NFRMPO
NORTH FRONT RANGE METROPOLITAN PLANNING ORGANIZATION

2016 Non-Motorized Plan

North Front Range Metropolitan Planning Organization

Adopted February 2, 2017

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2016 Non-Motorized Plan

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NFRMPO
NORTH FRONT RANGE METROPOLITAN PLANNING ORGANIZATION

RESOLUTION NO. 2017-04
OF THE NORTH FRONT RANGE TRANSPORTATION & AIR QUALITY PLANNING COUNCIL ADOPTING THE 2016 NON-MOTORIZED PLAN IN CONFORMANCE WITH FEDERAL REQUIREMENTS

WHEREAS, the North Front Range Transportation & Air Quality Planning Council (NFRMPO) is designated as the Metropolitan Planning Organization (MPO) in cooperation with local elected officials and is authorized to carry out the continuing, cooperative, and comprehensive ("3C") multimodal transportation planning process; and

WHEREAS, the NFRMPO has been designated by the U.S. Department of Transportation and the Colorado Department of Transportation (CDOT) to direct, coordinate, and administer planning processes as mandated by the Congress in Titles 23 and 49 U.S.C.; and

WHEREAS, the NFRMPO is the agency responsible for developing and updating long range regional transportation plans and the transportation improvement programs; and

WHEREAS, the NFRMPO's Technical Advisory Committee recommended approval of the plan.

NOW, THEREFORE, BE IT RESOLVED, by the NFRMPO that it adopts the 2016 Non-Motorized Plan as follows:

SECTION 1. The NFRMPO hereby adopts the 2016 Non-Motorized Plan as proposed by the NFRMPO's Technical Advisory Committee.

SECTION 2. This Resolution shall become effective immediately upon passage and approval.

Passed and adopted at the regular meeting of the NFRMPO held this 2nd day of February, 2017.

ATTEST:

Terri Blackmore, Executive Director

Kevin Ross, Chair

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Executive Summary

The *2016 Non-Motorized Plan* provides a consolidated summary of existing bicycle and pedestrian infrastructure in the North Front Range Metropolitan Planning Area (NFRMPO) region, provides the 15 member communities tools to support their non-motorized planning activities, positions the NFRMPO communities to pursue state and federal funding opportunities, and fulfills federal requirements to address bicycle and pedestrian planning as a component of the *Regional Transportation Plan* (RTP).

The NFRMPO's 2040 RTP non-motorized facilities per capita performance measure was calculated after mapping all sidewalks, trails, and bicycle lanes in the region. There are 6.87 miles of non-motorized facilities per 1,000 residents. Throughout the planning process, public feedback was solicited through community events, transportation board meetings, and a Non-Motorized Plan survey. With 265 responses, the survey provides insight into successes and areas for improvement for many of the NFRMPO member communities.

An inventory of comprehensive plans, non-motorized plans, and parks and open space plans is included for all 15 member communities. Non-motorized crash data was collected and analyzed for the region. The Plan presents federal and state funding opportunities for non-motorized transportation as a resource for communities and individuals to use. Documentation of the 2014 and 2016 Call for Projects efforts are included to highlight funded non-motorized related transportation projects.

Nationally, trends to improve non-motorized transportation, reduce traffic deaths, and increase ridership have been tested. In the NFRMPO region, emerging trends and technology such as bicycle share, complete streets, driverless vehicles, the Public Health Institute's *Health in All Policies* initiative, low-stress bicycle networks, pilot projects, Moving Towards Zero Deaths, vehicle miles traveled reduction, and wayfinding will be incorporated into future non-motorized planning efforts. The *Appendices* offer tools and resources to assist with non-motorized planning including, a sidewalk audit template, bicycle parking resources, bicycle and pedestrian count location selection resources, bicycle share location criteria, and a wayfinding template. Additionally, a copy of the non-motorized survey tool, public comments, and an outreach meeting log are provided.

Chapter 1: Introduction

Accommodation of bicyclists and pedestrians for both transportation and recreation has seen increasing emphasis throughout the country and especially in Colorado. The US Department of Transportation (USDOT) policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including USDOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.[1]

The Colorado Department of Transportation (CDOT) issued a Policy Directive (Bike and Pedestrian Policy 1602) in 2009 and subsequent State Statute 43-1-120, which makes clear the Colorado Transportation Commission's directive for CDOT to promote mode choice and provide for the needs of bicyclists and pedestrians. Through this policy the Transportation Commission has directed the safe and reliable accommodation of bicyclists and pedestrians in all of CDOT's planning, design, and operation of transportation facilities. Recognizing the State's commitment to integrate bicycle and pedestrian accommodation, this *Regional Non-Motorized Plan* for the North Front Range Metropolitan Planning Organization (NFRMPO) serves as the bicycle and pedestrian planning component of the *Regional Transportation Plan* (RTP).

In support of Policy 1602 (and the related Procedural Directive), CDOT adopted its first *Statewide Bicycle and Pedestrian Plan* in October 2012, amended in June 2015. The *Statewide Bicycle and Pedestrian Plan* establishes goals, investment decision criteria, and performance measures to facilitate project and program funding allocation. This Plan is intended to work in concert with the *Statewide Bicycle and Pedestrian Plan*, identifying evaluation criteria specific to the NFRMPO and identifying a regional bicycle and pedestrian corridor network; both of which further CDOT's bicycle and pedestrian initiatives.

The NFRMPO is a governmental agency responsible for long range transportation planning activities in northern Colorado. The NFRMPO, as shown on ***Figure 1-1***, has 15 members, including Berthoud, Eaton, Evans, Fort Collins, Garden City, Greeley, Johnstown, LaSalle, Loveland, Milliken, Severance, Timnath, Windsor, and portions of Larimer and Weld Counties. The Colorado Transportation Commission and the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) are also members. The NFRMPO covers approximately 600 square miles from Fort Collins in the north, Boulder County line on the south, the foothills of the Rockies to the west, and Greeley to the east.

[1] United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations. US Department of Transportation. Federal Highway Administration. 2010.

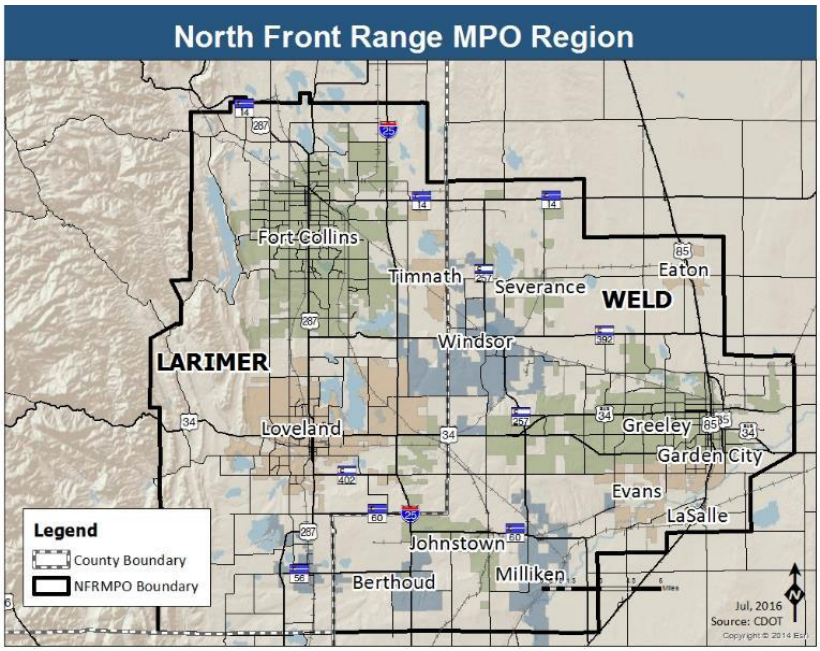

Figure 1-1: North Front Range Metropolitan Planning Organization Region

Purpose of Non-Motorized Transportation Plan

The NFRMPO *Regional Non-Motorized Plan's* primary purposes are:

- Fulfill the federal requirement to address bicycle and pedestrian planning as a component of the Regional Transportation Plan;
- Provide a consolidated summary of the existing bicycle and pedestrian infrastructure, data, and design standards throughout the region;
- Provide the NFRMPO's 15 member governments with tools to support their local non-motorized planning and accommodation initiatives; and
- Position the NFRMPO communities to pursue state and federal funding opportunities.

Background

In 2013, the NFRMPO completed the *Regional Bicycle Plan* (RBP) for inclusion in the *2040 Regional Transportation Plan* (RTP). The Plan evaluated existing infrastructure and future improvements to the regional bicycle system. It also explored bicycle performance monitoring, infrastructure expansion, design standards, and future connections between the NFRMPO's member governments, trail systems, employment centers, and recreation opportunities. In September 2015, the NFRMPO adopted the 2040 RTP which provides a long-range vision for the North Front Range regional transportation system and guides the implementation of multimodal transportation improvements, policies, and programs in the region.

The 2013 RBP identified 12 Regional Bicycle Corridors connecting the NFRMPO communities with each other and surrounding communities. Additionally, each of these corridors has the capacity to also support pedestrian travel. The 2016 Non-Motorized Plan will refer to these corridors as Regional Non-Motorized Corridors (RNMC). During the creation of the 2040 RTP, the corridors were updated with the most recent information available. The RNMC have been reproduced in this Plan to highlight the existing and future corridors for bicycling and walking.

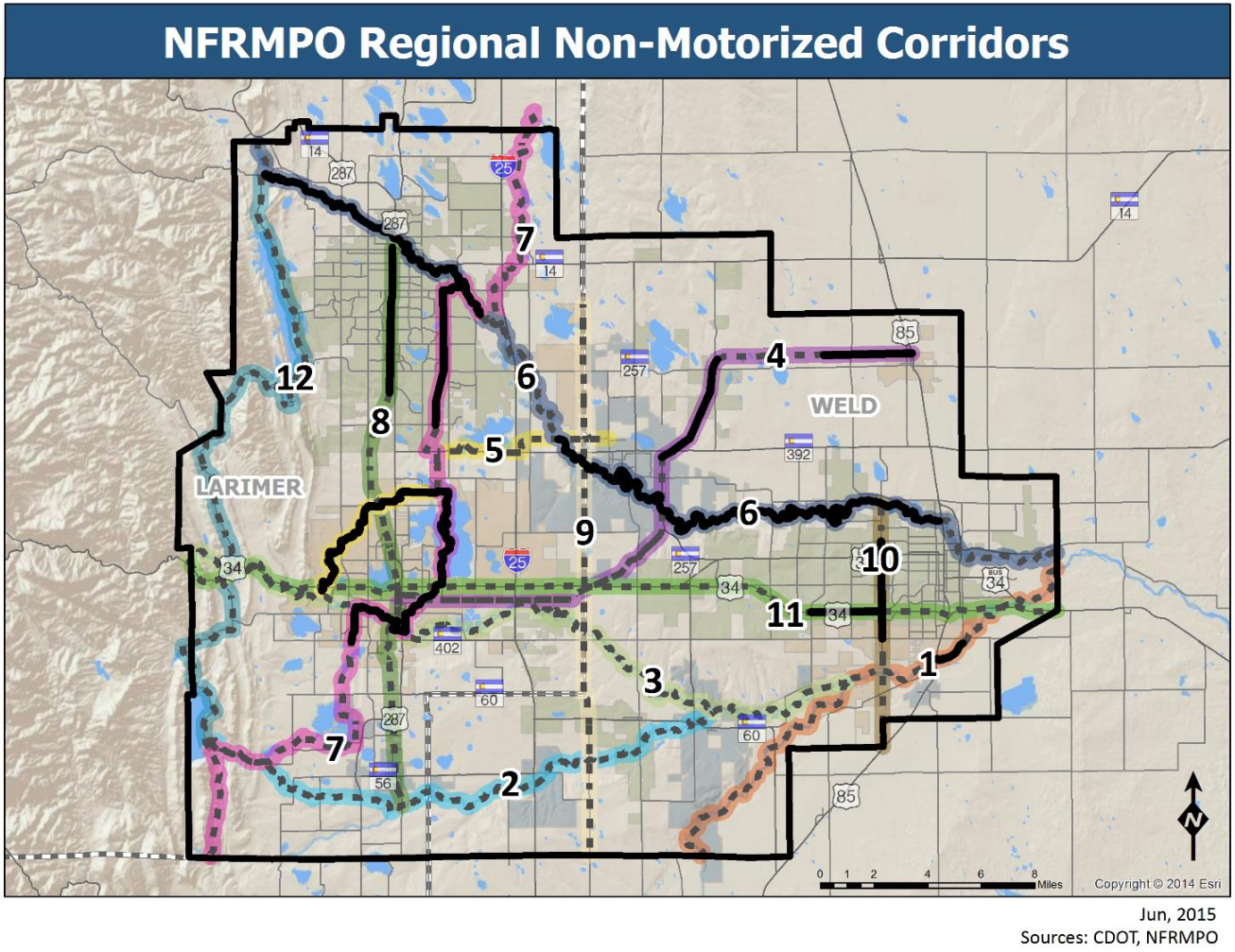

Figure 1-2: Regional Non-Motorized Corridors

RNMC 1: South Platte/American Discovery Trail

RNMC 1 goes from the southern NFRMPO boundary on the west to the eastern NFRMPO boundary on the east. The RNMC is 22 miles in length in Weld County and connects Milliken, Weld County, Evans, LaSalle, and Greeley. Currently one segment exists in Evans connecting US 85 to Riverside Park. The remaining segments are planned with several grant awards received to construct portions of the RNMC. The primary investment need recognized for this corridor is increased safety.[2]

Vision Statement

The South Platte River flows through the southeast portion of the NFRMPO region. The RNMC represents a future connection between NFRMPO communities and the statewide Colorado Front Range Trail and nationally-recognized corridor, the American Discovery Trail. NFRMPO members reference RNMC 1 as a shared-use trail along the river corridor ultimately connecting with RNMC 6 – Poudre River Trail east of Greeley.

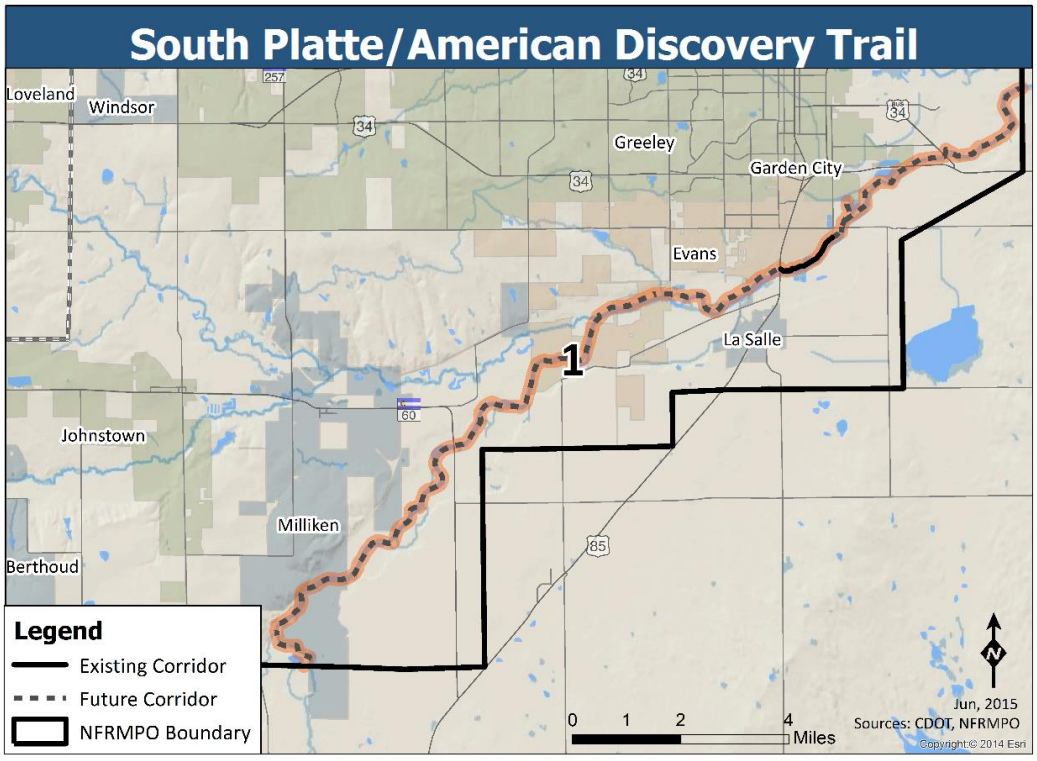

Figure 1-3: RNMC 1

[2] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 2: Little Thompson River

RNMC 2 starts at RNMC 12 – Carter Lake/Horsetooth Foothills Corridor on the west connecting to RNMC 3 – Big Thompson River on the east. This RNMC connects Larimer County, Berthoud, Weld County, Johnstown, and Milliken. The length of the RNMC 25.5 miles, with 10.5 miles in Larimer County and 15 miles in Weld County. The primary investment need recognized for this corridor is increased safety.[3]

Vision Statement

RNMC 2 provides a true regional connection across the southern portion of the NFRMPO region. This historically-identified corridor connects both Larimer and Weld counties with access to destinations such as Carter Lake, RNMC 7 – Front Range Trail (West), the I-25 Park-n-Ride at State Highway 56/County Road 44, and downtown Milliken. The preferred alignment for this corridor leaves the Little Thompson River in Berthoud and follows the Dry Creek northwest to Carter Lake. The historical alignment along the Little Thompson is preserved as an alternative alignment.

Figure 1-4: RNMC 2

[3] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 3: Big Thompson River

RNMC 3 is 35 miles in length with 20 miles in Larimer County and 15 miles in Weld County. The trail will pass through Larimer County, Loveland, Weld County, Milliken, and Evans. Currently, one segment has been constructed in Loveland. The remaining segments are planned to be constructed when funds become available. This Corridor is a priority for Larimer County to complete within the next 10 years. The primary investment need recognized for this corridor is increased mobility.[4]

Vision Statement

RNMC 3 provides a regional connection across the central portion of the NFRMPO region. This historically identified RNMC will connect both Larimer and Weld counties with access to destinations such as RNMC 7 – Front Range Trail (West), Loveland's Recreation Trail, Devil's Backbone, and downtown Loveland and Milliken, as well as 15 different schools in the area.

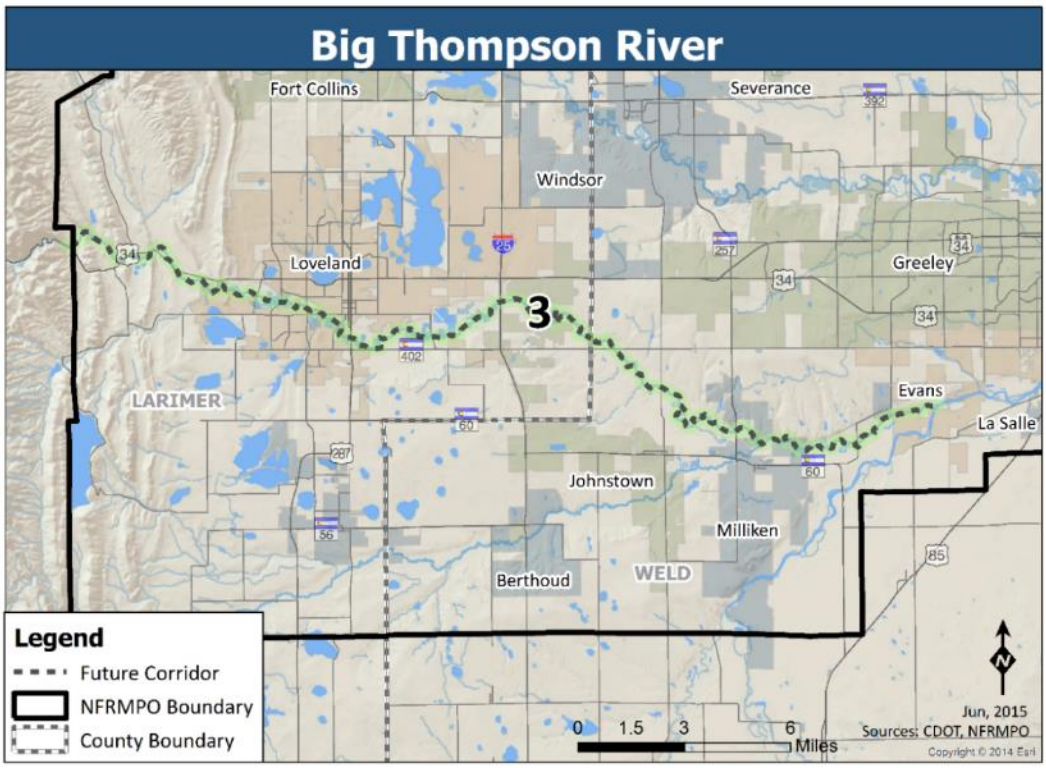

Figure 1-5: RNMC 3

[4] *NFRMPO Regional Bicycle Plan*, 2013 & *Larimer County Open Land Plan Update*, 2015

RNMC 4: Great Western/Johnstown/Loveland

RNMC 4 begins at RNMC 8 – BNSF Fort Collins/Berthoud and ends at US 85 in Eaton. The RNMC is 25 miles in length, seven miles in Larimer County and 18 miles in Weld County. The Great Western Trail received NFRMPO TAP funds in the 2014 Call for Projects to construct a segment of the trail connecting Windsor to Eaton. In total, the trail will pass through Loveland, Larimer County, Johnstown, Weld County, Eaton, Greeley, Windsor, Severance, and Eaton. The primary investment need recognized for this corridor is maintaining system quality.[5]

Vision Statement

The RNMC follows the alignment of the Great Western Railroad, which once connected Eaton to Loveland. The backbone of the RNMC is the 11.7 mile mixed-use recreational trail connecting the towns of Windsor, Severance, and Eaton using the abandoned rail bed of the Great Western Railroad (preserved right-of-way through the provisions of the federal "Rails to Trails" legislation). The remainder of the RNMC would follow the remaining active railway (Rail-with-Trails) crossing RNMC 6 – Poudre River Trail and I-25 connecting to Loveland's off-street bicycle network. This corridor provides critical rural access from the northeast portion of NFRMPO region to the region's core.

Figure 1-6: RNMC 4

[5] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 5: North Loveland/Windsor

RNMC 5 starts at RNMC 3 – Big Thompson River in Loveland and extends to Weld CR 15 in Windsor. The RNMC is 18 miles in length, 17 miles in Larimer County, and one mile in Weld County. This existing segment is the backbone of Loveland's bicycle network, including shared-use tails, bike lanes, and signed bike routes. The trail passes through the southeastern corner of Fort Collins. The remaining segments are planned to be complete within the next 10 years. The primary investment need recognized for this corridor is increased mobility.[6]

Vision Statement

RNMC 5 will support bicycle travel from Windsor in Weld County across the county line into the southern portion of Fort Collins, RNMC 12 – Carter Lake/Horsetooth Foothills Corridor and the western arc of Loveland's Recreation Trail in Larimer County. The trail attempts to route bicycle traffic away from SH 392 along the parallel section of Larimer CR 11 to the north. The trail also leverages the newly constructed bike lanes across the upgraded Fort Collins/Windsor Bridge at SH 392 to access the bicycle lanes and a future shared-use trail on the southern boundary of Fossil Creek Reservoir.

Figure 1-7: RNMC 5

[6] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 6: Poudre River Trail

To the east RNMC 6 begins at RNMC 12 – Carter Lake/Horsetooth Foothills Corridor and extends to the NFRMPO Boundary on the west, along the Poudre River. The RNMC is 53 miles in length, 24 miles in Larimer County, and 29 miles in Weld County. This Corridor connects Larimer County, Fort Collins Timnath, Windsor, Weld County, and Greeley. The primary investment need recognized for this corridor is increased mobility.[7]

Vision Statement

RNMC 6 is a nationally-recognized bicycle and pedestrian corridor extending beyond the NFRMPO boundary. The Poudre River Trail is the most publicly recognized infrastructure in the 2040 RTP and is a model for the regional collaboration required to construct a trail between multiple jurisdictions. The collaborative effort has received numerous state and federal funding awards. The State recognizes RNMC 6 as the backbone of the Colorado State Park's Front Range Trail through Northern Colorado. The segment within Windsor serves both recreational and commuter bicyclists and pedestrians. The trail offers alternative modes of transportation and is a significant community amenity.

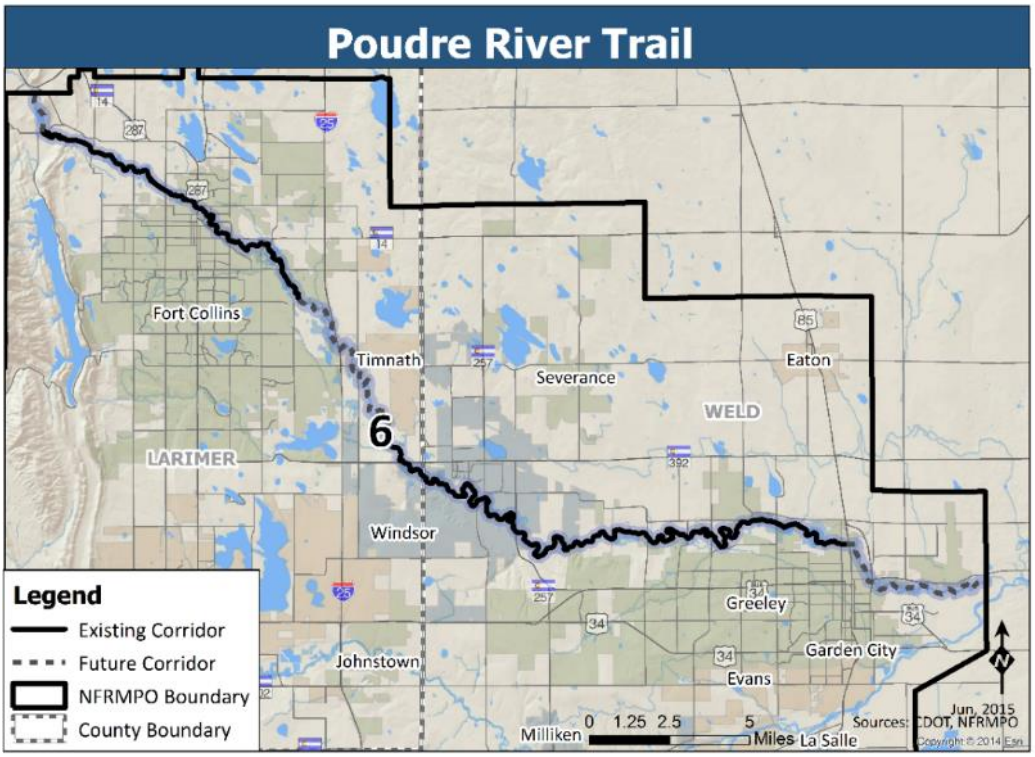

Figure 1-8: RNMC 6

[7] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 7: Front Range Trail (West)

RNMC 7 extends from the northern NFRMPO boundary to the southern NFRMPO Boundary through Larimer County, Fort Collins, Loveland, and Berthoud. The RNMC is 35 miles in length with the majority of the RNMC in Fort Collins and Loveland connecting to RNMC 6 – Poudre River Trail and RNMC 3 – Big Thompson River. The remaining segments are planned for development with many infrastructure obstacles including I-25 and Harmony Road crossings. The primary investment need recognized for this corridor is increased safety.[8]

Vision Statement

Colorado State Parks recognizes RNMC 7 as the western leg of the Front Range Trail in the NFRMPO region. The completed RNMC will connect Larimer County, Fort Collins, Loveland, and Berthoud to Boulder County. The trail connects many open space areas and 43 schools. The Colorado State Parks identifies the trail's northern terminus in Cheyenne, Wyoming.

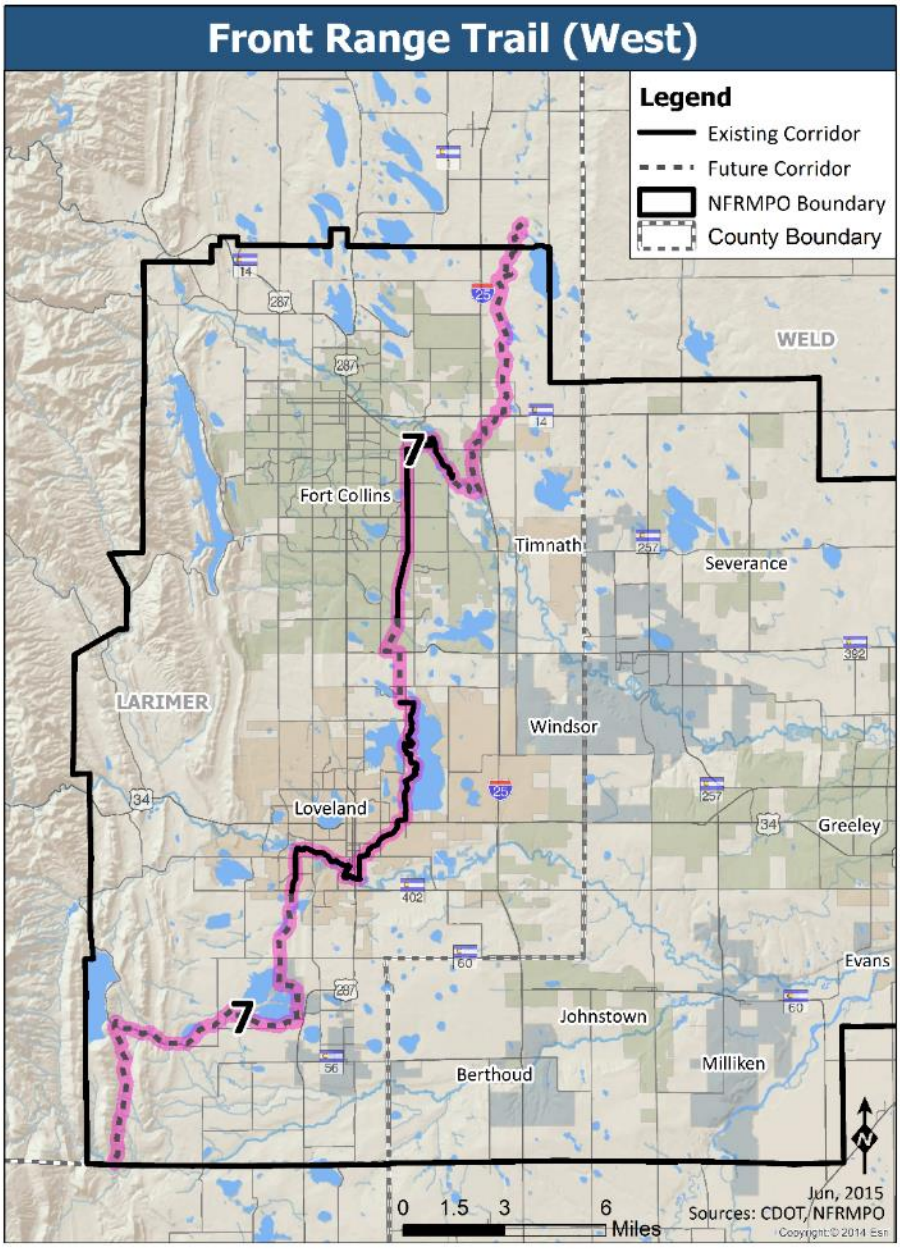

Figure 1-9: RNMC 7

[8] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 8: BNSF Fort Collins/Berthoud

RNMC 8 begins in Fort Collins at RNMC 6 – Poudre River Trail and connects to RNMC 2 – Little Thompson River in Berthoud passing through Loveland and Larimer County. RNMC 8 is 24 miles in length and is completely within Larimer County. The most recent investment was made by the City of Fort Collins as part of the *Mason Street Transportation Corridor Master Plan*. The primary investment need recognized for this corridor is increased safety.[9]

Vision Statement

The historical BNSF railway runs from Fort Collins through Loveland, Larimer County, and Berthoud. RNMC 8 parallels the BNSF railway line (Rails-with-Trails) to connects the downtowns of all three cities and 57 schools.

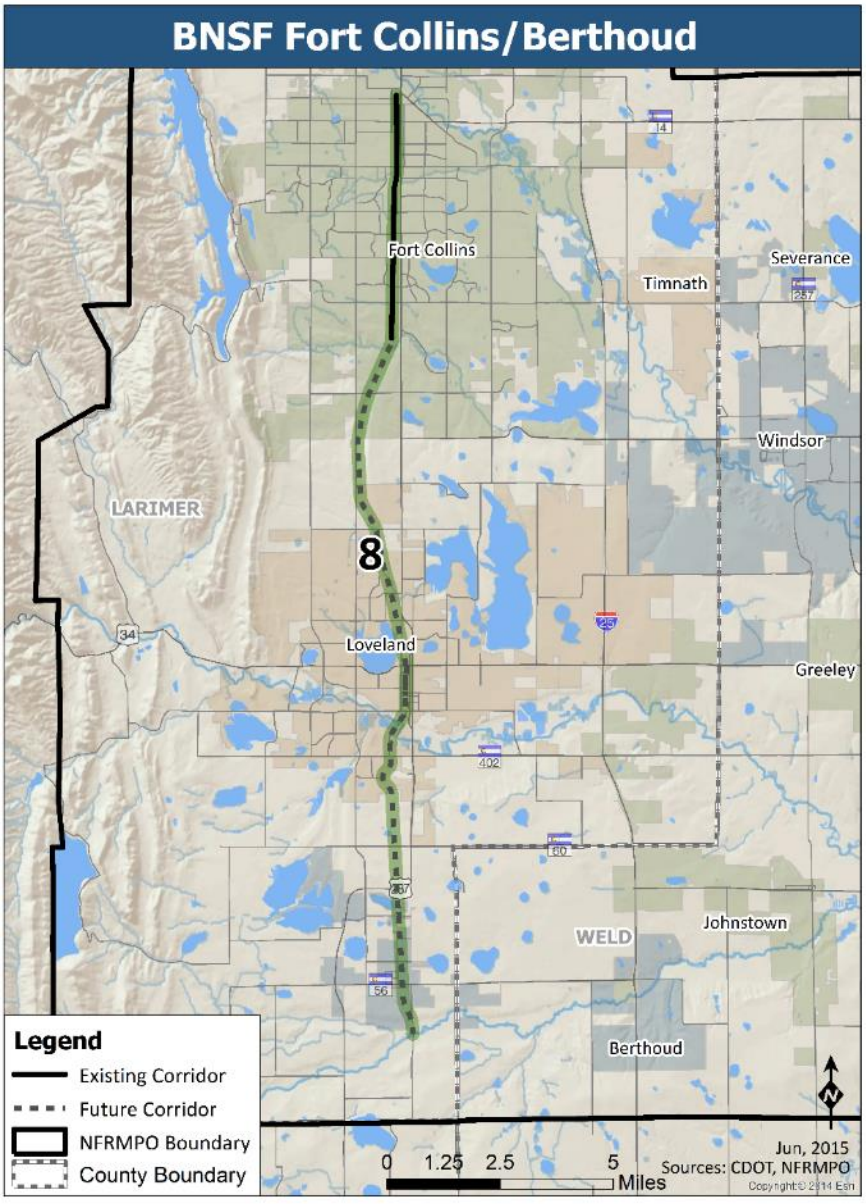

Figure 1-10: RNMC 8

[9] *NFRMPO Regional Bicycle Plan*, 2013. *North I-25 Environmental Impact Statement*, 2011. *Mason Street Transportation Corridor Master Plan*, 2000

RNMC 9: Johnstown/Timnath

RNMC 9 starts at County Road 80/Prospect Road and travels along County Line Road and County Road 13 to County Road 38 on the south through Larimer County, Timnath, Windsor, Weld County, and Johnstown. The RNMC is 19 miles in length, 13 miles in Larimer County, and six miles in Weld County. There are no planned improvements on this RNMC until the roadway is scheduled for maintenance/expansion. The primary investment need recognized for this corridor is increased mobility.[10]

Vision Statement

RNMC 9 serves as a north-south connection in the NFRMPO Region. The RNMC connects Larimer County, Timnath, Windsor, Weld County, and Johnstown with dedicated bike lanes. The corridor strategically follows County Line Road (Colorado Boulevard) to intersect with six RNMCs to provide bicycle access for many of the developing NFRMPO communities including RNMCs: 3 – Big Thompson River, 4 – Great Western/Johnstown/Loveland, 2 – Little Thompson, 5 – North Loveland, 6 – Poudre River Trail, and 11 – US 34 Non-motorized.

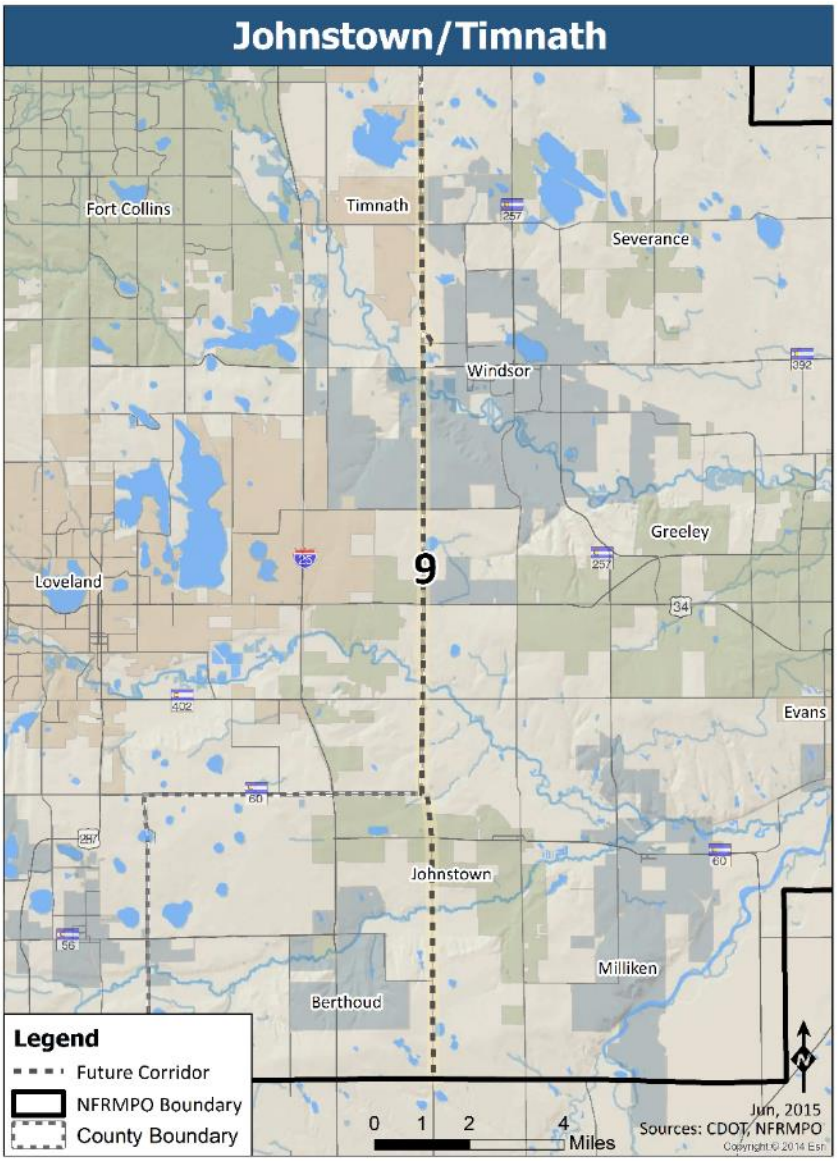

Figure 1-11: RNMC 9

[10] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 10: Greeley/LaSalle

RNMC 10 connects to RNMC 6 – Poudre River Trail on the north and US 85 on the south along 35th Avenue. RNMC 10 is approximately 8.5 miles long within Weld County. The RNMC currently exists in Evans and Greeley as shared-use paths. The City of Evans and Town of LaSalle plan to complete the trail as identified in their Transportation Plans. The primary investment need recognized for this corridor is increased mobility.[11]

Vision Statement

RNMC 10 leverages the existing shared-use trail infrastructure along 35th Avenue in Greeley to create a RNMC extending to LaSalle through Evans. The RNMC accommodates the identified desire for north-south bicycle commuting between the communities to access the GET transit system, Aims Community College, Greeley West High School, and various retail centers.

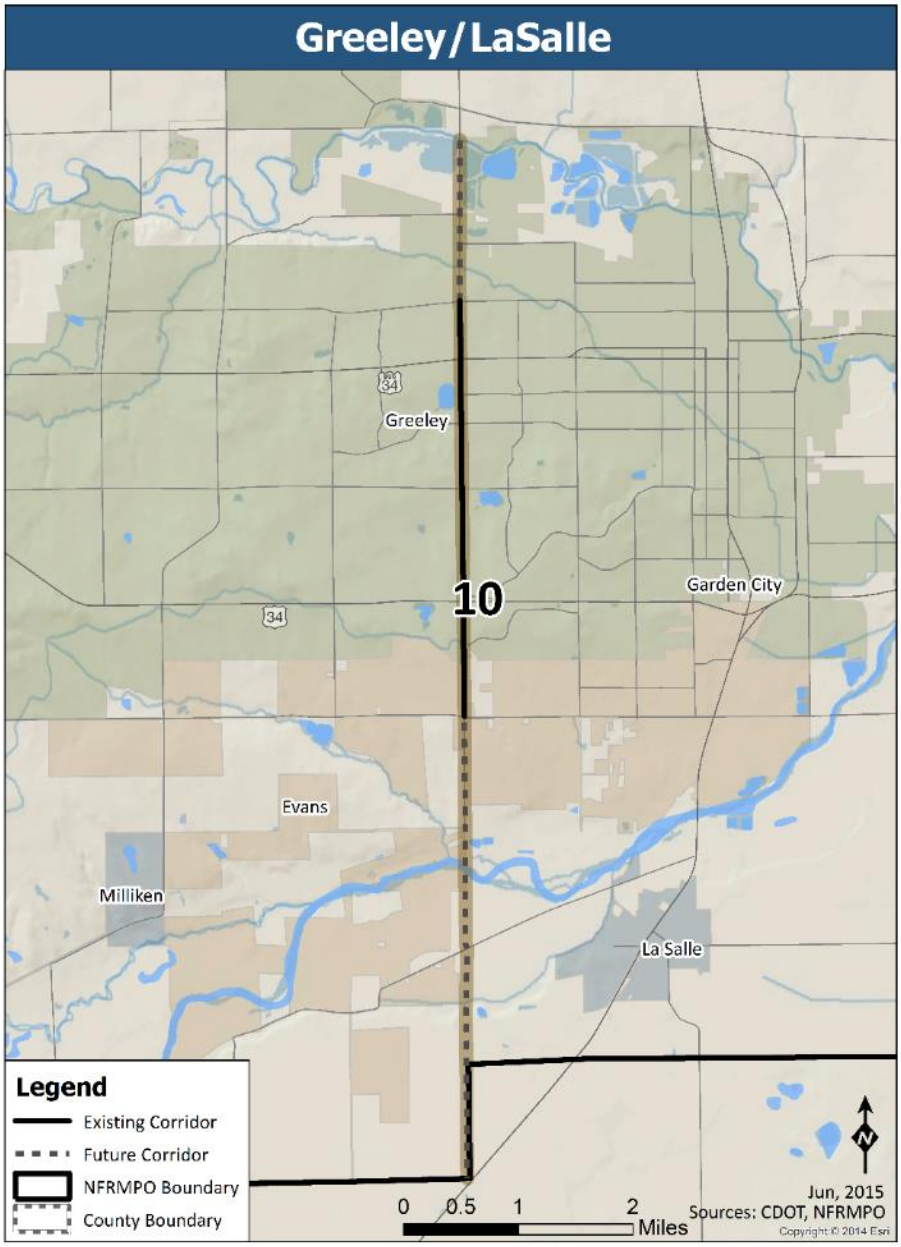

Figure 1-12: RNMC 10

[11] *NFRMPO Regional Bicycle Plan*, 2013

RNMC 11: US 34 Non-Motorized

RNMC 11 connects RNMC 7 – Front Range Trail (west) on the west to RNMC 1 – South Platte/American Discovery Trail on the east following US 34. RNMC 11 is 21.5 miles in length, 5.5 miles in Larimer County, and 16 miles in Weld County. This RNMC connects Loveland, Windsor, Greeley, and Garden City. The primary investment need recognized for this corridor is increased safety.[12]

Vision Statement

RNMC 11 is the only regional corridor to parallel a State Highway. The *Colorado Transportation Commission's Bike and Pedestrian Policy Directive 1602.0*[13] and subsequent *State Statute 43-1-120*[14] codifies the accommodation of bicyclists and pedestrians on the State Highway System. The vision for this RNMC is a shared-use trail, safely separated from the highway connecting Greeley and Promontory to Centerra, Johnstown, and Loveland. The RNMC would use CDOT's Right-of-Way on US 34.

