TRANSPORTATION INFRASTRUCTURE

INFRASTRUCTURE VISION STATEMENT

Fort Collins' transportation infrastructure will facilitate the safe and efficient movement of people, goods and services regardless of mode. The infrastructure will be improved in concert with land use development while being respectful of community values and the environment.

SUPPORTING PRINCIPLES

PRINCIPLE T1

Coordinate transportation plans, management and investments with land use plans and decisions.

PRINCIPLE T2

Build and maintain high-quality infrastructure supporting all modes of travel.

PRINCIPLE T5

Ensure that transit is a safe, affordable, efficient and convenient travel option for people of all ages and abilities.

Introduction

This section outlines priorities for future investments in Fort Collins' transportation infrastructure. Strategic infrastructure investment provides residents and visitors with safe, comfortable and intuitive choices for multiple modes that balance cost, time, environmental outcomes and health benefits. The core of this system is the "layered network." The layered network creates a cohesive and connected set of transportation connections for all modes to destinations in Fort Collins.

Where We Are Today

The number of vehicle miles traveled (VMT) in Fort Collins increases every year. With continued population growth, the amount of total VMT is predicted to further increase, despite miles driven per person decreasing. This means more vehicles on already-busy roads. In many parts of Fort Collins roads are already as wide as planned. As such, there is limited space to accommodate more traffic. The existing infrastructure needs to be managed effectively and efficiently to keep the high level of mobility that Fort Collins residents and visitors expect.

Opportunities for the Road Ahead

Although the citywide VMT is projected to increase because of population and employment growth, the per-capita daily VMT is projected to decrease by 6%, which aligns with the City's objective of reducing auto-dependency and increasing other mode shares. Establishing reliable and comfortable alternatives for traveling without a vehicle and promoting alternatives to driving alone to reduce VMT are essential components of the Transportation Master Plan.

The Layered Network

The Transportation Master Plan was developed using a layered network framework, which focuses on how the City's transportation network can function, as a system, to meet the needs of all users. The layered network concept is recommended by the Institute of Transportation Engineers and emphasizes safety for all modes of travel, while supporting key City principles and policies.

LAYERED NETWORKS PRIORITIZE ROADWAYS FOR DIFFERENT MODES OF TRAVEL, WHICH HELPS INFORM DIFFICULT INVESTMENT CHOICES.

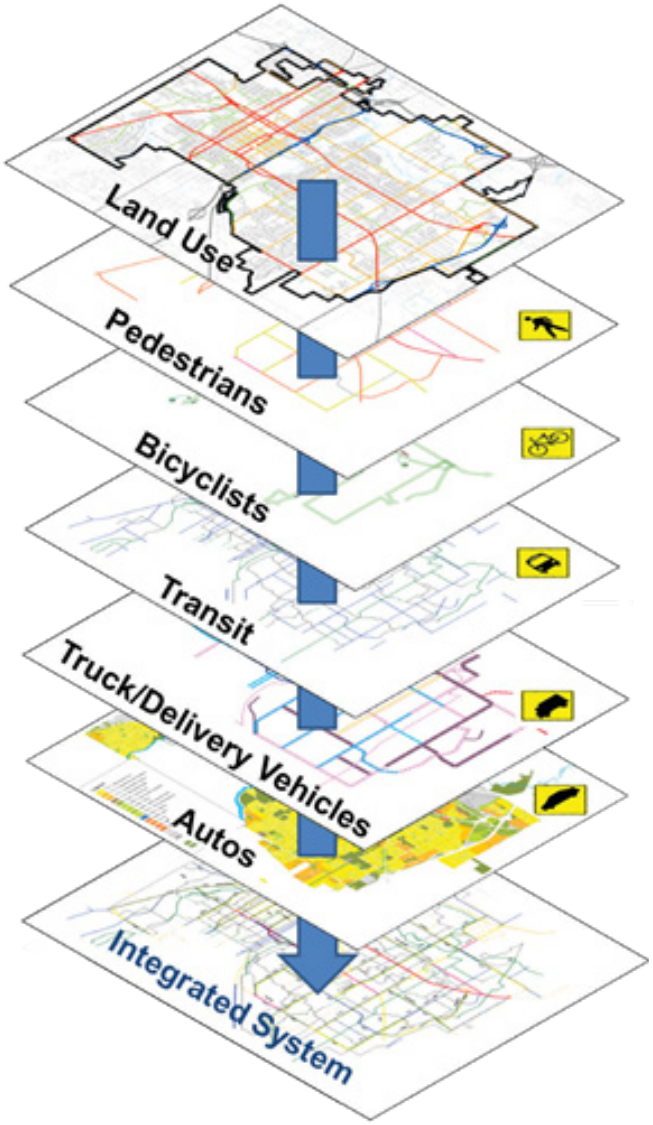
Introduction to the Layered Network Concept

Fort Collins is committed to planning and building complete streets. However, it is often a challenge for every roadway to meet the demands and needs of all modes.

The layered network concept envisions streets as systems; each street type is designed to create a high-quality experience for intended users. A layered network approach allows for certain streets to emphasize specific modes or user types, while discouraging incompatible uses. For example, a downtown street may be planned to provide a pleasant experience for shoppers on foot, recreational bicyclists and people wishing to park on the street, while discouraging use by "cut-through" traffic and regional trucking.

Fundamentally, the layered network is influenced by the land uses outlined in the Structure Plan. Increased land use density results in more trip-making activity and therefore demands more space-efficient forms of travel such as bicycling, walking, transit, scooters and longboards. In lower-density areas of the city, maintaining vehicle accessibility is important, while still providing key bicycle connections and pedestrian access on all streets.

The following sections of this chapter describe the individual modal network "layers" that have been developed for transit, walking, biking and vehicles. When all the layers are combined, the result is a complete, connected, and multimodal system that is in integrated with the underlying land use patterns. The following sections provide an overview of each layer, and full-layer maps can be found in the Mobility & Travel Choices portion of the TMP.



Source: Institute of Transportation Engineers, 2011

Transit Network Layer

The Transit Master Plan identifies specific corridors in the City where transit service will operate in the future. The transit network layer is planned to provide a balance between coverage (serving many areas of the City) and productivity (providing high-frequency service along high-ridership corridors). This will be achieved by expanding bus rapid transit (BRT) and high-frequency service to corridors with transit supportive land uses, including dense urban and mixed-use nodes and major activity and employment centers.

Future fixed-route bus service is categorized into four typologies: BRT, high-frequency, local and regional. The Transit Master Plan identifies a list of capital and operational improvements to facilitate the expansion of fixed-route service. For example, on future BRT and high-frequency routes, projects to speed up buses through traffic-signal improvements (transit-signal priority) and queue jump lanes are identified, as well as upgrades to passenger waiting areas.

To facilitate transit coverage as the City grows, new "mobility innovation zones" have been identified where new types of transit services, such as autonomous shuttles or partnerships with on-demand ride-hailing services, will be deployed to more efficiently connect the lower-density areas of Fort Collins to the fixed route backbone.

What Happened to Enhanced Travel Corridors (ETCs)?

The 2011 TMP prioritized transportation investment corridors through a designation of ETCs: corridors uniquely designed to incorporate a mix of automobile, transit, bicycle and pedestrian investments, which could include different prioritization of modes within these corridors. With the introduction of the layered network concept in the TMP, the ETC concept is replaced with the identification of priority transit, bicycle, pedestrian, and automobile corridors.

The most visible transformation of ETCs in this Transportation Master Plan update are the BRT and high-frequency transit corridors. These corridors are based on the expected land use intensification identified in the Structure Plan.

Pedestrian Network Layer

Everyone is a pedestrian at some point during their trip. Therefore, every street in the City should contain a sidewalk and curb ramps that are Americans with Disabilities Act (ADA) accessible. Certain areas in the City with higher pedestrian volumes prioritize the pedestrian experience, such as Downtown and near Colorado State University.

Unlike the layered network for bicyclists, transit and vehicles, the priority locations for pedestrians are not limited to certain corridors. Instead they are identified based on results from the City's Prioritization Model. This approach to the pedestrian component of the layered network acknowledges that comfortable pedestrian facilities are intended to be present on all streets, not just certain corridors.

Walk and Wheels Skills Hub

Bicycle Network Layer

While bicycles are welcomed and permitted on all streets in Fort Collins, the bicycle network layer identifies corridors with dedicated bicycle facilities, consisting of protected bike lanes, buffered bike lanes, standard bike lanes or neighborhood greenways. The 2014 Bicycle Plan states a key outcome of ensuring that "80 percent of residents will live within one quarter mile of a low-stress bicycle facility" and "all neighborhoods will have access to a low-stress bicycle route."

In line with the layered network concept, not every street needs to, or should, have a low-stress bicycle facility, but most residents should be reasonably close to a facility. For example, on streets with high speeds and volumes, or angled parking, it is not as appropriate or feasible to provide a low-stress bicycle

facility. However, determining a parallel facility that can provide bicyclists with a connected, low-stress network and access to key destinations is important. In a way, the low-stress bicycle network is similar to the arterials devoted to vehicle travel. Not every street is required (or appropriate) to be an arterial, but the streets are spaced at a reasonable interval to ensure good vehicle access.

The Transportation Master Plan references the 2014 Bicycle Plan to identify corridors prioritized for bicyclists through the identification of a designated bicycle facility. All designated bicycle facilities in the layered network will be low-stress, according to the Level of Traffic Stress methodology featured in the 2014 Bicycle Plan. The low-stress bicycle network is also intended to accommodate other users such as e-scooters and longboard users.

Bike to Work Day

Vehicle/Truck Network Layer and Master Street Plan

Establishing reliable and comfortable alternatives for traveling without a vehicle and promoting alternatives to driving alone are essential components of this Plan. However motorized vehicles will continue to be one of the primary ways people travel in Fort Collins. Additionally, it is important to recognize the importance of providing efficient and reliable vehicle mobility for businesses, including deliveries.

