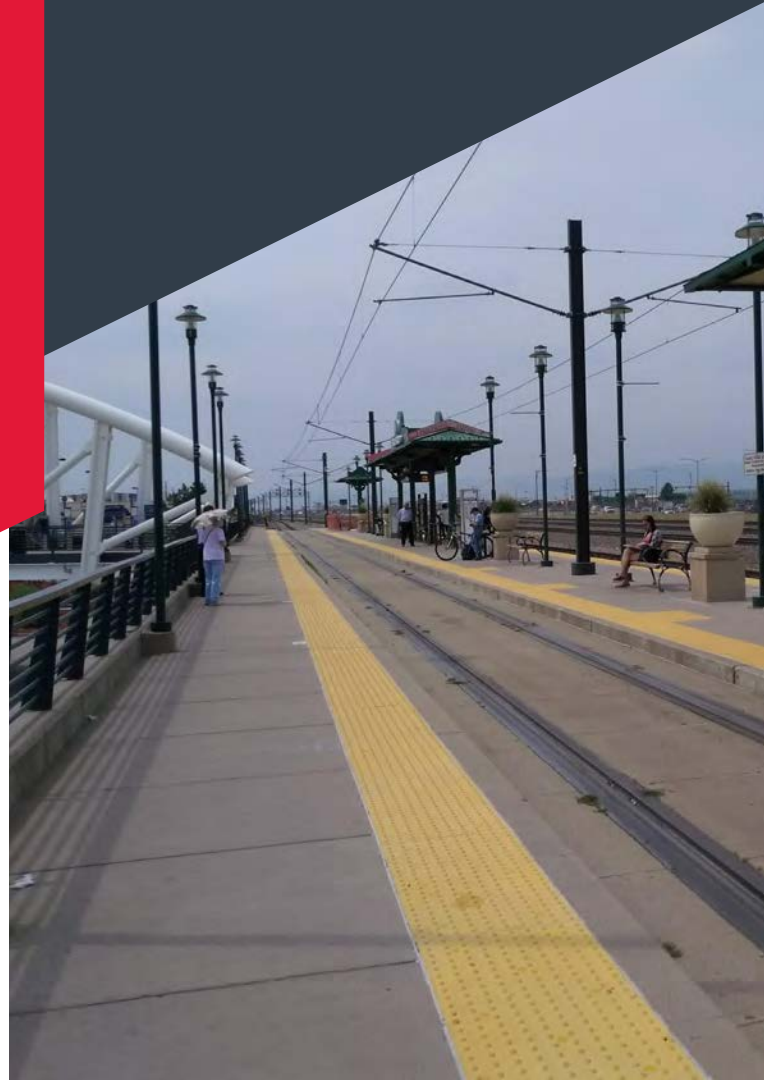




FIRST AND LAST MILE STRATEGIC PLAN

SPRING 2019



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PROJECT PLANNING ADVISORY COMMITTEE (PPAC)

ADAMS COUNTY

CITY OF AURORA

BOULDER COUNTY

CITY AND COUNTY OF BROOMFIELD

CDOT

CITY OF CENTENNIAL

COMMUTING SOLUTIONS TMA

CITY AND COUNTY OF DENVER

DENVER SOUTH TMA

DRCOG

DRMAC

CITY OF LAKEWOOD

MILE HIGH CONNECTS

NORTHEAST TRANSPORTATION CONNECTIONS TMA

NATIONAL RENEWABLE ENERGY LABORATORY

SMART COMMUTE METRO NORTH TMA

TRANSPORTATION SOLUTIONS TMA

WALKDENVER

ACKNOWLEDGMENTS

RTD PROJECT STAFF

PAUL DESROCHER: RTD PROJECT MANAGER

BILL SIROIS

CHARLIE STANFIELD

INTERNAL WORKING GROUP (IWG) DEPARTMENTS

PLANNING, FINANCE, BUS OPERATIONS, LEGAL, CAPITAL PROGRAMS, AND CIVIL RIGHTS

CONSULTANT TEAM

JONNY ROTHERAM, URBANTRANS: CONSULTANT PROJECT MANAGER

AMY JOHNSON, URBANTRANS

MATTHEW KAUFMAN, URBANTRANS

TED HEYD, ALTA PLANNING + DESIGN

MAGGIE BROWN, ALTA PLANNING + DESIGN

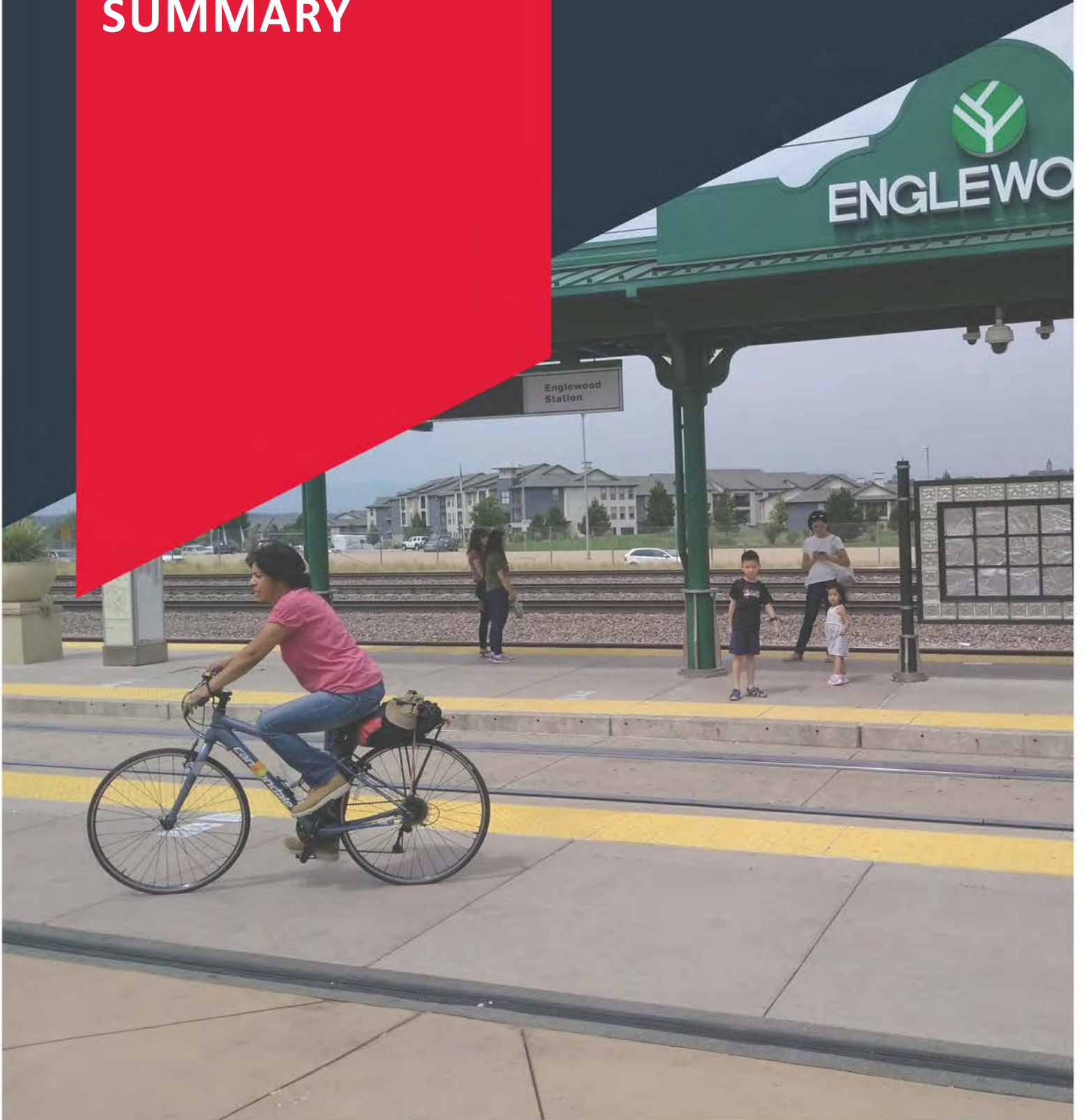
DREW PARKER, HDR

KATIE ANGELL, HDR

TARA BETTALE, HDR

COLIN MURPHY, SHARED USE MOBILITY CENTER

1. EXECUTIVE SUMMARY



WHAT IS FIRST AND LAST MILE?

Transit is only effective when riders can access it. First and Last Mile (FLM) is the problem of getting to transit (first mile) and getting to your final destination (last mile).

