


TRANSPORTATION MASTER PLAN



The Transportation Master Plan (TMP) establishes a vision for mobility in Fort Collins, achieved through a safe and reliable multimodal transportation network for all residents, visitors and employees. The City recognizes the importance of an integrated and balanced transportation network that supports access and mobility for all people. Current travel patterns where a majority of travelers drive alone is unsustainable. This pattern results in congested roads, poor air quality, high energy use, climate change impacts, and high costs to expand and maintain streets. The TMP seeks to upend this existing travel pattern by creating a better balance among modes to reduce driving alone. To achieve this outcome, this plan outlines a bold vision to improve the accessibility, mobility, reliability and safety of the transportation system for all modes.



“In 20 years, I hope Fort Collins will have been bold enough to have gone outside the box of car-centric living. We should start now-planning other ways of gathering and getting around besides the automobile. ”

-Fort Collins resident



A Framework for Future Transportation

Transportation Vision Statement

The Fort Collins transportation system will move people and goods safely and efficiently, while being accessible, reliable and convenient.

Introduction

The previous Transportation Master Plan provided Fort Collins an effective roadmap toward a multimodal future. However, transportation has quickly evolved in the intervening years. New shared-mobility modes, support of the Moving Towards Zero Deaths initiative, and the Climate Action Plan represent just a few transportation developments changing mobility in Fort Collins.

This update highlights the progress Fort Collins has made toward advancing a well-connected multimodal transportation network. This update also recognizes that shifting social, technological, demographic and climate trends demand continued refinement in managing transportation. Fort Collins remains committed to maintaining community access through safe multimodal transportation, while expanding to include equity, sustainability and new technologies as additional core components of the planning process.

Recommendations and direction from the 2019 Transit Master Plan are reflected in this update, as well as guidance from the 2014 Bicycle Plan. In addition, the Transportation Master Plan incorporates elements from the North Front Range Metropolitan Planning Organization (NFRMPO) 2040 Regional Transportation Plan (RTP) that impact Fort Collins.

The Plan development process was a collaborative effort among City staff from several departments, key stakeholders and members of the public. Community input for the Transportation Master Plan was gathered as part of the community outreach process for the City Plan through several community workshops, in-person and online surveys, and numerous other events.

Ten core principles were developed to encapsulate, guide and develop policies to ensure that the transportation system is in line with the City's broader vision and goals:

- 1 **Coordinate transportation plans, management and investments with land use plans and decisions.**
- 2 **Build and maintain high-quality infrastructure that supports all modes of travel.**
- 3 **Lead transportation innovation by exploring and utilizing emerging and transformative systems and technologies.**
- 4 **Pursue regional transportation solutions.**
- 5 **Ensure that transit is a safe, affordable, efficient, convenient travel option for people of all ages and abilities.**
- 6 **Support bicycling as a safe, easy and convenient travel option for all ages and abilities by building a connected network of facilities.**
- 7 **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.**
- 8 **Manage the transportation system to ensure that reliable traffic and transit flow through travel demand management and transportation system optimization.**
- 9 **Utilize the transportation system to support a healthy and equitable community.**
- 10 **Support and enhance safety for all modes.**

The Transportation Master Plan's implementation strategies will allow Fort Collins to achieve a vision where the transportation system moves people and goods safely and efficiently. The system will also be accessible to everyone with reliable, convenient, innovative and intuitive travel choices that support the city's growing economy through sustainable infrastructure, programs and services.

PLAN ORGANIZATION

The Transportation Master Plan is organized into six sections focused on core components of a sustainable transportation network. Each section is guided by its own vision statement and underlying plan principle(s) to guide Fort Collins toward realizing the overall transportation vision. These sections provide an overview of the existing transportation network conditions as they relate to the section theme, as well as where Fort Collins can enhance its programs and investments to achieve better outcomes. In addition, the Plan provides both an overview of new trends and best practices, and a roadmap for how Fort Collins can leverage new approaches to transportation in each category.



1. TRANSPORTATION INFRASTRUCTURE

Planning a physical transportation network that supports multimodal travel.



2. MOBILITY & TRAVEL CHOICES

In-depth consideration of the role each transportation mode plays in shaping the Fort Collins mobility network.



3. HEALTH & EQUITY

Ensuring that the transportation network plays a key role in advancing social outcomes.



4. INNOVATION

Understanding emerging technologies and how new trends are influencing travel.



5. SAFETY

The full Plan vision cannot be achieved without an effort to eliminate serious injuries and fatalities on Fort Collins roadways.



6. SUSTAINABILITY & RESILIENCY

Shifting transportation away from creating harmful environmental impacts toward being a resource for improving environmental outcomes.





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.

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 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.

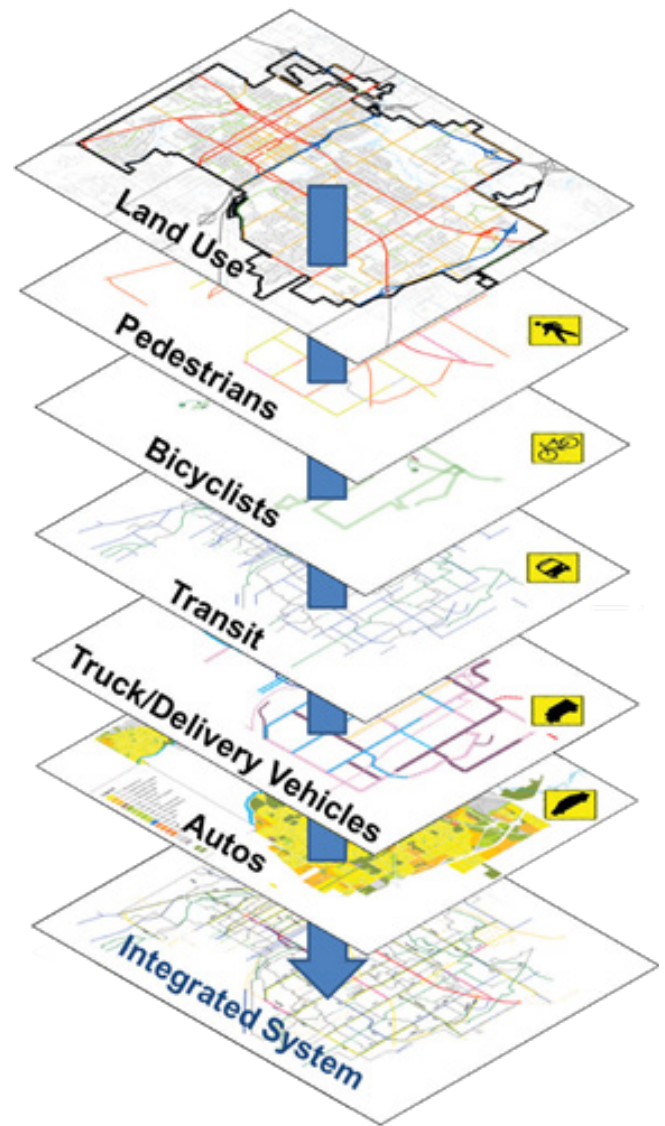
**LAYERED NETWORKS
PRIORITIZE ROADWAYS FOR
DIFFERENT MODES OF TRAVEL,
WHICH HELPS INFORM DIFFICULT
INVESTMENT CHOICES.**

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.



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.



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

LEGEND

- Collector (2 Lanes)
- Arterial (2 Lanes)
- Arterial (4 Lanes)
- Major Arterial (6 Lanes)
- Interstate

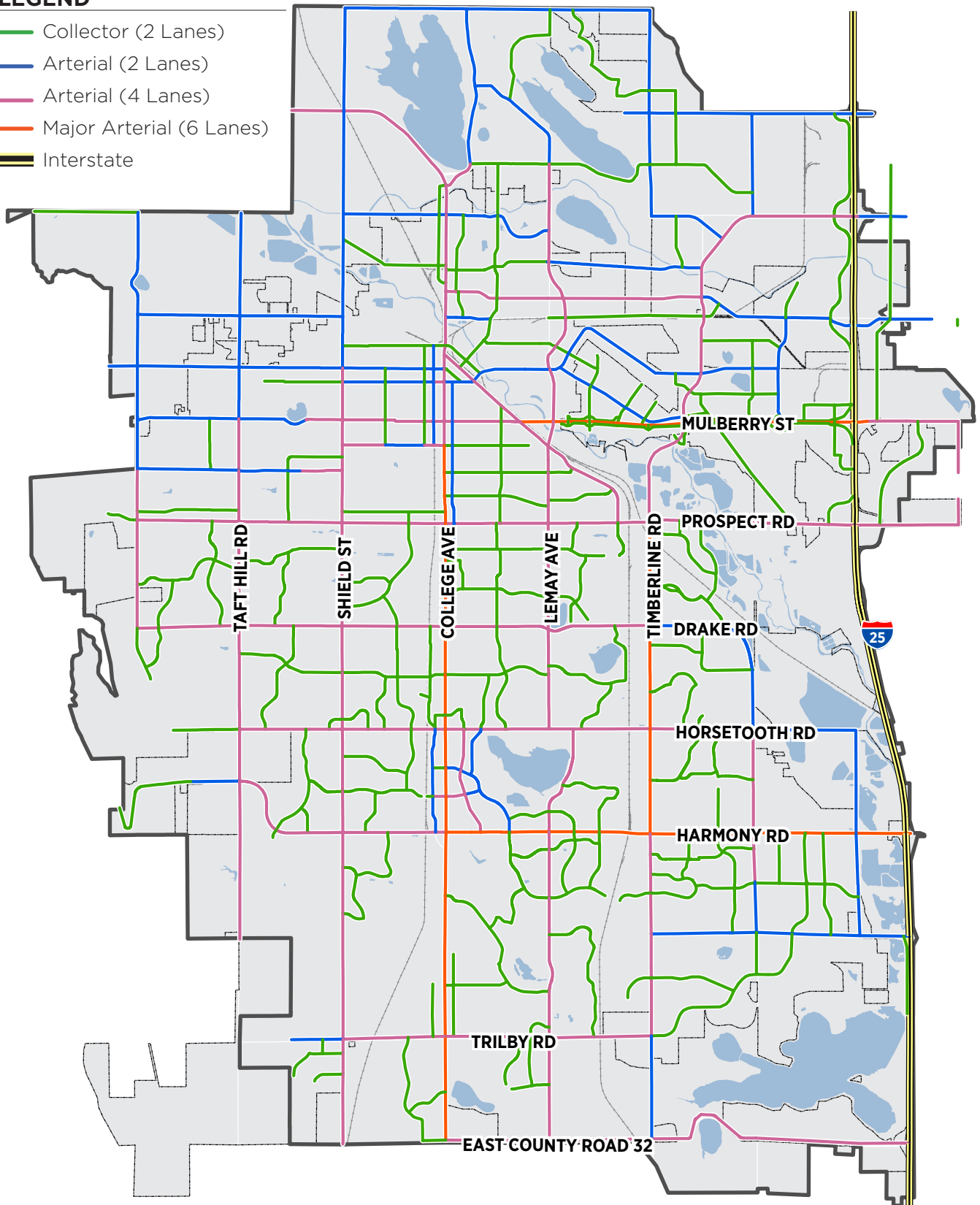


Figure 5-1: Major Street Network

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.

