line for the City's Capital Improvement Program.

Routine, Scheduled and Irregular Maintenance Tasks

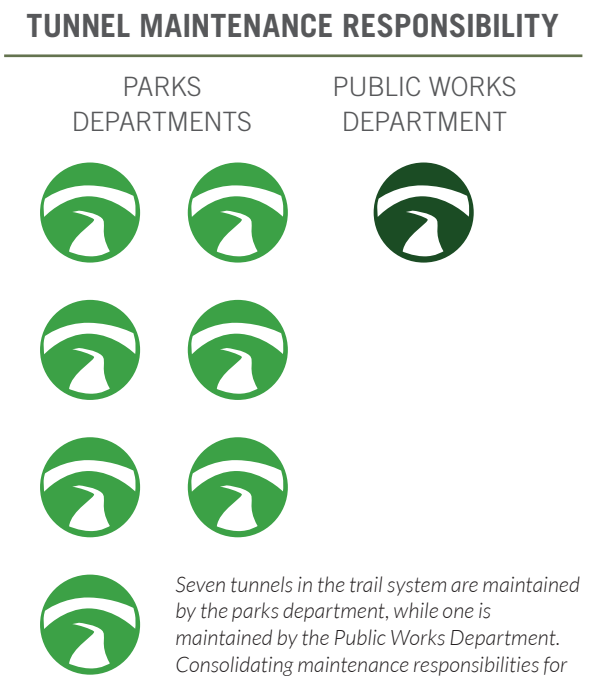
Issue - Departments have different maintenance policies: Within the City of Billings, trails are maintained by both the City of Billings Parks Department and the Public Works Department. The Parks Departments uses the Maintenance Checklist developed in the

MAP 4.4: PUBLIC RECREATIONAL TRAILS MAINTENANCE RESPONSIBILITY



Currently, public recreational trail maintenance is the responsibility of multiple departments, including the Parks Department and Streets Traffic Division, among others. It is recommended that on agency be designated as responsible for the maintenance of all shared-used paths.

2011 Trail Asset Management Plan (Table 1, page 5) for maintenance of the shared use paths under their jurisdiction. The City of Billings' Public Works Department does not use this checklist to maintain trails under their jurisdiction. Their primary shared use path maintenance activities include sweeping trails once or twice annually, and repairing any trail signage that is traffic control in nature (i.e. stop signs, etc.). The Public Works Department is also responsible for any trail asphalt repair; however, this has not been a significant task since there are relatively few asphalt trails. The Parks Department is using the Maintenance Checklist to schedule tasks and frequency, but actual man hour estimates to complete tasks have not been updated recently.



Seven tunnels in the trail system are maintained by the parks department, while one is maintained by the Public Works Department. Consolidating maintenance responsibilities for the tunnel system could provide efficiencies.

Formal winter bicycle facility maintenance policies would give the City the chance to prioritize corridors with bicycle lanes for snow clearance.

Recommended Solutions:

1. The Parks Department, through their Comprehensive Park Plan Update, is conducting an analysis of labor and equipment assessment for all parks, including shared use paths under their jurisdiction. This data should be used to provide a current cost of maintenance report and to update the Maintenance Checklist.
2. The Public Works Department could prepare a similar maintenance checklist for both on-street bicycle facilities and shared use paths under their jurisdiction. Having consistency between the two checklists would help to ensure maintenance is conducted in a consistent manner.

Issue – Street Sweeping Frequency on Bikeways: The City of Billings Public Works Department is responsible for on-street bikeway maintenance. On-street bikeways are maintained according to the routine roadway maintenance schedule. This includes sweeping three times a year on residential streets and one to two times a month on arterials. Roadway debris affects bicyclists more than motor vehicles, especially at the street edge where debris tends to collect and where most bicyclists tend to ride. The City should continue to these sweeping practices, and consider increasing sweeping along dedicated bikeways.

Recommended Solution:

Increase frequency of street sweeping along dedicated bikeways, including roads with bike lanes, buffered bike lanes, and roads designated as bicycle boulevards. Multiple sweepings should be conducted in the spring after snow melt to clean up gravel and other debris, and in the fall when leaves and other debris collect. Increased frequency will require additional staff and financial resources.

Issue – Snow Removal: Within the City of Billings, on-street snow removal is the responsibility of the Public Works Department, and off-street trail snow removal is the responsibility of both the Public Works Department and the Parks Department, depending on who has jurisdiction over the facility. The Public Works Department prioritizes snow removal along major roadways, and bikeways along arterials are plowed first, followed by collectors. Trails are plowed 36 hours after a snow event ends. The Parks Department policy is to clear snow from

their trails immediately after snow events. For trails, the result of this joint approach to trail snow removal is that snow is removed at different times, depending on which department has jurisdiction over the trail. The public may not recognize why one trail is cleared and another is not, which decreases the level of service that the trail system provides. The City of Billings, in general, continues to evolve their snow removal policies and priorities. Yellowstone County snow removal for trails only occurs through private contracting by a Rural Special Improvement District.

Recommended Solutions:

1. Look for opportunities to improve plowing of on-street bike lanes on arterials and collector streets. Arterial roadways currently have first priority by city crews. Identify additional resources if they are needed to keep bike lanes clear with overall plowing efforts, if applicable. Off-street trails within the public right-of-way are to be cleared within 36 hours after the storm ends.

Issue – On-Street Bikeway Markings: Bikeway pavement markings, including bike lane symbols and lines, are a lower priority for maintenance, compared to roadway markings for motor vehicles. For example, it is the Public Works Department's policy to prioritize the repainting of road markings first, followed by crosswalks and then bikeway markings. Bikeway striping is typically repainted more frequently than bikeway symbols.