The City's major street network (**Figure 5-1**) defines the primary vehicle and truck layer which is also compatible with the transit, pedestrian and bicycle network layers. This major roadway network helps guide transportation investments and serves as the overarching framework for transportation.

The major street network is defined by the Master Street Plan (MSP), which informs the development of the Capital Improvement Program. The MSP helps identify projects the City should undertake to support future travel needs and is updated to reflect demand, new infrastructure and planning.

The Master Street Plan will be updated as an early action item after adoption of the TMP. Updates to the MSP will reflect future travel needs identified by the regional travel model, input from stakeholder and public comment, and the adoption of the layered network concept.

Traffic in Fort Collins

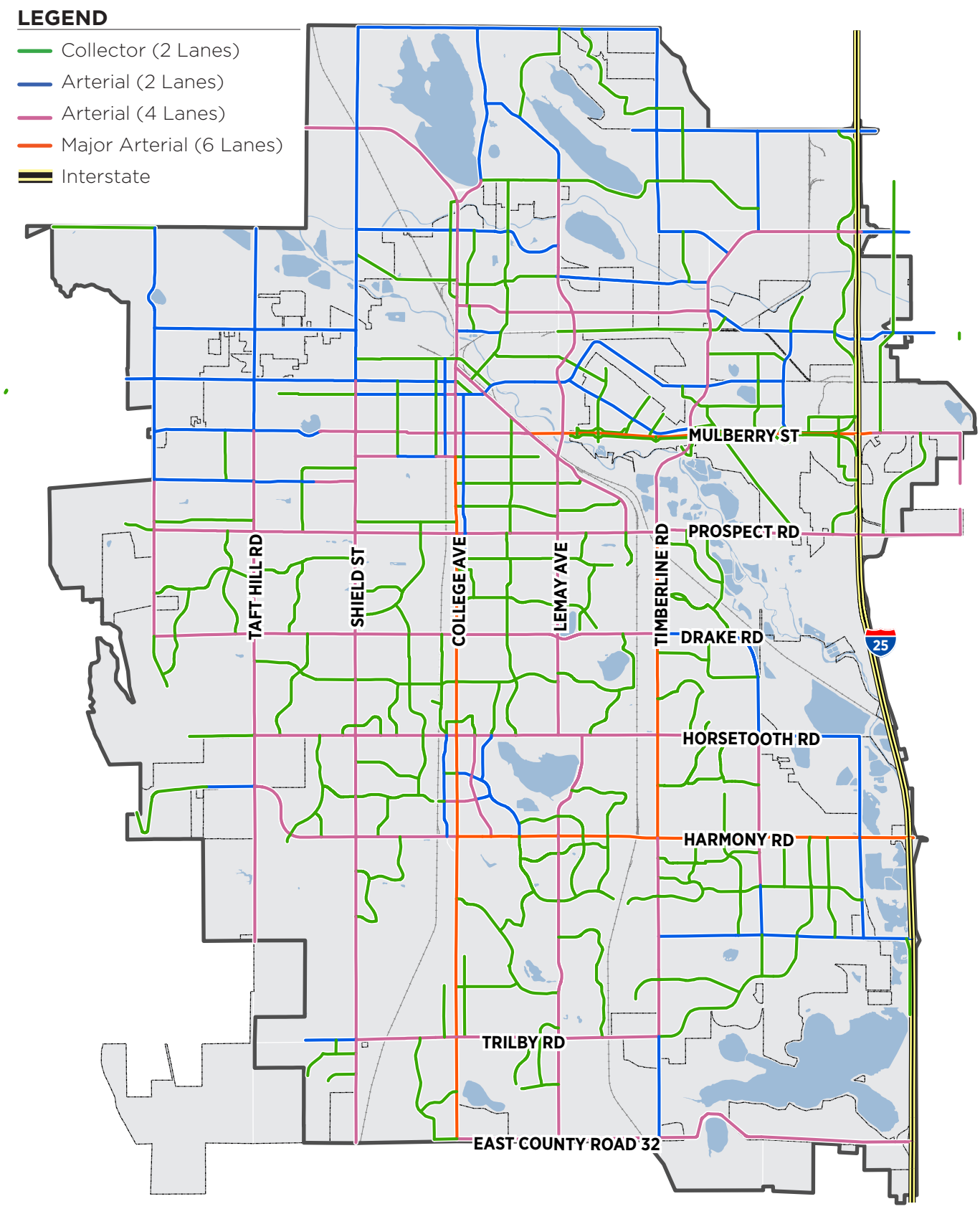


Figure 5-1: Major Street Network

Multimodal Level of Service (MMLOS)

MULTIMODAL LEVEL OF SERVICE IS A TOOL TO IDENTIFY WHAT TYPES OF FACILITIES SHOULD BE INCLUDED IN EACH LAYER OF THE TRANSPORTATION SYSTEM AND HOW TO IMPLEMENT THOSE FACILITIES.

Background and Purpose

Fort Collins was one of the first cities to adopt Multimodal Level of Service (MMLOS) standards to evaluate how projects serve pedestrians, bicyclists, transit riders and vehicles. Consistent use and implementation of MMLOS practices helped to achieve multimodal goals and objectives, meet community needs, and provides transparency for developers and the public.

To continue to create projects and developments that have high levels of service for all modes, the existing MMLOS standards are in need of updating. As the standards exist currently, some projects and developments fail to meet existing standards due to constraints and lack of flexibility. Additionally, current standards do not reflect best practices being used in capital improvement projects.

Another key objective in updating these standards is to streamline the development review process, providing clarity for both developers and City staff. Under the existing system, the MMLOS standards are helpful in identifying gaps in the transportation system, but they are difficult to apply and do not result in the consistent implementation of multimodal infrastructure improvements by developers.

Recommended Updates

Fort Collins intends to move away from MMLOS "standards" to a guideline-based system to inform City planning efforts, capital projects and the development review process.

Guidelines define an outcome or design that is desirable but allows deviations for exceptional circumstances. Moving from a standard to a guideline allows City staff to more easily implement improvements in areas with limited right-of-way or where other constraints limit the type of facility that can be built.

MMLOS updates are also expected to modify the Development Review process and change how City capital projects incorporate multimodal considerations. Additionally, there is a recommendation to enhance the current transportation dashboard to track and share Fort Collins' progress on MMLOS. More comprehensive details on the initial recommended approach can be found in Appendix H3.

MMLOS and Development Review

As part of an update to the standards and guidelines, it is recommended that the City streamline the MMLOS analysis requirements for development review. As described in Appendix H3, the proposed changes would have developers include an MMLOS analysis as part of their standard Traffic Impact Study to identify needed improvements.

Identified projects could be either built directly by the developer or potentially mitigated through a fee. One concept considers expanding the Transportation Capital Expansion Fee to include additional multimodal improvement projects.

This recommendation will be further developed as an early action item and will include a diverse set of stakeholders to ensure that the key details are discussed and well defined.

Updates to the Larimer County Urban Area

One part of this update process will be revisions to Chapter 4 of the Larimer County Urban Area Street Standards (LCUASS). This includes changing the title to "Multimodal Transportation Impact Study," to reflect the intent of the studies to be multimodal. This keeps the Transportation Impact Study process intact for vehicle level of service, but integrates the multimodal considerations into the process, revising

the project-impact text and strengthening language around Transportation Demand Management (TDM) mitigation.

Capital Improvement Plan & Infrastructure Improvements

The Capital Improvement Plan (CIP) is a list of multimodal transportation system improvements needed to achieve the TMP vision. Typically, the CIP is updated in conjunction with the Transportation Master Plan update to ensure that planned projects continually match the community's transportation vision.

CIP projects include categories such as:

- Advanced Traffic Management System;
- Bicycle;
- Bridge;
- Intersections;
- Parking;
- Pedestrian;
- Railroad;
- Roadway;
- Trails;
- Transit;
- Grade Separated Crossings;
- Pedestrian Program; and
- Bus Stop Improvements.

The 2012 CIP identified $309.4 million in short-term (2013-18) project costs and approximately $1.3 billion in long-term (through 2035) projects costs. In the short term, transit projects make up the largest capital project category with one-third of projected short-term costs. For long-term projects, roadway projects account for the largest percentage of costs. Moving forward, the CIP will be updated every two years to reflect projects that are based on the layered networks identified previously in this plan. CIP updates will also revisit project prioritization by considering land-use changes, sustainability goals, evolving community values and equity.

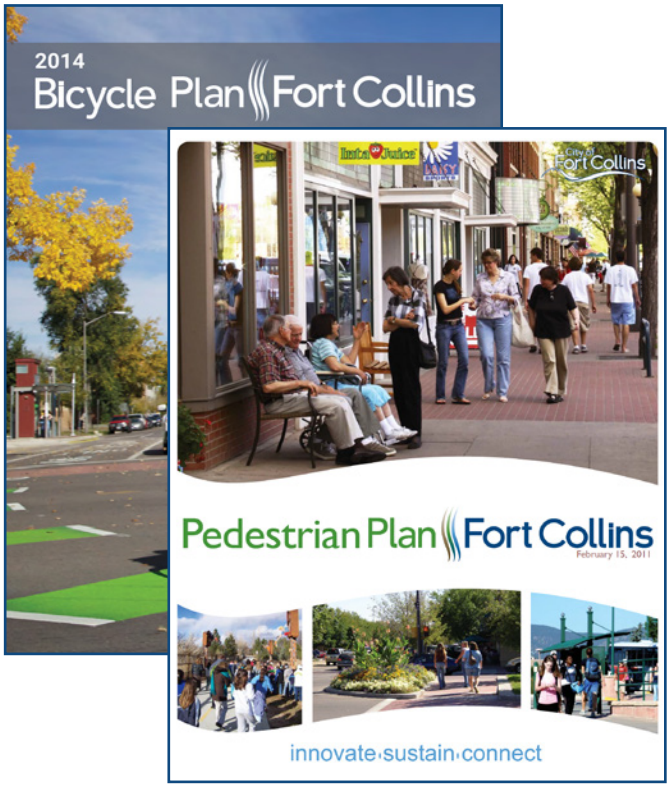
In addition to the CIP, other improvement efforts are prioritized through programs such as the pedestrian program and arterial intersection prioritization study.