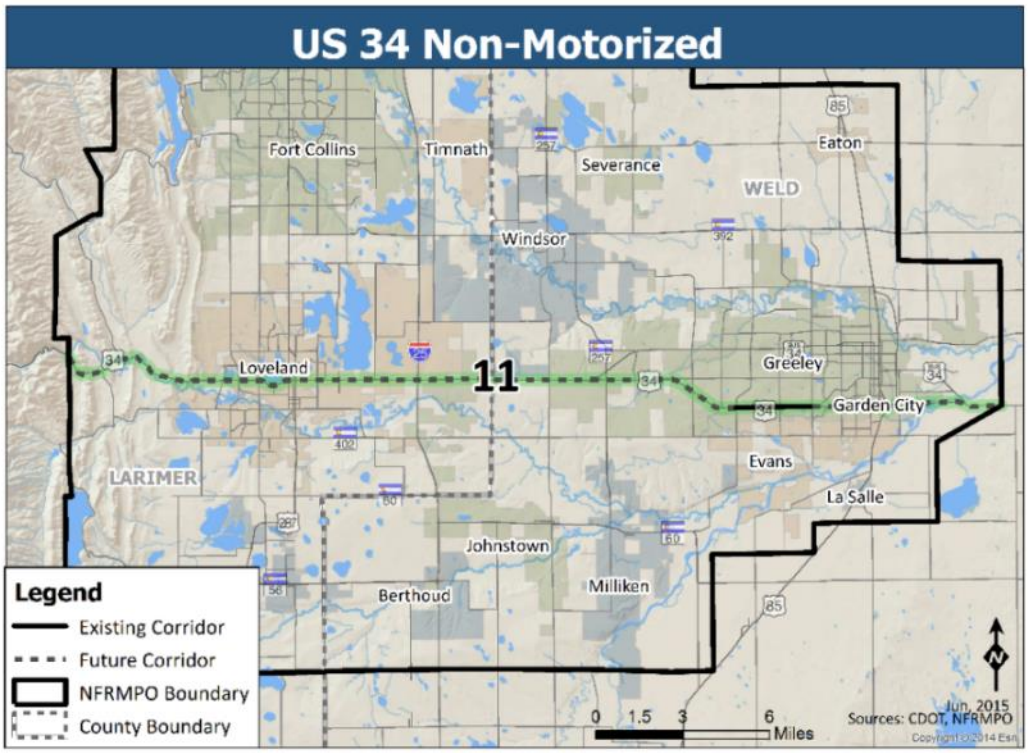

Figure 1-13: RNMC 11

[12] *NFRMPO Regional Bicycle Plan*, 2013

[13] *Colorado Commission's Bike and Pedestrian Policy Directive 1602.0,* https://www.codot.gov/programs/bikeped/documents/1602-0-policy-bike-pedestrian, 2009

[14] *State Statute 43-1-120,* http://tornado.state.co.us/gov_dir/leg_dir/olls/2013TitlePrintouts/CRS%20Title%2043%20%282013%29.pdf, 2013

RNMC 12: Carter Lake/Horsetooth Foothills Corridor

RNMC 12 begins at RNMC 6 – Poudre River Trail in Fort Collins on the north and ends at RNMC 2 – Little Thompson Trail River on the south in Larimer County. This RNMC follows County Road 23/Centennial Drive; County Road 38; Buckhorn Road; US 34; and County Roads 29, 18E, and 31. These existing roadways total 31 miles in length, with wide shoulders. There is no planned investment expected until the roadway is scheduled for maintenance. The primary investment need recognized for this corridor is increased safety.[15]

Vision Statement

RNMC 12 is predominantly a recreational corridor which provides access to many city, county, state parks, and trailheads along the foothills in the western NFRMPO region. The RNMC frequently hosts bicycle and foot races and sporting events. The entire RNMC traverses Larimer County and provides strategic local connections to Larimer County, Fort Collins, Loveland, and Berthoud.

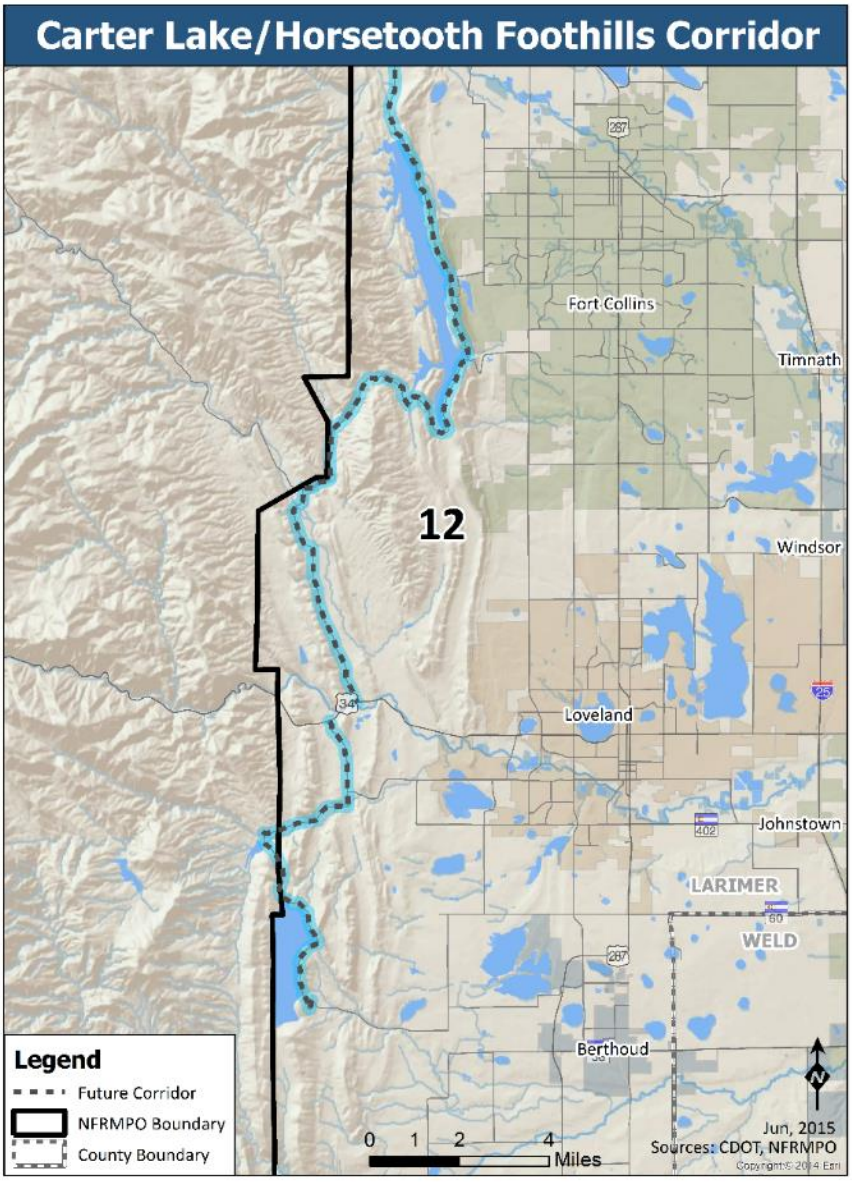

Figure 1-14: RNMC 12

[15] *NFRMPO Regional Bicycle Plan*, 2013

Benefits of Investing in a Non-Motorized Region

Creating a safe, low-stress, connected bicycle and pedestrian network allows people of all ages and abilities to conveniently and safely access destinations. Networks of bicycling and walking infrastructure contribute to vibrant economies; reduce motor vehicle emissions; promote physical activity and health; improve access to opportunity; and create safe, accessible, livable communities.

Economic Benefits

With the average household cost to own and operate one car in the US more than $9,000 per year or 60.8 cents per mile, walking and bicycling offer an affordable choice in transportation.[16] The cost of operating a bicycle is approximately $308 per year, while walking is free.[17] Additionally, households in walkable and bikeable communities are more resilient to economic turmoil. Homes in accessible communities retained their value after the 2008 recession, while auto-dominated suburban developments lost value.[18]

Customers who arrive at retail stores by bike spend the same amount per month as comparable customers who arrive by car. They tend to make smaller purchases, but return more frequently according to studies in Toronto; New Zealand; Wales; Davis, California; and Portland, Oregon.[19] By shifting traffic from cars to bikes and making it easier to reach transit stops, Austin's planned protected bike lane network is projected to increase the City's traffic capacity by approximately 25,000 trips per day at about the same cost ratio as a single expressway widening project of 11 miles.[20]

On Salt Lake City's Broadway, replacing parking with protected bike lanes increased retail sales. A general street upgrade removed 30 percent of the auto parking from nine blocks of the major commercial street, but improved crosswalks, sidewalks, and added protected bike lanes. In the first six months of the next year, retail sales were up 8.8 percent over the first six months of the prior year, compared to a seven percent increase citywide. After the changes, 59 percent of business owners on the street said they supported the protected bike lanes; only 18 percent opposed. Additionally, the walking experience improved with the additional space devoted to non-motorized transportation, which may have led to the additional sales.[21]

Bicycle tours and races can have a significant impact on the economy; the USA Pro Challenge attracted more than 1M spectators each year from 2011 to 2015, resulting in an estimated economic impact of $83.5M in 2011 increasing each year to $130M in 2014. 2015 was the final year of the USA Pro Challenge,

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[16] Stepp, Erin. Cost of Owning and Operating Vehicle in U.S. Increases Nearly Two Percent According to AAA's 2013 'Your Driving Costs' Study. 2013. http://newsroom.aaa.com/2013/04/cost-of-owning-and-operating-vehicle-in-u-s-increases-nearly-two-percent-according-to-aaas-2013-your-driving-costs-study-archive/

[17] Pocket Guide to Transportation. Research & Innovative Technology Administration Bureau of Transportation Statistics. 2009. http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/pocket_guide_to_transportation/2009/pdf/entire.pdf

[18] Leinberger, Christopher B. Walk, Don't Drive, to the Real Estate Recovery. 2011. https://www.brookings.edu/blog/the-avenue/2011/04/28/walk-dont-drive-to-the-real-estate-recovery/

[19] Clifton, K., et al., 2012. Oregon Transportation Research and Education Consortium (OTREC).

[20] Wilkes, Nathan. City of Austin 2014 Bicycle Master Plan Update. 2014. http://b.3cdn.net/bikes/5844b4fc9967a883c5_326m66kq1.pdf

[21] Salt Lake City Street Removes Parking, Adds Bike Lanes and Sales Go Up. PeopleForBikes. 2015. http://www.peopleforbikes.org/blog/entry/salt-lake-city-street-removes-parking-adds-bike-lanes-and-sales-go-up

with Stage 6 starting in the City of Loveland and finishing in the City of Fort Collins. The Tour of Colorado is scheduled for August 10 – 13, 2017 and will consist of four stages across the Colorado Front Range.

For additional economic benefits of bicycling, please visit the PeopleForBikes Statistics Library / Economic Statistics page (http://www.peopleforbikes.org/statistics/category/economic-statistics).

Environmental Benefits

Walking and bicycling to destinations reduces motor vehicle emissions, traffic noise, and the need for expensive additional travel lanes or parking infrastructure.

Table 1-1: 30-40-50 Trip Distance Concept

Mileage	Percent	Cumulative Percent
1 Mile or Less	28	28
1.1 – 2 Miles	13	41
2.1 – 3 Miles	9	50
3.1 – 4 Miles	6	56
4.1 – 5 Miles	7	63
More than 5 Miles	37	100

Table 1-1 illustrates the 30-40-50 trip distance concept. That is, nearly 30 percent of trips are a mile or shorter, 40 percent are two miles or shorter and 50 percent are three miles or shorter. The table shows how many of our daily trips involve distances that can be easily walked and biked.[22]

In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) federal transportation bill provided a one-time $25M award to Columbia, Missouri; Marin County, California; Minneapolis, Minnesota; and Sheboygan County, Wisconsin to see if people would use integrated walking and bicycling networks if they were built into a community's transportation system. The communities saved an estimated 25 pounds of carbon dioxide (CO_2) pollution in 2013 per capita, or a total of 9,065 tons. This is equivalent to saving over 1.25 gallons of gas per capita in 2013 or nearly 3.6M gallons between 2009 and 2013. This translates to an estimated 34,629 tons of CO_2 emissions averted over that time period. In 2013, the pilot communities reduced emissions of hydrocarbons (33.4 tons), particulate matter (255 pounds PM10 and 241 pounds PM2.5), nitrogen oxides (23.3 tons), and carbon monoxide (304.6 tons) which contribute to local air pollution. Additional information from this pilot study can be found in the Health and Safety Benefits section and Chapter 5. [23]

Health and Safety Benefits

In 2015, approximately 38,300 people were killed on US roadways and 4.4M were injured which makes 2015 the deadliest driving year since 2008. While many factors likely contributed to the increase, a stronger economy and lower unemployment rates are likely at the core of the trend.[24] In 2014, 4,884

[22] Flusche, Darren. National Household Travel Survey – Short Trips Analysis. League of American Bicyclists. 2010. http://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis

[23] Nonmotorized Transportation Pilot Program Yields Striking Results. Volpe. United States Department of Transportation. December 16, 2014. https://www.volpe.dot.gov/policy-planning-environment/transportation-planning/nonmotorized-transportation-pilot-program-yields

[24] Motor Vehicle Deaths Increase by Largest Percent in 50 Years. National Safety Council. 2016. http://www.nsc.org/Connect/NSCNewsReleases/Lists/Posts/Post.aspx?ID=103

pedestrians and 726 bicyclists were killed in crashes with motor vehicles.[25] If data analyzed for the first half of 2015 holds true for the full year, 2015 would be the largest year-to-year increase in pedestrian deaths since 1975 when the current federal system for recording traffic deaths was created.[26]

For pedestrians and bicyclists, speed matters in a vehicle collision. Only five percent of pedestrians would die if struck by a vehicle traveling at 20 mph or less. At 30 mph, there is a 40 percent chance of fatal injury if struck. At 40 mph, the chance of dying increases to 80 percent, and at 50 mph it reaches 100 percent.[27] Research concludes that adding walking and bicycling infrastructure increases safety for all modes.[28, 29] The $25M FHWA study mentioned in the previous section, which tracked four communities with non-motorized investments, concluded despite significant increases in trips made by bicycles and pedestrians following the investments, fatal crashes over the study period remained steady or decreased. Bike lanes have been credited with increasing the number of bicyclists traveling in the right direction, reducing the number of bicyclists on sidewalks, increasing stop sign compliance, and providing an increased buffer between automobiles and pedestrians.[30] And with a greater number of people bicycling, drivers become more aware of non-motorized users, creating a safer environment for all.

Increased bicycling and walking due to added infrastructure can also provide health-related benefits. Employees who participate in physical activity take fewer sick days, have lower healthcare costs, and even have an increase in productivity.[31,32] Increased physical activity can reduce the risk of various chronic diseases, prevent weight gain and obesity, and increase life expectancy. Bicycling and walking for recreational or transportation purposes can help to fulfill recommended daily physical activity requirements. Many research studies have linked the presence of bicycling and walking infrastructure with increased physical activity and improved health.

The Centers for Disease Control and Prevention (CDC) provides a series of recommendations for bringing public health considerations into transportation issues.[33] One of the primary recommendations is to promote active transportation by providing safe and convenient walking and bicycling facilities. The

[25] Traffic Safety Facts. US Department of Transportation. National Highway Traffic Safety Administration. 2016. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812270

[26] Lowy, Joan. Pedestrian deaths surged last year by an estimated 10 percent. Associated Press. 2016. http://www.usnews.com/news/politics/articles/2016-03-08/early-data-suggests-pedestrian-deaths-surged-in-2015

[27] Literature Review on Vehicle Travel Speeds and Pedestrian Injuries. U.S. Department of Transportation. National Highway Traffic Safety Administration. 1999. http://www.nhtsa.gov/people/injury/research/pub/hs809012.html

[28] Safety Benefits of Walking. America Walks. Sam Schwartz Engineering. 2012. http://americawalks.org/learning-center/benefits-of-walking-2/safety/

[29] Evidence on Why Bike-Friendly Cities are Safer for All Users, Cambridge Journals Online, April 2011.

[30] Bicycle Lanes Versus Wide Curb Lanes: Operational and Safety Findings and Countermeasures Recommendations, Federal Highway Administration, October 1999.

[31] Realizing the Benefits of Accelerated Investment in Cycling, British Columbia Cycling Coalition, January 2011.

[32] 5 Surprising Benefits of Walking. Harvard Health Publications, Harvard Medical School. May 2016. http://www.health.harvard.edu/staying-healthy/5-surprising-benefits-of-walking

[33] CDC Transportation Recommendations. Centers for Disease Control and Prevention. November 2011. http://www.cdc.gov/transportation/recommendation.htm

benefits of bicycling and walking have been found to outweigh the risk of breathing traffic exhaust. Only one percent of cities in the world have such high levels of air pollution to pose a risk to health.[34]

Vision for Non-Motorized Plan

Communities across the North Front Range region desire non-motorized transportation facilities to provide additional transportation choices, enhance access to transit, complement community centers, and empower people who do not have access to or cannot operate a motor vehicle. The NFRMPO created this *Non-Motorized Plan* to assist NFRMPO communities with prioritizing and selecting improvements to the bicycling and walking network. Every trip, including those made by automobile and transit, involve some amount of bicycling or walking. This Plan sets a foundation for increased non-motorized connections across the region.

[34] Boseley, Sarah. Benefits of cycling and walking 'outweigh air pollution risk' in cities. theguardian. 2016. https://www.theguardian.com/environment/2016/may/05/benefits-cycling-walking-outweigh-air-pollution-risk-cities

Chapter 2: NFRMPO 2040 Regional Transportation Plan

The NFRMPO's 2040 Regional Transportation Plan (RTP) provides the goals, objectives, performance measures, and targets (GOPMT), which guide the *Non-Motorized Plan*. The 2040 RTP is the culmination of the Comprehensive, Cooperative, and Continuing (3C) planning process. The Vision Statement for the 2040 RTP is:

We seek to provide a multi-modal transportation system that is safe, as well as socially and environmentally sensitive for all users that protects and enhances the region's quality of life and economic vitality.

Non-Motorized Goals, Objectives, Performance Measures, & Targets from the 2040 RTP

The 2040 RTP outlines four regional transportation goals with 13 objectives. The applicable goal and associated objective are listed below. Each objective has associated performance measure(s) and target(s), which will be assessed in this Plan. The performance measures and targets will be re-examined with the next RTP development effort.

Goal 1: Foster a transportation system that supports economic development and improves residents' quality of life.

Goal 2: Provide a transportation system that moves people and goods safely, efficiently, and reliably.

Goal 3: Provide a multi-modal system that improves accessibility and transportation system continuity.

- Objective 9: Develop infrastructure that supports alternate modes and connectivity.
  - Performance Measure: Non-motorized facilities per capita
    - Target: Increase by at least 2 percent

Goal 4: Optimize operations of transportation facilities.

Non-Motorized Facilities Per Capita.

The non-motorized facilities per capita performance measure target in this Plan is a baseline for future plans and projects. Population within the NFRMPO region was approximately 482,144 in 2015 and is expected to rise to 884,734 in 2040.[35]

In 2016, the NFRMPO region had a total non-motorized network of 3,313 miles of sidewalks, trails, and bicycle lanes. Based on the 2015 population figure and the 2016 non-motorized facilities, there are 6.87 miles of non-motorized facilities per 1,000 residents in the NFRMPO region.

[35] Demographic Profiles. Colorado Department of Local Affairs. https://demography.dola.colorado.gov/

Chapter 3: Outreach and Data Collection

Public Feedback

The NFRMPO created a *Non-Motorized Plan* survey to help inform this Plan. The survey is not statistically valid and should not be used to fully represent the NFRMPO region. The survey was distributed at the FC (Fort Collins) Bikes Projects Fair, Fort Collins Bike to Work Day, Loveland Bike to Work Day, Eaton Days, LaSalle Day, Severance Days, Milliken Beef N' Bean Day, Loveland Old Fashioned Corn Roast Festival, Windsor Harvest Festival, Fort Collins Open Streets, and Taste in Timnath throughout summer 2016. Additionally, the survey was available online for responses and was distributed as a link at community events, citizen transportation board meetings, in the NFRMPO's quarterly newsletter, to the Larimer and Weld County Mobility Committees, and to community partners. A total of 265 responses were received before November 1, 2016. The survey tool can be found in ***Appendix A:***.

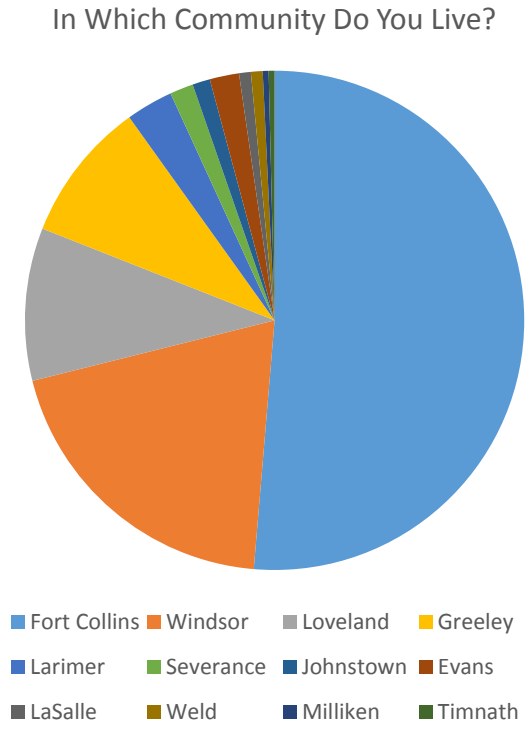


Figure 3-1: Respondent Community of Residence

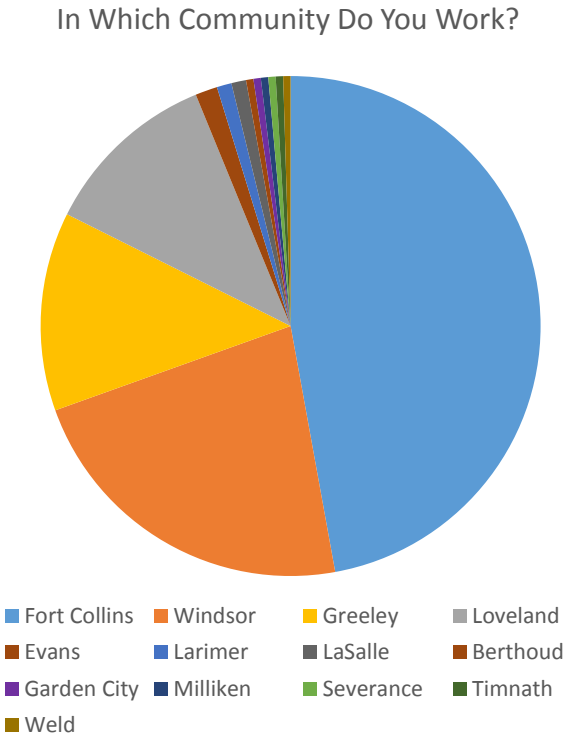


Figure 3-2: Respondent Community of Employment

Survey respondents shown in ***Figure 3-1 and Figure*** 3-2 primarily live (263) and work (210) in Fort Collins, Windsor, Loveland, and Greeley. A total of 55 respondents did not indicate where they worked, which could potentially indicate their employment status or they live outside the region. ***Figure 3-3*** highlights where survey respondents live and work across the region.

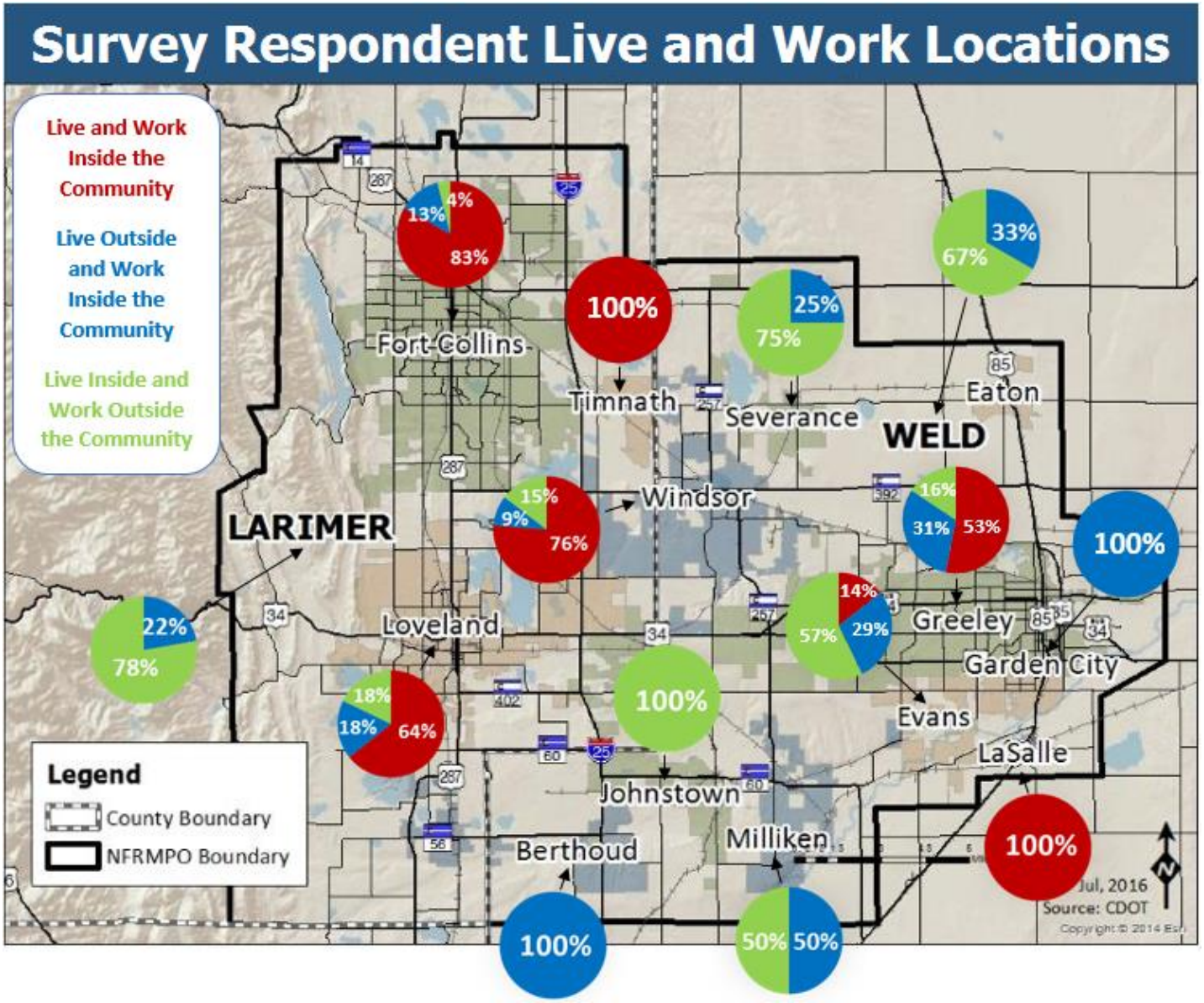


Figure 3-3: Survey Respondent Live and Work Locations

Table 3-1, Table 3-2***, and Table*** 3-3 are compilations of answers to survey question three, "*How many days per week does your household use the transportation mode listed for each activity? (Please mark 1-7 for the number of days).*"

Table 3-1: Average Days per Week Each Transportation Mode is used for All Respondents

Mode	Commute to work or school	Errands	Recreation	Average Number of Responses
Walk	0.71	0.90	2.54	247
Bike	1.65	1.37	2.17	250
Walk & Transit	0.59	0.41	0.41	238
Bike & Transit	0.16	0.10	0.15	234
Automobile	2.91	2.78	1.47	214

Table 3-1 compiles the average number of days per week respondents estimated their use of each transportation mode. For all respondents, walking (2.54 days per week) and bicycling (2.17 days per week) was used most often for recreational purposes where the automobile was used more heavily for commuting (2.91 days per week) and errands (2.78 days per week). The walk and transit and bike and transit modes exhibited low use for all three trip types.

Table 3-2: Percent of Respondents Using Mode for Trip Purpose At Least Once Per Week

Mode	Commute to work or school	Errands	Recreation	Average Number of Responses
Walk	18%	33%	67%	204
Bike	44%	45%	69%	211
Walk & Transit	14%	12%	11%	63
Bike & Transit	6%	5%	6%	31
Automobile	68%	75%	49%	195

Table 3-2 compiles the percent of respondents using each mode for their trip purpose at least once per week. Across commuting to work or school and errands the automobile is the most popular choice with 68 percent and 75 percent for each category respectively. For the recreation trip purpose walking or bicycling excel with 67 percent and 69 percent respectively. The walk & transit or the bike & transit mode choices are the least popular choice for all trip purposes.

Table 3-3: Average Days per Week Each Transportation Mode is used Among Respondents Selecting the Mode

Mode	Commute to work or school	Errands	Recreation	Number of Respondents Using Mode
Walk	0.92	1.18	3.24	204
Bike	1.99	1.63	2.60	211
Walk & Transit	2.35	1.61	1.60	63
Bike & Transit	1.23	0.77	1.13	31
Automobile	3.23	3.08	1.63	195

Table 3-3 compiles the average number of days per week each transportation mode is used for only the respondents selecting that mode. For users of a specific transportation mode, the information

presented indicates the amount or intensity with which each mode was used for the three trip purposes. For example, among the 204 respondents who walked at least once per week, on average they commuted 0.92 days per week by walking, walked for errands 1.18 days per week, and walked for recreation 3.24 days per week. Again, the number of users who chose the walk and transit or bike and transit mode choice were lower than other options.

Survey question four asked respondents, '*Within the last 3 years, have any transportation improvements improved your ability to walk and/or bike within your community? If so, please specify which ones.*' There were 193 responses received. Of these, 33 stated there had been no improvements; 43 stated they identified trail improvements that allowed them to walk and bike; 34 identified multiple improvements in the area; 25 indicated bike lane improvements; 25 recognized transit improvements; 11 observed sidewalk or crosswalk improvements; and three recently moved to Colorado. A number of items were positively mentioned, including:

- Bike lanes or paths along the MAX route - 47 individuals
- Transit service - 25 individuals
- Poudre River Trail - 22 individuals
- Shields Street improvements - six individuals.

Respondents noted:

- "The Remington Greenway has been an excellent addition to the transportation network. Otherwise, exploration of existing facilities has been the biggest eye-opener."
- "Love the bike lanes that have painted separation from traffic - that is a huge improvement."
- "The great western trail has recently been improved and goes all the way from Severance to Windsor...this has been very nice."
- "Only yesterday I used bike & GET bus for the first time. That option is very helpful. The GET driver was very courteous in helping me understand the use of the bus bike rack."

Figure 3-4 highlights the frequency a word occurs in respondents' answers to question four.

Figure 3-4: Transportation Improvements

Table 3-4: Perceived Importance of Transportation Improvements (Average Number of Responses)

	Responses for Essential (1)	Responses for Important (2)	Responses for Somewhat Important (3)	Responses for Not Important (4)	Total Response Count	Average Rating Score	Average Rating Category
Bike Lanes	173	68	8	4	253	**1.38**	**Essential**
Protected Bike Lanes	94	102	40	11	247	**1.87**	**Important**
Bike Boxes	39	84	70	40	233	**2.48**	**Important**
Sidewalks	141	69	32	8	250	**1.63**	**Important**
Crosswalks	135	59	13	3	210	**1.45**	**Essential**
Trails	150	85	19	0	254	**1.48**	**Essential**
Improved ADA Accessibility	66	84	50	29	229	**2.18**	**Important**
Traffic Signal Detection for Peds & Bikes	128	95	24	5	252	**1.63**	**Important**
Safe Routes to Schools	157	64	13	13	247	**1.52**	**Important**
Wayfinding Signs which include Route Information to Destinations	53	106	70	20	249	**2.23**	**Important**
Bicyclist and Pedestrian Safety Programs	61	110	61	17	249	**2.14**	**Important**
Motorist Safety Programs regarding Bicyclists and Pedestrians	107	91	44	7	249	**1.80**	**Important**
Improved Trail Connectivity between Communities in the Region	151	83	18	4	256	**1.51**	**Important**
Slower Traffic Speeds	48	64	87	42	241	**2.51**	**Somewhat Important**
Other	11	4	5	20	40	**2.85**	**Somewhat Important**

Question five asked respondents, '*Please rate how important these transportation improvements are to you by marking with an X.*' ***Table 3-4*** displays the number of responses for each transportation improvement by rating from "essential" to "not important", along with the average rating. On average, respondents considered bike lanes (1.38), crosswalks (1.45), and trails (1.48) to be essential. Slower traffic speeds (2.51) and other enhancements (2.85) were ranked as only somewhat important for improving transportation. All other responses fell under the "Important" category.

Question six inquired, '*Is there anything else you would like us to know about non-motorized transportation in the region?*' A total of 110 responses were received, of these 29 responses indicated safety concerns limiting walking or bicycling; 18 responses concerned missing trails, half of which referenced the Poudre River Trail connection under I-25; an additional 15 responses included a combination of requested improvements, trail and sidewalk connectivity, and snow problems; and 10 responses were positive comments on planning, existing improvements, or non-motorized transportation in the region. Seven responses involved improvements to transit service, while three responses related to gaps in the bicycle lane network.

Specific recommendations or issues included:

- "Currently, there is no bicycle trail connecting the Poudre River trail from Fort Collins to Windsor. It would be great if there was a connecting trail."
- "Weekend bus service please!"
- "I have had friends/coworkers comment they would be more likely to ride if they felt safer."
- "Cars don't pay attention I felt sad when one hit my husband while he was biking."
- "We love to road bike but feel that the roads in Weld County are so narrow with virtually no shoulders and it's becoming too dangerous to do one of our favorite activities."
- "There is no transportation for individuals in wheelchairs. The yellow cab service is not consistent on the front house pickup regardless of a scheduled appointment with them. The other services are within city limits only."
- "It's a big step up from where we were."

Figure 3-5: Non-Motorized Transportation Comments***Figure 3-5*** highlights the frequency a word occurs in respondents' answers to question six.

Figure 3-5: Non-Motorized Transportation Comments

Community Transportation Boards

To solicit community input, NFRMPO staff presented to the Loveland, Fort Collins, and Greeley Citizen Transportation Boards on August 2, 17, and 22, 2016 respectively. The presentation consisted of a history of the *2013 NFRMPO Regional Bicycle Plan*, an outline of the *2016 Non-Motorized Plan*, the public involvement responses incorporated in the Plan, the regional bicycle and pedestrian counting efforts, and a Transportation Board and audience feedback session. The four feedback questions are listed below.

- "What would allow you to walk or bike more?"
- "What non-motorized gaps have you identified in the region?"
- "Are there any areas the NFRMPO missed?"
- "Who else should be contacted?"

Loveland Transportation Advisory Board

When asked, "What would allow you to walk or bike more", the Loveland Transportation Advisory Board stated:

- Continuous trails and sidewalks
- Trails with destinations
- Wayfinding and signage
- Safer bike lanes with more space or a buffer
- Additional protected bike lanes
- More landscaping
- Increased enforcement of rules and regulations
- Education for all users
- Safer crosswalks with additional time for seniors and children
- Enhanced Safe Routes to Schools program; a roundabout at Truscott elementary
- Additional bicycle storage capacity on City of Loveland Transit (COLT) buses to prevent people being left at stops
- Better snow and ice removal.

When asked, "What non-motorized gaps have you identified in the region" responses included:

- Larimer County Road 11C between Boyd Lake and Orchard Lake, which has no shoulder for bicyclists
- 57th Street
- Access to the South Transit Center from Shields Street
- Downtown Loveland to Lake Loveland.

When asked, "Who else should I contact" responses included the Coalition for Activity and Nutrition to Defeat Obesity (CanDo) because of their prioritized project list:

1. Add more bike racks and designated bike parking throughout town
2. Add a recreational path along BNSF, as identified in bike and pedestrian master plan
3. Add more wayfinding throughout town (along recreational path, to downtown, to identify popular and safe bike routes)
4. Widen and improve N. Boyd Lake, as identified in Loveland's *Bicycle and Pedestrian Plan*
5. Link downtown through a connection at Fairgrounds Park
6. Add a connection from North Side of town into Downtown

Fort Collins Transportation Board

When asked, "What would allow you to walk or bike more" the Fort Collins Transportation Board stated:

- A paved trail to Windsor (Poudre River Trail Connection)
- Increased employer commuter benefits
- Direct paths to destinations
- Better road maintenance possibly using Surface Transportation Block Grant (STBG) funding

When asked, "What non-motorized gaps have you identified in the region" responses included:

- A trail connection between Fort Collins and Loveland

- An above grade connection of the Power Trail at Harmony Road
- Non-motorized connections to the Budweiser Event Center
- Safe routes across major streets to reach grocery stores

Areas missed included intersections and connections out of the region.

Greeley Citizen Transportation Advisory Board

When asked, "What would allow you to walk or bike more" the Greeley Citizen Transportation Advisory Board stated:

- Bike lanes in Greeley
- Additional off-street trails
- Increased access to trails
- Fixing wayfinding issues especially at 14th Avenue and Island Grove Park
- Connecting the Sheep Draw Trail to the Poudre River Trail
- Connecting west Evans to the Poudre River Trail
- Increasing non-motorized connections in west Greeley
- Better transit trail connections
- Additional bicycle racks and covered bicycle parking
- Water fountains and repair stations along the Poudre River Trail
- Bicycle lockers
- A LaSalle to Evans bicycle and pedestrian connection at the South Platte River.

When asked, "What non-motorized gaps have you identified in the region" responses included:

- The US 34 and US 85 interchange
- A trail south of US 34 to connect to 71st Avenue
- Bicycle lanes on 65th Avenue

An area missed included connecting communities using Frisco and Breckinridge as an example. Suggested outreach events included Friday Fest and Potato Day.

Steering Committee Feedback

A steering committee was formed to guide the creation of the *Non-Motorized Transportation Plan*. Meeting the third Tuesday of the month at the Windsor Recreation Center, the group reviewed status updates and provided input on the planning process from June through November 2016. A call-in option was provided for those unable to attend. Suggestions were incorporated on the Non-Motorized Plan Survey, community collected data was submitted to the NFRMPO for inclusion in the Plan, and recommended topics were added to this Plan.

Review of NFRMPO Member Community Non-Motorized Transportation Plans

The *2013 NFRMPO Regional Bicycle Plan* contained a review of NFRMPO member community transportation plans related to non-motorized transportation. Since 2013, a number of communities have completed stand-alone non-motorized plans, as an element in their comprehensive plan, or in the form of a trails plan. An updated review of communities' non-motorized transportation plans is provided below, along with the status of online mapping for non-motorized infrastructure and the availability of education and outreach programs. For current Americans with Disabilities Act of 1990 (ADA) Accessibility Guidelines (ADAAG) and Public Rights of Way Accessibility Guidelines (PROWAG) please visit ADA.gov.

Town of Berthoud

Non-Motorized Planning Efforts

The Town of Berthoud's 2014 *Comprehensive Plan* was adopted by the Berthoud Planning Commission in spring 2014. The Plan references a corridor-based trail network for non-motorized transportation using historic irrigation ditches to form the backbone of the system. Sidewalks with tree lawns are the preferred layout of pedestrian facilities in the plan.

A transportation system for all users and safe routes to schools are highlighted in the Transportation Goals section of the Plan. The Transportation Policies section includes the adoption of a Complete Streets policy, limits the use of cul-de-sac streets, and creates formal bicycle and pedestrian routes.

The Plan also highlights the 2004 *Parks, Open Space, Recreation and Trails Master Plan* (PORT) which contains bicycle and pedestrian plans for Berthoud. The 2016 PORT is currently in development, with an anticipated adoption date of late 2016 or early 2017.

Online Mapping

A majority of trails and routes in Berthoud are displayed by Google Maps.

Non-Motorized Education and Outreach Programs

The Berthoud Police Department holds a bike safety program/bike rodeo for elementary students on an annual basis.

Town of Eaton

Non-Motorized Planning Efforts

In 2013, the Eaton Town Board adopted the *Eaton Transportation Plan*. The Plan outlines transportation goals and policies, existing conditions, forecasted growth, long range plans, and implementation. Maps of existing pedestrian facilities, shared-use paths, and future shared use paths are provided in the Plan. The Bicycle and Pedestrian Plan portion of the Plan outlines the range of bicycle and pedestrian user abilities and facility standards for trails, sidewalks, and bike lanes.

Online Mapping

Google Maps depicts three of the four existing shared use paths in the Town of Eaton; however, existing portions of the Great Western trail are missing.

Non-Motorized Education and Outreach Programs

Eaton does not currently have any bicycle education or outreach programs.