Recommended Solutions:

1. Repaint bikeway symbols in the spring so that the markings last clearly through the summer rather than being freshened up in the fall only to be degraded over the winter. Additional resources or private contractors may be needed as painting is weather and temperature dependent. This would also require additional maintenance and funding over current levels.
2. Continue the practice of utilizing thermoplastic legends versus water-based paint to reduce frequency of bikeway marking repainting. Consider installing recessed thermoplastic markings, by grinding down the pavement and setting the marking below the grade of the roadway. This increase the longevity of the markings by reducing wear and tear caused by plow blades.
3. Consider instituting a policy where all bikeway symbols are installed utilizing thermoplastic instead of paint. Also consider implementing a life-cycle replacement schedule for all symbols, recognizing that the higher up-front cost is realized over time.

Bikeways should be repainted in the Spring

4.8 POLICY RECOMMENDATIONS

Opportunities for improvement exist within City and County Subdivision Regulation and Standard Drawings. This section describes two overarching issues that were identified, including a lack of current definitions and standards for on-street and off-street facilities, and a lack of consistent enforcement of design, construction and maintenance standards. This section also provides recommendations to update specific elements of the City of Billings Subdivision Regulations. Together, these recommendations will help to ensure that facilities are built to consistent standards, which will facilitate maintenance and improve user experiences for bicyclists and trail users.

Update Facility Definitions

Issue: As on-street and off-street facility design has evolved through innovative practices, the nomenclature of the facilities has not been updated in several key policy documents, causing confusion for agency managers, developers and the public.

Example: In some subdivisions, developers have provided for and built "trails" throughout the development. However, the trail may have substandard width, surface and construction issues, causing increased maintenance and a decreased level of service. What some developers may deem a 'trail' may in fact be a sidewalks. Providing greater clarity about what defines a trail, sidewalk and other on-street facilities will help to ensure they are built consistently and to established best practices.

Recommended Solutions:

1. In both the City and County Subdivision Regulations, define the following terms:
   - Shared Use Path
   - Bicycle Boulevard
   - Buffered Bike Lane
   - Bike Lane
   - Shared Lane Marking
   - Sidewalk
   - Neighborhood Trail

2. Each term should be further defined with a construction and design standard, whether it references a national publication (i.e. NACTO, AASHTO, etc.) or a local standard that is accepted across all agency departments.

3. Each term should be defined with a designated maintenance responsibility, whether it is the City, County, homeowners' association, or adjacent land owner.

Currently, definitions for on-street bikeways are not included in the City of Billings Subdivision Regulations. Including definitions and standards for these facilities will help to ensure they are built consistently.

Construction/Design/Maintenance Enforcement and Inspection

Issue: In 2004, a Trail Design Standards document was created. Interviews with agency staff indicated that it was not well utilized, or they were not aware that the document existed. As a result, construction standards for trails constructed outside of the street right of way are often negotiated at the Subdivision Improvement Agreement level, which results in some trails being built to a poor standard, increasing the maintenance burden in the future.

Example: The internal asphalt pathways in a subdivision were constructed with a substandard base course and asphalt thickness. As a result, the pathways are deteriorating prematurely and at a faster rate and will need to be replaced sooner than the expected life cycle, causing undue financial burden to the surrounding property owners who will be assessed for the reconstruction costs.

1. Update and message the existence of City and County Construction Standards. Ensure that these standards equally apply to trails within and external to street rights of way.

2. Require a construction inspection for all off-street facilities outside of street rights of way, similar to the current city practice for streets, water and sewer installations. This could be a future duty of the trail management coordinator position.

3. For each type of facility defined in Construction Standards, enforce the construction, design and maintenance standards across all departments, and apply them equally to every development and facility as practical.