Modal Plan Update Schedule

To fully embrace the layered networks identified in the TMP, the modal plans should be periodically updated to reflect changing land use patterns. The 2014 Bicycle Plan should be updated in 2020 or 2021 to reflect refinements to the bicycle facility types and projects that have been implemented since the adoption of the 2014 Plan. The 2011 Pedestrian Plan should also be updated in 2020 or 2021.

This should include updates to the Pedestrian Priority Areas, changes to design standards based on best practices and changes in land-use, and updates to the crossing guidelines in accordance with national best practices. The 2019 Transit Master Plan should be updated in 2024 to reflect land use changes and revise any BRT or high-frequency routes if the land use development pattern does not reflect what is currently envisioned in the Structure Plan.

The Bicycle and Pedestrian plans may be combined into an Active Transportation Plan. This would streamline the outreach process and result in increased coordination between biking and walking infrastructure.



Infrastructure Maintenance

The City of Fort Collins is committed to maintaining the City's transportation infrastructure. Operation and maintenance cost should be integrated into planning efforts for all modes.

The City's annual Street Maintenance Program (SMP) is designed to prolong the life of streets through preventive maintenance. The program improves concrete curb, gutter and sidewalk; constructs handicap access ramps; repairs deteriorating asphalt; and reconstructs, overlays, or slurry-seals existing streets.

Additionally the City maintains bridges, traffic signals, street lights and more through constant monitoring and programmed upgrades and improvements.

Not only does the City repair and upgrade the streets, but it also ensures the system functions through timely snow removal and coordinated incident management.

Snow Clearing Operations

MOBILITY & TRAVEL CHOICES

MOBILITY VISION STATEMENT

Fort Collins will offer multimodal access and choices that are seamlessly interconnected and create a transportation system that is safe, efficient and reliable.

SUPPORTING PRINCIPLES

PRINCIPLE T4

Pursue regional transportation solutions.

PRINCIPLE T6

Support bicycling as a safe, easy and convenient travel option for all ages and abilities by building a connected network of facilities.

PRINCIPLE T7

Support walking as a safe, easy and convenient travel option for all ages and abilities by building a connected network of sidewalks, paths and trails.

PRINCIPLE T8

Manage the transportation system to ensure reliable traffic and transit flow through travel demand management and transportation system optimization.

Introduction

Due to investments in increased service, Fort Collins is one of the few communities in the nation that has experienced substantial transit ridership growth over the past five years. Additionally, Fort Collins' mode share for bicycling is among the highest in the nation. Despite these successes, the number of people driving alone continues to make up 73% of commute trips and 60% of all trips.

Where We Are Today

The City can continue building on efforts to expand transit, improve bicycle infrastructure and increase pedestrian connectivity. Leveraging the layered network to improve each travel mode will generate opportunities for travelers to choose from a variety of modes for each trip. Additionally, technology will make it increasingly easy for residents and visitors to choose travel options for all modes, combine trips (e.g., take a ride-hailing service to transit), and view the cost, health and environmental consequences of each modal choice.

Opportunities for the Road Ahead

A city with good mobility requires a multimodal approach that supports an interconnected transportation system. As Fort Collins nears build-out, there are fewer opportunities to widen streets to add vehicle capacity, so the street space must be more efficiently used in the future. To ensure the high level of mobility the community demands, there will be a need to shift trips from driving alone to more space-efficient modes such as transit, bicycling, and walking. It is with this desire for a more modally balanced system that the TMP update focuses on the development of a layered network.

Transit

Transit will play an increasingly important role in moving people around the City over the coming years. As the city gets denser, transit provides an efficient way to move large numbers of people in a small amount of space. A fully loaded MAX bus can easily carry 80 to 100 people, removing a comparable number of cars from the most crowded areas of the city.

Transit ridership in Fort Collins nearly doubled between 2013 and 2017 due in large part to the opening of the MAX in 2014, the City's first BRT line, as well as more frequent and efficient routing near the CSU campus.

The Transit Master Plan sets Fort Collins on a path to continue growing transit ridership and make significant transit system improvements by 2040 through a continued shift from a more coverage-based transit service model to one that is more focused on higher productivity (i.e., more riders per bus) (**Figure 5-2**). This may be achieved through a phased process that includes the following major transit service revisions:

- BRT and high-frequency service may be expanded along several key corridors where future land use and density are expected to support transit.
- Local routes may be realigned to provide more direct, reliable service, with higher frequencies and better opportunity to connect into the BRT and high-frequency network.
- Lower-density areas of the City may be served by "mobility innovation zones" that will capitalize on new mobility technologies. Service in these zones may be provided by on-demand, microtransit or other emerging technologies that allow for more flexible routing and may be provided through partnerships with the private sector.
- Mobility innovation zones should be connected into the BRT and high-frequency network at strategically spaced mobility hubs that can serve as multimodal transfer points between transit, bicycles, cars, scooters, shuttles, on-demand and other mobility services.

South Transit Center

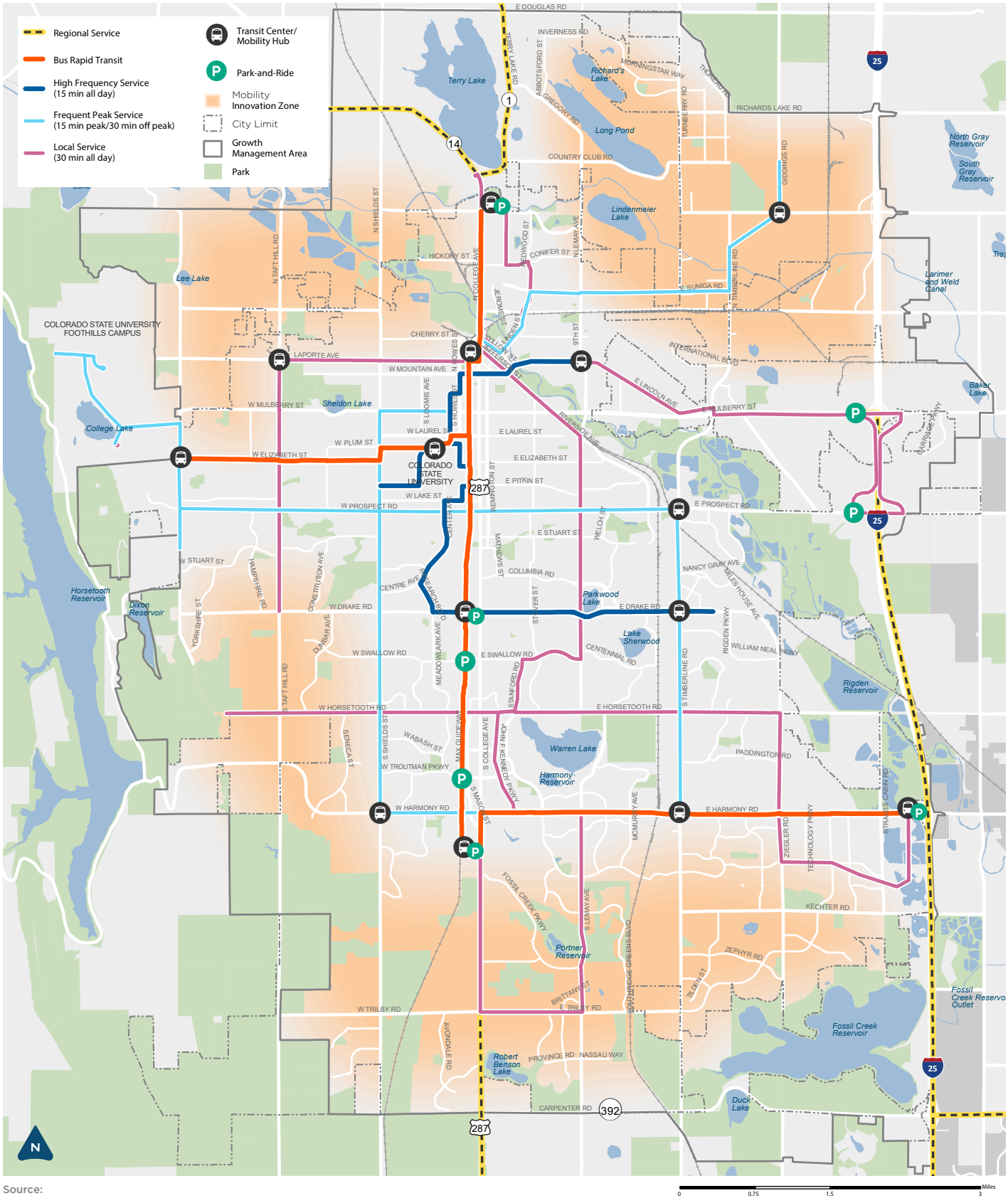


Figure 5-2: Transit Vision Network

Regional Transit Service

In partnership with nearby communities, Fort Collins will provide new service or support funding and planning for expanded regional transit outside the city. This will include continuing to enhance the FLEX route to Loveland, Longmont and Boulder, as well as potentially adding new service to Windsor/Greeley, Laporte and Wellington.

In collaboration with the Colorado Department of Transportation (CDOT), Fort Collins will support continued growth of Bustang service to Denver and provide seamless transfer opportunities from the Transfort system to Bustang. Also, Fort Collins is prepared to support CDOT on potential future commuter-rail service to Denver.