City of Evans

Non-Motorized Planning Efforts

The City of Evans' 2004 *Open Space and Trails Master Plan* is the primary bicycle planning document for the City. The 2004 *City of Evans Transportation Plan* references the Trails Plan and the City's desire to provide additional trails throughout the City. The City is primarily focused on providing off-street shared use trails. Existing and missing sidewalks are highlighted in the Plan. Evans does not currently have a separate bicycle or pedestrian plan.

The 2010 *Comprehensive Plan* references transportation connections which serve all modes, a network of non-motorized facilities, and sidewalks which are large enough to accommodate bicyclists. Creating viable alternatives to the automobile is highlighted as a primary goal for future development.

The *South Platte Recreation Corridor Master Plan* was approved in 2016 to create more local recreation opportunities. It creates a framework for a bicycle and pedestrian network tied into a system of parks, open space, and trails along the South Platte River.

Online Mapping

No online map of current bicycle routes exists independently. Google Maps has a number of routes in or near the City of Evans. The *2004 Transportation Plan* shows the Riverside Park Trail as well as sidewalks which are eight feet wide or greater, which are considered by the City to be shared use trails.

Non-Motorized Education and Outreach Programs

Evans does not currently have any bicycle or pedestrian education and outreach programs.

City of Fort Collins

Non-Motorized Planning Efforts

The *Transportation Master Plan* (2011) is the foundational planning document for all forms of transportation in Fort Collins. An update to the TMP is anticipated in 2017-2018, pending appropriation of project funding. Currently, the City of Fort Collins is a League of American Bicyclists, Platinum Level Bicycle Friendly Community.

The 2014 *Bicycle Master Plan* covers bicycling focused goals and objectives, including a proposed 2020 low-stress bicycle network, existing and future programs, policies, defines the network, and details implementation.

The 2011 *Pedestrian Plan* created a pedestrian Level of Service (LOS), highlighted gaps in the sidewalk network, established a crosswalk identification policy, and outlined improved infrastructure for pedestrians.

The 2011 *Master Street Plan* introduced the concept of Enhanced Travel Corridors (ETCs) which provide connections between major activity centers in Fort Collins. ETCs provide a special focus on public transit, biking and walking and are intended to strategically accommodate future growth by offering multiple options for getting around.

Online Mapping

Fort Collins maintains an interactive online mapping tool, which includes a bikeways layer. This tool includes known gaps, low-stress routes, multi-use trails and denotes where bicycles are not allowed. The Colorado State University (CSU) and downtown dismount zones can also be viewed on the map. A paper version of the bicycle map is also available. Google Maps also provides an extensive mapping of bike routes in Fort Collins.

Non-Motorized Education and Outreach Programs

The City of Fort Collins' FC Bikes program promotes cycling as a safe and attractive means of transportation within Fort Collins. FC Bikes works to build the cohesiveness of the bicycle community and also educates residents on bicycle safety and awareness while encouraging the Fort Collins community to use bicycles as a preferred method for getting around through events like Bike to Work Day and Open

Streets. The FC Bikes' Bicycle Ambassador Program and Safe Routes to School (SRTS) Program reach nearly 20,000 Fort Collins residents per year with bicycle safety education.

In addition to education and outreach, FC Bikes works closely with Police Services to support bicycle safety initiatives, while also conducting evaluation through annual counts and other survey methods. Fort Collins also publishes a bicycle riding guide, which contains stories about clothing choice, fundamentals of cycling, and a calendar of bike events.

Town of Garden City

The community does not currently have a bicycle plan, map, or programs in place. Any future efforts will be incorporated into this document when completed.

City of Greeley

Non-Motorized Planning Efforts

In 2015, the City of Greeley adopted the *City of Greeley Bicycle Master Plan*. The goal of the Plan is to achieve a League of American Bicyclists, Gold Level Bicycle Friendly Community designation. Currently, the City of Greeley is a Bronze Level Bicycle Friendly Community. The Plan incorporates goals and objectives, existing conditions, a needs assessment, recommendations for bicycling improvements, and implementation strategies.

The *2016 Parks, Trails and Open Lands Master Plan* was completed in 2016 and is an update to the 2013 edition. The goal is to create a park system which addresses natural areas, community separators, and agricultural lands. The plan describes on and off street bicycle and pedestrian connections to parks and references the *City of Greeley Bicycle Master Plan*.

In 2009, the City of Greeley adopted their *2060 Comprehensive Plan*. It includes visioning, community values, and guiding principles for all aspects of community self-assessment. The transportation section outlines complete streets, a history of bicycle plans, roadway design features, air quality standards, goals, and objectives. The Land Use section of the Plan incorporates transit, bicycling, and walking into community goals.

Online Mapping

The City of Greeley has a bike and pedestrian map available on their website. The map was last updated in 2014, highlights routes, bike lanes, multi-use paths, shared lanes, parks, schools, bicycle shops, and the North Colorado Medical Center in Greeley. Google Maps displays most of the bicycle facilities in Greeley.

Non-Motorized Education and Outreach Programs

The City of Greeley has an internal bicycle advisory group and has purchased the greeleybikes.com website which provides links to bicycle education websites.

Town of Johnstown

Non-Motorized Planning Efforts

The Town of Johnstown does not have a dedicated bicycle plan, but its *2008 Transportation Master Plan* addresses bicycling by referencing the *Johnstown/Milliken Parks, Trails, Recreation and Open Space Master Plan* (2003). The joint *Johnstown/Milliken Trails Plan* serves as the primary bicycle and pedestrian planning document for the area.

Online Mapping

No online map of current bicycle routes exists independently; however, the *2008 Transportation Plan* and joint *Johnstown/Milliken Trails Plan* do map current and proposed trails for the area. Google Maps also illustrates a limited amount of trails in the western part of Johnstown.

Non-Motorized Education and Outreach Programs

Johnstown does not currently have any bicycle or pedestrian education and outreach programs, as it is the responsibility of the Thompson Rivers Park and Recreational District to conduct recreational outreach programs.

Larimer County

Non-Motorized Planning Efforts

Larimer County's *Transportation Master Plan* (2006) includes a short section on bicycling, but the County does not have a dedicated bicycle plan. Its *Open Lands Master Plan* (2015) provides information on recreational trails, demographics, regional trail corridors, and references the NFRMPO 2013 *Regional Bicycle Plan*. Larimer County is currently updating their *Transportation Master Plan* and their *Comprehensive Master Plan*.

Online Mapping

Larimer County does not provide any online maps specifically for bicycling; however, PDF maps of open space trails can be obtained from the Department of Natural Resource's webpage. A regional view of trails is also available within the *Open Lands Master Plan* appendix "Master Plan Maps & Inventory". Google Maps displays some non-motorized routes outside of municipalities, but a majority of the routes are within Fort Collins and Loveland.

Non-Motorized Education and Outreach Programs

Larimer County does not currently have any programmed bicycle education and outreach programs, but does provide such services on-demand.

Town of LaSalle

Non-Motorized Planning Efforts

The Town of LaSalle's 2010 *LaSalle Transportation Plan* provides a bike and pedestrian planning element which includes proposed bike lanes and shared use trails. Listed policy and strategy components include a safe, connected, multi-modal transportation system which ensures consideration for bicycles and pedestrians. The Plan outlines existing and missing sidewalk facilities and describes the shared use trail north of LaSalle. The Town also has a *Parks Plan* that lists trails in the community.

Online Mapping

LaSalle does not currently have any bike facilities, and therefore does not have an online map. A map of proposed bike lanes and shared use trails is available within the Town's *Transportation Plan*.

Non-Motorized Education and Outreach Programs

In 2016, the Town of LaSalle participated in Bike to Work Day. At the end of the 2015 school year all 1st grade students received new bicycles through their school.

City of Loveland

Non-Motorized Planning Efforts

The City of Loveland adopted the *Bike and Pedestrian Plan* in 2012. The Plan outlines goals, existing conditions, crash data, project evaluation, implementation and funding, and measures of success. The Plan was incorporated in the Loveland *2035 Transportation Plan.*

The Loveland *2035 Transportation Plan* was approved in 2012. The Plan summarized different bicycle, pedestrian, and Travel Demand Management (TDM) facilities. Changes from 2000 to 2012 are explained and land-use, daily vehicle volume, and LOS projections are offered for the future.

The *Parks and Recreation Master Plan* was approved in 2014 and included bicycle and pedestrian trail information. The Plan references the *Bike and Pedestrian Plan* and the *2035 Transportation Plan* for background information.

In 2016, the *Create Loveland Comprehensive Plan* was adopted. The Plan references the *Bike and Pedestrian Plan* and the *2035 Transportation Plan*.

Online Mapping

Loveland provides a PDF map on its website of the existing bike network and its recreational trail network. Google Maps displays a majority of Loveland's bicycling network.

Non-Motorized Education and Outreach Programs

The City of Loveland provides a variety of education and outreach programs. The City is a collaborative partner in the Bicycle and Pedestrian Education Coalition (BPEC), which provides bicycle education and outreach programs, while maintaining a Safe Routes to School (SRTS) program that involves many of the area's schools. The City also operates programs such as Helmet Blitzes and Strap-n-Snap for 3rd graders, and provides non-motorized outreach at a variety of local events. Additionally, the City works closely with the Coalition for Activity and Nutrition to Defeat Obesity (CanDo) Coalition to address better access to recreation opportunities by identifying gaps in the sidewalk and trail system.

Town of Milliken

Non-Motorized Planning Efforts

The Town of Milliken does not have a dedicated bicycle plan, but its *Milliken Transportation Master Plan* (2008) includes a bicycle and pedestrian element. The joint *Johnstown/Milliken Parks, Trails, Recreation and Open Space Master Plan* (2003) serves as the primary bicycle and pedestrian planning document for the area.

Online Mapping

Google Maps provides mapping for three park trails, one trail outside of a park, and one set of dirt trails. No online map of current bicycle routes exists independently. However, the *Transportation Plan* and joint *Johnstown/Milliken Trails Plan* do map current and proposed trails for the area.

Non-Motorized Education and Outreach Programs

Milliken does not have any structured education and outreach programs, but the Town occasionally hosts a bike rodeo.

Town of Severance

Non-Motorized Planning Efforts

The 2011, *Severance: Hometown Vision, Comprehensive Plan* describes pedestrian networks and access in the community.

The most recent *Severance Transportation Plan* was adopted in April of 2015. The Plan lists the existing and proposed sidewalks, crosswalks, shared used paths, and bicycle facilities. Facility standards like sidewalk and bike lane width are listed.

The Town of Severance is currently in the process of completing its first *Parks and Recreation Master Plan*. This Plan includes surveying the existing pedestrian trail system throughout the Town and identifies potential future local and regional trail connections.

Online Mapping

Google Maps displays the bicycle lanes on 4th Avenue and the Great Western Trail with a corresponding trail connector. The *Transportation Plan* maps existing and proposed bicycle and pedestrian facilities.

Non-Motorized Education and Outreach Programs

The community does not currently have any bicycle education programs in place.

Town of Timnath

Non-Motorized Planning Efforts

The *Parks, Recreation, Open Space + Trails Master Plan* from 2011 describes the goals and objectives guiding non-motorized facilities in Timnath. Connectivity, maintenance, safety, land acquisition, partnerships, and the environment are areas of concern. Potential projects with prioritization criteria are listed.

The 2013 *Timnath Comprehensive Plan* outlines community goals, objectives, and action steps. Access to non-motorized facilities, a community wide trail system, ADA compliance, centrally locating popular facilities, and community surveys are featured in the Plan.

The *Timnath Transportation Plan* was adopted in fall 2015. The Plan includes objectives and actions to promote alternative transportation (pedestrian, bicycle, and transit modes). Bicycle facilities, trails, and pedestrian facilities defining features and locations are detailed in the Plan.

Online Mapping

The *Transportation Plan* lists existing and proposed sidewalks, bicycle lanes, and trails. Google Maps shows existing trails around the Wal-Mart location.

Non-Motorized Education and Outreach Programs

Timnath does not currently have any bicycle education and outreach programs.

Weld County

Non-Motorized Planning Efforts

Weld County does not have any dedicated bicycle planning efforts, instead opting to leave bicycle planning to its municipalities and providing support. The Weld County *2035 Transportation Plan* (2011) does provide some goals related to bicycle accommodation, primarily about supporting municipalities. The Weld County

Department of Public Health & Environment's (WCDPHE) *2014 Annual Report* lists health related walking and bicycling initiatives in Weld County.

Online Mapping

In the NFRMPO region, Google Maps displays bicycle facilities in Evans, Greeley, Johnstown, and Windsor. The County does not provide online mapping of non-motorized facilities, but the Weld Trails Coordination Committee (WTCC) provides a regional trails inventory map on its website. The County's *Transportation Plan* includes a small version of this map, along with a national and state trails map.

Non-Motorized Education and Outreach Programs

Weld County does not currently have any programmed bicycle education and outreach programs. The WTCC would likely be the primary entity to provide such programs in the County, but no such programs are explicitly advertised.

Town of Windsor

Bicycle Planning Efforts

The *Parks, Recreation, Trails and Open Lands Master Plan – 2007 Update* provides the Town of Windsor a companion document to the *Comprehensive Plan.* Trails and pedestrian facilities are highlighted in the Plan.

The Town of Windsor's *Comprehensive Plan* was completed in 2016. The transportation and mobility section of the Plan provides information on goals and objectives, functional classifications, road diets, sidewalk gaps, high priority trail projects, and complete streets. A bicycle and pedestrian mobility map is also provided.

The *Parks, Recreation & Culture Master Plan* was completed in April 2016. The Plan identifies community needs, the demographic profile, previous efforts, an inventory, analysis of issues, recommendations, and an action plan for the next five to 10 years.

Online Mapping

The 2016, *Comprehensive Plan* contains a map of existing and proposed bicycle and pedestrian facilities. Google Maps illustrates many of the trails within and around Windsor.

Bicycle Education and Outreach Programs

The Town of Windsor's Police Department runs an annual bicycle rodeo, while the Recreational Department hosts an annual bike to work day.

Regional Sidewalk, Bicycle Lane, and Trail Inventory

A component of the *Non-Motorized Plan* process was to map all of the non-motorized facilities in the NFRMPO region. All of the sidewalks, multi-use trails, bicycle lanes, and bicycle routes have been mapped and examples are given in subsequent figures. Contact the NFMRPO for a copy of the complete network and associated Geographic Information Systems (GIS) files.

Table 3-5: Total NFRMPO Member Government Non-Motorized Facilities in Miles

	Facility Type			
Community	**Sidewalks**	**Multi-Use Trails**	**Bicycle Lanes**	**Bicycle Routes**
Berthoud	40.98	1.49	0	0
Eaton	37.11	3.15	0	0
Evans	104.28	9.79	0	0
Fort Collins	841.25	53.66	338.54	43.36
Garden City	0	0	0	0
Greeley	511.24	36.05	89.79	35.20
Johnstown	101.15	7.62	0	0
LaSalle	13.15	0	0	0
Larimer County	24.09	0.05	20.35	0
Loveland	519.70	27.77	163.20	14.90
Milliken	42.25	3.35	0	0
Severance	18.12	5.59	0.57	0
Timnath	26.08	1.28	3.39	0
Weld County	0	2.01	0	0
Windsor	192.57	26.35	46.69	12.57
Total	**2,471.97**	**178.16**	**662.53**	**106.03**

Table 3-5 shows the total mileage of each non-motorized facility across each of the 15 NFRMPO member governments. Larimer and Weld counties facilities were calculated only in the NFRMPO boundary. The bicycle route mileage may overlap with bicycle lanes or multi-use trails.

Figure 3-6 highlights the non-motorized facilities in south Berthoud. A shared use recreational trail is mapped in between Berthoud High School and Ivy Stockwell Elementary School.

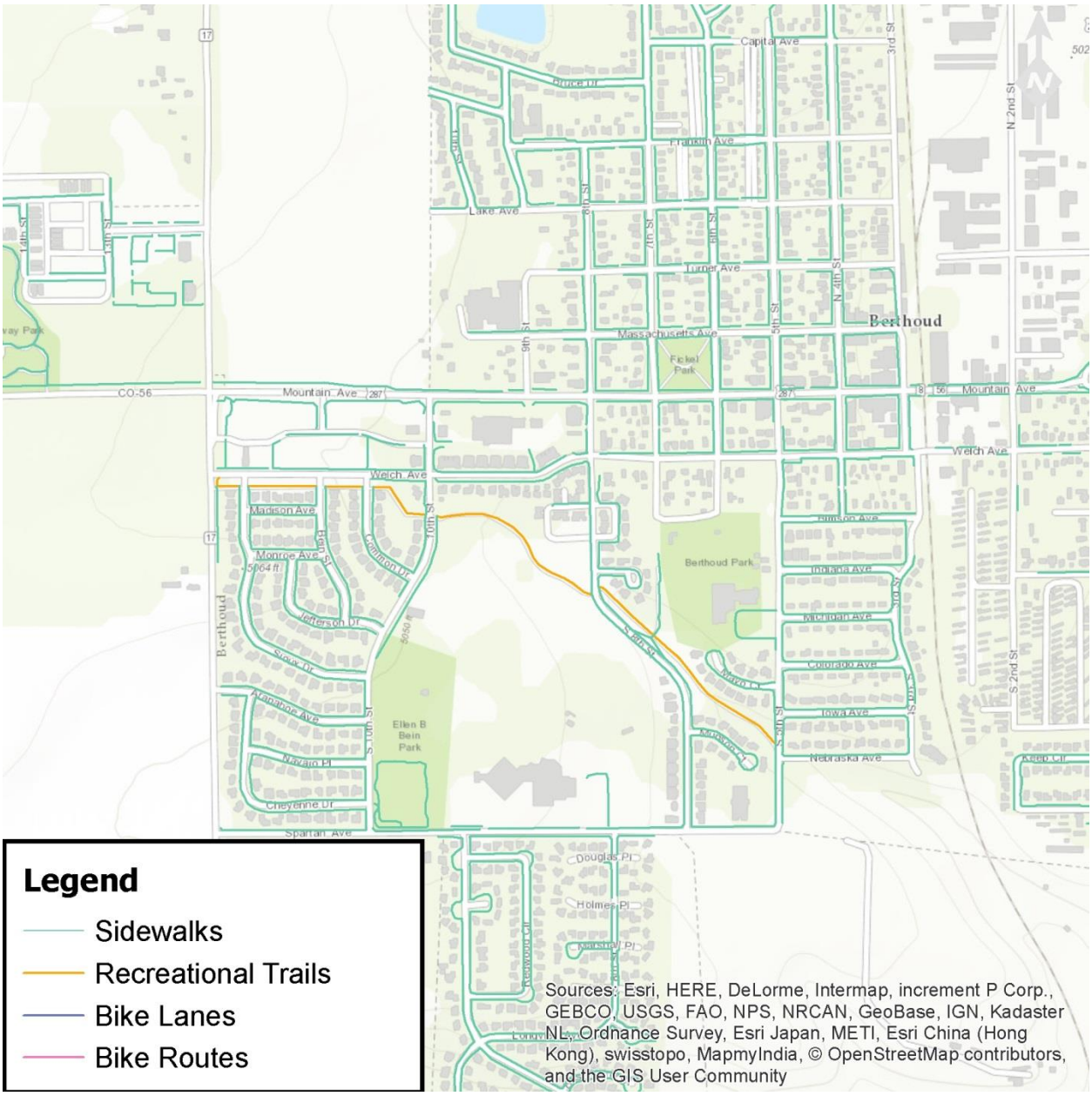


Figure 3-6: South Berthoud Non-Motorized Facilities

Figure 3-7 highlights the non-motorized facilities in Eaton. Eaton's middle and high school are located in the middle of the image. The Great Western Trail runs east to west and is mapped north of town. The bottom left subdivision is has a recreational trail that runs along the perimeter of the community.

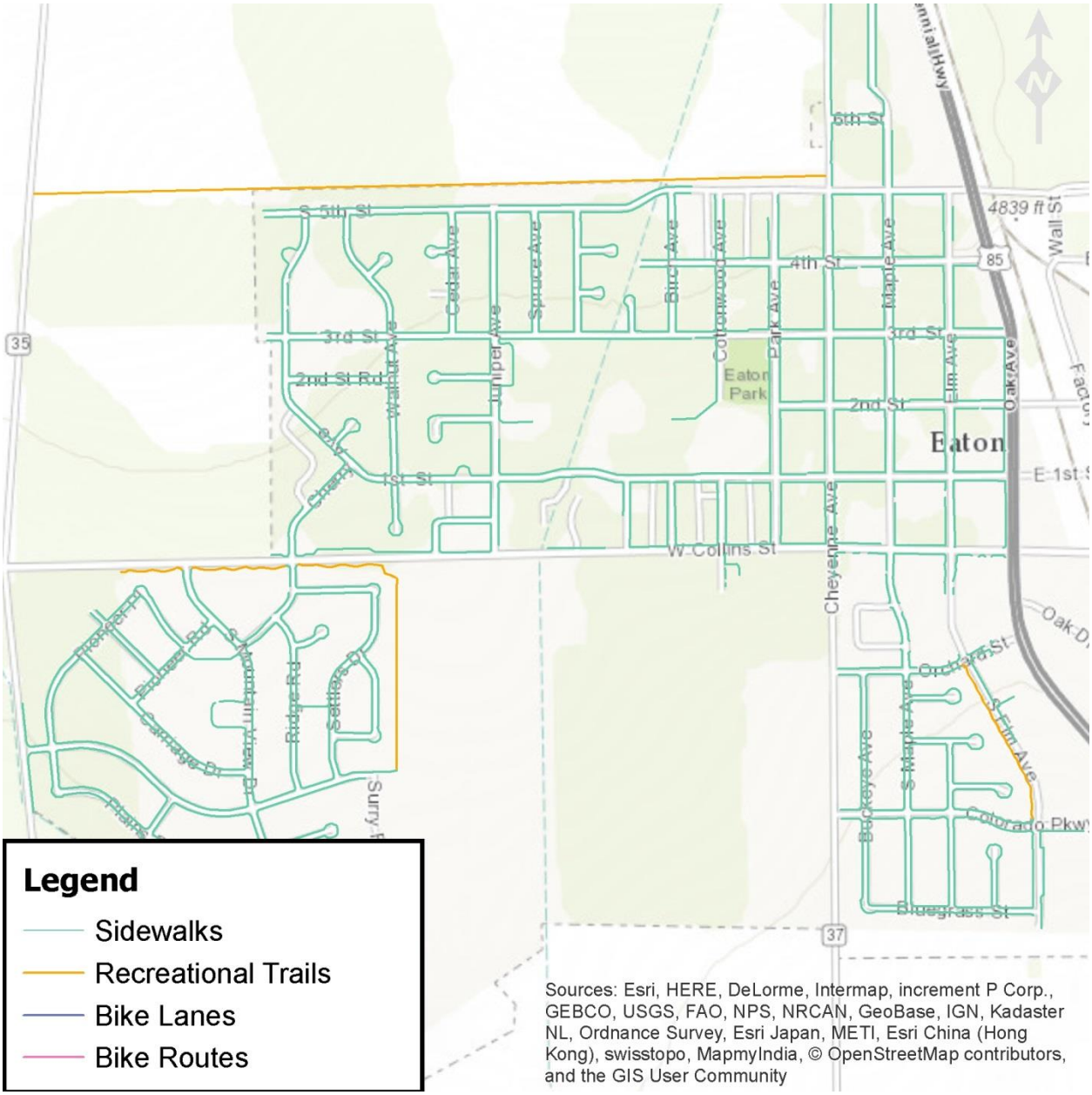


Figure 3-7: Non-Motorized Facilities in Eaton

Figure 3-8 highlights non-motorized facilities in northern Fort Collins, including Old Town Square. The Poudre River Trail is shown going under North College Avenue. The image also shows how Mountain Avenue transitions from a bike route to a dedicated lane at the Howes Street intersection.

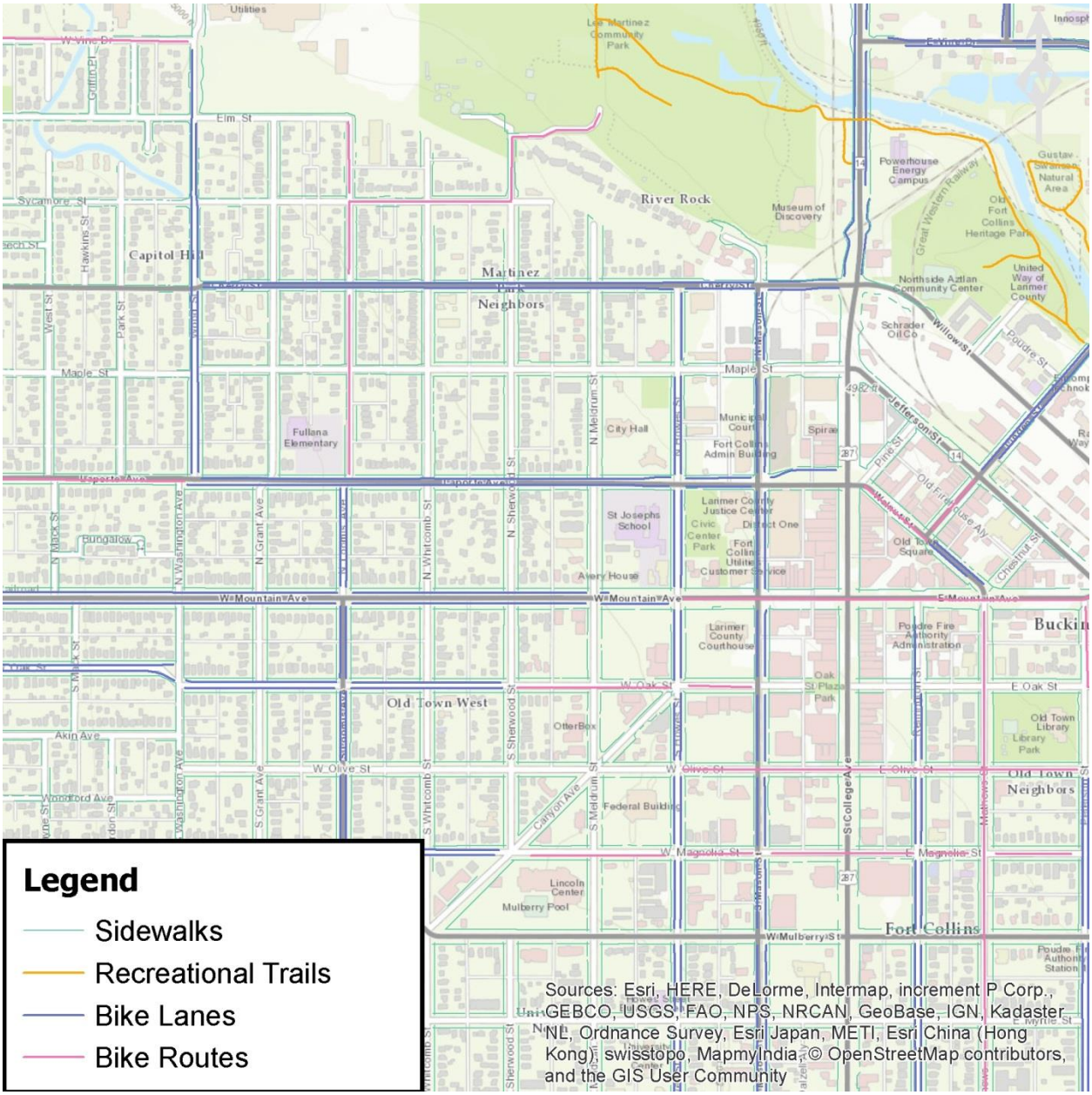


Figure 3-8: Non-Motorized Facilities in North Fort Collins

Figure 3-9 shows non-motorized facilities in northern Greeley. The Poudre River Trail is shown at the top of the image crossing near the Greeley Stampede.

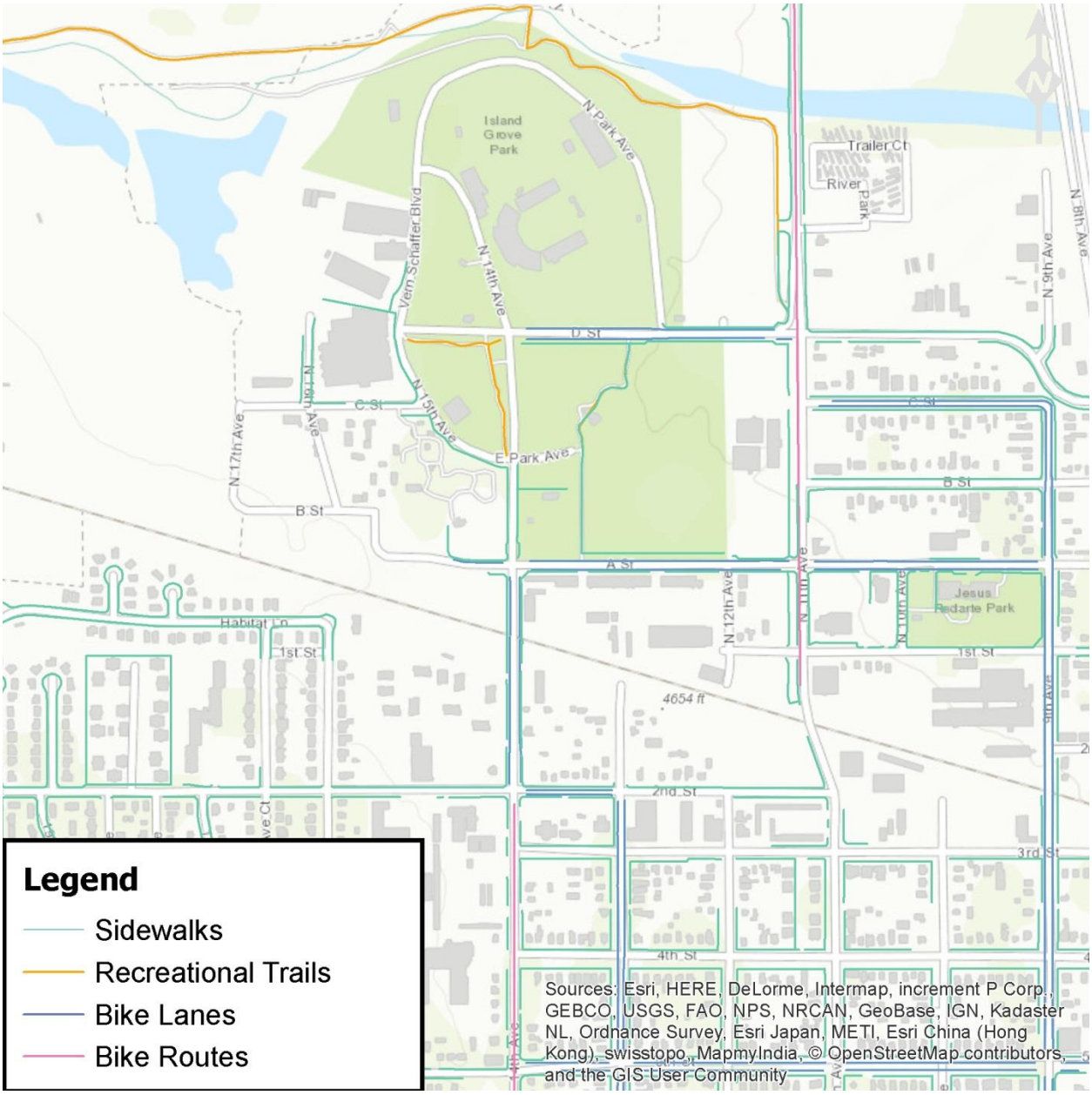


Figure 3-9: Non-Motorized Facilities in Northern Greeley

Figure 3-10 highlights the non-motorized facilities in eastern Loveland. The Mckee Medical Center is shown at the bottom right of the image. Also shown is the Loveland Recreational Trail going through Seven Lakes Park and entering Boyd Lake State Park.

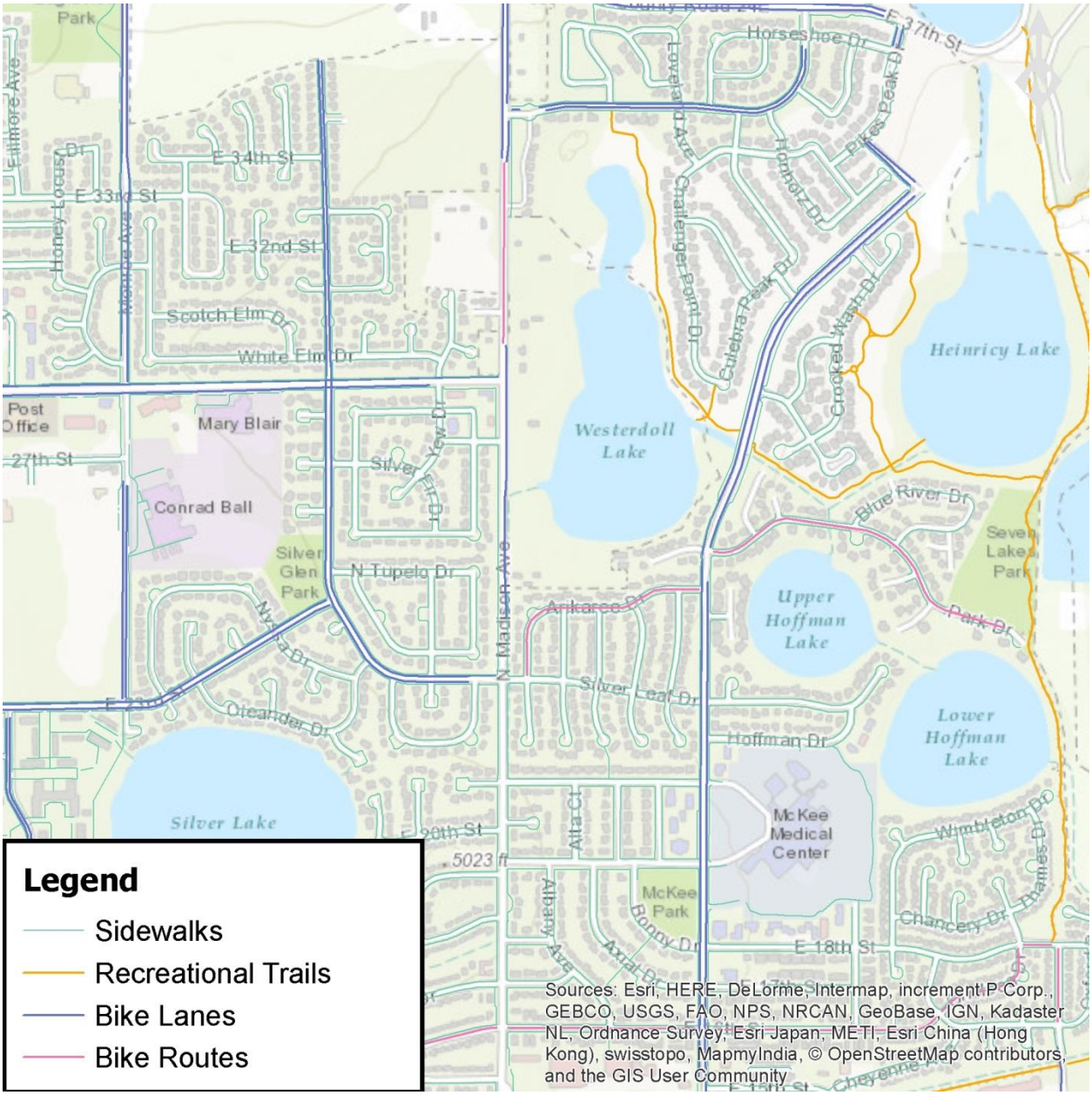


Figure 3-10: Non-Motorized Facilities in Eastern Loveland

Figure 3-11 highlights the non-motorized facilities in Windsor. The Windsor-Severance Library is located in the middle of the image as well as Skyview Elementary School on the left border. The Poudre River Trail is shown connecting with Water Valley Parkway.

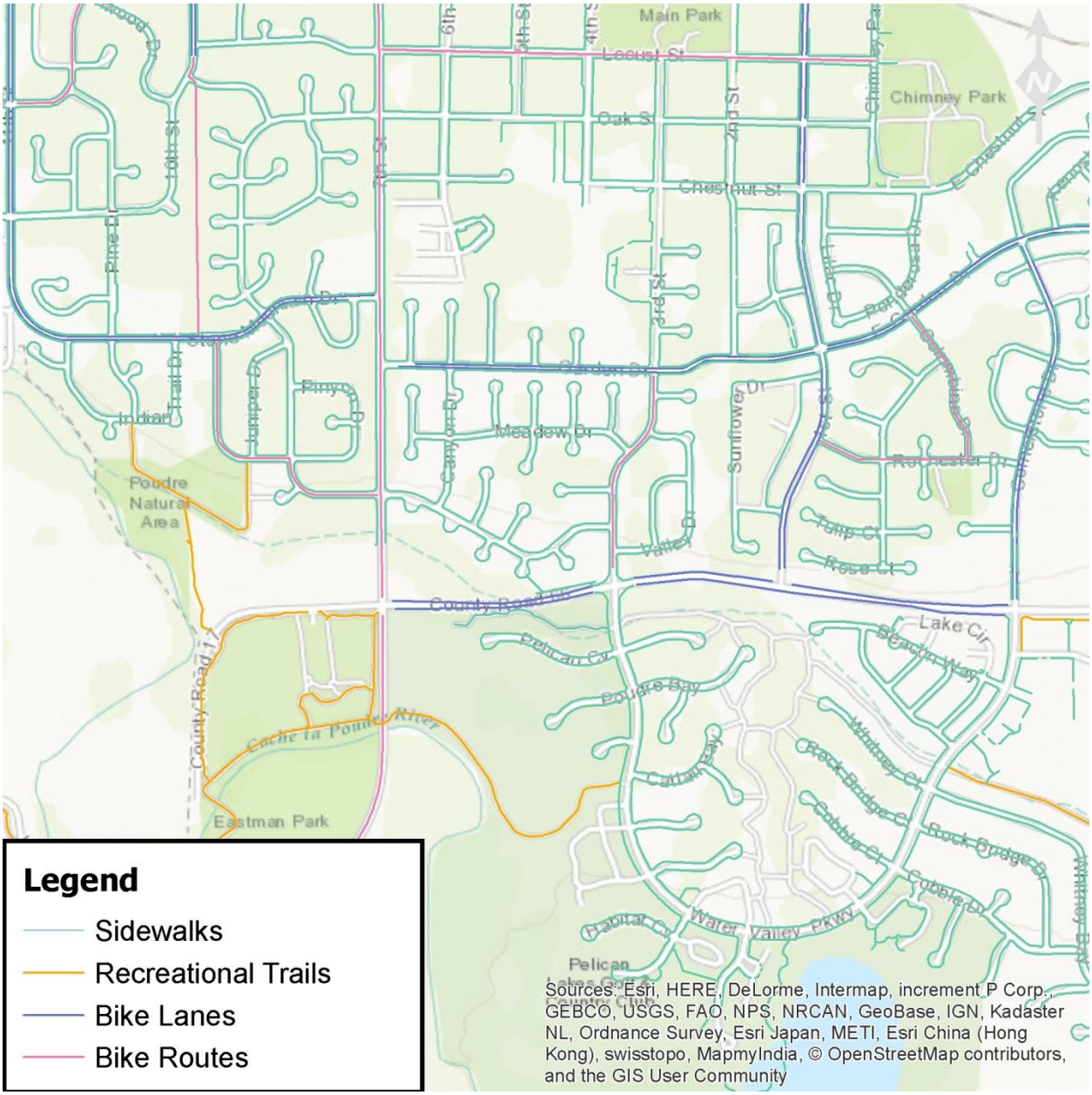


Figure 3-11: Non-Motorized Facilities in Central Windsor

Regional Bicycle and Pedestrian Count Effort

The NFRMPO and regional partners have begun collecting non-motorized transportation user count data. While bicyclists and pedestrians predate the automobile, efforts to count non-motorized users have historically been scarce. Vehicle traffic counts have been completed using a systematic process to assess the volume of vehicles on a given roadway. Typically, roadways across an area are counted using a consistent interval to create a longitudinal dataset. Today, efforts are being made nationally to collect non-motorized user count data on sidewalks, roadways, and trails. Similar to vehicular counts, bike counts will be used to apply for funding, prioritize transportation improvements, and highlight safety concerns.

In December 2016, the summary report *FHWA Bicycle-Pedestrian Count Technology Pilot Project* was released.[36] The report examines 10 MPOs with a population greater than one million, but without an established bicycle or pedestrian count program. These MPOs received seed money to purchase automated count devices and examine the resulting data. Lessons learned include:

- Ensure sufficient staff time and resources are available for count programs
- Involve partners in all steps of establishing and running a count programs
- Select count technology best suited to identified count locations
- Validate automatic count data with manual spot checks

In a similar, but unrelated effort, the NFRMPO purchased five bicycle and pedestrian counters to begin counting bicyclists and pedestrians in December 2015. Two of the counters are permanent devices installed along the Poudre River Trail at the River Bluffs Open Space in Larimer County and the Rover Run Dog Park in Greeley. The remaining devices are two mobile tube style counters and one mobile infrared style counter. The mobile units are available for NFRMPO member communities to check out and use to collect data within the NFRMPO region.

The two permanent count sites collect pedestrian information through an infrared counter and bicyclist information through two piezo electric strips placed in the trail surface. The tube counters collect both bicycle and automobile counts using tubes stretched across the roadway. The infrared device collects a single count of passing bicyclists and pedestrians using their heat signature.

Highlighted on ***Figure 3-12***, the cities of Fort Collins, Greeley, and Loveland; the Town of Windsor; Larimer County; CDOT; and CSU all have permanent bicycle counters installed, some of which collect pedestrian information as well.