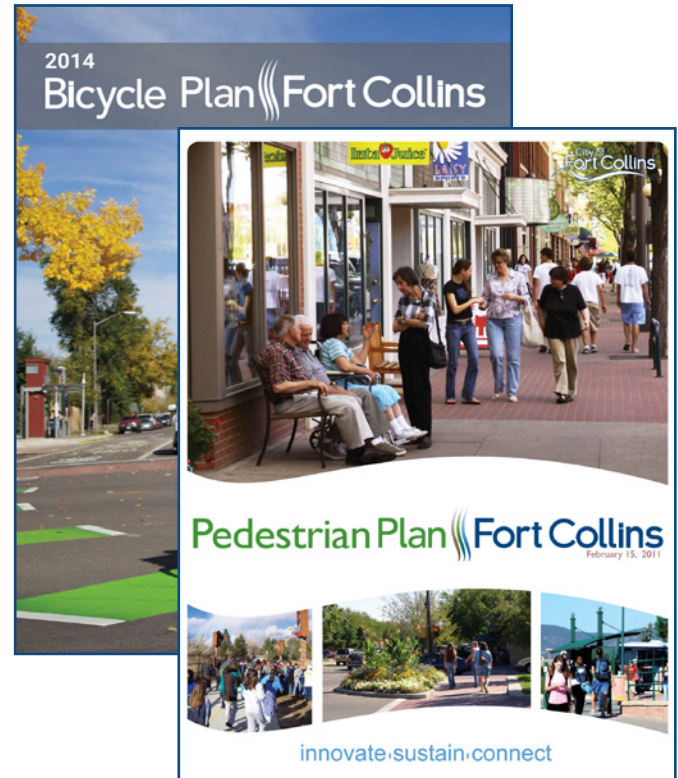
Modal Plan Update Schedule

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

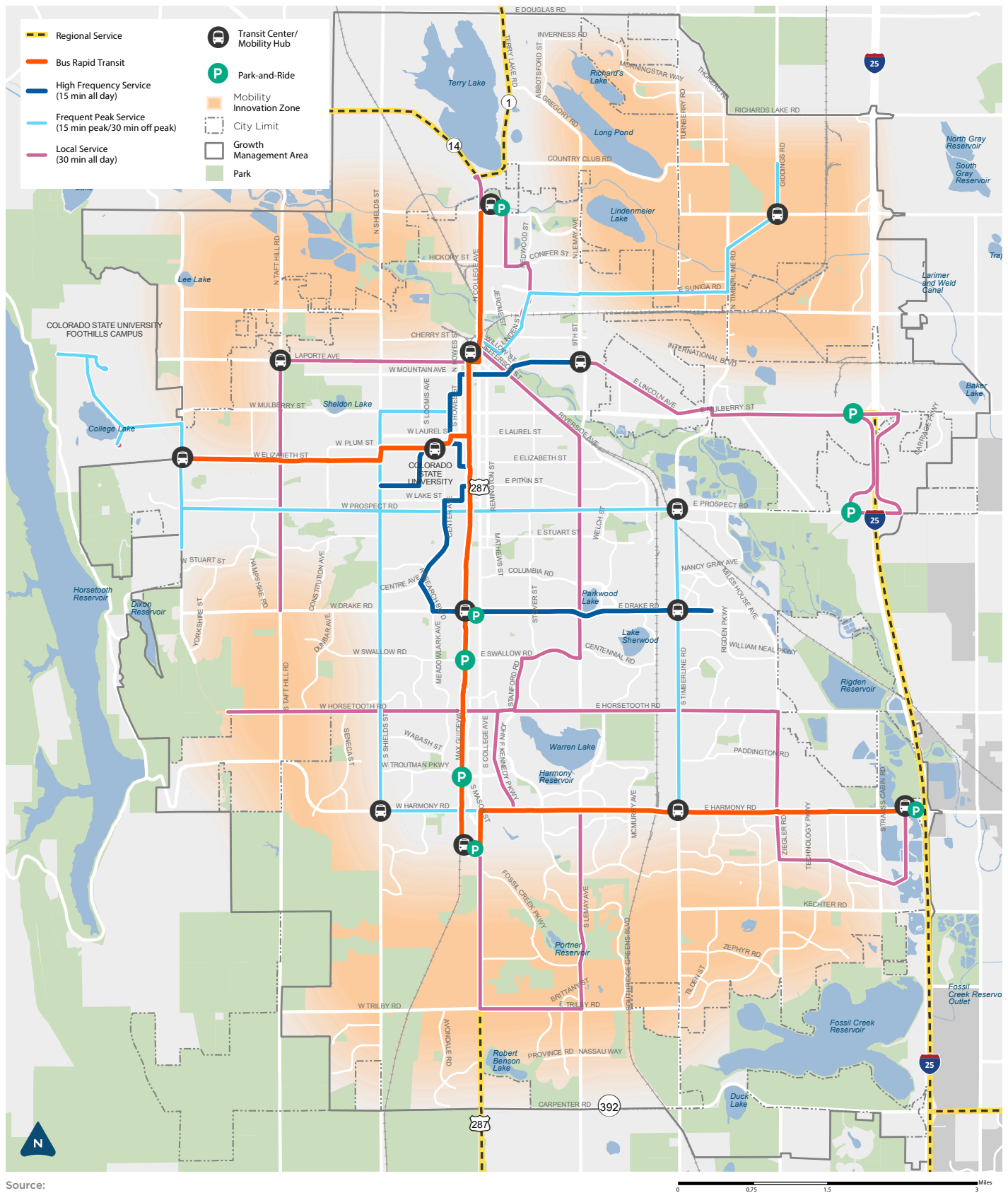
Transit will play an increasingly important role in moving people around the City over the coming years. As the city gets denser, transit provides an efficient way to move large numbers of people in a small amount of space. A fully loaded MAX bus can easily carry 80 to 100 people, removing a comparable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





Source:

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
- » **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.



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.

Land Use				Transit	
Land Use Type	Example	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
 Downtowns & High Density Corridors		>45	or >25	 BRT  High Frequency Bus  Local Bus	 10 minutes or better
 Urban Mixed-Use		30-45	or 15-25	 BRT  High Frequency Bus  Local Bus	 10-15 minutes
 Neighborhood & Suburban Mixed-Use		15-30	or 10-15	 Local Bus	 15-30 minutes
 Mixed Neighborhoods		10-15	or 5-10	 Local Bus  Micro-Transit	 30 minutes On demand
 Single Family Neighborhoods		<10	or <5	 Rideshare  Micro-Transit	On demand

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.





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.

LEGEND

- Buffered Bicycle Lane
- Bicycle Lane
- Neighborhood Greenway
- Protected Bicycle Lane
- - - Existing Bicycle Trail

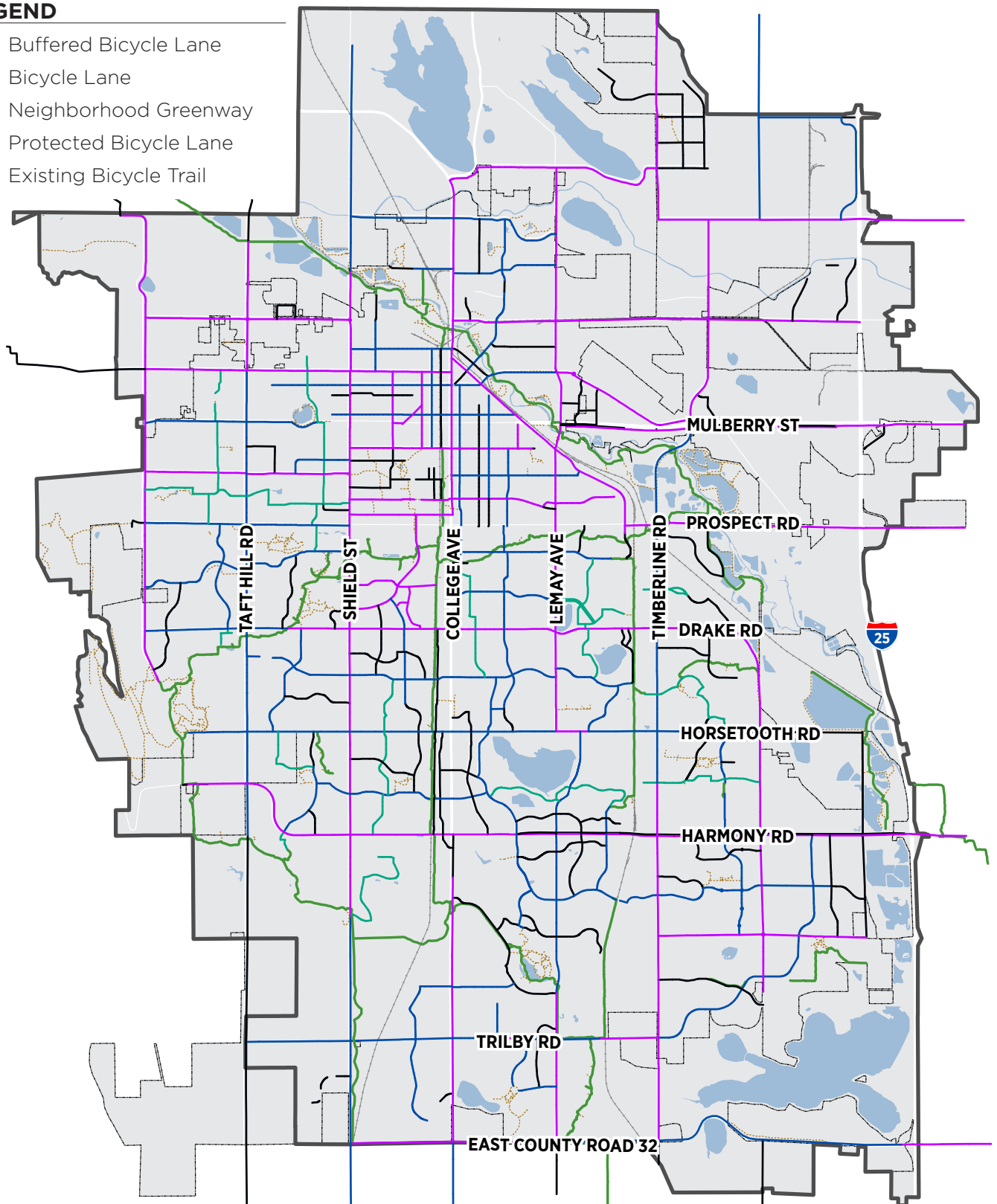


Figure 5-4: Full Build Bicycle Network

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

LEGEND

- Bike Lane
- Bike Route
- Shared Route
- Shared-use Trail
- Minor Shared-use Trail
- - - Unpaved Trail

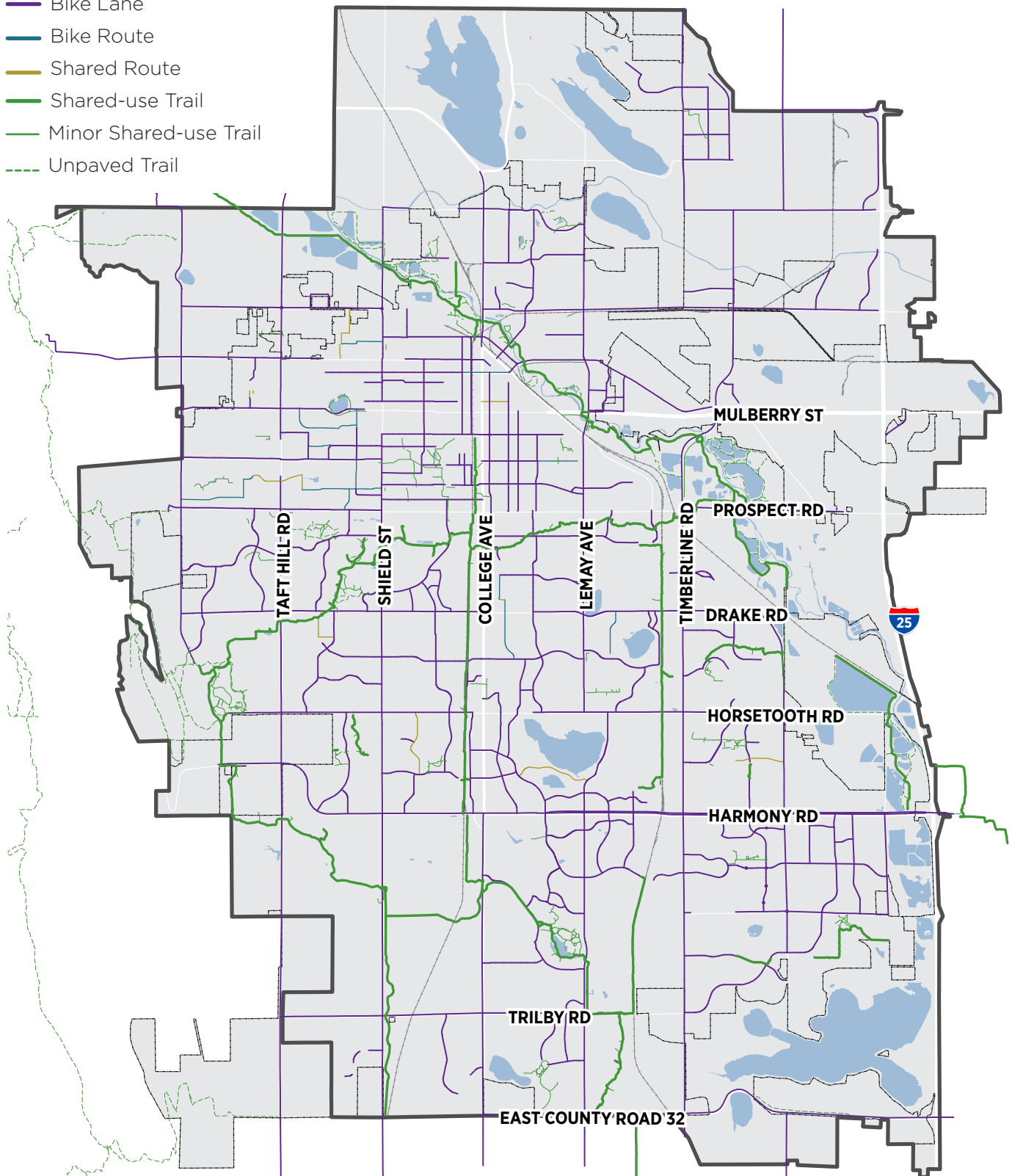


Figure 5-5: Existing Bicycle Network

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.