Not all trips are the same, and first mile trips often differ from last mile trips in length, mode of travel, and purpose. Similarly, trips to access transit are not necessarily limited by a one-mile radius but can differ depending on the mode of travel used to access the transit service.

Different levels of transit service may have different catchments for a FLM trip. For example, an end-of-line light rail service with high frequency will likely have a wider catchment area than a local bus stop along an urban arterial roadway.

Why is FLM important to transit agencies?

FLM is an essential concept for transit agencies. Improving access to and from transit for a wider breadth of people will ultimately lead to a better catchment for transit ridership. This includes providing better access to transit for multiple modes, rather than focusing on one specific mode, and introducing new incentives and travel options to access transit.

What's in the Plan?

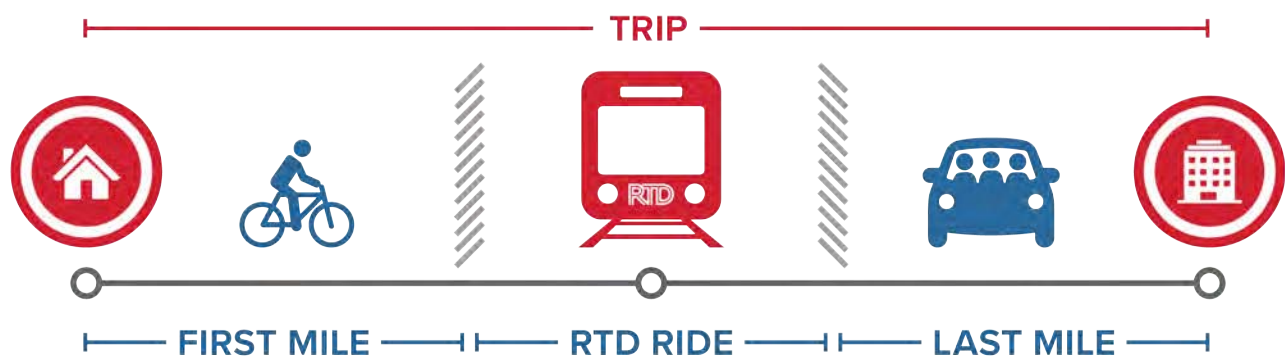
This First and Last Mile Strategic Plan (the Plan) covers FLM strategies for multiple types of transit stations and stops in a variety of settings. Recommendations include:

- Strategies related to new infrastructure
- Methods to reuse current infrastructure
- General FLM guidance
- Transportation demand management (TDM)
- New transportation services

This Plan is not intended to be a prescriptive guide to implementing FLM strategies and recommendations, but provides a framework from which to select a tailored set of FLM strategies to improve transit access.

Flexibility during a changing mobility landscape

During the 18 months this Plan was developed, the mobility landscape changed dramatically. Shared scooters were introduced to the Denver region, while some micromobility and shared dockless bike providers dissolved or left the region. RTD reacted to emerging technologies and the shifting landscape in several ways. First, RTD developed the Regional Mobility Working Group, comprised of mobility practitioners from agencies across the RTD region. The Regional Mobility Work-



Original Source: LA Metro

ing Group had several objectives, including collaboration and the sharing of information and ideas across the region. This resulted in the planning and execution of RTD’s Transportation Transformation (T2) summit, which was held on September 13, 2018. The T2 summit brought people from across the region together to learn about new mobility technology and to gather input for the role of RTD in the changing mobility landscape.

Since the summit, RTD has engaged and delivered on multiple new mobility ideas. Notable developments include:

- Revamp and renaming of RTD’s Call-n-Ride service to FlexRide, which introduced a mobile app to provide convenience and reduce the time taken to book trips
- Partnerships with Transportation Network Companies (TNCs) to improve access to RTD services
- The deployment of the region’s first autonomous transit shuttle
- The execution of license agreements with e-scooter/e-bike share companies to deploy on RTD property

To better meet these changing times, the Plan has become more than a static, stand-alone document. The Plan has been developed to form a living, dynamic framework for FLM to ensure integration of future changes in the mobility landscape.



RTD T2 Summit

VISION AND GOALS

The Plan’s vision is to define strategies and policies that will improve multimodal transportation and connectivity to RTD services and facilities by making RTD more accessible to more people, thus increasing ridership.

The Plan aims to improve transit accessibility by empowering local jurisdictions, transportation management associations (TMAs), and other partners to understand the range of FLM solutions that are available and then apply those solutions to specific station areas. As FLM strategies and recommendations often span across jurisdictional boundaries, partnerships will be key to implementation.

The Plan has multiple goals, as defined below:

- Develop attainable strategies to improve multimodal access and remove barriers to and from RTD facilities
- Define clear roles and responsibilities for the implementation of FLM strategies and recommendations
- Improve transit “usefulness” to a greater portion of the public
- Consider implications of rapid changes in technology that may impact the future of transportation and FLM solutions

Throughout the process of developing the Plan, partnerships, and information sharing were two key components. The project team brought together two stakeholder groups to help guide the development of this Plan:

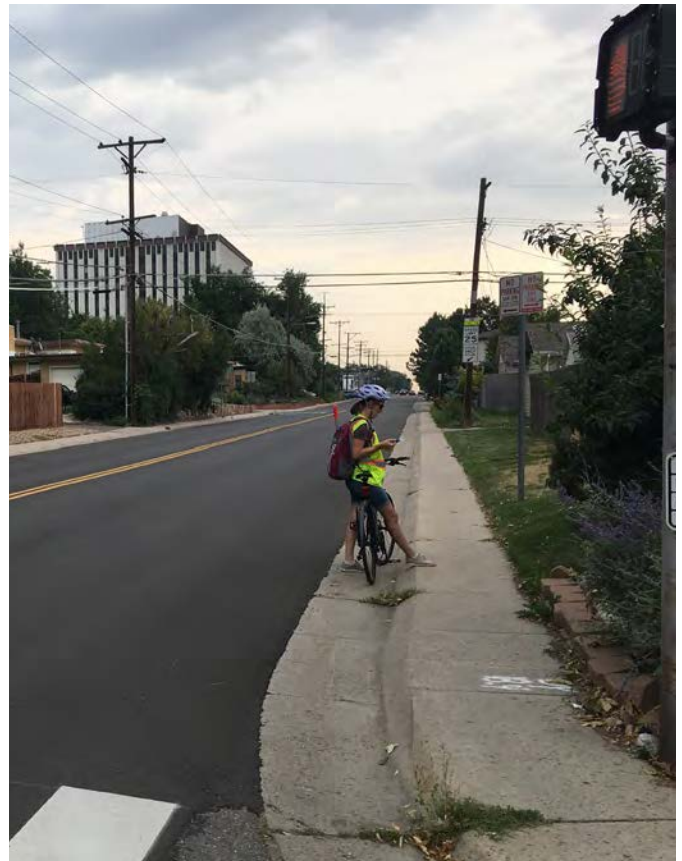
- The Internal Working Group (IWG) made up of RTD staff
- The Project Planning Advisory Committee (PPAC) made up of local and regional agencies, TMAs and non-profits

The Plan also included public outreach, using an online comments tool and several events where people could provide comments on their FLM issues and barriers.

KEY RECOMMENDATIONS AND OUTPUTS

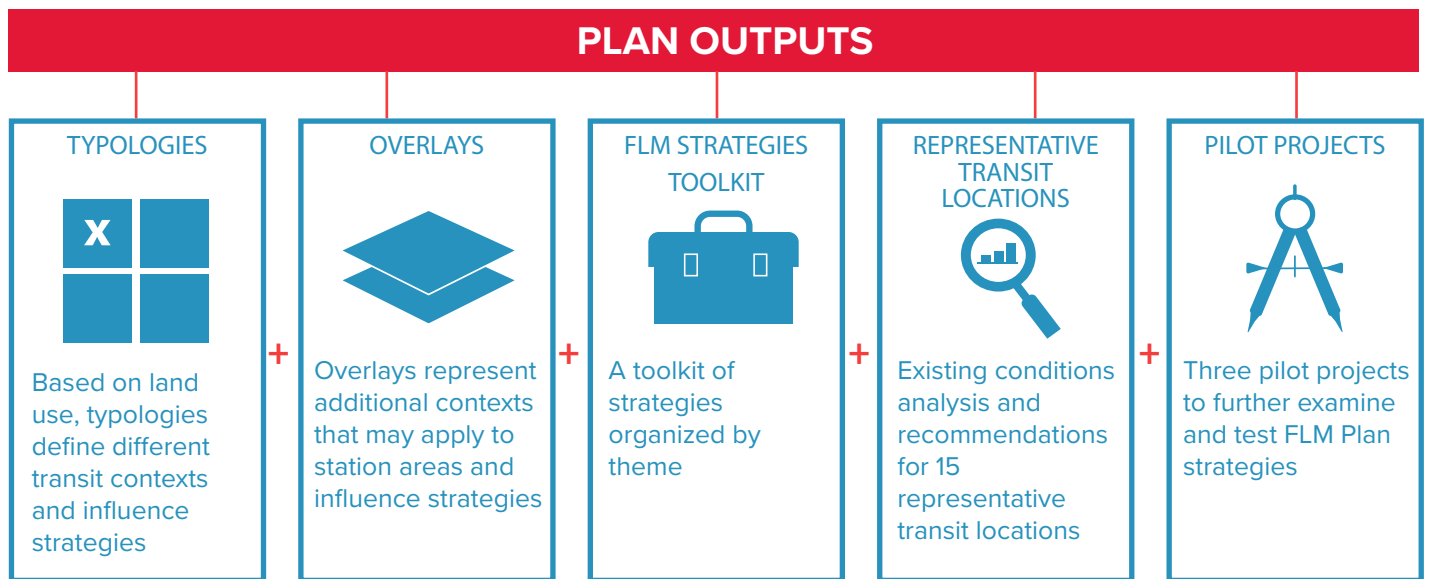
The following are five key outputs from the Plan:

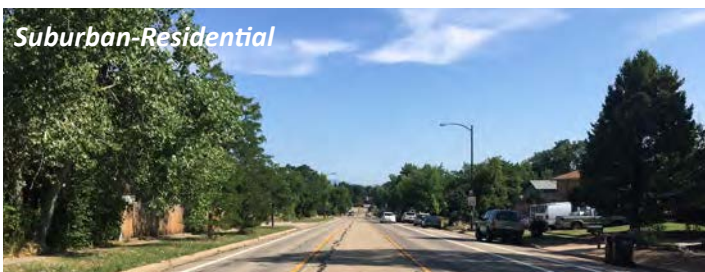
- Five FLM typologies, based on land use, which define different transit contexts and influence recommendations
- Six FLM overlays which represent additional contexts that may apply to station areas and which also may influence recommendations
- A toolkit of FLM strategies organized into themes
- An existing conditions analysis of 15 representative transit locations and recommendations tailored to address identified issues and constraints
- Three pilot projects to build on the momentum generated by the Plan
- Guidance for local governments seeking to conduct their own FLM analysis



The project team conducted field work as part of the existing conditions analysis of the 15 representative transit locations.

Combined, these outputs present a framework for improving accessibility to RTD stations and stops across the region. Descriptions of each output follow.





Typologies

The typologies used in this Plan are based on the Denver Regional Council of Governments (DRCOG) Generalized Zoning (2016). Typologies are arranged on a continuum of very high to very low employment density, residential density, and transit frequency, with Urban Core having the highest densities and transit frequencies and Rural the lowest.

Different density and land use contexts demand different types of FLM strategies. What works well for improving FLM access in an urban setting may be much less effective in a Suburban-Residential area, and vice versa. Therefore, identifying the typology for each transit study area is the first step in an FLM analysis.

Figure 1.1 shows the basic characteristics of the five typologies. See Chapter 3 for more information about typologies, including the applicability of recommendations to different typologies.

URBAN CORE



URBAN



SUBURBAN-MIXED



SUBURBAN-RESIDENTIAL



RURAL



	URBAN CORE	URBAN	SUBURBAN-MIXED	SUBURBAN-RESIDENTIAL	RURAL
Employment Density	Very High	High	High	Low	Very Low
Residential Density	Medium to Very High	High	Medium	Low	Very Low
Transit Frequency	Very High	High	Medium	Low	Very Low
# of Transit Locations	124	610	2,382	1,917	157
% of Transit Locations	2%	12%	46%	37%	3%

Figure 1.1 Typologies (see Chapter 3 for classification definitions)

Overlays

Overlays are additional context types that are relevant to transit access. Transit stations or stops with overlays have particular needs or considerations that should be taken into account when conducting an FLM analysis. For instance, locations with a High Accessibility Needs overlay may require the prioritization of Americans with Disabilities Act (ADA) infrastructure. Locations that are within a High Propensity for Change overlay will require more fluid strategies to account for the changing built environment or demographics. Figure 1.2 includes descriptions of each overlay. For additional information on overlays see Chapter 3.







	<p>This overlay uses a combination of six socioeconomic indicators, including age, language, race, income, education, and access to a vehicle, to identify where historically vulnerable populations are concentrated. Research suggests that this combination of factors can be used to determine areas where more people may rely on walking, bicycling, and transit to complete most of their trips, relative to other areas within the District. The analysis does not assess the quality of transit services (or other transportation infrastructure) in these areas, but can be used as a planning tool to guide how and where these assessments are conducted.</p>
	<p>This overlay focuses on locations with a high dependency on transit due to individual physical ability. This would include locations with nearby populations of people who are elderly or require ADA accessibility, and locations near hospitals and other medical institutions. FLM solutions can expand the range of travel options available to people with mobility challenges.</p>
	<p>Locations with a high shift/visitor variability or irregular commute pattern (e.g., outside of the usual peak times). Examples include shift work at industrial centers, retail centers, or universities.</p>
	<p>Locations with extremely high numbers of visitor trips at very specific times, such as, Broncos Stadium at Mile High stadium or Pepsi Center.</p>
	<p>Locations in areas with a high propensity for change will require more fluid strategies as the location moves from one type of built environment and/or surrounding demographics to another.</p>
	<p>In locations with very high levels of parking utilization or locations that are currently not meeting the demand for parking, FLM solutions can reduce the need to build more parking and encourage alternative access to stations other than Single Occupancy Vehicle (SOV) trips.</p>

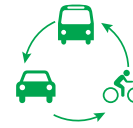
Figure 1.2 Overlays

FLM Strategies Toolkit

The FLM strategies toolkit includes strategies for improving FLM access organized into five themes: Reuse and Improvements of Existing Infrastructure, New Infrastructure, FLM General Guidance, TDM, and Transportation Service. Themes vary in their applicability to typologies. Different agencies are also responsible for implementing the strategies falling under the different themes. For instance, New Infrastructure focuses

primarily on the construction of infrastructure on RTD property, while TDM strategies are typically spearheaded by other agencies, such as a TMA.

Once an existing conditions analysis for a location is complete, practitioners can select strategies from the toolkit depending on the station typology, overlays (if any), and other needs of the study area. Toolkit themes are described in Figure 1.3. The full toolkit is available in Appendix B.



	Reuse of Existing Infrastructure	New Infrastructure	FLM General Guidance	TDM	Transportation Service
Description	Improvements to, or leverage of, existing assets to increase transit access	Construction of new infrastructure (at stations/stops)	Guidance on infrastructure types that improve FLM access	Programs that incentivize transit use or encourage walking or biking	Services that complement traditional transit
Strategy Examples	<ul style="list-style-type: none"> • Curbside management • Car share parking • Charging stations 	<ul style="list-style-type: none"> • Bike and micromobility parking • Bike repair stations • Wayfinding 	<ul style="list-style-type: none"> • Bicycle and micromobility infrastructure improvements • Pedestrian-scaled lighting 	<ul style="list-style-type: none"> • Transit pass promotion • Bike commuter education • Dynamic carpooling to transit 	<ul style="list-style-type: none"> • Shuttle services • Micromobility services • Car share
Most Applicable to...	<ul style="list-style-type: none"> • Urban Core • Urban • Suburban-Mixed 	<ul style="list-style-type: none"> • Urban Core • Urban • Suburban-Mixed 	<ul style="list-style-type: none"> • Urban Core • Urban • Suburban-Mixed • Suburban-Residential 	<ul style="list-style-type: none"> • Suburban-Mixed 	<ul style="list-style-type: none"> • Urban • Suburban-Mixed • Suburban-Residential
Implementing Agencies	RTD, local governments, partnership with other agencies	RTD, in partnership with other agencies	Local governments, developers, and businesses	TMAs, local agencies, and employers	RTD, local governments, and private companies

Figure 1.3 Toolkit Themes

Representative Transit Locations

The final key output of this Plan is the analysis of 15 RTD representative transit locations. The project team analyzed rail stations, Park-n-Ride stations, and bus stop locations from Urban, Suburban-Mixed, and Suburban-Residential typologies. For each location, they conducted field work and gathered data on four factors pertaining to FLM: Active Transportation, Curbside Management and Parking, Transit Frequency and Travel Patterns, and Land Ownership. The existing conditions findings, including the typology and overlays (if any) informed the selection of strategies from the FLM strategies toolkit.