[36] Baas, et. al. FHWA Bicycle-Pedestrian Count Technology Pilot Project: Summary Report. December 2016. US Department of Transportation.
http://www.fhwa.dot.gov/environment/bicycle_pedestrian/countpilot/summary_report/fhwahep17012.pdf

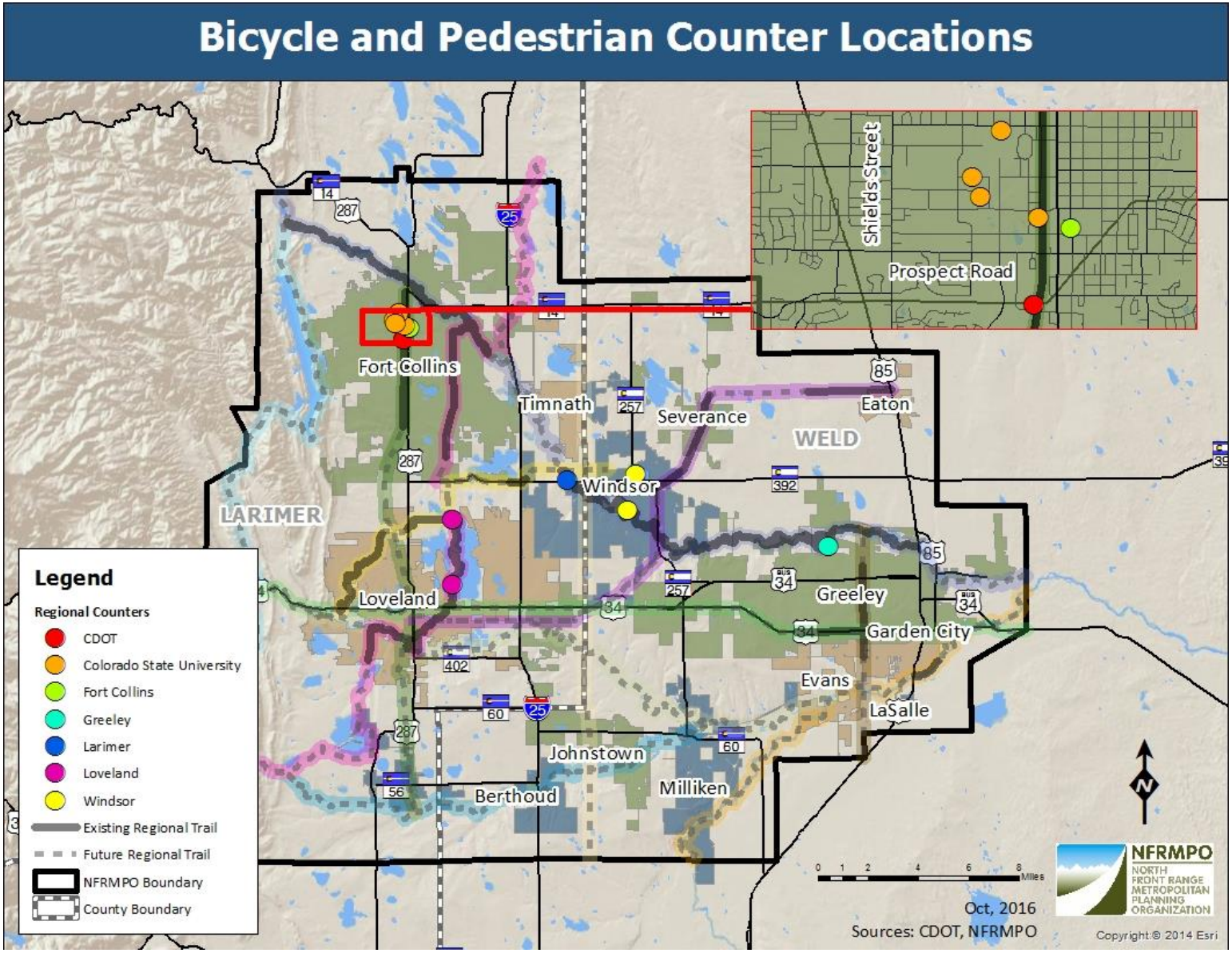


Figure 3-12 Bicycle and Pedestrian Counter Locations across the NFRMPO Region

The NFRMPO purchased permanent counters began operating on April 27, 2016 (Larimer County) and May 3, 2016 (Greeley). ***Table 3-6 and Table*** 3-7 highlight the collected pedestrian and bicycle count figures from May 3, 2016 to August 24, 2016 which is when the Greeley site went offline due to a low battery.

Table 3-6: River Bluffs Open Space, Larimer County
May 3, 2016 to August 24, 2016

Weekday Average Pedestrians	70
Total Seven Day Average Peds	75
Weekday Average Bicyclists	168
Total Seven Day Average Bicyclists	198
Total Weekday Average	242
Total Seven Day Average	279
Total Trail Users	**31,450**

Table 3-7: Rover Run Dog Park, Greeley
May 3, 2016 to August 24, 2016

Weekday Average Pedestrians	97
Total Seven Day Average Peds	99
Weekday Average Bicyclists	97
Total Seven Day Average Bicyclists	112
Total Weekday Average	200
Total Seven Day Average	218
Total Trail Users	**24,373**

Table 3-8 contains the collected count information from April 27, 2016 to October 13, 2016 at the River Bluffs Open Space site. This site might be popular with recreational users as the figures increase when Saturday and Sunday are included with the total seven day average counts.

Table 3-8: River Bluffs Open Space, Larimer County April 27, 2016 to October 13, 2016

Weekday Average Pedestrians	66
Total Seven Day Average Peds	71
Weekday Average Bicyclists	149
Total Seven Day Average Bicyclists	182
Total Weekday Average	219
Total Seven Day Average	259
Total Trail Users	**43,481**

Non-Motorized Crash and Safety Data

Nationally, 4,884 pedestrians and 726 bicyclists were killed in crashes with motor vehicles in 2014.[37] Of the 4,884 pedestrian deaths, 14 percent or 696 involved an intoxicated driver. Of the 726 bicyclist's deaths, 71 percent of these fatalities were in urban areas. Bicyclist deaths accounted for two percent of all traffic fatalities, with the fatality rate almost eight times greater for males than females. Alcohol impairment for either the motor vehicle operator or the bicyclist was reported in more than 35 percent of all fatal crashes.[38] Colorado ranked 14th among all states for cyclist fatalities per capita in 2010-2012, with 1.9 average annual cyclist deaths per million residents.[39]

Pedestrian injuries and fatalities declined nationwide from 2001 to 2014. Fatalities declined from 4,901 in 2001 to 4,884 in 2014, a nominal reduction, while injuries dropped 20 percent, from 78,000 in 2001 to 65,000 in 2014.[39] Pedestrian deaths declined between 2002 and 2004 and again between 2006 and 2009, but began rising from 2010 to 2012. The rise in pedestrian fatalities between 2010 and 2012 coincided

[37] Traffic Safety Facts 2014. National Highway Traffic Safety Administration. National Center for Statistics and Analysis. U.S. Department of Transportation. Washington, DC 20590.
[38] Bicyclists and Other Cyclists. National Highway Traffic Safety Administration. 2014 Data. May 2016. DOT HS 812 282. https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812282
[39] Deadliest States For Cyclists: Per Capita Fatality Rates. Governing Magazine. http://www.governing.com/gov-data/transportation-infrastructure/most-bicycle-cyclist-deaths-per-capita-by-state-data.html

with a decrease in motor vehicle deaths from 2010 to 2011. This time period overlapped with the 2009 to 2012 recession. In 2013, Colorado was ranked 26th for pedestrian facilities per capita, with 0.95 pedestrian fatalities per 100,000 residents.[40]

Crash data for communities in the North Front Range is available from two sources: CDOT and NFRMPO communities. CDOT provides crash data compiled from traffic accident reports (form DR 24447) completed by law enforcement officers across the state, including both highway and local road crashes. The CDOT crash data does not include counter reports, which are required reports completed by drivers involved in a crash when a law enforcement officer is not on scene. Counter reports cannot be used for any crash involving loss of human life, injuries which are evident at the scene, drugs, or alcohol use. The second source of crash data is from NFRMPO communities, which often compile crash data from law enforcement officers in addition to counter reports filed in their jurisdiction.

Local Community Crash Data

Non-motorized crash data was submitted by six communities in the North Front Range region. The years of data available from the communities varies, as does the comprehensiveness of the data. Some communities, such as Fort Collins, include counter reports, while other communities do not. ***Figure 3-13*** displays bicycle-involved crashes from 2006 to 2015. The City of Fort Collins experienced the greatest fluctuation of the five communities with data, ranging from a low of 107 crashes in 2006 to a high of 180 crashes in 2012. Bicycle-involved crashes in Fort Collins declined between 2012 and 2015 by 24 percent. The City of Greeley experienced a decline in bicycle-involved crashes between 2012 (37) and 2015 (24). Loveland, Windsor, and unincorporated Larimer County experienced minimal variations in bicycle-involved crashes.

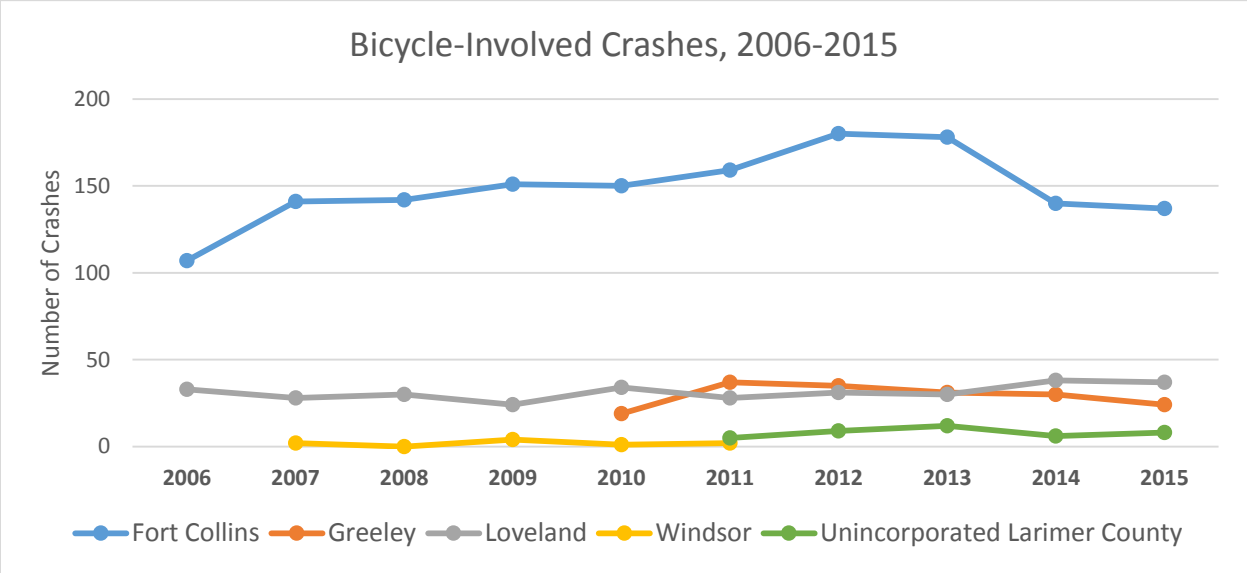


Figure 3-13: Bicycle-Involved Crashes, 2006-2015 – Source: NFRMPO Communities

[40] Williams, Allan. Pedestrian Traffic Fatalities by State, 2014 Preliminary Data. Governors Highway Safety Association. http://ghsa.org/sites/default/files/2016-11/Spotlight%20Pedestrian%202014%20C%20-%20FINAL.pdf

Figure 3-14 displays pedestrian-involved crashes in five NFRMPO communities between 2006 and 2015. The cities of Fort Collins and Greeley each experienced a decline in pedestrian-involved crashes between 2010 and 2011, followed by year-over-year increases between 2012 and 2015. Loveland, unincorporated Larimer County, and unincorporated Weld County experienced minimal variation in pedestrian-involved crashes.

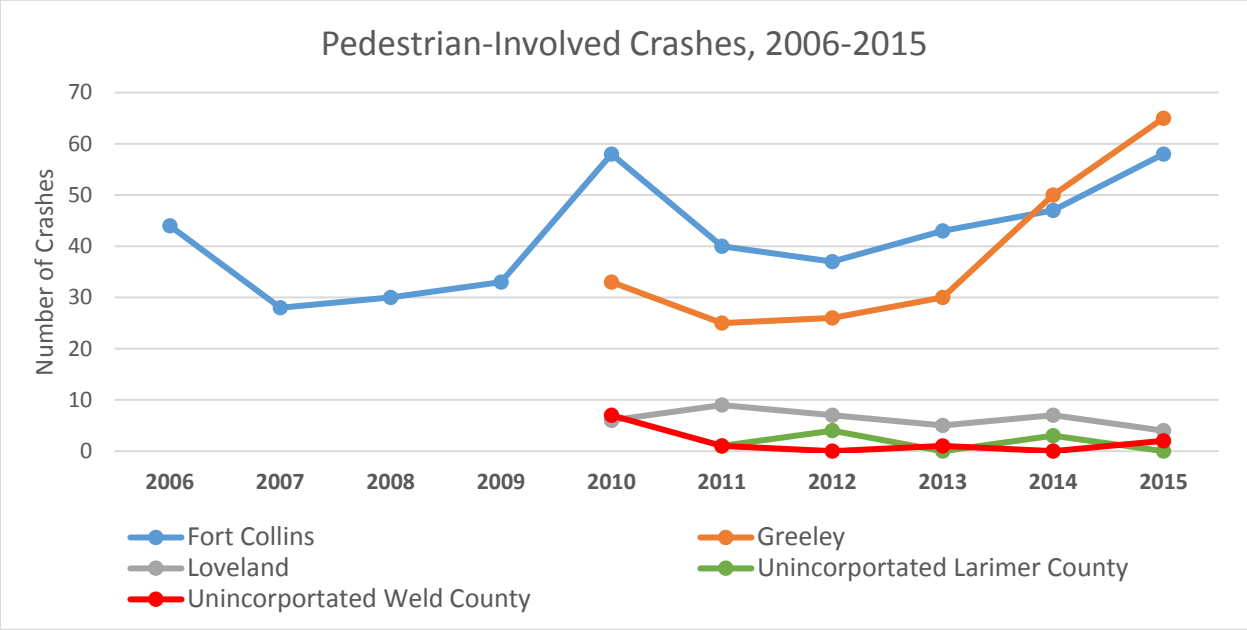


Figure 3-14: Pedestrian-Involved Crashes, 2006-2015 – Source: NFRMPO Communities

CDOT Crash Data

The CDOT crash data indicate non-motorized crashes in Larimer and Weld counties increased between 2010 and 2014 by 13.6 percent (see ***Figure 3-8***). In Larimer County, non-motorized crashes increased year over year from 2010 through 2013 and declined in 2014, with an overall decrease of 1.3 percent from 2010 to 2014. In Weld County, non-motorized crashes fluctuated with an overall increase of 63.8 percent from 2010 to 2014.

Table 3-9: Non-Motorized Crashes in Larimer and Weld Counties, 2010-2014

	2010	2011	2012	2013	2014	Percent Change 2010-2014
Larimer County	232	246	263	264	229	-1.3%
Weld County	69	99	96	83	113	63.8%
Total	**301**	**345**	**359**	**347**	**342**	**13.6%**

In both Larimer and Weld counties, bicycle-involved crashes increased between 2010 and 2012 and fell between 2012 and 2014, while pedestrian-involved crashes declined between 2010 and 2012 and increased between 2012 and 2014 (see ***Figure 3-15***). Most of the increase in non-motorized crashes between 2010 and 2014 is due to the increase in bicycle-involved crashes.

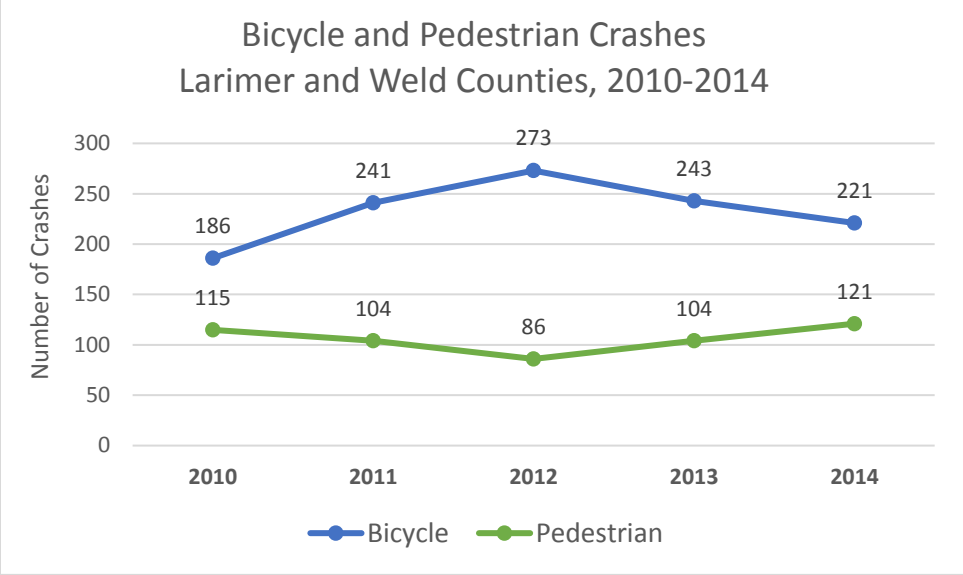


Figure 3-15: Bicycle and Pedestrian Crashes, Larimer and Weld Counties, 2010-2014 – Source: CDOT

The frequency of bicycle and pedestrian crashes varies by month. In Larimer and Weld counties, bicycle-involved crashes peaked in June through October, and pedestrian-involved crashes peaked in September and October (see ***Figure 3-16***).

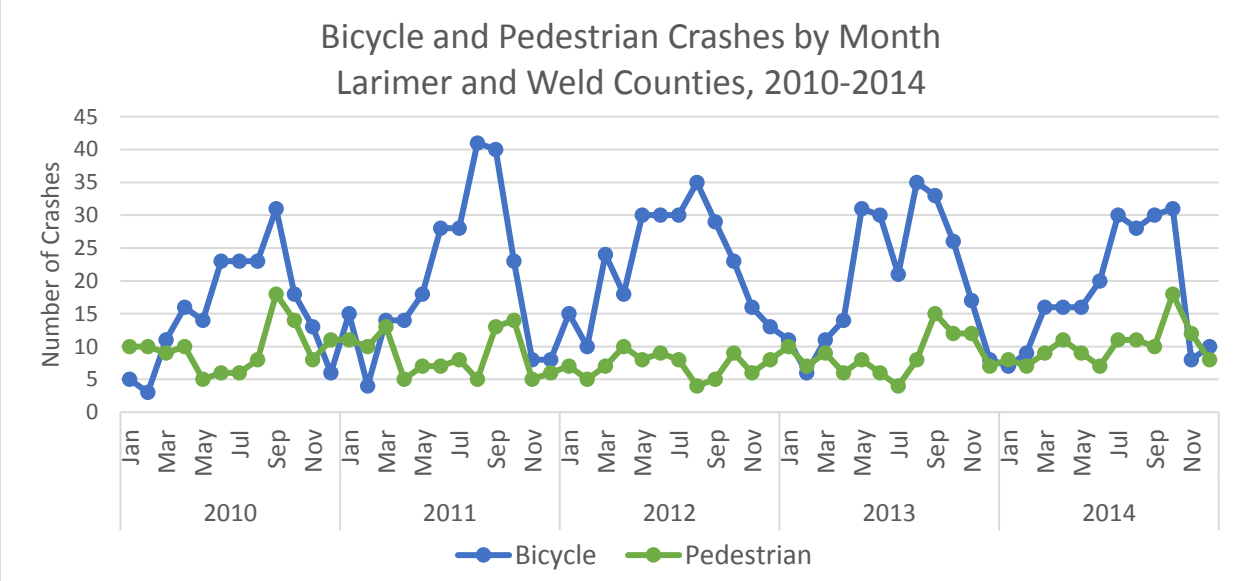


Figure 3-16: Bicycle and Pedestrian Crashes by Month, Larimer and Weld Counties, 2010-2014 – Source: CDOT

Among communities in the North Front Range, the City of Fort Collins had the most bicycle and pedestrian crashes from 2010 through 2014, with a total of 915 non-motorized crashes (see ***Figure 3-17***). The City of Greeley had the second highest number with 284, followed by the City of Loveland with 185 non-motorized crashes. The towns of Severance and Timnath did not have any non-motorized crashes from 2010 to 2014.

Most communities experienced flat trends in non-motorized crashes from 2010 to 2014, except for the City of Greeley, which experienced a 50 percent increase from 2010 (44 crashes) to 2014 (66 crashes). The City of Evans experienced the next highest change, from two crashes in 2010 to 12 crashes in 2014. All other jurisdictions experienced no change in the number of non-motorized crashes, or saw an increase or decrease of fewer than 10 crashes between 2010 and 2014.

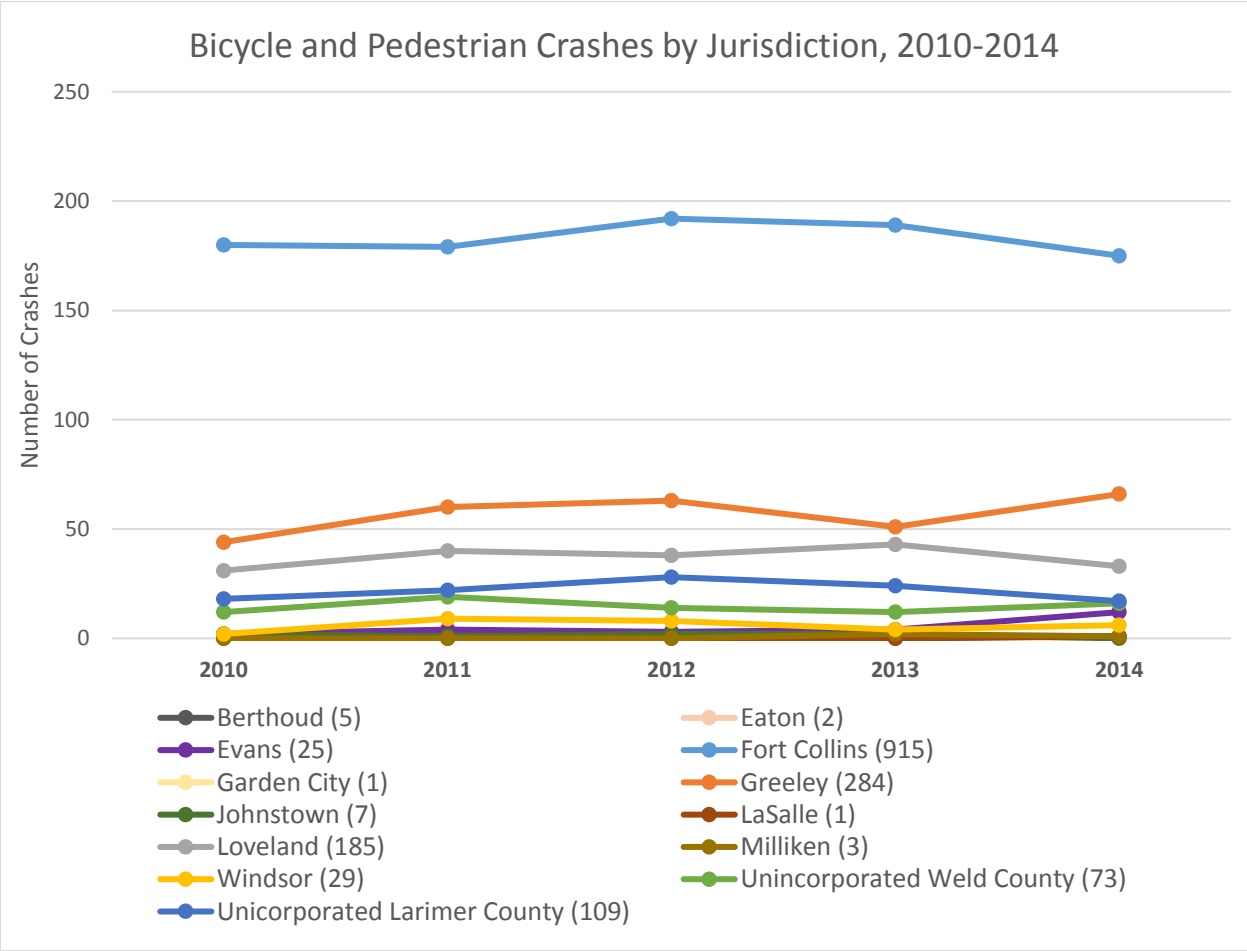


Figure 3-17: Bicycle and Pedestrian Crashes by Jurisdiction, 2010-2014 – Source: CDOT

From 2010-2014, non-motorized crashes constituted three percent of all crashes in Larimer and Weld counties, but accounted for eight percent of crashes resulting in a fatality and 15 percent of crashes resulting in an injury. ***Figure 3-18*** depicts the severity of crashes in Larimer and Weld counties for bicycle-involved crashes, pedestrian-involved crashes, and all crashes. Approximately 47 percent of bicycle-involved crashes resulted in an injury, including incapacitating and non-incapacitating injuries. One

percent of bicycle-involved crashes resulted in a fatality. Over half (53 percent) of pedestrian-involved crashes resulted in an injury and three percent resulted in a fatality. Among all crashes, 10 percent resulted in an injury and one percent resulted in a fatality.

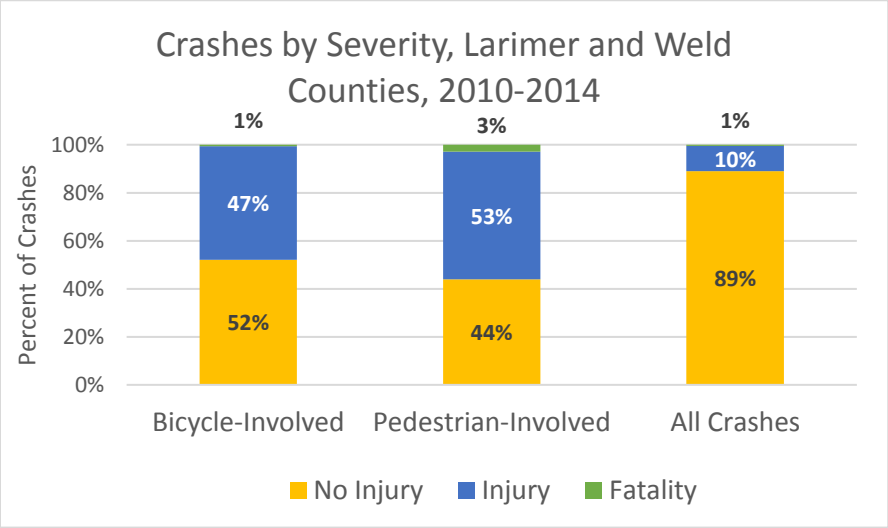


Figure 3-18: Bicycle and Pedestrian Crashes by Jurisdiction, 2010-2014 – Source: CDOT

For bicycle-involved crashes, the number of persons with serious injuries, defined as incapacitating injuries, increased from 13 in 2010 to 26 in 2013, and fell to 15 in 2014 in Larimer and Weld counties (see ***Figure 3-19***). The number of fatalities from bicycle-involved crashes increased from one in 2010 to two in 2014.

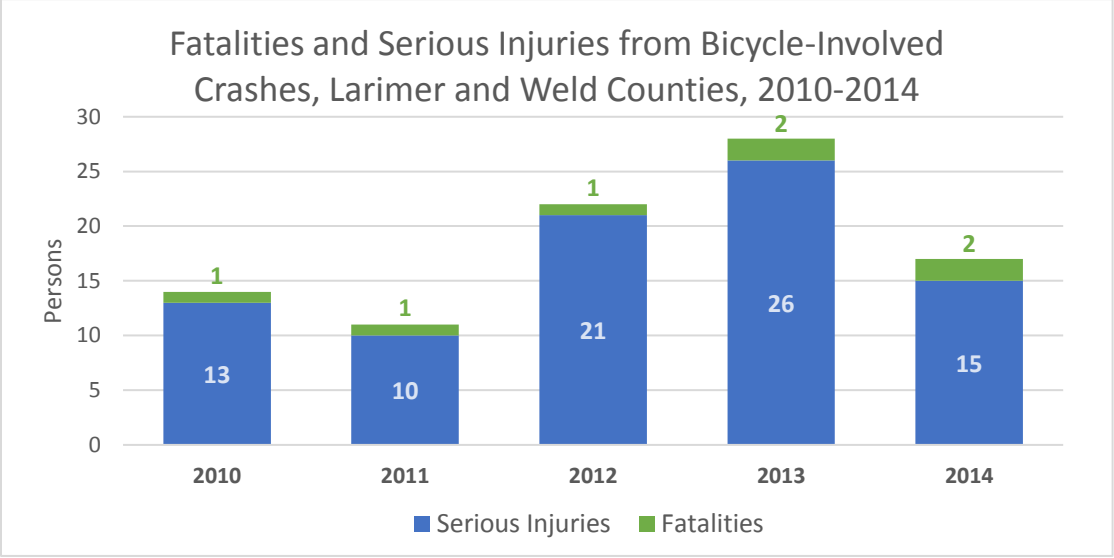


Figure 3-19: Fatalities and Serious Injuries from Bicycle-Involved Crashes, Larimer and Weld Counties, 2010-2014 – Source: CDOT

The number of persons seriously injured in pedestrian-involved crashes increased from 17 in 2010 to 23 in 2014, while the number of fatalities fell slightly from four in 2010 to three in 2014 (see ***Figure 3-20***).

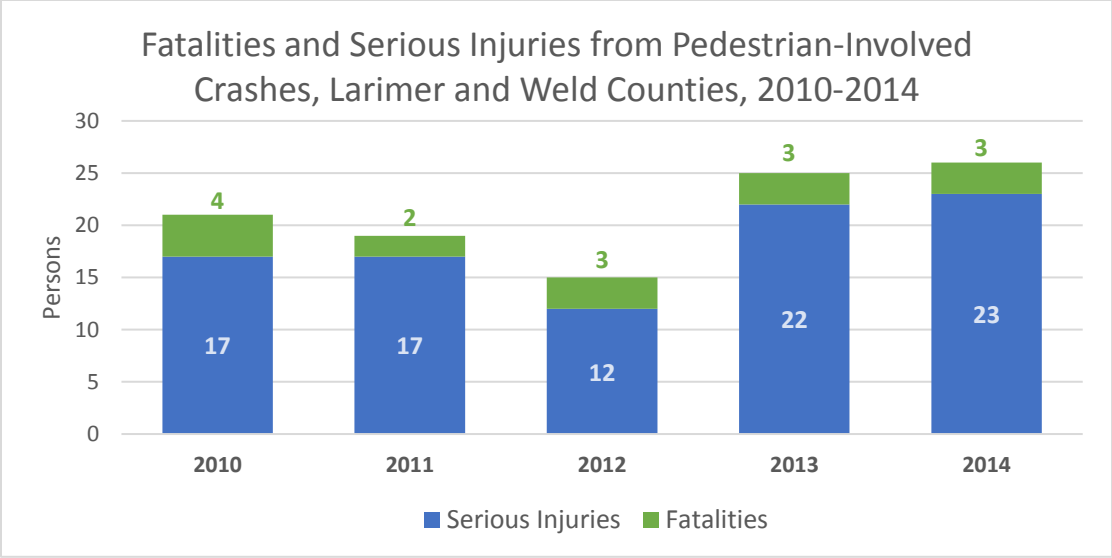


Figure 3-20: Fatalities and Serious Injuries from Pedestrian-Involved Crashes, Larimer and Weld Counties, 2010-2014 – Source: CDOT

Figure 3-21 depicts non-motorized crashes by facility type in Larimer and Weld counties from 2010-2014. Most non-motorized crashes occurred on city streets (71 percent), followed by state highways (21 percent), and county roads (seven percent).

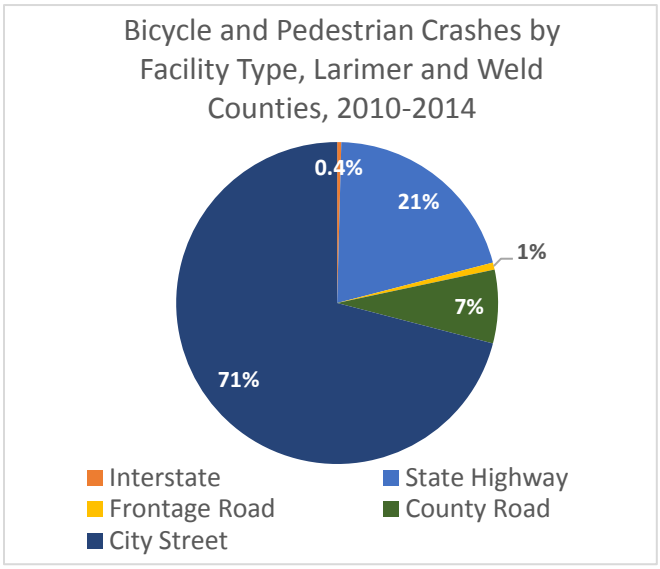


Figure 3-21: Bicycle and Pedestrian Crashes by Facility Type, Larimer and Weld Counties, 2010-2014 – Source: CDOT

Figure 3-22 depicts where non-motorized crashes occurred in Larimer and Weld counties from 2010-2014. Over half of non-motorized crashes occurred at an intersection (57 percent), 20 percent of crashes did not occur at an intersection, and 13 percent were near driveway access. Other locations, which accounted for two percent of crashes, included alleys, roundabouts, ramps, and parking lots.

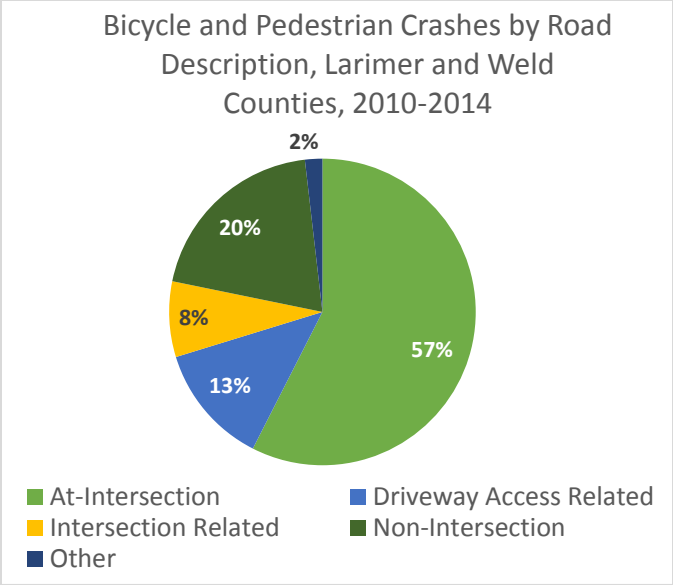


Figure 3-22: Bicycle and Pedestrian Crashes by Road Description, Larimer and Weld Counties, 2010-2014 – Source: CDOT

The lighting condition of crashes is available from 2010 through 2012 for Larimer and Weld counties and is depicted in ***Figure 3-23***. Almost three quarters of non-motorized crashes occurred in daylight (72 percent), followed by 16 percent in lighted roadways during dark conditions, six percent at dawn or dusk, and six percent in unlit dark conditions.

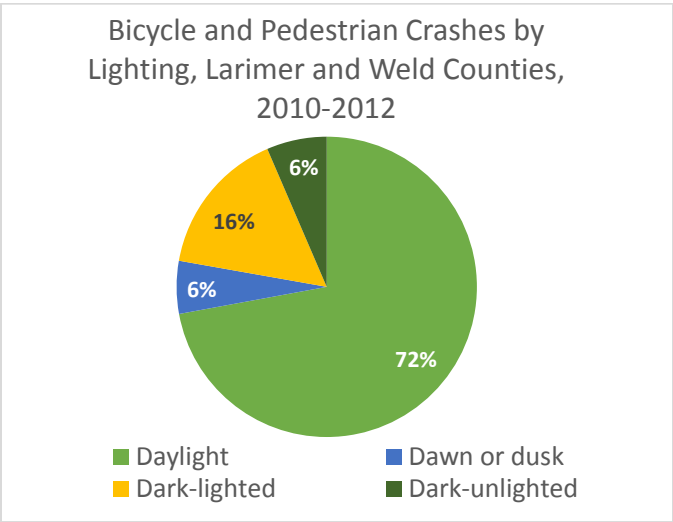


Figure 3-23: Bicycle and Pedestrian Crashes by Lighting, Larimer and Weld Counties, 2010-2012 – Source: CDOT

Chapter 4: Funding

Funding Opportunities

There are a variety of funding mechanisms available for bicycle and pedestrian improvement projects and programs. While some funding sources are specific to bicycle and pedestrian enhancements, non-motorized projects are eligible for funding from almost all major federal highway, transit, and safety programs. To receive federal funding, projects must be "principally for transportation, rather than recreation, purposes" and must be consistent with State and MPO transportation plans. The following sections contain an alphabetical listing of potential federal and state funding sources, along with the types of bicycle and pedestrian projects and programs applicable for each funding source.

Federal Highway Administration (FHWA) Funding Opportunities

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

CMAQ (23 U.S.C. 149) funds may be used for either the construction of bicycle and pedestrian transportation facilities, or non-construction projects (such as maps, brochures, public service announcements, and others). Pedestrian and bicycle facilities are included as measures to reduce vehicle use or improve traffic flow to reduce emissions.

Federal Lands Highway Program (FLHP)

The FLHP (23 U.S.C. 201, 203) funds projects that improve access within Federal lands (national forests, national parks, national wildlife refuges, national recreation areas, and other Federal public lands) on transportation facilities in the national Federal Lands transportation inventory, and owned and maintained by the Federal government. Bicycle and pedestrian provisions are eligible for some categories of funding through this program in conjunction with roads, highways, and parkways.

Highway Safety Improvement Program (HSIP)

The HSIP (23 U.S.C. 119) provides funding for projects which correct or improve a hazardous road location, feature, or other safety problem. Projects concerning pedestrian and bicyclist safety or the installation and maintenance of signs at crossings are eligible projects.

National Highway System (NHS)

NHS (23 U.S.C. 103) funds may be used for bicycle and pedestrian improvement activities within interstate rights of way.

Recreational Trails Program (RTP)

The RTP (23 U.S.C. 206) provides funds to States to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the FHWA. The FAST Act reauthorized the RTP for FY 2016 to FY 2020 as a set aside of funds from the Transportation Alternatives (TA) Set-Aside under STBG.[41]

Safe Routes to School (SRTS)

SRTS grants (23 U.S.C. 402) can be used for bicycle and pedestrian education programs and projects that provide connections and/or improve the safety along routes to K-8 schools.

[41] Recreational Trails Program. U.S. Department of Transportation Federal Highway Administration. http://www.fhwa.dot.gov/environment/recreational_trails/

Surface Transportation Block Grant Program (STBG)

The STBG (23 U.S.C. 133) program provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge, and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.[42]

Transportation Alternatives (TA)

The TAP (23 U.S.C. 213(a)) program was a federal funding program originally authorized under the Moving Ahead for Progress in the 21st Century (MAP-21) federal transportation bill to provide funding for transportation alternatives programs and projects, including on- and off-road pedestrian and bicycle facilities, recreational trail programs, and safe routes to schools. The FAST Act continues the program as the Transportation Alternatives (TA) program (23 U.S.C. 133(h)).

Federal Transit Administration (FTA) Funding Opportunities

Bus and Bus Facilities Formula Grants (FTA 5339)

The FTA 5339 (49 U.S.C. 5339) program provides capital funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. Eligible activities include access enhancements, bridges and tunnels for pedestrians and bicyclists, shelters, crosswalks, curb cuts and ramps, data collection equipment, bicycle and pedestrian plans, sidewalks, sign and signals, wayfinding, adding bicycle routes to transit, installing bike racks, building shelters and equipment for public transportation vehicles.

Enhanced Mobility of Seniors and Individuals with Disabilities (FTA 5310)

The FTA 5310 (49 U.S.C. 5310) program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve the special needs of transit-dependent populations beyond traditional public transportation services and Americans with Disabilities Act (ADA) complementary paratransit services. Bicycle improvements which provide access to an eligible public transportation facility and meet the needs of the elderly and individuals with disabilities are eligible for funding.

Fixed Guideway Capital Investment Grants (FTA 5309)

The FTA 5309 (49 U.S.C. 5309) program provides grants for new and expanded rail, bus rapid transit, and ferry systems that reflect local priorities to improve transportation options in key corridors. Eligible activities include access enhancements, bridges and tunnels for pedestrians and bicyclists, shelters, crosswalks, curb cuts and ramps, data collection equipment, bicycle and pedestrian plans, sidewalks, sign and signals, wayfinding, adding bicycle routes to transit, installing bike racks, building shelters and equipment for public transportation vehicles.

Formula Grants for Rural Areas (FTA 5311)

The FTA 5311 (49 U.S.C. 5111) program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000, where many residents often rely on public transit to reach their destinations. Eligible activities include access enhancements,

[42] Surface Transportation Block Grant Program (STBG). Special Federal-aid Funding. U.S. Department of Transportation Federal Highway Administration. http://www.fhwa.dot.gov/specialfunding/stp/

bridges and tunnels for pedestrians and bicyclists, shelters, crosswalks, curb cuts and ramps, data collection equipment, bicycle and pedestrian plans, sidewalks, sign and signals, wayfinding, adding bicycle routes to transit, installing bike racks, building shelters and equipment for public transportation vehicles.

Metropolitan & Statewide and Nonmetropolitan Transportation Planning (FTA 5303, 5304, 5305)

FTA 5303 (49 U.S.C. 5303), FTA 5304 (49 U.S.C. 5304), and FTA 5305 (49 U.S.C. 5305) programs funding support the 3C planning process for metropolitan and statewide areas. These federal planning funds are first apportioned to CDOT and subsequently allocated to the NFRMPO.

The funds are available for planning activities which:

A. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
B. Increase the safety of the transportation system for motorized and nonmotorized users
C. Increase the security of the transportation system for motorized and nonmotorized users
D. Increase the accessibility and mobility of people and for freight
E. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
F. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
G. Promote efficient system management and operation
H. Emphasize the preservation of the existing transportation system

Urbanized Area Formula Grants (FTA 5307)

The FTA 5307 (49 U.S.C. 5307) program provides transit capital and operating assistance to urbanized areas with populations of more than 50,000. Projects which address pedestrian and bicycle access to a mass transportation facility are eligible. Eligible activities include access enhancements, bridges and tunnels for pedestrians and bicyclists, shelters, crosswalks, curb cuts and ramps, data collection equipment, bicycle and pedestrian plans, sidewalks, sign and signals, wayfinding, adding bicycle routes to transit, installing bike racks, building shelters and equipment for public transportation vehicles. However, bicycle and pedestrian projects may be funded up to a 90 percent share.

Federal Railroad Administration (FRA) Funding Opportunities

Hazard Elimination and Railway-Highway Crossing Programs

This program (23 U.S.C. 130) is a set aside from STBG funds specifically to correct locations which are unsafe. These funds may be used to address bicycle and pedestrian safety issues at rail crossings. The Fixing America's Surface Transportation (FAST) Act increased the set-aside amount each fiscal year through 2020.

State Funding Opportunities

Funding Advancements for Surface Transportation and Economic Recovery Act of 2009 Safety (FASTER Safety)

This state of Colorado funding source can be used for improvements to intersections and interchanges, adding shoulders, and other safety related widening when combined with a surface treatment project. Inclusion of bike facilities as part of the projects is allowed.