Annual Estimated Sidewalk Program Cost from 2018 City of Fort Collins Sidewalk Prioritization 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

LEGEND

- Low Priority
- Medium Priority
- High Priority

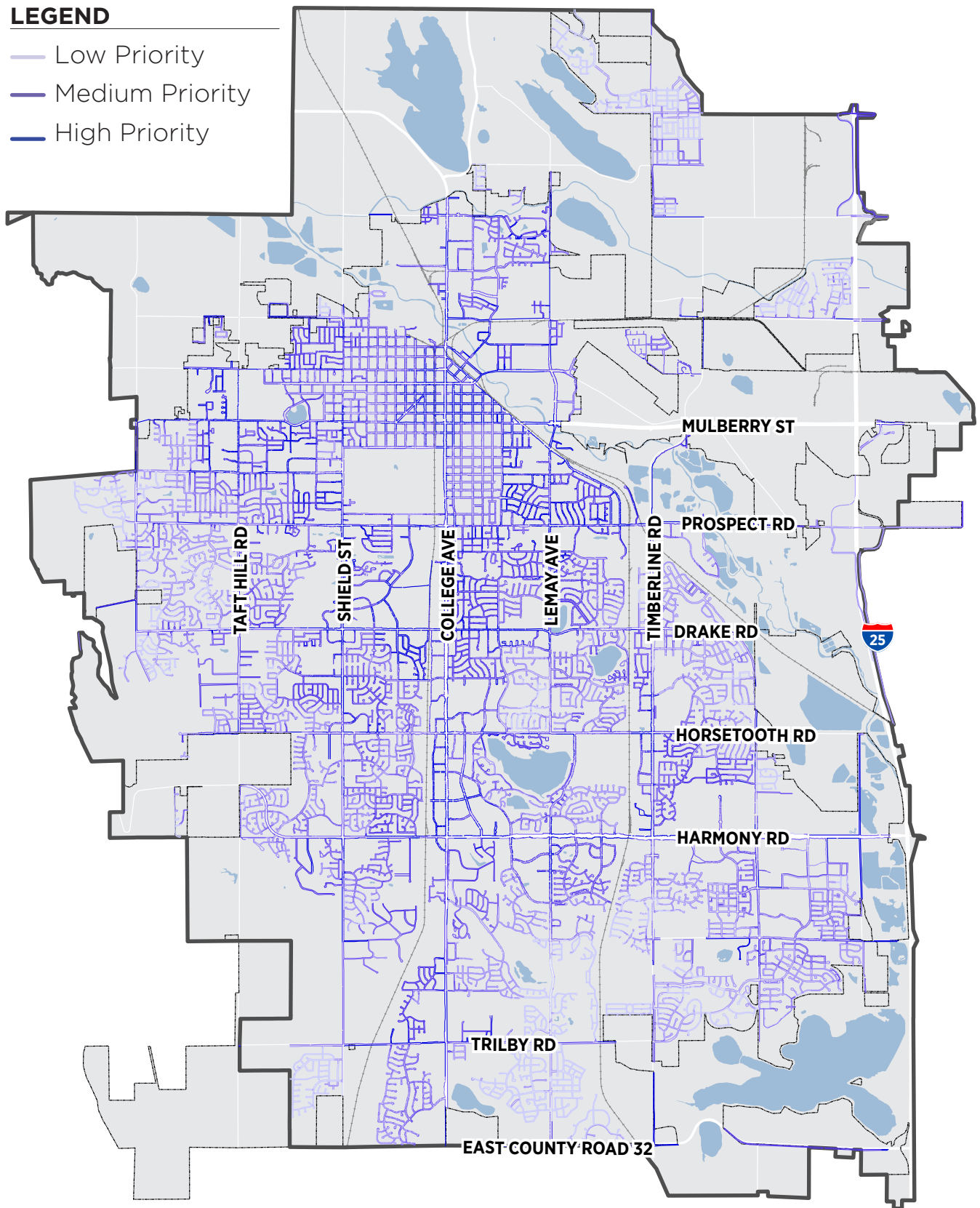


Figure 5-6: Sidewalk Prioritization

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.

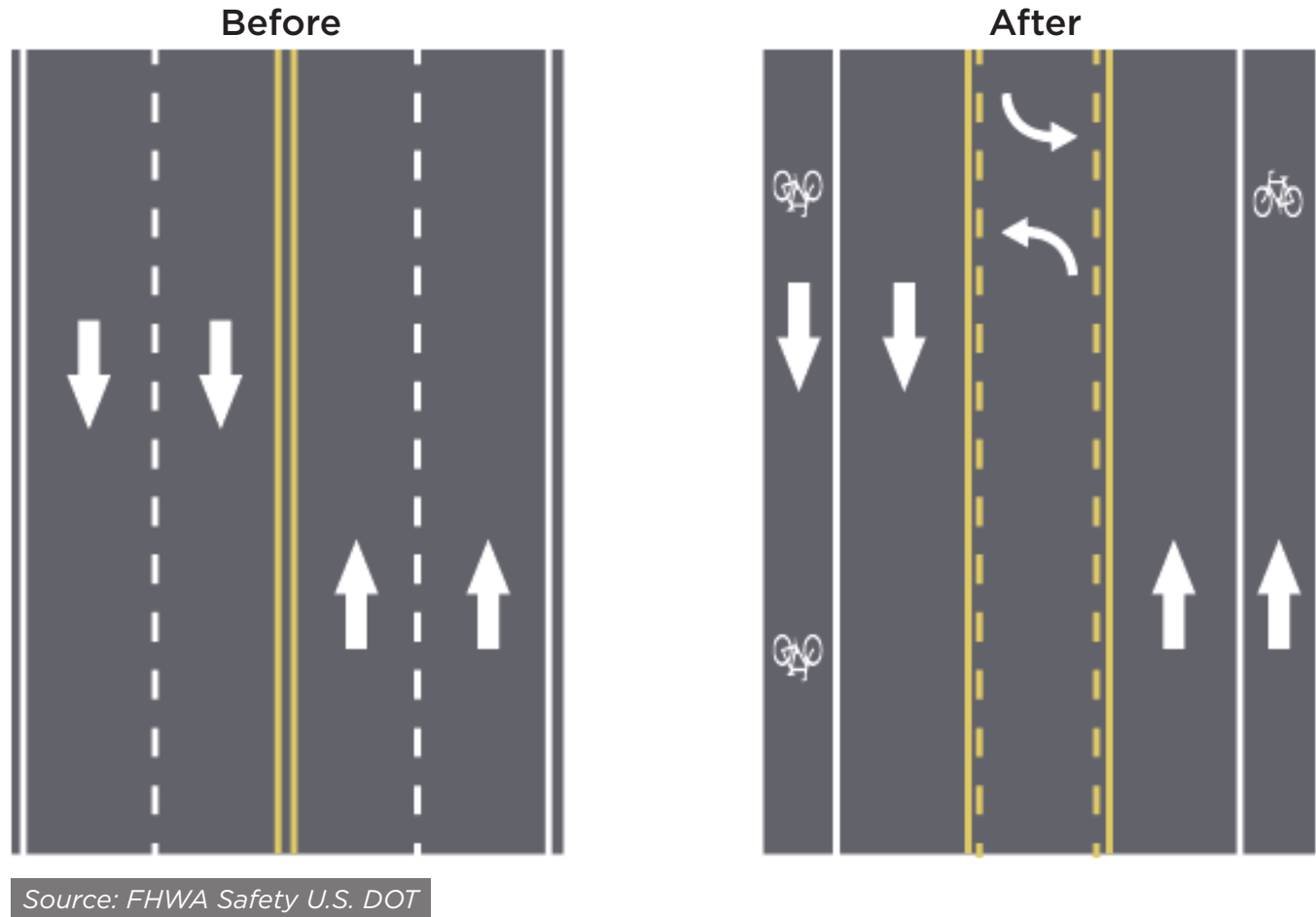
The City's capability to track travel reliability is relatively recent. Looking ahead, the City will continue to explore how the Bluetooth system can further inform transportation policy.

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.



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



REINVENTING THE WHEEL
Parking and Transportation Services
Your Guide to Navigating Campus

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.



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.

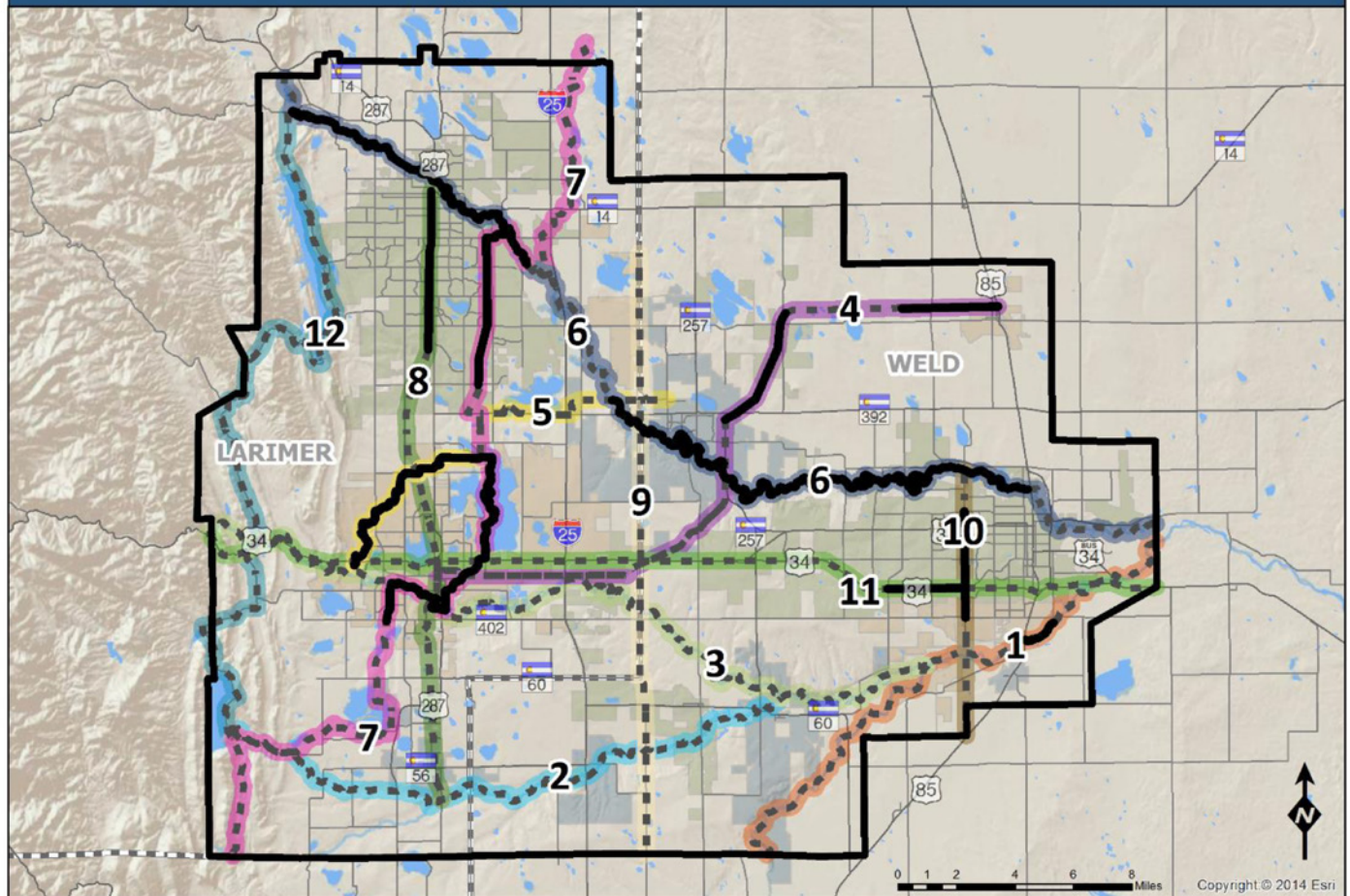
Regional Trails Connections

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.

