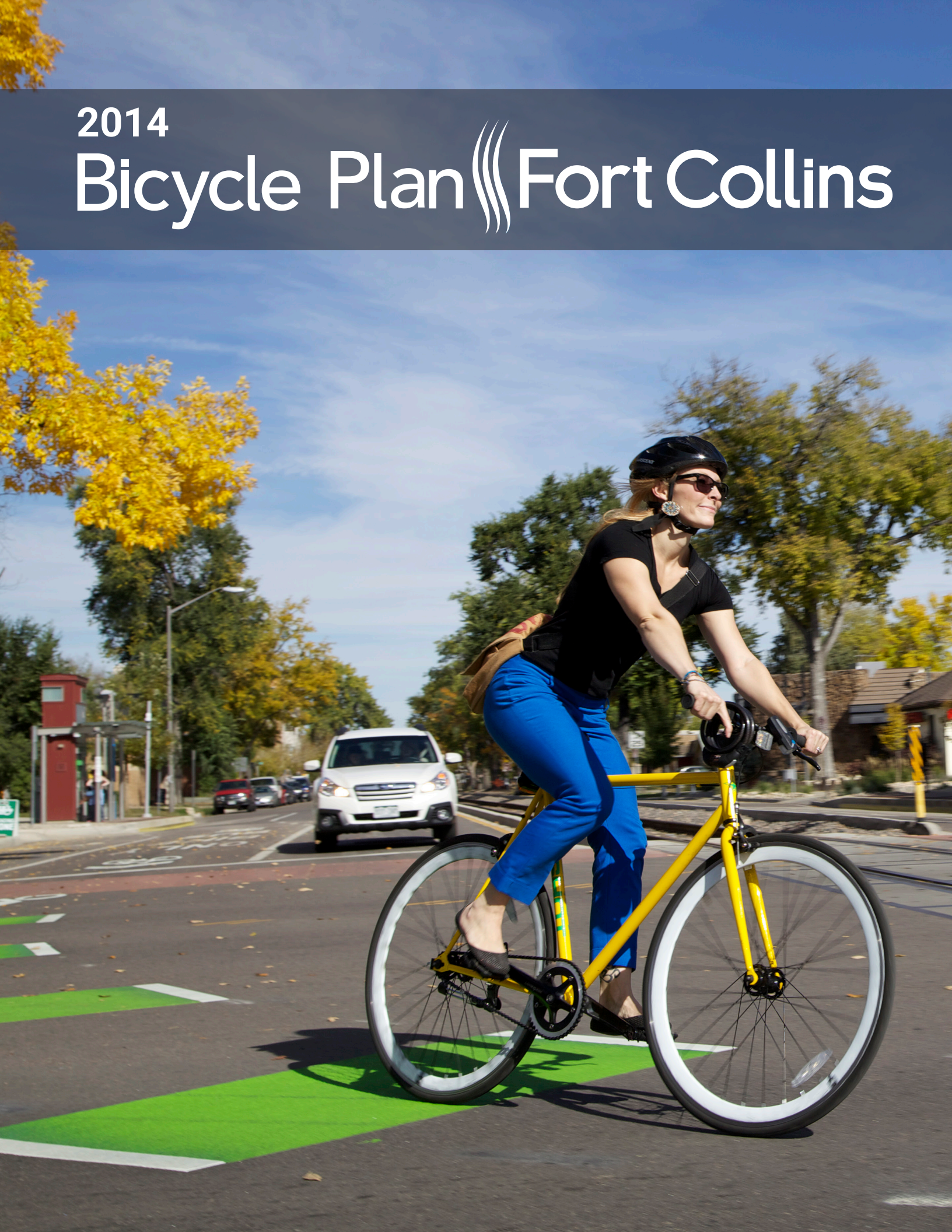


2014

# Bicycle Plan Fort Collins



# Acknowledgments

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- Communications
- Social Sustainability
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- Planning and Zoning Board
- Senior Advisory Board
- Youth Advisory Board
- Parks and Recreation Board
- Bicycle Advisory Committee
- Air Quality Advisory Board
- Commission on Disability

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- Fort Collins Bike Library
- New Belgium Brewery
- Ciclismo Youth Foundation
- Visit Fort Collins
- Cranknstein
- Bicycle Safety Institute
- Fort Collins Cycling Club
- CanDo Fort Collins Coalition
- Healthier Communities Coalition
- Bicycle Pedestrian Education Coalition
- Coalition for Infrastructure
- Southeast Fort Collins
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# Chapter 1: Introduction

# The 2014 Bicycle Master Plan envisions Fort Collins as a world-class city for bicycling.

It is a city where people of all ages and abilities have access to a comfortable, safe, and connected network of bicycle facilities, and where bicycling is an integral part of daily life and the local cultural experience.

## Chapter 1: Introduction

Bicycling has long been a part of the fabric of life in Fort Collins. Recognized as one of the best cities in the United States for bicycling, Fort Collins is rated a Platinum-level Bicycle Friendly Community by the League of American Bicyclists, and ranked among the top 10 best U.S. cities for bicycling by *Bicycling Magazine*. Through the efforts of dedicated citizens, City leaders and staff, and the business community, Fort Collins has established a supportive environment for bicycling and a strong bicycle culture. The 2014 Bicycle Master Plan (2014 Plan) builds upon the significant existing investments in bicycling in Fort Collins, recognizing the importance of bicycling in the development of a healthy and safe community, and the opportunity for bicycling to become a mainstream transportation mode.

The 2014 Plan embraces a forward-thinking and cost-effective approach to bicycle infrastructure, route connectivity, policies and programs, and is oriented around the year 2020 in Fort Collins, where:

- 20 percent of people will commute by bicycle
- A balance of genders will bicycle
- There will be zero bicycle fatalities
- The number and severity of bicycle-related crashes will be lower than today
- There will be a 162-mile low-stress bicycle network
- 80 percent of residents will live within one-quarter mile of a low-stress bicycle route
- All neighborhoods will have access to a low-stress bicycle route
- The City will have implemented a protected bike lane demonstration program
- 8,000 K-12 students will receive bicycle education annually
- Participation in the City's bicycle education and outreach programs will reflect the demographic and socio-economic breakdown of the Fort Collins population
- The number of residents participating in the City's education and outreach programs will have doubled
- 55 percent of residents will find it very easy to travel by bicycle
- Childhood and adult obesity rates will be lower
- Greenhouse gas emissions will be 20 percent lower than 2005 levels





**Low-stress bicycle facilities include low-speed and low-volume streets with comfortable crossings, paved trails, and protected bike lanes.**

A connected network of low-stress bicycle facilities has been shown to attract those who are interested in bicycling but concerned about their safety. The 2014 Plan provides a roadmap for attracting more riders with low-stress facilities.

The City has a real opportunity to increase the number of people who bicycle and truly make bicycling “an integral part of daily life and the local cultural experience.” Estimates show that bicycle trips currently make up between 7 and 13 percent of all commute trips, but the analysis and public feedback from this planning process indicate the untapped potential for bicycling in Fort Collins.<sup>1</sup> Regionwide, the average length of all trips is around five miles – a reasonable biking distance for most adults.<sup>2</sup>

To achieve the 2014 Plan vision, the City must:

- Provide residents, employees and visitors with world-class bicycle infrastructure by developing a “comfortable, safe and connected network” of bicycle facilities that is accessible to “people of all ages and abilities.”
- Build on its successful bicycle programs by emphasizing strong partnerships to increase safety, ridership and create a culture of respect and responsibility.

1 The 2012 American Community Survey estimates a 6.4 percent bicycle mode share for commute trips, and the NFRMPO 2010 Household Travel Survey estimates a 13.3 percent bicycle commute mode share.

2 NFRMPO 2010 Household Travel Survey. The top 10 trip types account for 82.2% of trips and have an average length of 4.89 miles. The overall average length of all trip types was 5.59 miles.



Credit: Flickr User Paul L Dineen



The many faces of Fort Collins bicycling



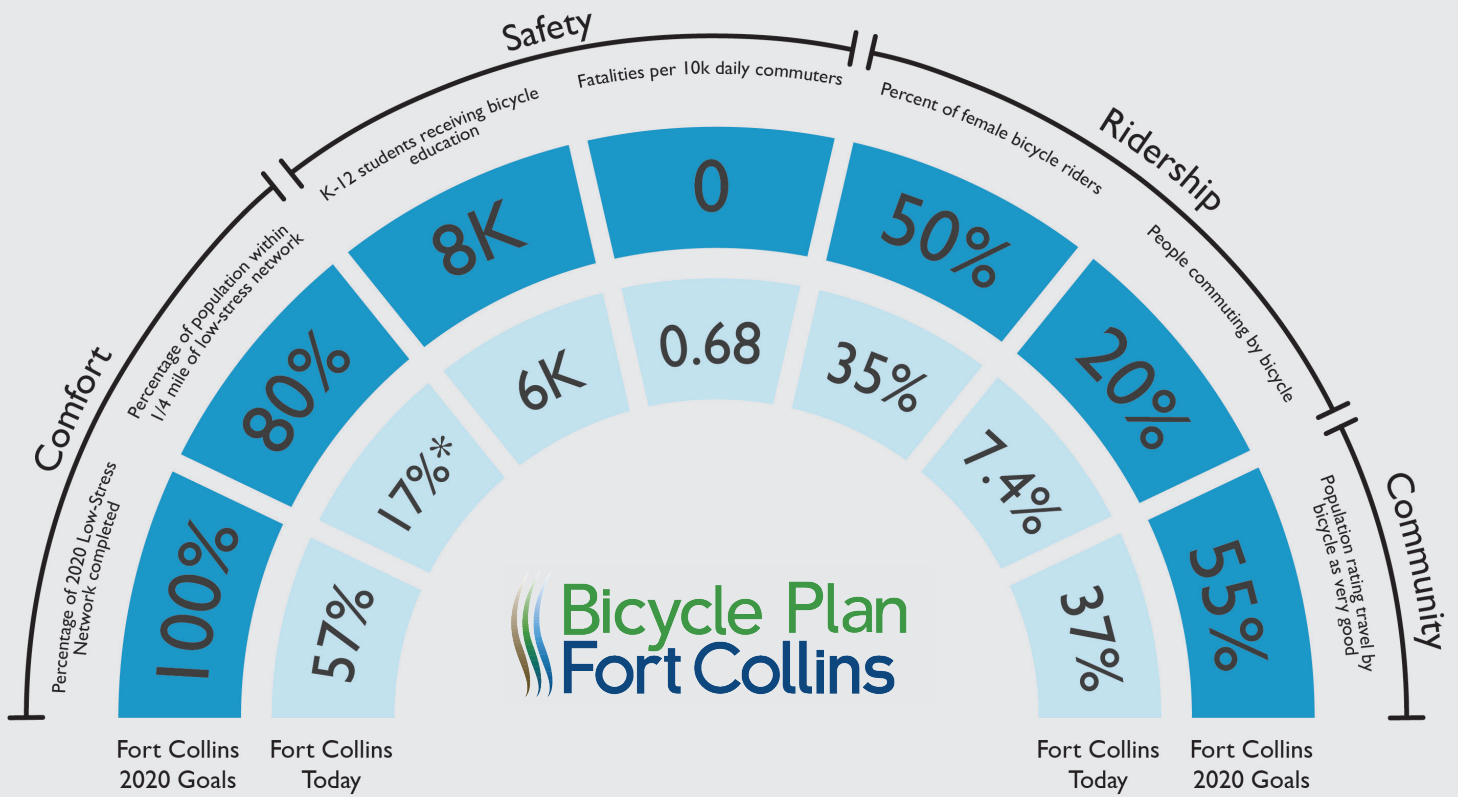
Community input from stakeholder visioning meetings about biking in Fort Collins today (left) and a vision for the future (right).

## Goals and Objectives

The goals and objectives of the Plan were developed by the City, key stakeholders, and the public within the context of a Triple Bottom Line—environmental, economic, social sustainability—evaluation. These goals set the stage for the 2014 Plan recommendations, including how actions are phased and prioritized.

	Goal	Objectives
<b>Connectivity</b>	Complete a connected network of low-stress bicycle facilities.	<ul style="list-style-type: none"> <li>Build and maintain bicycle facilities that form a continuous and dense low-stress bicycle network with seamless connections to public transit, bike share, schools, neighborhoods, community destinations, and the regional bicycle network.</li> <li>Implement a cohesive wayfinding system directing people to and along the low-stress bicycle network, and to community destinations.</li> <li>Provide high-quality bicycle parking at key destinations across the city.</li> </ul>
<b>Safety</b>	Improve safety for all modes of transportation.	<ul style="list-style-type: none"> <li>Reduce the number and severity of bicycle crashes.</li> <li>Eliminate bicycle-related fatalities.</li> <li>Implement appropriate, well-designed bicycle facilities, education and enforcement programs.</li> </ul>
<b>Ridership</b>	Increase the amount of bicycling for all trip purposes.	<ul style="list-style-type: none"> <li>Increase the percentage of trips taken by bicycle for commuting, recreation, and other purposes.</li> <li>Increase ridership by creating a welcoming environment for people of all bicycling levels.</li> </ul>
<b>Community</b>	Foster a strong bicycle community identity while advancing a culture of respect and responsibility for all transportation system users.	<ul style="list-style-type: none"> <li>Continue bicycle programming that showcases Fort Collins' local culture and encourages bicycling.</li> <li>Implement programs and initiatives that promote understanding and empathy among transportation users, and educate all users about rules of the road.</li> <li>Support community initiatives that help make bicycling a viable part of daily life.</li> </ul>
<b>Equity</b>	Provide equal access to bicycling for all members of the community.	<ul style="list-style-type: none"> <li>Build high-quality and leading-edge bicycle facilities in all parts of the city.</li> <li>Implement inclusive bicycle-related programs and outreach.</li> </ul>
<b>Comfort</b>	Increase the level of comfort experienced by people when bicycling.	<ul style="list-style-type: none"> <li>Increase the amount of low-stress bicycle facilities in Fort Collins and focus bicycle-related programming on educating and encouraging riders in order to build confidence.</li> </ul>
<b>Health</b>	Increase access to bicycling as essential to a physically active and environmentally healthy community.	<ul style="list-style-type: none"> <li>Promote recreational and utilitarian bicycling as part of a connected active transportation system.</li> <li>Connect bicycle facilities to parks, neighborhoods, schools, and other key points.</li> <li>Incorporate climate adaptation strategies in bicycle infrastructure planning and design.</li> <li>Configure land uses in a way that promotes bicycling.</li> </ul>

Table 1. Bicycle Master Plan Goals and Objectives



\* "Fort Collins Today" is the percentage of the population within 1/4 mile of a trail entrance.  
 "Fort Collins 2020" is the percentage of the population within 1/4 mile of a trail entrance or on-street low stress route.

#### Highlighted 2014 Plan Performance Measures

Inspired by the League of American Bicyclists "The Building Blocks of a Bicycle Friendly Community" graphic

## The Role of Bicycling in Fort Collins

Bicycling plays a major role in the culture and quality of life experienced by Fort Collins residents and visitors. People and businesses choose to locate in Fort Collins for the bicycling opportunities, the city is home to world-class cycling events, and Fort Collins now ranks seventh in the nation for the most bicycle-friendly businesses (ranked by the LAB). Residents, businesses and City leaders already recognize the many benefits of bicycling – including health, social, economic and environmental – but to truly position bicycle-related improvements for investment and prioritization, it is important to demonstrate how bicycling fits into other citywide goals.

In March 2014, Fort Collins became a certified 3-STAR Community in the Sustainability Tools for Assessing & Rating Communities (STAR) system—the only national sustainability rating system for communities. The City is one of only seven municipalities nationally to be recognized for its sustainability leadership at this level. A robust multimodal transportation system that enables residents to choose environmentally-friendly travel modes like bicycling can help Fort Collins maintain its role as a sustainability leader. Fort Collins has embraced the globally-recognized three pillars of sustainability: economic health, environmental

services, and social sustainability. These three elements, forming the Triple Bottom Line, help guide the City's decision-making. An improved bicycling environment supports all three aspects of the Triple Bottom Line.



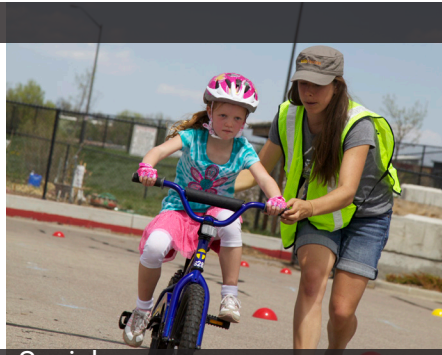
**Bicycling plays an important role in all aspects of Fort Collins' culture. Because of how important and valuable bicycling is:**

- K-12 schools run their own bicycle programs
- Local tourism centers around bicycling
- Numerous annual citywide events feature bicycling
- Businesses choose to locate in Fort Collins for the bicycle culture, lifestyle and infrastructure



New Belgium's Tour de Fat Parade.

**Bicycling's Triple Bottom Line**

Economic	Environmental	Social
<ul style="list-style-type: none"> <li>• A bicycle-friendly community attracts residents and businesses</li> <li>• Bicycling supports tourism</li> <li>• Improving bicycling is a relatively low-cost investment</li> <li>• Bicycling contributes to the local economy</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing bicycling can reduce single occupancy vehicle trips and greenhouse gas emissions</li> <li>• Bicycle projects have relatively low construction impacts given the small footprint and reduced impermeable surface</li> </ul>	<ul style="list-style-type: none"> <li>• Bicycling provides access to an affordable transportation option</li> <li>• Bicycling improves personal and community health</li> <li>• Bicycling increases quality of life and creates vibrant communities</li> </ul>

## Reasons to Take Action

### Barriers to bicycling still exist.

The majority of trips in the Fort Collins region are short enough to be made by bicycle, yet many of these trips are made by private automobile. In a survey conducted for this Plan, “gaps in the existing bicycle network” was the top response from Fort Collins residents when asked about physical infrastructure issues that prevent them from biking or from biking more.<sup>3</sup> This may mean different things to different riders. These gaps may be short sections of bike lanes missing on major streets, segments of trail yet to be built, or difficult intersections along corridors that connect important destinations. These physical barriers, no matter how small, impact people’s decisions about whether to make bicycling a part of their transportation routine.

<sup>3</sup> Fort Collins Bicycle Master Plan Online Survey, question 9.

### Bicycling Benefits: Success Stories

- After the construction of a protected bike lane in New York City, local businesses saw a 49 percent increase in retail sales.
- In Minneapolis-St. Paul, for every 400 meters closer a median-priced home is to an off-street bicycle facility, its value increases by \$510.
- Bicyclists in Philadelphia ride 260,000 miles daily, saving 47,450 tons of CO<sub>2</sub> from being emitted by cars each year.
- Portland State University researchers found that customers who arrive by bike spend 24% more per month than those who arrive by car.
- After New York City installed a protected green bike lane on Columbus Avenue, bicycling increased 56% on weekdays, crashes decreased 34%, speeding decreased and sidewalk riding decreased.

Source: People for Bikes

## Investing in bicycling can improve safety.

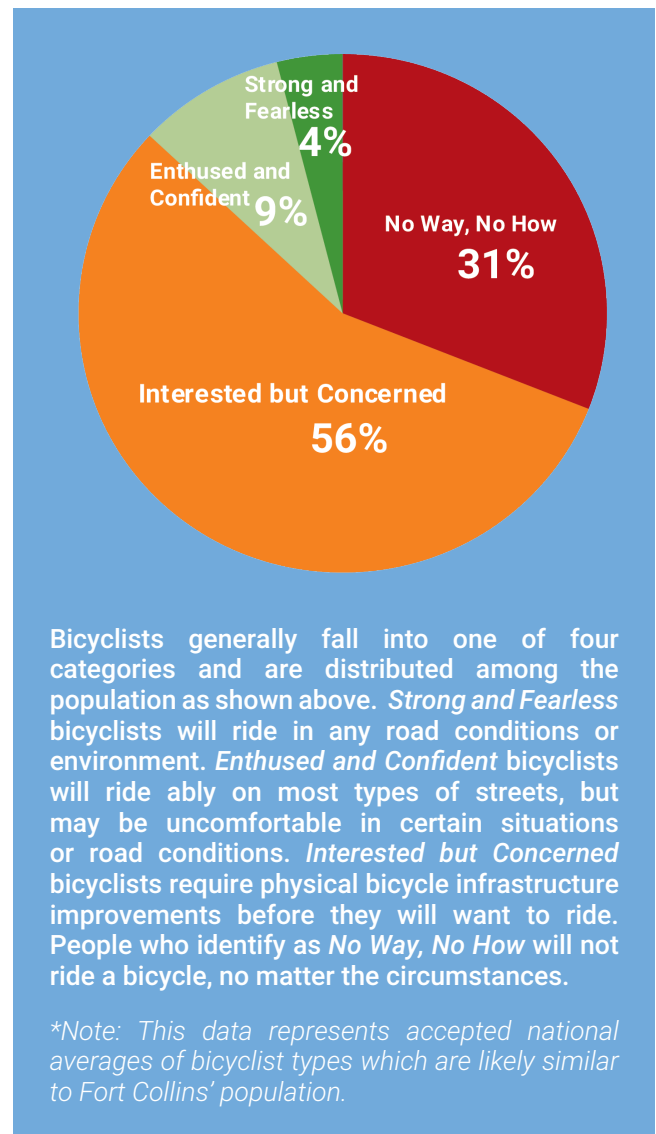
Along with overcoming physical barriers, the safety of bicycling in Fort Collins can improve. Annual bicycle-related crashes in Fort Collins rose 13 percent during the past five years, compared to an approximately 11 percent increase in population.<sup>4</sup> Almost all crashes occur at intersections and access points, and the most common types of crashes involve sidewalk riding. This suggests that, along with intersections, insufficient or lacking on-street bicycle facilities, which could influence a person's decision to bicycle on the sidewalk, are barriers to safe bicycling. Infrastructure improvements, as recommended in this plan, can address these issues, along with targeted education and enforcement programs.

## There is an untapped audience for bicycling in Fort Collins.

Fort Collins already has high bicycle ridership for an American city. The close proximity of destinations, temperate climate, flat terrain, strong bicycle culture, along with the general acceptance of bicycling as a viable mode of transportation, have contributed to the relatively high ridership that exists today. But there is a large segment of the population who choose not to ride today because they are concerned about safety and comfort; this population is commonly referred to as the *Interested but Concerned*. Women, youth, and seniors are the primary members of this underrepresented group. Given the right bicycle facilities, education and encouragement, these residents might choose to ride a bicycle for their next trip.

There is another audience of residents and visitors who may not ride today because they don't have access to a bicycle. The Fort Collins Bike Library addresses some of this need through low-cost bicycle rentals, but a more widespread bike share system offers the potential to significantly increase the accessibility and availability of bicycling, by providing a system of public bicycles available on-demand. A fully automated bike share system is outlined in the accompanying Bike Share Business Plan that was completed to complement the 2014 Plan.

<sup>4</sup> Crash statistics refer to all police-reported bicycle-automobile crashes from 2009-2013.



*Enthused and Confident bicyclists ride in a bicycle lane.*



Fort Collins stakeholders attend an open house about the Bicycle Master Plan.

### Existing plans and policies guide the City to continue planning for bicycles.

The City's guiding document for development, *City Plan*, called for an update to the 2008 Bicycle Plan. Each of *City Plan's* main themes—innovate, sustain, connect—is addressed inherently in the 2014 Plan. Innovation is presented in the form of leading-edge bicycle facility types and programs. Sustainability will be advanced through the environmental benefits of bicycling investments. Connections will be formed as more people have a convenient, safe and inexpensive way to travel through the City and as a growing bicycle culture supports vibrant neighborhoods and business districts.

One of the major goals of *City Plan* is community and neighborhood livability. The goals and principles related to bicycling include a “complete streets” approach to commercial districts and the promotion of bicycling along Enhanced Travel Corridors (ETCs).

*City Plan* is accompanied by the Transportation Master Plan (TMP), updated in 2011. The TMP aims to implement the themes of *City Plan* within the transportation network. Goals to enhance the bicycling environment appear throughout the TMP: increasing awareness of healthy transportation; promoting bicycle safety and enforcement; designing high-quality and environmentally sustainable trails and streets; making bicycling safe, easy, and convenient for all; and encouraging land use planning and development to support bicycling.

The *City Plan* and TMP goals and actions were considered in the development of this 2014 Plan and helped guide program, policy and network recommendations.

Other City plans and policies, such as the *Climate Action Plan (CAP)*, also guide the City to plan for and invest in bicycling. The City is currently updating its *CAP*, which calls for visionary community greenhouse gas emissions reduction targets, for example, a 20 percent reduction below 2005 levels by 2020 and an 80 percent reduction by 2030. As the City strives to achieve bold climate protection goals, providing access to bicycling as a sustainable form of transportation presents a unique opportunity for mitigating and adapting to a changing climate. As Fort Collins continues its leadership role in environmental sustainability and stewardship, bicycling should play a major role in the City's future transportation options.