Funding Advancements for Surface Transportation and Economic Recovery Act of 2009 Transit (FASTER Transit)

This state of Colorado 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 of Colorado funding program uses a portion of lottery proceeds for projects that protect and enhance Colorado's trails and open space. Transportation related local government grants include funds for parks and outdoor recreation. The GOCO Special Initiatives Grant's Connect Initiative helps fund projects which connect regional and local trail networks for commuting or recreational trips.

Other Funding Opportunities

PeopleForBikes Community Grant Program

The *PeopleForBikes* Community Grant Program provides funding for projects, which leverage federal funding and build momentum for bicycling in communities across the Country. Transportation related project funding is available for bike paths, lanes, trails, and bridges. End of trip facilities such as bike racks, bike parking, and bike storage are eligible. *PeopleForBikes* fund advocacy projects including programs to transform city streets, such as Open Streets Days and initiatives designed to increase ridership or the investment in bicycle infrastructure. [43]

Rivers, Trails, and Conservation Assistance Program (RTCA)

This community assistance arm of the National Park Service provides support for community-led trail development, but does not provide direct grants. The project application must include specific conservation and recreation goals.

Bicycle and Pedestrian Resources for Transportation Professionals

The Michigan Department of Transportation released the *Bicycle and Pedestrian Resources for Transportation Professionals* in November 2016. This document contains helpful links for design criteria and funding information for non-motorized projects.

[43] Community Grants. PeopleForBikes. http://www.peopleforbikes.org/pages/community-grants

NFRMPO Call for Projects

Periodically, the NFRMPO holds a Call for Projects to select projects and distribute funding for the three NFRMPO allocated funding sources including CMAQ; STBG, formerly STP-Metro; and TA, formerly TAP. During the 2014 Call for Projects, two TAP projects were selected for FY2018 and FY2019 construction. The projects are highlighted in ***Figure 4-1***. The Colorado Front Range Trail (RNMC 7) project includes the construction of 2.24 miles of concrete shared use path to connect Fort Collins and Loveland. The Great Western Trail (RNMC 4) project includes the construction of seven miles of crusher fines trail between Eaton and Severance.

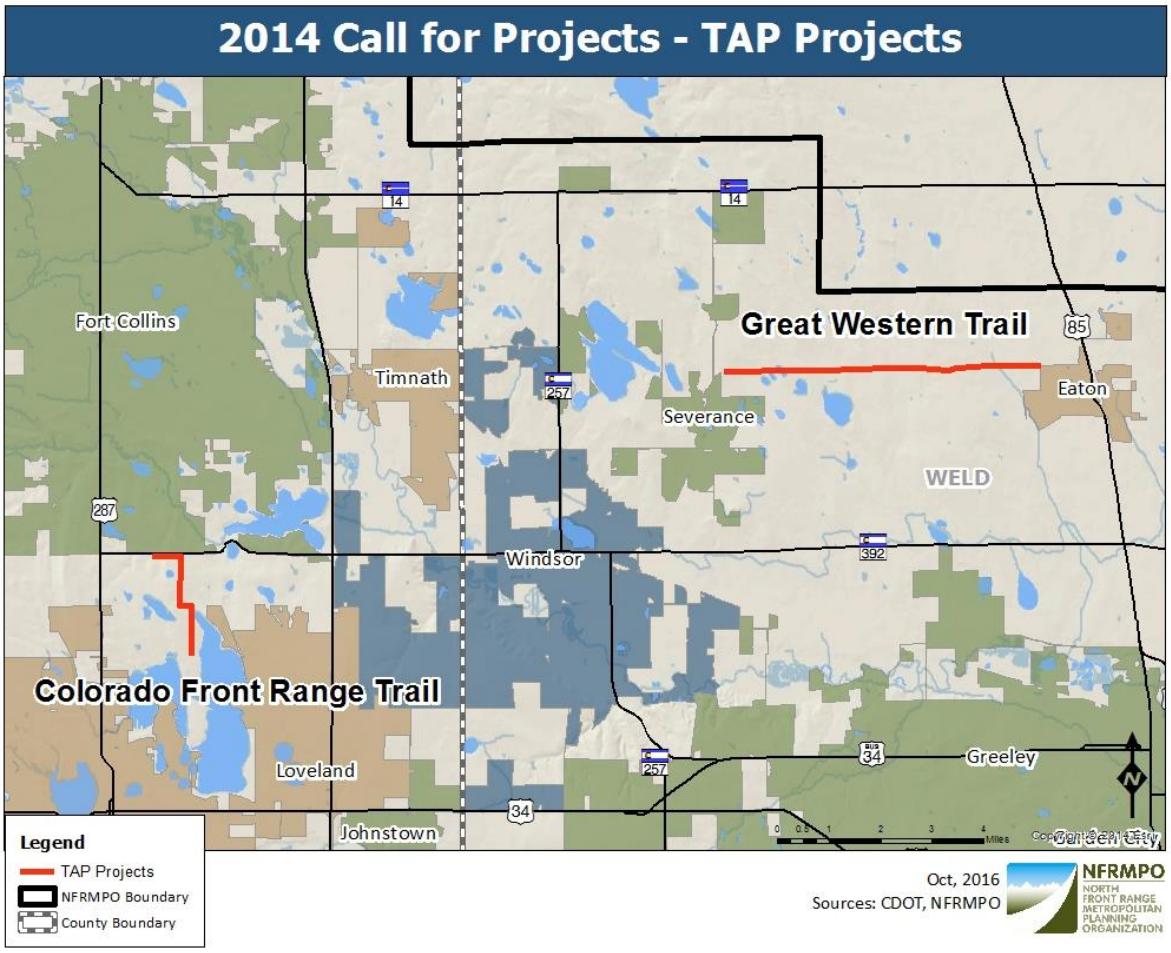


Figure 4-1: 2014 Call for Projects – TAP Projects

During the 2016 Call for Projects, one TA project was selected and one STBG project with a bicycling component was partially funded using TA. The projects are highlighted in ***Figure 4-2 and Figure*** 4-3. The Johnstown, Little Thompson River Corridor Trail – Phase 1a is highlighted in ***Figure 4-2***. This 5,000 foot long crusher fines trail was described in the *Johnstown-Milliken Parks Trails and Open Space Master Plan*. This will be the first section of RNMC 2, Little Thompson River to be completed.

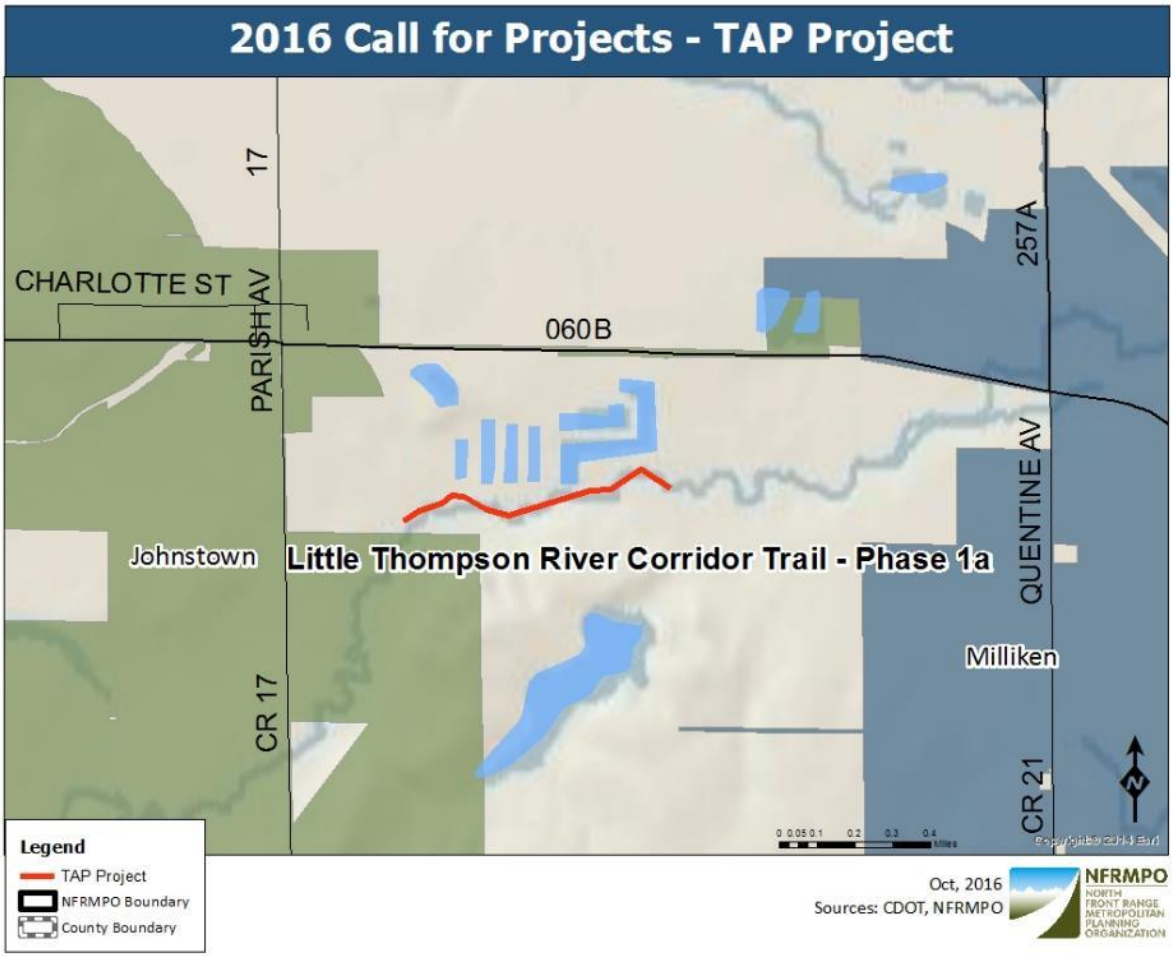


Figure 4-2: Little Thompson River Corridor Trail – Phase 1a TAP Project

Figure 4-3 shows the alignment of the Larimer County North LCR 17 Expansion project, which will be one mile in length. This project will add two, six foot shoulders to the two lane facility. The shoulders will serve as bicycle lanes and afford right turning drivers additional space to slow down prior to completing their turn. Immediately south of the project the bicycle lanes will help provide access to a parking lot along the Poudre River Trail (RNMC 8).

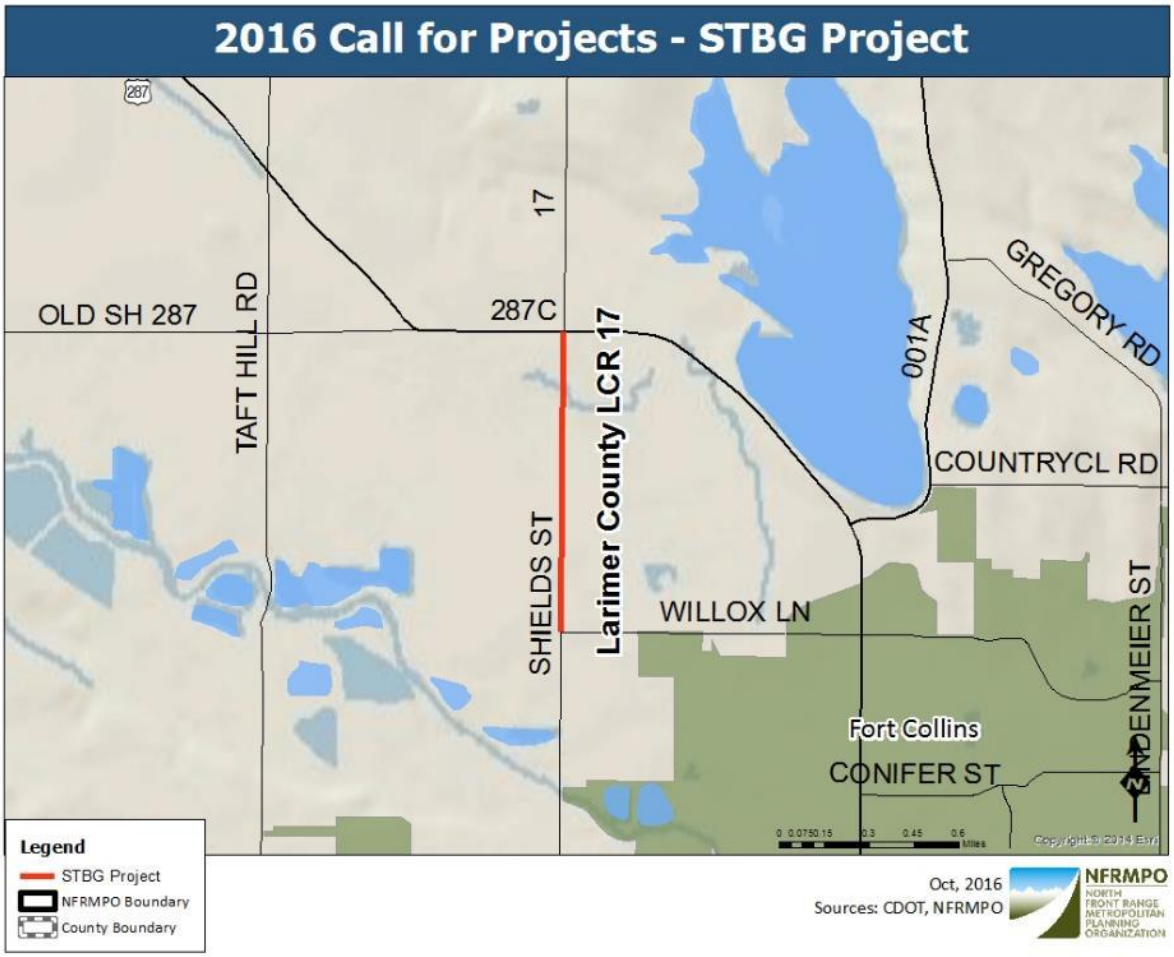


Figure 4-3: Larimer County North LCR 17 STBG Project

Chapter 5: North Front Range Emerging Technology and Trends

Bicycle Share

Bicycle share is a public transportation program offering a network of bicycles for short-term use. Through automated, self-service bike check-out stations, bike share combines the flexibility and freedom of a bicycle with the accessibility of public transportation. Bike share systems enhance mobility within a city, promote tourism and economic development, and offer a fun and healthy way of getting around town. Extending the reach of public transit by providing the last mile connections, bike share systems create connections - connecting people to where they live, work and play, and to other modes of transportation.[44]

Started in 2012, the University of Northern Colorado's (UNC) Campus Recreation Department offers a free campus bike program for students and faculty. Shown in ***Figure 5-1***, the program provides participants with an affordable and environmentally sustainable form of transportation. Bicycles can be checked out from the Campus Recreation Department. The program strives to provide an alternative to driving and promote Bear pride on campus. Campus Recreation has a fleet of 100 cruiser bicycles and 20 Mountain Bikes, designed uniquely for UNC. All bikes come with a helmet, lock, and the option to use a front-mounted basket.

Figure 5-1 UNC Bike Share (Source: UNC)

The City of Fort Collins debuted a bicycle share system for Old Town on April 1, 2016. The automated system, displayed in ***Figure 5-2***, is available 24/7 and is operated by Zagster, which runs 150 bike share systems across the country. Initially, 79 bicycles were spread across 13 stations and provided residents access to bike share through a smartphone application. Users text Zagster to pay for the use of a bicycle and acquire a code for access before each use. Daily, weekly, or annual passes are available.

Figure 5-2 Fort Collins Bike Share (Source: Zagster)

Complete Streets

Complete Streets are streets designed to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. The adoption of a Complete Streets policy by communities encourages the routine design and operation of the entire right of way to enable safe access for all users.[45] ***Figure 5-3*** highlights a complete streets cross section which accommodates pedestrians, bicyclists, and vehicles.

[44] What is Bike Sharing? City of Fort Collins, FC Moves.
http://www.fcgov.com/transportationplanning/bikeshare.php

[45] What are Complete Streets? National Complete Streets Coalition. Smart Growth America.
http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/complete-streets-faq

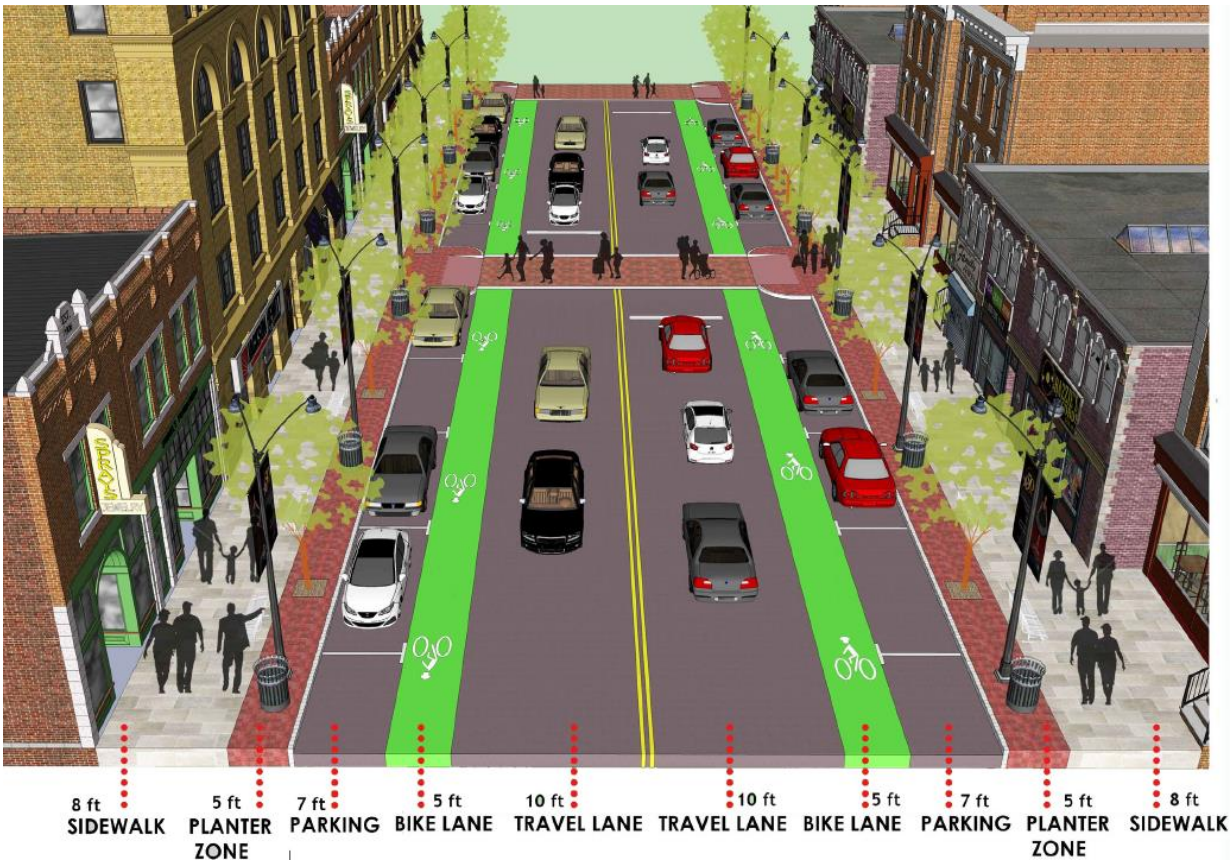


Figure 5-3: Complete Streets Cross Section [46]

Within the North Front Range, Berthoud, Fort Collins, Greeley, Loveland, and CDOT have adopted Complete Streets policies. Eaton references Complete Streets in their *Eaton Transportation Plan*, the Town of LaSalle references Complete Streets in their *LaSalle Transportation Plan*, the City of Greeley references Complete Streets in their *Bicycle Master Plan*, the Town of Timnath has an action step of adopting a Complete Street policy in the *Timnath Transportation Plan,* and the Town of Windsor has an action step of adopting a Complete Street policy in their *Comprehensive Plan*.

Driverless Vehicles

An autonomous, or driverless vehicle, is one that is capable of sensing its environment and navigating without human input. Autonomous vehicles analyze sensory data, distinguish different road users, navigate obstacles, and detect signage technology such as radar, LIDAR, GPS, odometry, and computer vision. A semi-autonomous vehicle has self-driving features, but still requires some driver engagement. Currently, a number of barriers to the adoption of driverless vehicles exist, including technological improvements, vehicle cost, and government regulation.

Interaction with bicyclists and pedestrians is an area where driverless vehicles may be an improvement over their human driver counterparts. Driverless vehicles are designed to stop for or avoid objects in the path of travel. In 2015, a bicyclist performing a track stand, balancing without putting a foot on the

[46] The City of Elizabeth Releases a Complete Streets Concept Plan for Morris Avenue. Alan M. Voorhees Transportation Center. Rutgers Edward J. Bloustein School of Planning and Public Policy. http://vtc.rutgers.edu/

pavement at a four way stop, prevented a Google self-driving car from proceeding through the intersection. As the bicyclist rolled forward and backward to maintain balance the car proceeded and stopped repeatedly.[47] This case and many like it will challenge the software and technology integrated in the driverless vehicle.

As challenges for driverless vehicles are resolved vehicle trips are expected to increase greatly in the future. In the UK, KPMG estimates self-driving cars will lead to 2,500 fewer deaths between 2014 and 2030. Additionally, 10M self-driving cars are expected to be on the road by 2020.[48] Companies like Tesla, Mercedes, and BMW have released or will soon release, vehicles with some self-driving features. With private vehicles spending an average of 95 percent of their life parked, driverless vehicles offer a more efficient solution. With an on-demand vehicle, private vehicle ownership rates may decline and parking needs would be minimized.

Health in All Policies

Health in All Policies is a collaborative approach to improving the health of all people by incorporating health considerations into decision-making across sectors and policy areas. Due to the complex nature of the current health challenges in the US, five key elements are included: promoting health and equity, supporting intersectoral collaboration, creating co-benefits for multiple partners, engaging stakeholders, and creating structural or process change. Non-motorized transportation offers individuals an opportunity to use physical activity as a mode for reaching their destination. The Colorado Department of Public Health and Environment (CDPHE) and the Weld County Department of Public Health and Environment have incorporated *Health in All Policies* into their planning and outreach.[49]

Low-Stress Bicycle Networks

A low-stress bicycle network provides routes for individuals which do not exceed their tolerance for traffic stress and do not require excessive detours. Fear is the overwhelming reason given for not using active transportation. Directly relating user fear to street attributes such as narrow lanes, a lack of shoulders or bike lanes, and poor pavement condition allows communities to address issues which prevent additional users from choosing active transportation.[50] In the Low-Stress Bicycling and Network Connectivity Report four levels of traffic stress (LTS) are described.

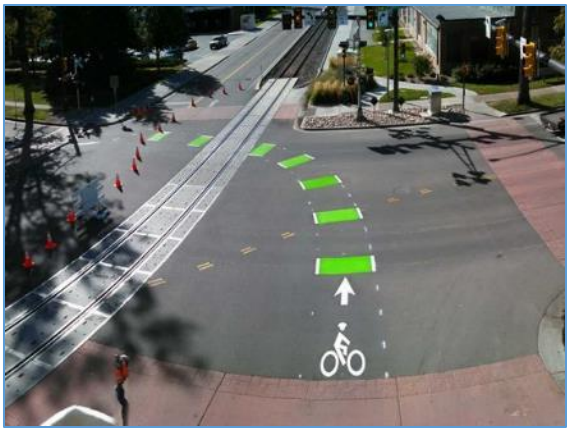


Figure 5-4 Green Bicycle Lane Striping at Laurel St. & Mason St. (Source: FC Bikes)

[47] McFarland, Matt. The Washington Post. How fixed-gear bikes can confuse Google's self-driving cars. August 26, 2015. https://www.washingtonpost.com/news/innovations/wp/2015/08/26/how-fixed-gear-bikes-can-confuse-googles-self-driving-cars/

[48] Greenough, John. 10 million self-driving cars will be on the road by 2020. Business Insider. BI Intelligence. August 24, 2016. http://www.businessinsider.com/report-10-million-self-driving-cars-will-be-on-the-road-by-2020-2015-5-6

[49] Health in All Policies: A Guide for State and Local Governments. American Public Health Association. 2013. http://www.phi.org/resources/?resource=hiapguide

[50] Flusche, Darren. Summit Big Idea: Low-Stress Bicycling Networks. League of American Bicyclists. 2015. http://www.bikeleague.org/content/summit-big-idea-low-stress-bicycling-networks

- LTS 1 being suitable for children
- LTS 2 representing the stress most adults will tolerate
- LTS 3 greater level of stress than most adults will tolerate
- LTS 4 greatest level of stress

Typically, an increasing level of skill is required to safely navigate the facilities with a LTS 2 or higher. To examine traffic stress, each street in San Jose, California was classified using the four categories and found high stress links divide the community into low-stress islands. To promote bicycling to work it was found the introduction of 32 miles of strategically placed segments would almost triple the 4.7 percent of work trips up to six miles long for LTS 2 users.[51]

In 2015, the City of Fort Collins began the Laurel Street Pilot Project, ***Figure 5-4***, to test low-stress bicycling infrastructure. This pilot project is located on Laurel Street on the northeastern edge of the CSU campus in an area with high foot, bicycle, and vehicular traffic. The project area includes the College Avenue and Laurel Street intersection, which historically has been an area with a high number of bicycle-related crashes. Bollard protected bike lanes, parking-protected bike lanes, bike boxes at intersections, and enhanced shared lane markings or sharrows were installed. The project will be evaluated in late 2016 to assess the effectiveness of these improvements on bicycle ridership and impacts to other modes.

Pilot Projects

As referenced in Chapter 1, non-motorized pilot projects allow communities to conduct a small scale preliminary study to estimate the feasibility, cost, adverse issues, and benefits of a project. In 2005, a one-time $25M federal transportation bill was awarded to Columbia, Missouri; Marin County, California; Minneapolis, Minnesota; and Sheboygan County, Wisconsin to see if people would use integrated walking and bicycling networks if they were built into a community's transportation system.

This evidence based study allowed elected officials, planners, and the public to assess impacts from increased access to destinations, reductions in emissions, and improved health from physical activity. Each of the communities involved represented a cross-section of American cities which are geographically, demographically, and climatically diverse. Columbia implemented more than 125 miles of new bikeways, pedestrian walkways, and sidewalks. Marin County incorporated more than a dozen infrastructure improvements with education and outreach programs. The Minneapolis area emphasized strategic bicycle and walking infrastructure planning focused on women, immigrants, and underserved communities. Sheboygan County constructed more sidewalks, bicycle lanes, bicycle racks, new urban and rural recreational trails, and volunteer-driven outreach programs.

[51] Maaza, et al. Low-Stress Bicycling and Network Connectivity. MTI Report 11-19. Mineta Transportation Institute. May 2012. 68 pgs. http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf

After reviewing the improvements, Volpe, the National Transportation Systems Center and part of the US Department of Transportation (USDOT), found the results to be striking. When conscientiously designed and implemented, integrated active transportation systems are both successful and beneficial. The communities involved experienced a 22.8 percent increase in walking trips and a 48.3 percent increase in bicycling trips; avoided 85.1M vehicle miles traveled (VMT), saving an estimated 3.6M gallons of gasoline and avoiding approximately 34,629 tons of carbon dioxide emissions. They also expanded quarter mile access to the bicycle network for approximately 240,000 people, 106,000 housing units, and 102,000 jobs and observed a 20 percent decline in the number of pedestrian fatalities, despite increases in walking and bicycling; and experienced improved public health including a reduced economic cost of mortality (death) of $46.3M from increased bicycling in 2013.[52]

Moving Towards Zero Deaths

In 2015, Colorado Governor John Hickenlooper joined state and national officials to announce a Colorado initiative for *Moving Towards Zero Deaths*, which sets a goal of zero deaths for every individual, family, and community using Colorado's transportation network. In 2014, there were approximately 486 traffic deaths in Colorado. This effort is integrated in the State's 2014 *Strategic Highway Safety Plan*, which provides a data-driven approach to improve highway safety. Strategies in the Plan show promise in reducing deaths. Interim goals include saving one additional life per month resulting in reducing fatalities from 548 in 2008 to 416 by 2019. Between 2000 and 2008, Colorado reduced crash fatalities by 24 percent, which far exceeds all other states in the nation. In subsequent years, the number of fatalities has remained level or slightly increased.[53]

Vehicle Miles Traveled (VMT) Reduction

VMT is a measurement of miles traveled by vehicles within a specified region during a specified time period. FHWA calculates VMT per capita as the total annual miles of vehicle travel divided by the total population in a state or in an urbanized area which consist of 50,000 persons at a minimum. FHWA compiles monthly and yearly VMT statistics for each state using approximately 4,000 continuous traffic counting locations nationwide.[54] Sections of the Clean Air Act (CAA), the 1993 Climate Change Action Plan (CCAP), and CMAQ Improvement Program specifically encourage the reduction of VMT.[55] According to FHWA, decreasing annual VMT per capita can directly improve air quality and the overall health of a

[52] Nonmotorized Transportation Pilot Program Yields Striking Results. Volpe. United States Department of Transportation. December 16, 2014. https://www.volpe.dot.gov/policy-planning-environment/transportation-planning/nonmotorized-transportation-pilot-program-yields

[53] CDOT Launches Moving Towards Zero Deaths. Colorado Department of Transportation. https://www.codot.gov/safety/cdot-launches-moving-towards-zero-deaths.

[54] Travel Monitoring. Policy and Governmental Affairs Office of Highway Policy Information. U.S. Department of Transportation Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm

[55] Highway Performance Monitoring System (HPMS). Policy and Governmental Affairs Office of Highway Policy Information. U.S. Department of Transportation Federal Highway Administration. https://www.fhwa.dot.gov/policyinformation/hpms/epastat.cfm

population. Similarly, walkable compact communities with strong public transportation systems have lower VMT levels.[56]

Wayfinding

Wayfinding from a non-motorized transportation perspective refers to clear, concise information systems which guide people through a physical environment while enhancing their understanding and experience of the space. Communities are turning to wayfinding to not only help citizens and visitors navigate, but to thematically brand their downtown, trails, and destinations. Often found in high-stress environments, wayfinding systems contribute to a sense of well-being, safety, and security. Template wayfinding documentation can be found in ***Appendix J:*** and is available for NFRMPO communities to guide their efforts.

[56] VMT Per Capita. U.S. Department of Transportation Federal Highway Administration. https://www.transportation.gov/mission/health/vmt-capita

Chapter 6: Next Steps

Intermodal Connections

Walking, bicycling, and public transportation are complementary modes of transportation. The success of a transit system is closely tied to the quality of the first and last mile infrastructure. Providing safe and attractive options for people to walk and bicycle to a transit stop increases the likelihood of ridership. Adequate sidewalks, pathways, and road crossings for pedestrians as well as benches, shelters, bicycle parking, and lighting for all users increases accessibility and comfort. Linking bicycling and walking to transit allows residents to have increased travel options without relying on a personal automobile. The introduction of improved non-motorized facilities is less expensive and requires less space for transit operators when compared to providing automobile parking.

Typically, a measurement of one-half mile around transit stops is considered the catchment area for the average pedestrian to walk to a transit stop. Additionally, there is support for a quarter mile pedestrian catchment area for employment locations.[57] For bicyclists, FHWA supports a three mile transit stop catchment area. Each catchment area is limited by the street network, which may not extend a full one-half mile or three miles in all directions.[58]

As discussed in **Chapter 5:**, bicycle sharing programs offer users a convenient way to increase the range they can travel to and from transit while reducing the need to own a bicycle. Secure bicycle parking is a welcome addition to transit stops and facilities. In 2015, the Association of Pedestrian and Bicycle Professionals released the *Essentials of Bike Parking: Selecting and Installing Bike Parking that Works,* which offers criteria to consider when building short and long term bicycle parking.[59]

With the expected population increase across the North Front Range, transportation options become more critical for the movement of people and goods. The NFRMPO supports efforts to connect bicycling and walking with transit. Efforts to use transportation demand management (TDM) strategies will help reduce private vehicle demand on the transportation network, while insuring residents and businesses maintain access to desired goods and services.

Transit Stop Review

Six bus stop examples from Fort Collins, Greeley, and Loveland are analyzed in the following section. The three cities were included because each city runs one of the three local transit agencies: Transfort, City of Loveland Transit (COLT), and Greeley-Evans Transit (GET).

[57] Guerra, E. Cervero, R. & Tischler, D. The Half-Mile Circle: Does It Best Represent Transit Station Catchments? 2011. Institute of Transportation Studies University of California, Berkeley. http://www.its.berkeley.edu/sites/default/files/publications/UCB/2011/VWP/UCB-ITS-VWP-2011-5.pdf

[58] Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements Unver Federal Transit Law. Federal Transit Administration. Federal Register. Docket No: FTA–2009–0052. August 19, 2011. https://www.gpo.gov/fdsys/pkg/FR-2011-08-19/pdf/2011-21273.pdf

[59] Broom et al. Essentials of Bike Parking. Revision 1.0. Association of Pedestrian and Bicycle Professionals (APBP). 2015. http://www.apbp.org/?page=publications

The two Fort Collins bus stops in ***Figure 6-1*** are examples of good connections to the regional bicycle network. The bus stops provide direct access to the Poudre River Trail (RNMC 6), ensuring transit riders on Route 5 can make quick and easy connections to the trail. Additionally, the presence of sidewalks helps pedestrians navigate the transit stops.

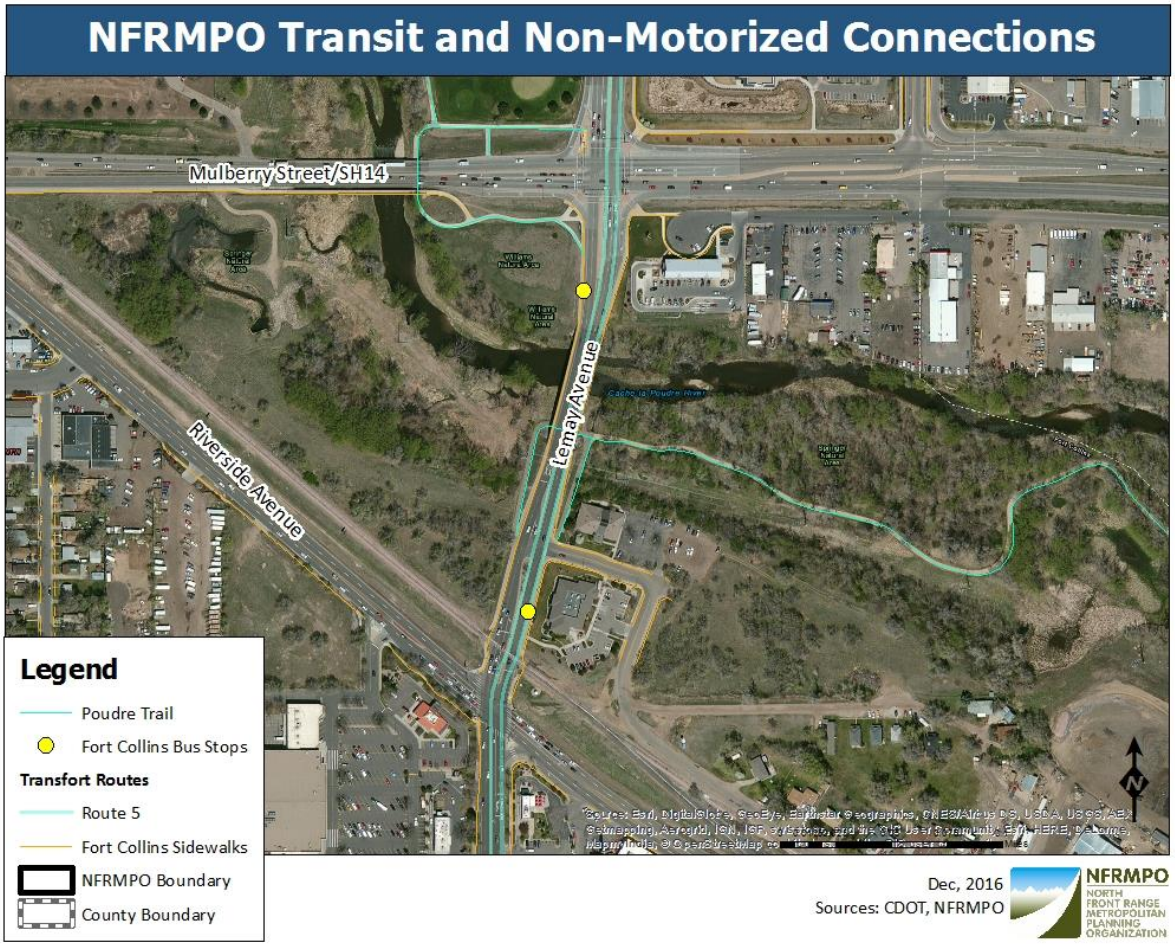


Figure 6-1: Fort Collins Transfort Connected Transit Stops

The two Fort Collins Route 7 bus stops in ***Figure 6-2*** are located on sidewalks, but the sidewalks do not meet Americans with Disabilities Act (ADA) regulations. Narrow sidewalks make it difficult for seniors, people with mobility devices, or people with mobility challenges to reach the bus stops. Additionally, narrow sidewalks force pedestrians to walk close to the 35 mph traffic. These locations also lack bicycle amenities such as bicycle lanes and have limited bicycle parking.

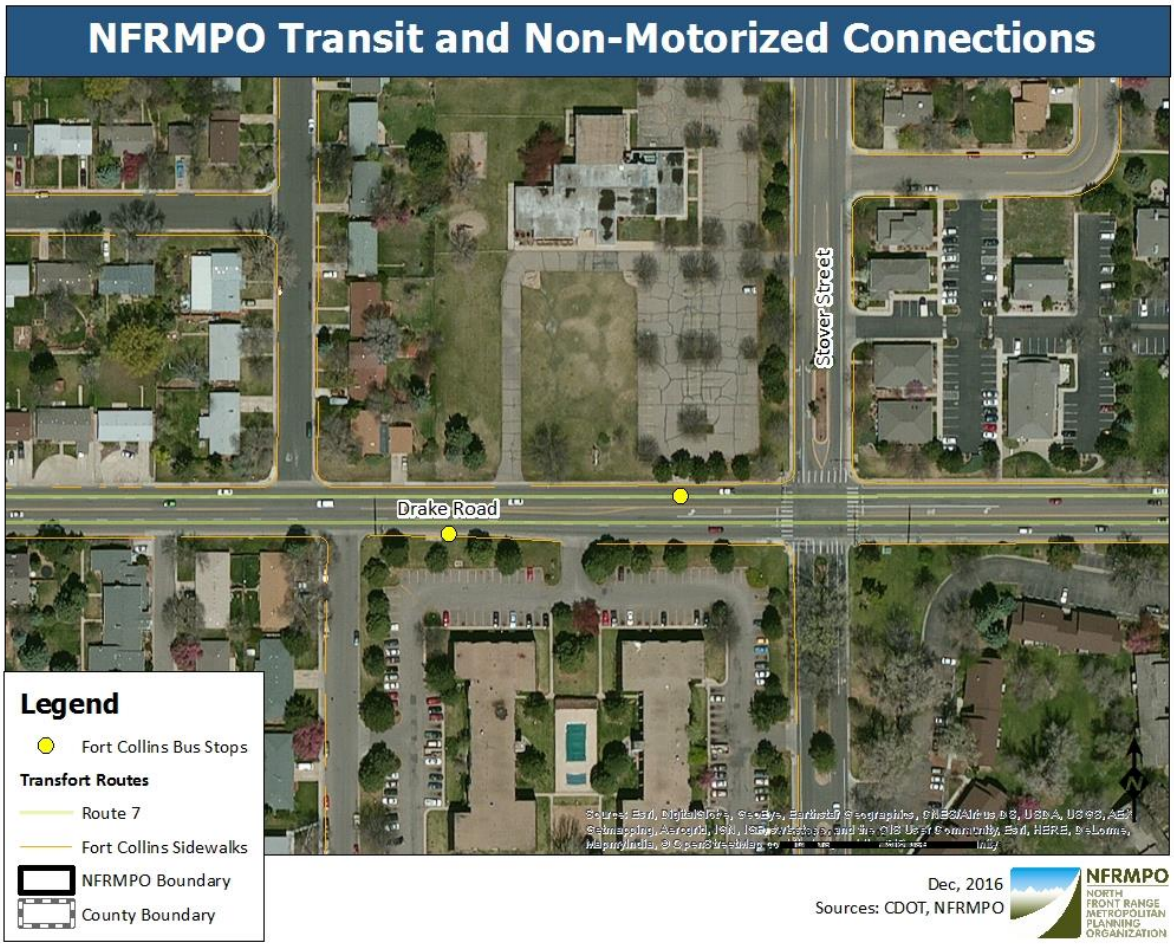


Figure 6-2: Fort Collins Transfort Disconnected Transit Stops

Figure 6-3 shows the two Route 5 bus stops on the east side of the University of Northern Colorado (UNC) campus. Wide sidewalks connect the bus stops to the inner campus, while landscaping protects transit riders from the traffic on 22nd Street. A partnership between UNC and GET allows UNC students to ride the bus for free. Improving the pedestrian experience for transit riders helps incentivize students to use this benefit.