4.8.1 Subdivision Regulation Changes

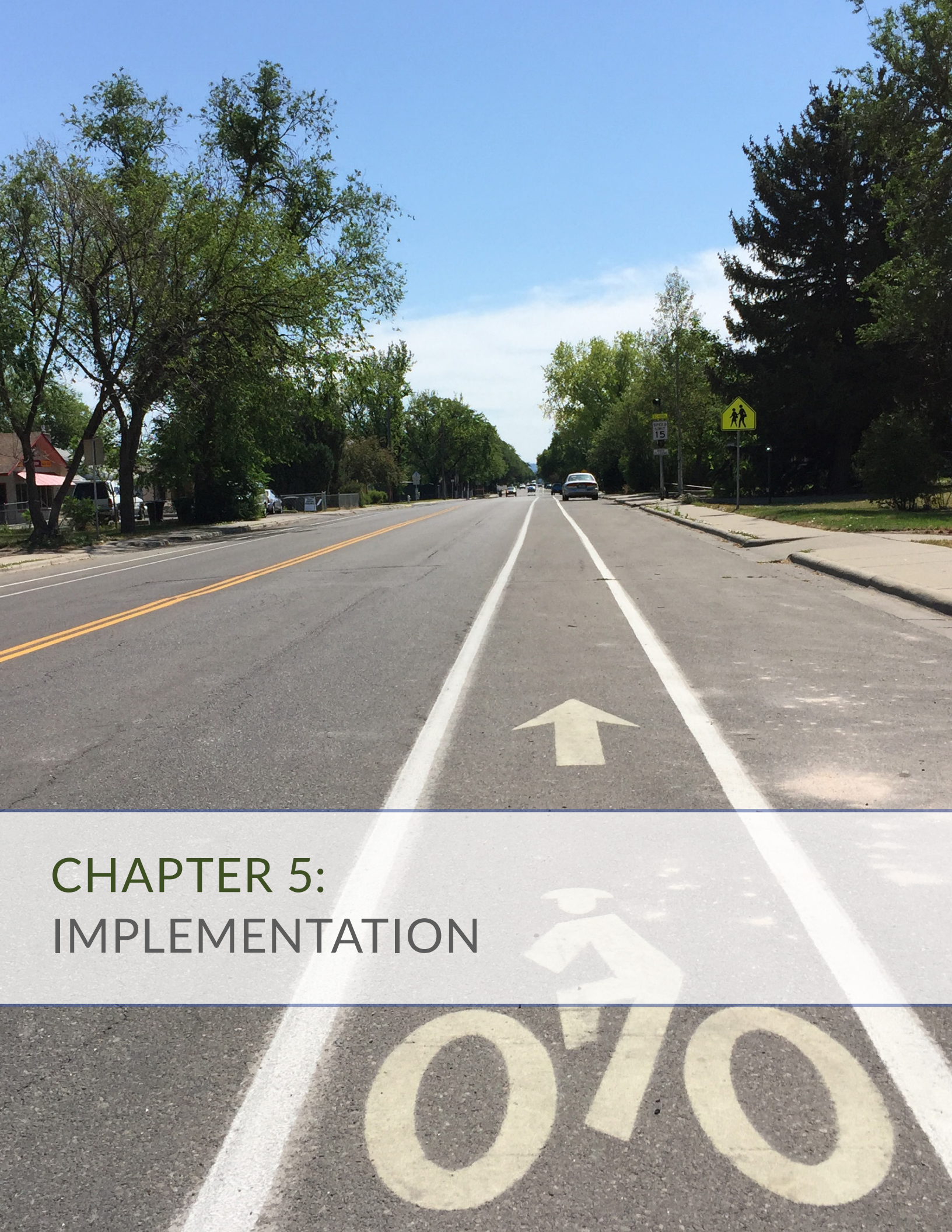
The planning team reviewed the City of Billings Subdivision Regulations, and recognized that several sections should be updated to reflect current best practices and the recommendations included in this Plan. The changes for consideration are listed in Table 4.11.

TABLE 4.11: RECOMMENDED CITY OF BILLINGS SUBDIVISION REGULATION CHANGES

Section	Change for Consideration	Rationale
Definitions	Delete "Bikeway" and "Multi-Use Path" definitions and add and define the following terms to be consistent with the facility types recommended in the 2017 Plan Update (for each facility, including cross-section detail): • Shared Use Path • Bicycle Boulevard • Buffered Bike Lane • Bike Lane • Shared Lane Marking • Sidewalk • Neighborhood Trail	Several new developments are being constructed with developer-defined trails in private and public open spaces. Review of several City and County adopted policies and plans reflect undefined nomenclature, and this results in confusion over the type of facility desired and its construction standard. Standard definitions will help to provide clarity for developers when implementing facilities, and ensure facilities are built to consistent standards.
Section 23-405. Blocks. Item B. Rights-of-Way for Internal Non-motorized Connections.	Remove the permissive language "when essential" or "where deemed appropriate."	Connections within blocks and pathways at the end of cul-de-sacs should be required, unless a variance or administrative relief is requested. This removes the ambiguity of determining appropriateness or essential services for both staff and elected officials, while providing clarity for developers.
Section 23-406. Streets and Roads. A.4. distance between Parallel Right-of-Way	Encourage flexibility to find solutions that facilitate trail corridors within or beyond ditch easements.	Some easements provided to ditch or canal companies also have trail easements on them, but the ditch or canal is open, limiting the opportunity to actually place a trail within the easement.
Section 23-406. Streets and Roads. A.12. Lot Corners at Intersections	Add "PROWAG," or Proposed Public Rights-of-Way Accessibility Guidelines	PROWAG is specific to accessibility for the design, construction and alteration of pedestrian facilities in the public right-of-way. By adding this language, facilities will need to be designed according to national accessibility guidelines.
Section 23-406. Streets and Roads. B.2. Improvement Design.	Designate one location or entity responsible for the definition of design standards for on-or-off street non-motorized facilities. It should be noted that the design standard does not need to be codified in the subdivision regulations, the design standards can be part of the City's modifications to the MPWSS.	The right-of-way and construction standards for streets are located in several different places and omits some plan references all together. Different departments are using different design or construction standards. By creating universal design/construction standards, facilities will be constructed consistently.
Section 23-406. Streets and Roads. B.4. Traffic Accessibility Study	No change.	It should be noted that the Institute of Transportation Trip Generation Report does not directly identify trip calculations made by bicyclists and pedestrians. The need for these facilities is usually identified by the Planning Department, not the Public Works Department by current practice.
Section 23-406. Streets and Roads. Table 23-406.B.1. Required Dedications & Street Improvements for Subdivisions within City Limits	Create new columns labeled shared use path and on-street bicycle facility. Indicate that along arterial and collector roads, either a shared use path (minimum 10 feet wide) and sidewalk or on-street bike lane (minimum 5 feet wide) and sidewalks (both sides of the road) are required.	The table does not require shared use paths or bikeway facilities. Including them in the table will ensure they are constructed with new roadway projects, with the intent of avoiding missed opportunities.
Section 23-406. Streets and Roads. B.13. Sidewalks.	Remove the following sentence: "The Planning Board may recommend to the City Council that it waive or modify the requirement for boulevard walks on both sides of a local residential street when the subdivision constructs an approved multi-use bicycle/pedestrian path connected and accessible to all lots in combination with or in lieu of sidewalks."	This provision is rarely requested. However, in subdivisions where it has been used, people are still walking in streets potentially causing a safety issue.
Section 23-406. Streets and Roads. C. Multi-Use Trails, General	Update this entire section to reflect current nomenclature and recommendations as a part of the 2017 Billings Area Bikeway and Trails Plan Update. Consider adding a section for on-street bicycle facilities, which could require that they be constructed if they are recommended in the Plan Update	The "Heritage Trail Plan", now called the "Billings Area Bikeway and Trail Master Plan" has since been updated twice, with new recommendations included in each plan. All instances of multi-use trail/greenway corridor should be updated with current language included in the Plan Update.