### City Plan and the TMP include the following near-term action items related to bicycling.<sup>5</sup>

**Evaluate the existing on-street bicycle system and update the LOS criteria** (*On-street network has been addressed through the 2014 Plan*)

**Implement additional pedestrian and bicycle safety education programs** (*Addressed through the early implementation of the 2011 Bicycle Safety Education Plan*)

**Update the Master Street Plan Classifications and Larimer County Urban Area Street Standards to address needs for context-sensitive elements**

**Update bicycle/pedestrian trail design standards to address use of trails for commuting/transportation purposes** (*Addressed through the 2013 Trails Plan*)

**Evaluate/improve bicycle wayfinding** (*in progress*)

**Plan for and design a “green street” demonstration project** (*Currently planned for implementation in 2015 along Remington St.*)

<sup>5</sup> City of Fort Collins, *City Plan*, 2011, pp 144, 146, and 153.

## Strategic investments can make bicycling better.

Fort Collins' existing bicycle-related programming serves as a national model. Partnerships with Bike Fort Collins, the Fort Collins Bicycle Co-op and other organizations help execute some programs, although many are led by the City. The City's Safe Routes to School (SRTS) program educates thousands of children every year about safe bicycling and walking. Bicycle Ambassadors encourage and educate at the neighborhood level, holding "open garage" events, distributing bicycling information at farmer's markets and other community events, teaching Traffic Skills 101 and other bicycle safety classes, and modeling good bicycling behavior when using the City's transportation system. Meanwhile, Summer and Winter Bike to Work Month and Day events attract thousands of enthusiastic new and long-time riders, and new initiatives like Open Streets and Women on a Roll introduce new audiences to bicycling.

The 2014 Plan recommends a strategic and focused approach to future bicycle programs. Making bicycling a viable choice and attractive for people of all ages and abilities will require

the City to focus primarily on implementing the network recommendations presented in Chapter 4. Residents indicated in the 2014 Plan survey that improvements related to infrastructure are the most important elements to increase bicycling and improve safety, specifically better bike routes, additional grade-separated crossings (underpasses or overpasses) and improved intersections.<sup>6</sup>

Chapter 3 outlines a focused approach to bicycle programs in alignment with the 2014 Plan goals. Existing and new programs are recommended for implementation through strong community partnerships.

**In 2013, the SRTS program educated nearly 6,000 K-12 students and reached an additional 8,000 with encouragement activities.**



A Fort Collins Safe Routes to School Bicycle Safety class in action.

6 Fort Collins Bicycle Master Plan Online Survey, question 16.

## Fort Collins can become a world-class city for bicycling.

Fort Collins is one of only four Platinum-level Bicycle Friendly Communities (BFC) in the country, as rated by the League of American Bicyclists (LAB). Since the city attained this designation, the LAB has added a higher rating to its system: Diamond.

Diamond BFCs will be world-class bicycling cities where, among other metrics, at least 20 percent of residents commute by bike, 90 percent of all arterial streets have bike lanes, and excellent bicycle-friendly laws and ordinances are in place.

**The 2014 Plan establishes a strategic path for Fort Collins to achieve the metrics set by the LAB, but most importantly, to establish a world-class cycling environment that is safe and comfortable for people of all ages and abilities.**



## Bicycle Master Plan Development

Over 3,000 Fort Collins residents and stakeholders helped shape the 2014 Plan. The project process included collaborative engagement focused on the general public, community stakeholders, the project Technical Advisory Committee (TAC), the Bicycle Advisory Committee (BAC), City Boards and Commissions, and City Council.

The 2014 Plan included the following community engagement:

- **Regular electronic communication.** Project updates were available through FC Bikes' monthly newsletter, *Momentum*, reaching nearly 3,000 people, and through website and social media communication.
- **Online survey and interactive map.** The City conducted an online survey in late 2013 with over 1,000 respondents, and launched an online WikiMap in early 2014. Both gave the public an opportunity to give input on existing bicycling habits, barriers to bicycling, locations where bicycle parking is needed, and potential bike share locations.
- **FC Rides!** The City hosted four community bicycle audits with nearly 50 participants to gain on-the-ground feedback about bicycling conditions across the community.
- **Public open houses.** Two open houses were held during the course of the project, reaching



hundreds of residents. Each open house was both informative and interactive.

- **Focused group events.** To reach groups typically underrepresented in bicycling, the City participated in the Leshler Middle School Tour de Fit held during the school's Bike Week and National Bike to School Day, and a meeting with Vida Sana, a community coalition addressing health issues in Fort Collins' Hispanic community.
- **Formal participation in key citywide events and open houses.** The City presented information and solicited input at multiple events and public meetings including Summer Bike to Work Day, Open Streets, a Community Issues Forum, the Air Quality Forum, and the Citywide Planning Projects Open House.
- **Stakeholder meetings.** A total of four Technical Advisory Committee meetings were held to gain input on the 2014 Plan goals, existing conditions, and recommendations. Additionally, a workshop was held with approximately 40 stakeholders to define a vision and goals for bicycling in Fort Collins.
- **Partnerships.** Concurrent with the City's 2014 Plan, Colorado State University (CSU)



FC Rides! in action.

developed a Bicycle Master Plan. Enhanced stakeholder coordination occurred as the plans were developed.

- **Boards and Commissions Presentations.** The City solicited input through the: Youth Advisory Board, Transportation Board, Bicycle Advisory Committee, Planning and Zoning Board, Air Quality Advisory Board, Commission on Disability, Senior Advisory Board, and Parks and Recreation Board.
- **Other stakeholder presentations, including:** Downtown Business Association, Chamber of Commerce, Trinity Lutheran Church, Coalition for Infrastructure, Fort Collins Cycling Club, and ClimateWise's Business Education Series.



Fort Collins residents and planners discuss specific improvements to the Fort Collins bicycle network.

## Plan Organization

The 2014 Bicycle Master Plan is a strategic and focused summary of key recommendations designed to increase the safety, connectivity and comfort of bicycling for people of all ages and abilities. The recommendations were informed by technical analysis, best practices, community input and local policy guidance. The Plan is organized around recommendations for bicycling in three key areas: **programs**, **policies** and the **bicycle network**, and concludes with a chapter on **implementation**. Chapters begin with a summary of existing conditions followed by relevant key outcomes. Comprehensive details on existing conditions, public engagement, design and wayfinding guidelines, and recommendations can be found in the Appendices.

The Plan goals are referenced in each chapter. In Chapters 2 and 3, the goals most specifically addressed by each recommendation are noted with the icons shown in the table to right. Since the bicycle network plan (Chapter 4) comprehensively addresses all the Plan goals, their relation to physical bicycle infrastructure is outlined at the beginning of the chapter, rather than for each individual recommendation.

### Chapter 2: Bicycle Programs

This chapter includes an overview of existing bicycle programs, proposed new and expanded programs and proposed strategies to focus the City's bicycle programming.

### Chapter 3: Bicycle Policies

This chapter includes a description of recommendations for City policy changes, including engineering standards, land use policies, maintenance standards and parking policies.

### Chapter 4: Bicycle Network

This chapter outlines recommendations to improve the physical infrastructure that makes up the bicycle network. It includes: a description of existing bicycle facilities and new proposed facility types, such as protected bike lanes; a description of the proposed near-term 2020 low-stress bicycle

network, which focuses on bicycle wayfinding, intersection treatments, and on maximizing existing streets that are already comfortable for bicycling; and, the proposed Full Build Network, which proposes a dense network of bicycle facilities to be built over time.

## Chapter 5: Implementation

This chapter presents a prioritized list of the 2020 low-stress network recommendations and bicycle programs, and discusses funding strategies that will help the City implement the 2014 Plan recommendations in a focused, data-driven and strategic manner. This chapter also includes performance measures to track progress over time.

## Appendices

- A. Summary of Public Involvement
- B. State of Bicycling in Fort Collins
- C. Draft Design Guidelines
- D. Wayfinding Guidance
- E. Existing and Planned Bicycle Programs
- F. Implementation Details

CT	Connectivity
SA	Safety
RD	Ridership
CO	Community
EQ	Equity
CF	Comfort
HE	Health



# Chapter 2: Bicycle Programs

## Chapter 2: Bicycle Programs

Fort Collins has become an exemplary bicycle-friendly community due in part to the many education, encouragement, enforcement and evaluation programs that are operated by the City and community partners. In addition to the numerous programs that exist today, the City has additional programs in the planning stages (e.g., level of comfort bicycle map and bike share). Many of the City's programs were recommendations in the 2011 Bicycle Safety Education Plan (BSEP), a comprehensive plan focused on safety-related education initiatives.

### The League of American Bicyclists categorizes non-engineering aspects of a bicycle friendly community as follows:

**Education:** Gives people of all ages and ability levels the skills and confidence to ride

**Encouragement:** Creates a strong bike culture that welcomes and celebrates bicycling

**Enforcement:** Ensures safe roads for all users

**Evaluation and Planning:** Plans for bicycling as a safe and viable transportation option

This chapter presents recommendations for new and expanded programs, focusing on those which will be most effective at helping achieve the 2014 Plan goals. Because resources are limited, this plan recommends a limited number of new programs, and recommends that the City conduct ongoing and comprehensive evaluation of its programs to evaluate efficacy, consolidate where necessary, and partner where opportunities exist. Chapter 5 presents an evaluation framework that the City can use to conduct this evaluation, in addition to program-specific data collection and evaluation.

## Key Outcomes

By 2020, a comprehensive and focused set of bicycle programs, implemented through strong partnerships, will support the following key outcomes:

- 20 percent of people will commute by bicycle
- There will be zero bicycle fatalities
- The number and severity of bicycle-related crashes will be lower than today
- A balance of genders will bicycle
- The number of residents participating in the City's education and outreach programs will have doubled
- 8,000 K-12 students will receive bicycle education annually
- Participation in the City's bicycle education and outreach programs will reflect the demographic and socio-economic breakdown of the Fort Collins population

## Existing Programs

There are over 40 existing and planned efforts related to bicycle programming in Fort Collins today. City departments such as FC Bikes and the Safe Routes to School (SRTS) lead many of the existing programs. Others are run by local



FC Bikes' Women on a Roll event.

Program Type	Audience	Existing Programs
Encouragement	Youth	Boltage incentive program Bike clubs, bike rodeos and other Safe Routes to School initiatives National Bike to School Day Bike and Walk to School Weeks
	Others/All	Bike to Work Days Bike Summer and Bike Winter FC Bikes marketing and outreach Open Streets initiative Women on a Roll initiative Comfort-based bicycle map  Automated bike share system, complementing the Fort Collins Bike Library Fort Collins Bike Library Bicycle parking program (grants, sidewalk racks, on-street bike corrals)
Education	Youth	Walking and bicycling education (Pre-K through 12th grade)  Helmet fittings, distribution and education to low-income students and parents High School and Middle School Bicycle Ambassador Program SRTS Train-the-Trainer program (teachers) Summer youth bike camps Bicycle and pedestrian safety town (in planning)
	College Students	Bicycle safety education and outreach programs and CSU partnership
	All	Bicycle Ambassador Program Education classes including Traffic Skills 101, League Cycling Instructor Training, winter bike commuting courses, Learn-to-Ride classes Bicycle safety education and outreach to underserved populations Family Bike Rodeos and education at community events Motorist awareness and education Share the Road collaborative recommendations and messaging Bicycle light, helmet and safety items distribution
Enforcement	All	Bicycle enforcement program (police unit operating on bicycles) Bicycle registration program Enforcement at high-crash areas and times year Trainings of law enforcement officers Traffic citation safety diversion program
Evaluation/Planning	All	Bicycle count program Bicycle totem counter (planned) Individual program evaluation (e.g. Open Streets) City of Fort Collins Bicycle Advisory Committee

**Table 1. Examples of Current City-led Bicycle Programs and In-Process Initiatives**

organizations, such as Bike Fort Collins and the Fort Collins Bike Co-op, or by individual schools. Table 1 provides a summary of some of the existing and planned programs for which the City has a lead role in implementing.

### Key Program Partnerships

Community organizations and partner entities have helped shaped the bicycle culture that exists today in Fort Collins. Continued partnership with these organizations, coalitions and committees will be necessary to improve safety and ridership across the community.

Partners of FC Bikes and the SRTS program include:

- **Bicycle Advisory Committee (BAC)**

The BAC is a key entity in supporting bicycling and advising on bicycle-related improvements in Fort Collins. The BAC is a subcommittee of the City's Transportation Board and was formed in 2009 to review and recommend bicycle projects, policies, and aid in implementing the Bicycle Plan. Members of this committee are drawn from other bicycle-related organizations in Fort Collins, related advisory boards, CSU, Poudre School District, and the business community; there are also three at-large members from the community.

- **Bicycle and Pedestrian Education Coalition (BPEC)**

This coalition consists of 17 bicycle- and pedestrian-related groups from throughout Larimer County, including Fort Collins. BPEC's mission is to "reduce the number of motor vehicle/bicycle/pedestrian crashes in our community, and increase knowledge and awareness about how to safely share roads." BPEC has been critical to creating the successful foundation of the Bicycle Ambassador Program, which is now coordinated by FC Bikes.

- **Fort Collins Police Services**

Police Services employs eight bicycle officers who are typically responsible for enforcing

bicycle-related traffic laws in Fort Collins. In addition to their enforcement function, Police Services operates the City's bicycle registration program and provides outreach regarding such topics as proper bicycle locking techniques.

- **Poudre School District (PSD)**

SRTS programs are operated in direct partnership with schools throughout PSD. While City SRTS staff oversee, guide and coordinate these programs, many are executed in the school setting either by teachers or parent volunteers. School-based programs that reach thousands of students annually would not be possible without cooperation from PSD. The school district is a key partner in building the High School and Middle School Bicycle Ambassador Program.

**The Bike Library has provided 23,265 bicycle rentals and signed up 23,136 members since launching in April 2008.**



Photo Credit: Fort Collins Bike Library



A Bicycle Ambassador helps fasten a woman's helmet.

**As of 2014, the Bicycle Ambassador Program has 43 volunteer ambassadors, who have helped reach thousands of community members with bicycle education.**

- **Bike Fort Collins**

Bike Fort Collins is a member-based nonprofit organization started in 2005 to encourage safe and enjoyable cycling. It operates the Bike Library and a SRTS program, conducts adult education classes, runs marketing campaigns, coordinates encouragement events, and advocates for bicycle projects in Fort Collins. The Bike Library was launched by the City in 2008 and offers free bicycle checkout for the first day of rental. The fleet of 170 bicycles includes a wide range of bicycle types available at four locations. The Bike Library has been a boon for bicycling in Fort Collins as it enables more people to ride a bicycle without needing to own one.

- **Fort Collins Bike Co-op (Co-op)**

The Co-op began in 2003 with the goal of enabling more Fort Collins residents to ride a bicycle. It operates a volunteer-run community bike shop that accepts donated bicycles and parts and gives refurbished bicycles to lower-income residents. The Co-op operates the abandoned bicycle program for Fort Collins, refurbishing or recycling bicycles after attempting to contact the owner if the bicycle is registered. The Co-op also runs

maintenance classes, an earn-a-bike program, mountain biking trips for underserved youth, and a number of other initiatives.

- **Colorado State University (CSU) Transportation Planning**

In 2013, CSU hired a staff member to oversee "Alternative Transportation" with the goal of reducing single-occupancy vehicle trips to campus. This goal has led to the development of a campus bike plan in 2014 that is coordinated with the City's plan. The University and City collaborate to advance programs as well as projects adjacent and connecting to campus.

- **Colorado State University Enforcement**

CSU police officers are empowered to enforce traffic laws on and off campus since they are state police officers, and they may also write University-specific citations and warnings on campus. Student employees in the Bicycle Education and Enforcement Program (BEEP) write bicycle citations on campus as well.

## Future Programs Approach

As the City looks to significantly expand bicycling and improve bicycle safety, the 2014 Plan recommends focusing its resources on implementing infrastructure improvements, complemented by a select number of City-led bicycle programs. This, in addition to building strong community partnerships in order to continue to grow bicycle programs in Fort Collins, offers a successful community model for achieving the goals of the 2014 Plan.

Community organizations, such as Bike Fort Collins or the Fort Collins Bike Co-op, may be positioned to assume operations of some existing or future programs with support and partnership from the City. Many bicycle-friendly communities around the country successfully partner with local nonprofits to run a wide array of education and encouragement programs, and very few cities run a substantial number of bicycle programs themselves.

The Plan includes recommendations to help the City focus its bicycle programming, align with the 2014 Plan goals, and fill in gaps where necessary. The following framework was used to develop the recommendations presented in this Chapter.

### City bicycle programs should:

- Support the key goals of the 2014 Plan
- Integrate recommendations of the 2011 BSEP, as appropriate
- Rely on strong community partnerships
- Continue and strengthen existing programs that have proven effective
- Include new programs that address existing program gaps or opportunities
- Complement the network recommendations and attract *Interested but Concerned* riders
- Be financially sustainable as part of an overall 2014 Plan approach



Members of the Bicycle and Pedestrian Education Coalition.



## Recommendations

Throughout this section, each of the Plan goals addressed by a recommendation is indicated using the icons below.

2014 Plan Goals						
Comfort	Safety	Ridership	Connectivity	Community	Health	Equity
						

### Overall Recommendations

2.1 Perform a comprehensive evaluation of bicycle programs to focus the City on the ones that provide the most benefits and achieve the 2014 Plan goals



A full evaluation of the City's bicycle programming is needed and should include new programs, existing programs and those in development. Appendix E includes a full list of these programs. The City should undertake an effort to evaluate the efficacy of programs and consolidate where necessary. The Triple Bottom Line evaluation tool developed as part of this planning process can help guide this effort. The tool is explained further in Chapter 5, where it is used to evaluate a sample of the proposed new programs presented in this chapter.

2.2 Begin dialogues with community partners regarding additional program support and/or operation



Another way to expand the reach and efficiency of the City's programming is to maximize partnerships with other organizations. Key partners identified previously may be able to provide support or leadership on some existing and new programs.

2.3 Consult peer cities with successful community partnerships that support and execute bicycle programming



The City may benefit from conducting a set of focused interviews with other municipalities where local governments have partnered with community organizations for bicycle program implementation. Savannah, Ga., Carrboro, N.C., Spartanburg, N.C. and Burlington, Vt. are other small cities where successful bicycle-related programs are led by community groups.

2.4 Monitor best practices and consider innovative approaches to bicycle programs, infrastructure design and policies.



The state of the practice for bicycle planning, design, programming and technology is evolving. It is recommended that the City stay abreast of best practices and research in all areas related to creating a welcoming environment for people on bicycles, and implement new strategies as appropriate. For example, the City of Boulder has implemented a series of bicycle innovations called "living laboratory" projects, including piloting electric-assisted bikes on trails, advisory bike lanes, protected bike lanes, and back-in angled parking. Monitoring the results of these projects and others can help Fort Collins in its efforts to continue to design and implement state-of-the-art bicycle friendly strategies.

## Program Expansions

The following City-led programs have been recommended for continuation and ongoing expansion and refinement, as resources are available. It is recommended that the City pursue strong partnerships with stakeholder organizations in order to effectively implement all programs and, in the future, consider opportunities for community organizations to take the lead on program implementation as appropriate. Support for the continuation and expansion of the following programs has been demonstrated throughout this planning process, and the programs have shown alignment with the 2014 Plan goals. However, as with all existing and recommended programs, the City is encouraged to conduct ongoing evaluation to determine overall effectiveness and benefits in relation to the costs associated with implementation.

### 2.5 Bicycle Ambassador Program (BAP)



The BAP was launched through BPEC in 2012. Today the program is managed by FC Bikes and has 43 volunteer ambassadors helping to implement bicycle education and outreach across the city. BAP roles include teaching Traffic Skills 101 classes and Learn-2-Ride classes, hosting Open Garage events, serving as community ambassadors on the trails and streets, and offering in-the-field bicycle infrastructure education.

It is recommended that the City continue to grow the BAP in order to provide bicycle education to a wider audience throughout the city. The program should continue to explore new and innovative ways to effectively message bicycle safety to people across the community. In conjunction with the implementation of the network recommendations, BAP efforts should tie directly to the low-stress network, new infrastructure and reaching people of all ages and abilities. Specific recommendations for BAP expansions include:

- Increased collaboration with ClimateWise and community organizations to implement Bicycle Friendly Business outreach

- Implementation of neighborhood-based bicycle education outreach
- Partnerships with organizations like Vida Sana to provide bicycle safety education to a wider, more inclusive audience
- Additional in-the-field, infrastructure-based education and outreach in conjunction with implementation of the network recommendations
- Increased collaboration with CSU to partner on education and outreach initiatives
- Increased education opportunities to reach users of all transportation modes

### 2.6 High School and Middle School Bicycle Ambassador Program



Funding was secured to start the High School and Middle School Bicycle Ambassador Program in 2014. The vision of this program is to engage youth in promoting bicycling at their schools and educating their peers about bike safety, bike equipment mechanics and other bike-related topics. By joining this program, high school and middle students in Fort Collins will be able to help with various Safe Routes to School activities, such as bike rodeos at elementary schools. The students will be able to earn community service credit toward their graduation requirements and, by their senior year in high school, may qualify for special opportunities such as a free local bike tour or new equipment. This program, which is in its infancy, offers tremendous opportunity to grow bicycling and improve safety among youth. It is recommended for ongoing implementation and expansion.

### 2.7 Safe Routes to School



Safe Routes to School (SRTS) is a nationwide effort to get more children biking and walking to school for their health, the environment and academic achievement. The City of Fort Collins

SRTS program is administered by a coordinator housed alongside the FC Bikes program. An overarching program goal is to get at least 50 percent of K–12 school children safely biking or walking to school on a regular basis. To accomplish this, the SRTS program focuses on Five E's: Education, Encouragement, Engineering, Enforcement, and Evaluation.

With the assistance of Bike Fort Collins and other local advocacy organizations, the program educates about 6,000 K-12 students annually in bike-ped safety, with a goal of educating at least 8,000 annually by 2020. An additional 8,000 students are reached through encouragement programming each year. The following innovations have occurred over the past few years and are recommended for further development in coming years:

- School-sponsored bike field trips
- After-school bike clubs
- Satellite SRTS bike fleets housed at schools (including a mobile fleet trailered between several elementary schools)
- Bike-ped safety education ingrained in some schools' PE curriculum and taught by teachers who are also League Cycling Instructors
- SRTS instructors leading summer B.I.K.E. camps
- Strategic traffic infrastructure at high-priority school locations
- School-rotation schedule ensuring regular bike-ped educational opportunities for all students at public schools
- Robust middle school "Bike PE" curriculum
- SRTS Resource Notebooks at all public schools
- Bike fix-it stations at all major high schools
- New bike racks at many schools
- Boltage Demonstration Project

## 2.8 Open Streets (Car-free initiatives)



In 2014, the City launched its Open Streets initiative, as originally recommended in the 2008 Bike Plan. An estimated 2,000 people participated in the City's first car-free event, of which a large proportion was women and families. Event goals included increasing physical activity, active transportation, and supporting community health. Car-free initiatives have gained popularity in the United States as innovative ways for cities to achieve environmental-, public and social health-, and economic-related goals. It is recommended that the City continue its efforts to implement Open Streets initiatives and seek ways to ensure all neighborhoods have the opportunity to participate in these events.

## 2.9 Bike Month initiatives



FC Bikes' signature event, Bike to Work Day, has been executed for more than 25 years and continues to reach more people every year. Along with Bike to Work Day (summer and winter), the City's Bike Month activities include educational classes, light-up-the-night initiatives, and, most recently, guided bicycle rides. Initiatives such as Bike Month help incentivize people to consider bicycling more often while offering opportunities to establish strong partnerships with local business to further promote bicycle friendly workplaces. It is recommended that the City continue to implement Bike Month initiatives while focusing efforts on reaching the *Interested but Concerned* population through targeted education, incentives, and focused marketing.

## 2.10 Women on a Roll



In 2014, FC Bikes launched the Women on a Roll initiative in partnership with community organizations and local businesses. Designed around the League of American Bicyclist's (LAB) framework for addressing barriers to bicycling

among women, known as the “5 Cs” — Comfort, Convenience, Confidence, Community, and Consumer Products, Fort Collins’ 2014 Women on a Roll initiative included a women’s bicycling expo, women’s learn-to-ride classes, community rides, and bicycle safety education training for Vida Sana’s *Promotoras*. It is recommended that the City continue this initiative to achieve its goals of increasing ridership as well as the comfort and confidence of bicycling among women. This initiative is recommended for implementation through strong community partnerships, for example with Vida Sana and University of Colorado Health.