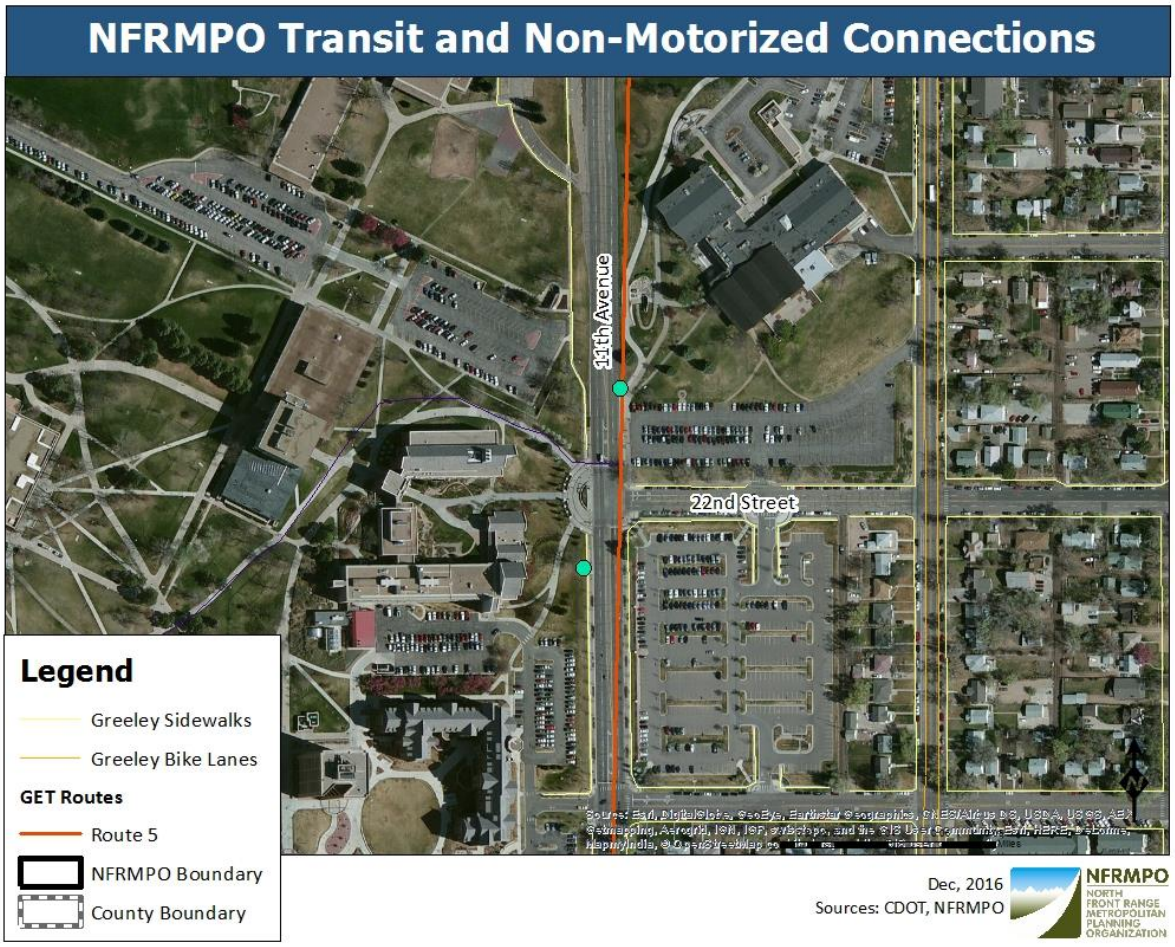


Figure 6-3: Greeley Evans Transit Connected Bus Stops

The four bus stops along Route 3 shown in ***Figure 6-4*** are located on or near the Greeley/LaSalle RNMC (RNMC 10), but feature no pedestrian amenities. Residents of the nearby houses do not have crosswalks to reach the westbound or southbound stops, and must walk along the 45 mph southbound or 35 mph eastbound roads to reach the stops.

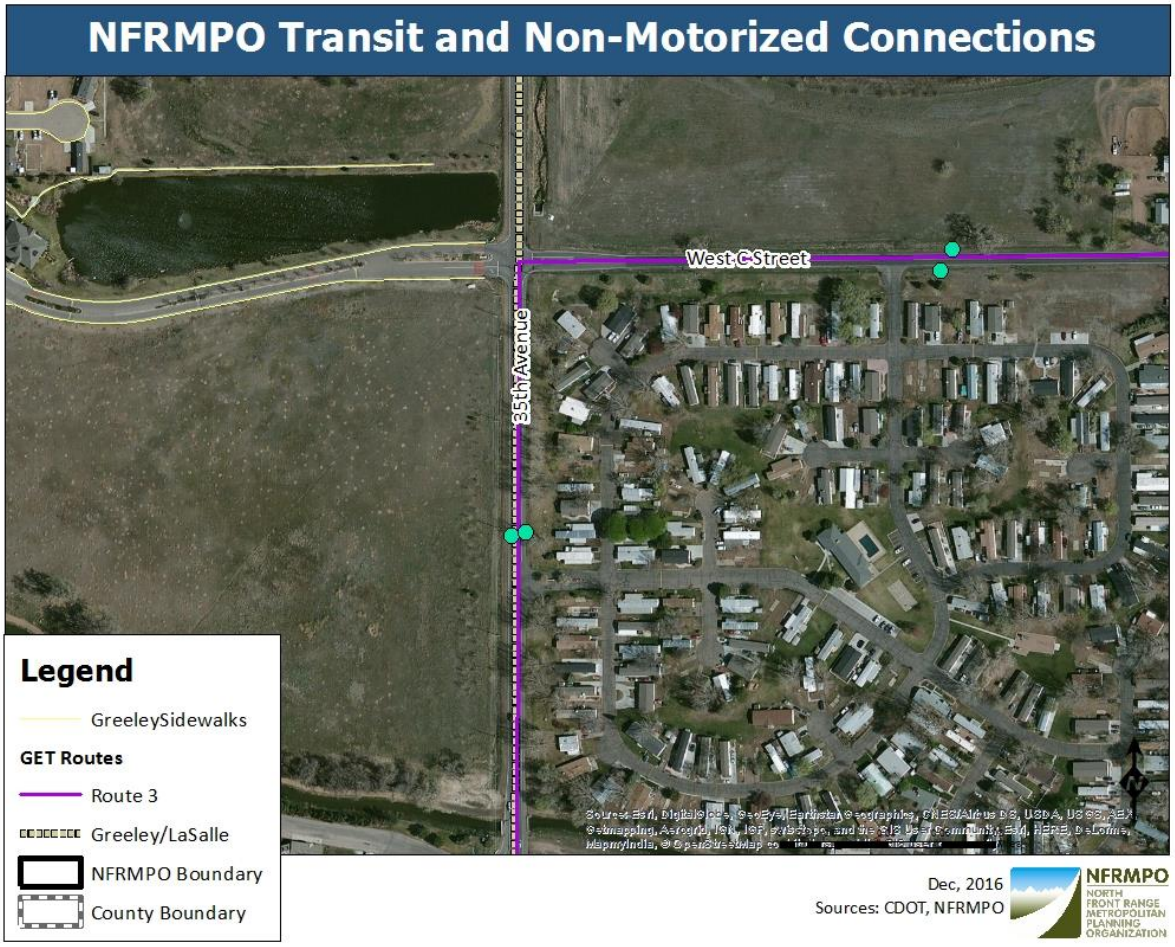


Figure 6-4: Greeley Evans Transit Disconnected Transit Stops

Figure 6-5, shows the COLT Route 100 and 300 bus stop is located along newly paved sidewalks and near the Front Range Trail West (RNMC 7). Bicycle lanes ensure cyclists can get to and continue from the bus stop safely. Additionally, the presence of sidewalks helps pedestrians navigate the transit stops.

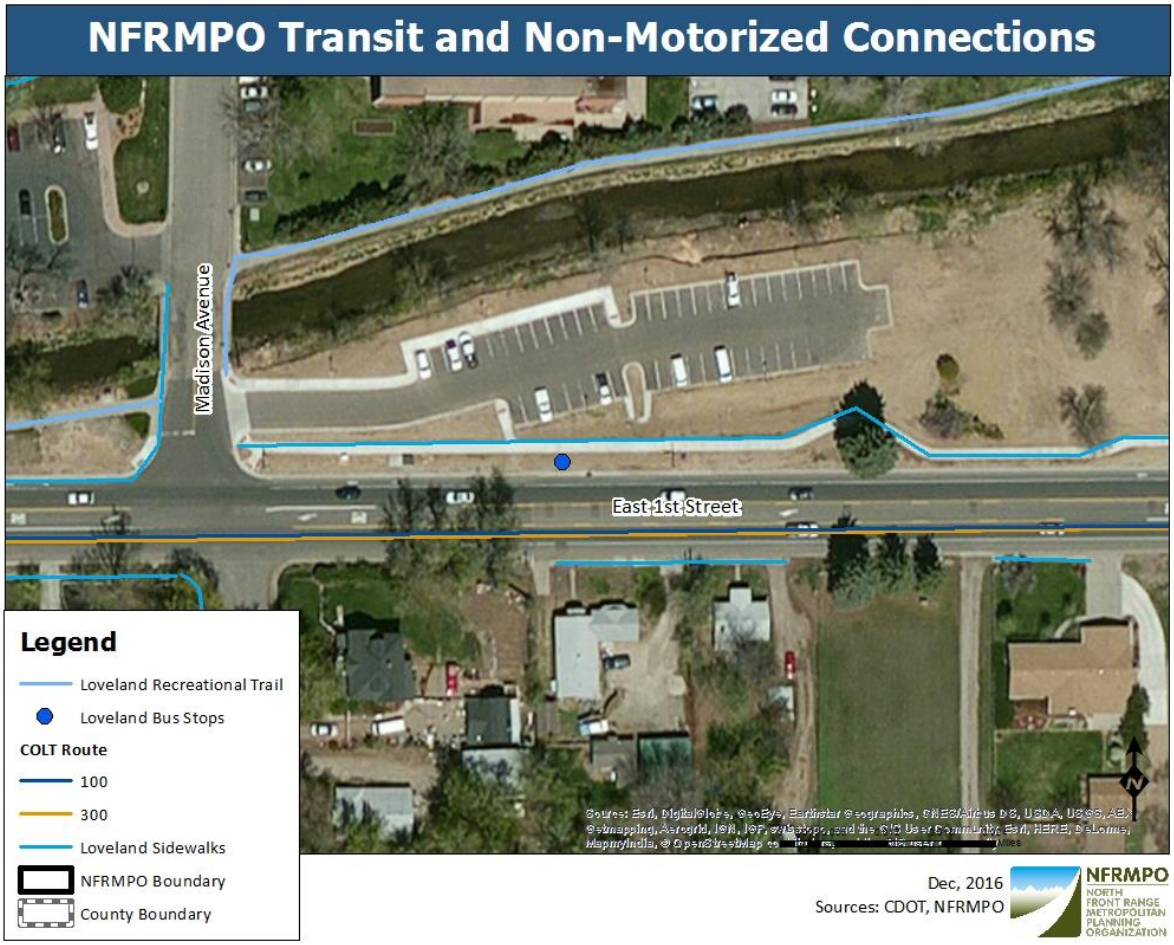


Figure 6-5: Loveland COLT Connected Transit Stops

In ***Figure 6-6***, the COLT Route 300 bus stop is located adjacent to the development on the west side of the road; however, there are no sidewalks or crosswalks to connect the development to the bus stop. Though a bench is provided to wait for the bus, it is located in a patch of dirt with no raised sidewalk or shelter. Bike lanes are available, but there is no parking or area to secure a bicycle.

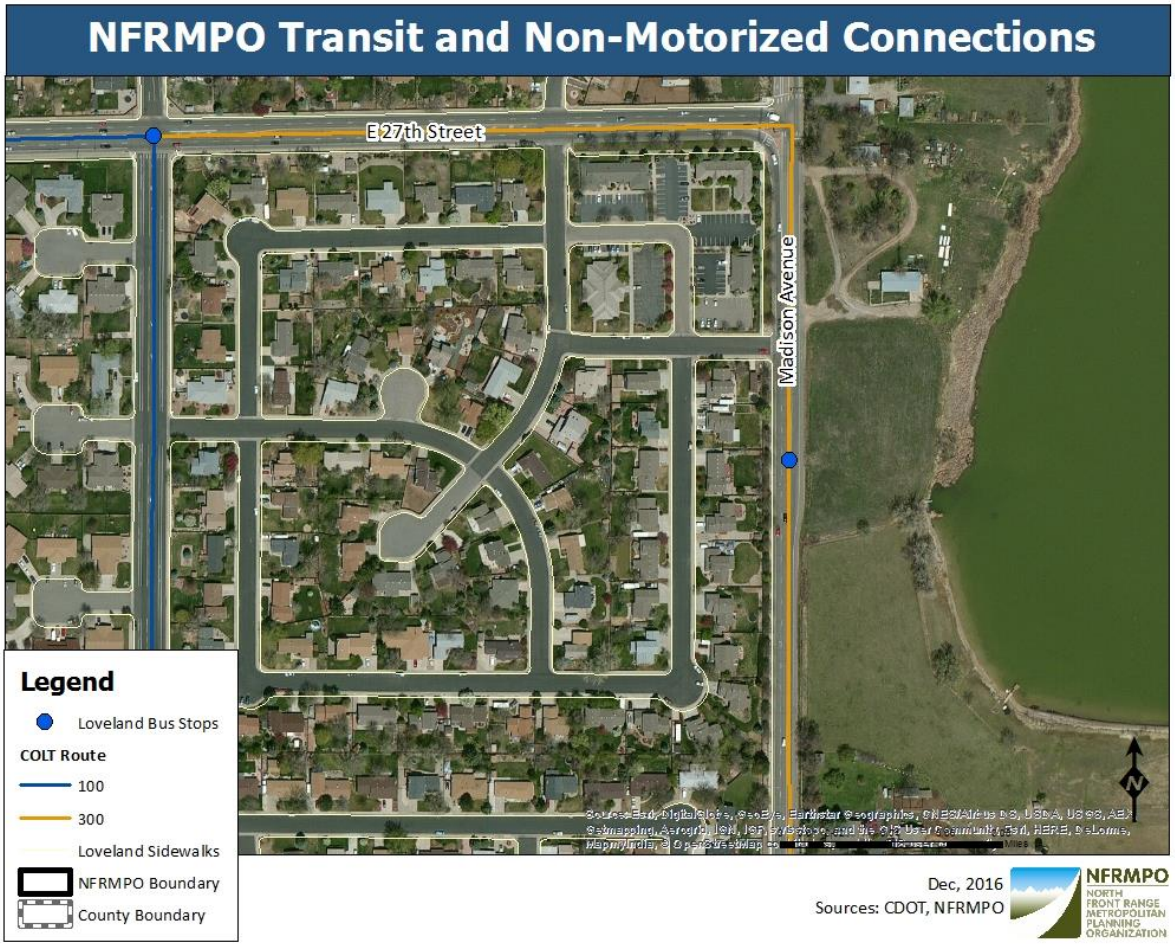


Figure 6-6: Loveland COLT Disconnected Transit Stops

In future non-motorized planning efforts a review of bicycle and pedestrian connectivity to all transit stops in the NFRMPO region will be completed. This review will provide member communities with information which can be used to prioritize improvements to the transit network.

Colorado the Beautiful's "16 in 2016" Initiative

On January 20, 2016, Governor John Hickenlooper announced the State's highest priority trail projects as part of Colorado the Beautiful's "16 in 2016" initiative. The projects represent the 16 most important trail gaps, missing trail segments, and unbuilt trails across the State. The initiative is part of the goal to have every Coloradoan living within 10 minutes of a park, trail, or green space. While there are no state dollars tied to these projects, GOCO is investing $30M in trails over the next four years as part of its Connect Initiative. Of this, $10M will be spent in 2016.

The Colorado Front Range Trail (CFRT) is the only trail within the initiative in the NFRMPO region. The vision of the CFRT is to create a multi-use trail extending from the borders of Wyoming to New Mexico along the Front Range. Approximately one third of this 900 mile long trail has been completed, including two stretches of the Poudre River Trail which cover nearly 40 miles. The NFRMPO is working closely with CDOT to construct the missing RNMC 6 connection under the new North I-25 Poudre River Bridge which will be constructed with highway expansion beginning in 2018. Additional sections of RNMC 6 for completion will be examined in future non-motorized planning efforts.

Non-Motorized Connections to Parks and Green Space

Safe, accessible infrastructure connecting residential areas to parks and green space is critical to the growing communities in northern Colorado. The goal of having every Coloradoan living within 10 minutes of a park, trail, or green space is an ambitious, but worthy goal. Parks master plans, open space plans, and other recreation based plans in the NFRMPO show non-motorized infrastructure around parks and green space destinations. The NFRMPO supports efforts by local communities to continue creating connections to offer recreational and commuting benefits. A review of bicycle and pedestrian connections to municipal facilities will be completed with future non-motorized planning efforts.

Equity in Non-Motorized Transportation

Equity is the fairness with which impacts (benefits and costs) are distributed and whether that distribution is considered fair and appropriate. Negative health effects related to the transportation system can fall hardest on vulnerable members of the community, such as low-income residents, minorities, children, persons with disabilities, and older adults. Households in low-income areas typically own fewer vehicles, have longer commutes, and have higher transportation costs.

Inadequate or substandard infrastructure in low-income and minority communities can prevent people from using active transportation. It can also make walking and bicycling unsafe for those who do rely on these modes to get around, leading to higher incidences of collisions involving pedestrians and cyclists.

Low-income and minority communities are more likely to be located near highways and other transportation facilities that result in locally reduced air quality, and to suffer from negative health effects such as asthma. These communities are also less likely to have convenient access to parks, healthcare, and healthy food.[60]

Transportation equity is a topic with many facets, ***Table 6-1*** outlines the different types of equity, impacts, measurements, and categories of people involved.

[60] Equity. US Department of Transportation. 2015. https://www.transportation.gov/mission/health/equity

Table 6-1: Transportation Equity Categories and Indicators [61]

Types of Equity	Impacts	Measurement	Categories of People
Horizontal ❖ Equal treatment of equals **Vertical With-Respect-To Income And Social Class** ❖ Transport affordability ❖ Housing affordability ❖ Impacts on low-income communities ❖ Fare structures and discounts ❖ Industry employment ❖ Service quality in lower-income communities **Vertical With-Respect-To Need And Ability** ❖ Universal design ❖ Special mobility services ❖ Disabled parking ❖ Service quality for non-drivers	**Public Facilities and Services** ❖ Facility planning and design ❖ Public funding and subsidies ❖ Road space allocation ❖ Public involvement **User Costs and Benefits** ❖ Mobility and accessibility ❖ Taxes, fees and fares **Service Quality** ❖ Quality of various modes ❖ Congestion ❖ Universal design **External Impacts** ❖ Congestion ❖ Crash risk ❖ Pollution ❖ Barrier effect ❖ Hazardous material and waste ❖ Aesthetic impacts ❖ Community cohesion **Economic Impacts** ❖ Economic opportunities ❖ Employment and business activity **Regulation and Enforcement** ❖ Traffic regulation ❖ Regulations and enforcement ❖ Regulation of special risks	**Per Capita** ❖ Per adult ❖ Per commuter or peak-period travel ❖ Per household **Per Unit of Travel** ❖ Per vehicle-mile/km ❖ Per passenger-mile/km ❖ Per trip ❖ Per commute or peak-period trip **Per Dollar** ❖ Per dollar user fees ❖ Per dollar of subsidy ❖ Cost recovery	**Demographics** ❖ Age and lifecycle stage ❖ Household type ❖ Race and ethnic group **Income Class** ❖ Quintiles ❖ Poverty line ❖ Lower-income areas **Ability** ❖ People with disabilities ❖ Licensed drivers **Geographic Location** ❖ Jurisdictions ❖ Neighborhood and street ❖ Urban/suburban/rural **Mode and Vehicle Type** ❖ Pedestrians ❖ People with disabilities ❖ Cyclists & motorcyclists ❖ Motorists ❖ Public transit **Industry** ❖ Freight ❖ Public transport ❖ Auto and fuel industries **Trip Type** ❖ Emergency ❖ Commutes ❖ Commercial/freight ❖ Recreational/tourist

According to FHWA many of the strategies transportation agencies can take to increase active transportation, improve safety, improve air quality, and improve connectivity can improve equity if they

[61] Litman, Todd. Evaluating Transportation Equity. September 12, 2016. Victoria Transport Policy Institute. http://www.vtpi.org/equity.pdf

are targeted in low-income and minority communities. Examples of some of these strategies include the following:

1. Improving pedestrian infrastructure or increasing public transportation service in low-income and minority communities to improve connectivity.
2. Using roadside barriers, vegetation, or bottleneck removal to reduce the impacts of pollution on communities located near high-volume roads.
3. Offering reduced public transportation fares for students or youth and working with employers to extend public transportation benefits to employees.
4. Targeting demand response service toward communities with high concentrations of older adults and poor access to shops and services.
5. Addressing housing affordability in a regional strategy for promoting a variety of housing options at different price points for people of all stages and walks of life.[62]

Transportation equity is a human rights priority because access to affordable, reliable transportation increases access to opportunities. Providing for excellent bicycling, walking, and transit facilities help increase options people use to get to places of employment, schools, medical facilities, and other necessary services. Incorporating equity in the planning and subsequent construction process can address poverty, unemployment, and fulfill equal opportunity goals. The NFRMPO will incorporate equity as a central component in future non-motorized planning efforts to highlight areas of success and areas in need of growth.

[62] Equity. US Department of Transportation. 2015. https://www.transportation.gov/mission/health/equity

Appendix A: Non-Motorized Plan Survey Tool

NON•MOTORIZED
NORTHERN COLORADO
NFRMPO
NORTH FRONT RANGE METROPOLITAN PLANNING ORGANIZATION

Thank you for participating in this survey for the NFRMPO's Non-Motorized Transportation Plan. This Plan will be shared with the region's communities to collaboratively guide them in enhancing their non-motorized regional connections. Public input on what is most important to those who live, work, and play in the region is essential.

In which community, do you live? _____

1. In which community, do you work or go to school? _____
2. How many days per week does your household use the transportation mode listed for each activity?

(Please mark 1-7 for the number of days)

	Commute to work or school	Errands	Recreation	Other
Walk				
Bike				
Walk & Transit				
Bike & Transit				
Automobile				

(*If you **only** use an automobile skip to **question 5** & mark what would incentivize you to use a non-motorized mode)

3. Within the last 3 years, have any transportation improvements improved your ability to walk and/or bike within your community? If so, please specify which ones. To continue writing please use the back of page.

_____

_____

_____

4. Please rate how important these transportation improvements are to you by marking with an **X**.

	Essential	Important	Somewhat Important	Not Important
Bike Lanes				
Protected Bike Lanes				
Bike Boxes				
Sidewalks				
Crosswalks				
Trails				
Improved ADA Accessibility				
Traffic Signal Detection for Peds & Bikes				
Safe Routes to Schools				
Wayfinding Signs which include Route Information to Destinations				
Bicyclist and Pedestrian Safety Programs				

Motorist Safety Programs regarding Bicyclists and Pedestrians				
Improved Trail Connectivity between Communities in the Region				
Slower Traffic Speeds				
Other				

A glossary of terms can be found on the back of this page →

5. Is there anything else you would like us to know about non-motorized transportation in the region? To continue writing please use the back of page.

Interested in learning more about the NFRMPO? Yes, sign me up for the: ☐ NFRMPO's On the Move Newsletter
☐ NFRMPO's Non-Motorized Plan Updates

If yes, please leave your email _____

Thank you for your feedback!

Glossary of Terms:

- Protected Bike Lanes – Bike lanes which use planters, curbs, bollards/posts, or parked cars to separate bicycle and automobile traffic on busy streets.
- Bike Boxes – A bike box is a designated area at the head of a traffic lane at a signalized intersection which provides bicyclists a safe, visible way to get ahead of queuing traffic during a red signal phase.
- ADA – The Americans with Disabilities Act of 1990 (ADA) related transportation improvements include curb ramps, appropriate sidewalk width, removing protruding objects, and generally creating accessible routes.
- Traffic Signal Detection – Technology which detects the presence of an automobile, bicyclist, or pedestrian and subsequently triggers the signal to switch and provide a green signal phase.

Additional Space for Responses:

Appendix B: Public Involvement Comments

Public Involvement Comments

Through the development of the *Non-Motorized Plan* comments were accepted either directly or through the Non-Motorized Plan Survey. The following list includes comments collected through November 1, 2016.

Non-Motorized Plan Survey Question Four

Within the last 3 years, have any transportation improvements improved your ability to walk and/or bike within your community? If so, please specify which ones.

- The boomerang bus allows me to walk part way to class and still get there on time.
- YesThe GET transit
- No.
- If I walk 1 mile from my home, I can get to the Max and take it up to Old Town to avoid driving and parking at big events like New West Fest, Taste of Fort Collins, New Year's, etc.
- no
- No
- No
- new sidewalk on 1st Street east of Wilson
- Not a whole lot. I do take advantage of park and ride. Is that included in Bike and Transit?
- No really, but will be great to use bouth abilities to make more activities
- None
- Some walking/biking trails were constructed around our subdivisionMax bus has been great. Remington bike lane improvements (but didn't like the traffic circle at Laurel)
- New and better bikes lanes have made biking easier and less stressful.
- Great bike lanes - Laurel and Remington
- Yes! In the summer, we bike to the Max station to come downtown.
- Yes, A new bike bridge at Lemay.
- Yes, espically these new buses are more quiet and more roomy
- trails sidewalks lighting
- No
- No
- Only yesterday I used bike & GET bus for the first time. That option is very helpful. The GET driver was very courteous in helping me understand the use of the bus' bike rack.
- Multi-use path to Tavelli Elementary School has improved the experience of biking
- Mason Trail, Poudre River Trail, and North College Road improvements
- Nope
- Expanded bike lanes
- No
- Remington greenway extension of Power Trail south beyond Trilby
- Cathy Fromme and Spring Creek trail connections Bike Lane improvements on Shields (between Drake & Mulberry). Hickory Street Trail
- Remington Greenway Mason Corridor MAX BRT
- No
- Yes, completion of the Mason Trail and Power Trail in Fort Collins
- No
- Poudre Bike trail
- No.
- Extension of the Poudre Trail.
- Yes, we now have a crosswalk that goes across 257 to attach better to lake bike trail. The addition of sidewalk along 257 to cross the railroad tracks as also been added. The cross walk added to the CR that passes by River West has been improved and made safer.
- No
- Increased bike lanes in west Greeley,
- ped cross walk on country rd 13.
- Continued improvement of Poudre trail
- Yes, on CR 13 across the trail head.
- no
- improvement in crossing lane on Hwy. 13
- None
- We have only lived here 1 year, but we love the bike trails and use them almost daily in good weather

northbound on northern Lemay Ave. Improvements at Lemay and Magnolia - good sidewalk now for grade-separated biking.
- I don't like how the bus routes have changed...
- The bus that passed by finally started go back around insste of by passing the area
- Bike lane on 287 over bridge in Windsor.
- Poudre River Trail.
- Bike paths.
- New bike trails to get to places
- Poudre River Trail.
- Bike paths and trail system are awesome.
- improvement to walk
- G.E.T. is a great, ACCESSIBLE, way for me to get to and from school and work.
- Yes, bike paths along 59th Ave and 20th Street
- More bike trails.
- Connections with Transfort
- Yes, They have more bike lanes. No, the sidewalks are horrible
- Fossil creek bike trail now connects to Boyd lake trail and Poudre trail.
- Max and Flex Express/Bustang
- Round about near Eastman Park - Fixed trail on Poudre
- Bike lanes on Fort Collins streets.
- Yes, new walk way in our community
- Yes, I moved to Colorado
- Bike
- Yes - Boyd Lake curce
- Loveland bike path
- Bike/hike trails
- Underpass on North 287 - recreation trail. Underpass on Madison - recreation trail.
- Bike path continuation on red tall will help.
- Bike lanes, bike paths
- Bike lanes in old town. Sidewalk/crosswalk improvements bike path improvements.
- Yes! Max, new mason trail, bike lanes on laurel.
- Better bike trails.
- Bike trails
- Remington bike lanes
- Kechta Hill! Makes my life awesome.
- Mason corridor- but still needs bike improvements
- Remington greenway
- Mason corridor has helped a bit.
- I am unaware of any transportation improvements in Windsor that would improve my ability to walk/bike.
- Trails
- No
- The great western trail has recently been improved and goes all the way from Severance to Windsor...this has been very nice.
- Yes! The new sidewalk (along 7th street) from the Poudre Heights neighbor to the Poudre Trail gets lots of use.
- Yes - the addition of a sidewalk along 7th Street as part of the Safe Paths to School program to connect our neighborhood to an existing trail.
- none lines, curbs, cross walks, etc are not painted
- Some sidewalk repairs have been done which help with safety.
- no
- The Poudre River Trail
- None
- Improved corners. Not much else.
- Trail to Water Valley South Good Samaritan building. Crossing on 7th street by lakes
- The Poudre Trail. Some bike lanes
- Pore Trail.. also the great western trail when it wasn't closed with no signs....
- The bridge expansion on 15th that connected the sidewalks
- Completion of the Greeley Canal Ditch 2 Trail
- They light on seventh by the lake
- No
- Bike Lane Striping in Fort Collins
- MAX; Fort Collins Bike Trails
- Not in Evans.
- I moved from the East Coast to Fort Collins!! YES - I ride my bike EVERYWHERE!! (1000-miles in-town in the first 6-months of the year!)
- bike paths and bike lanes
- Madison Avenue underpass on the recreation trail Flashing crosswalk on rec trail at Boise Ave
- Love the bike lanes that have painted separation from traffic - that is a huge improvement.

- Protected/better bike lane on Shields is nice. Also like improvement of bike lane on Laurel near College Ave.
- Sensor lights that recognize bikes! Education at bikes have the right to take the lane and giving three feet of passing space.
- "Taft Hill north of Mulberry Mason Corridor"
- The availability of bike lanes
- Max has helped to get from old town to work (Whole Foods)
- Southeast Fort Collins needs better lanes.
- Move and widened bike lanes and separated bike lanes and bike traffic signals
- Just moved here!
- Yes, Max with transfort. Bridge over railroad near whole foods
- Yes, Laurel and College bike lane.
- I moved and the bike route is a lot easier. Prospect is a nightmare on a bike.
- Max
- Laurel street improvments
- Not that I know of
- Bike boxes
- Max
- Max
- Underpasses and overpasses on bike paths.
- Better bike lanes - Remington
- County roads offer very little shoulder to ride in. The North College improvements have been great. Making the jump from HWY 1 to 287 - going south - is no fun. Forced to ride on wrong side.
- No
- The Poudre Trail near shields is awesome! I wish the underpasses weren't flooded all the time, but not sure if there's much we can do about that.
- "Max system - Love taking kids to the discovery museum from South Fort Collins.
- Can we get a pedestrian crossing light on Cherry and Mason to the museum?"
- Improved bike lanes - connectivity love to take the lane signage and green boxes
- Roundabouts have diminished my cycling experience.
- Max
- Sidewalks and North College improvements
- Yes. Buffered bike lanes on Remington, new wide bike lane on N. Shields, the roundabouts at Vine and Remington, the bike traffic signal on Mason, and the bike boxes around town. I look forward to the upcoming underpasses around CSU
- Greeley keeps adding bike lanes which is nice. Sheep's draw trail is very nice for recreational riding over to the Poudre Trail
- The max and bus system are really useful. I never have to drive with them.
- - Mason Trail in Fort Collins including bike signal
- Sidewalk enhancements on Laporte Avenue
- Remington Greenway
- Buffered bike lanes at CSU
- 13th Street Bike lanes, Regionally- Bustang to Denver
- MAX has increased my ability to travel for work-related errands
- Better bike infrastructure
- Trails along Poudre in Windsor
- Mason Corridor!!
- Poudre and Spring Creek Trails
- Poudre River under Mulberry
- Yes - improved bike lanes throughout downtown FoCo and around CSU.
- Not particularly
- Shared lanes
- Yes, protected bike lanes.
- Bike
- None
- Mason Trail
- Just moved to FC!
- Yes, bike trails have made recreation easier. I.e. Poudre Trail
- Remington and Laurel improvements
- I moved here in Dec. 2015 because we visited in 2012 and kept cominb back because we could walk and bike ride so many more places than in our intown neighborhood in Atlanta!
- Bike lanes
- North Shields near Poudre; Vine to Willox
- Max! N. Shields improved (near Poudre)
- Not in 3 years
- No
- Remington new bike anes. Traffic light at Lemay and Vine St.

- Bike garage/shed at work, bike to work events, Lanes
- Bike lanes
- The trails - Spring Creek/Poudre
- The Max.
- I just moved from Denver which has horrible bike lanes. I am much more likely to bike in Fort Collins due to the Mason and Spring Creek Trails
- Yes, Improved Sidewalks
- Buffered bike lanes, trail improvements, roundabouts, sharrows.
- Yes, MAX and Transfort Overhaul. Transfort and MAX rock!!!!
- Not sure if this is new, but I discovered the ditch trail and now ride my bike when I need to go to Walgreens and/or King Soopers.
- No
- Flex bus to boulder.
- Recently signed low-stress bikeways have made a huge difference to how I get around town. A creative update to a shifted intersection has been helpful. And street lights that can "see" bicyclists are a huge plus.
- bike racks; striped bike lanes; increased bike awareness.
- Remington and Laurel St improvements greatly help bike safety
- Wider standard lane pattern and repainted streets.
- The max line
- Mason corridor and the Max have done wonders for ease of traveling.
- MAX
- FLEX to Bounder helpful. New to area.
- Yes, bike trail connectivity, Poudre Line trail to north from Hwy 392.
- Yes
- Education programs
- Remington Bike way, Laurel PBL
- Yes, the Mason bike lanes that allows me to bike/walk North and South to most downtown and many businesses along College Ave
- Safe Routes to School in Loveland has succeeded in getting more pathways constructed that were long needed.
- Power Trail south of Harmony Road making it easier to get to Loveland
- More bike lanes added, existing bike trails improved, new bike trails added
- The Remington Greenway has been an excellent addition to the transportation network. Otherwise, exploration of existing facilities has been the biggest eye-opener.

Non-Motorized Plan Survey Question Six

Is there anything else you would like us to know about non-motorized transportation in the region?

- Adding more bike lanes around the NW side of town (we live at Mulberry and Taft Hill and our bike lane just ends halfway down the road going west on Mulberry).
- Fort Collins is growing too fast for it's infrastructure. Traffic is now very heavy and we have rush hours! I hate it, but I keep driving because there aren't enough buses or connections or routes to get where I need to go throughout the day on time. I would like more routes with more buses (higher frequency) on the routes like a real city and I would get rid of my car completely!
- yes, it is un safe here in Greeley a lot of times because drivers don't obey the federal and state laws of yielding to pedestrians
- It needs more attention and more funding
- "Cross walk lights should function east/west and north/south. For example: The cross walk light at Hwy 34 & Promontory Circle walks across Promontory Circle but not Hwy 34. If you ride up on the right, you have to ride over to the left side, hit the button and then ride back to the ride side to move with traffic across Hwy 34. Also, painting the wheel chair access from street to sidewalk a florescent color to differentiate it from the curb would be very helpful."

- Is not too use
- Is there a way we can get fixed routes to lovland and fortcollins from Greeley
- Currently, there is no bicycle trail connecting the Poudre River trail from Fort Collins to Windsor. It would be great if there was a connecting trail.
- Weekend bus service please!
- More bike lanes, bike trails, ande sidewalks are extremely important.
- It would be great if the River Trail was completed.
- Thanks for your support!
- N/A
- We defintally need more bike lanes . I ride by 71st ave and there ain't even a side walk to ride my bike on and I ride road but there ain't no room just drivers honking and getting close enough to hit me with their mirror
- The automobile traffic tends to be fast on wide streets, which makes it scary to bike and walk. I love Loveland's and Fort Collins trail system, but there I-25 is definitely a barrier. A lot of residents in Weld County go to Larimer and Boulder County for recreation because not much exists here. Sidewalks are even coveted and lighting is huge issue in the winter for people wanting to exercise early or when they get home.
- Have a better lighting and crosswalk system since sometimes it can be very dangerous. Control speeding cars a lot more
- No
- Is there any arrangement of motorists offering (in advance) rides to other communities--a sort of "hitchhiking in advance"?
- More protected/grade-separated bike lanes! I am a cautious rider despite bike commuting for 6 years, and alongside car traffic going 40+ (much of my riding), I am much more comfortable on grade-separated or protected bike routes.
- No
- No connections to any other major colorado cities via bus.
- It's a big step up from where we were.
- Less large truck traffic.
- "Traffic light synchronization is essential.
- No red light camera!"
- Please complete the Poudre Trails to Fort Collins
- There is no transportation for individuals in wheelchairs. The yellow cab service is not consistent on the front house pickup regardless of a scheduled appointment with them. The other services are within city limits only.
- Need more bike lanes within Windsor on 7th, Eastman, Main. Need sidewalks around 7th and Eastman on northeast sides.
- Cycling is my primary mode of transportation.
- "We need more public transportation - city of Loveland really needs to extend their hours of use."
- More room on 2 lane roads for bicyclists
- Adequate light for safety on pedestrian walkways is essential. Also plan for public transit self-driving car routes and car charging stations at park and rides
- Complete trail linkage as soon as possible
- Not enough dedicated bike lanes one Hwy 85 from Wyoming border to Denver

- Bike path across I-25/34
- Other is referring to red light runners.
- Keep working on the trail system especially downtown.
- Partnering with bike shops for awareness is a great idea.
- I have had friends/coworkers comment they would be more likely to ride if they felt safer.
- Keep up the great work.
- Connect the Poudre trail.
- No talking on cell phone calls.
- Not at this time.
- Cars don't pay attention I felt sad when one hit my husband while he was biking.
- Making continuous trails that are practical and scenic are my most valued attributes of non-motorized transportation. Also I love underpasses/overpasses at busy streets!
- Water on trails at bridges/underpasses discourages me from biking to work each spring. I'm sure I'm not the only one who feels this way in north Colorado.
- Biking along prospect is frustrating, especially with CSU construction.
- No
- "It's great as-is. I used to bike daily to work for 15 years. But recently moved to unincorporated Fort Collins and have yet to start bike commuting. My transportation needs require a car for my lunch hour - I need to go home for lunch and a 3 mile bike commute each way is hard on a 1 hour lunch break.
- Promoting longer lunch breaks would increase my cycle commuting to 100%"
- We need more consistent bus during winter and spring break.
- I am intimidated to ride out of Fort Collins since most roads are 45-60 mph. It would be great to have trails.
- wish we would have gone for "Stop as Yield". Sucks getting stop sign tickets on a bike :+(
- So-called "protected" bike lanes are *dangerous* for cyclists: 1) always have an escape route; 2) reduced visibility by motorists; 3) complicates, therefore compromises street sweeping and snow-plowing.
- Not a week goes by when I'm walking and someone either stops and blocks the pedestrian crossing in front of me, or I'm crossing at a mid-block marked pedestrian crossing and people don't even deign to slow down a little bit, or I'm crossing at an unmarked intersection ped crossing and someone makes a left hand turn, doesn't see me, and I have to wave my arms and shout to get their attention so I don't get run over.
- Its part of the solution to climate change; contributes to cleaner air and health; less noise; better connections with community; good exercise... fun.
- Limited appeal and accessibility due to anemic menu of options.
- Enforcement of proper motor driving skills would go a long way to helping everyone get around (using turn indicators, stopping behind stop signs/stop bars, etc.) Physically separated infrastructure for bikes/peds from motor vehicles will help also.
- "When might there be sidewalks or better bike lane opportunities on Shields Street between Harmony and Trilby.
- Why is Fort Collins bus service not offered to neighborhood of Registry Ridge?"
- Improved soft-surface trail connectivity and access needs to be included in this plan as well, not just hard-surface trails.
- Bike trail and bike lanes are terrible in Windsor

- If 392 gets widens into Windsor there needs to be a wide bike lane for all the people who live up the hill on WCR 13 that like to ride a bike into Windsor
- Safer bike lanes along Hwy 34 or alternative route areas off of 34 would be nice.
- Please include non paved gravel edges along trails for runners.
- On snow days and days following in our community it is very difficult to maneuver to get to our schools. Our drainage is so bad that the build-up of ice and snow at our corners makes it virtually impossible for walker and bikers to safely get to schools or members of the community to walk safely in the community. It sometimes can take weeks to have the ice removed from the corners because it will have to melt.
- Living out north of the lake off of 257 and not having the path/trail continued so that we could ride our bikes to the lake or town is not acceptable. Riding on 257 is completely unsafe.
- Bike lanes should be free of debris
- We need more dog friendly trails
- it doesn't seem to be included in road upgrades
- I would love a trail between CR13 and the Safeway store area!!
- Better connectivity to Poudre River Trail from neighborhoods in western edge of Windsor proper (areas between CR 13 and CR 17).
- Trail hook-up w/Safeway would allow for walkers instead of automobiles.
- Access to Poudre Trail from west Windsor (Safeway/King Soopers area)
- I think Windsor needs to do a major overhaul on bike lanes trail connectivity. The Poudre River trail is not safely accessible without a vehicle or major detours. The trail running east west along the irrigation canal has dangerous bollards that could easily injure cyclists riding during low light conditions. The majority of the few bike lanes in town don't connect to each other or provide easy access to grocery stores, etc. If people had to drive their cars to get to their destinations in the indirect and unsafe environment cyclists do, there would be an uproar!
- We need it. Took the kids on bikes on 83rd and 20th and almost got hit and drivers driving too close to single file kids and parents to far right. Can't walk outside our neighborhood to get anywhere since there are no connecting sidewalk areas and same motorist issues. Too dangerous to walk or bike.
- We need more bike access and paths throughout our communities as well as connected trail that allow re creationists and kids to move among communities off roads.
- We need to finish the Poudre Trail, and a safe trail to walk/run/bike from South part of Windsor to town. I would bike to grocery stores and my kids would bike to school if there was a safe route, but there isn't. Biking through round-a-bouts is super scary...
- "Windsor has very little in the way of convenient North/South or East/West bike routes that access neighborhoods. The Poudre Trail is great for recreation, but does very little to connect neighborhoods in town. The Cache La Poudre Ditch Trail is essentially parallel to the Poudre Trail; it does a better job of connecting some neighborhoods, but there is no viable connection between the two trails.
- 7th Street in Windsor needs a bike lane for the entire length to connect Poudre Trail/Eastman Park with the Windsor Lake and Cache La Poudre Ditch.
- Finally, completion of the Poudre Trail would go a long way towards tying Windsor to Ft Collins with a safe route. However, there doesn't seem to be good connection between Loveland/Ft Collins or Windsor/Loveland."
- Connectivity is most important to me
- children are not allowed to walk to schools because there is no "SAFE ROUTE"

- I would love to see the Poudre River trail connect all the way to Ft. Collins!
- "Getting kids walking biking to school for exercise will also decrease traffic on Main Street
- Setting up Safe Routes to school with a designated area for WMS even with painted bike lanes is a simple cheap place to start. Having signage and bike lanes from Poudre trail to downtown via 7th street or 3rd is a priority "
- I like trails whether paved or not, away from cars. Prefer more unpaved trails.
- Flashing lights at all or most crosswalks would be extremely helpful
- Snow removal to include the sidewalks around town, especially the crosswalks, they seem to get snow piled on the corners making intersections hard to traverse
- We love to road bike but feel that the roads in Weld county are so narrow with virtually no shoulders and it's becoming too dangerous to do one of our favorite activities
- Windsor Middle School specifically struggles with bike and pedestrian safety as the school sits just off Main Street (Hwy 392) and therefore has high volumes of large truck and auto traffic at no less than 30 MPH while students are coming to school.
- The construction zone around Grandview Elementary (Jacoby Farms) has been both a blessing and a curse. Once the building is over, the improved sidewalks will help kids/families walking to & from Windshire and New Windsor. However, there should be some type of enforcement of keeping routes clear from construction trash/materials while kids walk and the school's arrival/dismissal times should be honored by construction company to where there are NOT trucks blocking routes for those brief periods of the day.
- Need to encourage pedestrian transportation in areas other than Old Town-we live in Mid Town and do not see many people walking for errands, etc. Down right dangerous to cross College Avenue even with crosswalks and pedestrian crossing signs!
- Connectivity from Evans to the Greeley bike routes are essential and the addition of bike lanes to 17th avenue South of Hwy 34 is a great start.
- "My focus is more on the Loveland Area, but I would like to have more off road connections with other communities' recreation trails.
- Please add asphalt for a continuous bike lane on north side of 1st St between Railroad Ave and the actual railroad tracks. This area already is congested with the narrowing of the lanes for room for the left hand turn lane to the south and the lack of a bike lane makes it dangerous to bike through here.
- Also please add a skinny sidewalk or asphalt on west side of Denver Avenue between the road and the guard rails along the Chubbuck Ditch from the recreation trail north across the Chubbuck Ditch until it meets up with the existing sidewalk. This gets very muddy with rain or snow and pedestrians then need to walk in the street which is not very safe.
- I love the recreation trail that goes around Loveland, but I would like to see more trails that go through the middle of Loveland north to south and east to west. We should work toward putting in more recreation paths along the existing ditches that go through town as well as along side the railroad tracks that cut right through town.
- For people who have not been on the recreation trail before, I think there needs to be better signs indicating where the trail goes at areas that are hard to follow such as:
    - From 1st and Washington south
    - As it goes north on Denver Ave between Hwy 34 and E 18th Street
    - On 43rd Street where it picks up on the north and south sides of the street

    - Wilson Ave how to get from North of Woodward Governor to the sidewalk that's north of Tabernash
    - Directions to get to the trail between New Castle Drive and Crowley Cir.
- To make the trails used more for commuting - it would be nice to add more signs on each side of roads indicating what they are so people have a better frame of reference where they are and when to get off the trail.
- Adding paint dividing lines would help to keep people on the main trail at areas where the offshoot sidewalks are about the same width such as along the west side of Boyd Lake where they go to camping areas or to the swim beach as wells as through the areas north of Woodward Governor and south of 57th St rather than them taking the wrong route and having to back track to figure out where the trail actually is."
- Love the area, I travel a lot for work and love coming back to NoCO to ride.
- It is essential that there is standardized and mandatory bicycle education for both bicyclist and motor vehicle drivers. Currently, many bicyclists and motor vehicle drivers are not aware of the rule of the road as they pertain to bicyclists. This is a major reason for unsafe transportation behavior.
- Greeley is doing a great job providing bike infrastructure, Evans could use to do the same. More nature-type trails along waterways would be nice - i.e. platte, big T, etc.
- "- Wayfinding regional trails
    - Additional bicycle data collection needed to support trail investment
    - It is important to get the first segments of trail on the Big Thompson and Platte Rivers built to connect communities in Weld County while supporting the Front Range Trail"
- More bus options that run regionally and better times.
- It would be wonderful to have a safe way to cycle across or under I-25 - Let's do it now!!!!! We frequently ride between Windsor and FTC and there is no safe place to cross. Car traffic is scary and someone has already been killed. Please make this a top priority!
- Off road bike trails are awesome
- More people should do it because it's clean energy and it's good for you!
- More awareness for motorists
- More access between city centers and foothills trail system.
- Best non-motorized transportation in any city in which we've lived.
- Better communication on when these trail systems are rolled out.
- Wide shoulders and bike lanes
- It is great to have options (more tjan one way to get these)
- Allow electric bikes - at least between towns.
- Ban cars
- N/A
- Thank you for all your efforts!
- Would love to see regional trail system connections to the Northern Front Range.
- Bikes are vehicles, not pedestrians. Please treat them as such in future road improvements. Thank you for considering N-S and E-W travel.
- More info on funding

Figure B-1: Survey Link on Greeley Evans Transit Bus

Appendix C: Non-Motorized Plan Meeting Log

Non-Motorized Plan Meeting Log

Throughout the spring and summer of 2016 the NFRMPO attended 11 community events and three transportation board meetings to solicit feedback about the *Non-Motorized Plan* and distribute the corresponding survey. Additionally, at the community events the public could ask questions, learn about air quality in the NFRMPO region, collect information on other transportation plans, and get project updates.