This Plan focuses on stations and stops within the Urban, Suburban-Mixed, and Suburban-Residential typologies because implementation of FLM strategies within these areas has the highest potential to increase transit ridership, and because the vast majority (95%) of RTD transit locations fall within these types. In addition, a wide range of FLM strategies apply to the Urban, Suburban-Mixed, and Suburban-Residential typologies, which make them ideal for demonstrating strategy application.

Figures 1.4 - 1.6 list the representative transit locations analyzed by typology, including any relevant overlays. Appendix C contains the full existing conditions and recommendations for each station.

URBAN TRANSIT LOCATIONS			Overlays					
Station Name	Transit Types ¹	Jurisdiction						
Arapahoe at Village Center Station	Rail, Local & Regional Bus	Greenwood Village			●	●	●	
Englewood Pkwy (Englewood Station to Broadway)	Rail & Local Bus	Englewood		●	●	●	●	
Havana St & 17th Ave	Local Bus	Aurora	●	●			●	
S Federal Blvd & Alameda Ave	Local Bus	Denver	●					
S Colorado Blvd & Florida Ave	Local Bus	Denver	●		●			

Figure 1.4 Urban Representative Transit Locations

¹ Distinctions between local and regional bus routes as per RTD. Please see <http://www.rtd-denver.com/Schedules.shtml> for more information.



SUBURBAN-MIXED TRANSIT LOCATIONS

Station Name	Transit Types ¹	Jurisdiction	Overlays					
40th & Colorado Station	Rail & Local Bus	Denver	●				●	
US 36 & Broomfield Station	Local & Regional Bus	Broomfield				●	●	
8th & Coffman PnR	Local & Regional Bus	Longmont						
Wagon Rd PnR	Local & Regional Bus	Northglenn		●			●	●
Sheridan Station	Rail & Local Bus	Denver Lakewood	●				●	

Figure 1.5 Suburban-Mixed Representative transit locations



SUBURBAN-RESIDENTIAL TRANSIT LOCATIONS

Station Name	Transit Types ¹	Jurisdiction	Overlays					
US 36 & Table Mesa PnR	Local & Regional Bus	Boulder						
Iliff Station	Local & Regional Bus	Aurora		●	●			
Clear Creek - Federal Station	Rail & Local Bus	Unincorporated Adams County	●				●	
72nd Ave Station	Rail, Local & Regional Bus	Commerce City	●				●	
Wheat Ridge - Ward Rd Station	Rail & Local Bus	Wheat Ridge		●	●		●	

Figure 1.6 Suburban-Residential Representative Transit Locations

¹ Distinctions between local and regional bus routes as per RTD. Please see <http://www.rtd-denver.com/Schedules.shtml> for more information.

Pilot Projects

In order to further examine and test some of the FLM strategies outlined in this Plan, the project team identified three pilot projects that RTD will develop and implement following Plan completion. The three pilot projects will cover wayfinding, mobility hubs, and microtransit. Further detail is provided in Appendix E.

HOW TO USE THIS DOCUMENT

This document is intended to be used by local governments and other agencies to understand FLM solutions and how they can be implemented at any location in the RTD district. The typologies, overlays, FLM strategies toolkit, and representative transit locations analyses contained within the FLM framework are intended to guide users on how to complete their own FLM plan for one or more stations. The four step process illustrated in Figure 1.7 will guide you through an FLM analysis and application of strategies.

Step 1. Identify a typology and any overlays

The first step in conducting a FLM analysis is to identify the typology of your transit station or stop. Appendix A includes a typology map of the entire RTD district, and another map showing every RTD station and stop along with its associated typology. Any overlays that apply to your station or stop should also be identified. See page 3-30 for full descriptions of each overlay.

Step 2: Choose a representative transit location that is similar to the station of interest

The second step is to identify one of the representative transit locations that is similar to your station of interest. See Appendix B for the representative transit locations existing conditions analysis and application of FLM strategies. Use this as a guide when conducting your own analysis.

Step 3: Conduct analysis for each focus area

Collect data for each of the focus areas. See Chapter 3 for more information about these focus areas. Pages 3-27 through 3-30 include detailed descriptions of how the project team conducted assessments of active transportation and curbside management and parking.

Step 4: Apply toolkit strategies

The fourth and final step is to apply strategies from the FLM toolkit that are most applicable to your station. The typology is the first indication of the potential strategies that are likely to be relevant, but ultimately, the results of the existing conditions analysis in Step 3 will guide the specific strategies that you choose. The result will be a tailored set of FLM strategies that, once implemented, will improve FLM access to your station. Appendix C includes the FLM toolkit and resource sheets for each strategy. The resource sheets include a description of the strategy, a discussion on how they are applicable to the overlays and typologies, implementing agencies, potential funding sources, and a case study or resource for further information.

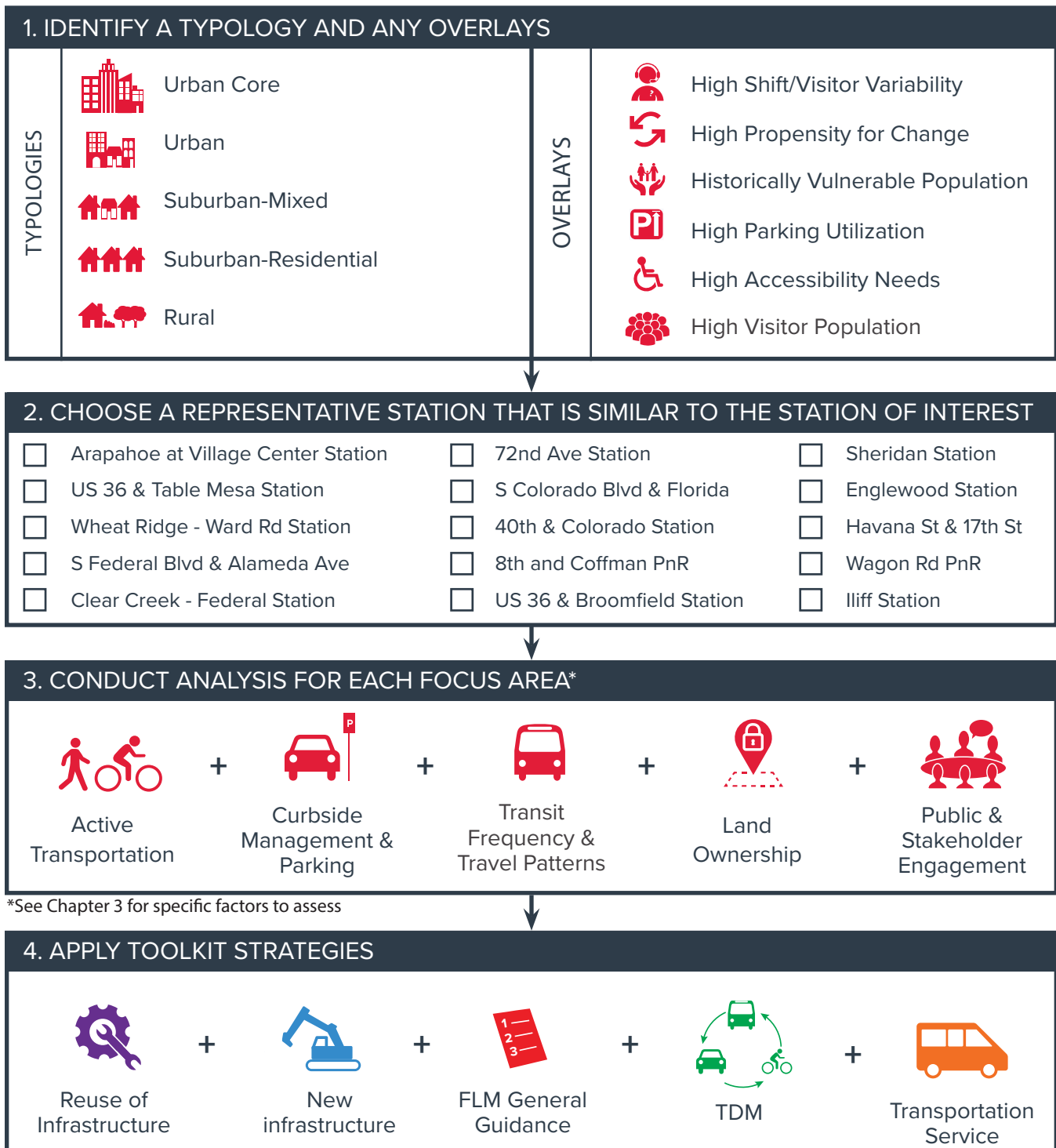
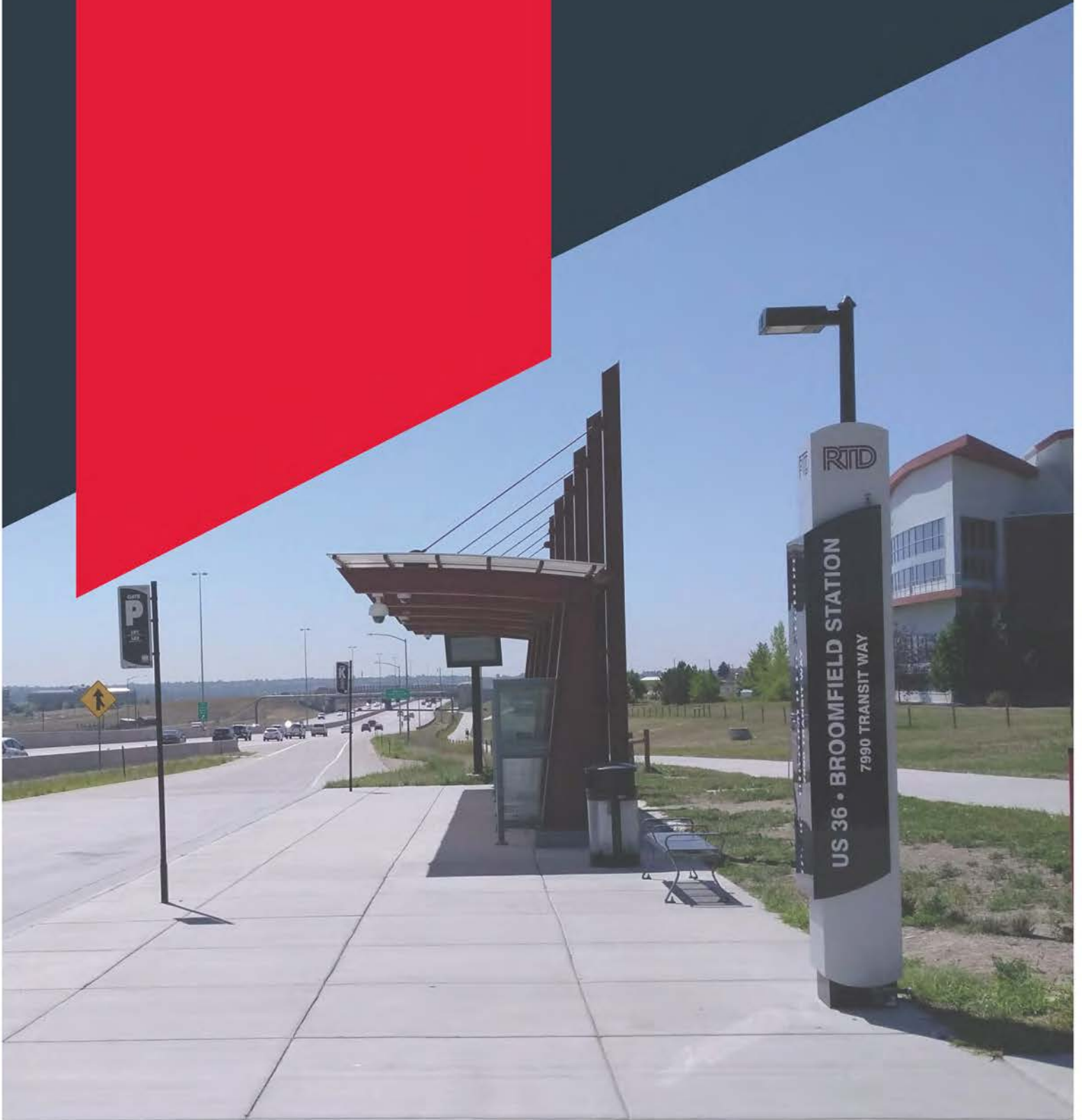