### 2.11 Enforcement initiatives



The 2014 Plan places an emphasis on the importance of improving and expanding the City’s bicycle infrastructure; these recommended investments can play a significant role in improving bicycle safety while also modifying bicyclists’ behaviors. For example, where bicycle infrastructure can help people feel more comfortable bicycling in streets, the prevalence of sidewalk riding and related bicycle crashes may decrease. These infrastructure improvements are part of an overall enforcement strategy, however, direct enforcement initiatives will be important in creating a safe community for all transportation system users.

It is recommended that the City continue to expand and refine its bicycle-related enforcement initiatives to target behaviors and locations that have a higher incidence of bicycle-related crashes and opportunities for education for all modes. Specific recommendations for ongoing enforcement initiatives include:

- Work with Police Services and Traffic Operations annually to develop high-priority enforcement and education locations based on crash data (for all modes)
- Partner with the City and CSU’s police departments to implement education and enforcement initiatives at key times of year (e.g., September, when schools and colleges are back in session)
- Conduct annual workshops with Police Services and other community stakeholders to collaborate on key messages and safety priorities, and develop a mutual awareness of bicycle-related laws.
- Conduct annual community safety discussions
- Partner with Police Services to distribute safety items as part of an overall bicycle enforcement strategy (e.g., lights)
- Communicate enforcement campaigns to the public through website and social media
- Expand the City’s traffic safety diversion program (launched in 2014)

### 2.12 Marketing and outreach



In addition to the programs mentioned above, FC Bikes has the opportunity to reach more *Interested but Concerned* riders by building on existing marketing and outreach efforts. Recommendations for ongoing and expanded marketing and outreach include:

- Develop and refine messaging campaigns to educate all street and trail users how to co-exist and travel safely.

**As of October, CSU officers issued 2,059 tickets to bicyclists disobeying traffic laws on campus in 2014.**

CSU uses enforcement to provide education. For instance, students cited for a bicycle safety violation have the option of taking a safety seminar to reduce the applicable fine.

- Work with the Bicycle Ambassador Program to evaluate existing marketing campaigns and develop new campaigns targeted at specific groups (e.g., women, families, Latino/Latina populations) to effectively increase bicycling among a wider audience
- Continue to utilize *fcgov.com/bicycling* website and update with current events, news, and educational offerings
- Add more social media avenues to communications. For example, create Facebook and Twitter accounts.
- Update existing video content on FC Bikes website and develop new videos that address safety issues and infrastructure changes. Also utilize videos to market events and to make educational offerings easily accessible to a wider population
- Research individualized marketing campaigns to encourage bicycling across the community

### 2.13 CSU Coordination: Education and Outreach



FC Bikes currently partners with CSU on a number of initiatives, including offering education and outreach events, participating in the Campus Bicycle Advisory Committee, organizing light giveaways, and partnering on funding opportunities. As an importance audience in the Fort Collins community, it is recommended that the City continue to grow its partnership with CSU to implement new and innovative ways to collectively reach students, staff and faculty members. The 2014 Plan was developed in alignment with the Campus Bicycle Plan; the City and CSU should seek opportunities to collaborate on implementing the shared recommendations of each Plan.

## New Recommended Programs

Recommendations for a select number of new bicycle programs are discussed below. For each program, the recommended lead entity (City versus non-City) is indicated. A full list of existing and previously planned programs and initiatives is available in Appendix E.

### Education Programs

#### 2.14 Develop a safe driving pledge program



In a safe driving pledge program, drivers promise to obey the speed limit and avoid distracted driving. Even a few cars driving at or below the speed limit help to decrease overall speeds in areas with speed enforcement issues. The speed at which people drive influences the overall comfort and safety of people bicycling and walking; fostering a low-speed environment is important to the overarching goals of this Plan.

Wide streets, such as many of the neighborhood streets in Fort Collins, encourage speeding. Additionally, distracted driving is a safety problem in Fort Collins and across the country. This program would complement the engineering solutions recommended in Chapter 4 and could be implemented in the near-term. A pledge program also serves to communicate to a wide audience of drivers the importance of safe driving.

The program could be initially advertised through schools, where an interested audience already exists, and piloted at one school before a larger rollout. School parent volunteers could be responsible for program operation.

Outreach could be continued through public events, the car registration and inspection process, and driver's license exams. Pledge materials could be paired with information about the relationship between automobile speed/distracted driving and crash severity.

**Who:** Non-City lead

**Example:** Washington Area Bicyclists Association Pace Car Program

## 2.15 Support a modified driver's education curriculum to include bicycle education



An effort should be launched to modify the driver's education curriculum to include instruction on bicycle-related laws. Questions regarding bicycle-related laws and bicyclists' rights and responsibilities on the road should be added to the driver's education exam to increase awareness among all roadway users.

There is a concern and perception among many in the city that both bicyclists and motorists do not know the rules of the road as they relate to bicycles. Public comments heard throughout this planning process noted that some motorists ignore the "3-feet to pass" law and that police officers do not enforce the law.

This program could be led by a statewide organization such as Bicycle Colorado or the Colorado Division of Motor Vehicles (DMV). The City could work with the DMV to modify the driver's education curriculum to include instruction on bicycle laws, and modify the driver's license exam to include questions related to these laws.

**Who:** Non-City lead

**Example:** Minnesota, Louisiana, Washington

## 2.16 Coordinate with Transfort to implement education and outreach to support bicycle and transit integration



Bicycling works well to expand the reach of transit by providing first-mile and last-mile transportation options to and from transit services. Transfort's services offer the ability for people to seamlessly combine bicycling with transit through on-board bicycle storage, bicycle storage options at stops and stations, and direct connections to the City's bicycle infrastructure (such as the Mason Trail). These services have already proven to be in high demand; however, as the City continues to expand bicycle infrastructure connections to transit and develop additional options for combining these complementary modes, FC Bikes should

coordinate with Transfort to launch an education and outreach campaign to further communicate the opportunities for residents, visitors and students to combine bicycling with transit.

**Who:** City lead

**Example:** Los Angeles Metropolitan Transportation Authority

## Encouragement Programs

In addition to the City's existing encouragement programs, the following programs are proposed to help increase ridership, comfort, connectivity, and equity.

## 2.17 Establish an automated bike share system



The 2014 Plan process included a discrete effort to define the scope and operations for a modern, automated bike share system for the city. The results are summarized in the Fort Collins Bike Share Business Plan (Business Plan). An automated bike share system would increase the accessibility of bicycling and public transit, introduce new riders to bicycling, and promote Fort Collins to potential employers, residents, and visitors. It would augment existing services provided by the Fort Collins Bike Library, offering a comprehensive set of travel options to Fort Collins residents and visitors.

An automated bike share system can extend the reach of transit, making MAX an even more attractive option for residents and visitors. Riders using this rapid bus service could use bike share to reach the beginning or end of a trip lying outside the MAX corridor.

The Business Plan proposes an initial bike share system of approximately 20 stations to serve Downtown, the CSU campus and the Elizabeth, Plum, and Lincoln corridors. Station locations capitalize on connections to MAX. It recommends a City-owned and managed system with a nonprofit or private sector operator.

**Who:** City lead

**Example:** Madison, Wi., Boulder, Co.

## 2.18 Create a Community Neighborhood Greenway Program



This program works in conjunction with the network recommendations and the City's current neighborhood traffic calming program to create traffic-calmed, neighborhood greenway streets. The proposed Full Build Network plan calls for approximately 19 miles of neighborhood greenways, which include traffic calming measures to make them more inviting for people bicycling and walking, while offering community-wide benefits. Traffic calming measures could include a variety of design treatments such as lane narrowing, mini circles, curb extensions, signage, gateway treatments, speed humps, chicanes and street diversions, further described in Appendix C.

As part of the Community Neighborhood Greenway Program, it is recommended that the City provide materials and information online related to the Program, proposed locations, benefits of neighborhood greenways, and work with individual neighborhoods to support outreach, design, community events, and maintenance of neighborhood greenway treatments where appropriate.

In some cities, such as Seattle, nonprofit organizations have developed around the concept of neighborhood greenways, helping to champion these improvements within neighborhoods across the city. Residents' sense of ownership of these streets can help enhance neighborhood pride, vibrancy and cohesion.

**Who:** City lead

**Example:** Portland, Or., Seattle, Wa., Berkeley, Ca.

## 2.19 Enhance end-of-trip facilities and develop a comprehensive bicycle parking plan



It is recommended that the City create a bicycle parking plan, subsequent to this Plan, to determine opportunities for increased bicycle parking and other end-of-trip facilities in key locations across the city. This bicycle parking plan should

incorporate specific recommendations for future bicycle parking in downtown, near transit facilities, along bicycle routes, and in other business districts. The plan should recommend best practices for bicycle parking and site design (in connection to recommendation 3.12), as well as information regarding bicycle repair stations, and commuter facilities like showers and lockers.

The ongoing expansion and improvement of end-of-trip facilities such as bicycle parking will increase the accessibility and attractiveness of bicycling in Fort Collins. The City should continue to implement sidewalk bicycle racks in response to requests, but efforts should focus on adding bicycle parking near priority bicycle routes, transit stops and stations, and within the city's business districts. The City should also grow its on-street bike corral program in partnership with local businesses; the addition of such racks offers significant community and economic benefits, and allows sidewalk space to be utilized for other purposes like sidewalk cafes and pedestrian walkways.

**Who:** City lead

**Example:** Cambridge, Ma., Philadelphia, Pa.

## 2.20 Update the City bicycle map annually to reflect low-stress routes and distribute widely



The City is currently working to update its citywide bicycle map to highlight low-stress routes. As the network recommendations presented in Chapter 4 are implemented, ensuring residents and visitors have access to an updated bicycle map will enable safe and comfortable bicycle travel around the community. This map could also include priority snow plow routes to aid bicyclists with bicycle route selection in the winter. This paper map should be supplemented by an online map on the FC Bikes website, as well as resources for online bicycle trip planning (e.g., Google Maps and Ride the City). The online map should be updated annually, and the paper map should be updated periodically as major infrastructure changes occur.

**Who:** City lead

**Example:** Austin, Tx.

## 2.21 Conduct regular rides of new bicycle facilities and low-stress routes



Many new bicycle facilities and routes are recommended in Chapter 4. Rides of these newly implemented facilities and routes should be conducted to highlight and familiarize residents with the low-stress network and how new facility types should function for all users. The City could partner with a non-profit organization, such as Bike Fort Collins, to initiate this program.

Who: Non-City lead

### Enforcement Programs

Enforcement programs require a commitment of resources from the Fort Collins Police Services (FCPS). As resources are limited, the 2014 Plan recommends that enforcement primarily be enhanced by infrastructure design; that is, high-quality bicycle facilities should be designed and constructed so that safe and legal use of these facilities is inherent. FC Bikes should continue to strengthen its partnership and existing enforcement initiatives with FCPS and CSU Police, as discussed in recommendation 2.11. Additionally, one new enforcement-related program is recommended.

## 2.22 Work with Department of Revenue to amend crash form



A number of elements on the state's standard crash reporting form do not adequately capture data necessary to assess and understand bicycle crashes. Further information about bicyclists' movements and the presence or absence of bicycle facilities at the crash site is critical to understanding how to best reduce crashes in the future. The City's Traffic Operations Department (Traffic Operations) today collects that data from narrative sections on crash reports, but changes to the state reporting form would make officers' reports more consistent and lower the burden on Traffic Operations staff to comb through narratives for information. Specifically:

- A box should be added to indicate whether the bicyclist was riding on the sidewalk, and if so, whether they were riding with or against traffic.
- Forms should more clearly indicate which street each of the involved parties was traveling on. This will enable the City to analyze the impact of bicycle facilities on specific types of crashes.

The City could partner with Bicycle Colorado and other bicycle friendly municipalities in the state to undertake this effort.

Who: City lead

### Evaluation and Planning Programs

## 2.23 Expand bicycle data collection program



The City should establish a regular and standardized bicycle data collection program, and align the program with CDOT statewide efforts and CSU planned efforts. An expanded bicycle count program will help the City continue to evaluate ridership and safety, while supporting future investments in bicycle infrastructure.

A systematic bicycle counting methodology will allow the City to develop correction factors to mitigate shortcomings inherent in national and regional data sources. Year-to-year changes in counts can also help the City evaluate ridership and safety impacts at specific locations where new infrastructure has been built. Accurate and systematic counts will enable the City to calculate crash rates that are more instructive than raw numbers of crashes.

Fort Collins' current bicycle count data comes from four sources: 1) manual counts conducted annually in September at 14 on-street locations and 10 trail locations, 2) regular signalized intersection counts collected as part of Traffic Operations' Intersection Turning Movement Report program, 3) 12 automated trail counters, and 4) SRTS travel tallies. The City should continue its detailed manual count program which enables the



tracking of gender and helmet use, metrics which can help gauge the impact of outreach activities and infrastructure improvements.

The City should expand this program to include a network of permanent counters at key locations throughout Fort Collins. Counters should be installed in conjunction with new bicycle infrastructure and along key bicycle routes. This will help assess the impact of new facilities on ridership.

**Who:** City lead

**Example:** City of Boulder Bicycle Count Program

### 2.24 Conduct pre- and post-studies of new bicycle infrastructure projects



Building on recommendation 2.23, the City should conduct pre- and post-data collection for new bicycle infrastructure projects. Aligning with the Protected Bike Lane Pilot Project Program, as discussed in Chapter 4, this program would incorporate evaluation for other projects, such as neighborhood greenways, buffered bike lanes, and green paint treatments to determine the safety and ridership impacts for all modes, associated with new bicycle facilities.

### 2.25 Coordinate assessment between Police Services and hospital-collected crash data



Crash data is collected both by Fort Collins police officers responding to crashes and by local hospitals who treat bicyclists for injury. To date, these two data sources have not been coordinated to create a full picture of the state of bicycle-involved crashes in Fort Collins. Coordination with hospital data will enable the City to fully understand the extent of bicycle crash issues, particularly since not all bicycle-automobile crashes are reported to the police. Even data on hospital crashes that do not involve automobile conflicts could help the City evaluate needed engineering solutions or tailor education and outreach materials about safe bicycling.

**Who:** Non-City lead

**Example:** Boston, Ma.

### 2.26 Create an annual FC Bikes report on 2014 Plan implementation and ongoing activities



Fort Collins citizens have been a driving force in the development of the 2014 Plan. To remain accountable to all stakeholders involved in the process, as well as to track progress toward the goals identified in this Plan, the City should produce an annual progress report on the implementation of the Plan and highlight ongoing efforts. This report should include, for example, coordinated bicycle crash data, a catalog of infrastructure projects implemented, numbers of citizens reached at FC Bikes events, results of pilot project studies, and progress toward the performance metrics established in Chapter 5.

**Who:** City lead

**Example:** San Francisco, Ca.

### 2.27 Amend the Fort Collins Citizen Survey to include recommendations from the League of American Bicyclists (LAB)



The City conducts an annual survey of its residents about satisfaction in a number of areas, including transportation. The survey currently asks respondents to rate their ease of traveling by bicycle. The LAB recommends a more detailed survey about bicycle satisfaction, and is planning to make this a requirement to achieve a Diamond-level Bicycle Friendly Community status. The recommended questions would measure quality, comfort and convenience of bicycling in Fort Collins.

**Who:** City lead

## Key Actions Summary

The following table summarizes the key actions that Fort Collins will need to take to accomplish Plan goals through the use of existing, planned and new recommended bicycle programs.

Category	Key Action
Overall	
	<p>2.1 Perform a comprehensive evaluation of bicycle programs to focus the City on the ones that provide the most benefits and achieve the 2014 Plan goals</p> <p>2.2 Begin dialogues with community partners regarding additional program support and/or operation</p> <p>2.3 Consult with peer cities with successful community partnerships that support and execute bicycle programming</p> <p>2.4 Monitor best practices and consider innovative approaches to bicycle programs, infrastructure design and policies.</p>
Program Expansions	
	<p>2.5 Bicycle Ambassador Program (BAP)</p> <p>2.6 High School and Middle School Bicycle Ambassador Program</p> <p>2.7 Safe Routes to School</p> <p>2.8 Open Streets (Car-free initiatives)</p> <p>2.9 Bike Month initiatives</p> <p>2.10 Women on a Roll</p> <p>2.11 Enforcement initiatives</p> <p>2.12 Marketing and outreach</p> <p>2.13 CSU Coordination: Education and Outreach</p>
New Programs	
Education	<p>2.14 Develop a safe driving pledge program</p> <p>2.15 Support a modified driver's education curriculum to include bicycle education</p> <p>2.16 Coordinate with Transfort to implement education and outreach to support bicycle and transit integration</p>
Encouragement	<p>2.17 Establish an automated bike share system</p> <p>2.18 Create a Community Neighborhood Greenway Program</p> <p>2.19 Enhance End-of-Trip Facilities and develop a comprehensive bicycle parking plan</p> <p>2.20 Update the City bicycle map annually to reflect low-stress routes and distribute widely</p> <p>2.21 Conduct regular rides of new bicycle facilities and low-stress routes</p>
Enforcement	<p>2.22 Work with Department of Revenue to develop bicycle-specific crash form</p>
Evaluation and Planning	<p>2.23 Expand bicycle data collection program</p> <p>2.24 Conduct pre- and post-studies of new bicycle infrastructure projects</p> <p>2.25 Coordinate assessment between Police Services and hospital-collected crash data</p> <p>2.26 Create an annual FC Bikes report on 2014 Plan implementation and ongoing activities</p> <p>2.27 Amend the Fort Collins Citizen Survey to include recommendations from the LAB</p>

Table 2. Key Actions



# Chapter 3: Bicycle Policies

## Chapter 3: Bicycle Policies

The policy recommendations presented in this chapter are an important part of the City's progress toward becoming a world-class bicycle-friendly community. While these changes may not be as visible as new bicycle infrastructure and programs, they underpin the implementation of the recommendations in Chapters 2 and 4.

A range of policies can help shape the physical bicycling environment and encourage people of all abilities to bike more often. This chapter provides an overview of existing policies that impact the bicycling environment and presents recommendations related to design standards, traffic, land use, and maintenance. Some of these recommendations will require changes in ongoing staff practices while others will require changes to official City codes and necessitate approval by City Council.

### Key Outcomes

By 2020, revisions to Fort Collins' bicycle-related policies will support the following key outcomes:

- Zero bicycle fatalities
- The number and severity of bicycle-related crashes will be lower than today
- 80 percent of residents will live within one-quarter mile of a low-stress bicycle route
- There will be a 162-mile low-stress bicycle network
- 55 percent of residents will find it very easy to travel by bicycle

### Existing Policies

Bicycling in Fort Collins is impacted by a number of existing City and County policies and by Colorado state traffic law. The design of on-street bicycle facilities is governed by Larimer County's Urban Area Street Standards (LCUASS). These standards are applied by the City to new roadway construction and roadway retrofits. City staff also use a multimodal level of service

(MMLOS) analysis to determine appropriate street designs, particularly as part of development and redevelopment projects. This approach, which is progressive compared with common practices in most U.S. cities, estimates the impact of a development on future automobile, transit, bicycle and pedestrian traffic. If it is determined that a development will cause a location to fall below an established minimum MMLOS, improvements will be required as part of the project.

The majority of Fort Collins' traffic laws regarding bicyclists are adopted directly from the Colorado Vehicle Code (CVC), which are recognized by the League of American Bicyclists as being bicycle friendly.<sup>1</sup> For instance, both the CVC and Fort Collins' code specifically state that bicyclists are permitted to make a two-stage left turn when they do not feel comfortable making a traditional left-turn movement. Fort Collins has the authority to enact local laws that differ from state law to regulate travel by bicycle (per Section 42-4-111 of Colorado Code of Regulations), and the City has used this authority in two instances: to prohibit riding on sidewalks within a downtown zone and on the street on College Avenue from Laurel Street to Harmony Road. In all other cases, bicyclists are allowed to ride on the sidewalk and are otherwise required to observe the same traffic laws as drivers.



Bicyclist walking in downtown dismount zone.

<sup>1</sup> Colorado is, as of 2014, ranked the 6th most bicycle friendly state in the country, in part owing to its high score (four out of five) on legislation. [http://bikeleague.org/sites/default/files/BFS2014\\_Colorado.pdf](http://bikeleague.org/sites/default/files/BFS2014_Colorado.pdf) (Accessed September 12, 2014)

## Recommendations

Throughout this section, each of the Plan goals addressed by a recommendation is indicated using the icons below.

2014 Plan Goals						
Comfort	Safety	Ridership	Connectivity	Community	Health	Equity
<b>CF</b>	<b>SA</b>	<b>RD</b>	<b>CT</b>	<b>CO</b>	<b>HE</b>	<b>EQ</b>

### Policy Recommendations

Though many of the City’s existing policies are recognized as being progressive and bicycle friendly, there is opportunity for improvement in order to implement new, state-of-the-art facility types and move toward a world-class bicycling environment.

In addition to the specific recommendations outlined below, City staff should stay abreast of new policy developments in other bicycle-friendly communities that improve the bicycling environment.

### Street Design Standards and Practices

#### 3.1 Amend Larimer County Urban Area Street Standards

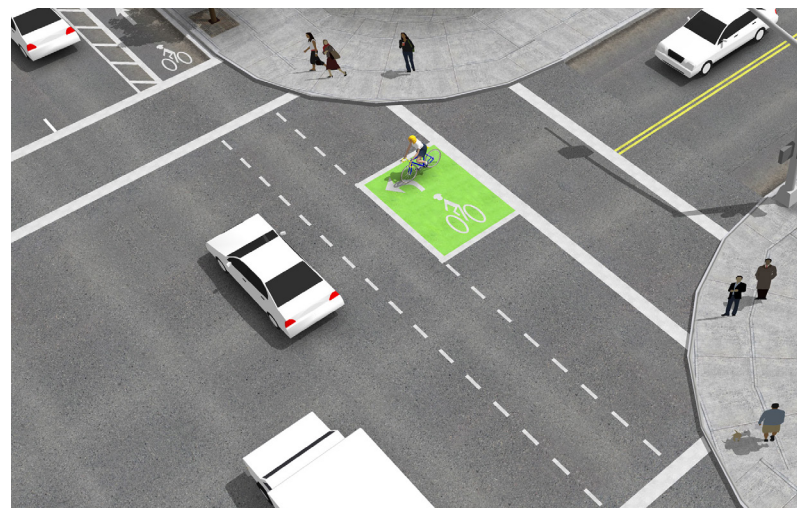


The 2014 Plan presents new facility types that are not currently included in Larimer County Urban Area Street Standards (LCUASS), which govern street construction in Fort Collins. It is recommended that these facilities be included for consideration in an update of the LCUASS. Details about the specific design of these types of facilities, as well as how they interface with existing facility types, should also be explored as part of the update. It is important to note that this Plan provides design guidance and recommended locations for bicycle infrastructure improvements; however recognizes that design will be context-sensitive and based on feasibility of each project.

#### 3.2 Consider a City endorsement of the National Association of City Traffic Officials (NACTO) Urban Bikeway Design Guide



The NACTO Urban Bikeway Design Guide provides guidance on state-of-the-art solutions to bicycle infrastructure design. This national resource has been endorsed by six state departments of transportation and dozens of municipalities, all of which are working to make their communities more bicycle-friendly. The Federal Highway Administration and Colorado Department of Transportation have issued memoranda that allow for design flexibility encompassing facilities presented in the Urban Bikeway Design Guide. The



Example of two-stage left turn from NACTO Bikeway Design Guide. | Graphic courtesy of NACTO.

NACTO guide can serve as a supplement to the guidance included in Appendix C of this document.

### 3.3 Pilot back-in angled parking via ordinance amendment



Many streets in downtown Fort Collins are wide enough to accommodate angled parking, bike lanes and two travel lanes, typically 56 feet wide. Many include front-in angled parking and allow for bicycle travel in shared travel lanes. With front-in angled parking, drivers tend to enter spaces at high speeds and have limited visibility as they back out of spaces into moving traffic. There is evidence that back-in angled parking can reduce crash rates and improve safety, particularly for bicyclists.

A pilot project could be implemented on Magnolia Street east of College Avenue. Magnolia is included in the 2020 Network with a facility recommendation of priority shared lane markings. By reversing the angled parking, the same number of spaces could be maintained, but drivers would need to slow and stop within the travel lane before they reverse into a parking space. This allows bicyclists, as well as motorists, time to assess the situation and react. Upon exiting the space, drivers have a better view of oncoming traffic, including bicyclists. This pilot would necessitate a change to Section 1205.5 of the Fort Collins Traffic Code.