TABLE 4.11: RECOMMENDED CITY OF BILLINGS SUBDIVISION REGULATION CHANGES (CONTINUED)

Section	Change for Consideration	Rationale
Section 23-603. Manufactured and/ or Mobile Home Park Development Requirements. B. Streets.	Include provisions for bicycle and pedestrian facilities for private streets.	Currently language indicate that "streets shall be designed and built to meet current City Standards," but does not provide direction on non-motorized transportation facilities.
Section 23-706. Permitted Uses of Open Space. A.3.	Update the sentence to reflect the current nomenclature for the 2017 Billings Area Bikeway and Trails Master Plan Update.	Administrative change.
Section 23-710. design Standards and Applications for Planned Neighborhood Developments. E.	Update the sentence to reflect the current nomenclature for the 2017 Billings Area Bikeway and Trails Master Plan Update.	Administrative change.
Section 23-1004. Linear Park Land Dedication for Trail Corridors	Update the sentences to reflect the current nomenclature for the Billings Area Bicycle and Trails Master Plan. Linear park should be a minimum 25 feet wide.	Corridors that are only 20 feet wide are difficult to maintain both the trail surface and surrounding landscaping.
Appendix K. Subdivision Improvements Agreement Template. Section III Park D. Heritage Trail Plan.	Update this language to reflect the different types of bikeway and shared use path facilities Recommended in the 2017 Billings Area Bikeway and Trails Master Plan Update.	The Subdivision Improvements Agreement Template currently references the Heritage Trail Plan, which has since been updated twice. Additionally, the language only references 'trail' or 'trail connection'. Revising language to reflect all recommendations in the 2017 Plan Update, including both on-street and off-street recommendations, will help to ensure they considered during the subdivision application process. .



CHAPTER 5:
IMPLEMENTATION

5.1 INTRODUCTION

The vision of the Billings Bikeway and Trails Master Plan Update is to create a safe, convenient, and connected active transportation network consisting of streets, trails, sidewalks, and on-street bicycle facilities that are accessible to people of all ages and abilities, thereby improving the economic and physical health of the community and its citizens. This vision, and the associated goals developed in coordination with community stakeholders, should be referenced often to guide the implementation of this Plan. The Plan's goals include:

1. Complete Streets: *Improve, expand and consider active transportation and recreation facilities within the Billings Urban Area.*

2. Implementation: *Consider the implementation of active transportation facilities at all levels of government and through all related policies, processes, and standards that encourage and enhance walking, bicycling, and other trail-related activities in the Billings area.*

3. Evaluation: *Monitor the implementation of the Billings Area Bikeway and Trail Master Plan*

4. Transit Integration: *Integrate bicycling and walking into the Metropolitan Transit System (MET)*

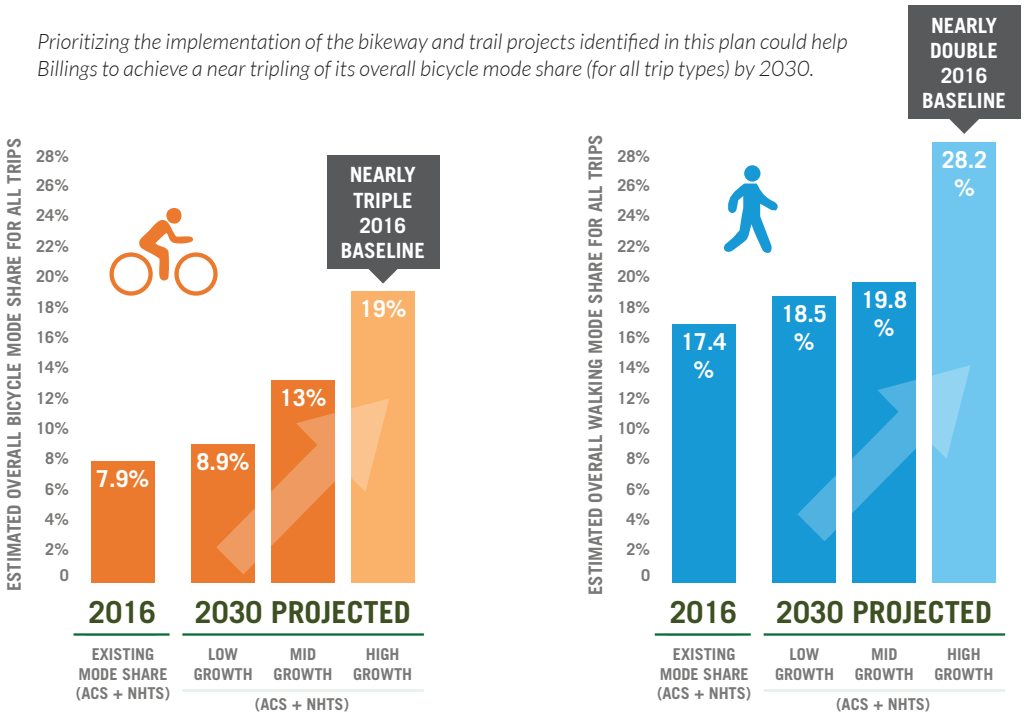
5. Maintenance: *Ensure bicycle and trail facilities are clean, safe, and accessible.*