Additional Transit Supportive Elements

As part of restructuring the transit service to provide more BRT and high-frequency routes, the City will implement several additional supportive elements:

- **Fleet.** Achieving the 2040 vision for transit will require about a doubling of 2017 revenue service hours. The fleet will need to grow accordingly, including the addition of new high-capacity buses for the new BRT routes. Advances in technology will present the opportunity for the City to convert its fleet to electric vehicles in the near term and potentially autonomous vehicles in the long term, providing for long-term cost savings and environmental benefits.
- **Technology.** The Transit Master Plan provides guidance on integrating the system with emerging technologies. In addition to electric- and autonomous-vehicle fleet conversion, the City will work toward making transfers between regional services more seamless, integrating trip planning and fare payment across regional transit providers and other modes into a centralized mobility-as-a-service (MaaS) platform.
- **Capital improvements.** To implement the Transit Master Plan, several major capital improvements will be needed, notably an expansion of the existing transit-maintenance base, an expanded or new Downtown Transit Center, and new mobility hubs (which are similar to transit centers but will include additional infrastructure to support shared mobility devices, cars, bikes, scooters, and space for on-demand and microtransit connections). Capital investments to support the new BRT and high-frequency routes will also be required. Major capital improvements to technology and information sharing will be required to improve the transit rider's experience and integrate with the other digitally connected mobility options that will continue to grow in the future.
- **Access to Transit.** Access to transit is a cornerstone of this Transportation Master Plan, and the Transit Master Plan integrates the enhancements to the pedestrian and bicycle system into the overall structure of the transit network. More frequency is proposed in the denser areas that correspond with Pedestrian Priority Areas; mobility hubs are proposed near major intersections of the bike network and the transit network; and new mobility hubs with the potential for park-and-ride are identified where major regional roadways meet the transit system.
- **Equity.** Transfort will ensure that transit meets the needs of the most vulnerable users of the system while also growing in a way that makes transit a default choice of mobility where the system is the most robust. Disability rights experts will help to guide transit project selection and program implementation. More information about the role disability stakeholders will play in the transit planning process can be found in the Transit Master Plan.
- **Complementary Policies.** Transit will grow and thrive as the City implements complementary policies, most notably related to land-use density, transportation demand management, and sustainable transportation outcomes. Transit is in a strong position to help meet the City's overall land-use, transportation, and sustainability goals.

FLEX Bus

Flexible Approach to Implementation

The Transit Master Plan will be implemented in phases over time and provides for flexibility. The pace of implementation and flexibility of the Plan will depend in large part on three major factors and how these factors play out over the next 20 years. These factors are:

» **Land Use.** Land use will be the primary driver in determining when and where new services are added. High-frequency and BRT service may be added to corridors as infill and new development occur on those corridors. In addition, where BRT and high-frequency service occur may deviate from the Plan if dense, mixed-use development occurs in different parts of the City than anticipated. In this way, transit service will be added and upgraded along various corridors to respond to actual, as opposed to forecasted, land use. **Figure 5-3** illustrates how the City will plan and provide transit on various corridors based on adjacent land use and associated transit demand.

» **Funding.** Implementation of the Transit Master Plan will require a doubling of revenue service hours, as well as capital investments in: fleet, maintenance facilities, bus stops, and speed and reliability improvements along key corridors. When and how much additional funding will become available in the future will dictate the speed and extent to which improvements can be made. The Transit Master Plan provides a comprehensive overview of potential funding options and strategic opportunities to grow transit over time.

» **Technology.** New transportation technologies introduced in the past several years (including ride-hailing services, car/bike-share, and electric scooters) have had a significant impact on mobility and travel behavior, particularly in urban areas. Advances in future technology could have significant influences on transit demand, mobility options and the cost of providing different transit services. How and when various elements of the Plan are implemented will depend in part on future technologies and how quickly they take hold.

Figure 5-3: Level of Transit Service Need by Land Use Context

Bicycling

Bicycling provides residents and visitors of Fort Collins a fast and spontaneous mode of travel. With a bicycle-friendly climate and a strong City commitment to improved bicycle infrastructure, bicycling will continue to play a major role in future travel in Fort Collins.

The 2014 Bicycle Master Plan and Recent Implementation

The Fort Collins 2014 Bicycle Master Plan, as referenced in Appendix H5, serves as the current guide to support the bicycling culture and infrastructure in the community. The Plan sets forward-thinking short- and long-term goals, which address the creation of a connected and low-stress network, safety for all modes, increased bicycle ridership, a strong bicycle community, equitable access, increased comfort for all ages and abilities, and the creation of a physically active and environmentally healthy community.

Low-stress (or high-comfort) bicycle facilities are those where a bicyclist shares the street with low-volume, low-speed automobile traffic, is adjacent to such traffic in a bike lane of adequate width or is completely separated from traffic in a protected bike lane. Comfortable crossings of major streets are also necessary to complete a low-stress network. A connected network of low-stress bicycle facilities has been shown to attract those who are interested in bicycling but concerned about their safety.

The 2014 Fort Collins Bicycle Master Plan includes policy, program and bicycle network recommendations to achieve a community where people of all ages and abilities can safely and comfortably travel by bike to where they want to go. Many of the Bike Plan recommendations have been implemented, for example:

- Established an automated bike-share program;
- Expanded the city's Bicycle Ambassador and Safe Routes to Schools Programs;
- Completed a bicycle and pedestrian safety town (Walk & Wheel Skills Hub);
- Launched Fort Collins' Open Streets initiative (car-free events);
- Expanded the city's bicycle-related evaluation efforts, including installing automated bike counters;
- Developed a Bicycle Wayfinding Master Plan and installed wayfinding signage along the Phase 1 routes;
- Developed a Bicycle Friendly Driver Program and certified over 4,000 people ;
- Joined National Association of City Transportation Officials (NACTO); and
- Updated the Larimer County Urban Area Street Standards (LCUASS) to include bicycle infrastructure design recommendations.

Fiesta de Movimiento Comunitario de Hickory Street

Infrastructure

The 2014 Bicycle Master Plan recommends a 2020 Network and a Full Build Bicycle Network **(Figure 5-4).** The 2020 Network focuses on facilities that can be implemented quickly such as primarily neighborhood greenways on low-volume residential streets, while providing a comprehensive network that gives all residents access to low-stress facilities.

The Full Build Bicycle Network requires significant investment by the City with potential impact on other modes, with a focus of protected bike lanes on busy streets. This network is proposed to be built out on an ongoing basis over the next 25 to 50 years. This network identifies the recommended facility type and a framework for facility locations that are to be implemented according to the Plan's design guidelines.

In addition to on-street bicycle facilities, the Plan recommends wayfinding and signage improvements, enhanced crossings of major streets, and grade-separated crossings at key locations. The goal underlying this network is to serve the person who would like to bike but is concerned about having a safe and comfortable place to ride. In order to attract these riders (which make up about 50 percent of the population)[2], the plan calls for a low-stress facility at least every half mile, as defined by Level of Traffic Stress methodology (which is a component of MMLOS, described earlier).

Recommendations about the future low-stress network were made to achieve the goal of "network equity," which provides all neighborhoods with access to low-stress bicycle routes.

[2] Jennifer Dill and Nathan McNeil, "Revisiting the Four Types of Cyclists: Findings from a National Survey," Transportation Research Record: Journal of the Transportation Research Board, 2587: 90-99, 2016.

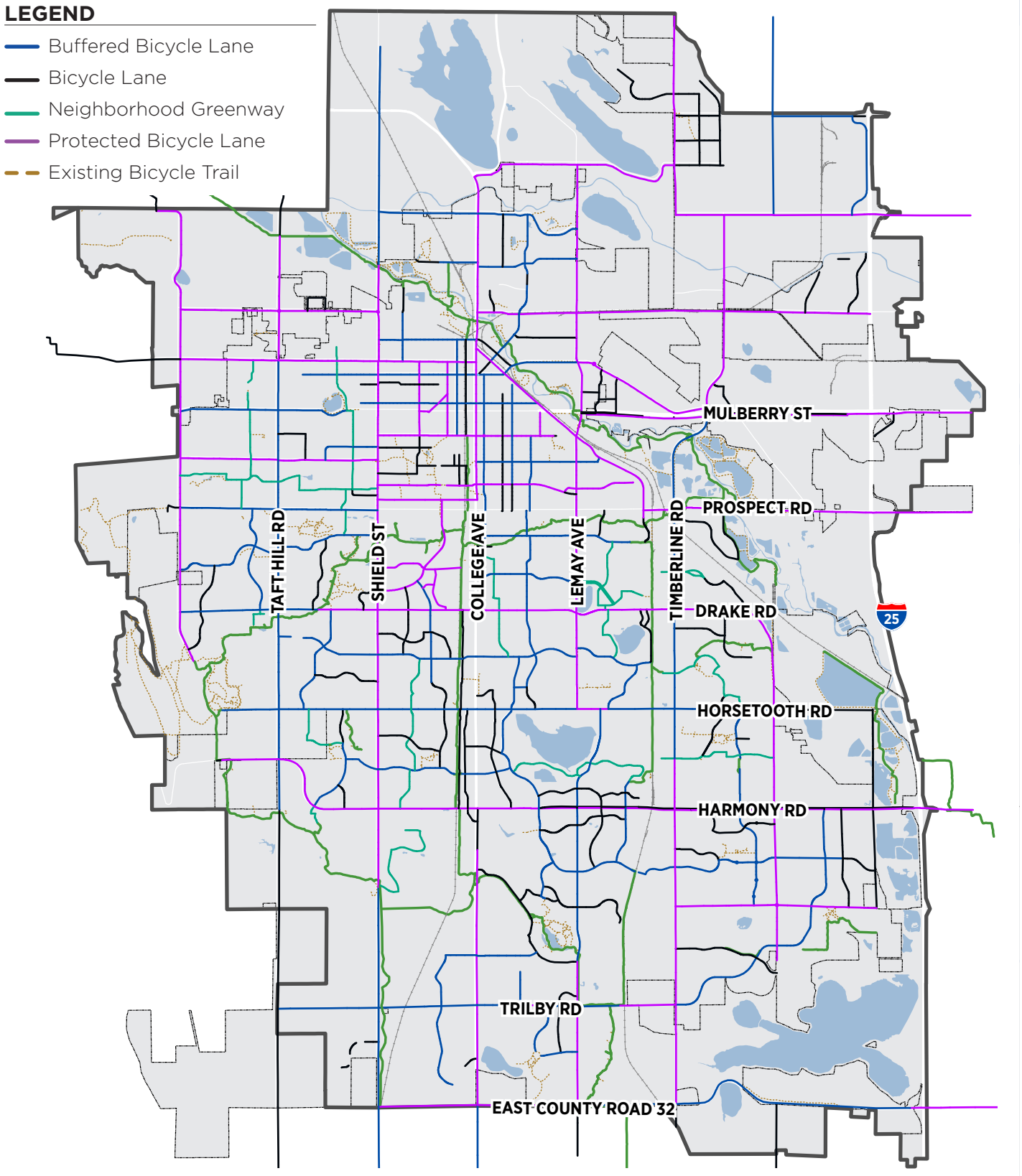


Figure 5-4: Full Build Bicycle Network

The City has made significant progress toward completion of the recommended 2020 low-stress bicycle network plan. Arterial-crossing improvements have been completed at 21 locations, 19 miles of buffered bike lanes have been installed, and the two protected bike lane pilot projects on Laurel and Mulberry Streets have been completed. A map of existing facilities is shown in **Figure 5-5**. The City has a goal of implementing one protected bike lane a year for the next five years under this pilot program. The pilot program includes a comprehensive evaluation component in order to apply lessons learned from a range of contexts and approaches to the implementation of future facilities.