### 3.4 Amend the City’s Multimodal Level of Service methodology



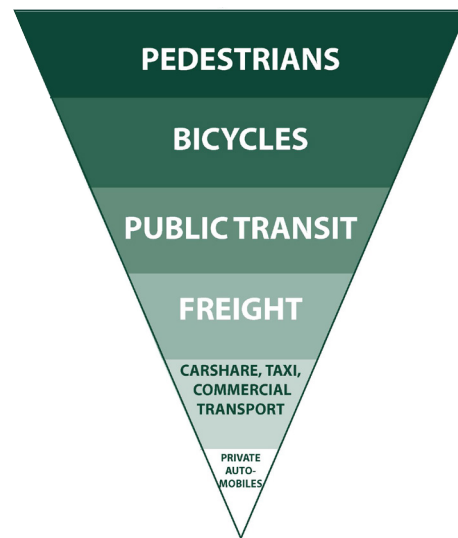
Fort Collins uses a multimodal level of service (MMLOS) methodology to evaluate projects that impact streets. This method incorporates factors that impact the comfort of drivers, transit riders, bicyclists and pedestrians. The Level of Traffic Stress (LTS) method used for the 2014 Plan should be incorporated into the MMLOS and replace the method used to assess impacts on bicycling. The LTS method has been a valuable tool throughout this planning process and can continue to help Fort Collins identify facilities and assess trade-offs related to network implementation.

### 3.5 Evaluate codifying modal hierarchy with a Complete Streets policy



While bicycle travel is the focus of this Plan, it is recognized that bicycle facilities will not be implemented in a vacuum. Ideally, all streets would accommodate the needs of all transportation systems users equally; however, limited right-of-way and resources frequently require trade-offs and compromises.

Some cities such as Portland, Chicago, and San Francisco have developed a transportation mode hierarchy to help establish policy-level priorities for the transportation system and to guide design decisions on individual projects. The adoption of a transportation mode hierarchy in Fort Collins could help streamline decision-making and clarify priorities for different areas of the City based on the surrounding land use and adopted transportation plans. The resulting process or modal hierarchy plan could be codified as part of an official “complete streets” policy to support the City’s multimodal transportation planning. The policy should continue to provide multimodal level of service metrics to allow evaluation to monitor the success of the policy.



Modal hierarchy example from Portland, Ore. developed as part of its 2014 Comprehensive Plan.

### 3.6 Evaluate traffic signal timing throughout Fort Collins

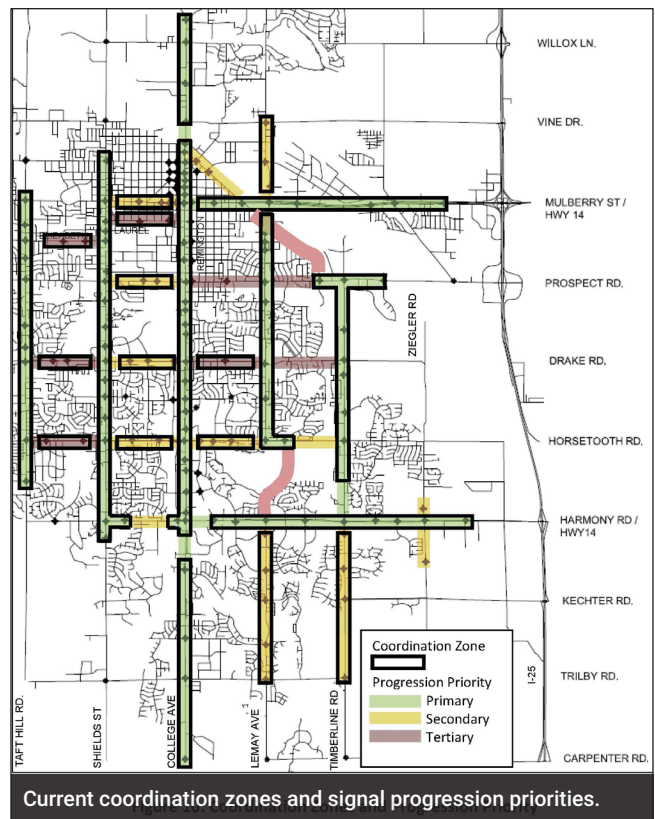


The 2020 Network emphasizes the use of local and collector streets as a primary lower-stress option for bicycle travel to the arterial roadway network. For this Network to be attractive and efficient for people bicycling, it is important that arterial crossings be safe and comfortable, with delays minimized. The City last assessed signal timing in 2010 on all arterial corridors. The plan resulted in:

- The prioritization of key arterial corridors to move high volumes of traffic
- Use of cycle lengths of up to 120 seconds in length used to minimize stops and delays on arterials and emissions from motor vehicles

With the adoption of the 2014 Plan and changes to transit routes throughout the City, it is recommended that an updated signal timing study be conducted that includes strategies to improve the efficiency of bicycle travel throughout the City. In particular, this study should seek opportunities on the 2020 Low-Stress Network to:

- Provide faster signal response time once detection is actuated by bicyclists
- Shorten traffic signal cycle lengths
- Provide bicycle signals at:
  - Trail and sidepath crossings
  - Locations where bicyclists transition from the street to an off-street facility
  - Intersection approaches with protected bicycle lanes
  - Locations where it is desired to provide a leading or protected bicycle phase
  - Arterial crossings where bicyclists are directed to cross with pedestrians such as at HAWK or Half signal locations
- Provide leading or protected bicycle phases where conflicts between turning motorists are a challenge or there is a history of



crashes between turning motorists and through moving bicyclists

- Provide increased green and clearance time at locations where groups of bicyclists are routinely crossing an arterial

### 3.7 Continue to assess opportunities to improve signal detection for bicyclists



There are many different technologies that cities use to detect vehicles at traffic signals, some of which work better for bicyclists. The City has been working to upgrade signal detection at intersections, with a preference for the provision of video detection. The City should continue to work with vendors to improve detection capabilities for bicyclists, especially during low-light or shadowed conditions where bicyclists are often not detected. As technology improves, detection equipment and/or software should be upgraded to improve detection for all light and weather conditions.

### 3.8 Continue to pilot and expand the use of bicycle detection confirmation lights



A bicycle confirmation light, which turns on to confirm that a bicycle has been detected at a traffic signal, is being piloted at the intersection of Lemay Avenue and Stuart Street. It is recommended that this pilot be extended to additional intersections near the CSU main campus for continued evaluation. Information regarding the purpose and use of the confirmation lights should also be included in educational outreach strategies organized by FC Bikes, CSU and other local organizations.

### 3.9 Incorporate bicycle counters into new on-street and trail infrastructure projects



This policy recommendation supports new programs identified in Chapter 2 (2.22 and 2.23) regarding the expansion of bicycle data collection efforts and the creation of a robust pre- and post-construction evaluation of new bicycle facilities. Counters installed at the time of construction will enable evaluation of usage from day one and ensure their appropriate integration into facility design.

## Traffic Laws

### 3.10 Remove College Avenue bicycle restrictions as corridor improvements are implemented



The existing prohibition of bicycle riding on College Avenue should be removed, in conjunction with infrastructure improvements, as it is not consistent with the principles of a bicycle-friendly community. Bicyclists are using the corridor frequently as evidenced in count data and crash statistics. Moving forward, the focus should be implementing improvements to the bicycling environment as recommended in the Midtown in Motion Plan. This change was also recommended by the League of American Bicyclists as a requirement for achieving

a Diamond-level Bicycle Friendly Community during its June 2014 audit. Additional focus should also be placed on creating low-stress parallel routes with good connectivity and wayfinding to College Avenue destinations.

## Land Use and Development Codes

### 3.11 Review existing land use codes for bicycle-friendly development outcomes



A bicycle-friendly development task force should be developed to evaluate the LCUASS and the City's land use and traffic codes, in order to identify opportunities for further promoting bicycling, increasing connectivity, and creating shorter trip options. The City's Planning and Zoning Board provides a good venue to initiate this effort.

### 3.12 Consider revisions to existing bicycle parking code to offer additional siting and design guidance



The City should consider undertaking an effort to update bicycle parking standards in the land use code to provide more specific guidance that adapts national best practices and guidelines to City applications. This should include recommendations for covered and secure bicycle parking, bicycle rack design, siting, parking structure design, and amount of required bike parking by land use type. Specifications should be included for the increasing number of non-standard bicycle designs such as Xtracycles®, Dutch-style front cargo bicycles, and bicycles with trailers. These bicycles will not necessarily fit in existing parking spaces, and their riders should be provided the same accommodation as riders of standard bicycles. It is recommended that the City incorporate best practice design guidelines for bike parking in the City's Design Manual, as a first step to updating the City's bicycle parking code.



## Maintenance

### 3.13 Develop a citywide prioritized map for plowing bicycle routes after snow events



Current snow plowing priorities for the City focus on high-traffic arterial streets where clearance includes both automobile travel lanes and bicycle lanes. With the implementation of the 2020 network, it will be important to move some local and collector streets to higher priority levels in the plowing hierarchy. FC Bikes should work with the Streets and Parks Departments to create a plowing map and procedure that will ensure safe bicycle travel on critical routes throughout the city on lower-stress corridors. Considerations should include the demand of the route and potential impacts on bicyclists' safety, should the route not be available for travel for a few days or weeks. In conjunction with a snow clearing map for priority bicycle routes, the City should determine the scale of snow events that will require clearing.

### 3.14 Develop maintenance and snow removal procedures for protected bike lanes



The City should develop a maintenance and snow removal policy that will be implemented in tandem with the protected bike lane pilot projects recommended in Chapter 4. These new facilities will be implemented gradually with likely no more than three miles in any year. Other cities around North America have found creative ways to maintain protected bike lanes using existing resources; these cities should be consulted with as the City moves forward with these new facility types.

Currently, the Streets Department is responsible for clearance of on-street bicycle facilities as part of regular street sweeping and plowing, while the Parks Department is responsible for sweeping and snow clearance on most paved trails. Protected bike lanes may require the use of smaller, sidewalk scale equipment.

At present, the Streets Department owns several

street sweepers but only one that will fit in the proposed protected bike lanes. This machine is nearing the end of its service life and thus requires frequent repair. The Parks Department owns additional equipment for its use maintaining the trail system. Streets and Parks should coordinate the use of smaller sweeping and snow removal equipment that will fit within the anticipated minimum six-foot width of a one-way protected bike lane. Discussion should also begin on the possibility of Streets "subcontracting" snow removal and sweeping of these facilities to Parks staff. As can be seen from the map on the following page, some of the proposed protected bike lane pilot locations could potentially be added to a loop route for Parks as they clear paved trails. For instance, the S Shields Street pilot project could be cleared as part of a return loop for the equipment clearing the Spring Creek Trail.

Arterials with flexible post protected bike lanes will require special attention as snow piles within the buffer zones are not likely to be cleared. This snow is likely to melt and run across the bike lane where it may refreeze creating icy conditions. Porous bicycle lanes or pre-treatment strategies may be required to keep the protected bike lanes ice-free.

### 3.15 Develop a street sweeping plan for protected bike lanes



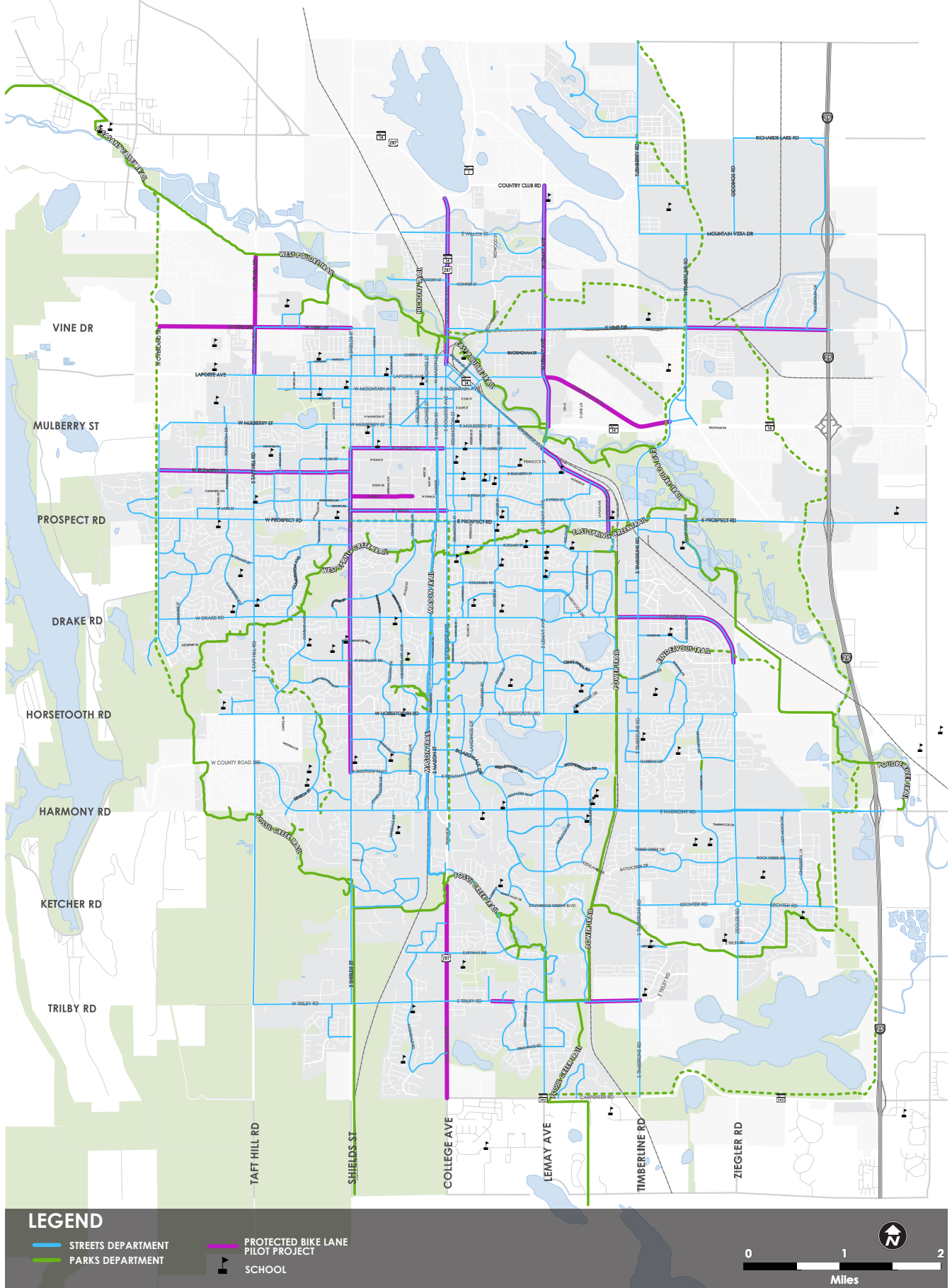
Protected bike lanes should be designed to accommodate street sweepers. Debris will collect in the buffer area between delineators and into the bike lane, causing potential hazards and flat tires if not kept clear. Increased street sweeping of the protected bike lanes may be necessary.

### 3.16 Develop communications and design protocols for bicycle facility closures and detours



Closures and detours of on-street and off-street bicycle facilities are necessary from time to time for various reasons. The Parks Department currently maintains an up-to-date open/closed status webpage for all trails that is available from

# PROTECTED BICYCLE LANE PILOT PROJECTS WITH CITY SNOW PLOWING RESPONSIBILITIES



the FC Bikes page. This model should be replicated for on-street bike facilities that may be closed as a result of construction, maintenance and weather events.

The City should also work to ensure well-communicated and designed detours are established for streets and trails when extended closures of bicycle facilities are necessary. This protocol should address necessary signage for communicating closures to bicyclists and drivers, standards for detours that require comparable or higher quality bike facilities, and/or the provision of temporary bike facilities on the street with a closure. San Francisco and Washington, D.C. have

strong policies in these areas that should be used as guidance.

In addition, locations where there are frequent closure, such as the underpass at Spring Creek Trail and Centre Avenue, should be evaluated for permanent improvements to ensure high-quality detour routes.

## Key Actions Summary

The following table summarizes the key actions that Fort Collins will need to take to accomplish Plan goals through changes to City and County policies and procedures.

Category	Key Action
Street Design Standards and Practices	3.1 Amend Larimer County Urban Area Street Standards
	3.2 Consider a City endorsement of the National Association of City Traffic Officials (NACTO) Urban Bikeway Design Guide
	3.3 Pilot back-in angled parking through an ordinance amendment
	3.4 Amend the City's Multimodal Level of Service methodology
	3.5 Evaluate codifying modal hierarchy with a Complete Streets policy
	3.6 Evaluate traffic signal timing throughout Fort Collins
	3.7 Continue to assess opportunities to improve signal detection for bicyclists
	3.8 Continue to pilot and expand the use of bicycle detection confirmation lights
	3.9 Incorporate bicycle counters into new on-street and trail infrastructure projects
Traffic Laws	3.10 Remove College Avenue bicycle restrictions as corridor improvements are implemented
Land Use and Development Codes	3.11 Review existing land use codes for bicycle-friendly development outcomes
	3.12 Consider revisions to existing bicycle parking code to offer additional siting and design guidance
Maintenance	3.13 Develop a citywide prioritized map for plowing bike routes after snow events
	3.14 Develop maintenance and snow removal procedures for protected bike lanes
	3.15 Develop a street sweeping plan for protected bike lanes
	3.16 Develop communications and design protocols for bicycle facility closures and detours

Table 1. Key Actions Needed

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# Chapter 4: Bicycle Network

# Chapter 4: Bicycle Network

**The development of a comfortable, safe and connected bicycle network is the most important step that Fort Collins should take to become a world-class city for bicycling.**

Providing a bicycle network that is connected, safety-focused, convenient and comfortable will help the City achieve all of the goals set forth in this plan. Table 1 explains how each of the Plan goals guided the network design.

This chapter presents a brief overview of existing conditions and the network development process, but the main focus is the presentation of a bicycle facility network for implementation by 2020. This network strategically utilizes existing low-stress streets to create a connected network, accessible to people of all abilities, throughout the city.

The recommended bicycle facility types as identified in the 2020 Low Stress and Full Build Networks should follow the design guidelines presented in Appendix C. While the network provides a framework for facility location decisions, these guidelines provide the detailed instruction on implementation of facilities and should be consulted throughout the design process.








Goal		Network Design Application
Comfort		Recommended facilities will provide a low-stress riding environment through the use of trails, neighborhood greenways, buffered bike lanes, protected bike lanes, and comfortable street crossings.
Safety		Recommendations are provided to address the most typical safety issues and to prioritize improvements along high-crash corridors and intersections. Recognizable bike routes will alert drivers to be more conscious of bicycle traffic on the street.
Ridership		Providing an extensive and varied network that includes a range of facility types will enable more people to use a bicycle for more of their trips.
Connectivity		Network recommendations create continuous routes throughout the city, connecting neighborhoods to one another and to major destinations such as schools, trails, commercial districts and downtown.
Community		Low-stress bicycle facilities are designed to allow families and other groups of people to ride together, especially at slower speeds. Streets more active with bicyclists and pedestrians can also promote the personal interactions that underpin neighborhood livability and vitality.
Health		The planned network creates an accessible and affordable way for a wide range of people to incorporate physical activity into their daily lifestyles.
Equity		Network recommendations cover the entire geography of Fort Collins, ensuring residents in all neighborhoods are served by the low-stress network.

Table 1. Relationship of Plan Goal to Network Design

## Key Outcomes

Implementation of the 2020 Network is intended to achieve the following outcomes:

- 20 percent of people will commute by bicycle
- A balance of genders will bicycle
- Zero bicycle fatalities
- The number and severity of bicycle-related crashes will be lower than today
- 80 percent of residents will live within one-quarter mile of a low-stress bicycle facility
- There will be a 162-mile low-stress bicycle network
- The City will have initiated a protected bike lane pilot program

Additionally, a long-term vision for the City's bicycle network, the Full Build Network, is presented and should be implemented as opportunities arise.

## Bicycle Network Development

The future Fort Collins bicycle network is designed to be a connected and convenient grid of low-stress facilities. The City should work to implement recommendations from the 2014 Plan that coincide with other planned projects, while striving to implement corridorwide improvements to create a complete route for people wanting to bicycle. The overarching strategy must be to create a connected network where the *Interested but Concerned* rider is comfortable.

The bicycle facility network was developed through an iterative process of existing conditions analysis, field work, public and agency stakeholder review and discussion, level of comfort assessment, safety analysis and demand analysis. Using these inputs, a draft network was developed and reviewed by the public and agency stakeholders. Their input was incorporated into the final recommended networks presented in this Chapter.

Key elements of the bicycle network development process are highlighted in the following section. Full details of the existing conditions assessment are available in Appendix B.

## Level of Comfort Assessment

As a key goal of the 2014 Plan is to serve the *Interested but Concerned* rider, all streets in Fort Collins were assessed for their level of bicycling comfort to identify those already suitable for these riders and those needing improvement. Assessment included: traffic volumes, speed, the number of lanes, and the presence and quality of bicycle facilities. Intersections were similarly assessed. All street segments were assigned a level of traffic stress (LTS) from 1 to 5, where “low-stress” streets rate LTS 1 or 2.

### Low-Stress Bike Facilities

**For the purpose of this plan, low-stress streets and bicycle facilities, including paved trails, are those rated with a level of traffic stress (LTS) 1 or 2. On-street bicycle facilities in these low-stress categories are those where a bicyclist shares the street with low-volume, low-speed automobile traffic, is adjacent to such traffic in a bike lane of adequate width, or is completely separated from traffic in a protected bike lane. Comfortable crossings of major streets are also necessary to complete a low-stress network.**

The existing low-stress network in Fort Collins consists primarily of paved trails and low-volume local streets which have signal-controlled crossings of major arterial streets. Unfortunately this system lacks connectivity. The existing local street grid—including cul-de-sac style development and offset intersections—limit the functionality of the network. Additionally, Fort Collins' existing low-stress bicycle network serves some parts of the city better than others. Recommendations about the future low-stress network were made to achieve the goal of “network equity,” that is, to provide all neighborhoods with access to low-stress bicycle routes.

shared lanes

bike lanes

intersections

trails

protected bike lanes

low

traffic stress

high



The level of comfort assessment utilized a number of factors to determine the LTS for every road in Fort Collins. The comfort of bicyclists varies based upon whether they are sharing the roadway, have dedicated space on the roadway (bike lanes), or are completely separated from automobile traffic (protected bike lanes, trails). Intersections were also assessed based upon the level of exposure a bicyclist would have to conflicts with automobiles. The most stressful intersections surprise the bicyclist by dropping a bike lane where one was present on the approaching segment. Long right turn lanes also allow for longer exposure to high-speed traffic that crosses the bicyclist's path.

**Low-Stress Islands**

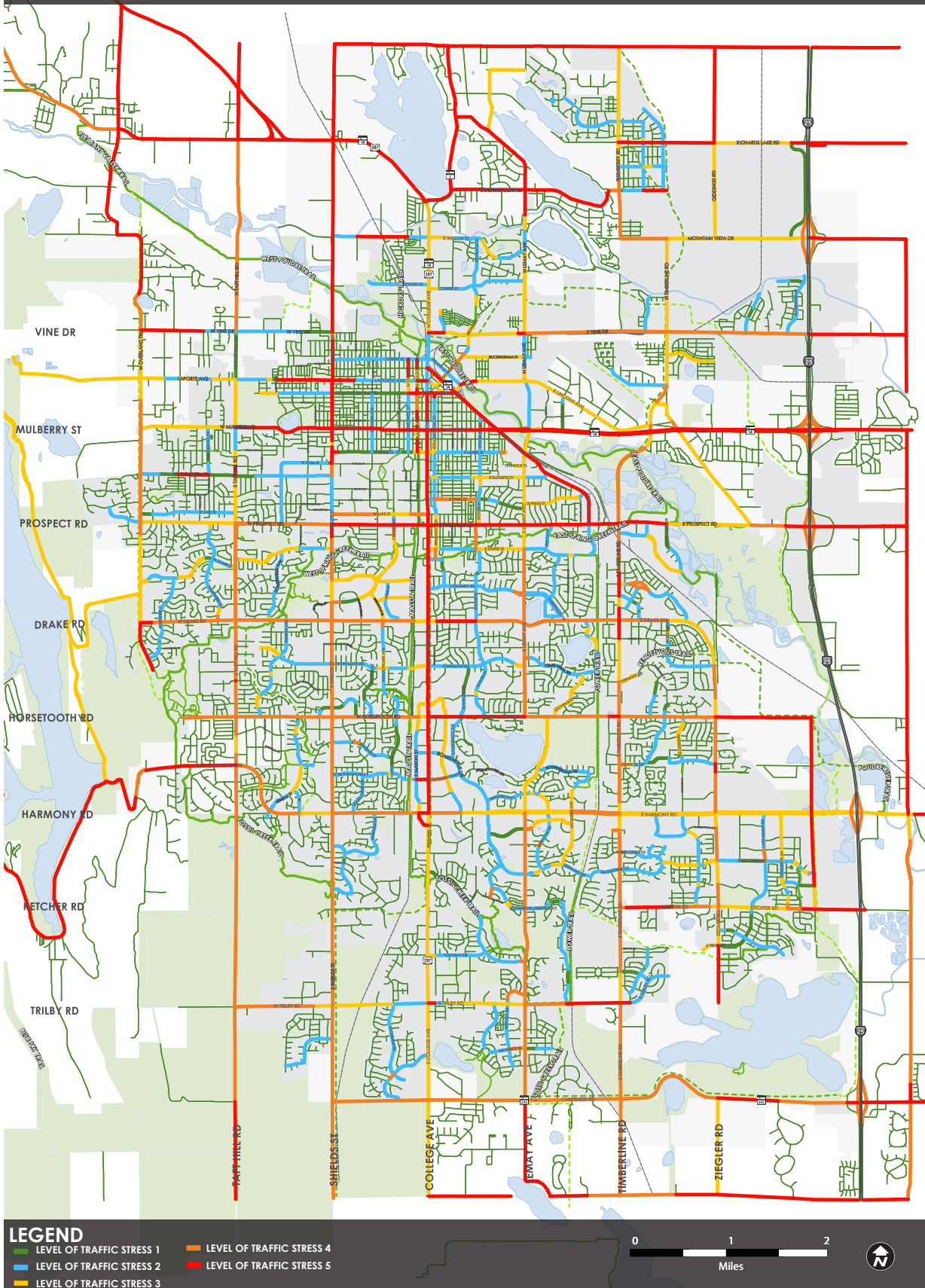
When City streets were assessed for level of stress, it was discovered that there are a number of low-stress "islands" in Fort Collins. These are areas, typically in residential neighborhoods, where a set of low-stress streets connect to one another but do not connect across a major street. In the map at right, low-stress neighborhood streets do not connect across Country Club Rd.