Figure 1.7 How to Conduct a FLM Analysis

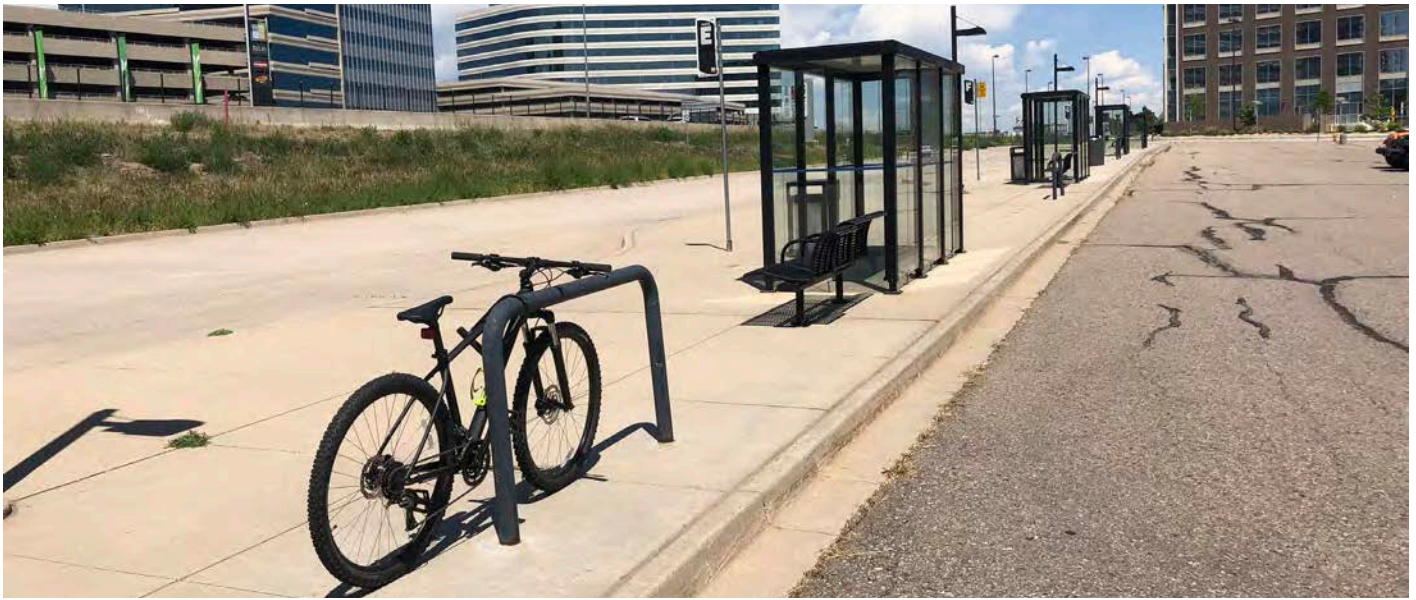
Using these toolkits and resources aren't intended as substitutes for public and stakeholder communication and engagement. They do, however, give local governments, other agencies and RTD options of proven strategies to address FLM challenges at a wide variety of locations.

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2. PLAN INTRODUCTION



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First and Last Mile (FLM) is described as the method of travel to access a transit service from your origin (first mile), use transit, then leave the transit service to reach your final destination (last mile). While it's understood that trips to and from transit service are not necessarily limited by a one-mile radius, FLM is a common approach to evaluating overall accessibility to and from transit service.

Throughout the RTD system, FLM access to and from stations and stops is a primary factor affecting the agency's capacity to effectively serve the region. The ease with which an existing or prospective RTD patron can access transit by a multitude of modes heavily influences their decision on whether or not to use transit, and if so, how frequently. This affects transit ridership and how well the region's multi-modal transportation system is able to meet its intended goals of reducing traffic congestion, improving air quality, and stimulating economic development.

RTD initiated a system-wide FLM Plan to more closely examine common barriers to getting to and from transit services and develop strategies for overcoming those barriers. At the core of the study was the identification and examination of 15 representative transit locations throughout the system. A set of tailored recommendations was provided for each of the 15 transit locations

based on a rigorous analysis of the existing conditions. All recommendations were integrated into a toolkit which also includes strategies organized under five themes:

- Reuse and Improvements of Existing Infrastructure
- New Infrastructure
- FLM General Guidance
- Transportation Demand Management (TDM)
- Transportation Service

The FLM toolkit and related strategies are the primary component of this Plan. The Plan also provides meaningful guidance on how partners from around the region can conduct their own FLM analyses in order to better understand constraints and pursue solutions that encompass policy, projects, and programs. This guidance consists of a four-step process and provides a flexible framework that can be implemented at any location in the RTD district.

Lastly, the report also describes three pilot projects that will be led by RTD subsequent to the Plan's completion. The pilots will further examine and test several of the strategies identified and recommended through this Plan.