This Plan makes recommendations for future updates to the Full Build Bicycle Network during the next update of the Bicycle Plan (which is recommended for 2020). These infrastructure updates should consolidate designated bicycle facilities in order to reduce redundancy in the low-stress network and lower the cost—and thus increase the feasibility—of implementation. The updated network should focus on neighborhood greenways and protected bike lanes. This shift will provide a more cost-effective option with a reduced impact on parking and adjacent land uses, while still implementing a connected, low-stress bike network. The updated network should distribute protected bike lanes across the City and ensure a comprehensive network of neighborhood greenways between the grid of protected bike lanes. These updates should incorporate lessons learned from the Protected Bike Lane Pilot Program, including effective cross-sections and contexts for implementation.

To move toward the vision in the bicycle network layer, it is recommended that the City continue efforts toward completing the 2020 low-stress network plan and the Full Build Bicycle Network Plan. Other priority Bike Plan recommendations to move forward with include:

- Developing a neighborhood greenway program in connection with the low-stress bike routes;
- Continuing the protected bike lane pilot program with new project locations; and
- Developing best practice policies for bikeway maintenance.

The 2014 Bike Plan was planned to be updated on a five year schedule. While the plan is still actively being implemented, the city should consider an update in the next couple of years to refine and prioritize its low-stress and protected bike lane network plan.

Protected bike lanes on Mulberry Street

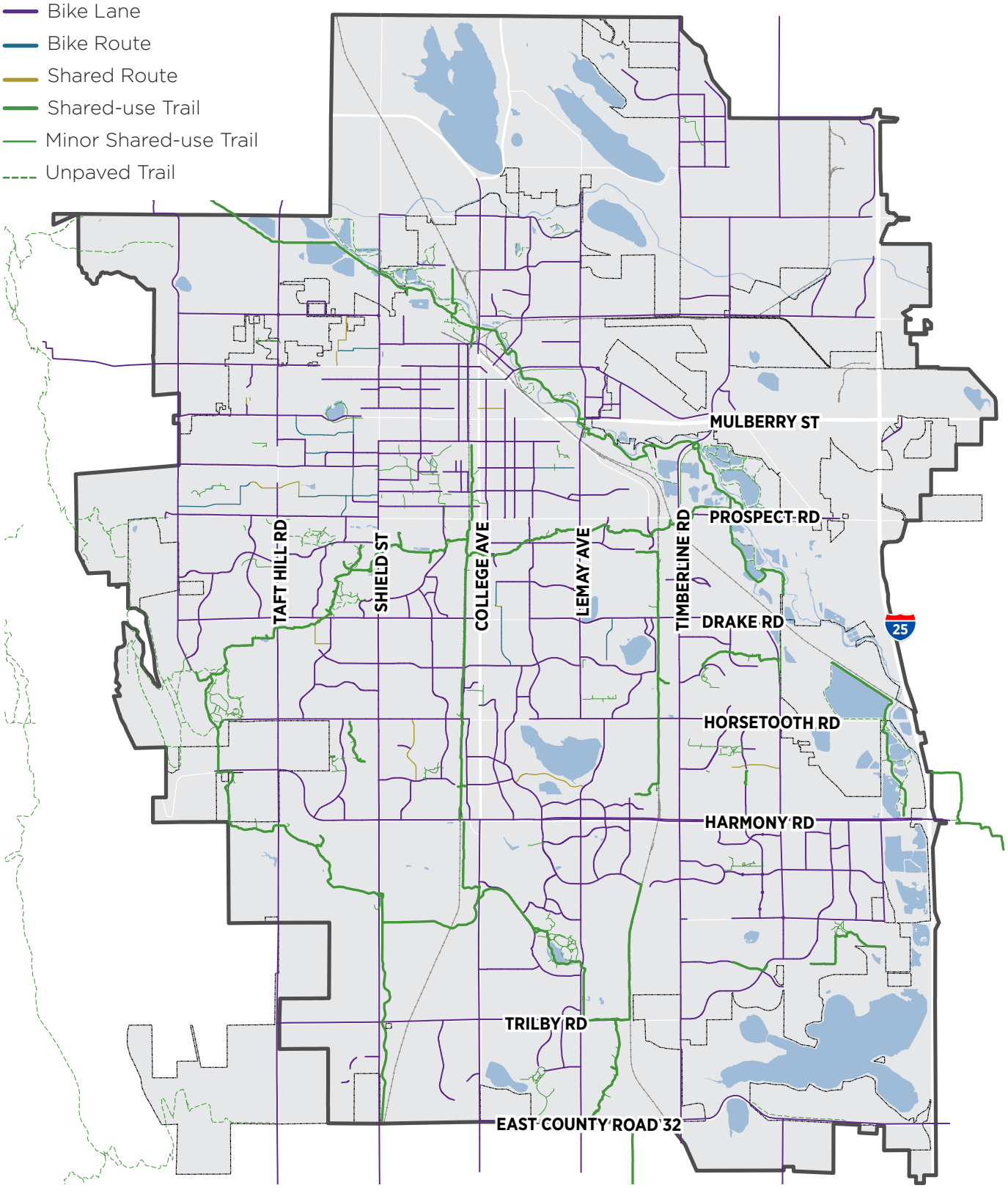


Figure 5-5: Existing Bicycle Network

Walking

Nearly everyone in Fort Collins is a pedestrian at some part of the day, even if it is just a short walk from a building to a car. Walking is the most basic (and inexpensive) form of travel available to most people, including those using mobility devices. Thus, walking is an important pillar of the layered network and represents an important component of accommodating future travel needs in an increasingly dense and diverse city.

The 2011 Pedestrian Plan

The Fort Collins 2011 Pedestrian Plan identifies and prioritizes pedestrian gaps in the city, including sidewalks, crossings and Americans with Disabilities Act (ADA) accessibility. As is the case with many communities, the key challenges related to the sidewalk network come from missing sections of sidewalk, inadequate street crossings, areas with no ADA accessibility, and dense areas with narrow or otherwise inadequate sidewalks. The Pedestrian Master Plan identified problems and respective solutions to make walking safe, convenient, comfortable, efficient and easy for all ages and abilities.

Safe Routes to School

Safe Routes to School (SRTS) is a nationwide effort to get more children biking and walking to school for their health, academic achievement, and the environment. The City of Fort Collins SRTS program is dedicated to getting at least 50 percent of local K–12 students biking or walking to school on a regular basis by focusing on education, encouragement, engineering, enforcement, evaluation and equity. The City partners with the Poudre School District on SRTS programming and works collaboratively with Larimer County to provide missing sidewalk connections at the interface between City and County jurisdictions.

The City SRTS program is a model program for implementing change and influencing travel behavior and is key to reducing vehicle trips in Fort Collins. The SRTS program should serve as a foundation for continued efforts around encouraging more trips be made by bicycling, walking, transit or shared.

Crossing Policy

The 2011 Pedestrian Plan defines a crossing policy that will continue to guide the City of Fort Collins in making decisions about where crosswalks may be marked, where crosswalks with special treatments (such as flashing beacons and other special features) should be employed, and where crosswalks will not be marked due to safety concerns resulting from volume, speed or sight distance issues. Using findings from national best-practice research, this section provides guidance about the type of treatments, if any, that are appropriate on various streets and under various conditions. Preferred and enhanced options are provided for signalized locations, stop-controlled locations and uncontrolled locations. This crossing policy serves as the guide for ensuring that there are frequent crossings to create a connected, low-stress pedestrian network.

Implementation and Funding

The 2011 Pedestrian Plan recommends the implementation of pedestrian projects based on the following project-type categories:

- Sidewalk and ramp improvements to meet ADA standards;
- Proposed pedestrian priority project list consisting of items identified by citizens through a pedestrian survey, public comments and remaining Capital Improvement Program projects from 2004; and
- Pedestrian projects as identified in the most recent CIP.

The 2011 Pedestrian Plan recommends a combination of funding mechanisms to better leverage outside revenue sources such as state and federal grants. This will help supplement ongoing CIP revenues and help fund the implementation of larger projects and maximize money spent. Funding sources include money from developers, Urban Renewal Authority Tax Increment Financing, state and federal transportation grants such as from the NFRMPO and

CDOT, and a property-tax mill levy. Overall, these funding strategies continue to be relevant toward implementing the pedestrian network layer.