Thin green lines denote low stress streets. Red and yellow lines denote higher stress streets.



# FORT COLLINS LEVEL OF TRAFFIC STRESS

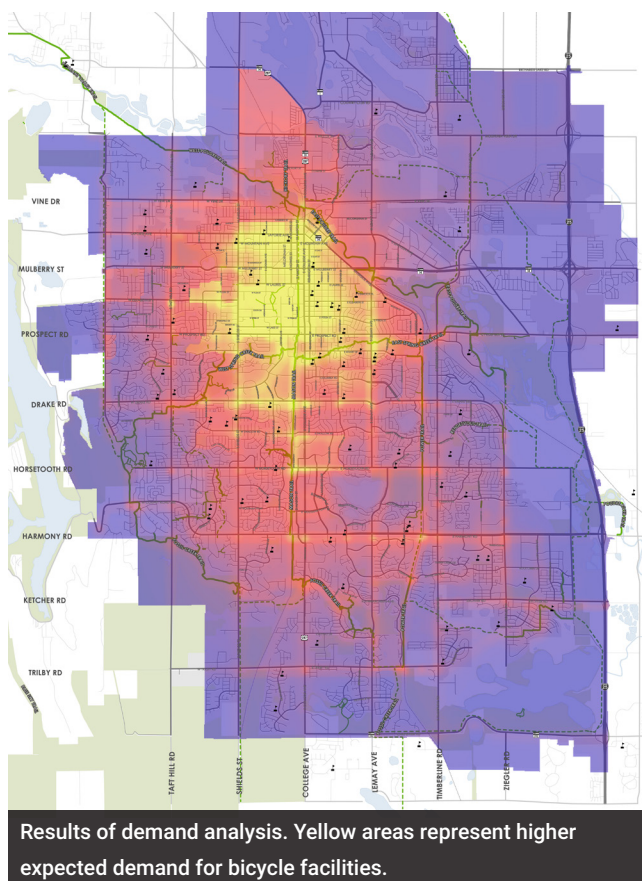


## Safety Analysis

The safety analysis involved a review of police-reported crashes from 2009 to 2013. These crashes were mapped and analyzed to assess typical crash types and locations. The safety analysis factored into the network development and it also plays a large role in the prioritization and implementation of the 2020 Low-Stress Network and intersection improvement strategy (Chapter 5).

## Demand Analysis

A demand analysis was prepared using available GIS information to understand the spatial distribution of various populations, trip generators, and trip attractors (e.g., schools, transit and employment centers). The resulting map, shown below, identifies areas of the community with the highest potential demand for bicycling.



## Network Development

The combination of these analyses helped create a study network for which facility recommendations were developed. Streets and intersections with significant safety challenges were included in the network. The existing and funded trail system was included as well, along with a promising subset of local and collector streets which provide parallel routes to major thoroughfares.

The demand analysis led to additional streets being incorporated into the network in order to increase the density of routes in areas with potential for high bicycling demand. The bicycle comfort assessment was carefully evaluated to identify high-stress areas and intersections that needed further review. The resulting draft study network was assessed in the field, and preliminary recommendations for engineering improvements were identified for street segments and intersection crossings.

Recognizing that the transformation of the arterial roadway system will be a long-term effort, the development of a short-term, cost-effective alternative to the arterial network was identified as a top priority for the 2014 Plan. This short-term network is presented here as the **2020 Low-Stress Network (2020 Network)**, while the longer-term vision necessary to bring Fort Collins to world-class level is referred to as the **Full Build Network**.

## 2020 Low-Stress Network

The 2020 Network is a 162-mile network consisting of 91 miles of on-street facilities and 71 miles of paved trails designed to appeal to the *Interested but Concerned* rider. The proposed 2020 Network capitalizes on existing local streets, collector streets, and existing and funded paved trails as an alternative to potentially expensive retrofits of arterial streets. It is a cost-effective approach to develop a comprehensive low-stress network in the near future.

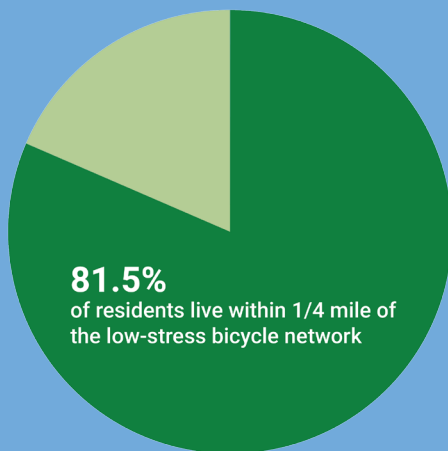
Implementation of these recommendations will result in an approximate one-mile low-stress grid that provides direct connectivity between neighborhoods, trails, employment, and schools. With the build-out of the 2020 Network, including anticipated trail completions, 81.5 percent of Fort Collins' population will be within one-quarter mile of a low-stress network route.

## Network Implementation

Nearly all of the local street and collector street projects identified in the 2020 Network can be completed without additional traffic engineering studies, since most facilities are accomplished through lane narrowing and intersection improvements that do not significantly impact traffic operations. These projects are all anticipated to be completed by 2020. They are shown on the 2020 Network Map as solid yellow lines.

Many of the arterial street projects identified in the 2020 Network will require additional traffic analyses and public involvement prior to implementation as they may require removal of a turn lane, traffic lane, or parking lane. Additionally, some spot intersection improvements at arterial crossings may require changes in traffic operations, installation of a new traffic signal, or reconstruction of some portion of the street. The 2014 Plan recommends the City upgrade a minimum of five of these streets by 2020 as part

### Low-Stress Route Accessibility: 2020 Network Goal

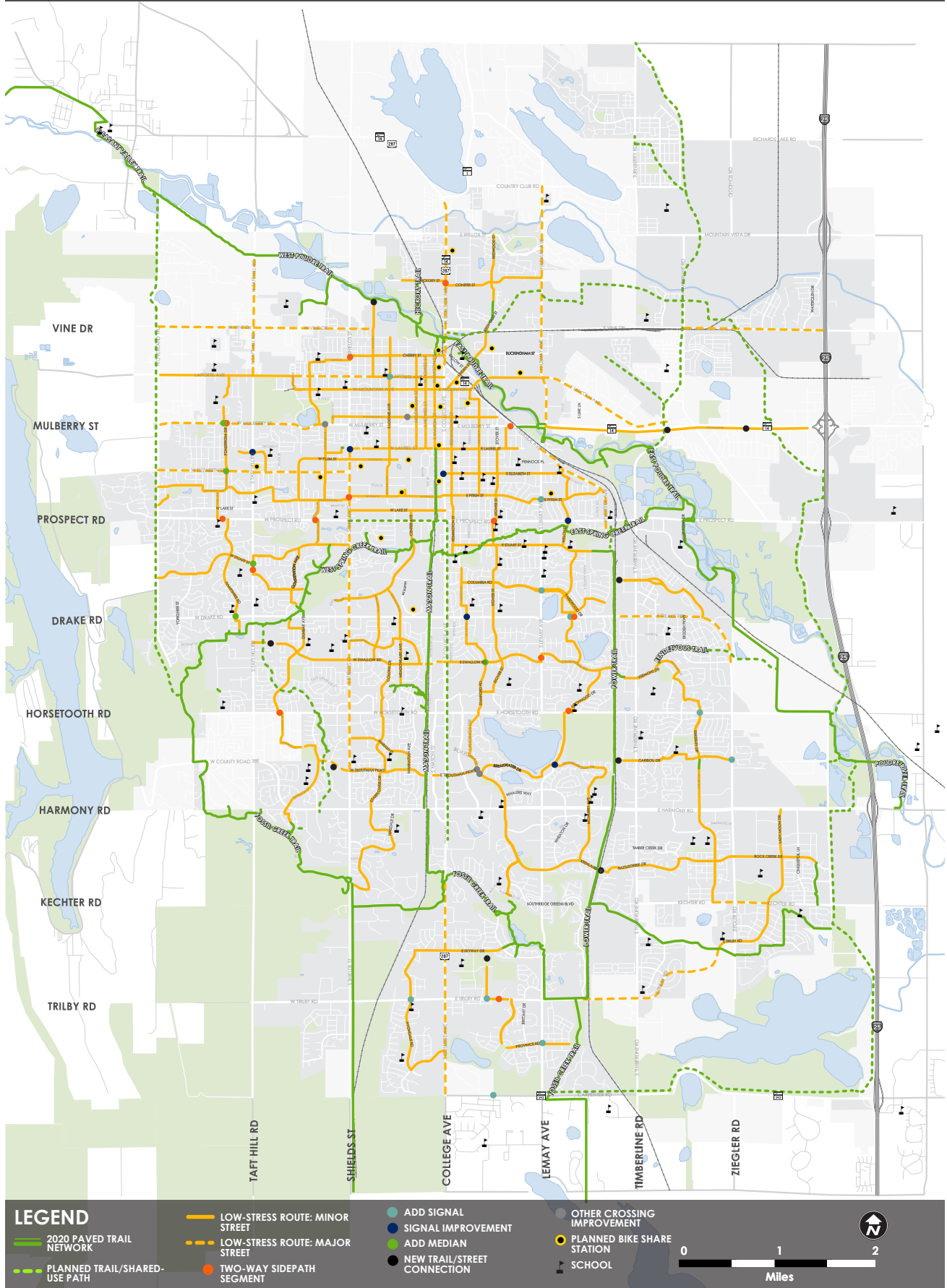


Today, only 17 percent of Fort Collins residents live within 1/4 mile of a paved trail access point. While many low-stress streets may also be nearby, bicyclists cannot be guaranteed a low-stress trip since they are likely to cross an arterial through a high-stress intersection.

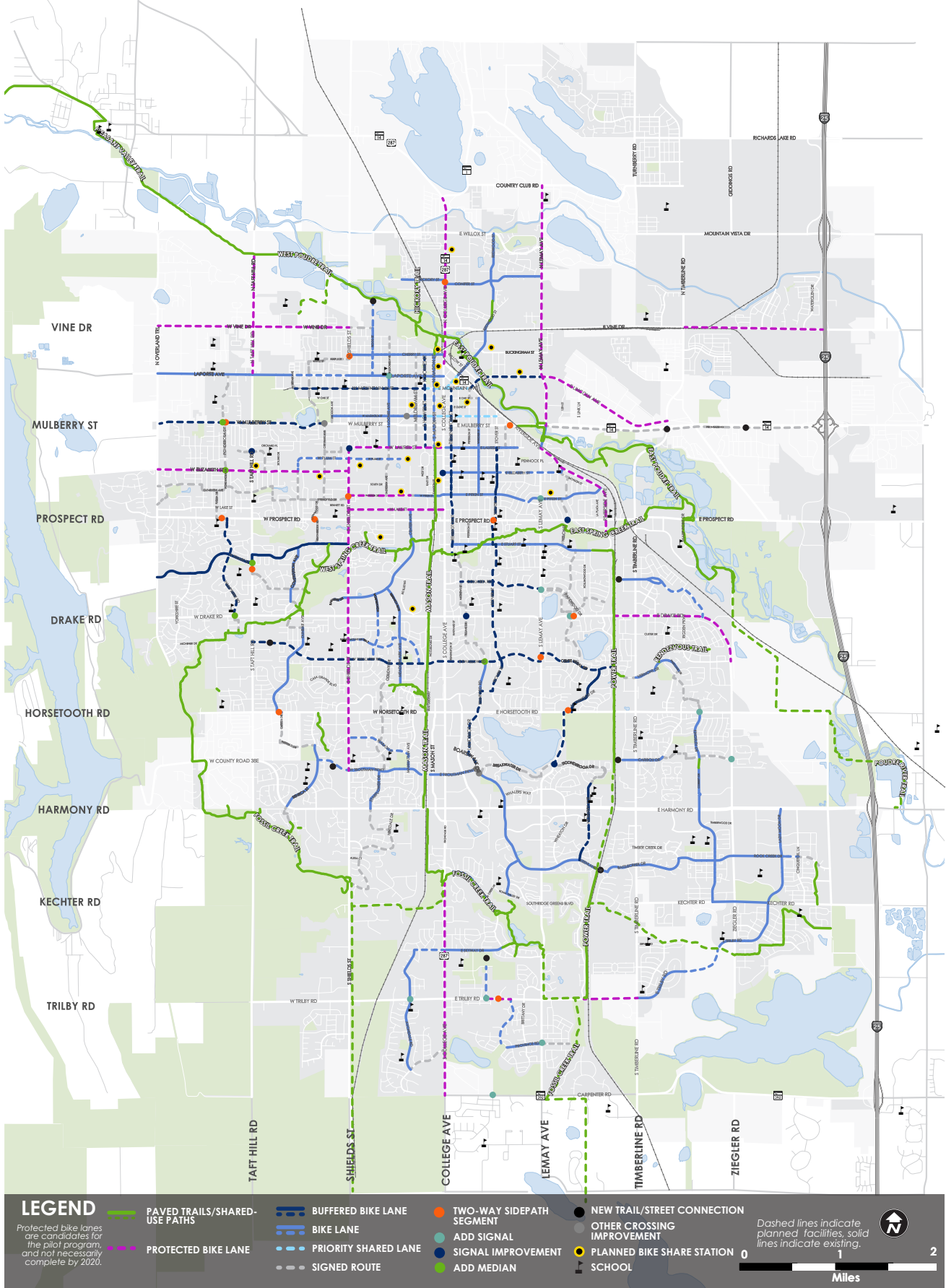
Facility Type	2020 Network Mileage
Signed Route	21.8
Priority Shared Lane	1.3
Bike Lane	38.1 (32.1 existing)
Buffered Bike Lane	20.6 (2.9 existing)
Protected Bike Lane* <small>Mileage estimate based on five pilot projects by 2020</small>	8.7
<b>On-Street Total</b>	<b>90.6</b>
Paved Trails	71.4
<b>Total Network Mileage</b>	<b>161.9</b>

Table 2. Network Facility Mileage in 2020 Network

# 2020 LOW-STRESS NETWORK



# 2020 LOW-STRESS NETWORK FACILITIES



of a pilot program to study protected bicycle lanes. The remaining streets will have protected bicycle lanes installed as opportunities for additional funding arise or as a retrofit can be leveraged with other complementary infrastructure projects. These major streets are shown on the 2020 Network map as dashed yellow lines.

The implementation and phasing section of this plan, Chapter 5, offers direction on how the City should prioritize investments for the 2020 Network. It is understood that not every project can be built at once, so this prioritization—based on public input, crash frequency, expected demand, a Triple Bottom Line analysis, feasibility and geographic equity—provides a ranked set of corridor and intersection improvement projects. Implementation of specific projects and corridors may be adjusted as opportunities or needs arise.

## Paved Trails

### 4.1 Implement the trail network according to the 2013 Paved Recreational Trail Master Plan

The Trail Plan envisioned a more than 100-mile network of paved trails spaced approximately two miles apart. This system forms the backbone of the 2020 Network. As of 2014, the trail network was approximately 50 percent complete. Trails with implementation dates before 2020 were integrated into the 2020 Network as critical low-stress connections. These include the Poudre River Trail connection from Arapahoe Bend Natural area to the Environmental Learning Center and over I-25, connector from W Vine Drive to the Poudre River Trail near Lincoln Middle School, Fossil Creek Trail from Shields Street to College Avenue, Fossil Creek Trail near Bacon Elementary School, and the Longview and Front Range Trails to Loveland.

All other planned trails are represented on network maps as well but were not assumed to play a major role in the 2020 Network.

### 4.2 Coordinate on-street bicycle system with off-street trail system to ensure an integrated bicycle transportation network

The City's recreational trails system also serves as an important transportation network for

people bicycling in Fort Collins. Managed by the Parks Department, increased coordination across departments should ensue to ensure an integrated system is implemented and communicated for people wanting to bicycle. Coordination will be especially important to ensure consistent design and implementation of a wayfinding system occurs to guide people bicycling along low-stress routes, which utilize a combination of trails and streets.

## Local and Collector Streets

### 4.3 Implement the low-stress network using a data-driven prioritization process, and with a focus on connectivity

In the 2020 Network, most local and collector streets do not have recommendations to upgrade the existing facility. The local streets typically are already low-stress as a result of low vehicle speeds and traffic volumes. Many of the identified routes on collector streets already have bike lanes or buffered bike lanes and are likewise low-stress. The following improvements are recommended on streets that are not yet low-stress:

#### *Buffered Bike Lanes*

Buffered bike lanes add a hatched buffer area to the bike lane, most often on the side adjacent to automobile travel lanes. This increased separation provides a more comfortable riding environment, and the hatched area reinforces the message that these wide lanes are not for parking or automobile travel. Buffers will most often appear on the left side of the bike lane but may be switched to



the right side where parallel parking exists and presents the potential for dooring of bicyclists.

### Priority Shared Lanes

Priority shared lanes are enhanced shared lane markings achieved with an underlay of green paint and the use of closely spaced (< 100 feet) markings. The increased conspicuity and frequency of the markings reinforce a bicycle priority message resulting in improved behaviors by bicyclists and motorists. This treatment reserved for use on higher volume arterials or collectors with gaps in the bicycle network where there is not space for bike lanes, such as E Mountain Avenue, Linden Street and Magnolia Street. Addition of these markings will not change the level of stress of these streets.

The following treatment is recommended on streets that are already low-stress:



Priority shared lane in Long Beach, Calif.

### Marked Shared Lanes

Marked shared lanes are where a shared lane marking on the pavement is used to indicate that motorists should expect to see and share the lane with people bicycling, and to indicate the legal and appropriate line of travel for a bicyclist. These markings are typically spaced every 250 feet. This treatment is typically used where

traffic volumes and speeds are low enough to create a comfortable riding environment, and where constrained roadways do not allow for the inclusion of bike lanes. They may be added to streets indicated as signed routes on the 2020 Network where additional indication of bicyclists' presence is desired.

## Intersection Spot Improvements

### 4.4 Implement the low-stress network spot improvements in coordination with prioritized low-stress corridor improvement projects

Existing low-stress routes are discontinuous in many parts of the city where they cross high-traffic, high-speed arterial streets. Challenges with many arterial intersections include:

- Signalized crossings which do not adequately detect bicyclists, or which require bicyclists to wait long periods of time to cross
- Unsignalized crossings which require a bicyclist to wait for more than 30 seconds for a gap in automobile traffic to cross<sup>1</sup>
- Offset intersections which require a bicyclist to ride on a stretch of a high-stress arterial
- Network gaps on dead-end streets which will require a new street or trail connections

Making these crossings comfortable for the *Interested but Concerned* rider is the key to creating a connected network built upon existing low-stress local and collector streets. Intersection spot improvements have great potential to increase safety for bicyclists. While spot improvements may be completed as one-off projects as opportunities arise (for example as part of a routine repaving or engineering improvement), the ultimate goal should be completion of a series of intersections along a low-stress corridor. This coordinated approach will enable bicyclists to travel along continuous low-stress routes.

Spot improvements that address these issues are indicated on the network map under five

<sup>1</sup> The Highway Capacity Manual suggests increased risk taking occurs for people waiting to cross unsignalized crossings after 20 seconds, and after 30 seconds at signalized crossings.

categories. Further engineering analysis will be required to determine the final design recommendation. The categories of spot improvements include:

### *Two-Way Sidepath*

This recommendation suggests the installation of a short section of two-way sidepath to connect between two offset intersections. The two-way sidepath may replace an existing sidewalk and provide shared space for both bicyclists and pedestrians. Depending upon the roadway characteristics, this may also require installation of a crossing island or signal, to ensure that a safe crossing of the arterial is feasible.



### *Median*

This recommendation suggests the installation of a short section of median to act as a crossing island for pedestrians and bicyclists. These are typically installed at locations where a left turn lane is not necessary or where a left turn movements could potentially be prohibited and redirected to another intersection. The median may extend across the intersecting roadway if restricted motor vehicle access is desired. This treatment would typically include other engineering treatments such as an advanced yield line or rectangular rapid flashing beacon. Median islands are a standard feature for new roadway construction.



### *Add Signal*

This recommendation indicates that a new traffic signal may be required to provide a safe crossing. Regardless of signal type, each location should be designed to be triggered by a person bicycling from within the roadway.

### *Signal Improvement*

This recommendation indicates that an existing signal or half signal needs some additional improvement, such as a new push button, to help bicyclists make a comfortable crossing.

### *Other Crossing Improvements*

Other types of crossing improvements may include the installation of turn queue boxes, crosswalks, curb extensions, curb radius reductions, or other treatments which are discussed further in Appendix C.





## Arterial Street Protected Bike Lane Pilot Program

While the majority of routes in the 2020 Network are on local and collector streets that already provide a low-stress cycling environment, arterial streets are included where comparable parallel low-stress routes are not available. To become low-stress streets, these arterials will need a heavier level of investment in infrastructure which offers physical separation from automobiles, such as protected bike lanes or sidepaths/shared-use paths.

Arterial streets included in the 2020 Network tend to be located in areas of Fort Collins where the street network is discontinuous. For instance, the recommended protected bike lane on N College Avenue provides the only direct north-south low-stress connection in that part of the city. Additional protected bike lane recommendations come from other planning processes such as that on W Lake Street, currently being considered through the West Central Area Plan.

A set of protected bike lane recommendations are recommended for implementation through a pilot program as described below.

### *Protected Bike Lanes*

Protected bike lanes improve comfort and reduce stress for people bicycling by physically separating them from automobile and pedestrian traffic. They may be located at street level or sidewalk level and the protection may be provided with flexible delineators, curbing, parking, or other physical treatments. Designs of protected bike lanes will generally fall into the following two categories:

*Flexible-Post Protected:* This facility provides physical separation from automobiles with vertical flexible delineators. These are generally considered an interim treatment to a longer term, curb-separated protected bike lane. They are typically implemented with the installation of tubular markers in a buffer area. These facilities may be one-way or two-way, located on one or both sides of the street. They may mix bicyclists with right-turning motorists (one-way operation) in a short weaving area or maintain separation up to



One-way, street-level, flexible-post separated  
Chicago, Ill.



Two-way, street-level, curb-separated  
Washington, D.C.

an intersection through the provision of protected phasing (one-way or two-way operation).

*Curb-Protected:* This facility provides physical separation from automobiles with vertical curbing, bringing bicyclists to the same level as, but separate from, the sidewalk. These facilities may be one-way or two-way. They may mix bicyclists with right turning motorists (one-way operation) in a short weaving area or maintain separation up to an intersection through provision of protected phasing (one-way or two-way operation).

*Protected Bike Lane Intersections:* These are characterized by design features which minimize exposure with merging, weaving, and turning traffic, and are built to induce yielding and slow speeds at conflict points. At signalized intersections with high volumes of conflicting traffic, bicyclists may be given a dedicated portion



One-way, sidewalk-level, curb-separated  
Cambridge, Mass.