6. Education and Encouragement Programs: *Implement comprehensive education and encouragement programs targeted at all ages and abilities.*

7. Enforcement: *Increase enforcement on City/County streets, trails and bikeways to make interactions between motorists, bicyclists, and pedestrians safer.*

8. Health and Safety: *Encourage healthy activities through increased access and safe infrastructure for bicyclists and pedestrians.*

Prioritizing the implementation of the bikeway and trail projects identified in this plan could help Billings to achieve a near tripling of its overall bicycle mode share (for all trip types) by 2030.



5.2 IMPLEMENTATION STRATEGIES

Implementation of this Plan will take place incrementally over many years, and involve a number of community partners. The City of Billings, Yellowstone County, MDT, Billings TrailNet, and the private development community will all make contributions to improving the bikeway and trail network in the Billings Area.

The recommendations included in this plan have been prioritized to provide staff and community stakeholders general guidance about how projects could be implemented. Using the prioritization results should be only one of several factors used to determine the order of project implementation. Bikeway and trail implementation is often based on opportunities. As opportunities arise, projects should not be overlooked if they did not rate near the top of the scoring exercise. The following strategies and actions can guide Billings toward completing the bikeway and trail network identified in this Plan.

Complete Inexpensive 'Low-Hanging Fruit"

Many projects in this Plan may be accomplished without major roadway reconstruction or resurfacing. Potential projects should be reviewed annually to determine how many of these projects can be completed. Projects that may be low-hanging fruit include bike lanes that require striping only to complete, wayfinding installation, and the bicycle boulevard network.

Leverage Resurfacing Projects

Billings' streets are subjected to hundreds of freeze/thaw cycles annually, as well as wear-and-tear caused by snow tires, heavy vehicles, plowing operations and other stresses. These conditions reduce the life of the pavement surface, requiring more frequent pavement surface preservation than in other US Cities. Each chip seal, or mill and overlay project, should include a review of this Plan to determine if a bikeway can be integrated into the scheduled roadway resurfacing project. These projects represent blank slate opportunities to implement bikeway facilities with little incremental cost.

Leverage Other Roadway Projects

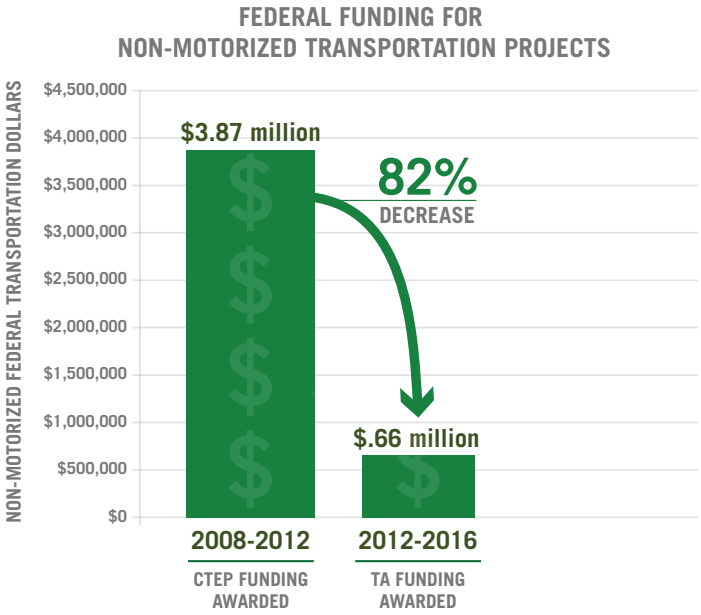
Roadway reconstruction projects also represent opportunities to implement recommendations included in this Plan. As major reconstruction projects are planned and designed, the Plan's recommendations should be reviewed and integrated.

Pursue Visionary Projects

In communities across the country, bikeway and trail projects that were originally considered visionary have been constructed. Grants can provide funding that fast-track projects towards implementation. While some projects included in this Plan represent long-term visions, the community should think boldly about how to fund and implement all projects, including expansion of dedicated local funding sources.

Establish Dedicated Local Funding

Bikeway funding in Billings is typically an opportunistic mix of funding sources from the Federal, State and Local levels. In recent years with the passage of the new Federal transportation bills (MAP-21 and the FAST Act), dedicated funding for non-motorized transportation has been reduced and become more competitive with other Montana communities. The Billings area has received only $664,930 in Transportation Alternatives (TA) grant funding from 2012-2016, versus annual dedicated funding under the previous transportation bill through the Community Transportation Enhancements Program (CTEP). of $3.87 million from 2008-2012. This 82% reduction has had a palpable effect on the pace and number of projects being developed, resulting in a slowing of bikeway and trail development. To provide additional revenue streams to implement the plan's recommendations, dedicated local funding sources should be established. Section 5.5 provides a summary of available funding sources, including options for creating dedicated local funding sources for non-motorized transportation facilities.



Nationally, federal funding for bicycle and pedestrian projects has become more competitive. Between 2012 to 2016, the Billings Area received 82 percent less federal funding through the TA Program than from 2008 to 2012 through CTEP. This drop in funding emphasizes the need for additional mechanisms to fund bicycle and pedestrian projects, such as a dedicated local funding source. Options to establish this type of funding source are described in Table 5.4.