NFRMPO Regional Non-Motorized Corridors



Jun, 2015

Sources: CDOT, NFRMPO

Legend

- | | | |
|--|-------------------------------|---|
| — Existing | 5: North Loveland/Windsor | 11: US 34 Non-motorized |
| - - - Future | 6: Poudre River Trail | 12: Carter Lake/Horsetooth Foothills Corridor |
| 1: South Platte/American Discovery Trail | 7: Front Range Trail (West) | NFRMPO Boundary |
| 2: Little Thompson River | 8: BNSF Fort Collins/Berthoud | County Boundary |
| 3: Big Thompson River | 9: Johnstown/Timnath | |

Figure 5-7: NFRMPO Regional Non-Motorized Corridors



HEALTH & EQUITY

HEALTH & EQUITY VISION STATEMENT

The transportation system in Fort Collins will foster a community that is healthy, environmentally sustainable and which promotes social equity through an inclusive transportation planning process that seeks to empower vulnerable communities and the equitable implementation of multimodal transportation enhancements.

SUPPORTING PRINCIPLE

PRINCIPLE T9

Utilize the transportation system to support a healthy and equitable community.

Where We Are Today

Promoting community health and equity is a core value for the City, as seen in targeted efforts such as the Climate Action Plan, the Neighborhood Traffic Mitigation Program and the work of the Fort Collins Social Sustainability Department. The transportation system plays a major role in the health of Fort Collins' residents and visitors since it influences activity levels and air pollution emissions.

Opportunities for the Road Ahead

Efforts to reduce greenhouse gas emissions, especially from transportation sources, must be accelerated to meet the City's Climate Action Plan goals. Improving multimodal transportation options and connectivity, particularly in lower-income neighborhoods and areas with poor access, will improve environmental outcomes while better connecting all residents to the City's economic, recreational and social resources. A transportation system with more active travel will also improve the health outcomes of people through greater physical activity.

Introduction

The quality and performance of the transportation system can be measured in many ways—including roadway capacity, travel times and transit ridership—but assessing network impact on quality of life is an equally important consideration. Transportation investments should not be made with the sole objective of moving as many people as possible. Instead, planning efforts unlock opportunities to help people access healthier travel modes, create cleaner air and diminish the negative impacts current transportation infrastructure has on community

life. In addition to outlining strategies for improving public health outcomes through transportation, the Transportation Master Plan has a particular focus on planning with the community instead of for the community. Transportation provides access, which in turn can empower vulnerable populations. Planning in collaboration with all Fort Collins residents will ensure that the resulting layered network represents a transportation system that fosters a healthy and equitable city.

Health Impacts

Lack of Access

Lack of access to transportation options disproportionately affects people with disabilities. Without access to public transit and/or Dial-a-Ride, many people with disabilities have no way to get to work, church, school, shopping, friends, etc. Additionally, a missing sidewalk gap could result in someone with disabilities traveling much farther than necessary to reach a destination that is physically very close. The City is working through the sidewalk-prioritization program to reduce barriers in the pedestrian network and by prioritizing the implementation of bicycle facilities in areas with poor connectivity. The layered network approach to placing appropriate travel facilities to match the community context will ensure that connectivity for all modes is improved.

Air Quality

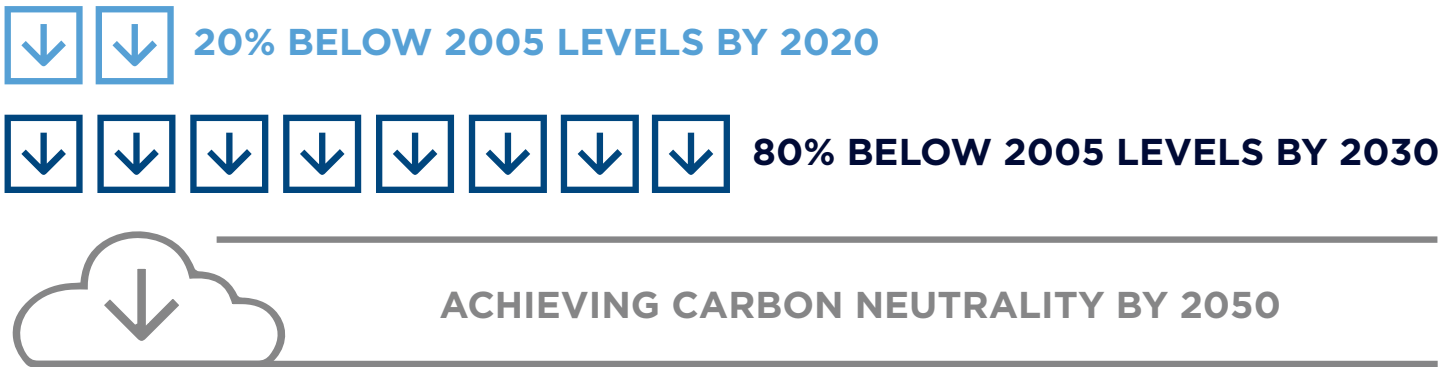
Vehicle emissions have a direct negative impact on air quality. Low air quality can result in respiratory illnesses, particularly among vulnerable populations such as children and older adults. Air pollutant and GHG emissions are closely related, as reductions in greenhouse gases also result in air pollutants such as ozone- causing emissions and particulate matter. Through the Climate Action Plan (CAP), Fort Collins is committed to reducing GHG:

Fort Collins uses a Transportation Air Quality Impacts Guidance Manual to consistently evaluate, analyze and document the benefits and tradeoffs of transportation investments as they relate to air quality. This was developed to clarify and standardize the process for analyzing air quality impacts of City-initiated transportation planning and construction projects, and to incorporate emissions reductions into the planning process.

Using the manual, Fort Collins can continue to:

- » Differentiate air quality impacts of various alternatives;
- » Determine better and more-consistent information to support triple-bottom-line decision-making;
- » Optimize projects from an air quality perspective and to mitigate air pollution increases from certain projects;
- » Meet requirements for air quality analysis associated with City requests to the Federal Transit Administration (FTA) for funding; and
- » Be more competitive on City grant applications when seeking funding from sources such as the Congestion Management and Air Quality Improvement Program.

Relative to the region, Fort Collins is making active strides in achieving better air quality, but continued efforts to reduce emissions from transportation sources are needed to substantially improve air quality and subsequently reduce rates of chronic obstructive pulmonary disease and asthma.



Congestion

Vehicle emissions are the primary contributor to PM2.5 levels in the air. A Harvard School of Public Health study found that increased levels of PM2.5 contributed to 4,000 premature deaths in 83 U.S. cities in 2000 alone. In addition, congestion carries high monetary costs through loss of work time and excess fuel consumption.

Perceptions of congestion vary significantly. The ability to easily and reliably move around town is often a significant concern for residents. Congestion also impacts emissions and economic health. There are two basic types of congestion:

- » **Travel Time.** The actual measurement of the amount of time it takes to travel between an origin and a destination, or on a segment of a roadway.
- » **Delay.** Travel time in excess of estimated “free flow” travel time. This is calculated by multiplying the individual travel time by the traffic volume to estimate the total delay of the roadway segment. This measure correlates with fuel consumption, vehicle emissions and greenhouse gases.

It is important to acknowledge, recognize and work toward addressing both types of congestion. Historically, traffic volumes in Fort Collins have increased but at a slower rate than population growth. Impacts of congestion include:

- » **Driver Frustration.** A measure of driver sentiment, as reflected in the City’s annual Citizen Survey.
- » **Vehicle Emissions.** Emissions from vehicles are the largest transportation contributor to the city’s GHG emissions.
- » **Quality of Life.** When arterials are congested, neighborhood cut-through traffic can negatively impact residents’ enjoyment of their neighborhoods.
- » **Economic.** Travel time reliability has a measurable impact on economic health and employee productivity.
- » **Safety.** As traffic congestion increases, the risk of crashes also increases for all modes.

Measuring Congestion

The City utilizes a Bluetooth data system along all major arterials in the city that collects constant, anonymous travel-time data. It is used to provide accurate, comprehensive metrics for congestion, and can be used for real-time travel management and historical evaluation. The system can be used to develop average travel time by corridor, or total delay by corridor (to reflect both types of congestions discussed above).

Noise and Rail Quiet Zones

The connection between noise and human health is not an extensively studied field. However, recent studies suggest transportation noise can negatively impact health by modestly elevating the risk of hypertension and cardiovascular disease. The more-prevalent impact of noise is an increase in annoyance, which can cause stress reactions. In addition, transportation noise exposure can lead to loss of sleep, which in turn can lead to negative health outcomes and have harmful consequences for cognitive development in children, including diminished memory and reading-comprehension skills.

Increased adoption of electric vehicles in Fort Collins can help address noise impacts on local streets. However, freight rail activity still presents a quality-of-life issue due to its high level of sound emissions. The City has worked to address noise from freight rail by studying where quiet zones could be implemented. A rail quiet zone designates sections of track with consecutive crossings where train horns may be sounded only at the beginning of a zone, rather than at each crossing. The quiet zone must comply with the Federal Railroad Administration’s (FRA) Train Horn Rule, which details requirements railroad operators must follow to alert motorists and pedestrians at railroad crossings that a train is



approaching. In order to establish a quiet zone, each crossing in the zone must have a quadrant gate system or gates with raised medians.

The City completed a Quiet Zone Study that took place in two phases. Phase 1 was conducted in 2011 with the support of the Downtown Development Authority. The study identified the necessary improvements to meet federal railroad quiet-zone regulations in the Downtown area. Phase 2 was completed in 2013 and includes the Burlington Northern Santa Fe (BNSF) crossings from south of Laurel Street to Trilby Road. Fort Collins also submitted a request to the FRA in 2015 for a waiver to the train-horn rule for freight crossings near the CSU campus. The waiver included a set of possible improvements the City would make to the proposed zone that would ensure safety in the absence of a train horn. FRA denied the waiver but instead established a working group for Fort Collins representatives to work with the Federal Highway Administration and the Federal Transit Administration to determine strategies for addressing the quality-of-life problems that train horns pose for Fort Collins residents.

Fort Collins should continue to explore opportunities to work with the FRA and other stakeholders to create a healthy community that mitigates the impacts of freight noise as much as possible.

Lack of Exercise

Active transportation fulfills the dual purpose of connecting people with their community via non-driving modes while also increasing physical activity, which leads to positive health outcomes for individuals and the broader community. The 2011 City Plan envisions health and wellness as key aspects of a sustainable community. Transportation has proven central to helping more Fort Collins residents achieve an active lifestyle through biking and walking. Bicycling is a core component of active transportation in Fort Collins, which was designated as a platinum-level bicycle-friendly community by the League of American Bicyclists and ranked as the one of the best cities for riding by People for Bikes.

Organizations such as FC Bikes promote active living through initiatives including Bike to Work Days and bicycle-safety education programs. The local SRTS program also promotes active transportation among Fort Collins youth who live close to their school.

The City encourages active transportation through both programming and policies that promote the development and maintenance of walking and biking facilities to enhance community wellness.

The City should continue to promote active and healthy living through infrastructure, education and encouragement programs and policies that make biking and walking a comfortable, convenient and safe option for all ages and abilities. The modal plan updates described in the Mobility Section of the TMP outline the ways Fort Collins will make the biking and walking layers more user-friendly, and thus present opportunities for more active travel.



People practice yoga at a 2018 Open Streets event.