Two-way, sidewalk-level, curb-separated  
Utrecht, Netherlands

of the signal phase for a partially or fully protected crossing. Additional design approach details are provided in Appendix C.

#### Sidepaths/Shared-use Paths

Sidepaths separate bicyclists from adjacent automobile traffic, but allow pedestrians to share the space. Sidepaths should only be utilized where low volumes of pedestrians or bicyclists are anticipated. Sidepaths are constructed at sidewalk level. Sidepaths can be constructed with protected bike lane intersection features to improve safety.

#### 4.5 Develop and implement a protected bike lane pilot program

While protected bike lanes have been in widespread use in Europe for many decades, in particular the Netherlands, they are a relatively new design strategy in the United States. Since the first

construction of a protected bike lane in the U.S. in Cambridge, Mass. in 2004, over 140 protected bike lane projects (totaling over 120 miles) have been built in the United States, including in nearby Denver and Boulder. These projects have demonstrated that protected bike lanes can be an effective strategy for improving real and perceived bicyclist safety, and increasing the rates of bicycle travel by the *Interested but Concerned* demographic.

As this is a new facility to the City of Fort Collins, it will be important to evaluate their potential application within different land use and roadway contexts before they are implemented widely throughout the City. The evaluation will be conducted through the recommended Protected Bike Lane Pilot Program.

The initial pilot projects will evaluate alternative design, operation, and maintenance approaches to assess safety, mobility, and cost metrics. Public opinion will be evaluated throughout the process as well. Pilot locations should allow a comparison of a variety of roadway operation and land use conditions that are typical within the City. It is anticipated the City will implement approximately one pilot project per year through 2020.

Corridors for pilots may be selected from two categories: a prioritized list of protected bike lane projects in the 2020 Network, and opportunistic projects that are part of the Full Build Network.

All projects in the 2020 Network were ranked on a set of factors and are fully presented in Chapter 5. The top five scoring 2020 protected bike lane projects are:

- S Shields Street
- W Lake Street
- W Elizabeth Street
- W Laurel Street
- W Vine Drive

While projects in the Full Build Network have not been ranked, some protected bike lane projects may present themselves as opportunities due to inclusion in other planning processes such as

Harmony Road (*Harmony Corridor Plan*).

In general, there are three means by which the City will likely implement protected bike lane projects:

1. *Stand-alone projects*: These projects will fall into two categories depending upon the design of the bike lane. Street-level protected bike lanes may be implemented as retrofits of existing buffered bike lanes through the addition of flexible bollards to the buffer area. For example, the wide bike lanes on N College Avenue may be retrofitted with flexible bollards to create protected bike lanes.<sup>2</sup> Street-level lanes may also be part of resurfacing projects.

Curb-protected lanes necessitate an edge reconstruction which could take place independently of other street improvements.

2. *Full street reconstruction*: Implementation of protected bike lanes may be part of a street reconstruction project. Projects such as this are more likely to incorporate curb-protected bike lanes since reconstruction will allow for the movement of curbs. In the 2020 Network, W Elizabeth Street is a candidate for this type of implementation because it will be fully evaluated through the W Elizabeth Enhanced Travel Corridor Master Plan.
3. *Redevelopment projects*: Major redevelopment projects along arterial corridors will also present the opportunity to implement protected bike lane recommendations. The City may choose to place requirements on developers to construct or provide payment in lieu of construction for protected bike lane projects along a development's frontage. Collection of payments would allow for the creation of a fund to construct a corridor-length project at a future date.

#### 4.6 Develop and implement protected bike lane pilot evaluation program

A key component of the protected bicycle pilot is the evaluation program. Evaluations should be conducted at one or more representative

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<sup>2</sup> This project would require coordination with the Colorado Department of Transportation as College Avenue is State Route 287.

intersections within the corridor as intersections will be the primary location of potential conflict. The following evaluation steps are recommended for each project:

1. Establish baseline conditions prior to implementing pilot project
2. Analyze protected bike lane physical maintenance condition
3. Annual follow-up evaluation of crashes for up to 5 years

It is recommended each step of the evaluation assess the following information, as applicable:

1. Automobile and bicycle traffic volumes
2. Review all crash studies from previous 5 years
3. Document geometric features (lane widths, curb radii, etc)
4. Document operational features (signal cycle length, signal phasing)
5. Document traffic capacity (Level of Service, Level of Traffic Stress)
6. Document traffic control compliance
7. Document user behavior (yielding, avoidance maneuvers, travel path)
8. Document maintenance and operational techniques and costs
9. Conduct a multi-modal opinion survey to evaluate attitudes and understanding of intersection design

#### 4.7 Produce protected bike lane pilot program evaluation report

It is recommended that the City issue a final report in 2020 documenting the findings of the protected bike lane pilot program. Based on these findings, the City will reevaluate the protected bike lane recommendations of the Full Build Network presented below. The reevaluation may result in the City expanding or reducing the network. It is anticipated that the updated plan will include a prioritization scheme with specific recommendations for protected bike lane treatments based on the findings of the 2020 report.

#### 4.8 Develop protected bike lane design guidance

This process will culminate in the development of design standards for protected bike lanes and allow the City to add detail to and refine the Full Build Network.

After the conclusion of the evaluation effort, the City will develop detailed guidelines for the inclusion of protected bike lanes on arterial streets. These guidelines will provide details for the selection, design, construction, operations, and maintenance of protected bike lanes for new construction and reconstruction projects. The guidelines will be an update to the design guidance provided in Appendix C.

### Wayfinding

#### 4.9 Develop and implement a citywide wayfinding system to facilitate navigation of the 2020 Network

Many of the routes included in the 2020 Network are not currently known or recognizable to Fort Collins residents. In order to attract riders, this network must be publicized through a new bike map, and more directly identified through a wayfinding and branding system.

Wayfinding consists of signs that direct bicyclists along routes, providing clarity about turns and reassuring riders that they are continuing along a designated bicycle route. As new or novice riders see wayfinding signage throughout the city, they may be encouraged to try riding along a new route where they can be assured a low-stress trip. Wayfinding is also helpful to visitors and could help orient newcomers such as CSU students.

A wayfinding system should indicate distance and destinations. Destinations identified by the public as important include: parks, transit lines, neighborhoods, business districts, schools, trails and CSU. Longer-distance destinations such as Loveland and Windsor, as well as local and regional trails, should also be used. Finally, as the bike share program is implemented, signage directing riders to nearby docking stations should be added.

Wayfinding should not be limited to on-street routes. The current signage on trails relates to distances to major arterials rather than destinations or connections to other major paved trails. Wayfinding signs on trails should use the same destinations as the on-street network and should indicate the name of cross streets at access points. Access points can also be marked with directional wayfinding orienting trail users and helping them to make decisions about which way to turn.



Possible sign assembly for wayfinding on the Spring Creek Trail.

#### 4.10 Complete a comprehensive wayfinding plan for the City with a phased approach to complete 2020 Network signing first

Subsequent to this Plan, the City should develop a wayfinding master plan to help create system continuity, legibility, and branding. This system should focus first on routes within the 2020 Network and be implemented in tandem with corridor improvements so as to ensure bicyclists are directed along routes that have mitigated high-stress arterial crossings. This will be a major undertaking for the City that can provide a significant improvement to the bicycling environment in Fort Collins. Further guidance on wayfinding is available in Appendix D.

## Full Build Network

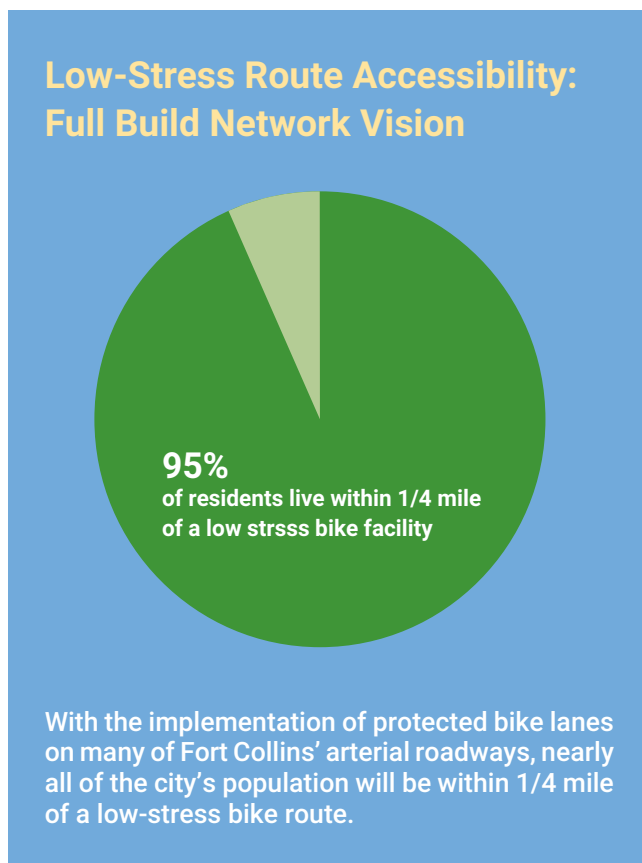
The Full Build Network creates an ambitious vision for Fort Collins’ future as a world-class bicycling city. Implementation of this network will require a significant investment in the design and construction of facilities. While the 2020 Network takes advantage of existing low-stress streets, the Full Build Network focuses on improving high-stress streets with protected bike lanes. Implementation of these recommendations should be carefully considered in light of the results of the protected bike lane pilot program.

The construction of these facilities, along with planned paved trails and the improvements of the 2020 Network, will create a comprehensive network of low-stress facilities spaced at ½-mile intervals throughout the city. Implementation of the protected bike lanes identified in the Full Build Network is anticipated to be a continuous effort over the next 25 to 50 years. The design, public review, funding and construction of the majority of the protected bike lanes is anticipated to be

opportunity-driven as outlined in the preceding section. For this reason, the Full Build Network does not include an implementation schedule.

The Full Build Network enhances and extends the 2020 Network by recommending:

- Additional buffered bike lanes on collector and lower-speed arterial streets
- Protected bike lanes on a majority of arterials throughout Fort Collins, with an emphasis on connecting higher density residential and commercial areas and major destinations
- Neighborhood greenways to further traffic calm bike friendly streets
- Intersection improvements for protected bike lane intersections
- Comprehensive intersection improvements completed as projects present themselves through best practice design as outlined in the Design Guidelines (Appendix C)

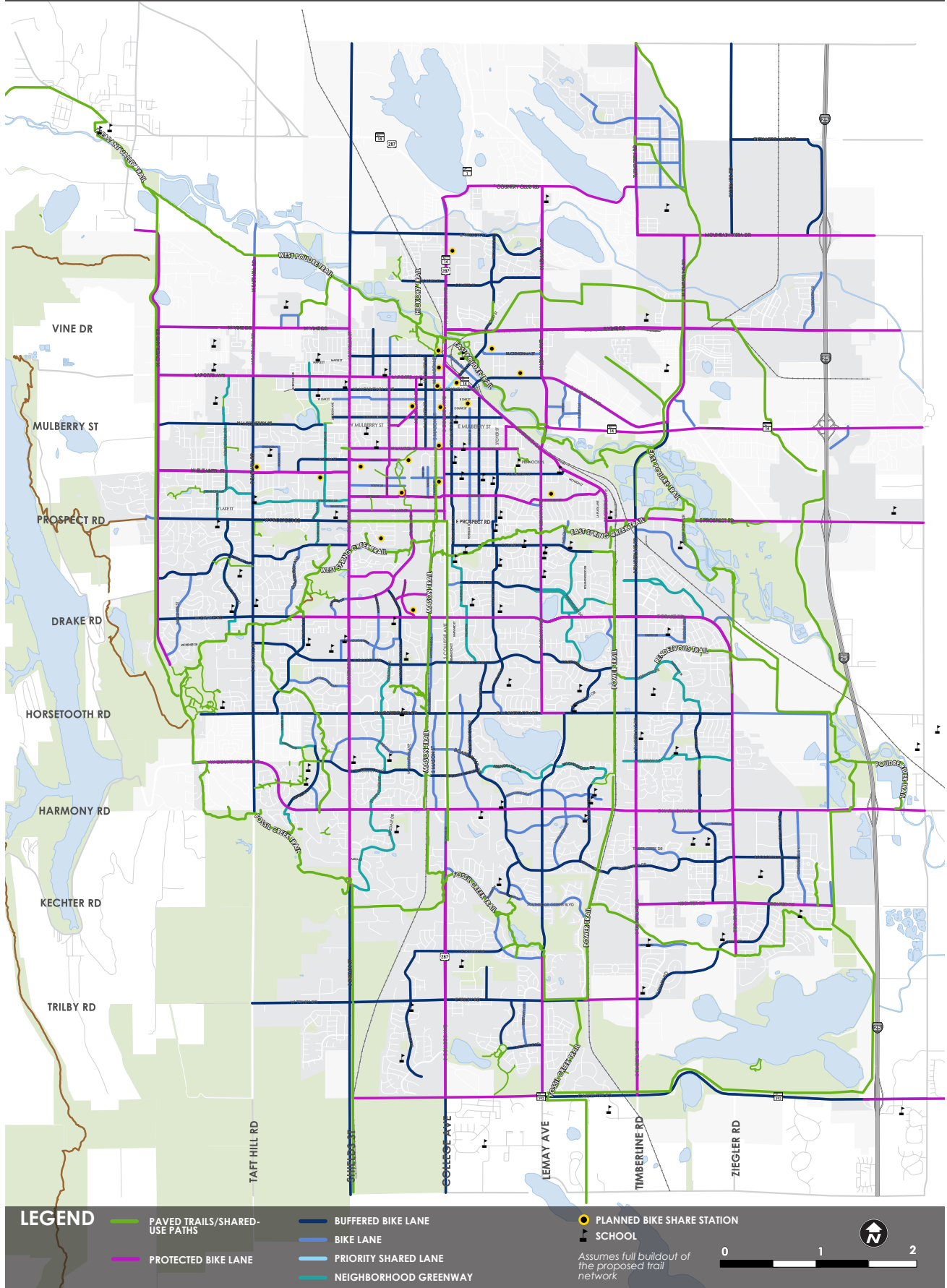


Facility Type	Full Build Network Mileage
Signed Route	<b>5.1</b> <i>(5.1 existing)</i>
Priority Shared Lane	<b>0.1</b>
Bike Lane	<b>63.3</b> <i>(57.2 existing)</i>
Buffered Bike Lane	<b>88.1</b> <i>(20.6 existing)</i>
Protected Bike Lane	<b>92.6</b> <i>(8.7 existing)</i>
Neighborhood Greenway	<b>18.2</b>
<b>On-Street Total</b>	<b>267.3</b>
Paved Trail	<b>116.4</b>
<b>Total Low-Stress Mileage</b>	<b>383.7</b>

**Table 3. Network Facility Mileage in Full Build Network**

\*Note: Existing mileage in Table 3 assumes implementation of 2020 Network facilities

# FULL BUILD NETWORK



## Network Implementation

Many of the projects in the Full Build Network will require additional traffic engineering study. Protected bike lane projects may alter the operations of intersections requiring decisions to be made regarding potential trade-offs between bicycle, pedestrian, transit, and motor vehicle priority. The findings of the protected bike lane pilot project program are anticipated to have a significant influence on the ultimate design and implementation of protected bike lanes planned in the Full Build Network.

The following actions are recommended to implement the most typical facility types in the Full Build Network:

### Bike Lanes

#### 4.11 Widen existing substandard bicycle lanes to minimum width bicycle lanes as opportunities present themselves

Most existing bike lanes meet current design guidelines. In locations where bike lane widths are substandard, it is recommended that they be restriped to a minimum of 6 feet wide to allow side-by-side riding and increased bicyclist comfort through greater separation from adjacent motor vehicle traffic. The measurement of bicycle lane width is exclusive of the gutter pan except where the gutter pan is integrated across the full width of the bicycle lane on constrained corridors such as Shields Street or W Elizabeth Street. Where existing narrow bicycle lanes cannot be widened due to constrained roadway cross sections, the gutter pan should be removed or extended across the full width of the bicycle lane to maximize its width.

### Buffered Bike Lanes

#### 4.12 Upgrade existing bicycle lanes to buffered bike lanes as opportunities present themselves

Buffered bike lanes are recommended as a default facility on all streets where space is available, which includes many collector and arterial streets in Fort Collins. The city started to implement buffered bike lanes as part of routine resurfacing projects on McMurry Avenue, W Stuart Street,

Lochwood Drive and a portion of S Shields Street during 2014.

### Neighborhood Greenways

#### 4.13 Continue implementation of neighborhood greenways

Neighborhood greenways are located on slow speed (25 mph speed limit) and low volume (<3,000 vehicles per day) streets that optimize bicycle and pedestrian travel. These streets may require traffic calming or traffic diversion. The recommended neighborhood greenways can help guide prioritization of projects in the City's existing traffic calming program. All treatments for these streets should be engineered for a target speed of 20 mph, which will create a comfortable riding environment for bicyclists sharing the road with automobiles and a safer environment for adjacent residents.

Engineering and urban design treatments may also be provided to enhance the quality of life of adjacent residents through the provision of improved street aesthetics, vegetation and other innovative green street designs. Lessons learned from the 2015 planned Remington Greenway project should be applied as these facilities are implemented.



Neighborhood greenways use traffic calming such as mini circles to further slow automobile traffic

## Protected Bike Lanes

### 4.14 Upgrade existing bicycle lanes to protected bike lanes as opportunities present themselves

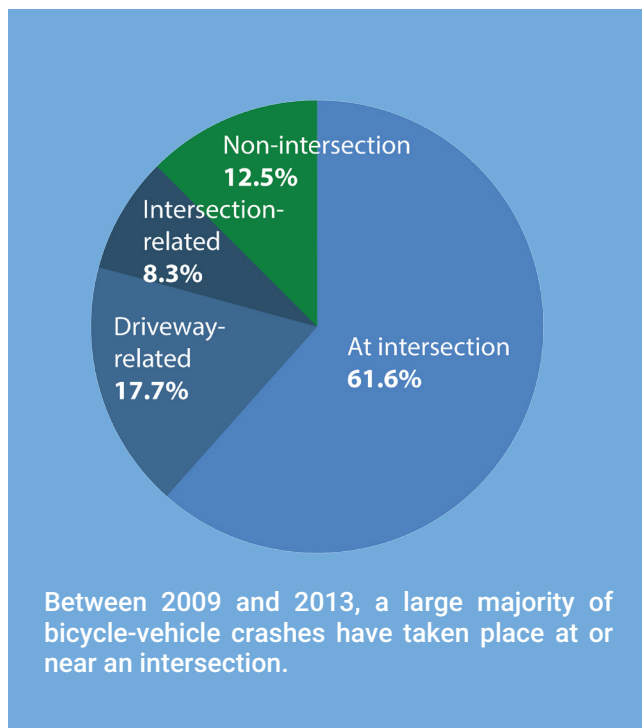
The implementation of protected bike lane recommendations will vary from street to street and may be at street level or sidewalk level as described in the 2020 Network section. Full design guidance about these facilities is provided in Appendix C.

It is anticipated that variants of the Dutch protected intersection will be deployed at protected bike lane intersections where appropriate and as space permits.<sup>3</sup>

## High-Priority Intersections

### 4.15 Improve high-priority intersections as opportunities present themselves

While the set of intersections on the 2020 Network is critical for making that network usable, there are other intersections in Fort Collins with pressing needs for improvement. To improve opportunities



<sup>3</sup> The design of Dutch style protected intersections is addressed in the Design Guidance, Appendix C.

for people to bicycle throughout the city, there must be safe places to cross major streets throughout the City, not only along the identified 2020 Network. The design guidance in Appendix C will help identify appropriate treatments at these intersections.

Intersection improvements will be fundamental to increasing bicyclist safety, as approximately 88 percent of all crashes in Fort Collins occur at intersections. In addition to high-crash intersections, the public identified other intersections that are difficult to navigate.

All intersections with at least one bicycle crash between 2009 and 2013, as well as those identified as barriers by public input on the WikiMap, were scored based on a combination of safety, demand, and public input to generate a list of high-priority intersections which should be evaluated for improvement. A prioritized list of these intersections is presented in Chapter 5.

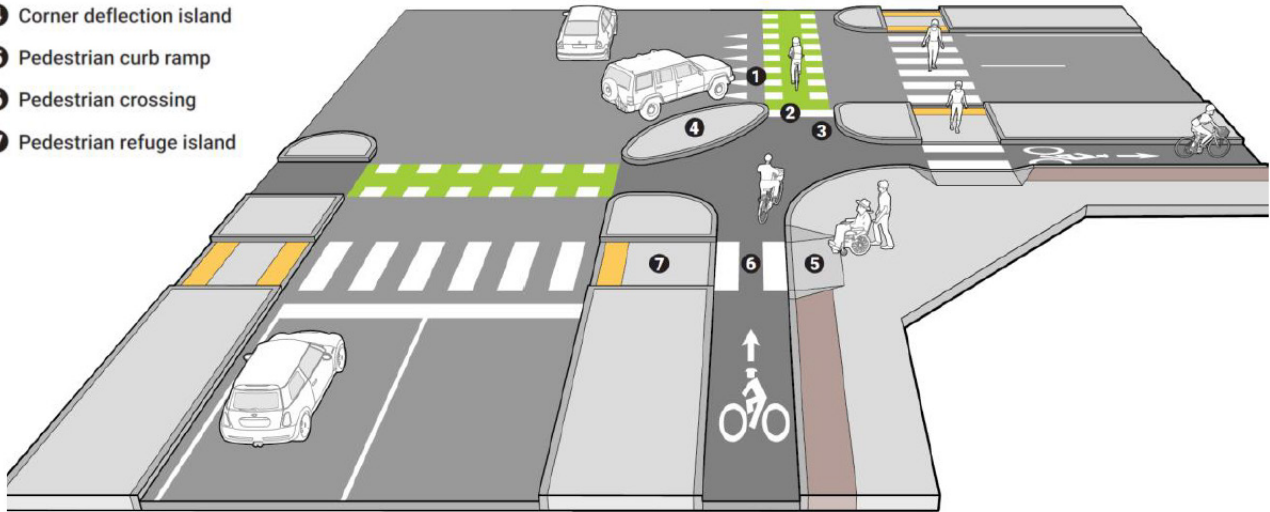
The primary challenges related to safety and comfort at high-priority Intersections that are not part of the 2020 Network include:

- Extended wait times for bicyclists at high-volume unsignalized intersections
- Extended wait times for bicyclists at signalized intersections where breaks in cross traffic spur bicyclists to cross illegally on a red signal
- Long right-turn lanes (>150 feet) that create extended periods of exposure to potential conflicts for bicyclists in areas where their path of travel must cross with an automobile
- Bike lanes that are dropped at intersections to accommodate automobile turn lanes
- Lack of defined space for bicyclists at and through large, multilane intersections
- Long crossing distances of multilane streets
- Necessary crossing of multiple lanes of automobile traffic to make left turns

There are a number of intersection treatments that can aid cyclists in crossing busy intersections,



- 1 Bicycle crossing
- 2 Bicycle stop line
- 3 Bicycle queuing area
- 4 Corner deflection island
- 5 Pedestrian curb ramp
- 6 Pedestrian crossing
- 7 Pedestrian refuge island



Elements of a Protected Bike Lane Intersection, Source: Toole Design Group

including signalization, crossing islands, high visibility crosswalks, and flashing warning beacons. The appropriate solution will require site-specific analysis at each location. In all cases, the provision of Dutch-style protected intersections should be considered wherever two protected bike lanes (existing or proposed) intersect (see image above).

#### 4.16 Incorporate 2014 Plan recommendations into existing and future Arterial Intersection Prioritization studies

Chapter 5 and Appendix F identify intersections that should be considered for bicycle improvements during future City planning efforts. The Design Guidelines provided in Appendix C should be consulted during this process.

### Signage Improvements

#### 4.17 Review streets for potential applications of regulatory and advisory signs at intersections and along existing and new bicycle facilities

*BICYCLES MAY USE FULL LANE Signs with Shared Lane Markings*

Install BICYCLES MAY USE FULL LANE signs (R4-11) on arterials or collectors where gaps exist in

the bicycle lane network, lanes are too narrow for bicyclists and motorists to travel side by side, and evaluation of conditions shows that the signs will improve safety and operation.