5.3 COST ESTIMATES

Planning level construction cost estimates for shared use path and bicycle boulevard projects are provided in the Appendix. Being a planning level assessment, project unknowns exist, and therefore a high and low cost estimate is provided. This broad range of potential costs is appropriate given the level of uncertainty in the design at this point in the planning process. Engineering costs, and any property acquisition costs (if applicable), are not included in the cost estimate. The following provides greater detail on some of the associated cost estimates (note: additional costs will require additional funding).

Shared Use Paths

Path construction can require a high level of preparation – purchasing property, engineering design, and coordination with many stakeholders. Costs for a new shared use path typically range from $80-$140 per linear foot, depending on complexity. Projects that require minimal grading and pavement will run at the lower end of the range, where projects that require culverts, bridges, retaining walls or other expensive improvements will fall toward the upper end of the estimate.

Bicycle Boulevards

The costs assume that the project consists of wayfinding signs every quarter-mile, and roadway markings about every 200 feet. At about $400 per installed sign and $200 per marking, the per mile cost is roughly $17,000. Thermoplastic markings are recommended, as paint markings will typically wear out completely in less than one year. Intersection improvements are estimated based on the level of complexity. In general, the more that concrete and signal work is required, the more expensive the improvement will be. Some bicycle boulevards include short sections of other facility types, such as shared use paths or bicycle lanes. All segments for individual projects should be implemented simultaneously.

Bicycle Lanes

Some bicycle boulevards include sections of bike lanes. Painting a bicycle lane on a road with sufficient width costs roughly $10,000 per linear mile ($5,000 in one direction) for paint striping and thermoplastic stencils. For such retrofit projects, some may require few or no other changes to the roadway configuration, however some may require lane configuration or orientation changes. This can be done by removing the existing road markings and applying new ones, or it also may be included as part of a routine resurfacing. When bike lanes are added as part of a resurfacing project, additional features such as buffers or separated bike lanes, increase the cost further.

5.4 PROJECT PRIORITIZATION

For the 2011 Plan, projects were prioritized based upon scoring criteria, which were then weighted by the project steering committee. The plan had two-sets of scoring criteria, one specific to off-street facilities and the other specific to on-street bikeways, and scores were developed for every project. For this Plan Update, rather than using two sets of scoring criteria, the two lists have been consolidated into a single, more focused set.

These criteria are described in Table 5.1, and were determined in coordination with the project steering committee, along with weights for each criterion.

Additionally, for this Plan Update, the total number of recommended projects has increased. Projects that would be funded through new development, or through the standard resurfacing and complete streets elements of other roadway projects, have not been scored, as those projects will be implemented according to the CIP and engineering schedules. Overall, this strategy results in a smaller list of scored projects, and provides a more useful tool for staff to pursue bicycle, pedestrian or trail specific funding for projects that require external funding sources. Project descriptions and scores are provided in the Appendix.

TABLE 5.1: PROJECT PRIORITIZATION CRITERIA

Criteria	Description
Public Input	The Billings Area Bikeway and Trail Master Plan has engaged the public through two public workshops, stakeholder meetings, an online mapping exercise, and online survey. Recommended projects with demonstrated public endorsement will qualify for this prioritization criterion.
Proximity to Schools	To encourage more students to walk and bicycle to school, proposed facilities that connect to, or travel within 1/4 mile of K-12 schools (public and private), Montana State University-Billings, and Rocky Mountain College would qualify for this prioritization criterion.
Connectivity to Existing Facilities	Extending the existing network to create longer continuous routes will result in a more connected system as it expands versus implementing isolated and disconnected projects. Facilities that connect to an existing bikeway or trail will receive this scoring criterion.
Network Gaps	Gaps in the bikeway network discourage use because they limit route continuity, or require users to choose less direct paths to access their destinations. Some users feel "stranded" when a facility abruptly ends, sometimes forcing them to walk or ride on a street that does not accommodate them. Facilities that fill gaps between two otherwise continuous facilities in the existing bikeway and trail network will qualify for this criterion.
Connections to Activity Centers	Activity centers are the major trip-originating destinations within Billings (e.g. parks, commercial districts, large employment centers, etc.). By increasing bicycle accessibility to major activity centers, the Billings Area Bikeway and Trail Master Plan can reduce traffic congestion and support residents and visitors who choose to bicycle or walk for transportation. Projects that connect to these centers qualify for this prioritization criteria.
Ease of Implementation	Bikeway and trail facilities range in project readiness and the amount of construction or prior work that needs to be completed before a facility can be installed. Some streets or existing public rights of way can accommodate bike lanes and/or trails without extensive modifications; where as other projects may require significant changes to the travel lanes, medians, street parking, topography, etc. Many cities choose to pursue the "low-hanging fruit" projects to achieve quick wins and build support for more politically complex projects. Bikeway projects that require minimal changes to the built environment will score higher on this criterion.
Equity	As the bikeway and trail network continues to develop, it is important to serve areas of the community that have a high concentration of traditionally underserved populations. These areas typically have higher rates of transportation based walking and bicycling, and are usually more underserved when it comes to existing infrastructure. US Census data will be used, and projects that serve areas with a high concentration of historically underserved populations will score more points than areas with lower concentrations of these populations. Included data will cover poverty, people of color, high school diploma, percent of population that is non-English speaking, and percentage of population without access to a private vehicle.
Downtown	Downtown Billings is a major trip generator for the region. Downtown is a major entertainment, commercial and employment hub. As such, it is the destination for many daily trips in Billings. Providing adequate, and a variety of bikeway and/or trail connections to downtown can positively impact daily use in the City. Bikeway or trail facilities that provide direct or secondary connectivity to downtown will quality for this criterion.