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3. PLANNING PROCESS



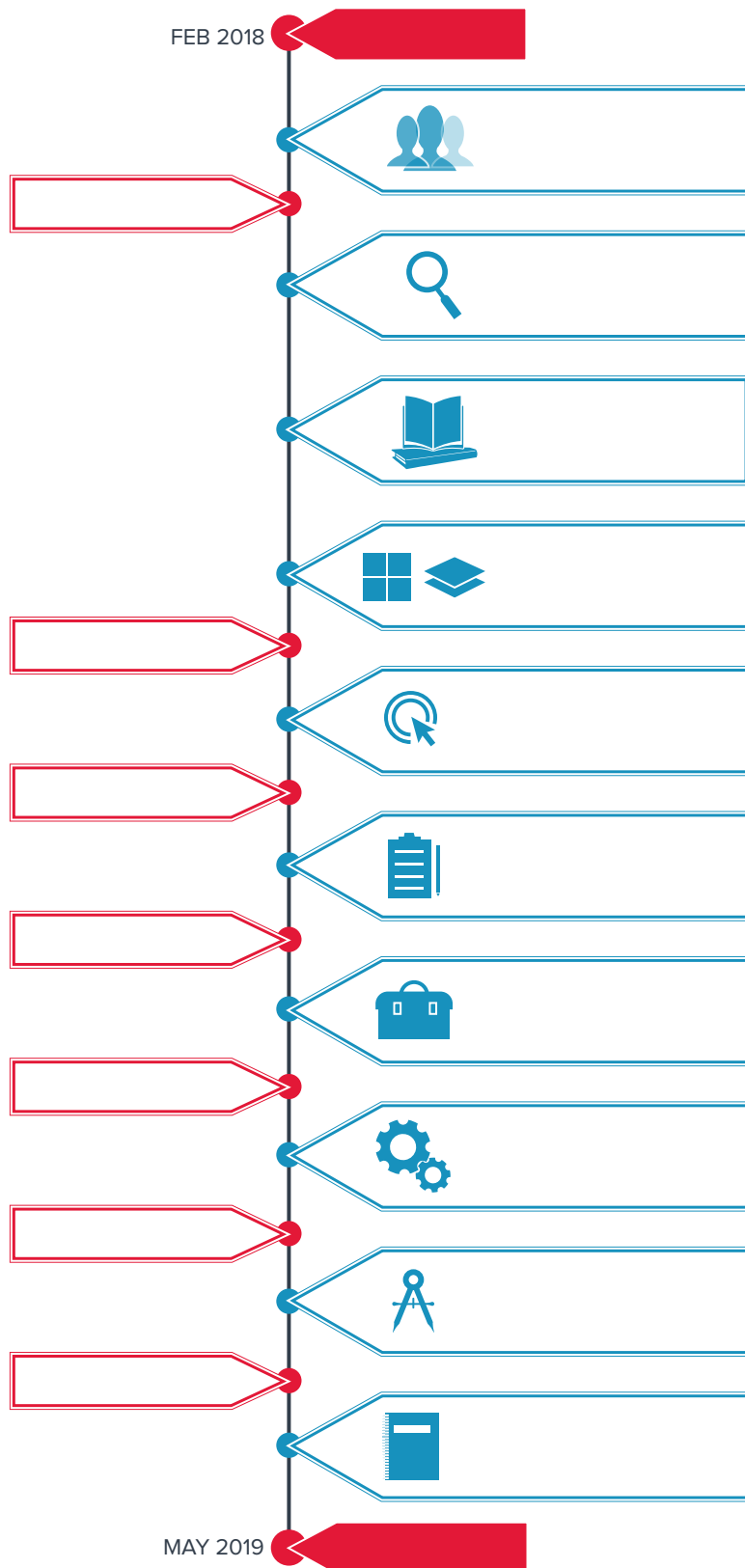


Figure 3.1 Plan Process

PROCESS OVERVIEW

The RTD FLM Plan was developed over a period of 18 months, with project kick-off in February 2018. The Plan was completed in May 2019. Figure 3.1 illustrates the process with each distinct phase highlighted.

The FLM planning process began with the development and implementation of a public and stakeholder strategy, identification of concurrent initiatives, and research into relevant plans and policies on a regional and national scale. Informed by these investigations, the project team developed a classification framework of typologies and overlays to apply to a selection of representative transit locations. Existing conditions at these 15 representative transit locations were extensively analyzed, and public feedback sought, as the team developed the FLM Strategies Toolkit. The project team then applied the Toolkit to these 15 representative transit locations and identified three key pilot projects to test strategies from the Plan. Findings from this process have been compiled into this final report.

The remainder of this chapter describes each step in the process in more detail.

PUBLIC AND STAKEHOLDER OUTREACH STRATEGY

The FLM planning process primarily brought together two key stakeholder groups to provide input and direction throughout the course of the project. The two groups were:

- The Internal Working Group (IWG), comprised of RTD staff from across the Agency
- The Project Planning Advisory Committee (PPAC), comprised of representatives of local, regional, and state agencies, transportation management associations (TMAs), and non-profits.

Engagement with both groups was key to ensuring buy-in and collecting input at each phase of the project. Each group met a total of seven times and each meeting had a different focus that corresponded with a project phase.

In addition to stakeholder engagement, the project team developed several methods for soliciting and collecting input from the general public. These methods included a public open house, pop-up events, one-on-one meetings, an online survey, an online input map, and a webpage with a comment form on the RTD website. RTD also solicited feedback on the project through their existing social media channels. Descriptions of each method or event, along with summaries of the input received can be found in Appendix D.

RELEVANT CONCURRENT INITIATIVES

There were several concurrent initiatives underway during development of the FLM Plan that impacted the process and outcomes, which are summarized in Figure 3.2

Initiative	Description	Agency
Mobility On-Demand RFI	Provided a list of ideas and future technologies that could be implemented as part of FLM	RTD
Mobility Choice Blueprint	A cross-agency effort which developed several pilot projects, one of which overlapped with the FLM toolkit items (use of Variable Message Signs to show transit information)	Multiple
Mobility Hub Guidelines	Provided details on how to define a mobility hub and recommendations for implementation within a transit station or bus stop location.	RTD
T2 Summit & Regional Mobility Working Group	Provided an avenue for regional information sharing during the project process during the numerous concurrent initiatives.	RTD
Vision Zero Action Plan	Developed in coordination with the FLM Plan to crossmatch recommendations.	City and County of Denver

Figure 3.2 Relevant Concurrent Initiatives

NATIONAL FLM PLANS AND POLICIES

The project team analyzed the following FLM plans and studies and incorporated useful ideas and concepts into the FLM Plan. Each is discussed in more detail below.

First and Last Mobility Plan (Riverside Transit Authority, Calif., 2017)

RTA is the main transit agency for western Riverside County in southern California. This plan was selected for analysis as it was the most recently completed FLM plan in the country at the time of project initiation. The RTA plan split the region into typologies based on geography. This classification method was the basis for the creation of the Urban Core, Urban, Suburban-Mixed, Suburban-Residential, and Rural typologies used in the FLM Plan.

First/Last Mile Strategies Study (Utah Transit Authority, Utah, 2015)

UTA is the main transit agency for the Salt Lake City region. This study was selected due to regional similarities (both agencies serve urban and suburban areas). Characteristics used in this study (walk access, active mode split, parking spaces, and employment) were used to help refine the FLM Plan strategies.

TOD Strategic Plan (City and County of Denver, 2014)

The City and County of Denver developed a system of typologies and overlays that show how recent station area initiatives can be classified into one of five context types. The concept of overlays in this plan was incorporated into overlays for the FLM Plan.

First and Last Mile Strategic Plan (LA Metro, Calif., 2014)

LA Metro is the transit authority for the Los Angeles metropolitan area. The plan served as a guide for how to undertake an FLM analysis. Understanding the value of providing instruction to readers on how to conduct their own FLM analysis, the project team incorporated this guidance into the FLM Plan (see Chapter 5: How to Conduct Your Own FLM Analysis).

<p>URBAN</p> 	<p>Walk Access: High Active Mode Split: High Non-Auto Mode Split: High Parking Spaces: None Population: High Employment: High</p>
<p>MULTIMODAL</p> 	<p>Walk Access: Medium-High Active Mode Split: Medium-High Non-Auto Mode Split: High Parking Spaces: Low Population: Medium Employment: Medium</p>
<p>INSTITUTIONAL</p> 	<p>This typology is determined by the location, which is a single land use/user. University and the Airport stations were included in this typology.</p>
<p>SUBURBAN</p> 	<p>Walk Access: Low-High Active Mode Split: Low-Medium Non-Auto Mode Split: Low-High Parking Spaces: Low-High Employment < Population (within suburban typology)</p>
<p>SUBURBAN NON-RESIDENTIAL</p> 	<p>Walk Access: Low-High Active Mode Split: Low-High Non-Auto Mode Split: Medium-High Parking Spaces: Low-High Employment > Population (within suburban typology)</p>
<p>AUTO-DEPENDENT</p> 	<p>Walk Access: Low-Medium Active Mode Split: Low Non-Auto Mode Split: Low Parking Spaces: High (>200)</p>

A figure from the UTA First/Last Mile Strategies Study describes characteristics from each typology.