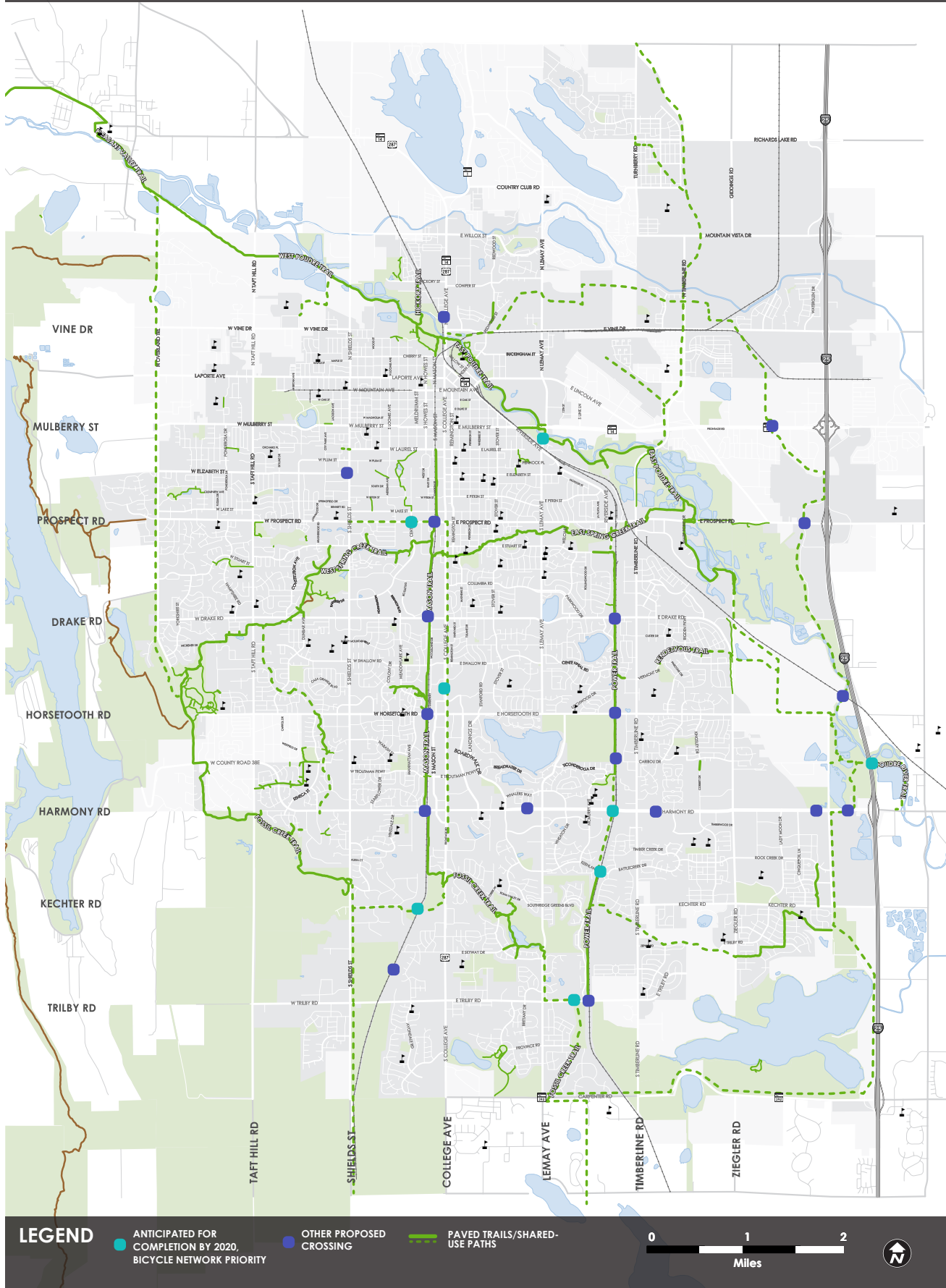
#### *RIGHT TURNING TRAFFIC YIELD TO BIKES Signs*

Install RIGHT TURNING TRAFFIC YIELD TO BIKES signs (R4-4) at all locations where a right turn lane develops to the right of a bicycle lane requiring motor vehicles to merge across a bicycle lane.



MUTCD Signage Examples

# PROPOSED GRADE-SEPARATED CROSSINGS



#### 4.18 Review crash data for streets with prevalent wrong-way riding and install signage to encourage riding in the direction of traffic

##### *WRONG WAY Signs*

Many crashes reviewed in the Safety Analysis for this Plan involved bicyclists riding against traffic. This data should be reviewed to identify corridors where the installation of WRONG WAY signs (R5-1b) and RIDE WITH TRAFFIC sub-plaques (R9-3cP) may encourage bicyclists to ride with traffic both in the street and on the sidewalk.

## Overall

#### 4.19 Prioritize grade-separated crossings that facilitate bicycle network connections

Other City plans identify a number of potential underpasses or overpasses that would serve pedestrian and bicycle trips, so this Plan does not make additional recommendations. A number of these grade-separated crossings already exist in Fort Collins, and additional installations will expand low-stress options for bicyclists and pedestrians crossing high-volume arterial streets and railroad barriers. The projects identified in the map on the following page should be prioritized because they provide critical connections in the 2020 Network.

#### 4.20 Consider the 2014 Plan recommendations through the City's Development Review process

To aid in implementing the recommendations of the 2014 Plan, the network recommendations and design approach included in this Plan should be considered through the City's Development Review process. Where there is a nexus, new development and redevelopment offers the opportunity to contribute to the overall buildout of the bicycle network. In addition, implementation of the Master Street Plan should consider the design philosophy and guidelines recommended in this Plan.

#### 4.21 Integrate the 2014 Plan recommendations and philosophy in future planning and design efforts

It is recommended that future corridor plans, neighborhood plans, and citywide planning efforts

consider the recommendations and philosophy inherent in the 2014 Plan while ensuring context-appropriate and best practice design to accommodate the needs of people on bicycles. As a citywide plan, the 2014 Plan presents high level recommendations that provide a baseline from which design adjustments may be made, as corridors and projects move to the next phase of planning. Even where the 2014 Plan may not recommend bicycle facilities, the City should approach all new and retrofit street projects from a Complete Streets perspective and consider opportunities to design for people bicycling where appropriate.

## Key Actions Summary

The table on the following page summarizes the key actions that Fort Collins will need to take to implement the 2020 Network and move toward the Full Build Vision to transform the city into a world-class place for bicycling.

Network	Category	Key Action
2020 Network	Trails	4.1 Implement the trail network according to the 2013 Paved Recreational Trails Plan 4.2 Coordinate on-street bicycle system with off-street trail system to ensure an integrated bicycle transportation network
	Local and Collector Streets	4.3 Implement the low-stress network using a data-driven prioritization process, and with a focus on connectivity 4.4 Implement the low-stress network spot improvements in coordination with prioritized low-stress corridor improvement projects
	2020 Protected Bike Lane Pilot Program	4.5 Develop and implement protected bike lane pilot program 4.6 Develop and implement protected bike lane pilot evaluation 4.7 Produce protected bike lane pilot program report 4.8 Develop protected bike lane pilot design guidance
	Wayfinding	4.9 Develop and implement a citywide wayfinding system to facilitate navigation of the 2020 Network and to provide guidance to community destinations 4.10 Complete a comprehensive wayfinding plan for the City with a phased approach to complete 2020 Network signing first.
Full Build Network	Segment Improvements	4.11 Widen existing substandard bicycle lanes to minimum width bicycle lanes as opportunities present themselves 4.12 Upgrade existing bicycle lanes to buffered bike lanes as opportunities present themselves 4.13 Continue implementation of neighborhood greenways 4.14 Upgrade existing bicycle lanes to protected bike lanes as opportunities present themselves
	High-priority Intersections	4.15 Improve high-priority intersections as opportunities present themselves 4.16 Incorporate the 2014 Plan recommendations into existing and future Arterial Intersection Prioritization studies
	Signage Improvements	4.17 Review streets for potential applications of regulatory and advisory signs at intersections and along existing and new bicycle facilities 4.18 Review crash data for streets with prevalent wrong-way riding and install signage to encourage riding in the direction of traffic
Overall	Grade-Separated Crossings	4.19 Prioritize grade-separated crossings that facilitate bicycle network connections
	Future Planning	4.20 Consider the 2014 Plan recommendations through the City's Development Review process 4.21 Integrate the 2014 Plan recommendations and philosophy in future planning and design efforts

**Table 4. Key Actions for Bicycle Network Development**



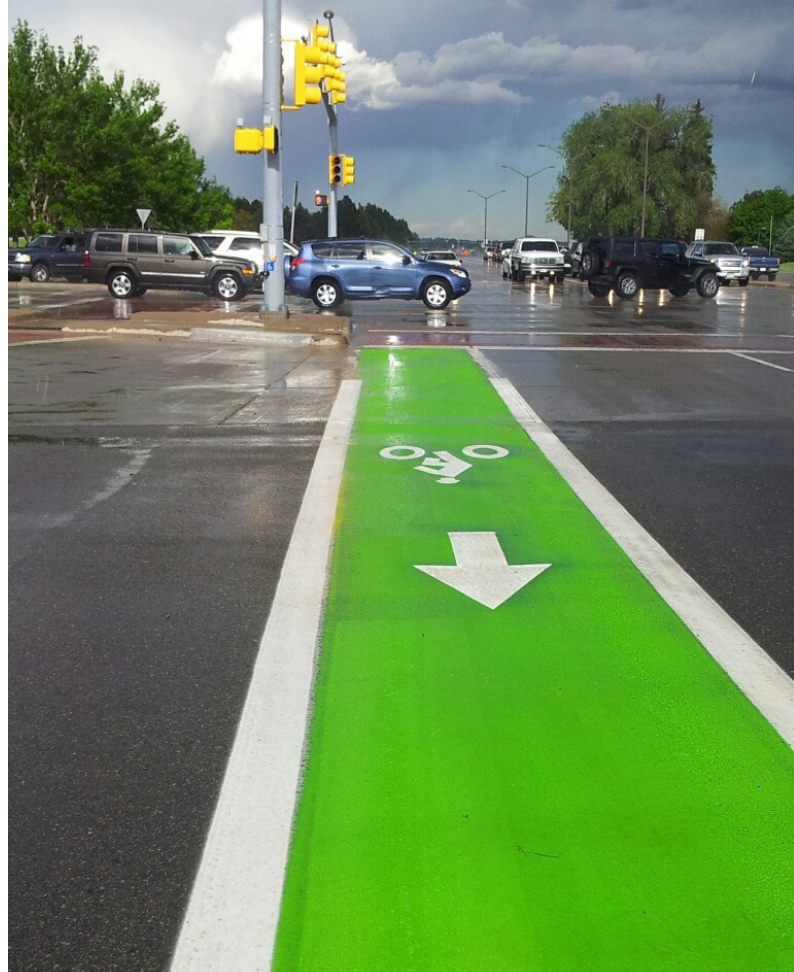
## Chapter 5: Implementation

## Chapter 5: Implementation

The infrastructure and program recommendations described in Chapters 2 and 4 provide strategies that will move Fort Collins toward the vision of becoming a world-class bicycling city. While improving bicycling is a clear community priority, implementation of these recommendations will necessarily occur over time commensurate with available resources. The purpose of this chapter is to provide guidance in the phasing and funding strategies to realize the City's vision; however, the adoption of the 2014 Plan does not commit the City to funding and implementing the recommendations according to the proposed phasing. Funding decisions regarding specific recommendations within this plan will be made by City Council through the budget process.

The approach to expanding Fort Collins' bicycle network must consider what is realistic given historic and anticipated funding, while also providing the City with flexibility to respond to changing conditions and opportunities that may arise. As described previously, there is a strong focus on creating a low-stress network that is comfortable for the *Interested but Concerned* rider. The implementation approach focuses on advancing a citywide low-stress bike network as quickly as possible, expediting high-priority improvements and leveraging scheduled maintenance projects and private funding opportunities. The majority of the low-stress bike network is proposed for completion by the year 2020.

A general overview of the process used to prioritize recommended projects and programs and develop a phasing plan is found on the following page. The seven 2014 Plan goals form the foundation for the implementation plan, which feed into the three primary inputs used to develop the phasing plan. Each 2020 project corridor has been evaluated quantitatively using measures that address one or more of the goals. The recommended projects and programs have also been evaluated qualitatively based on their ability to make improvements in the areas of economic, environmental, and social sustainability – which



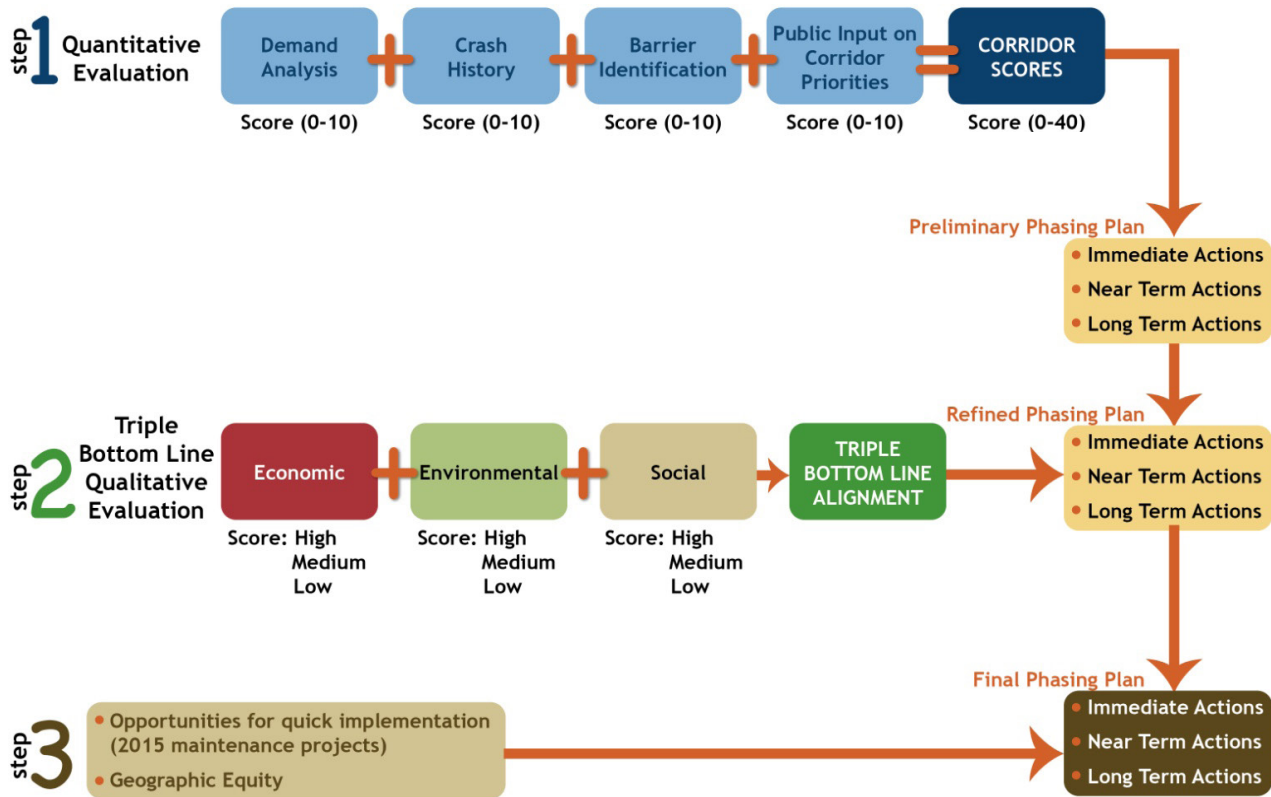
Green bicycle lane on Harmony Road

overlap with the 2014 Plan goals. Community input makes up the third major component of prioritizing projects and programs.

To be most useful to the City, the Implementation Plan allows for some flexibility to respond to changing conditions and opportunities. Other considerations that have been used to refine the phasing plan, and should continually be used to refine the implementation of the 2014 Plan, include:

- Project cost, feasibility and ease of implementation
- Opportunities for quick implementation (combining bike projects with ongoing maintenance projects, integrating bike improvements with programmed capital projects, or leveraging partnership opportunities)
- Geographic equity (assurance that high-priority projects are reasonably spread throughout the community)

The 2014 Plan goals also feed into performance measures to track the City's progress toward



### Corridor Prioritization Process

achieving these goals and implementing the bicycle network vision.

## 2020 Network Phasing

The recommended 2020 Network improvements have been grouped and evaluated by corridor. The corridors include a combination of segment and intersection improvements. A three-step evaluation process was applied to the 50 corridors to establish the corridor phasing plan. A full description of the prioritization process is included in Appendix F.

The quantitative analysis is based on four evaluation criteria, each of which was given a normalized score ranging from 0 to 10, with 10 being the best. The scores were summed, and each corridor was given a Quantitative Corridor Score ranging from 0 to 40, with 40 being the best. The criteria include demand analysis, crash history, barrier identification, and public input.

The Triple Bottom Line evaluation of corridors/projects asked the following questions:

### Economic Sustainability

- Does the project connect to a commercial district?

- Does the project make use of existing infrastructure (e.g., restriping only)?
- Does the project have high potential for partnership and/or non-City funding contributions?
- Does the project enhance connectivity to the proposed bike share stations?

### Environmental Sustainability

- Does the project increase connectivity to natural resources?
- Does the project limit the need for additional impervious surfaces?
- Does the project increase access to transit?

### Social Sustainability

- Does the project address a safety concern?
- Does the project connect to a community activity (e.g., school, library, park)?
- Does the project enhance a cultural or historic district?
- Does the project serve traditionally underserved populations (e.g., low income, minority)?

## Corridor Cost Estimates

The cost to build bicycle projects can vary greatly depending on the type of facility and the existing conditions in the project area. Planning-level cost estimates have been developed for different types of bicycle facilities based on typical elements that would need to be added, removed, or modified to implement the recommended facility. For example, installation of new pavement markings and signing are relatively easily installed if other existing infrastructure is not impacted; those costs are based on an estimate of bike lane markings and sign placement of approximately 20 per mile on each side of the street.

Improvements that require moving existing street edges can impact the removal and replacement of curb and gutter, drainage infrastructure, utilities, landscaping/trees, and it may also require the purchase of additional right-of-way or establishment of an easement – all of which can increase the cost of a bicycle facility improvement substantially. The methodology and assumptions used for estimating project costs are detailed in Appendix F.

There can be great variance in the cost for protected bike lanes and neighborhood greenways, depending on the ultimate design decisions specific to the corridor. Because of this variance, a broad cost range (low end – high end) has been provided for these facility types.

### *Probable Maintenance Costs*

The addition of bicycle facilities in Fort Collins will only increase ridership, safety and comfort if those, and existing facilities, are maintained properly. Monetary and staff costs of on-going maintenance of facilities should be factored into decisions about project implementation. This will require coordination between FC Bikes and the Streets Department.

Recommendations in Chapter 3 regarding maintenance of protected bike lanes will lead to increased maintenance costs. The Streets Department has estimated that the cost per mile of sweeping a street could increase from \$45 to \$150 with the implementation of a protected bike lane, and the cost of snow removal could increase from \$200 to \$1,000 per mile. There are a

number of design and implementation options to streamline maintenance, such as snow emergency parking bans on streets where parking is used as the separation between automobiles and bicycles. Other cities have found creative solutions, such as reorienting the blades on their existing snow plows to accommodate a narrower path (such as protected bike lanes). These options should be part of the discussion when implementing protected bike lane pilot projects. Maintenance costs and strategies will be incorporated into the evaluation of this pilot program.



The Poudre River Trail



**Table 1: Planning-Level Costs by Facility Type**

Project Type	Planning-Level Cost Estimate
<b>Signed Routes</b>	
Signed Route	\$6,000 per mile
Priority Shared Lane	\$61,000 per mile
<b>Bike Lanes</b>	
Bike Lane without lane re-striping	\$55,000 per mile
Bike Lane with lane re-striping	\$108,000 per mile
Bike Lane with roadway widening needed	\$2,000,000 to \$2,500,000 per mile
Green Bike Lane paint	\$383,000 per mile
<b>Buffered Bike Lanes</b>	
Buffered Bike Lane (conversion from bike lane)	\$40,000 per mile
Buffered Bike Lane (full street re-striping)	\$188,000 per mile
<b>Protected Bike Lanes</b>	
Low End (Street-level conversion from bike lane)	\$95,000 per mile
High End (Sidewalk-level)	\$3,000,000 per mile
<b>Neighborhood Greenway</b>	
Low End (Striping and Signing)	\$19,000 per mile
High End (Includes Traffic Calming Measures, Adjacent LID Treatments, etc.)	\$590,000 per mile
<b>Trails</b>	
New Trail Segment	\$1,000,000 per mile
<b>Crossing Improvements</b>	
Two-Way Sidepath	\$140,000 each location
Signal	\$250,000 each location
Bicyclist Activated Signal (HAWK)	\$86,000 each location
Median with Refuge and Crosswalk	\$26,400 each location
Rectangular Rapid Flashing Beacon (assumes 4 installed)	\$40,000 each location
Bike Signal Head (assumes 2 installed)	\$1,800 each location
Push Button (assumes 2 installed)	\$700 each location

## Priority Corridors

The corridor prioritization, along with an assessment of the planning-level cost estimates and network equity resulted in the target implementation phasing for both local and collector corridors displayed in Table 2. Table 3 displays rankings for the potential protected bike lane pilot projects in the 2020 Network. Note that project numbers for each corridor do not correspond with its ranking.

The corridor costs listed in Table 2 include all segment and intersection improvements necessary to create the low-stress route identified in the project map. For example, the Ponderosa Street/Hampshire Road project (corridor #1) includes two sidepaths, two medians and a buffered bike lane striping on Hampshire. Signed route costs are not included for any projects as it is assumed that these efforts will be part of

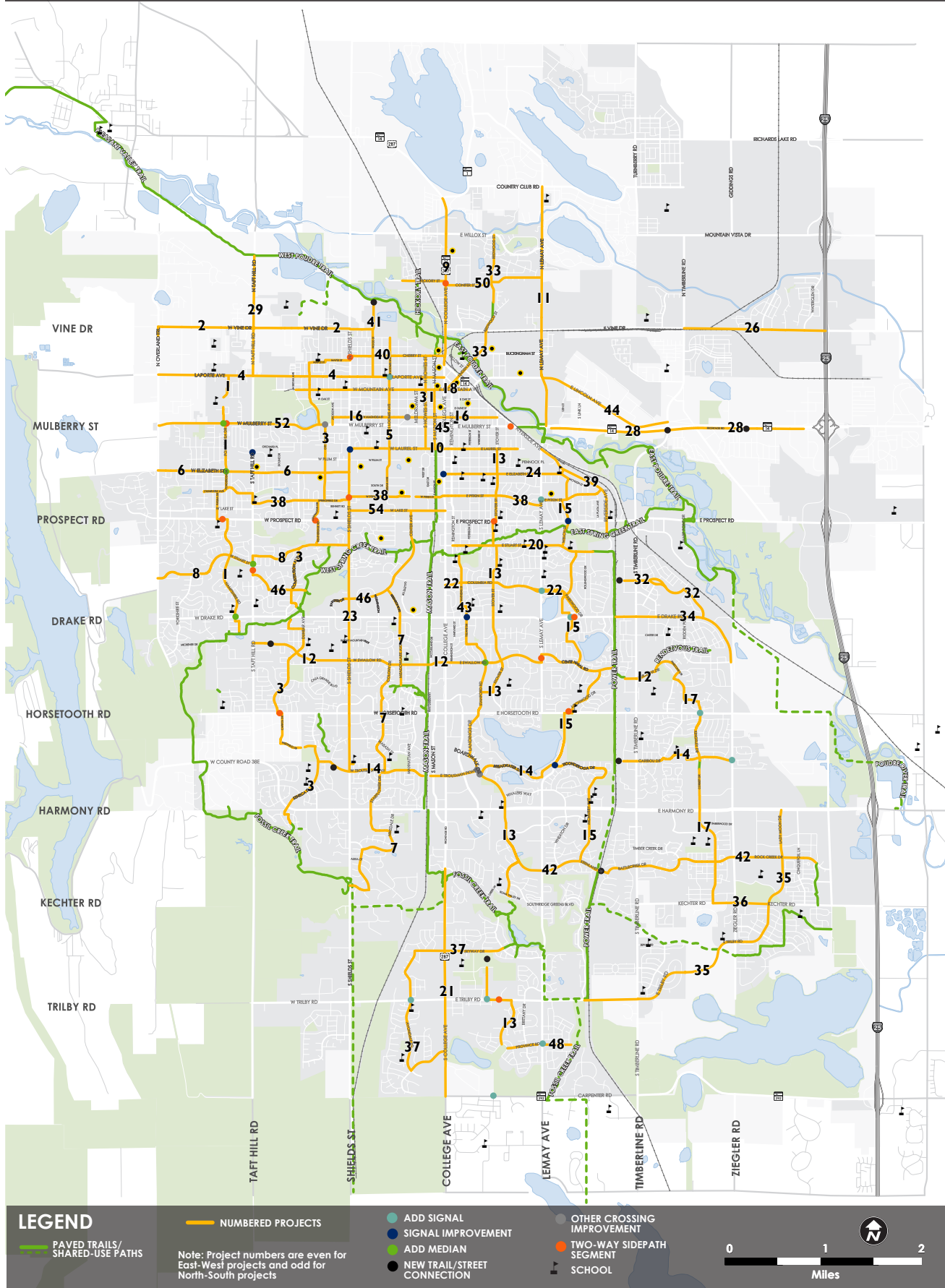
implementing a citywide wayfinding system. A detailed list of the components of each project is included in Appendix F.