Sidewalk Prioritization Model

The Sidewalk Prioritization Model, last updated in March 2018, was developed to provide a data-driven and logical methodology for the prioritization of specific pedestrian facilities in need of rehabilitation. This model allows for a prioritization process that acknowledges limited funding and provides a structure from which to prioritize projects with the highest return on investment. This model includes an inventory of all sidewalks and curb ramps, including whether they meet ADA requirements.

Each segment is given a score based on three inputs: location (proximity to key destinations), health and equity (demographics and health characteristics of nearby populations), and safety (adjacent street, bikeway and sidewalk characteristics). The most recent prioritization scores are shown in the map in **Figure 5-6**, serving as a flexible guide as other projects are completed or as key missing sidewalk gaps are identified. These scores and the base map should be updated on an annual basis.

The Sidewalk Program, as currently funded, would take about 30 years to achieve full ADA compliance. However, the Streets Maintenance Program also fixes and repairs sidewalks and ramps. The combined efforts of both the Sidewalk Program and the Streets Maintenance Program could result in full ADA compliance within 10 to 15 years.

Sidewalks and ramps along the Remington Greenway

Annual Estimated Sidewalk Program Cost from 2018 City of Fort Collins Sidewalk Priortization Model

	Sidewalk Program Components					
	Total Cost*	20 yrs.	25 yrs.	30 yrs.	35 yrs.	40 yrs.
Missing Sidewalks	$21,000,000	$1,100,000	$800,000	$700,000	$600,000	$500,000
Non-compliant Sidewalks	$65,000,000	$3,200,000	$2,600,000	$2,100,000	$1,800,000	$1,600,000
Missing Ramps	$22,000,000	$1,100,000	$900,000	$700,000	$600,000	$500,000
Non-compliant Ramps	$26,300,000	$1,300,000	$1,100,000	$900,000	$800,000	$700,000
Totals	$134,300,000	$6,700,000	$5,400,000	$4,400,000	$3,800,000	$3,300,000

** Current Total Cost estimated from 2014 data*

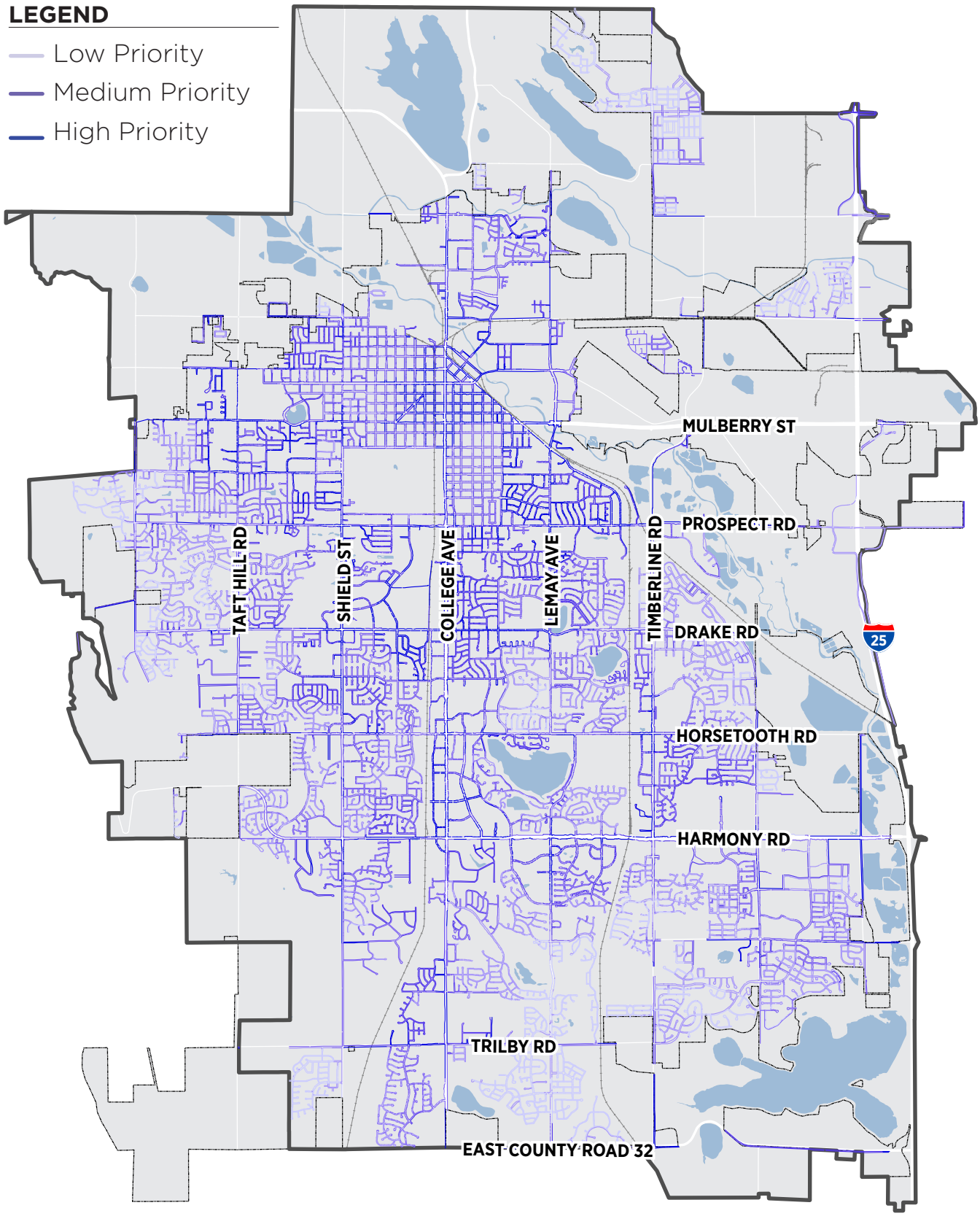


Figure 5-6: Sidewalk Prioritization

Pedestrian Priority Areas

The 2011 Pedestrian Plan identified Pedestrian Priority Areas (PPAs), which identify locations of high pedestrian use around the City that are held to a higher pedestrian LOS than other areas that are not PPAs. With a shift toward MMLOS being aligned with facility design standards, Pedestrian Priority Areas are not a necessary distinction. Instead, priorities for pedestrians are assessed through the Sidewalk Prioritization Model, which identifies high-priority segments based on access to key destinations, demographics of nearby residents, and safety considerations.

Walk Friendly Communities

Walk Friendly Communities, a national recognition program operated by the University of Northern Colorado (UNC) Highway Research Center and supported by the Pedestrian and Bicycle Information Center, awards communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access and comfort. Fort Collins was designated as a silver-level Walk Friendly Community in April 2018, an advancement from the community's previous bronze award.

The silver award acknowledges Fort Collins' strong planning, engineering, education, and encouragement that focus on pedestrians. Strengths noted by the Walk Friendly Community program include a Pedestrian Plan with ambitious mode split targets and project prioritization, planning for 20-minute accessibility, bus stop design guide, community-driven approaches to planning, sidewalk maintenance, Open Streets events, and pedestrian accommodations at signals.

A gold-level designation could be obtained by focusing on:

- Expanding the bicycle wayfinding system with walking routes and distances to make the program more relevant to pedestrians as well;
- Launching a pedestrian safety outreach campaign that is tailored to specific audiences and behaviors;
- Identifying and improving pedestrian crossings of arterials;
- Conducting targeted yielding and speed enforcement operations; use a data-driven approach and crash analyses to inform the best locations to conduct these targeted efforts, including school crossing guard placement; and
- Performing regular evaluations of safety improvements by performing an evaluation before and after a pedestrian project is implemented.

Traffic Flow

While this Transportation Master Plan identifies a goal of reducing the number of vehicle trips per person in the future, the City recognizes that there are many trips that are best accomplished in a car. Additionally many businesses require reliable vehicle options for patrons, employees, and deliveries. Therefore, the goal of this Transportation Master Plan is to ensure that the system is functional for drivers (and for future autonomous and connected vehicles). Reasonable traffic flow depends on managing the transportation system rather than expanding the roads.

Local Congestion Management

The efficiency of the vehicular system in the city is a key component to supporting reduced emissions for the climate action plan and creating reliable travel options. Among other impacts, congestion can result in driver frustration, reduced air quality from excessive vehicle emissions, and safety concerns from increased crash risks. To help mitigate these impacts, the City has an advanced traffic management system that includes fiber-optic connections to most of the roughly 200 signals and hundreds of CCTV and detection cameras that allow staff to actively manage traffic flow from the Operations Center.

There are a number of existing and proposed strategies to congestion management:

- Citywide and localized retiming efforts, including the implementation of the first two adaptive signal corridors, support greater refinement of varying travel patterns;
- Improving high-priority intersections from the Arterial Intersection Prioritization Study (AIPS) and addressing parts of the roadway network that consistently present issues, including right-turn lanes, can significantly reduce high-congestion areas;
- Implementing plans to minimize work-zone and incident impacts;
- Shifting vehicle trips onto Transfort service, bicycles or the pedestrian network; and
- Supporting the Travel Demand Management programs described later in this section.

Regional Efforts

Regional travel with daily commuting patterns into and out of Fort Collins plays an important role in mobility for residents and visitors. In addition to local efforts, there are significant regional initiatives to help reduce congestion. The North Front Range Metropolitan Planning Organization (NFRMPO), the regional planning entity for Northern Colorado, has a set of congestion reduction goals, including:

- Improve efficiency by reducing congestion without widening roadways but instead deploying cost-effective traffic management, travel demand, and technology solutions;
- Increase mobility by making modes other than driving alone more available;
- Improve safety by reducing crashes for all modes, with a specific focus on bicycle and pedestrian safety; and
- Increase travel-time reliability.

Regional corridors are evaluated based on targets for six performance measures on factors such as travel time, VMT growth and transit ridership.

Fort Collins leads the region on meeting certain goals. For example, Transfort achieved a 37.4% increase in revenue hours and had a 30% increase in per-capita ridership between 2012 and 2015. This plan supports Fort Collins leading the mitigation of regional impacts from congestion such as increased travel times, air quality degradation and lack of access to multimodal transportation.