DEVELOPMENT OF TYPOLOGIES AND OVERLAYS

In order to create a FLM framework that would be applicable to the entire District and would remain relevant after completion of the FLM project, the project team needed to create a classification scheme for all RTD stations and stops. The intent of classifying stations and stops was to guide the appropriate application of FLM strategies. The categories had to be simple, intuitive, and easy to understand. They also needed to accurately represent different contexts within the RTD service area that would require different FLM strategies. This led to the development of five typologies and six overlays, which are described in further detail on the following pages.

Typologies

The project team divided the RTD service area into five typologies: Urban Core, Urban, Suburban-Mixed, Suburban-Residential, and Rural (see Figure 3.3). Land-use, population, employment, and transit ridership and service data were organized to identify high-density areas of inten-

sive use relative to areas of low density and less intensive use. The project team also referenced other FLM methodologies discovered during the research phase of the study process, incorporated input from the IWG and PPAC, and applied findings from field observations to typology development.

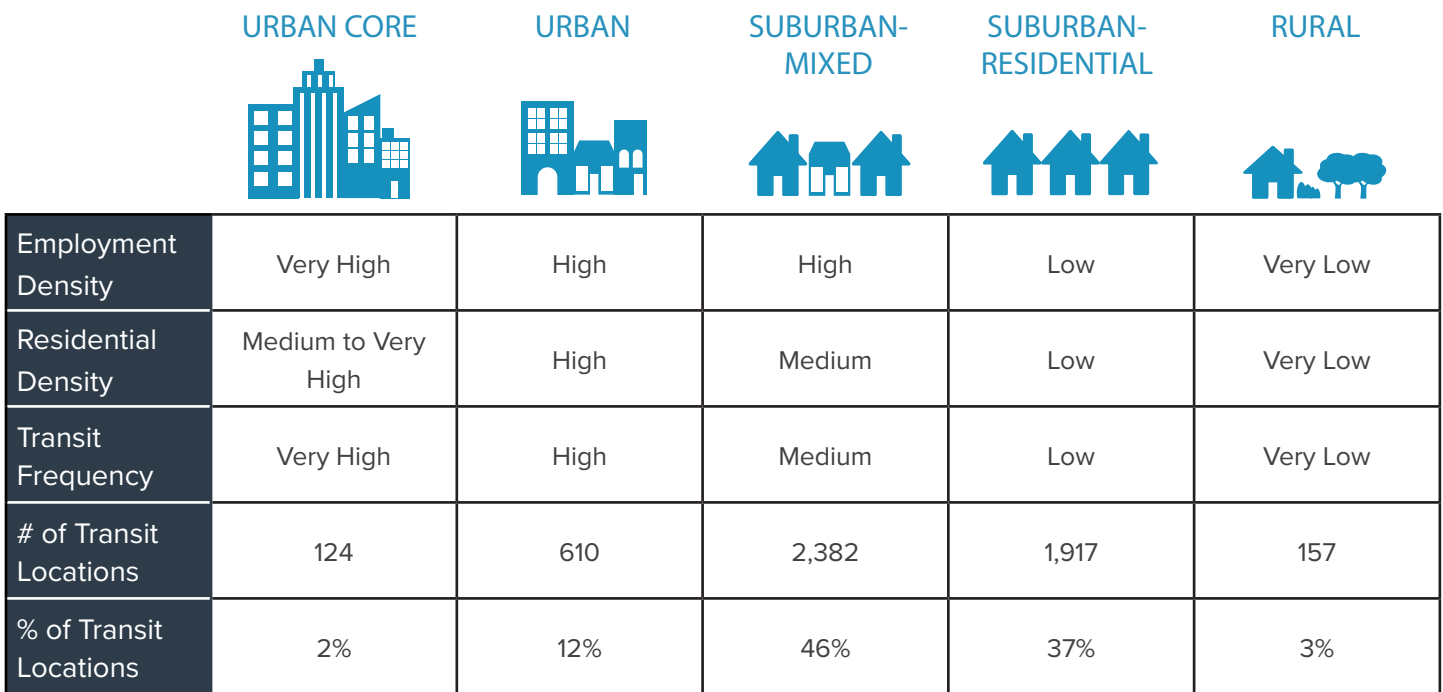


Figure 3.3 Typologies

Typology data sources

The typologies were produced using data from DRCOG’s Generalized Zoning (2016) to create Suburban-Mixed, Suburban-Residential and Rural typologies. The Urban typology was created by overlaying population and employment densities, taken from census data, and combining them with transit frequency and watershed coverage. The Urban Core typology generally follows the Denver and Boulder Central Business District boundaries.

Urban Core

Areas within the Urban Core typology are the Denver and Boulder Central Business Districts. These are the densest areas in the region, with the largest variety of land uses and the highest concentration of major destinations. They also contain major transportation hubs, including the stations and stops with the highest boardings and alightings in the region. Due to these attributes, the Urban Core has the most mobility options, both public and private. Information regarding transit in these areas tends to be easy to access and mobility options are highly visible. Relative to other typologies, traffic congestion and the limited availability of public parking in Urban Core areas results in more people using transit, walking, and biking. Generally, transit service locations within the Urban Core lean toward the “last-mile” as people travel to the Urban Core to access employment, services, or entertainment. Growing residential populations within the Urban Core will increase the number of people accessing transit for “first-mile” connectivity.

The major barrier to increasing transit ridership to and from the Urban Core is the continued prevalence of cheap and employer provided parking. In several locations, a lack of multimodal wayfinding information to and from destinations and transit service locations within the Urban Core is a missed opportunity. Traffic congestion in the Urban Core can lead to transit reliability issues such as bus delays during peak hours.



Urban Core typology



Urban typology

Urban

The Urban typology includes major transit corridors, such as Broadway, Colfax Ave and Federal Blvd in the City of Denver, neighborhoods surrounding the Urban Core typology, and other specific pockets of locations with high employment and residential populations. Transit stations and stops within the Urban typology generally serve equal numbers of first and last mile trips and have good connections to other transit services when compared to the other typologies (with the exception of Urban Core). Due to the relatively high density and number of high frequency transit corridors in the Urban typology, improvements to walking, bicycling and micromobility infrastructure are critical to improving transit access. Multimodal wayfinding improvements and targeted TDM programs will complement and enhance infrastructure improvements.

Safety is a major concern in Urban typologies, with high proportions of people walking, bicycling, or using micromobility devices to access transit service locations on a road network that is often not pedestrian- or bicycle-friendly. This is particularly evident at major urban intersections where transfers between transit services require the crossing of high speed, multi-lane roadways. Competition between modes to access transit service locations can create difficulties for more vulnerable road users, such as those with disabilities or the elderly. Pick up and drop off zones in the Urban typology may be poorly defined, leading to additional conflicts.

Suburban-Mixed

The Suburban-Mixed typology includes locations that are less dense than the Urban Core and Urban typologies, but that include concentrations of very high employment, services, or entertainment uses, such as the Denver Tech Center, Glendale, and the Northglenn Marketplace Mall. Transit in Suburban-Mixed areas is more likely to be accessed by driving alone and using a Park-n-Ride, though a significant number of people still access some Suburban-Mixed locations by walking and bicycling. This typology has the greatest range of applicable first and last mile strategies, especially for stations and stops near a high-frequency transit service and major employment centers.

Many transit stations in Suburban-Mixed locations are Park-n-Rides, often on high-frequency transit services along major highways, and, as such, are designed predominantly for private vehicle access. Major employment centers and dense residential areas are often situated near the transit service location, but a lack of diverse mobility options and multimodal wayfinding create barriers to modes other than driving. The presence of restricted-access highways, interstates, and railroads may further complicate multimodal access in this typology. Additionally, a lack of transit incentives, marketing, and readily available information, particularly where high-frequency transit services exist along congested corridors, can lead to missed opportunities to increase ridership.