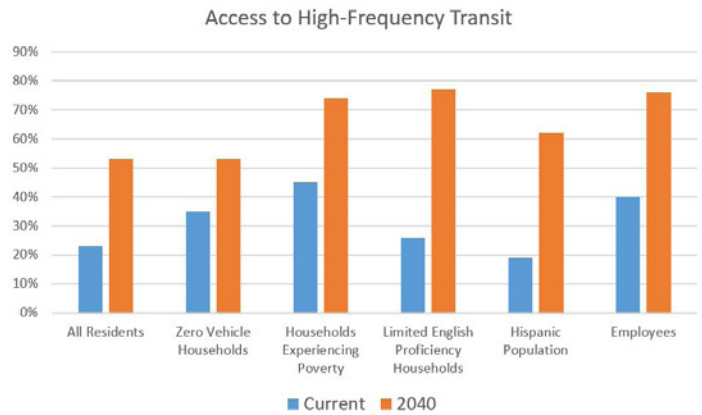
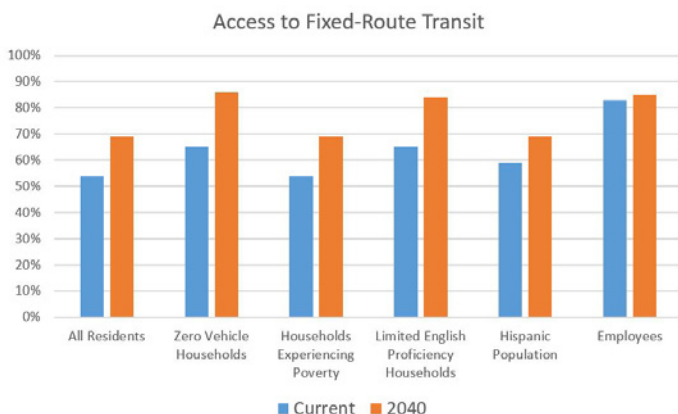
Equity in Transportation

The Planning Process

The location of transportation investments impacts not only the recipients of investments but also the communities that do not receive new infrastructure or service. Communities that experience lower levels of public investment have historically also reported worse air quality, lower access to community resources and less inclusion in the planning process. The impacts of marginalization are compounding, so it is important to bring in all members of the community early in the process. Recognizing the role of transportation in advancing social outcomes, equity must be a core consideration when deciding where to make investments in transportation assets and what form those investments should take.

A 2014 Social Sustainability Gaps Analysis identified the need for more transportation options as a common theme when evaluating the needs of vulnerable populations in Fort Collins. Lack of weekday evening and Sunday transit service was cited as a common barrier to community access. In 2017, City Council expanded Transfort funding for 365-day service to help address this concern.

The following charts from the Transit Master Plan show existing and future access to transit for various populations and demographics in Fort Collins. Access is defined as being within 1/4 of a mile of fixed-route transit and within 1/2 mile of high-frequency transit. Currently a good percentage of the identified populations have access to fixed-route transit, however access to high-frequency transit is much lower for all population groups. The proposed addition of high-frequency transit throughout the City will help address this imbalance.



Additionally, while driving alone is the predominant mode in Fort Collins, nearly 2% of households in the City do not own a vehicle.

With portions of the population living under the poverty line, as well as inequality in wages, affordable and accessible transportation becomes a key resource for accessing employment, education and other resources for economic mobility.

The TMP presents an opportunity to address inequity by incorporating underresourced communities into the planning process, starting with the visioning and prioritization as a part of this Plan. Fort Collins has demonstrated a commitment to advancing social equity and the TMP outlines the role that transportation planning plays in promoting equal access to opportunity in the city. The introduction to City Plan outlines the thorough public outreach process used to develop this Plan. The recommendation and prioritization of transportation investments identified in this Plan considers geographic and social equity.

Unequal access to transportation infrastructure can also translate to inequity in access to educational, professional and social opportunities. Communities that are underserved by transit, sidewalk infrastructure or safe biking facilities have reduced access to employment centers and other tools for economic mobility. Low-income residents may not have access to a private vehicle and rely heavily on reliable transit, biking, and walking services and infrastructure.

Investment Choices

Larimer County and Fort Collins have a growing older adult population that faces additional travel vulnerabilities. Transfort offers discount passes for seniors 60 and older. Senior Alternatives in Transportation (SAINT), a nonprofit human-service provider, administers a volunteer driver program that transports adults 60 and older around the Fort Collins area.

The City could consider investing in a publicly run program for providing older adults with community access through a reliable transportation option that can supplement SAINT. One potential opportunity for targeting the senior population could be through pilot projects and partnerships in the “mobility innovation zones” identified in the Transit Master Plan. These zones have a primary focus on connecting lower-density areas to the core transit network through on-demand, microtransit and micromobility options that could be implemented through public-private partnerships. As these partnerships are tested, they could be expanded to larger geographic areas for seniors in general or for low-income seniors to expand the ability to move across the city. The Larimer County Senior Transportation Needs Assessment (2017) provides additional recommendations for providing transportation options to seniors in the region; these recommendations include shuttles and public-private partnerships, which will require funding from partners such as Larimer County.

Efforts to improve access to transportation can run in parallel with planning efforts to improve environmental sustainability through transportation.

For example, while planning for electric vehicles, the City can make concurrent plans to site charging stations in lower-income neighborhoods.

To ensure that new transportation investments can further equity outcomes, the City could further develop the Health and Equity index and apply a scoring process that includes criteria such as race, ethnicity, median household income, average percentage of household income spent on housing, percent of the population that is non-ambulatory, and level of educational attainment. When determining where to prioritize investments, the scoring process can guide the City in making more equitable decisions that promote economic well-being within its communities.



Neighborhood Night Out



INNOVATION

INNOVATION VISION STATEMENT

Fort Collins will be proactive in welcoming new travel options that offer the opportunity of traveling more efficiently while reducing negative environmental, infrastructure and social impacts of travel.

SUPPORTING PRINCIPLE

PRINCIPLE T3

Lead transportation innovation by exploring and utilizing emerging and transformative systems and technologies.

Where We Are Today

New technologies are emerging daily that are fundamentally changing the way people think about moving around the community. Some of the emerging technologies can have positive impacts in contributing to meeting Fort Collins' vision and goals: vehicles that are far less likely to crash and injure others; shared mobility options; signal systems that adapt to changing traffic patterns; and transportation modes that are more affordable and accessible to people who can't walk or drive themselves. At the same time, some of these technologies could threaten the quality of life in the city if not managed well, such as congestion from induced demand with driverless cars or drones making same-day deliveries.

Opportunities for the Road Ahead

At this pivotal point in transportation, Fort Collins will be proactive in welcoming new travel options that offer the opportunity of traveling more efficiently while reducing negative environmental, infrastructure and social impacts of travel. At the same time, the City will be vigilant in establishing regulations and incentives to ensure that these new transportation technologies do not degrade the quality of life or erode the City's vision for sustainable and equitable mobility. Fort Collins should use emerging modes to facilitate transit use by encouraging first-last mile solutions through means such as bike-share and scooter parking at Mobility Hubs and right-sizing transit through ride-hailing in mobility innovation zones, as identified in the TMP.

Introduction

The potential impact of evolving technologies on vehicle miles traveled and travel preferences is important to understand. In order to assess the impact such trends may have in Fort Collins, a workshop on the future of transportation was held with City staff in January 2017. **Figure 5-8** shows the results of a polling exercise with workshop attendees on the direction of potential trends and their implication on VMT in 2040. More details on these projections and results are located in Appendix H7.

Based on staff projections on trends, VMT will be about 9,600 VMT per capita, while the Climate Action Plan goal is 6,300 VMT per capita. A significant amount of the growth in VMT can be attributed to increased ride-hailing, increased deliveries of goods/services, and decreases in housing affordability (which pushes some people further from job centers and lengthens their commutes). Results of this Plan support the City's priority to be more proactive in funding transit and regulating/encouraging more sustainable travel behavior in order to meet climate action goals.

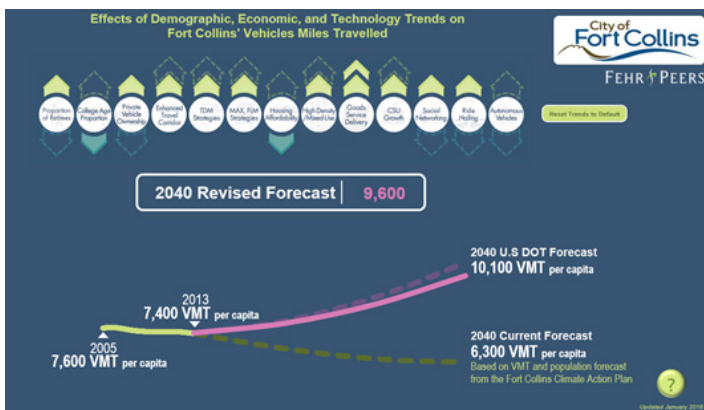


Figure 5-8: Results of Effects of Projected Future Trends on VMT

Shared Mobility

Shared mobility—the shared use of a vehicle, bicycle or other low-speed travel mode—is an innovative transportation strategy that enables users to have short-term access to a mode of transportation on an as-needed basis. It will be important for Fort Collins to prioritize shared mobility through programs and infrastructure in order to optimize the transportation system in consideration of environmental

sustainability and limited space and resources. Shared mobility also provides a broader set of transportation options for users that reduces reliance on the private automobile, therefore mitigating congestion and carbon emissions. Shared mobility is a key component of a future transportation innovation (MaaS) that is beginning to emerge in Europe and that has the potential to fundamentally change how people pay for and access travel. MaaS is described in a later section of this chapter.

Bike-Share

On April 1, 2016, the Fort Collins Bike Library evolved into Fort Collins Bike Share provided by Zagster, a private bike-share operator. This bike-share system is a collaboration of Zagster, the City of Fort Collins and Bike Fort Collins, along with the sponsorship of numerous local businesses.

In June 2018, the Fort Collins Bike Share became Pace Fort Collins. Pace Fort Collins, a product of Zagster, is a modern, dockless bike-share system that allows riders to dock their bikes at any local bike rack to end a ride. The citywide fleet has 250 bicycles, and since debuting two years ago, the program has provided more than 22,000 rides.

This flexibility expands the destinations users can travel to on bike-share. In addition, the system provides equitable access by accepting ride/membership purchases using EBT cards preloaded with public-assistance funds. Further enhancements to the bike-share system could include full integration of the Transfort trip-planning web and smartphone applications, along with Pace. This integration with transit would also be facilitated by incorporating bike-share stations at Mobility Hubs to ensure that bike-share serves as a first-last mile solution for transit users.



Shared E-scooters

Shared e-scooters are a system where scooters with electric motors are available for rental and short transportation trips. They are generally operated and maintained by private providers. They do not require memberships but have a small flat fee and a per-minute rate. This new shared-use mobility option has become popular around the country and is available in cities around the country and in Colorado, including Denver. Shared e-scooters are expected to launch in Fort Collins in mid-2019.

In anticipation of the potential arrival of e-scooters, the City updated local regulations. This includes e-scooter parking and inclusion of e-scooters in Downtown dismount regulations. Additionally the City is preparing a Request for Proposal (RFP) to manage e-scooter activity by selecting a company (or companies) to operate in Fort Collins. This will allow the City to work with e-scooter companies on details of operations and to help mitigate potential issues.

Early anecdotal data suggest that e-scooter sharing gets more usage than similar bike-share systems.



For some people, e-scooters are easier to ride and are less cumbersome to park than bikes. Cities that have planned for e-scooters by updating municipal codes to incorporate e-scooters and coordinating with e-scooter providers to negotiate the number of devices deployed onto city roadways have witnessed less disruption to their transportation networks than cities that had not prepared for the arrival of e-scooters.

Fort Collins is also reviewing its vehicle and bicycle codes, in anticipation of changes at the State level, to make sure it is clear where and how people should ride e-scooters (shared or not).

E-bikes

In addition to electric scooters, the use of electric bikes is also on the rise, in the form of privately owned and shared e-bikes. Fort Collins updated regulations that prohibit riders from using e-bikes on city trails with a one-year pilot to allow Class 1 and 2 e-bikes traveling 20 mph or lower on city paved trails. This pilot project is aligned with new state laws and the popularity of e-bikes.

E-bikes make biking accessible to many who otherwise would not feel comfortable biking while also expanding the range of how far some will bike to reach their destination. In a study at the University of Tennessee at Knoxville of its e-bike-share system data revealed that “with few exceptions, riders of e-bikes behave very similarly to riders of bicycles.” However, it is also important that the City of Fort Collins educates users and collects and analyzes data to protect the real and perceived safety of other trail users.



Car-Share

Car-sharing is a model for car rental that allows users to pay for access to vehicles for limited periods of time. Car sharing can come in many forms such as publicly or privately provided, gig economy based, and app-based. Rental periods for car-share are typically in minute or hour-long increments, filling a temporary need for a vehicle and offering an alternative to the traditional car-rental model, which requires a rental period of at least one day. In addition, car-share systems tend to have vehicles dispersed throughout a service area, making the vehicles easier to access than traditional car-rental companies. Access to a car-share vehicle is also much quicker than a traditional rental: a person either walks up to a car and gets in via an access card or smart phone, or reserves a car with a few clicks on a web page or smartphone app.