This phasing plan is a tool to guide the City in planning and programming funding for corridor improvements. Many of the corridors listed in Table 2 require a variety of actions, sometimes over several miles. The City will approach implementation of corridor improvements opportunistically: where there are occasions to leverage ongoing maintenance projects, other capital improvement projects, or private funding through development or redevelopment, the City will be flexible in elevating the priority of corridor improvements, or implementing stand-alone projects.



Cyclist navigates a crossing of S Shields Street near W Pitkin Street, a proposed crossing improvement location.

# 2020 LOW-STRESS NETWORK PROJECTS



**Table 2: Priority Local and Collector Street Corridors Target Implementation by Year**

Corridor (ID#)	Quantitative Corridor Score (0-40)	Triple Bottom Line Alignment			Planning-Level Cost Estimate
		Economic	Environmental	Social	
<b>2015 Implementation</b>					
Mason Street (45)	22	●	●	●	\$64,000
Colony Drive (7)*	16	●	●	●	\$18,000
Pitkin Street (38)	16	●	●	●	\$1,281,000**
Mountain Avenue (18)*	13	●	●	●	\$283,000
Magnolia Street (16)*	13	●	●	●	\$98,000
Remington Street (43)*	15	●	●	●	\$348,000***
Columbia Road (22)*	11	●	●	●	\$100,000
<b>2016 Implementation</b>					
Loomis Avenue (5)	22	●	●	●	\$50,000
Capitol Drive (3)	16	●	●	●	\$261,000
Mulberry Street (52)	12	●	●	●	\$328,000
Swallow Road (12)*	11	●	●	●	\$677,000**
Rock Creek Drive, Keenland Drive (42)	7	●	●	●	\$23,000
<b>2017 Implementation</b>					
Howes Street (31)	14	●	●	●	\$182,000
Linden Street (33)	15	●	●	●	\$17,000
Raintree Dr (46)	14	●	●	●	\$140,000
Wood Street (41)	15	●	●	●	\$100,000
W Stuart Street (8)	14	●	●	●	\$66,000
Cherry Street, Maple Street (40)	13	●	●	●	\$131,000
Brookwood Drive (15)	10	●	●	●	\$598,000
Conifer Street (50)	6	●	●	●	\$131,000

Note: The implementation of the 2020 Network will depend on available resources and future City Council funding decisions. Full funding has not been secured to complete the projects identified in these tables.

\* Portions of these projects will be implemented through the 2015 Street Maintenance Program.

\*\* Project costs for Pitkin Street and Swallow Road are taken from the Transportation Alternatives Program applications submitted for these projects.

\*\*\* The Remington Street project cost is based on cost estimates developed for this plan, not estimates developed for the Remington Greenway project. As such, the cost indicated here may not align with that in the Greenway plan.

Table 2 continued: Priority Local and Collector Street Corridors Target Implementation by Year

Corridor (ID#)	Quantitative Corridor Score (0-40)	Triple Bottom Line Alignment			Planning-Level Cost Estimate
		Economic	Environmental	Social	
<b>2018 Implementation</b>					
E Elizabeth Street (24)	15	●	●	●	\$120,000
Laporte Avenue (4)	17	●	●	●	\$144,000
Skyway Drive (37)	7	●	●	●	\$50,000
Hampshire Road (1)*	8	●	●	●	\$380,000
<b>2019 Implementation</b>					
Stover Street (13)	6	●	●	●	\$855,000 to \$1,600,000
Nassau Way (48)	1	●	●	●	\$50,000
<b>2020 Implementation</b>					
Mulberry Street Frontage (28)	8	●	●	●	\$676,000
Troutman Drive, Breakwater Drive (14)	7	●	●	●	\$239,000
Nancy Gray Avenue (32)	6	●	●	●	\$58,000
Kingsley Drive, Corbett Drive (17)	4	●	●	●	\$100,000

Note: The implementation of the 2020 Network will depend on available resources and future City Council funding decisions. Full funding has not been secured to complete the projects identified in these tables.

\* Portions of these projects will be implemented through the 2015 Street Maintenance Program.

\*\* Project costs for Pitkin Street and Swallow Road are taken from the Transportation Alternatives Program applications submitted for these projects.

\*\*\* The Remington Street project cost is based on cost estimates developed for this plan, not estimates developed for the Remington Greenway project. As such, the cost indicated here may not align with that in the Greenway plan.

**Table 3: Protected Bike Lane Pilot Project Options**

Corridor (ID#)	Quantitative Corridor Score (0-40)	Triple Bottom Line Alignment			Planning-Level Cost Estimate
		Economic	Environmental	Social	
Shields Street (23)	31	●	●	●	\$130,000 to \$4,100,000
Laurel Street (10)	19	●	●	●	\$95,000 to \$2,100,000
N College Avenue (9)	14	●	●	●	\$167,000 to \$5,200,000
W Elizabeth Street (6)	22	●	●	●	\$190,000 to \$6,000,000
W Lake Street (54)	24	●	●	●	\$95,400 to \$3,000,000
N Lemay Avenue (11)	10	●	●	●	\$239,000 to \$7,500,000
Riverside Avenue (39)	10	●	●	●	\$255,000 to \$3,325,000
E Lincoln Avenue (44)	8	●	●	●	\$138,000 to \$4,400,000
E Vine Drive (26)	4	●	●	●	\$141,000 to \$4,400,000
E Trilby Road (35)	4	●	●	●	\$53,000 to \$1,685,000
W Vine Drive (2)	16	●	●	●	\$188,000 to \$5,900,000
E Drake Road (34)	12	●	●	●	\$143,000 to \$4,500,000
S College Avenue (21)	8	●	●	●	\$227,000 to \$7,100,000
N Taft Hill Road (29)	10	●	●	●	\$118,000 to \$3,700,000

## Priority Intersections

The tables below identify two main categories of intersection improvements needed to make bicycling safer and more comfortable: those that are part of the 2020 Network, and those that are non-2020 Network. All intersections with a bicycle-related crash or WikiMap-identified barrier within 150 feet were used as the subset of intersections for analysis. The intersections were scored using demand analysis, crash history, barrier identification, and public input. All of the intersections that were evaluated are listed in Appendix F and shown on the Priority Intersections map.

Each intersection was given a normalized score ranging from 0 to 10, with 10 being the best, for each of the four criteria. The scores were summed, and each intersection was given a total score ranging from 0 to 40, with 40 being the highest priority. Table 4 shows analysis results for the 10

highest scoring intersections that are part of the 2020 Network. Table 5 identifies the 10 highest scoring non-2020 Network intersections for improvement.

The improvements needed at each intersection will vary and should be identified on a case by case basis. These could range from signal-timing modifications and lane restriping to more extensive intersection reconfiguration.

The City is currently evaluating intersections for potential improvement through an ongoing Engineering Arterial Intersection Prioritization Study (AIPS). This is a routine study which identifies and prioritizes intersections that are in need of mobility and safety improvements. Intersections which are included in this study are denoted with a checkmark in the tables below. Intersections that are selected for more detailed design through AIPS should be considered for improvements to the bicycling environment to implement the recommendations of the 2014 Plan.

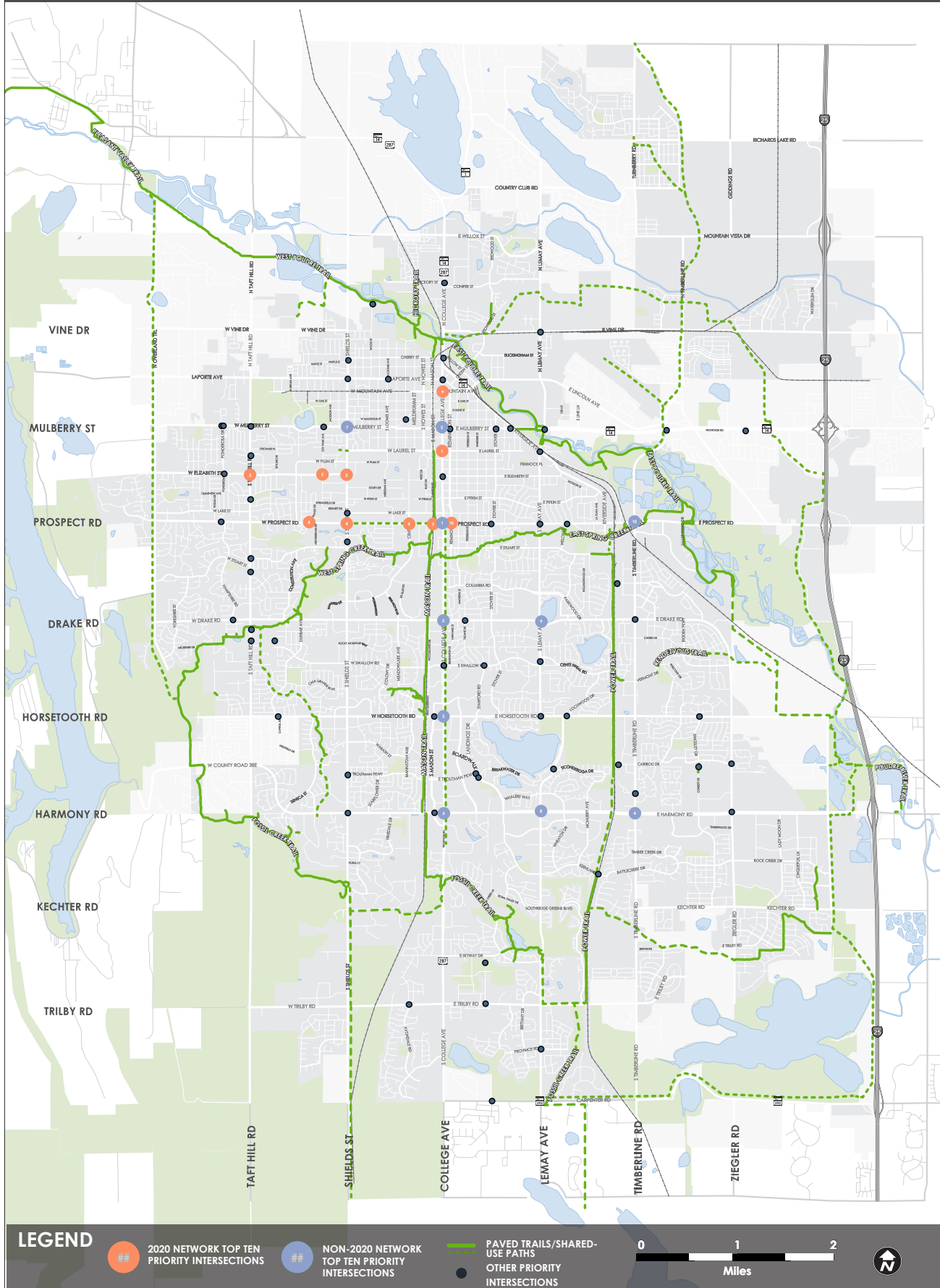
Intersection	Evaluation Criteria				Total Intersection Analysis Score (0-40)	Arterial Intersection Prioritization Study
	Demand	Crashes	Barriers	Public Input		
College Avenue and Laurel Street	10.00	5.56	6.67	7.91	30.14	x
Elizabeth Road and Shields Street	8.65	7.22	3.33	6.40	25.60	x
Elizabeth Road and Taft Hill Road	5.95	3.89	10.00	2.67	22.51	
Prospect Road and Shields Street	7.84	6.11	1.67	5.70	21.31	x
City Park Avenue and Elizabeth Street	5.95	10.00	0.00	0.12	16.06	x
Center Avenue and Prospect Road	7.30	2.22	3.33	3.02	15.88	x
Mason Trail and Prospect Road	8.38	5.83	0.00	0.00	15.26	
W Prospect Road and Lynnwood Drive	7.17	8.00	0.00	0.00	15.17	
College Avenue and Mountain Ave	7.57	5.56	0.00	1.40	14.52	
Prospect Road and Remington Street	7.16	0.56	4.17	1.63	13.51	

**Table 5: Non-2020 Network Top Ten Priority Intersections for Improvement**

Intersection	Evaluation Criteria				Total Intersection Analysis Score (0-40)	Arterial Intersection Prioritization Study
	Demand	Crashes	Barriers	Public Input		
College Avenue and Prospect Road	9.32	3.89	3.33	10.00	26.55	x
College Avenue and Drake Road	6.49	6.67	0.00	6.63	19.78	x
College Avenue and Horsetooth Road	6.22	2.78	0.83	6.16	15.99	x
Harmony Road and Timberline Road	4.19	5.00	0.00	3.37	12.56	
College Avenue and Mulberry Street	7.30	1.67	1.67	3.72	11.36	x
College Avenue and Harmony Road	4.86	1.11	1.67	3.72	11.36	
Mulberry Street and Shields Street	6.62	1.11	1.67	1.74	11.14	
Harmony Road and Lemay Avenue	5.00	0.56	1.67	1.05	8.27	
Drake Road and Lemay Avenue	5.14	1.67	0.83	0.58	8.22	x
Prospect Road and Timberline Road	3.78	2.78	0.00	1.16	7.72	



# PRIORITY INTERSECTIONS



## Programs Prioritization

### Evaluation Methodology

A sample of the recommended new bike programs (as described in Chapter 2) were scored using a Triple Bottom Line evaluation to help prioritize launching of the programs. The proposed programs were evaluated based on their ability to make improvements in the areas of economic, environmental, and social sustainability. The following questions were answered to determine each program's Triple Bottom Line alignment.

#### Economic Health

- Does the program have high potential for partnership and/or non-City funding contributions?
- Does the program have potential for creating jobs?
- Does the program have potential for household economic health benefits?
- Does the program have potential economic benefits to the local business community?
- Does the program attract businesses or tourism?

#### Environmental Services

- Does the program have potential for reducing greenhouse gases?
- Does the program make use of green products or services?
- Does the program help educate existing and future generations on environmental stewardship and health?
- Does the program support connectivity to transit, bike share and/or major destinations?

#### Social Sustainability

- Does the program address a safety concern (e.g., unsafe behavior by drivers and/or bicyclists)?

- Does the program provide an opportunity for a community activity and/or engagement?
- Does the program encourage and build confidence among all levels of bicyclists?
- Does the program serve traditionally underserved populations (e.g., low income, minority)?

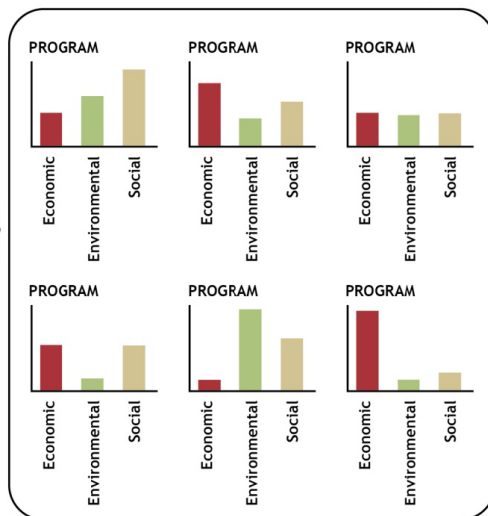
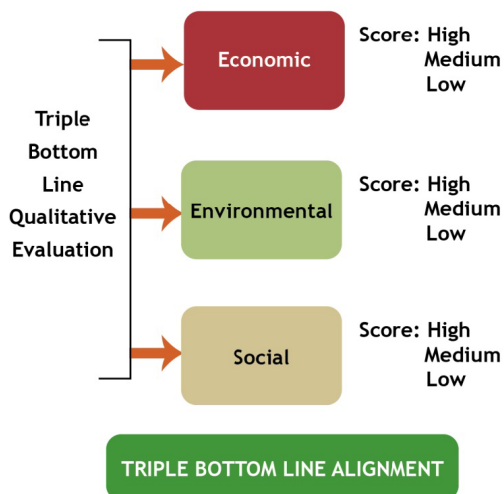
Each program was given a rating of High, Medium, or Low for each of the three Triple Bottom Line categories. As shown here, the Triple Bottom Line alignment of all recommended programs was combined to understand the strengths of the overall mix of programs.

### Program Evaluation Results and Recommendations

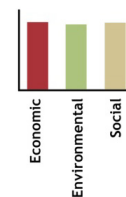
The results of the Triple Bottom Line evaluation of a sample of recommended programs are summarized in Table 7 on the following page. These nine recommended programs in combination provide a reasonable balance between economic, environmental and social benefits. Overall, the social benefits are rated the highest and the environmental benefits are rated the lowest, indicating potential need for programs that more specifically address environmental sustainability.

The City should apply this tool to the existing suite of bike programs to organize the programs based on their Triple Bottom Line alignment, help identify those programs that should be phased out, led by outside agencies or nonprofit organizations, or consolidated. The purpose of the tool is to ensure a balanced mix of programs that target equally the three Triple Bottom Line principles.

## INDIVIDUAL PROGRAMS



## Balanced Mix of Programs



Recommendations for Program Focus, Consolidation, Collaboration

Table 7: Sample Program Evaluation Results

Program	Triple Bottom Line Alignment		
	Environment	Economic	Social
Develop a Safe Driving Pledge Program	●	●	●
Modified Driver's Education	●	●	●
Establish a Bike Share System	●	●	●
Create neighborhood greenways through traffic calming and wayfinding	●	●	●
Work with Colorado State Patrol to develop bicycle-specific crash form	●	●	●
Expand bicycle counter program	●	●	●
Amend bicycle crash typing scheme	●	●	●
Coordinate assessment between Police Services and hospital-collected crash data	●	●	●
Amend Fort Collins Citizen Survey to include LAB recommendations	●	●	●

● High   ● Medium   ● Low

## Funding and Performance Measures

### Funding Strategy

Fort Collins has rigorously and successfully pursued grant monies for bicycle improvements from a variety of federal, local, and non-governmental funding sources in the past. Implementation of the 2020 and Full Build Networks and the recommended programs will require sustained pursuit of funding opportunities. The Bike Plan funding strategy considers a range of approaches to obtaining funds for implementation:

- Leverage planned Street Maintenance Program (SMP) projects, Capital Improvement Plan (CIP) projects, Neighborhood Traffic Calming Program projects, and arterial intersection improvement projects by adding bicycle facility upgrades at a relatively low incremental cost.
- Continue local funding of bicycle projects and programs through the Budgeting for Outcomes (BFO) two-year cycle.
- Partner with other agencies including CDOT, the NFRMPO, and Larimer County to fund and implement bike projects that are mutually beneficial.
- Partner with private developers, health organizations, nonprofit organizations, and public schools (e.g., CSU and Poudre School District) for funding and implementation of bike projects and programs.
- Identify those projects that are eligible for and would compete most successfully for federal grants.
- Pursue non-governmental grant opportunities.

### Funding Sources

A variety of funding mechanisms are available for bicycle improvement projects and programs. Following is a listing of potential local, state,

federal, and non-governmental funding sources along with the types of bicycle projects and programs that are applicable to each funding source.

#### *Local Funding Sources*

**Building on Basics (BOB)** – Fort Collins voters approved Building on Basics (BOB), a quarter cent sales and use tax which extends from January 2006 through December 2015. The City currently receives \$125,000 each year toward implementation of the Bike Plan. The City has a ballot initiative for fall 2015 for BOB 2.0, a tax renewal. Currently, \$500,000 per year is proposed for allocation to the Bike Plan; this would begin in 2016 if the initiative is approved.

**Keep Fort Collins Great (KFCG)** – In November 2010, Fort Collins voters passed Keep Fort Collins Great (KFCG), a 0.85 percent sales tax to fund critical services for the community (2011–2020). KFCG has been an important funding source for FC Bikes in the past and is expected to continue as source implementation of the 2014 Plan projects and programs.

**Street Oversizing (SOS) Fees** – Capital improvements that are required to serve new development are constructed by the developer generating demand are financed with Street Oversizing (SOS) Fees which are paid by new development; many of the City's bike lanes have been added through developer contributions.

#### *Federal Funding Sources*

**Congestion Mitigation and Air Quality Improvement Program (CMAQ)** – Funds may be used for either the construction of bicycle transportation facilities or non-construction projects (e.g., maps, brochures, and public service announcements) related to safe bicycle use.

**Transportation Alternatives Program (TAP)** – This federal funding program authorized under MAP-21 provides funding for transportation alternatives programs and projects, including on- and off-road bicycle facilities, regional trail programs, and Safe Routes to School.

**Federal Transit Administration (FTA) Grants** – Transit grants such as Urbanized Area Formula and Capital Investment can be used for improving bicycle access to transit facilities.

**Safe Routes to School (SRTS)** – Grants can be used for bicycle education programs and projects that provide connections and/or improve the safety along routes to K-8 schools.

**Hazard Elimination and Railway-Highway Crossing Program** – This program is a set-aside from the Surface Transportation Program (STP) specifically to correct locations that are unsafe, and these funds may be used to address bicycle safety issues.

### *State Funding Sources*

**FASTER safety** – This state funding source can be used for adding shoulders when combined with a surface treatment project.

**FASTER Transit** – This state funding source can be used for bicycle amenities such as bike racks, lockers and bike parking at multimodal stations, or enhanced modal connections such as trails and bike lanes providing access to major transit stations that would enhance transit ridership.

**Great Outdoors Colorado (GOCO)** – This state funding program uses a portion of lottery proceeds for projects that protect and enhance Colorado’s trails and open space.

### *Other Funding Sources*

**Kaiser Permanente Grants** – Kaiser Permanente offers Walk and Wheel and other grants to help communities be more bike-friendly by planning and designing safer, healthier, and more accessible transportation options.

**Green Lane Project** – The Green Lane Project awards grants to help cities expand bicycling through building innovative facilities.

## **Performance Measures**

The City of Fort Collins uses a Budgeting for Outcomes (BFO) process that is designed to create a government that works better, costs less,



Buffered bike lane on Lochwood Drive.

and is focused on desired results. Performance measures are important tools in making informed and effective budgeting decisions. They can aid in planning, developing policy, prioritizing investments, and measuring progress. Several characteristics are common to good performance measures:

- **Available Data** – Measures are often influenced by the availability of data and the ease of obtaining the data on a regular basis.
- **Trackable over Time** – Measures should be based on consistently tracked data that can be compared on an annual or semi-annual basis.
- **Relation to Goals** – In performance-based planning, performance measures should track progress toward stated goals and objectives.
- **Storytelling Potential** – Measures should be meaningful and help to weave a storyline

around performance of the system. They can be an effective communication tool for requesting funds and garnering public support.

With these characteristics in mind, a series of Performance Measures have been identified to track the City's process toward meeting the seven Plan Goals. The performance measures listed are compatible with the League of American Bicyclists' Diamond-level Bicycle Friendly Community (BFC) benchmark guidelines. While the City anticipates applying for this designation in the future, it is recognized that scoring of the application will consider achievements in multiple areas, so performance measures are not pegged directly to those of the BFC program.

For each measure, a baseline is provided where available, along with a target that is compatible with the 2020 Network recommendations and achievable by 2020, given the anticipated funding levels for bicycle projects and programs in Fort Collins.



**Table 6: Draft Performance Measures**

2020 Key Outcomes & Measures	Plan Goals						
	Connectivity	Safety	Ridership	Community	Equity	Comfort	Health
Complete 100% of Low-Stress Network on local and collector streets <i>from 57% to 100%</i>	●	●	●	●	●	●	●
Complete Protected Bike Lane Pilot Projects <i>from 0 to 5</i>	●	●	●	●	●	●	●
Reduce bicycle crashes per 10k bicycle commuters by 5% annually		●					●
Eliminate bicyclist fatalities <i>from 0.68 to 0 per 10k bicycle commuters</i>		●					●
Increase K-12 students receiving bicycle education <i>from 6,000 to 8,000</i>		●	●	●		●	●
Increase bicycle commute mode share <i>from 7.4% to 20%</i>			●				●
Increase perceived ease of travel by bicycle <i>from 37% to 55%</i>				●		●	
Increase percentage of female bicycle commuters <i>from 35% to 50%</i>			●		●	●	
Increase population within 1/4 mile of a low-stress bicycle route <i>from 17% to 80%</i>	●	●	●		●	●	●
Double the number of residents participating in City education and outreach events		●	●	●	●		

SMILE!  
YOU CAN  
DRIVE A  
BIKE!