Travel Times

The City has in the past four years implemented a citywide Bluetooth system that gathers travel time data by direction on all major arterials in the city. This travel time data is used to calculate vehicle travel speeds citywide. The anonymous system provides constant, current and historical data around the clock. It is connected to the Traffic Operations Center, can send alerts to staff when speeds are reduced beyond a certain threshold and is interconnected to the signal system to automatically implement special timing plans when appropriate.

The system is used to actively manage traffic, to evaluate the performance of roadway projects, and to provide regular updates on average travel time to the community and City leadership. Overall, travel times in the City have remained largely constant over the past few years, despite significant growth in the city's population and VMT.

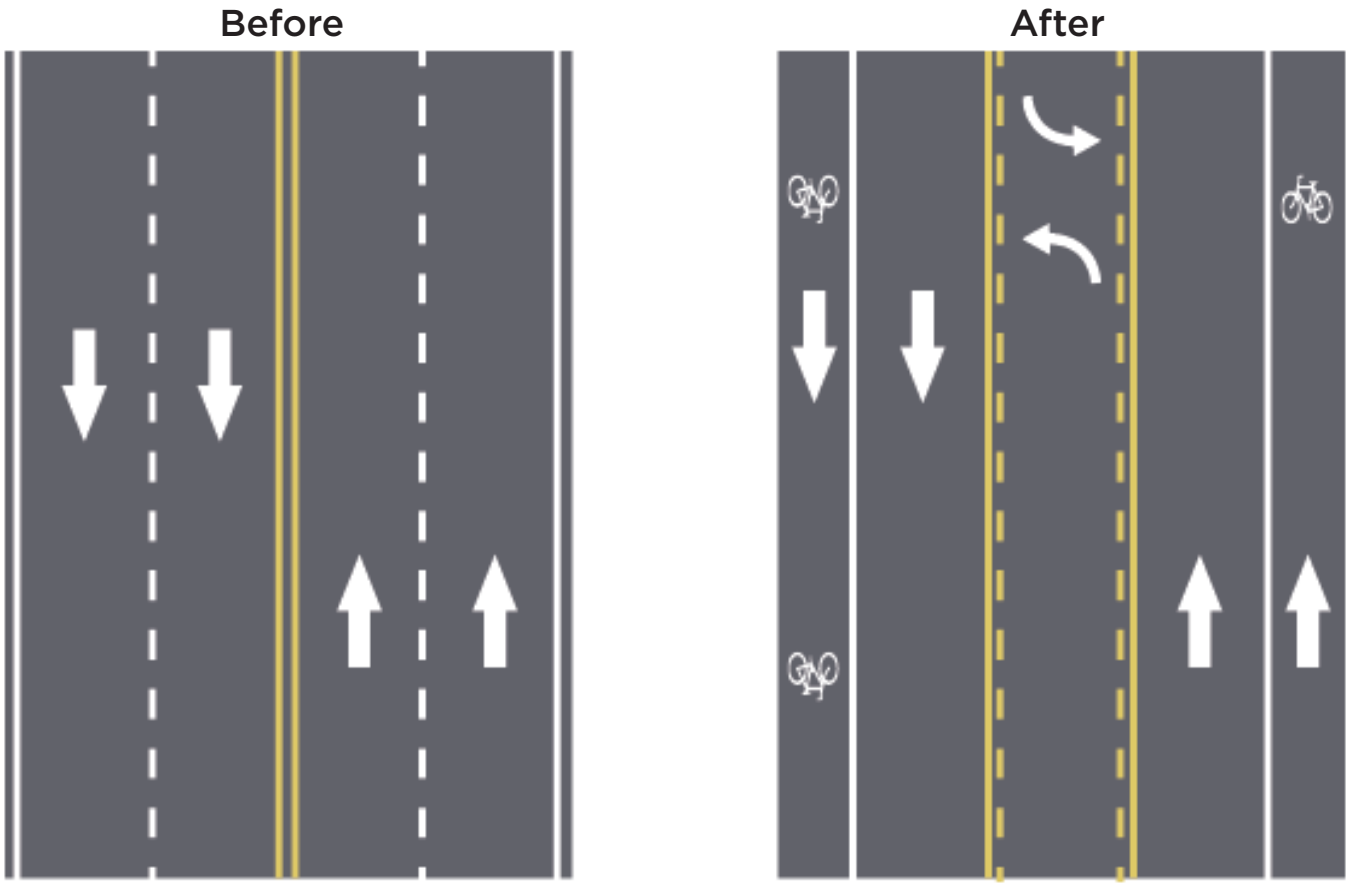
The City's capability to track travel reliability is relatively recent. Looking ahead, the City will continue to explore how the Bluetooth system can further inform transportation policy.

Fort Collins can continue leading the region in managing traffic congestion, attaining Congestion Management Process targets, and measuring/managing corridor travel times by making alternative transportation options more viable for trips that do not require a car. The City can enable a shift to more sustainable travel modes by implementing the layered network and facilitating the development of mobility as a Service (MaaS) programs.

MaaS is a relatively new concept in which a person can use a web-enabled trip planner (via a smartphone, computer or call-in) to select from a suite of travel options for a given trip. MaaS helps to break the cycle of travelers defaulting to an auto trip by better showing the monetary costs, health benefits and environmental consequences of different travel choices.

Reshaping Streets

Reshaping a street refers to the reduction of the number of general travel lanes to achieve system multimodal improvements. This "roadway right-sizing" may reallocate space from vehicles to dedicated transit right-of-way, a bicycle facility, on-street parking, and/or an enhanced pedestrian realm. Making capacity changes should be evaluated for impact and combined with community support before moving forward as a recommendation. The City has completed numerous reshaping projects and has shown that this is an important tool to implement the layered network and ensure a multimodal system.



Source: FHWA Safety U.S. DOT

Transportation Demand Management

Transportation Demand Management (TDM) is a set of strategies that strongly support the layered network concept by encouraging people to shift from the most-congested time and/or mode of transportation to less-congested options. At its core, TDM is a way to increase the efficiency of the transportation system since it allows more people to move within the same amount of physical space. In addition to reducing automobile trips, TDM supports other community and environmental goals such as increasing physical activity, reducing air pollution and reducing the amount of energy expended on transportation. TDM strategies often require some trade-offs between personal travel freedom and greater network efficiency or utilization. On the other hand, TDM strategies also help to expose the externalities (the impacts that an individual imposes on others) of automobile use, which helps people make lower-impact transportation decisions.

Fiesta de Movimiento Comunitario de Hickory Street

Successful TDM plans require collaboration between public and private sectors to ensure that alternatives to driving exist and travelers are provided with the tools they need to believe a vehicle trip should be replaced with another mode. TDM is also most effective when multiple strategies are implemented together as part of a package of transportation options for end users. Broadly, TDM strategies fall into five categories:

1. LOCATION-BASED STRATEGIES

Targeting dense areas with transit services with incentives such as discounted transit passes, carsharing memberships and vanpool programs can help people find alternatives to driving to work since there are robust alternatives once they are there.

2. SITE ENHANCEMENTS

Providing better walking facilities, bike paths and transit stops will make those options more appealing in areas with less-robust infrastructure.

3. PARKING PRICING

Ensuring that drivers pay market rates for parking can change people's default behavior and make other modes more cost-effective. Alternatively, parking cash-out can be an effective strategy for areas with more-abundant parking by offering people a cash incentive to not drive and park.

4. TRANSIT

As Transfort continues to invest in more frequent service on key corridors, transit becomes a more viable alternative to driving. Transit usage can be boosted through employer-subsidized transit passes, paid parking, parking cash-out and transit passes that are bundled with rent.

5. MARKETING

Because traditional planning emphasizes driving, public knowledge about driving is often stronger than knowledge about other modes. Successful TDM programs promote transit, walking, biking and other emerging modes by showing travelers how to reach their destinations using those modes.

Different strategies yield different results; charging for parking and parking cash-out has reduced VMT up to 12.5% in some communities, while implementing mandatory commute-trip reductions (which typically includes a mix of strategies such as parking pricing, subsidized transit passes, vanpool incentives and marketing) has led to a 20% decline in VMT.

Existing Programs and Education Campaigns

The NFRMPO has been promoting TDM in Fort Collins since 1996 when the SmartTrips program debuted. SmartTrips was a family of TDM initiatives geared toward reducing the number of single-occupancy vehicle trips in the NFRMPO region 10% by the year 2015. Current TDM programs include VanGo vanpooling, ride-matching through an online portal and promoting more bicycle travel.

Fort Collins actively promotes TDM through the following existing programs:

- The City of Fort Collins administers FCTrip, a web application that informs travelers of traffic and weather conditions, provides road-construction updates that may impact travel, and offers visual feeds of major intersections.
- ClimateWise, a City-administered program, provides assistance to local businesses on lowering greenhouse gas emissions. Businesses that achieve lower emissions through changes in employee commute choices earn community recognition for their efforts.
- For eight years, the Fort Collins Bike Library provided low-cost bicycle rentals to Fort Collins residents.
- After forming a partnership with Zagster, the Bike Library became the Pace Fort Collins bike-share program. The transition occurred in order to better facilitate a focus on providing bicycles to community members for general transportation use and not just for recreation.
- FC Bikes promotes cycling in Fort Collins by sponsoring awareness events such as Bike to Work Day, striving to grow participation each year.
- The local Safe Routes to School program encourages Fort Collins students to access school by walking and bicycling instead of driving in with their parents, which helps lower VMT.

CSU has also implemented TDM programs to limit the transportation impacts of its nearly 40,000 students, faculty and staff. CSU seeks to limit the number of people driving to campus by providing easy access to bicycles and bike parking, free parking for vanpool vehicles, and free transit passes for all students, faculty and staff. This program has been very successful in reducing vehicle trips and boosting transit ridership over the past five years. One result has been high demand at park-and-ride locations such as the King Soopers site at College Avenue and Drake Road.