Table C-1: Community Outreach Event Log for the Non-Motorized Plan

Date	Community	Event	NFRMPO Staff	Approximate # of Interactions
4/13/16	Fort Collins	Annual FC Bikes Projects Fair	2	60
6/22/16	Fort Collins	Bike to Work Day 2016	1	35
6/22/16	Loveland	Bike to Work Day 2016	1	15
7/9/16	Eaton	Eaton Days	2	25
7/16/16	LaSalle	LaSalle Day	2	15
8/2/16	Loveland	Transportation Advisory Board	2	15
8/13/16	Severance	Severance Day	2	35
8/13/16	Milliken	Beef N' Bean Day	2	20
8/17/16	Fort Collins	Transportation Board	2	10
8/19/16	Loveland	Old-Fashioned Corn Roast Festival	2	5
8/20/16			2	75
8/22/16	Greeley	Community Transportation Advisory Board	2	12
9/3/16	Windsor	Harvest Festival	2	50
9/4/16			2	40
9/18/16	Fort Collins	Open Streets - Linden/Redwood	2	35
9/24/16	Timnath	Founders Day	2	33
Attended 14 Events		Approximate Number of Interactions Total:		480

Appendix D: Non-Motorized Facility Mapping Resources

Resources Used to Map Regional Sidewalks, Multi-Use Trails, Bicycle Lanes, and Bicycle Routes

Town of Berthoud – The *2014 Comprehensive Plan* shows the trails in the appendix. http://www.berthoud.org/home/showdocument?id=50

Town of Eaton – The *Eaton Transportation Plan* lays out all of the sidewalks, trails, and on-road bicycle facilities. However, it is not posted online.

City of Evans – Trails can be found in the City of Evans *Open Space and Trails Master Plan*. http://www.evanscolorado.gov/sites/default/files/fileattachments/parks/page/964/open_space_and_trails_plan_-_2004.pdf

City of Fort Collins – Trail and on-road bicycle facilities can be found on the *Fort Collins Bicycle Map*. http://www.fcgov.com/bicycling/bike-maps.php

Town of Garden City – No mapped resources available.

City of Greeley – Trails and on-road bicycle facilities can be found in the *Greeley Bicycle Master Plan*. http://greeleygov.com/docs/default-source/greeley-bikes/greeley-bike-master-plan---draft.pdf?sfvrsn=2

Town of Johnstown – Information contained in *Milliken/Johnstown Parks, Trails, Recreation and Open Space Master Plan* regarding trails. http://townofjohnstown.com/documentcenter/view/34

Town of LaSalle – No bicycle facilities are listed, sidewalk facilities are present in their planning efforts, and trails are proposed, but visible outside of the town area. The *2010 LaSalle Transportation Plan* lists each of the items. http://www.nfrmpo.org/Libraries/Documents%20for%20Links/LaSalle%20Transportation%20Plan%20080310.sflb

City of Loveland – The Bicycle & Pedestrian department on the City of Loveland website offers materials. The *City of Loveland Bicycle and Pedestrian Plan* contains trails and on-road bicycle facilities. http://www.cityofloveland.org/modules/showdocument.aspx?documentid=10725

Town of Milliken – The *Milliken Transportation Master Plan* (2008) and the *Johnstown/Milliken Parks, Trails, Recreation and Open Space Master Plan* (2003) both contain information.

Town of Severance – 2015 *Severance Transportation Plan* contains sidewalks, trails, and on-road bicycle facilities.

Town of Timnath – *Transportation Plan* contains sidewalks, trails, and on-road bicycle facilities. Additionally, the *2011 Parks, Recreation, Open Space + Trails Master Plan* has some information. http://timnath.org/wp-content/uploads/2015/07/Timnath-Master-Trans-Plan-DRAFT-July-2015.pdf

Town of Windsor – For Bike & Pedestrian Mobility visit page 6.17 of the *2016 Comprehensive Plan*. http://www.windsorgov.com/DocumentCenter/View/15327

Appendix E: USDOT Pedestrian and Bicycle Funding Opportunities

Pedestrian and Bicycle Funding Opportunities US Department of Transportation Transit, Highway, and Safety Funds

Table E-1 indicates potential eligibility for pedestrian and bicycle projects under U.S. Department of Transportation surface transportation funding programs. Additional restrictions may apply. See notes and basic program requirements below, and see program guidance for detailed requirements. Project sponsors should fully integrate nonmotorized accommodation into surface transportation projects. Section 1404 of the Fixing America's Surface Transportation (FAST) Act modified 23 U.S.C. 109 to require federally-funded projects on the National Highway System to consider access for other modes of transportation, and provides greater design flexibility to do so.

Table E-1: Pedestrian and Bicycle Funding Opportunities US Department of Transportation Transit, Highway, and Safety Funds

Key: $ = Funds may be used for this activity (restrictions may apply). $* = See program-specific notes for restrictions. ~$ = Eligible, but not competitive unless part of a larger project.															
Activity or Project Type	TIGER	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Access enhancements to public transportation (includes benches, bus pads)	$	$	$	$	$		$	$	$						$
ADA/504 Self Evaluation / Transition Plan								$	$	$		$			$
Bicycle plans			$					$	$		$	$			$
Bicycle helmets (project or training related)								$	$SRTS		$		$*		
Bicycle helmets (safety promotion)								$	$SRTS		$				
Bicycle lanes on road	$	$	$	$	$	$	$	$	$		$				$
Bicycle parking	~$	~$	$	$	$		$	$	$	$	$				$
Bike racks on transit	$	$	$	$	$			$	$						$
Bicycle share (capital and equipment; not operations)	$	$	$	$	$		$	$	$						$
Bicycle storage or service centers at transit hubs	~$	~$	$	$	$			$	$						$

Key: $ = Funds may be used for this activity (restrictions may apply). $* = See program-specific notes for restrictions. ~$ = Eligible, but not competitive unless part of a larger project.															
Activity or Project Type	TIGER	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Bridges / overcrossings for pedestrians and/or bicyclists	$	$	$	$	$*	$	$	$	$	$	$				$
Bus shelters and benches	$	$	$	$	$		$	$	$						$
Coordinator positions (State or local)					$ 1 per State			$	$SRTS		$				
Crosswalks (new or retrofit)	$	$	$	$	$*	$	$	$	$	$	$				$
Curb cuts and ramps	$	$	$	$	$*	$	$	$	$	$	$				$
Counting equipment			$	$		$	$	$	$	$	$	$*			$
Data collection and monitoring for pedestrians and/or bicyclists			$	$		$	$	$	$	$	$	$*			$
Historic preservation (pedestrian and bicycle and transit facilities)	$	$	$	$				$	$						$
Landscaping, streetscaping (pedestrian and/or bicycle route; transit access); related amenities (benches, water fountains); generally as part of a larger project	~$	~$	$	$			$	$	$						$
Lighting (pedestrian and bicyclist scale associated with pedestrian/bicyclist project)	$	$	$	$		$	$	$	$	$	$				$

Key: $ = Funds may be used for this activity (restrictions may apply). $* = See program-specific notes for restrictions. ~$ = Eligible, but not competitive unless part of a larger project.															
Activity or Project Type	TIGER	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Maps (for pedestrians and/or bicyclists)			$	$	$			$	$		$	$*			
Paved shoulders for pedestrian and/or bicyclist use	$	$			$*	$	$	$	$		$				$
Pedestrian plans			$					$	$		$	$			$
Recreational trails	~$	~$						$	$	$					$
Road Diets (pedestrian and bicycle portions)	$	$				$	$	$	$						$
Road Safety Assessment for pedestrians and bicyclists						$		$	$			$			$
Safety education and awareness activities and programs to inform pedestrians, bicyclists, and motorists on ped/bike safety								$SRTS	$SRTS		$	$*	$*	$*	
Safety education positions								$SRTS	$SRTS		$		$*		
Safety enforcement (including police patrols)								$SRTS	$SRTS		$		$*	$*	
Safety program technical assessment (for peds/bicyclists)								$SRTS	$SRTS		$	$*	$		
Separated bicycle lanes	$	$	$	$	$	$	$	$	$		$				$
Shared use paths / transportation trails	$	$	$	$	$*	$	$	$	$	$	$				$
Sidewalks (new or retrofit)	$	$	$	$	$	$	$	$	$	$	$				$

Key: $ = Funds may be used for this activity (restrictions may apply). $* = See program-specific notes for restrictions. ~$ = Eligible, but not competitive unless part of a larger project.															
Activity or Project Type	TIGER	TIFIA	FTA	ATI	CMAQ	HSIP	NHPP	STBG	TA	RTP	SRTS	PLAN	NHTSA 402	NHTSA 405	FLTTP
Signs / signals / signal improvements	$	$	$	$	$	$	$	$	$		$				$
Signed pedestrian or bicycle routes	$	$	$	$	$		$	$	$		$				$
Spot improvement programs	$	$	$			$	$	$	$	$	$				$
Stormwater impacts related to pedestrian and bicycle projects	$	$	$	$		$	$	$	$	$	$				$
Traffic calming	$	$	$			$	$	$	$		$				$
Trail bridges	$	$			$*	$	$	$	$	$	$				$
Trail construction and maintenance equipment								$RTP	$RTP	$					
Trail/highway intersections	$	$			$*	$	$	$	$	$	$				$
Trailside and trailhead facilities (includes restrooms and water, but not general park amenities; see guidance)	~$*	~$*						$*	$*	$*					$
Training					$	$		$	$	$	$	$*	$*		
Training for law enforcement on ped/bicyclist safety laws								$SRTS	$SRTS		$			$*	
Tunnels / undercrossings for pedestrians and/or bicyclists	$	$	$	$	$*	$	$	$	$	$	$				$

Abbreviations

- ADA/504: Americans with Disabilities Act of 1990 / Section 504 of the Rehabilitation Act of 1973
- TIGER: Transportation Investment Generating Economic Recovery Discretionary Grant program
- TIFIA: Transportation Infrastructure Finance and Innovation Act (loans)
- FTA: Federal Transit Administration Capital Funds
- ATI: Associated Transit Improvement (1% set-aside of FTA)
- CMAQ: Congestion Mitigation and Air Quality Improvement Program
- HSIP: Highway Safety Improvement Program
- NHPP: National Highway Performance Program
- STBG: Surface Transportation Block Grant Program
- TA: Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)
- RTP: Recreational Trails Program
- SRTS: Safe Routes to School Program / Activities
- PLAN: Statewide Planning and Research (SPR) or Metropolitan Planning funds
- NHTSA 402: State and Community Highway Safety Grant Program
- NHTSA 405: National Priority Safety Programs (Nonmotorized safety)
- FLTTP: Federal Lands and Tribal Transportation Programs (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program, Nationally Significant Federal Lands and Tribal Projects)

Program-Specific Notes

Federal-aid funding programs have specific requirements that projects must meet, and eligibility must be determined on a case-by-case basis. For example:

- TIGER: Subject to annual appropriations.
- TIFIA: Program offers assistance only in the form of secured loans, loan guarantees, or standby lines of credit, but can be combined with other grant sources, subject to total Federal assistance limitations.
- FTA/ATI: Project funded with FTA transit funds must provide access to transit. See Bikes and Transit and the FTA Final Policy Statement on the Eligibility of Pedestrian and Bicycle Improvements under Federal Transit Law.
    - Bicycle infrastructure plans and projects funded with FTA funds must be within a 3 mile radius of a transit stop or station, or if further than 3 miles, must be within the distance that people could be expected to safely and conveniently bike to use the particular stop or station.
    - Pedestrian infrastructure plans and projects funded with FTA funds must be within a 1/2 mile radius of a transit stop or station, or if further than 1/2 mile, must be within the distance that people could be expected to safely and conveniently walk to use the particular stop or station.
    - FTA funds cannot be used to purchase bicycles for bike share systems.
    - FTA encourages grantees to use FHWA funds as a primary source for public right-of-way projects.
- CMAQ projects must demonstrate emissions reduction and benefit air quality. See the CMAQ guidance at www.fhwa.dot.gov/environment/air_quality/cmaq/ for a list of projects that may be eligible for CMAQ funds. Several activities may be eligible for CMAQ funds as part of a bicycle and pedestrian-related project, but not as a highway project. CMAQ funds may be used for shared use paths, but may not be used for trails that are primarily for recreational use.

- HSIP projects must be consistent with a State's Strategic Highway Safety Plan and either (1) correct or improve a hazardous road location or feature, or (2) address a highway safety problem.
- NHPP projects must benefit National Highway System (NHS) corridors.
- STBG and TA Set-Aside: Activities marked "$SRTS" means eligible only as an SRTS project benefiting schools for kindergarten through 8th grade. Bicycle transportation nonconstruction projects related to safe bicycle use are eligible under STBG, but not under TA (23 U.S.C. 217(a)).
- RTP must benefit recreational trails, but for any recreational trail use. RTP projects are eligible under TA and STBG, but States may require a transportation purpose.
- SRTS: FY 2012 was the last year for SRTS funds, but SRTS funds are available until expended.
- Planning funds must be used for planning purposes, for example:
  - Maps: System maps and GIS;
  - Safety education and awareness: for transportation safety planning;
  - Safety program technical assessment: for transportation safety planning;
  - Training: bicycle and pedestrian system planning training.
- Federal Lands and Tribal Transportation Programs (FLTTP) projects must provide access to or within Federal or tribal lands:
  - Federal Lands Access Program (FLAP): Open to State and local entities for projects that provide access to or within Federal or tribal lands.
  - Federal Lands Transportation Program: For Federal agencies for projects that provide access within Federal lands.
  - Tribal Transportation Program: available for federally-recognized tribal governments for projects within tribal boundaries and public roads that access tribal lands.
- NHTSA 402 project activity must be included in the State's Highway Safety Plan. Contact the State Highway Safety Office for details: http://www.ghsa.org/html/about/shsos.html
- NHTSA 405 funds are subject to State eligibility, application, and award. Project activity must be included in the State's Highway Safety Plan. Contact the State Highway Safety Office for details: http://www.ghsa.org/html/about/shsos.html

Cross-cutting notes

- FHWA Bicycle and Pedestrian Guidance: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/
- **Applicability of 23 U.S.C. 217(i) for Bicycle Projects:** 23 U.S.C. 217(i) requires that bicycle facilities "be principally for transportation, rather than recreation, purposes". However, sections 133(b)(6) and 133(h) list "recreational trails projects" as eligible activities under STBG. Therefore, the requirement in 23 U.S.C. 217(i) does not apply to recreational trails projects (including for bicycle use) using STBG funds. Section 217(i) continues to apply to bicycle facilities other than trail-related projects, and section 217(i) continues to apply to bicycle facilities using other Federal-aid Highway Program funds (NHPP, HSIP, CMAQ). The transportation requirement under section 217(i) is applicable only to bicycle projects; it does not apply to any other trail use or transportation mode.
- There may be occasional DOT or agency incentive grants for specific research or technical assistance purposes.

- ❖ Aspects of many DOT initiatives may be eligible as individual projects. For example, activities above may benefit Ladders of Opportunity; safe, comfortable, interconnected networks; environmental justice; equity; etc.[63]

[63] Pedestrian and Bicycle Funding Opportunities. US Department of Transportation Federal Highway Administration. 2015. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

Appendix F: Sidewalk Audit Resources

Sidewalk Audit Resources

A sidewalk audit or a walkability survey is a tool individuals, groups, and local leaders can use to assess the pedestrian access and walkability of an external environment. Audits can be used to highlight routes for students, the walkability of a downtown, or access to a specific destination. A number of physical features are assessed in the audit including intersections, sidewalks, driver behavior, and public safety. Information collected from a sidewalk audit can help communities identify areas for improvement.

A number of walk audit templates are available including:

- The American Association of Retired Persons (AARP) Walk Audit Tool Kit (and Leader Guide)
  - http://www.aarp.org/livable-communities/getting-around/info-2014/aarp-sidewallks-and-streets-survey.html
- The Pedestrian and Bicycle Information Center provides links to sidewalk audit templates, checklists, and other tools communities can use to perform an audit.
  - http://www.pedbikeinfo.org/planning/tools_audits.cfm
- Safe Routes to Schools (SRTS) Guide, Walking and Bicycling Audits
  - http://guide.saferoutesinfo.org/engineering/walking_and_bicycling_audits.cfm
- Victoria Walks, Walking Audit including Footpaths, Facilities, Crossing the Road, Traffic, Safety, and Aesthetics
  - http://www.victoriawalks.org.au/Walking_audit/

On November 5, 2015, UNC hosted the 2015 Northern Colorado Bike and Walk Conference to promote non-motorized transportation in the NFRMPO region. Speakers at the event included Colorado Governor John Hickenlooper, CDOT Executive Director Shailen Bhatt, national speaker and walking advocate Mark Fenton, the president and CEO of LiveWell Colorado Shepard Nevel, and the Executive Director of the Weld County Department of Public Health & Environment Dr. Mark Wallace. A walk audit overview created and given at the conference by Mark Fenton can be found below.

Walk Audit Tips
© Mark Fenton 2003
Tips on Leading a Walk Audit

Walk audits (or walkabouts) are facilitated walks for an interdisciplinary group of community stakeholders, often led by a design expert, with the following potential goals:

Education. Guides people to experience and assess the physical activity and healthy eating "friendliness" of an area, not just look at it theoretically.

Inspiration. Helps leaders and policy makers to explore what could be possible.

Practical planning. Outstanding way to get everyone--professionals and not--actively involved in project or policy development, valuing each person's input.

Participants. Anyone who can influence or is affected by the built environment: Planners, public works, engineers, architects and landscape architects, public health and safety, school officials; elected and appointed officials (city/county council, planning commission, school board); parents, children, elderly, people with disabilities,

Distance. Typically 0.5 to 2.0 miles; for a 30 to 90 minute walk, allowing time to stop for observation, discussion. A one-hour, roughly 1.5 mile walk can work very well.

Route. Should be determined ahead of time, and ideally pre-scouted by the facilitator. It should include a mix of supportive and challenging settings for healthy eating and active living, ideally with several safe (out of traffic) places for the group to stop and talk.

Good e.g.: Park, trail, walk- & bike-friendly downtown, traffic calming (curb extensions, islands, raised crossings), community garden, farmer's market.

Bad e.g.: Wide roads, no crosswalks, speeding traffic; malls & sprawling subdivisions, fast food strip development.

Surprises: Goat trails, bikes parked at trees or parking meters (or other evidence of user demand), overlooked gems (small neighborhood park or green grocer).

There are four major elements of the walk:

Introductions: Should be brief. Needs to connect the group and understand the mix of perspectives.

Education/set-up. This could be as much as an hour-long PowerPoint presentation on healthy community design. Or could be a 10 minute discussion of elements that participants offer as examples of what supports community health. But either way, start the walk by first thinking about what leads to healthier behaviors:

- A varied mix of land uses (live, work, shop, play, learn, pray close together).
- Good connections for pedestrian, bicycle, and transit use (sidewalks, trails, etc.)
- Functional, inviting site designs (buildings at the sidewalks, trees, benches, etc.)
- Safety and access for users of all ages, abilities, incomes (lights, traffic calming)
- Accessible, appealing, and affordable healthy food options.

The Walk. Consider having participants use a 1 to 10 scoring system for considering the environment, 10 being the most health supporting, 1 the least. At occasional stops, have participants state their scores, and give examples of why it is what it is ("too much traffic, only a 4;" or "great trees & benches & lots of people, 8"). No right or wrong answers, just a device to help all to observe and share.

Discussion/planning. Immediately following a walk is an ideal time to develop specific conceptual plans, project details, and ordinance recommendations[64]

[64] Fenton, Mark. Tips on Leading a Walk Audit. 2003. http://www.markfenton.com/index.html

Appendix G: Bicycle Parking Resources

Bicycle Parking Resources

As communities in the NFRMPO region become more bicycle friendly adequate bicycle parking becomes a necessity. Studies have shown bicyclists tend to purchase less per visit at businesses, but make more frequent visits than a motorist.[65] Creating safe, attractive parking near destinations for bicyclists sends a signal of acceptance and encourages bicycle ridership.

A community installing bicycle racks must consider the duration users will lock a bicycle to the rack. Users parking for more than two hours will most likely value security and shelter over the convenience and ease of short term parking.

Short Term Parking

- Should be visible from and close to the entrance it serves.
    - A benchmark of 50 feet or less is recommended.
- Shelters reduce the demand for users to bring wet bicycles into buildings.
- Lighting improves the safety and security of the user and the bicycle.
- Racks should be secured properly and located in view of the public.
- While the number of racks necessary to serve the population, perceived demand may be lower than the demand which develops once quality parking appears.

Long Term Parking

- Users are typically willing to trade a degree of convenience for weather protection and increased security.
- Since users will leave bicycles unattended for hours an increased number of parking spaces will be needed to accommodate users throughout the day.
- Bicycle lockers, enclosures, or a room in a building may be necessary to fulfill long term parking demand.

Table G-1 highlights performance criteria for bike parking racks for short or long-term use. [66]

Table G-1: Performance Criteria For Bike Parking Racks

Criteria	Details
Supports bike upright without putting stress on wheels	The rack should provide two points of contact with the frame—at least 6" apart horizontally. Or, if a rack cradles a bicycle's wheel, it must also support the frame securely at one point or more. The rack's high point should be at least 32".
Accommodates a variety of bicycles and attachments	The racks recommended on page 6 ("racks for all applications") serve nearly all common bike styles and attachments—if installed with proper clearances (see placement section). Avoid designs and

[65] Clifton, et. al. Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians. Department of Civil and Environmental Enginnering. Portland State University. August 1, 2012. http://nacto.org/docs/usdg/consumer_behavior_and_travel_choices_clifton.pdf

[66] Essentials of Bike Parking, Selecting and Installing Bicycle Parking that Works. Revision 1.0. September 2015. Association of Pedestrian and Bicycle Professionals. http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINA.pdf

	spacing that restrict the length, height, or width of bicycles, attachments, or wheels.
Allows locking of frame and at least one wheel with a U-lock	A closed loop of the rack should allow a single U-lock to capture one wheel and a closed section of the bike frame. Rack tubes with a cross section larger than 2" can complicate the use of smaller U-locks.
Provides security and longevity features appropriate for the intended location	Steel and stainless steel are common and appropriate materials for most general-use racks. Use tamper-resistant mounting hardware in vulnerable locations. Rack finish must be appropriate to the location (see materials and coatings section).
Rack use is intuitive	First-time users should recognize the rack as bicycle parking and should be able to use it as intended without the need for written instructions.

The links below offer bicycle parking criteria cities and towns should use to maximize the appeal of their bicycle parking.

- Association of Pedestrian and Bicycle Professionals
  - Essentials of Bike Parking, Selecting and Installing Bicycle Parking that Works
  - http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINA.pdf
- Federal Highway Administration
  - Federal Highway Administration University Course on Bicycle and Pedestrian Transportation, Lesson 17: Bicycle Parking and Storage
  - https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/pdf/lesson17lo.pdf
- Fort Collins Bike Parking Program
  - Fort Collins website with a collection of bicycle parking services
  - http://www.fcgov.com/bicycling/parking.php

Appendix H: Bicycle and Pedestrian Count Location Guidance

Bicycle and Pedestrian Count Location Guidance

The following section is an excerpt from the FHWA Traffic Monitoring Guide on Traffic Monitoring for Non-Motorized Traffic. For motorized traffic, State DOTs have a short-duration data program that provides traffic data for all roads on their State highway system. The same goal for non-motorized traffic data may not be feasible, especially since most non-motorized travel occurs off the State highway system and on lower-volume and lower-speed city streets, shared use paths, and pedestrian facilities.

The prevailing practice for collecting short-duration non-motorized traffic data has been to focus on targeted locations where activity levels and professional interest are the highest. Although this non-random site selection may not yield a statistically representative regional estimate, it provides a more efficient use of limited data collection resources (e.g., random samples could possibly result in many locations with low or very low non-motorized use).

The following National Bicycle and Pedestrian Documentation (NBPD) Project criteria are recommended for short-duration counts:

• Pedestrian and bicycle activity areas or corridors (downtowns, near schools, parks, etc.);

• Representative locations in urban, suburban, and rural locations;

• Key corridors that can be used to gauge the impacts of future improvements;

• Locations where counts have been conducted historically;

• Locations where ongoing counts are being conducted by other agencies through a variety of means, including videotaping;

• Gaps, pinch points, and locations that are operationally difficult for bicyclists and pedestrians (potential improvement areas);

• Locations where either bicyclist and/or pedestrian collision numbers are high; and

• Select locations that meet as many of the criteria as possible.

The number of short-duration count locations will depend on the available budget and the planned uses of the count data. To date, there has been no definitive analysis of, or guidance for, determining the required number of short-duration count locations. For most regions getting started with counting non-motorized travel, the short count program is best developed by working with other key stakeholders interested in collecting and using this data. By discussing needs and budgets, this group can identify and prioritize the special needs short count locations which the available data collection budget can afford to collect. (These same discussions should also identify those key regional facilities that should be used for early deployment of permanent counters that will then be used to expand the short count data into estimates of annual and peak use.) The special needs counts will then provide the data needed to guide the development of a more statistically valid sample of short count locations. These more statistically rigorous sample designs will become possible in the future as more data is collected and as research is performed in the coming years.

Once general monitoring locations have been identified, the most suitable counter positioning should be determined. The NBPD Project recommended the following guidance for counter positioning:

• For multi-use paths and parks, locations near the major access points are best.

• For on-street bikeways, locations where few if any alternative parallel routes are best.

• For traditional downtown areas, a location near a transit stop or in the center of downtown is best.

• For shopping malls, a location near the main entrance and transit stop is best. Count at one access point.

• For employment areas, either on the main access roadway or near off-street multi-use paths is best. Count at one access point, typically a sidewalk and street.

• For residential areas, locations near higher density developments or near parks and schools are the best. Count at one access point, typically a sidewalk or street.

In many cases, these recommended counter-positioning locations will result in the highest non-motorized traffic volumes. Given limited data collection resources and specific data uses, this focus on high-use locations may be appropriate. However, one should recognize that these high-use locations might represent a biased estimate of use levels and trends for an entire city or State.[67]

The list below covers a number of helpful resources which outline the proper selection of non-motorized count locations.

- Portland State University
  - Guide to Bicycle and Pedestrian Count Programs
  - https://www.pdx.edu/ibpi/count
- Southern California Association of Governments and the Los Angeles Metro
  - Conducting Bicycle and Pedestrian Counts
  - http://media.metro.net/projects_studies/call_projects/images/metroscag_bikepedcounttrainingmanual.pdf
- Federal Highway Administration
  - Pedestrian and Bicycle Data Collection
  - https://www.fhwa.dot.gov/policyinformation/travel_monitoring/pubs/pedbikedata.cfm

[67] Traffic Monitoring Guide. Chapter 4 Traffic Monitoring for Non-Motorized Traffic. U.S. Department of Transportation Federal Highway Administration. Policy and Governmental Affairs Office of Highway Policy Information. 2014. http://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/traffic-monitoring-for-non-motorized.cfm

Appendix I: Bicycle Share Location Criteria

Bike Share Location Criteria

The following criteria can be used to identify potential bike share station locations, based on program successes throughout the country:

- Areas with the highest population and/or employment density, specifically near young to middle-aged adults (usually in downtowns)
- Near public activity centers such as universities, cultural or tourist attractions, libraries, parks and recreational destinations
- Along established and/or proposed bike routes, especially shared use paths and bike lanes
- Near retail centers
- Spaced no more than half a mile from another station
- In highly visible areas that are easy to access and do not block pedestrian traffic or access to nearby destinations
- Based on community input

New York City used three pillars when they selected bike share locations in 2012 and 2013 including a high density of stations, close proximity to transit, and community feedback. The high density of stations ensures customers get the service they paid for by having open docking facilities. The close proximity to transit including the New York City Subway offers users the ability to reach their destination in the most efficient way possible. Community feedback allows the system to respond to requests and fix problem areas.[68] The system opened in May 2013, with 332 stations and 6,000 bicycles.[69]

The National Association of City Transportation Officials (NACTO) Bike Share Station Siting Guide provides information on the configuration of stations; station typologies including street, sidewalk, and open space locations; materials and design elements, and technical drawings.[70]

[68] The Methodology of Bike-Share Station Placement in New York City. City Lab, The Atlantic. 2011. http://www.citylab.com/commute/2011/10/how-new-york-city-will-choose-its-bike-share-stations/248/#disqus_thread

[69] Flegenheimer, Matt. Out for a First Spin: City's Bike Share Program Begins. The New York Times. 2013. http://www.nytimes.com/2013/05/28/nyregion/bike-share-program-opens-in-new-york-city-after-long-delay.html?pagewanted=all&_r=1

[70] Bike Share Station Siting Guide. National Association of City Transportation Officials. 2016. http://nacto.org/wp-content/uploads/2016/04/NACTO-Bike-Share-Siting-Guide_FINAL.pdf

Appendix J: Wayfinding Template

Wayfinding Template

In 2016, the City of Fort Collins concluded an effort to create a wayfinding template for use around trails and destinations. Fort Collins has agreed to share their wayfinding documentation with the NFRMPO to distribute to member communities. This turnkey solution allows cities and towns in the NFRMPO region to drop in their own branding and generate professional wayfinding signage. This effort also allows for a regional brand with templates consisting of uniform and unique components in different areas of each wayfinding sign. To view and use the wayfinding template see the attached Wayfinding Elements, Placement and Technical Guidance Memo below.

For more information and the complete Bicycle Wayfinding Network Plan please contact Tessa Greegor, FC Bikes Program Manager (tgreegor@fcgov.com)

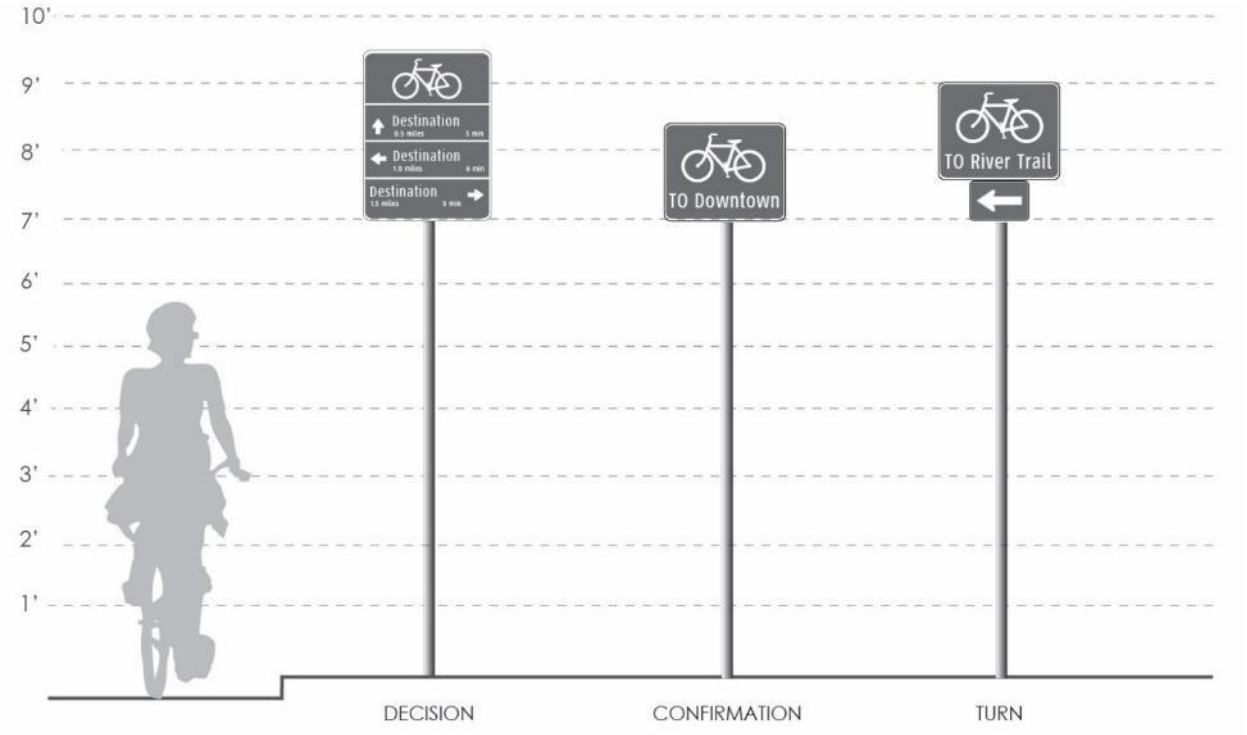
Wayfinding Elements, Placement and Technical Guidance Memo

Wayfinding Elements

Based on field reconnaissance, best practices review and discussions with stakeholder committee members regarding wayfinding needs in Fort Collins, the following sign typologies are recommended for the bicycle network. Unless noted otherwise, all wayfinding elements are oriented and scaled for the bicycle user.

Fundamental Navigational Elements

The fundamental family of signs which provide cyclists with navigational information consists of decision, confirmation, and turn signs. The function, content, and placement of each are described below.



Fundamental on-street wayfinding tools

Decision Sign

Function and content: Decision signs clarify route options at junctions where more than one potential route exists. Decision signs include system branding elements, space for up to three destinations, distances to destinations in miles and/or time (based on 10 mph or 6 minute per mile travel speed) and may include the route or path name.

Per the FHWA's Standard Highway Sign Manual, the standard three line decision sign for both on- and off-street bicycle facilities is formatted horizontally at 18 inches high by 30 inches wide.[71] Many municipalities have three line decision signs that are formatted vertically at 24 inches wide by 30 or 36 inches tall by omitting the bicycle symbol from each separate line and including a single bike symbol at the top of the sign. Regardless of orientation, six inches of vertical space per destination line is generally provided to allow for the two inch minimum text height.

Confirmation Sign

Function and Content: Confirmation signs are placed after a turn movement or intersection to reassure cyclists that they are on the correct route. Signs include a system brand mark and may include the route or path name.

For both on- and off-street bike routes, the minimum size of 24" wide by 18" high should be used.

confirmation signs may be as simple as a standard "bike route" sign or they may include information reassuring which destinations are ahead

[71] Sign width is not standardized by the MUTCD.

Turn Sign

Function and Content: Turn signs are used when only one route option exists to indicate a change in route direction. Signs include a system brand mark, route or pathway name and directional arrow.

Standard D1-1 series signs may be used to indicate turns. Standard turn arrow signs (M5 and M6 series) may also be used in conjunction with bike route signs to clarify turn movements. Similar to decision signs, a minimum height of 6" should be used and width may vary according to destination length.

directional arrows may be added to a bike route sign to clarify the need for a turn movement, Chicago, IL

Supplemental Elements

Mile Markers

Function and Content: Mile markers enable pathway users to measure distances travelled and provide pathway managers and emergency response personnel with reference points to identify field issues such as maintenance needs or locations of emergency events. Mile markers include the system brand mark, distance in whole number miles or decimal miles when less than one mile, and may include path name and jurisdiction.

Placement: Mile markers should be placed every ¼ to ½ mile along the pathway network. Mile markers may be installed on one side of a pathway, back-to-back.

Point zero should begin at the southern and westernmost terminus points of a pathway. Mile numbering should be reset at zero as a pathway crosses a jurisdictional boundary. Distances along on-street routes should be included within mile measurements.

Primary Pathway Identity Sign

Function and Content: Primary pathway identification signs are oriented and scaled for vehicle drivers and serve as the initial welcome and identification of primary pathway access points. Signs include the system brand mark, pathway name, and local jurisdiction identity/logo.

Placement: Signs should be located at trailheads or regional pathway access points. Care should be taken to maintain site triangles so as to not obstruct site lines between roadways and entries at trailhead locations.

Secondary Pathway Identity Sign

Function and Content: Secondary pathway identity signs are oriented and scaled for pedestrian and bicycle network users and serve as the initial welcome and identification of secondary pathway access points. Signs include the system brand mark, pathway name and local jurisdiction identity/logo.

Placement: Signs should be located at pathway access points visible from adjacent bicycle facilities.

Information Kiosk

Function and Content: Kiosks provide a clearing house of information at a more detailed level than other elements. Kiosks include orientation map graphics indicating the on- and off-street route and connections, major geographic features, destinations rules and responsibilities, emergency and pathway manager contact information and jurisdiction logo.

Placement: Kiosks should be located at major pathway system access points and set back from the edge of the path travelway to provide areas to dwell and consider the information. Per accessibility guidelines, kiosks should be placed at a distance greater than three feet from the pathway edge to provide clear circulation areas and avoid the creation of a potential physical obstacle from the bicycle travelway.

System Identifiers

Function and Content: System identifiers present opportunities to add the system brand mark or logo to existing features to expand visibility at an affordable rate. Identifiers may include vinyl wraps, adhesive graphics, sign toppers, and pavement markings with system name or brand mark.

Placement: Identifiers may be placed at each jurisdiction's discretion based on need for augmented system visibility.

Bicycle Wayfinding Element Placement

Elements of the wayfinding family should be located in a consistent and logical manner across Fort Collins. Signs may be mounted to existing or new wayfinding sign posts. The following typical placement scenarios were identified by project stakeholders as navigational issues that most need clarification in relation to the bicycle network.

- On-street route intersections
- Gaps in path network
- Path-path intersections

- Path-roadway intersections
- Off-street and on-street transitions
- Pathway access points
- Typical setback and frequency

On-street Wayfinding Element Placement

On-street wayfinding element placement recommendations are provided below. However, engineering judgement and a review of the existing site conditions should also be used on a case-by-case basis to determine the specific placement of each sign.

Decision Signs

The distance of a decision sign from a turn or transition is determined by design speed, site lines and slope. Decision signs should be placed along the right-of-way in places where the cyclist can see an upcoming sign from an appropriate distance given the design speed and physical context.

On busy streets with center turn lanes or left turn pockets, signs should be placed further from the intersection to decrease the possibility of conflicting cyclist/motorist movements while preparing for a left turn. The location of the sign should exceed the stopping distance needed by the fastest expected travel speed, but should not be placed so far in advance that the relevance of the sign is lost or forgotten.