5.5 FUNDING SOURCES

This section provides an overview of available federal, state, and local funding sources. Most funding sources are competitive and require the preparation of applications.

For multi-agency projects, applications may be more successful if prepared jointly with other local and regional agencies. The majority of non-local public funds for bikeway and pedestrian projects are derived through a core group of federal and state programs. In addition to federal, state, and regional funding sources, the Billings Area could develop a dedicated local funding source for active transportation improvements through a variety of measures. The Billings Area should also take advantage of private-public partnerships to fund projects identified in this Plan as well.

TABLE 5.2: FEDERAL FUNDING SOURCES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Funding Source Detail
Surface Transportation Block Grant Program (STBGP)	Bicycle and pedestrian improvements, among others	Varies	MDT and MPO	With the passage of the 2016 Federal Transportaiton Bill, Fixing America's Surface Transportation Act (FAST Act), the former Surface Transportation Program (STP) has become the Surface Transportation Block Grant Program (STBGP), which now includes Transportation Alternatives Program funding (described below). Billings- Yellowstone County Metropolitan Planning Organization (MPO) accepts concept reports for consideration of programming funds. This program has a state and an MPO component.
Transportation Alternatives Program (TAP)	Bicycle and pedestrian improvements only	Funds can be used for construction, planning and design of on and off-road bicycle and pedestrian facilities	MDT and MPO	The FAST Act combines the former TAP (which included the former Recreational Trails and the Safe Routes to School programs) into the STBGP (above). Though program requirements will stay roughly the same, total funding has been slightly increased. Most projects have an 80/20 federal/local match split, and can include sidewalks, paths, trails (including Rails-to-trails), bicycle facilities, signals, traffic calming, lighting and safety infrastructure, and ADA improvements. Unless a state opts out, it must use a specified portion of its TA funds for recreational trails projects. Since the Billings Urban Area is less than 200,000 people, the Billings Area competes with other Montana communities for this source to fund projects. Funds are distributed by MDT.
Highway Safety Improvement Program (HSIP)	Infrastructure and program safety improvements	Public road with a correctable crash history, expected to reduce crashes, positive cost-benefit ratio, or, a systemic safety project	MDT	Program purpose is to reduce fatalities and serious injuries on public roads through infrastructure and programs. Like SSIP, HSIP can fund low cost, systemic improvements if benefit-cost is met.
Transportation Infrastructure Finance and Innovation Act (TIFIA) Loans	Large projects	Varies	USDOT	While not a competitive grant funding source, these loans do provide financing options, including credit assistance in the form of direct loans, loan guarantees, and standby lines of credit for large, surface transportation projects of national or regional significance, as well as public-private partnerships.
Transportation Investments Generating Economic Recovery (TIGER)	Shovel ready, surface transportation projects	Positive estimated cost-benefit ratio meeting federal transportation goals, benefitting country as a whole	USDOT, State and Local Gov'ts	Approvals for the eighth round of TIGER, totalling $500 million, were signed into law in 2015 and applied for in 2016. Projects involving highways, bridges, bicycle and pedestrian facilities, transit, rail, and intermodal are eligible. Detailed application must be completed. Projects are highly competitive, and require a minimum 20 percent local match funding. While this funding source currently exists, it could be discontinued in the future.
Partnership for Sustainable Communities	Bicycle and Pedestrian infrastructure	Project must fulfill Livability Principles	EPA, HUD, and USDOT	Joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). It is based on five Livability Principles, one of which explicitly addresses the need for pedestrian and bicycle infrastructure. It is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities

TABLE 5.2: FEDERAL FUNDING SOURCES (CONTINUED)

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Funding Source Detail
Community Transformation Grants	Bicycle and Pedestrian Infrastructure and Programs	Projects and programs aimed at increasing physical activity to reduce risk of disease	CDC	Community Transformation Grants, administered through the Center for Disease Control (CDC), support community–level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.
Federal Transit Administration (FTA) Funding	Bicycle and pedestrian infrastructure	Project must enhance or be related to public transportation facilities	FTA	Multiple FTA funding sources exist. Most FTA funding can be used to fund pedestrian and bicycle projects "that enhance or are related to public transportation facilities."
Additional Federal Funding	Varies	Varies	Varies	The landscape of federal funding opportunities for pedestrian and bicycle programs and projects is always changing. A number of Federal agencies, including the Bureau of Land Management, the Department of Health and Human Services, the Department of Energy, and the Environmental Protection Agency have offered grant programs amenable to pedestrian and bicycle planning and implementation, and may do so again in the future. For up-to-date information about grant programs through all federal agencies, see: http://www.grants.gov/