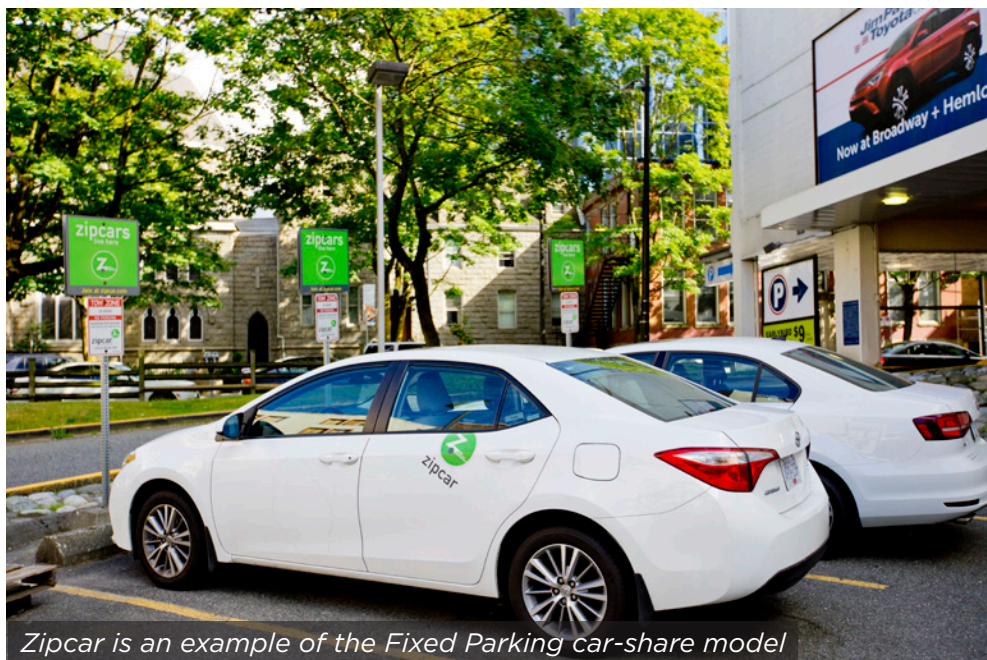
At the time of this update to the TMP, there are three primary models for car sharing:

- » **Point to Point.** This model consists of a fleet of vehicles that can be dropped off at any location within a designated service area. Point-to-point systems are designed for users traveling in one direction, do not require advance registrations and incentivize shorter trips by charging per minute of use.
- » **Fixed Parking.** The most well-known Fixed Parking car-share company is Zipcar. The Fixed Parking model requires an advance registration and the vehicle to be returned to its origin point. Fixed Parking requires coordination with private landowners and municipalities as the vehicles require a permanent location in either a privately owned lot or in the public right-of-way. In Fort Collins, Zipcar has several locations on and near the CSU campus.

- » **Peer to Peer.** The newest entrant in car sharing, peer-to-peer services provide a platform for people to rent their private vehicles out during times they are not in use. Rentals can be by the hour or by the day. Turo is an example of a popular peer-to-peer provider that currently operates in Fort Collins.

Fort Collins may continue to facilitate and support opportunities for car-share. This could be in the form of public-private partnerships, providing parking spaces or EV charging stations, or providing incentives and discounts as a part of Transportation Demand Management strategies. To better prepare for the continued growth of car-share services, the TMP recommends that the City formalize a permitting process that allows car-share operators to apply for a dedicated parking space or vehicle area permit through a streamlined process. The permitting process should clearly define the requirements that all vendors must meet, including required business licenses, insurance and operating permits. Unique permitting requirements should be identified for point-to-point and fixed-parking models.

Car sharing provides opportunities for people without access to a vehicle to enjoy increased connectivity when their travel needs cannot easily be met by walking, biking or riding transit. Car-share also tends to reduce overall vehicle use because the cost of operating a vehicle is no longer a hidden, sunk cost (as is the case with a privately owned car) and overall car ownership tends to decrease with car-share membership, which results in less driving overall. The availability of car-share models creates a more holistic landscape of transportation options and supports residents and employees who are unable or who choose not to own a vehicle.



Zipcar is an example of the Fixed Parking car-share model

Ride-hailing

Ride-hailing, provided primarily by Transportation Network Companies (TNC), is a newer mobility service that has exploded in popularity over the past few years. At its most basic level, ride-hailing is simply the modern version of a taxi using a web-based platform that matches passengers with drivers in a simpler and more intuitive way. Drivers opt in to provide this service, and fees and wait time are determined based on supply and demand, as moderated by the platform owners. Uber and Lyft are currently the TNCs operating within Fort Collins and the surrounding region.



Nationally, TNCs/ride-hailing represent the fastest growing transportation mode. Multiple studies have shown that people choose ride-hailing for many reasons, and as a result, ride-hailing has the potential to reduce the mode share for all modes, including walking, driving, biking and transit. Recent data also show that ride-hailing has the potential to increase overall VMT because of mode shifts from walking, biking, and transit and because of the amount of “deadhead travel” (travel with no passengers) required to pick up new passengers. On the other hand, a key market for ride-hailing vehicles is transit hubs—where TNCs serve as a first-last mile connection to transit and have the potential to increase transit ridership by expanding access to stops and stations.

Overall, ride-hailing presents some mixed opportunities for Fort Collins. Ride-hailing provides a niche in the travel market for many trips: late evenings when transit is less frequent; travel with bulky items; social travel; and more. Ride-hailing also can help to reduce the risk of impaired driving by providing an easy way home for people who shouldn't be driving. On the other hand, excessive

use of ride-hailing can lead to increased VMT, energy use/greenhouse gas emissions, traffic congestion, and crowded curb spaces and loading zones.

The TMP recommends that the City work with TNCs to ensure that ride-hailing is part of the mobility environment, while also working to prevent increases in traffic congestion and negative environmental outcomes. Some potential strategies to balance the pros and cons of ride-hailing include:

- » **Open data requirements.** Provide the city with more information to be able to more effectively regulate and create public private partnerships with TNCs; require that TNCs provide open access to real-time travel costs and travel times so that cost/travel time information for multiple modes can be aggregated into a single source.
- » **Fees in highly congested areas and times.** While TNCs incorporate surge pricing to entice more drivers when demand is high, Fort Collins should consider congestion pricing ride-hailing vehicles when congestion threatens the reliability of transit operation.
- » **Explore passenger occupancy levels or taxing low occupancy vehicles or deadhead time.** Particularly during congested times, higher vehicle occupancies may be charged a fee for low occupancies, to help mitigate the curb and roadway congestion caused by ride-hailing vehicles.
- » **Operational improvements that prioritize transit such as transit signal priority or BRT service.** The popularity of ride-hailing has shown that people highly value short travel times and the ability to quickly access a vehicle. Improving the speed and reliability of transit will make this mode more attractive than ride-hailing when considering the cost differential.
- » **Formalizing ride-hailing as a part of the transit system.** The Transit Master Plan has identified areas where ride-hailing can provide transit access in areas with minimal fixed route transit service, identified as mobility innovation zones, or to serve as first-last mile connections at mobility hubs.

Curbside Management

In addition to TNCs' potential impact on congestion and roadways, this type of travel also increases the demand for curbspace through pick-ups and drop-offs. Without designated curbspace and enforcement of pick-up and drop-off zones, TNC vehicles often block travel lanes; conflict with bicyclists and pedestrians; double park; obstruct loading zones; or block bus stops when picking up or dropping off passengers. This can result in safety conflicts and operational inefficiencies for private autos, freight and transit. In order to mitigate these impacts, managing the limited space at the curb becomes a critical piece of the transportation system. The Curbside Management Practitioners Guide describes this process as follows: "Curbside Management seeks to inventory, optimize, allocate, and manage curbspace to maximize mobility and access for the wide variety of curb demands."

In the short term (one to two years), a curbside management study could examine how well locations accommodate moderate- to high-volumes of passenger-loading activity amid other uses. As a part of this study, the City could collect, observe, and analyze video and traffic data, including activity data from TNCs to quantify loading demand. These results will help better understand curbspace demand and the efficiency with which different people use the curb, evaluate interactions between roadway users, and understand other behaviors and trends at and around the curb. In the short and medium term (three to five years), the City could then implement strategies to improve curb productivity based on the results of the curbside management study.

Potential actions could include creating designated pick-up and drop-off zones, especially in mobility innovation zones where ride-hailing is encouraged as a form of public transit. Some of these strategies are already being piloted at certain times in Downtown. Mobility hubs should all contain pick-up and drop-off zones to facilitate multimodal travel and first-last mile connections to high-frequency transit. Three additional strategies that may be implemented include:

- » Relocating curbspace along a block;
- » Converting the amount of curbspace dedicated to various uses; and
- » Implementing flexible curbspace that applies technology and infrastructure to change the curb use as demand for that space fluctuates throughout the course of a day or week.

Electric Vehicles

The City of Fort Collins has an Electric Vehicle Readiness Roadmap that was completed in October 2018 and serves as a strategic plan for supporting the increased use of plug-in electric vehicles (EV) in the city. The Roadmap establishes a vision and a set of goals, and clearly defines roles for City Departments, the private sector and the community. EVs are a cornerstone of the City's Climate Action Plan because CAP assumes that a large proportion of future travel will still be carried out in smaller vehicles (either as privately owned autos or ride-hailing-type services) that are inherently more energy-intensive to operate than public transit, walking or biking. The EV Readiness Roadmap includes short, medium, long-term, and ongoing action items and strategies to achieve these goals **(Figure 5-9)**.

In the short term (one to two years), the Roadmap recommends that the City identify locations for EV charging stations in the public right-of-way, encourage installation of the stations and continue transitioning the City fleet vehicles to electric. In the medium-term (three to five years), the Roadmap includes strategies to revise building codes to incorporate EV charging into new developments, incentivize local residents to purchase EVs, and support EV drivers by adjusting their utility rate structures and increasing their access to renewable electricity for EVs. Over the long-term (within ten years), the Roadmap encourages the use of EVs for ride-hailing and car-sharing, upgrading electricity distribution infrastructure to accommodate increased demand from EVs, and pursuing emerging technologies that will further support the adoption of EVs such as wireless charging and battery recycling. Ongoing strategies include: providing resources for promoting public awareness on EV benefits, incorporating EVs into local planning efforts and advocating for EV adoption regionally.

To build on what is in the EV Readiness Roadmap, the City may work with state and federal legislators on further incentives for EVs or disincentives for traditional internal-combustion engines. These state and federal efforts, in conjunction with the strong local actions outlined in the EV Readiness Roadmap, will help to speed the transition to a more efficient electric-vehicle fleet.