For TDM to be most effective, it is important to work closely with developers on the design and implementation of strategies. The City should consider providing funding and resources for the development of a mandatory TDM program for developers, employers and large multifamily property managers.

Ongoing monitoring is also a key element in the success of a TDM plan. Depending upon the goals of the specific project or citywide goal of focus, a set of TDM strategies can be focused to encourage lower VMT, reduce greenhouse gas emissions (GHG), lower rates of SOVs and reduce parking demand.

The City should consider developing a formal TDM monitoring-and-evaluation program. This will allow the City to determine how well-implemented TDM strategies are, to evaluate how effective TDM strategies are at impacting mode splits for new developments, and to modify TDM strategies accordingly. An effective monitoring program can track a number of different metrics, based on the City's goals. These metrics may include:

- Additional transit trips taken over baseline ridership as a result of TDM incentives;
- Parking occupancy in public parking facilities;
- Rate of commute trips taken by SOV (can be established using employer surveys);
- New bicycle trips taken as a result of TDM;
- Mode split of trips taken as a result of new development; and
- Annual average daily traffic (AADT) at specific cordon points or screenlines

Regional Transportation

Multimodal travel options are important not just within Fort Collins, but also into and out of the City. Fort Collins' location, job centers, destinations and high quality of life mean that its residents, visitors and employees are frequently traveling to and from neighboring communities such as Loveland, Denver and Greeley. More than a third of commute trips are to cities south and southeast of Fort Collins, underscoring the importance of multimodal connections to the surrounding communities.

Connections to Denver

Transit

Transfort operates the FLEX regional bus serving stops between Fort Collins, Loveland, Berthoud, Longmont and Boulder during peak hours. FLEX is collaboratively funded through regional partnerships and serves approximately 200,000 riders annually. FLEX also offers transfers to the Regional Transportation District (RTD) bus system in Longmont and Boulder. As Fort Collins grows, Transfort is looking for opportunities to increase the productivity and ridership of the FLEX route. Fort Collins will continue to collaborate with the cities along the FLEX route to refine and optimize service.

Flex Regional Bus stopped in Fort Collins

Rail

Currently, intercity transit service between Denver and Fort Collins is provided by CDOT's Bustang service. While Bustang is a popular and viable connection between Denver and Fort Collins, traffic congestion on the I-25 corridor continues to grow. The 2011 North I-25 Environmental Impact Statement (EIS) identified three potential rail projects to connect Denver to cities in the North Front Range. One project is an estimated $1.35 billion commuter rail line between Fort Collins and Colorado Boulevard, with a connection to RTD's light-rail line at 162nd Avenue, once the North Line is complete.

In 2017, a Colorado Senate Bill was passed to perform a feasibility study to implement passenger rail from Fort Collins south to Loveland, Longmont, Boulder, Denver, and onto Pueblo or Trinidad. This potential rail line would be contracted with Amtrak and use existing rail infrastructure.

An initial feasibility study considered the technical, financial and economic factors. Conclusions from this study, in addition to the work of designated committees, determined that high-speed rail along the I-25 corridor is feasible but further engineering studies should be conducted.

Interstate-25 Widening

CDOT is adding an Express Lane in both directions on I-25, which includes replacing multiple bridges and interchanges. This project began in late 2018 and is expected to be complete in 2022. The widening, when complete, will run from Johnstown to Fort Collins. In addition to serving passenger vehicles, the new express lanes will help increase bus speeds and reliability and will offer new bicycle and pedestrian connectivity under I-25 at Kendall Parkway and connect the Cache la Poudre River Regional Trail under I-25, as well as future trail access under I-25 at the Big Thompson and Little Thompson rivers. This project is an important interim step to provide more-reliable transit connections between Fort Collins and Denver, and the City strongly supports this project.

CDOT Bustang

CDOT operates daily Bustang service (the North Line) between Denver and Fort Collins, with stops at Loveland-Greeley Park & Ride in Loveland, and the Harmony Road and Downtown Transit Centers in Fort Collins. Bustang service began in July 2015. Due to high demand, additional Saturday and Sunday service was added to the route.

Bustang has proven to be a resounding success. The CDOT Bustang Ridership Report (2018) showed that monthly ridership increased from about 3,000 riders per month in 2015 to 8,000 riders per month in 2018. This high ridership growth rate suggests healthy demand for transit service between Fort Collins and Denver and supports additional intercity transit studies by CDOT.

Bustang

Connection to Greeley

Transfort is currently working with Greeley Evans Transit (GET) to connect Fort Collins, Greeley and Windsor with transit service. This regional route will be called the Poudre Express and is expected to be operational in 2020. A funding agreement between GET and Transfort, similar to how the FLEX service is funded, is being developed to operate this new route.

Regional Trails Connections

Several existing trails connect Fort Collins to other nearby regional destinations, serving as valuable facilities for transportation and recreation. These trail connections serve to extend Fort Collins' layered network well beyond the city limit and provide regional benefits. The Spring Creek Trail traverses Fort Collins from east to west, providing connections between Spring Canyon Community Park, the Mason Trail and the power Trail. The Mason Trail starts at the CSU campus and connects to the commercial portion of Fort Collins. The Fossil Creek Trail forms a connection between the southern end of the Mason Trail and the southeastern edge of the city.

Since the 2011 TMP, additional regional bicycle and pedestrian connections have been implemented. This includes the completion of the Front Range Trail West segment in 2017 that connects destinations in Larimer County, including Fort Collins and Loveland, and an additional trail segment connecting the Cathy Fromme Prairie Natural Area in Fort Collins with the Loveland Recreation Trail, which was completed in August 2018. The North Front Range MPO Non-Motorized Plan (2016) identifies twelve proposed regional trail connections that provide extensions to existing trails through Fort Collins, as shown in **Figure 5-7**. Future trail extensions will extend multimodal transportation options into the northeast, which is currently underserved, as well as south to Loveland.

The Poudre Trail provides a 12-mile shared use path that connects Bellvue and the CSU Environmental Center. A future section is planned to connect to the Poudre River Trail, forming a non-motorized option between Larimer County and Weld County. The section under I-25 will be completed by 2021 as part of the widening project.

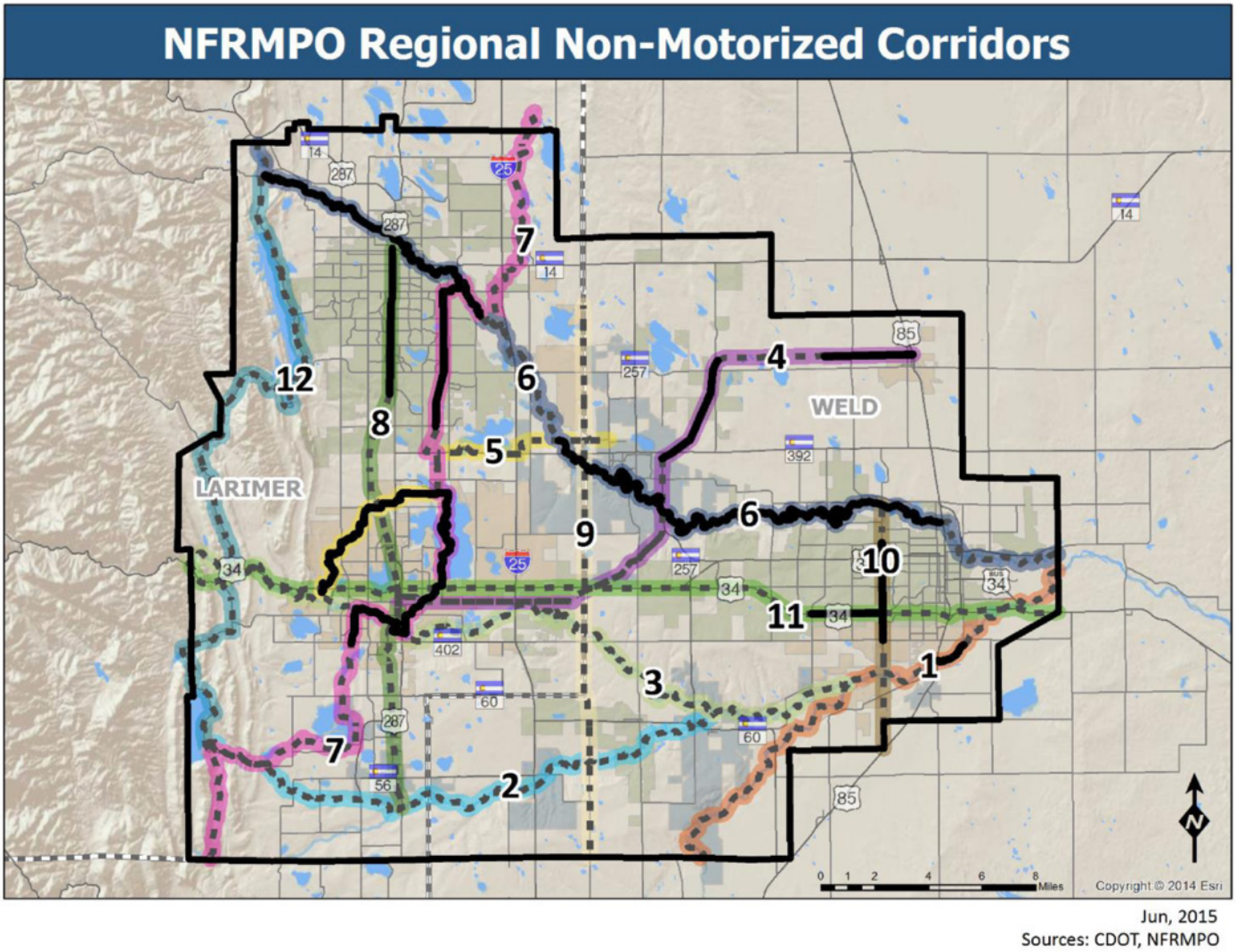


Figure 5-7: NFRMPO Regional Non-Motorized Corridors