TABLE 5.3: STATE/REGIONAL FUNDING SOURCES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Funding Source Detail
State Legislation	Legislation dependent	Legislation dependent	State of Montana	State legislation can create taxes, such as a gas tax, that provide dedicated funding for transportation. Funding raised for the tax could be directed to MDT and local municipalities. A new initiative to the state legislature to raise the Montana gas tax by $.10/gal has been proposed. If approved, $.04/gal would be directed to MDT, and $.06/gal would be directed to local governments, which a portion of the revenues could be used to fund bicycle/pedestrian projects locally.
Spot Safety Improvement Program (SSIP)	Infrastructure and program safety improvements	Identified safety issue, similar quals to the HSIP	MDT	Because SSIP is only state, and not federal, money, spending can be more flexible to fix crash-prone locations.
Statewide Transportation Improvement Program (STIP)	Transportation projects, including bicycle and pedestrian infrastructure	Varies	MPO and MDT	The Statewide Transportation Improvement Program (STIP) is MDT's short-term capital improvement program, providing project funding and scheduling information for the department and Montana's metropolitan planning organizations. The MDT, as well as the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approve the STIP.
Metropolitan Planning Organization Transportation Improvement Program (TIP)	Transportation projects, including bicycle and pedestrian infrastructure	Varies	MPO	MPOs are responsible for planning and prioritizing all federally funded transportation improvements within an urbanized area. The Billings-Yellowstone County Metropolitan Planning Organization is the is the Metropolitan Planning Organization (MPO) for Billings and surrounding urban areas. MPOs maintain a long-range transportation plan (LRTP) and develop a transportation improvement program (TIP) to develop a fiscally constrained program based on the long-range transportation plan. This Plan recommends that the City and County and its partners continue to work closely with MPO to ensure pedestrian, bikeways and transit improvement projects recommended in this Plan are listed in the TIP.

TABLE 5.4: LOCAL FUNDING SOURCES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Funding Source Detail
General Fund	Maintenance, Capital Improvements List projects	Projects should incorporate active transportation accommodation	Local Gov't	Street and park maintenance districts are used to pay for maintenance expenses. Projects identified for reconstruction or re-pavement as part of the Capital Improvements list should also incorporate recommendations for bicycle or pedestrian improvements in order to reduce additional costs.
Bond Financing	Varies	Varies	Varies	Bonds are a financing technique and not a funding source. Money is borrowed against a source of revenue or collateral (i.e. parcel tax revenue). Bonds do not increase total funding, but rather shift investment from future to present. A previous General Obligation Bond (GO Bond) funded many of the Billings Area trails.
Special Assessments or Taxing Districts	Varies	Varies	Local Gov't	Local municipalities can establish special assessment districts to pay for improvements. The Lockwood Pedestrian Safety District is a local example of this type of funding source, which is a special assessment program for implementing pedestrian improvements, including sidewalks.
Business Improvement Area of District	Varies	Projects should benefit surrounding businesses' customers	Billings BID	Trail, pedestrian, and bicycle improvements can often be included as part of larger efforts aimed at business improvement and retail district beautification. Business Improvement Areas, such as the Billings Business Improvement District, collect levies on businesses in order to fund area wide improvements that benefit businesses and improve access for customers. A portion of this revenue could be used to fund bicycle and pedestrian improvements.
Development and Impact Fees	Varies	Varies	Local Gov't	Development impact fees are one-time charges collected from developers for financing new infrastructure construction and operations, and can help fund bicycle and pedestrian improvements. Impact fees are assessed through an impact fee program.
Sales Tax	Varies	Varies	Local Gov't	Local governments can choose to exercise a local option sales tax, and use the tax revenues to provide funding for a wide variety of projects and activities. No sales tax is currently established in the Billings Area, but if there ever is, a small portion of the funds being directed towards transportation should be dedicated for active transportation projects. State approval required to enact local sales tax.
Property Tax	Open space acquisitions	Varies	Local Gov't	Property taxes generally support a significant portion of a local government's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance open space system acquisitions. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. It should be noted that other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.
Excise Tax	Varies	Varies- could specifically focus on tourism	Local Gov't	Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation-related activities.
Tax Increment Financing	Infrastructure projects	Projects should specifically benefit the TIF area	Local Gov't	Tax Increment Financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project (e.g., shared use path) is constructed, surrounding property values generally increase and encourage surrounding development or redevelopment. The increased tax revenues are then dedicated to support the debt created by the original public improvement project.

TABLE 5.4: LOCAL FUNDING SOURCES (CONTINUED)

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Funding Source Detail
Street User Fees	Infrastructure projects	Varies	Local Gov't (Public Works)	Many cities administer street user fees through residents' monthly water or other utility bills. The revenue generated by the fee can be used for operations and maintenance of the street system, and priorities would be established by the Public Works Department. This approach could be more equitable than property taxes, which just impact property owners.
In Lieu of Fees	Open space or trail projects	Varies	Local Gov't	Developers often dedicate open space or trail projects in exchange for waiving fees associated with park and open space allocation requirements in respect to proposed development.

Creation of a City of Billings and/or MPO level Bikeway and Trail Account.

To address federal funding shortfalls and provide a more dependable and consolidated funding stream the creation of a Bikeway and Trail Account is recommended. A Bikeway and Trail Account intends to fund safety improvements, enhancements, and targeted expansions of the city's bikeway and trail network. The fund would operate as a catch-all for various smaller funding sources, and could be used to fund capital projects or be used as matching funds to leverage larger amounts. Combining these sources could result in more effective projects than if the funds remained divided. Transferring other moneys to this account will help fund larger projects and allow them to happen more quickly. The proposed bicycle parking program could exist as a component of the Bikeway and Trail Account. The Account funding would need to be allocated within the City's and/or MPO's annual budget. The Bicycle Transportation Account may be funded through existing sources or may be funded through a new source such as an increase in fees or other new sources of revenue. Transfers from other sources such as a gas tax apportionment, would augment City or MPO funding. Likely candidate projects would include prioritized projects in the Appendix, which do not include bicycle or pedestrian facilities implemented as part of existing capital road construction projects or routine pavement preservation.

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