Confirmation Signs

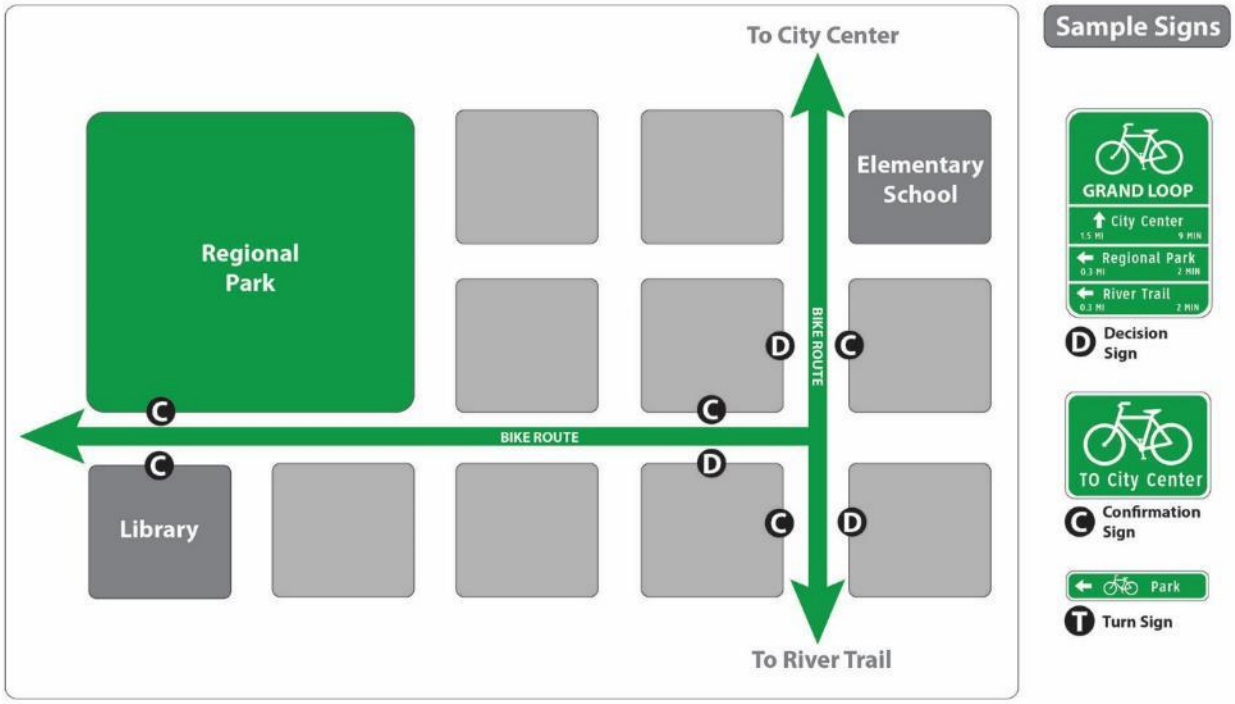
Confirmation signs provide reassurance of direction after decision points and along long routes with no intervening destinations or decision points. At decision points, the sign should be place 50 to 100 feet after the intersection or turn. Confirmation signs should not occur after every intersection and should be prioritized at complex intersections. Complex intersections include those having more than four approaches, non-right angle turns, roundabouts, or in-direct routing.

Along routes in developed areas with few decision points, confirmation signs should be placed every two or three blocks for reassurance. Where less reassurance is needed (for example, less developed areas, low volume streets or separated pathways) confirmation signs should be placed roughly every 0.5 miles.

Turn Signs

Turn signs should be placed at points prior to the turning action to provide cyclists advance notice of a change in direction. Signs may also be used in conjunction with a decision sign at complex intersections warranting additional information.

Note: in the diagrams below, generic wayfinding elements are used as placeholders until final designs are approved.



Typical placement scenario showing a decision sign being located prior to an intersection of two bicycle facilities. A confirmation sign is provided after the turn movement as well as periodically along the route for reassurance.

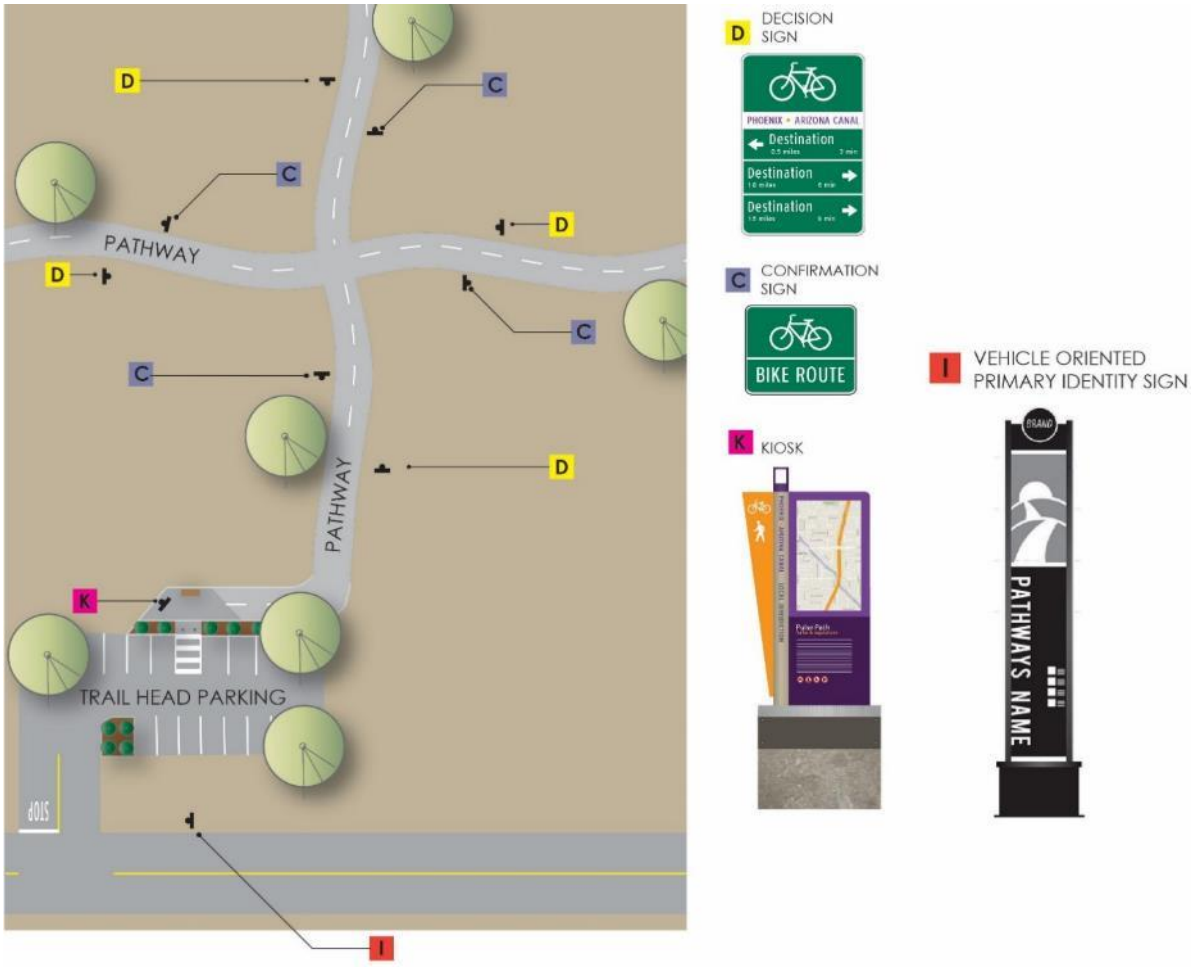
Off-street Wayfinding Element Placement

Pathway Access Points

Major pathway access points or trailheads should be identified via primary identity signs. Primary identity signs should be oriented towards approaching vehicles. Care should be taken to not obstruct site lines between the roadway and entry points or driveways. Pathway system access points not providing vehicle parking should utilize the secondary bicycle sign. As an option, kiosk signs with orientation maps may be placed at developed trailheads or access points.

Path-Path Intersection

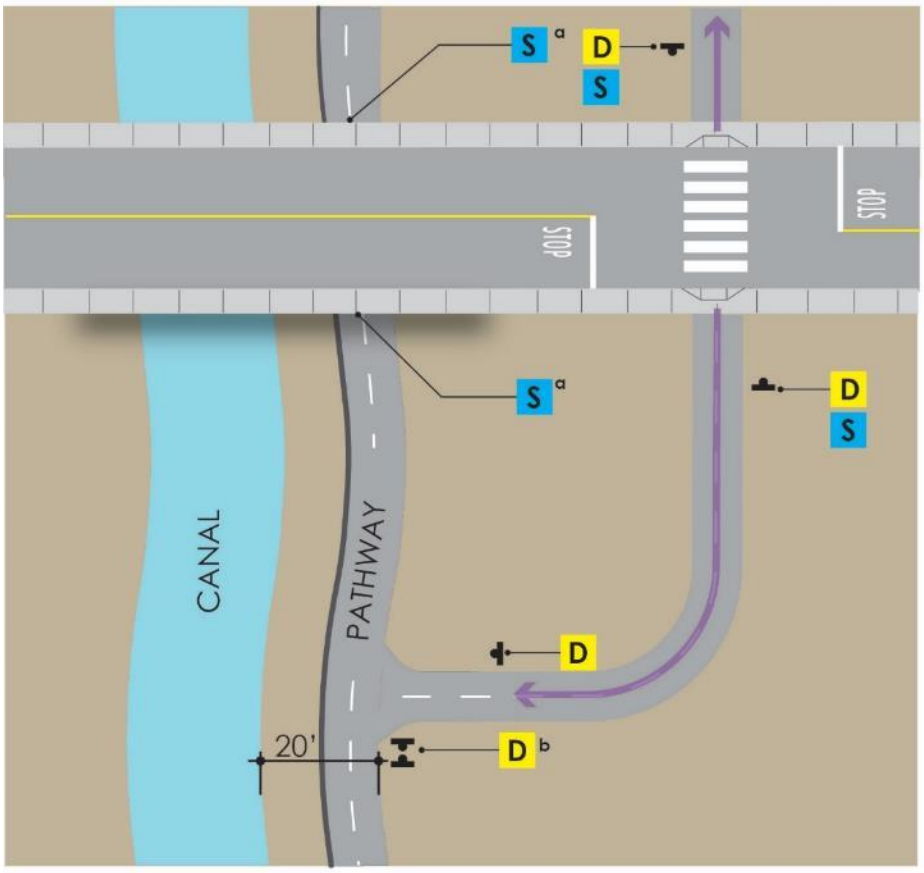
When pathways intersect each other, multiple destinations are likely. Thus, decision signs should be placed prior to the intersection. As an option, confirmation signs may be placed after intersections to reinforce that the user did indeed make the correct movement.



Pathway Bifurcations

Connections and access points between the off-street and on-street network may result in path bifurcations. At such junctions, it is important to inform cyclists of where the alternative route option goes. This may be done via decision signs located at junctions.

Grade separated roadway crossings would benefit from applying street name sign blades to crossing improvements such as bridge infrastructure.



NOTES:
a. MOUNT TO UNDERSIDE OF BRIDGE
b. OK TO MOUNT TWO SIGNS PER POLE. SIGNS TO BE PLACED PERPENDICULAR TO DIRECTION OF TRAVEL.

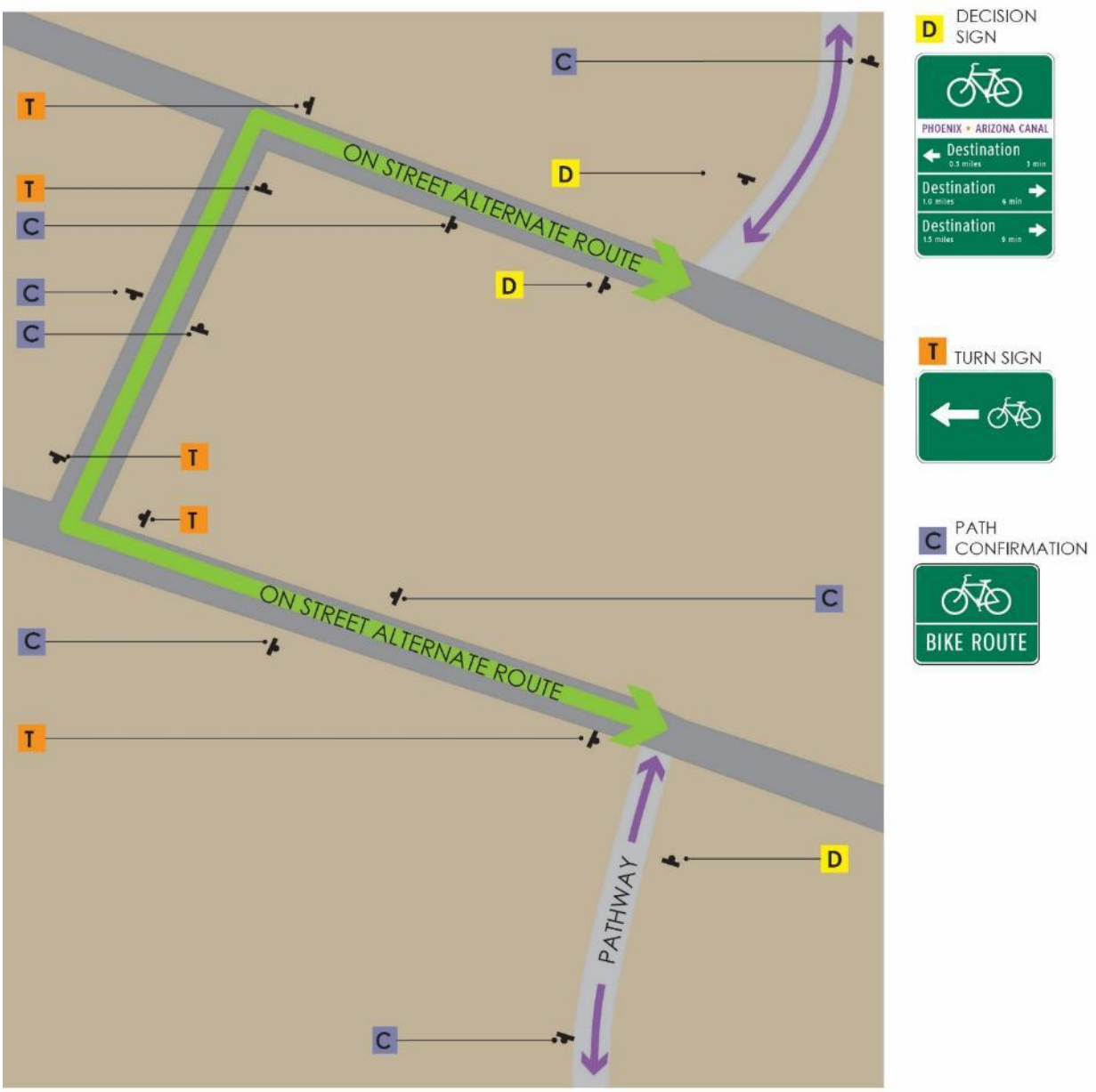
D DECISION SIGN

T TURN SIGN

C CONFIRMATION SIGN

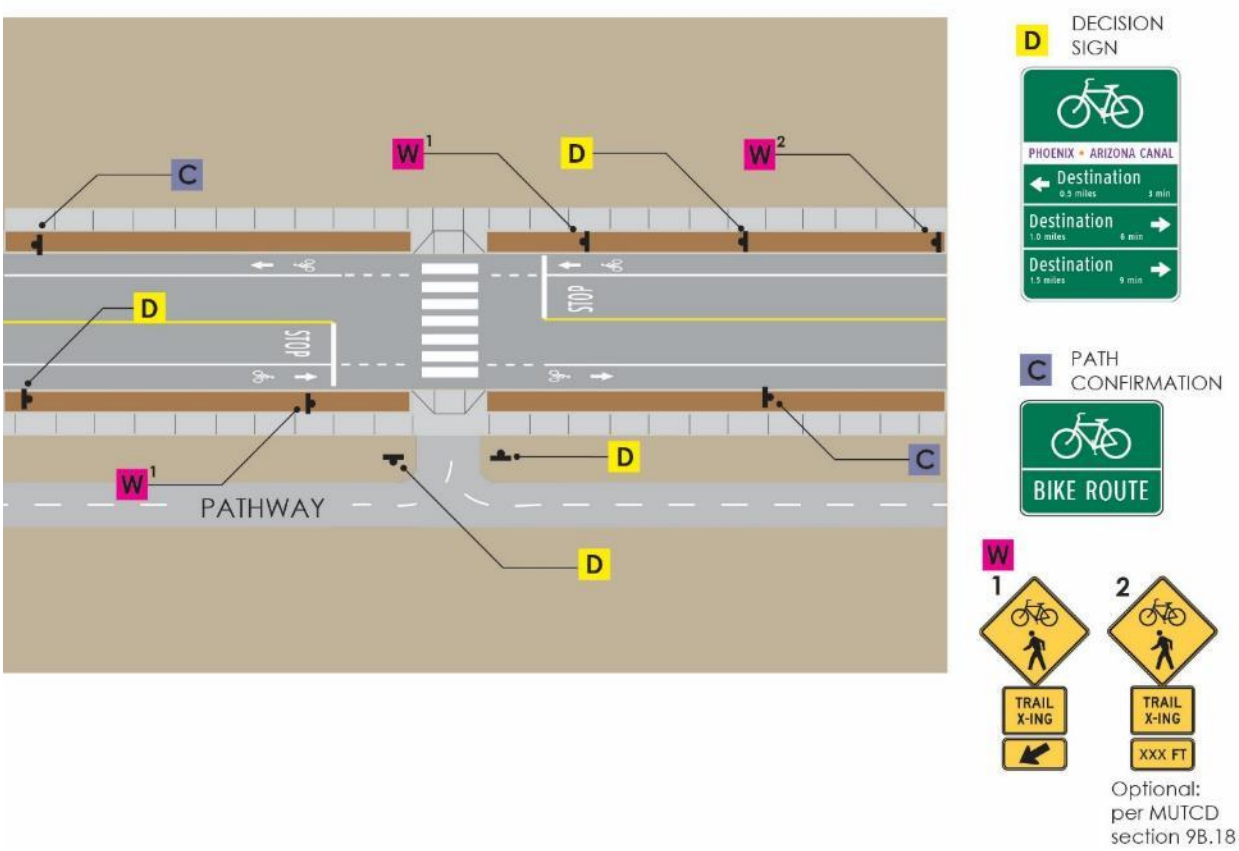
S

Gap in Path Network



Where gaps in the off-street bicycle network exist, pathway users may be routed to on-street bicycle facilities to provide improved connectivity. The typical pattern for wayfinding signs includes a decision sign prior to the intersection of route options, followed by an optional confirmation sign. Turn signs should be placed to reinforce the route in locations where only one route option exists.

Off-street / On-street Transition



When transitioning from an off-street facility to an on-street facility, it is important to advise travelers of their route options. In this scenario, decision signs direct cyclists to their destination choices while confirmation signs reinforce that the user is on a designated facility after a turn movement is made.

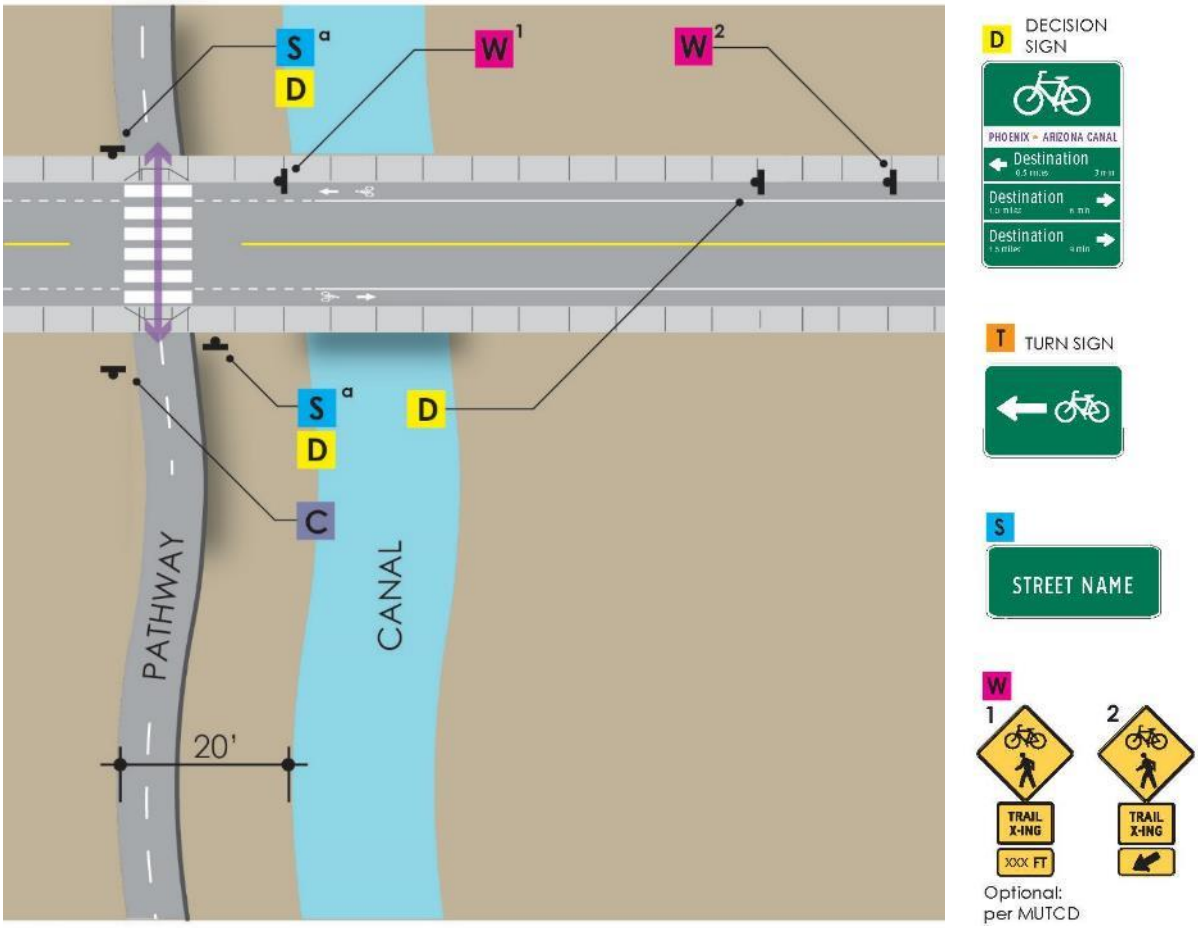
Decision signs should also be placed at the entry to the off-street bicycle network. Once on the off-street bicycle network, confirmation signs are optional.

Vehicle oriented bicycle and pedestrian crossing warning signs should be placed in advance of crosswalks. In urban areas, signs should not be placed within four feet of a crosswalk in order to maintain visibility of those intending to cross the roadway.

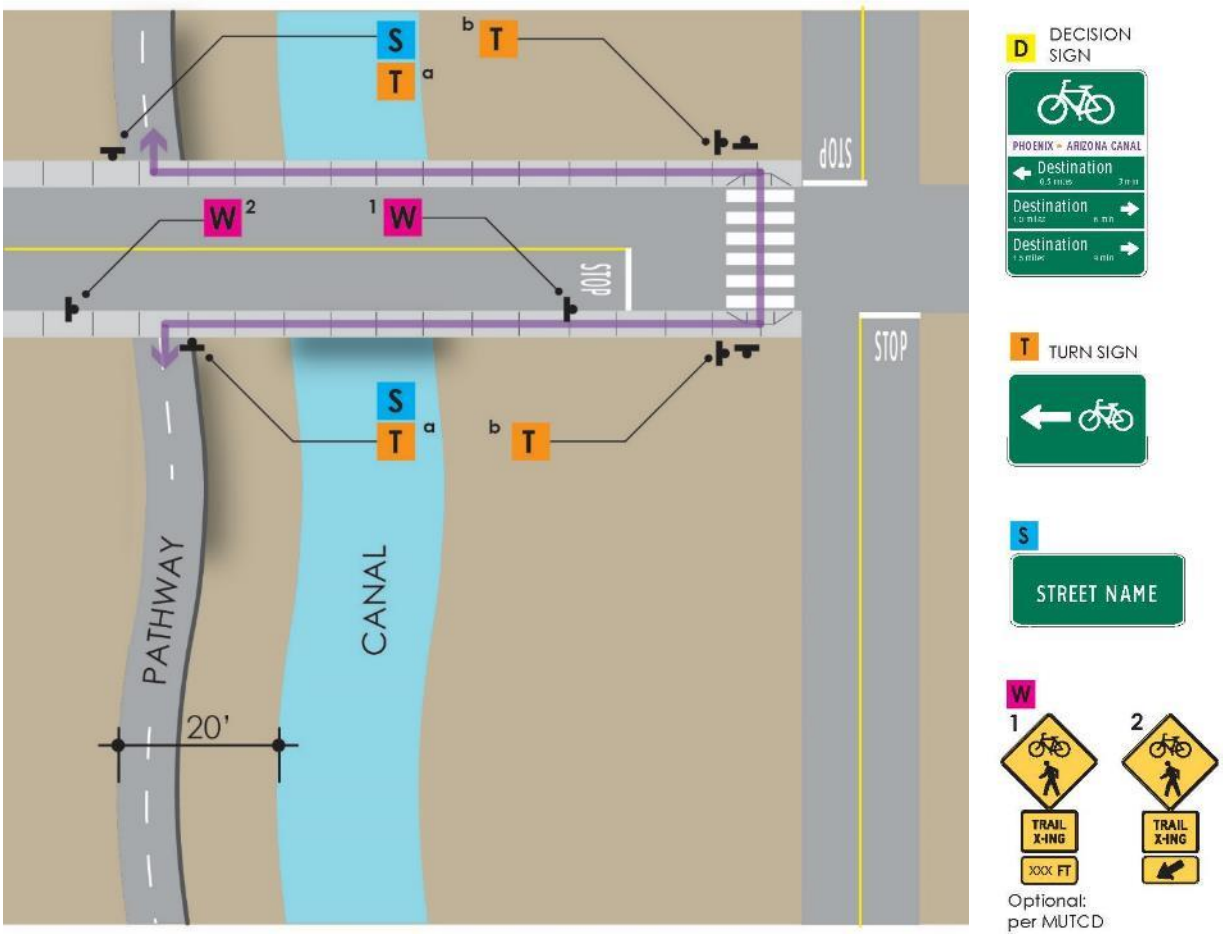
Advance warning signs are optional per the MUTCD. If they are used, their placement should provide needed time for detection, recognition, decision, and reaction. Table 2C-4 within the MUTCD provides guidance for advance warning sign placement based on vehicle speeds.

On-street directional signs leading to the pathway network should not obscure other roadway signs including warning signs. They should be spaced according to roadway travel speeds with faster roadways warranting wider spacing. Guidelines for the placement of advance warning signs based on perception-response time may be found within Table 2C-4 of the MUTCD.

Path-Roadway Intersection



Pathway users should be directed to cross roadways only where improvements such as curb ramps, crosswalk striping, and warning signs exists. If the cross street has bicycle facilities such as bike lanes, a bicycle boulevard, or cycle track, a decision sign should be placed prior to the intersection to inform cyclists of their route options. If a cyclist oriented stop sign is present, it should not be obscured by the wayfinding sign. Decision signs may be topped with street name sign blades to enhance one's awareness of their location. As an option, confirmation signs may be placed at pathway entries to assure cyclists that they are on a bicycle facility.



Oftentimes, direct travel via mid-block roadway crossings is not provided for. Instead pathway users are expected to divert to the nearest improved or signalized intersection. In this scenario, turn signs should be used to direct cyclists to the intersection with safety improvements. Again street name blades may be mounted above decision signs to reinforce location.

Wayfinding Technical Guidance

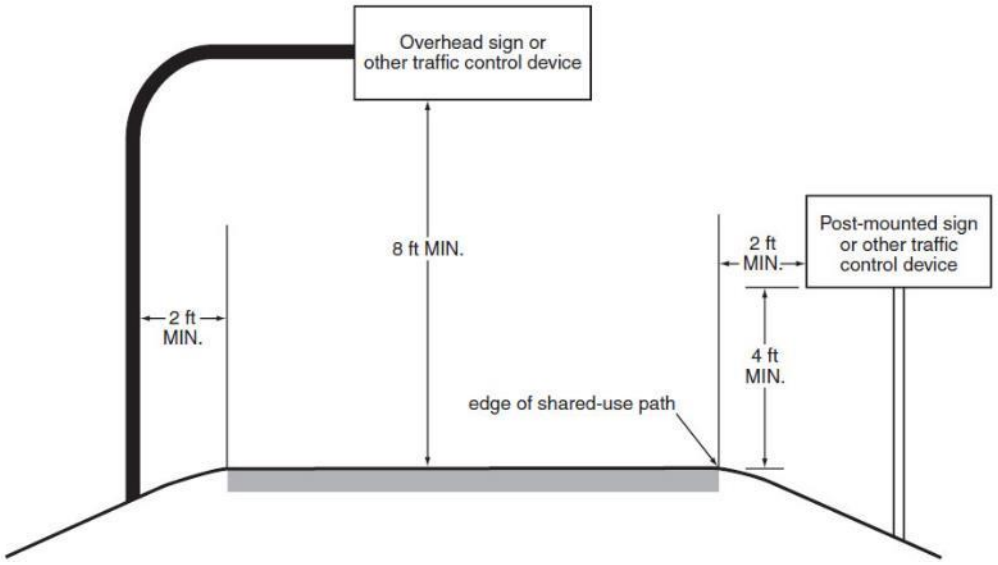
A variety of standards and guidelines influence both sign design and placement of wayfinding elements in Fort Collins. The following provides information related to national standards for wayfinding signage.

In general, regulatory and warning signs are a higher priority than wayfinding signs. Care should be taken to not obscure priority information. This includes providing a typical spacing of no less than 75 feet between signs along off-street pathways. This distance is based on travel speeds and thus is generally greater for on-street systems.

AASHTO Guide for the Development of Bicycle Facilities

The Guide for the Development of Bicycle Facilities by the American Association of State Highway Transportation Officials, or AASHTO, provides information on the physical infrastructure needed to support bicycling facilities. The AASHTO guide largely defers to Part 9 of the Manual on Uniform Traffic Control Devices (MUTCD) for basic guidelines related to the design of wayfinding systems for bicycles (see page 16). Additional information provided by AASHTO regarding wayfinding is as follows:

- Many communities find that a bicycle wayfinding system enhances other encouragement efforts by providing a visible invitation to new bicyclists and encouraging current bicyclists to explore new destinations.
- Bicycle wayfinding signs along do not improve safety or rider comfort and should supplement other infrastructure improvements so that conditions are favorable for bicycling.
- Guide signs may be used to designate continuous routes that are composed of a variety of facility types and settings.
- Wayfinding guidance may be used to provide connectivity between two or more major bicycle facilities, such as a street with bike lanes and a shared use path.
- Wayfinding may be used to provide guidance and continuity in a gap between existing sections of a bikeway, such as a bike lane or shared use path.
- Road/path name signs should be placed at all path-roadway crossings to help users track their locations.
- Reference location signs (mile markers) assist path users in estimating their progress, provide a means for identifying the location of emergency incidents, and are beneficial during maintenance activities.
- On a shared use path, obstacles, including signs, should be placed no closer than 24 inches from the near edge of the travel way and no more than 6 feet away. For pole mounted signs, the lowest edge of the sign shall be 4 – 5 feet above the existing ground plane.



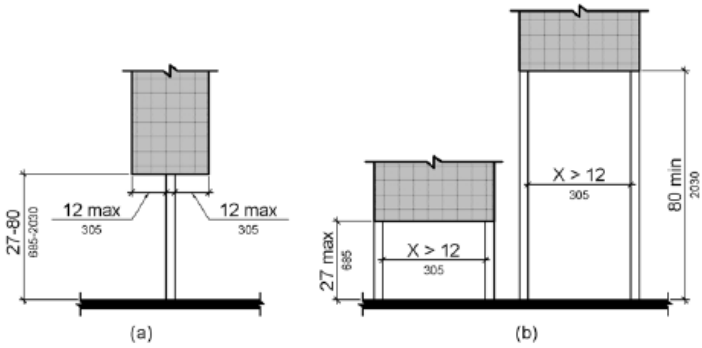
Minimum Sign Clearances on Shared-Use Paths

Accessibility Standards

As wayfinding systems often relate to accessible routes or pedestrian circulation, it is important to consider technical guidance from the ADA so that signs and other elements do not impede travel or create unsafe situations for pedestrians and/or those with disabilities. The Architectural and Transportation Barriers Compliance Board provides guidance for accessible design for the built environment. Standards which should be considered when designing and placing wayfinding signs includes the following:

Vertical Clearance

Vertical clearance should be a minimum of 80 inches high or maximum of 27 inches when signs protrude more than 12 inches from the sign post or support structure.



Post-Mounted Objects

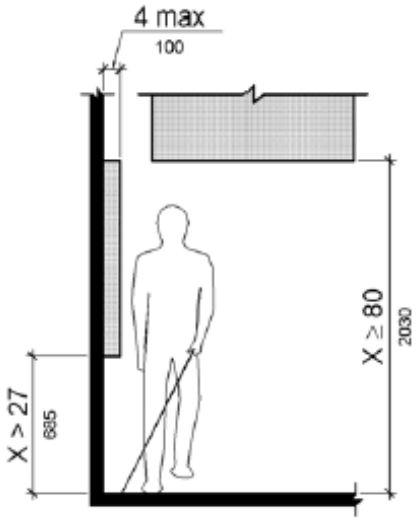
Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches, the lowest edge of such sign or obstruction should be 27 inches maximum or 80 inches minimum above the finish floor or ground.

Protruding Objects

Objects with leading edges more than 27 inches and not more than 80 inches above the finish floor or ground should protrude 4 inches maximum horizontally into the circulation path.

Required Clear Width

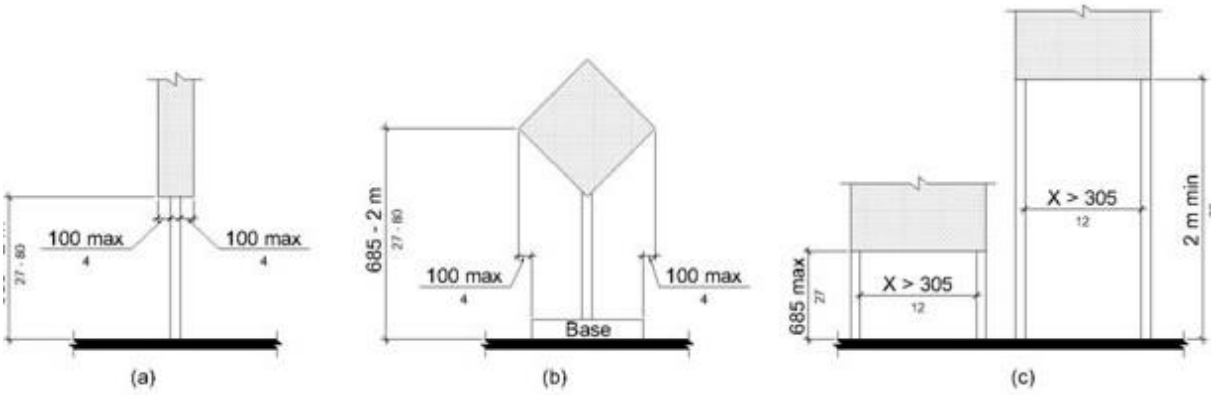
Protruding objects shall not reduce the clear width required for accessible routes. Generally this requirement is met by maintaining four feet minimum clear width for maneuvering. This requirement applies to both sidewalks and pedestrian circulation paths.



Limits of Protruding Objects

Shared Use Paths

Accessibility standards for shared use paths are currently being developed. Proposed standards address post mounted objects. Where objects are mounted on free-standing posts or pylons and the objects are 27 inches minimum and 80 inches maximum above the finish surface, the objects should overhang pedestrian circulation paths 4 inches maximum measured horizontally from the post or pylon base. The base dimension should be a minimum of 2.5 inches thick. Where objects are mounted between posts or pylons and the clear distance between the posts or pylons is greater than one foot, the lowest edge of the object should be 27 inches maximum or 80 inches minimum above the finish surface.



Current proposed standards for post mounted objects along shared use paths.

Manual on Uniform Traffic Control Devices (MUTCD)
Bicycle Sign Standards

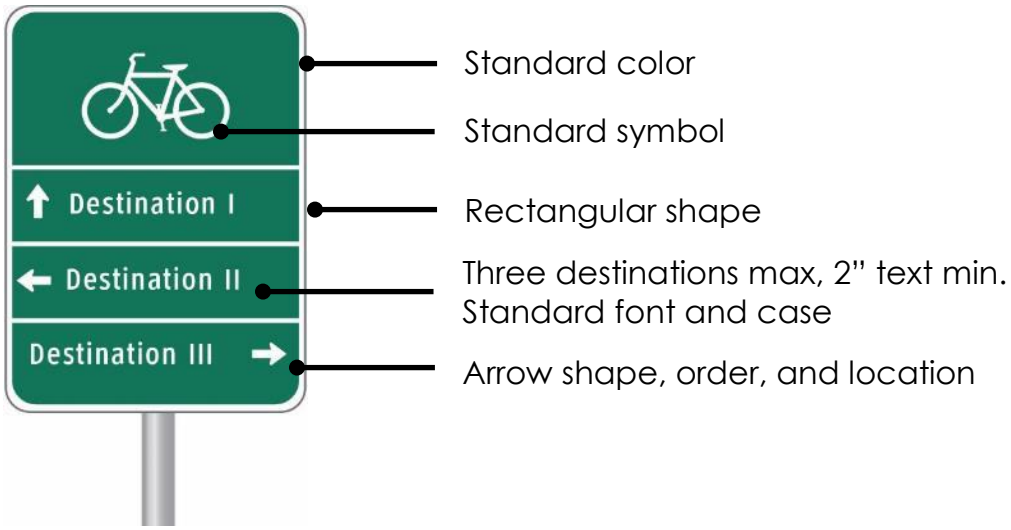
D11-1c M1-8

D1-3c

The Manual on Uniform Traffic Control Devices, or MUTCD, is a document issued by the Federal Highway Administration of United States Department of Transportation. The MUTCD specifies the standard for all traffic control devices installed on any street, highway, bikeway, or private road open to public travel. The MUTCD was established in order to achieve uniformity and consistency in traffic control devices (wayfinding signage is considered a traffic control device) so that information would be readily recognized and understood by travelers. Both on-street and off-street bicycle facilities are required to follow the standards within the MUTCD.

Per the MUTCD, devices should be designed so that:

- Size, shape, color, composition, lighting or retro-reflection, and contrast are combined to draw attention to the devices; simplicity of message combine to produce a clear meaning.
- Legibility and size combine with placement to permit adequate time for response.
- Uniformity, size, legibility, and reasonableness of the message combine to command respect.



Standard MUTCD compliant directional or decision sign

The MUTCD also recommends the arrangement and amount of text, or legend, on each section of each sign:

- Guide signs should be limited to no more than three lines of destinations, which include place names, route numbers, street names, and cardinal directions.

- A straight ahead location should always be placed in the top slot followed by the destination to the left and then the right. If two destinations occur in the same direction, the closer destination should be listed first followed by the farther destination.
- Arrows shall be depicted as shown above for glance recognition, meaning straight and left arrows are to be located to the left of the destination name, while an arrow indicating a destination to the right shall be placed to the right of the destination name. The approved arrow style must be used.
- 19 characters (incuding spaces) in titlecase should be considered a maximum length for a single destination title. 10-14 characters (including spaces) in titlecase should be considered an ideal maximum length for a single destination title.
- In situations where two destinations of equal significance and distance may be properly designated and the two destinations cannot appear on the same sign, the two names may be alternated on successive signs.
- Approved fonts include the Federal Series (series B, C, or D), also known as Highway Gothic. Clearview is also currently approved for use, however the FHWA is considering rescinding the use of Clearview.
- A contrast level of 70% needs to be achieved between forground (text and graphics) and background.

Appendix K: List of Acronyms

List of Acronyms

3C – Comprehensive, Cooperative, and Continuing planning process

AARP – American Association of Retired Persons

ADA – Americans with Disabilities Act of 1990

ADAAG – Americans with Disabilities Act of 1990, Accessibility Guidelines

AQCC – State Air Quality Control Commission

BPEC – Bicycle and Pedestrian Education Coalition

CanDo – Coalition for Activity and Nutrition to Defeat Obesity (University of Colorado Health)

CAA – Clean Air Act

CCAP – 1993 Climate Change Action Plan

CDC – Centers for Disease Control and Prevention

CDOT – Colorado Department of Transportation

CDPHE – Colorado Department of Public Health and Environment

CFRT – Colorado Front Range Trail

CMAQ – Congestion Mitigation and Air Quality Improvement Program

CSU – Colorado State University

ETC – Enhanced Travel Corridor

FAST Act – Fixing America's Surface Transportation Act (December 2015)

FASTER – Funding Advancements for Surface Transportation and Economic Recovery Act of 2009

FC – Fort Collins

FLHP – Federal Lands Highway Program

FTA – Federal Transit Administration

GOCO – Great Outdoors Colorado

HSIP – Highway Safety Improvement Program

LOS – Level of Service

LTS – Level of Traffic Stress

MAP-21 – Moving Ahead for Progress in the 21st Century (June 2012)

NACTO – National Association of City Transportation Officials

NFRMPO – North Front Range Metropolitan Planning Organization

NFRT&AQPC – North Front Range Transportation and Air Quality Planning Council

NHS – National Highway System

PORT – Berthoud Parks, Open Space, Recreation and Trails Master Plan

PROWAG – Americans with Disabilities Act of 1990, Public Rights of Way Accessibility Guidelines

RBP – NFRMPO 2013 Regional Bicycle Plan

RTCA – National Parks Rivers, Trails, and Conservation Assistance Program

RTP – Recreational Trails Program

RTP – NFRMPO 2040 Regional Transportation Plan

SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (August 2005)

SRTS – Safe Routes to School

STBG – Surface Transportation Block Grant Program

TA – Transportation Alternatives Program

TDM – Transportation Demand Management

UNC – University of Northern Colorado

USDOT – US Department of Transportation

VMT – Vehicle Miles Traveled

WTCC – Weld Trails Coordination Committee

WCDPHE – Weld County Department of Public Health & Environment

Appendix L: Glossary of Terms

Glossary of Terms

For consistency and clarification, the following definitions are provided for different types of bicycle and pedestrian facilities.[72]

Bicycle Boulevard – A street segment, or series of contiguous street segments, that has been modified to accommodate through bicycle traffic and minimize through motor traffic.

Bicycle Route – A roadway or bikeway designated by the jurisdiction having authority, either with a unique route designation or with BIKE ROUTE signs that may provide directional and distance information.

Bikeways – A generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bike Box – A designated area at the head of a traffic lane at a signalized intersection providing bicyclists with a safe and visible way to move ahead of queuing traffic during the red signal phase.

A Bike Box at W Plum St. & Shields St. in Fort Collins

Bike Lane – A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists.

Protected Bike Lanes – Bike lanes which use planters, curbs, bollards/posts, or parked cars to separate bicycle and automobile traffic on busy streets.

Sidewalk – Also known as a footpath, is a path along the side of a road separated from the vehicular road section by a curb.

A Bike Lane

Shared Use Path – A bikeway physically separated from motorized vehicular traffic by an open space or barrier either within the highway right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

Shared Lane – A lane of a traveled way that is open to bicycle travel and vehicular use.

Shared Lane Marking ("sharrows") – A pavement marking symbol that indicates an appropriate bicycle positioning in a shared lane.

Sidepath – A shared use path located immediately adjacent and parallel to a roadway.

Sharrow pavement marking

[72] Sources: AASHTO Guide for the Development of Bicycle Facilities, 2012 and February 2010 Draft; NACTO Urban Bikeway Design Guide.