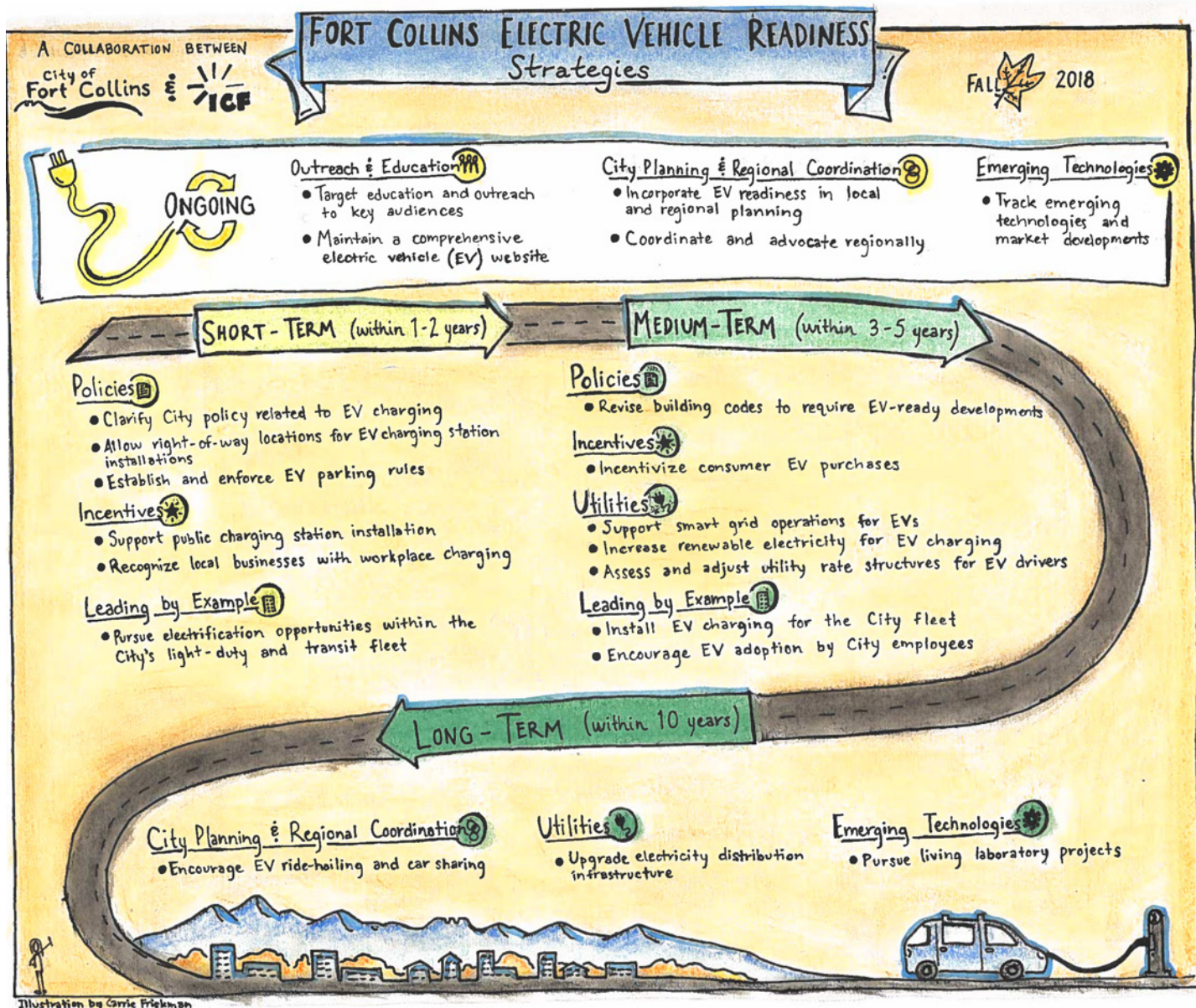


Figure 5-9: Strategies from the Fort Collins Electric Vehicle Readiness Roadmap

Autonomous and Connected Vehicles

Autonomous and Connected Vehicles (AV/CV), are two vehicle technologies that are rapidly evolving with the potential to impact travel patterns and trips choices in the future. AVs are capable of sensing the environment and moving through the street network with little or no human input. CVs are vehicles that communicate with other vehicles on the road, as well as connected infrastructure, to improve roadway use and safety.

AVs may increase the demand for travel due to the decreased opportunity costs for travel and decrease the demand for parking. In addition, research on travel behaviors suggests that AVs may decrease transit usage except for high-frequency transit services that operate in a separate guideway (e.g., BRT and rail). Some travel related to AVs has potential good outcomes by providing elderly and youth populations more mobility options and expected improvements in traffic safety.

Connected vehicles and connected infrastructure are currently in development and include various levels of connectivity, including:

- » Vehicle to Infrastructure;
- » Vehicle to Vehicle;
- » Vehicle to Cloud;
- » Vehicle to Pedestrian; and
- » Vehicle to Everything.

To address the potential impacts of AVs and CVs, strategies include:

- » **Curbside management (as discussed in the TNC section).** AVs could cause curbside congestion that impacts many other users and modes.
- » **Protect pedestrian safety.** The capability of AVs to adequately respond to pedestrian behavior presents a unique concern.
- » **Equity implications.** AVs may be more accessible to people with high incomes and the added congestion could negatively impact lower income populations.
- » **Land use impacts and policies to restrict potential sprawl.** When people don't have to drive, they might be interested in living further away from work.
- » **Opportunities for transit hubs and first-last mile connections.** AVs can serve as great connections to core transit services; Denver is about to get its first autonomous shuttle to connect a light rail station to an employment area.
- » **Transit implications.** Autonomous buses could improve the safety and reliability of the transit system and reduce operating costs.
- » **Support of Complete Streets principles and "Moving Towards Zero Deaths" goals.** AVs should not compete for space devoted to other modes (notably transit), though they can help achieve the "Moving Towards Zero Deaths" goals.
- » **Site planning and parking design that accommodates AVs and changes in demand.** The City could consider reducing minimum parking requirements in anticipation that AVs (and better transit service) will reduce the need for people to park at their final destination.
- » **Investing in smart infrastructure (e.g., dynamic traffic-control signals and multimodal sensor technology).** AVs can operate more efficiently and cities can better manage AV usage (through pricing, metering when trips can occur, etc.) if there is connected vehicle infrastructure. The City should monitor changes in connected vehicle technology.
- » **Developing data-management capabilities.** Fort Collins should work with state and federal legislators to ensure that the City can access relevant and anonymous data from AVs to help in understanding travel patterns and managing the traffic and curb congestion that could be caused by AVs

Drones

Delivery drones are remotely piloted vehicles that can deliver lightweight packages; they are currently in development and testing phases. In several examples across the world, drones are being used for delivering time-sensitive items, such as medicine, or for deliveries that would be difficult with traditional vehicle-based services.

Delivery drones have the potential to change last-mile delivery economics for smaller and lighter packages as they could replace many deliveries made by traditional delivery vehicles. The FAA issued regulations in 2016 that limit but allow the use of commercial aerial drones for deliveries. Current regulations require that a licensed pilot keep the drone within sight, the flight cannot be conducted from a moving vehicle, and the weight of the drone and package must be under 55 pounds.

Potential limitations include limited package weights; constrained operating times due to limited battery capacity; interference with other sidewalk and pathway users (for ground-based drones); difficulty in determining designated drop-off locations in dense urban areas; irregular or unpredictable events such as weather, wildlife or vandalism; and the need for airspace control regulation. In addition, aerial drones are a new source of noise pollution that is currently outside the scope of most city noise ordinances.

The potential limitations and impacts related to drone delivery, including concerns about privacy, noise, safety and vandalism, will need to be evaluated alongside the potential benefits of drone delivery. For example, drones could reduce the impact of "instant delivery" services and traditional vehicle-based delivery services in neighborhoods. Key actions to consider for both aerial and land-based drones include:

- » Size limits for land-based drones to ensure that sidewalk users can navigate around the vehicles;
- » Updates to the vehicle code to accommodate land-based drones;
- » Noise limits for aerial drones;
- » Operating hours to manage noise; and
- » Policies to address privacy concerns.



DHL delivery drone. Photo credit: Sam Churchill (fFlickr)

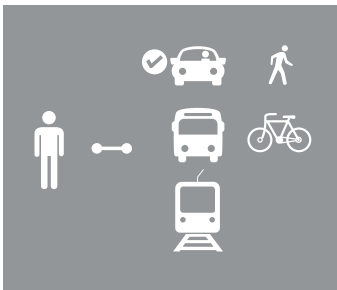
Mobility as a Service

MaaS describes the shift away from privately owned automobiles and toward transportation that is offered as a service. This includes both public and private providers that can work together to provide a holistic landscape of transportation options. MaaS provides reliable and comprehensive transportation options and information that can reduce the reliance on or eliminates the need for private automobiles. The average car costs more than \$8,800 per year to own and operate. By comparison, MaaS reduces costs for the user, decreases congestion, reduces emissions and provides transportation providers with the data they need to be more cost-effective. MaaS can become increasingly appealing and viable through an integration of modes that includes payment integration, a trip-planning app and mobility hubs.

Fort Collins can encourage and facilitate MaaS by:

- » Requiring open data from private providers to facilitate trip planning. This includes providing trip planning information and trip costs in a way that can be easily aggregated by a third party;
- » Creating a platform for integrated payment that starts with Transfort and bike-share and later expands to include private providers. Ultimately, Fort Collins may seek to require that third parties participate in an integrated payment system as a condition of operating in the City; and
- » Creating public-private partnerships that use private providers to complement and supplement public transit, particularly in the mobility innovation zones identified in the Transit Master Plan.

THEN



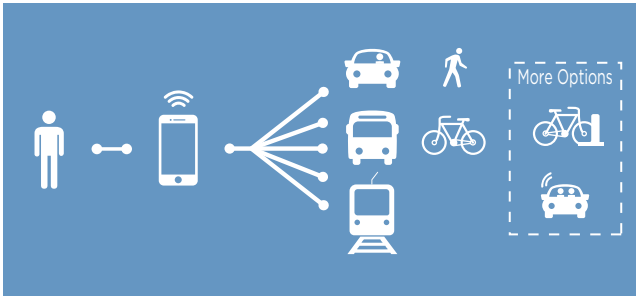
Loyal to Mode

Tend to use just one option and rarely switch

Perception of Limited Options

Personally owned car often the default option

NOW



Mobile Phone

Helps make choices, but each tool has separate app

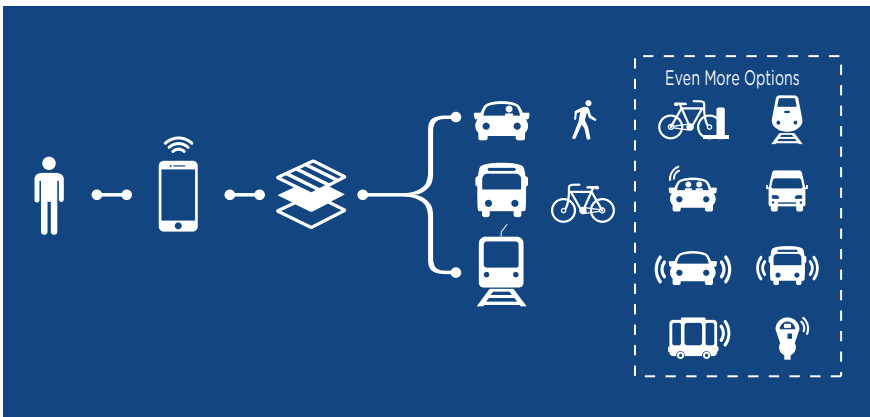
New Options

Many people use just one or two new options (ride-hailing, bike-sharing) in addition to their primary mode

Ride-Hailing

Car ownership separated from car use

FUTURE



Mobility as a Service

Use mobile device to select among many options and seamlessly book and pay for them

More New Options

Including innovative, new, private-sector mobility tools

Choose the Right Tool for the Right Trip

Based on better information about cost, time and comfort



People explore a Transfort bus during an Open Streets event in 2018.



SAFETY VISION STATEMENT

Safety is a key priority when planning, implementing and operating transportation elements in the city, as exemplified through the City's Vision Zero commitment to reduce and eliminate serious injury and fatal crashes.

SUPPORTING PRINCIPLE

PRINCIPLE T10

Support and enhance safety for all modes.

Where We Are Today

The Traffic Operations Department enters every reported crash into a database and uses that information in a detailed review of the city's roadway safety. The review includes basic crash information and trends, as well as overall data; analyzes specific types of crashes; looks for trends; involves a statistical review; undertakes pattern recognition; and evaluates locations to identify higher-than-expected crashes, trends and specific patterns that can lead to mitigation strategies. This information is summarized in the City's Annual Safety Report.

Information from the Annual Safety Report is used in an overall safety program, informs numerous City projects (from planning through construction), supports enforcement efforts and identifies specific safety-related projects. The safety program also evaluates and monitors efforts to continuously improve safety for all modes of travel.

Typically, during an average year, there are about 4,000 reported crashes in the City, including 260 significant-injury crashes and anywhere from five to 10 fatalities per year. The societal cost of crashes is estimated to be more than \$150 million per year as of 2018.

Opportunities for the Road Ahead

The City of Fort Collins strives to provide a safe and efficient transportation system for people using all modes of travel. Safety for roadway users is a top priority, and in 2016 the City became the first public local entity to join the Colorado Department of Transportation (CDOT) Moving Towards Zero Deaths initiative.

Trends

In the past three years (2016-18), the numbers of transportation-related crashes in the public right-of-way reported to Police Services have been on a slight downward trend. The total number of crashes, as well as the number of severe crashes, is similar to the number of crashes five years ago (2014) despite growth in both the city's population and overall VMT.

When comparing to peer cities of a similar population size throughout the country, Fort Collins has a fatal crash rate about 50% lower than the average.

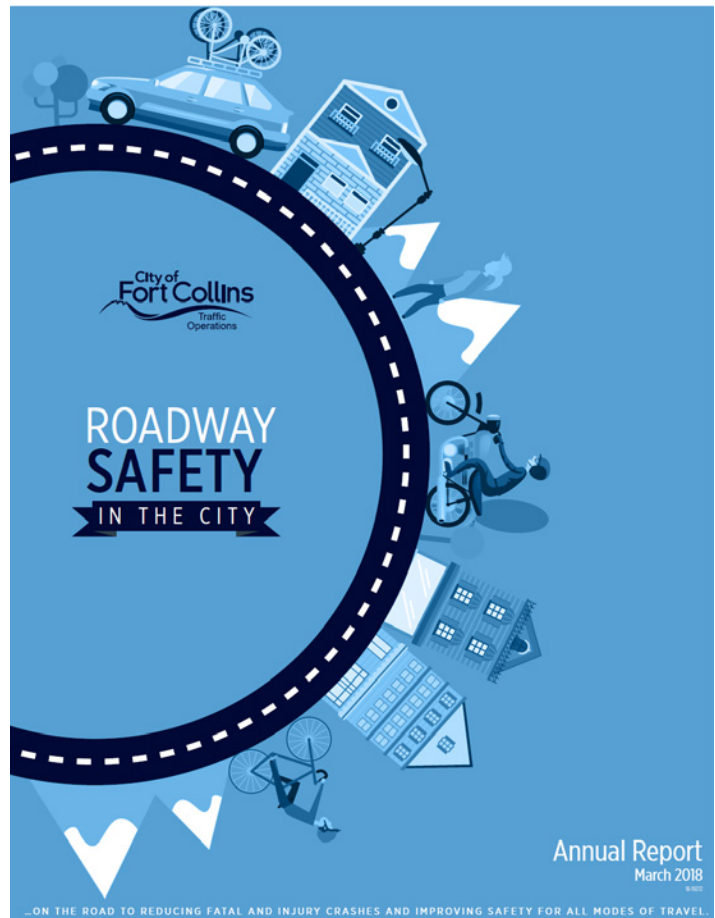
Crashes involving cyclists and pedestrians are also on a downward trend. Over the past five years (2014-18), total crashes were down 23% for cyclists and 5% for pedestrians. Severe crashes for these vulnerable road users are down 35% for cyclists and about the same for pedestrians. Despite the downward trend, the reality is that vulnerable road users are overrepresented in severe crashes—for instance, bike crashes make up 3% of all crashes but 20% of severe crashes—because when crashes do occur, they tend to be more severe.

A significant concern involves motorcycles. In a crash, motorcyclists are more than three times as likely to be injured and 11 times as likely to be killed than people in vehicles. Fatalities involving motorcyclists exceed those involving pedestrians and cyclists combined.

A number of factors can be reviewed for safety trends. Examples include time of year (most bike crashes occur in September), day of the week (Fridays are overrepresented), and time of day (3 to 5 p.m.). The demographics of road users can also provide guidance for targeting safety concerns. For example, drivers under the age of 25 represent about 25% of licensed drivers but are involved in almost 40% of DUI crashes. Crash locations are also an important component of safety reviews. More than 70% of all crashes and 90% of bike crashes occur at an intersection or driveway.

The City uses the AASTHO Highway Safety Manual to complete statistical reviews of intersections to identify locations where more crashes are occurring than would be expected. Pattern recognition can further detail potential safety concerns.

These factors and additional information is used to inform all aspects of transportation in the City, from operations to planning, maintenance, construction, enforcement, outreach, programs, education, etc.



Vision Zero

In 2016, Fort Collins was the first public local entity to join the Colorado Department of Transportation (CDOT) Moving Towards Zero Deaths initiative. The proclamation reflects the City's commitment to the vision of zero traffic-related deaths. This CDOT initiative is related to the national, and international, Vision Zero safety project.

Making progress toward zero deaths requires a multifaceted, collaborative and focused effort. This includes ensuring that crash information and trends are understood and inform mitigation strategies as well as policies, standards, design and projects. The analysis is then applied to the various Es of roadway safety:

- » **Engineering.** Physical changes such as signs, striping, signal timing and geometric changes.
- » **Education/Encouragement.** Programs and outreach efforts for all road users to teach and support safer behaviors.
- » **Enforcement.** Collaboration with police services and justice system to conduct targeted education and enforcement and provide alternative sentencing that is focused on changing behavior.
- » **Evaluation.** Continue monitoring and evaluating all aspects of roadway safety in order to inform upcoming work and next year's report.



The City is working on an official Vision Zero Action Plan, which will outline a set of actions that are comprehensive, multidepartmental, and community-based to support safety for the traveling public. While related to the CDOT Moving Towards Zero Deaths Initiative, this Vision Zero Action Plan will take the City's commitment one step further. The Action Plan will be based on a data-driven approach and will support efforts that demonstrate improved safety outcomes. Many efforts have been ongoing for years, which is reflected in the city's strong safety record and transportation trends, but the Action Plan will compile these efforts into a single source of safety review.

The City is also involved with the Federal Highway Administration (FHWA) and CDOT in their update of Colorado's Strategic State Highway Safety Plan (SHSP) and is a contributing partner in Toward Zero Deaths workshops.

Other transportation-related improvements are important and enjoy significant community interest and support, such as improving pedestrian curb ramps and making cycling infrastructure more comfortable. These improvements may not specifically "move the needle" on the city's number of crashes, but they play a crucial role in improving community mobility for all modes of travel. These priority improvements will be tracked and reported through the City's Annual Mobility Report. The Mobility Report is a companion document to the Annual Safety Report and reflects the critical importance of improving accessibility and mobility for roadway users of all ages and travel modes in addition to the focus on safety.



Law enforcement is a key stakeholder in traffic safety.



SUSTAINABILITY & RESILIENCY VISION STATEMENT

Fort Collins will be a leader in achieving environmental sustainability outcomes by pursuing a transportation system that reduces greenhouse gas emissions and air pollutants. The transportation network will display resiliency by continuing to effectively serve the community in the face of a changing climate.

SUPPORTING PRINCIPLE AND POLICIES

PRINCIPLE T9

Utilize the transportation system to support a healthy and equitable community.

Where We Are Today

Fort Collins has set aggressive goals for reducing greenhouse gas emissions and improving citywide sustainability outcomes in the face of a changing climate. However, at 24%, the share of emissions generated by transportation remains considerable, creating a need for more targeted intervention.

Opportunities for the Road Ahead

New technologies provide a clear avenue for making transportation more sustainable. Whether by supporting more electric-vehicle travel or making bike-share and transit more accessible through enhanced smartphone applications, Fort Collins can facilitate travel solutions that will improve environmental outcomes while helping residents and visitors enjoy enhanced mobility.

Alignment with the Climate Action Plan

Recognizing the relationship between GHG emissions and climate change, Fort Collins developed a Climate Action Plan (CAP) in 2015 to help reduce community GHG emissions. The CAP outlines strategies for achieving the goal of reducing GHG emissions to 20% below 2005 levels by 2020, to 80% below 2005 levels by 2030, and to achieve carbon neutrality by 2050. While overall emissions have been reduced, the share of emissions generated by ground travel in Fort Collins has risen from 24% in 2005 to 25% in 2013. Moreover, while total emissions are down, total metric tons of CO₂ emissions from transportation sources in Fort Collins are at their highest levels since 2010. The

TMP provides a roadmap for ensuring that ground travel represents a shrinking share of emissions in the community.

Lowering emissions from the transportation system will be critical to achieving the overall CAP goals. For example, a full bus emits just 0.18 pounds of CO₂ per passenger mile, compared to 0.96 pounds for each mile of SOV travel. Any strategies that replace SOV trips will help lower overall emissions. CAP includes three strategies for lowering emissions from transportation:

1. Shift land use patterns to shorten trips or reduce the need to drive;
2. Increase use of multimodal options; and
3. Increase adoption of fuel-efficient and EVs.

The vision and action items in the Transportation Master Plan align with the CAP strategy of lowering emissions by increasing the comfort, convenience and reliability of multimodal travel options, including biking, walking and transit. CAP outlines the following strategies for reducing driving, which closely align with the Transportation Master Plan action plan items:

- » Coordinating and expanding local and regional mass-transit commuting options;
- » Allowing third-party developers access to transit data so they can make travel tools for transit riders;
- » Facilitating car-share and ride-share growth;
- » Expanding bike-share;

- » Working with corporations to develop incentives for commuting by transit, walking and biking; and
- » Increasing awareness of the environmental costs of driving.

Planning for sustainability must be coordinated with planning for other aspects of community life such as housing, public health and transportation. Preparing the community for electric vehicles, for example, is a planning effort that combines transportation, land use, livability and environmental concerns. By taking on initiatives such as hiring a TDM coordinator, Fort Collins can ensure that sustainability remains a constant consideration.

Resiliency in Transportation

Fort Collins is a nationally recognized leader in planning for climate adaptation. As an early adopter of the National Institute of Standards and Technology's resiliency-planning process and one of the 30 local communities that participate in the Colorado Local Resilience Project, Fort Collins understands the need to effectively prepare for hazards posed by a changing climate. While potential climate hazards such as increased storm severity and extreme temperatures do not have a direct link to transportation, resiliency planning considers the role that transportation networks play in climate adaptation and considers the secondary impacts of climate events on mobility.

Flooding can disrupt a road network; extreme heat can pose travel hazards to older populations; and wildfires can reduce air quality to the point



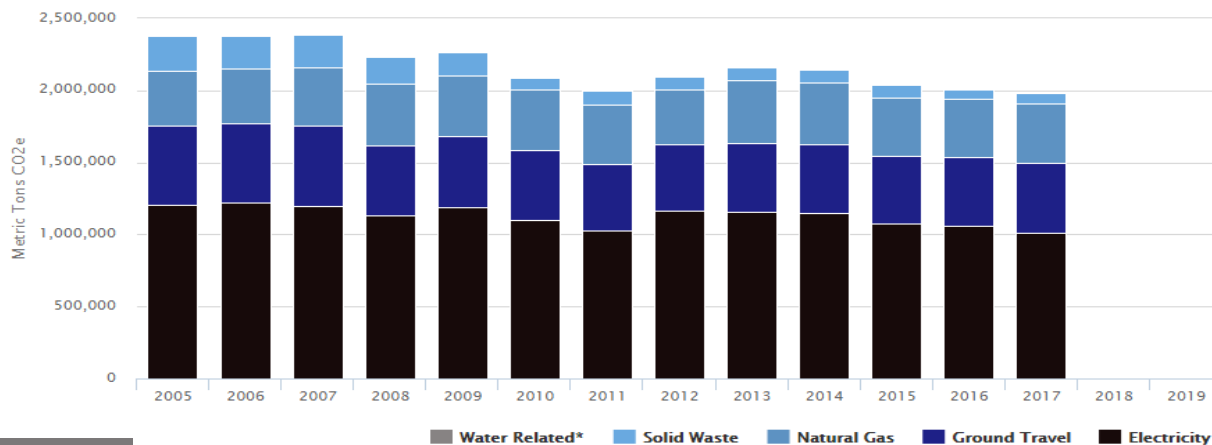
Environmental Indicators
Community Greenhouse Gas Inventory
2017
2 Million
Metric Tons CO₂e (-17%)

Down 17% since 2005
Down 34% per capita since 2005
Last updated 10.9.18



Emissions Down

Community Carbon Inventory



CAP Dashboard

where pedestrians and cyclists face major health risks. Planning for climate adaptation also requires developing strategic approaches to ensuring that people in Fort Collins have continued access to mobility during disruptive climate events.

Additionally, resiliency planning also requires stipulating a role for the transportation network in mobilizing people, goods and services during times of climate emergency. A high-capacity, well-maintained transportation network that is redundant in the necessary places is the crucial tool for safely evacuating a community during a major storm, for example. Resiliency planning requires assessing not just how proposed infrastructure might serve daily community needs, but also its ability to function during times of hazard.

To ensure that the transportation network is fully prepared for a changing climate, the TMP recommends regular monitoring of the following climate impacts on transportation infrastructure and operations:

- » Assessing whether extreme heat, severe storms, and other discontinuous weather events impact the Travel Time Index (TTI) by incorporating weather into the TTI tracking methodology;
- » Monitoring the impact of extreme heat days on transit vehicles and determining whether heat causes above-average maintenance issues;
- » Tracking road closures caused by flooding or downed trees from severe storms; and
- » Monitoring pavement quality and assessing whether unusual fluctuations in temperature negatively impact road surfaces.

Knowing when severe weather is most likely to impact transportation operations, the City can be prepared to implement mitigation strategies when forecasted weather suggests there will be negative impacts on the transportation network.

For example, if a severe storm is forecasted and data shows the storm is likely to result in road closures and other travel disruptions, the City can take preemptive measures. This could include free transit rides or coordinating with local employers to institute flexible work arrangements to keep people off the roads during the event. Using a data-driven approach to understand how a shifting climate impacts transportation will enable Fort Collins to have a resilient transportation network.



2013 Fort Collins Flood



This statue stands outside the City of Fort Collins Traffic Operations Center.