Suburban-Mixed typology



Suburban-Residential typology

Suburban-Residential

Suburban-Residential typology locations consist predominantly of low-density neighborhoods, but also include community and recreation centers, schools, and auto-oriented commercial corridors. Examples of this typology are the residential areas of Lone Tree, Highlands Ranch, and Thornton. First-mile trips are most prevalent in the Suburban-Residential typology, as people leave their home and use transit to access work, school, and other destinations. These locations often have less frequent transit services that connect to higher frequency transit or major employment centers. People typically access transit locations within the Suburban-Residential typology by driving alone, as the distance between where people live and the transit service is greater than other typologies (with the exception of the Rural typology).

Low density and large distances between origins and transit service locations are the most significant challenges in the Suburban-Residential typology. Restricted-access highways, interstates and railroads also create barriers to accessing transit service locations in this typology.

Rural

The Rural typology is the least dense of all the typologies. Transit stops and stations in a Rural typology may be near large areas of open space, agricultural communities, and very low-density housing, such as the Highway 285 corridor, and the Interstate 70 corridor. Some stations and stops may be situated in the center of a small town. This typology is the most limited in terms of first and last mile strategies, as the distance most people must travel to access the stations and stops reduces the feasibility of walking or biking instead of driving.

Low density and long travel distances are the most significant FLM challenges. A lack of transit information, particularly at Park-and-Ride stations, may also be a barrier to access.



Rural typology (Google.com)

Our Focus on Urban and Suburban-Mixed and Suburban-Residential Typologies

This Plan focuses on stations and stops within the Urban, Suburban-Mixed, and Suburban-Residential typologies because implementation of FLM strategies within these areas has the highest potential to increase transit ridership, and because the vast majority (95%) of RTD transit locations fall within these types. In addition, a wide range of FLM strategies apply to the Urban, Suburban-Mixed, and Suburban-Residential typologies, which make them ideal for demonstrating strategy application.

Overlays

After consultation with the IWG, PPAC, and RTD staff during the development of the typologies, the project team decided that further detail was needed to accurately capture the context of RTD transit locations. As a result, the project team developed six overlays in addition to the typologies: Historically Vulnerable Populations, High Accessibility Needs, High Shift/Visitor Variability, High Visitor Trips, High Propensity for Change, and High Parking Utilization.

Overlays can exist in any typology. Some RTD stations and stops have multiple overlays, while others have none. The overlays provide further context and are intended to guide the selection of FLM strategies that meet the specific issues and opportunities related to each overlay.

The six overlays include:



Historically Vulnerable Populations

This overlay uses a combination of six socioeconomic indicators, including age, language, race, income, education, and access to a vehicle, to identify where historically vulnerable populations are concentrated. Research suggests that this combination of factors can be used to determine areas where more people may rely on walking, bicycling, and transit to complete most of their trips, relative to other areas within the District.



High Accessibility Needs

Focuses on locations with a high dependency on transit due to individual physical ability. This would include locations with nearby populations of people who are elderly or require ADA accessibility, and locations near hospitals and other medical institutions. FLM solutions can expand the range of travel options available to people with mobility challenges.



High Shift/Visitor Variability

Locations with a high shift/visitor variability or irregular commute pattern (e.g. outside of the usual peak times). Examples include shift work at industrial centers, retail centers or universities. FLM solutions should address this variability.



High Visitor Trips

Locations with extremely high numbers of visitor trips at very specific times, such as Mile High Stadium or Pepsi Center. FLM solutions should address this variability in travel pattern.



High Propensity for Change

Locations in places with a high propensity for change will require more fluid strategies as the location moves from one type of built environment and/or surrounding demographics to another.



High Parking Utilization

Locations with very high levels of parking utilization, or locations that are currently not meeting the demand for parking. FLM solutions can reduce the need to build more parking and encourage alternative access to transit locations, other than

SELECTION OF REPRESENTATIVE TRANSIT LOCATIONS

Upon completion of the FLM typologies and overlays, the project team, with IWG and PPAC input, selected 15 RTD stations and bus stops (see Appendix C) to serve as representatives of transit locations found throughout the entire District. Selection was driven by the following stipulations:

- Each of the Urban, Suburban-Mixed and Suburban-Residential typologies need to be represented, as well as each overlay.
- Selected stations and stops should be spread out geographically across the RTD service area.
- Selected transit locations should include bus stops, rail stations, and Park-n-Rides to represent the different transit service modes and location types within the District.

The selected 15 representative transit locations were:

1. Arapahoe at Village Center Station
2. Englewood Parkway
3. Havana Street and 17th Avenue
4. US 36 and Table Mesa Park-n-Ride
5. Iliff Station
6. Clear Creek - Federal Station
7. 72nd Avenue Station
8. Wheat Ridge - Ward Road Station
9. 40th and Colorado Station
10. US 36 and Broomfield Station
11. 8th and Coffman Park-n-Ride
12. Wagon Road Park-n-Ride
13. Sheridan Station
14. S Federal Boulevard and Alameda Avenue
15. S Colorado Boulevard and Florida Avenue

Representative transit locations with overlays

Overlay	Count
Vulnerable Populations	8
Accessibility Needs	6
High Shift	5
High Visitor	3
High Parking Utilization	1
High Propensity for Change	9
Station with no Overlays	2

Representative transit locations by typology

Typology	Count
Urban	4
Suburban-Mixed	6
Suburban-Residential	5

EXISTING CONDITIONS DATA COLLECTION AND ANALYSIS OF THE REPRESENTATIVE TRANSIT LOCATIONS

Once the 15 representative transit locations and bus stops were selected, the project team collected data and conducted site visits of each. Data collection and analysis covered the following topics:

- Active transportation infrastructure and wayfinding conditions
- Curbside management and parking conditions
- Existing TDM programs
- Land ownership
- Transit frequency and travel patterns

For active transportation, curbside management, and parking conditions the project team gathered primary data through site visits. In-person observation provided a clearer understanding of the conditions as transit users experience them, and allowed the project team to more accurately conceive solutions. The following describes the specific data collection and analysis processes for active transportation and curbside management and parking.

Active Transportation Assessment Process

Route Identification To/From Transit Location

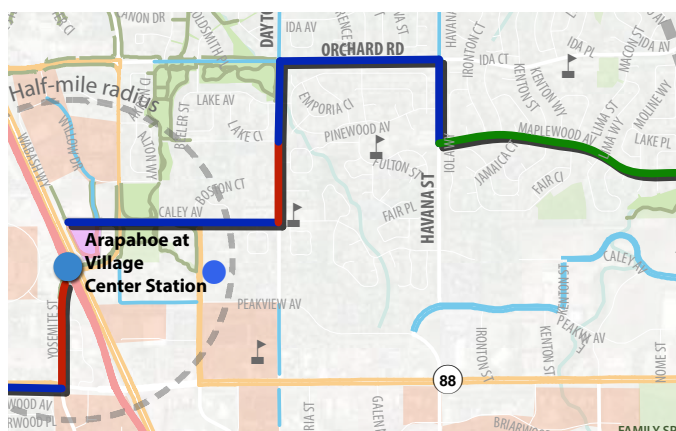
The project team selected routes based on a number of factors, including connections to activity generators (such as schools, commercial and employment areas, and residential neighborhoods), proximity to other transit locations, existing infrastructure and plans, and input from local jurisdictions. Generally, the most logical, low-stress routes for bicyclists and pedestrians were chosen based on roadway type and existing facilities.

Field Survey

The project team conducted fieldwork by walking and riding each selected route in order to identify gaps that currently serve as barriers to access. The team assessed both bicycle and pedestrian access within a half-mile walkshed, and focused primarily on bicycle access within a two-mile radius.

Level of Comfort Analysis

Each portion of the route received a “level of comfort” rating, from green (most comfortable) to black



Routes segments were assigned a level of comfort rating.

(least comfortable). Ratings were based on the existing (or lack of) pedestrian and/or bicycle facilities, the roadway type, and traffic speeds and volumes. Green represents routes that the majority of the population would be comfortable bicycling or walking on, such as low volume residential streets with five-foot sidewalks and eight-foot or wider shared-use paths. Black denotes routes that are highly uncomfortable or more dangerous for bicyclists and pedestrians, such as roads with four or more lanes of traffic, less than five-foot sidewalks, and no bicycle

facilities. The black and red portions of routes are the gaps; identifying—and eventually filling—these gaps will result in more comfortable first and last mile bicyclist and pedestrian access. Improved access can be created by supplementing existing infrastructure with spot treatments and corridor enhancements.

Recommendations

The active transportation recommendations presented for the representative transit locations are based on the routes that were assessed in the existing conditions analysis. As such, they are designed to be illustrative. They are also idealized, meaning that they represent the preferred improvement without taking into consideration specifics such as right-of-way width, property ownership, project funding, or other constraining factors. Upon further analysis, jurisdictions may decide that different or additional improvements are preferable to increase first and last mile access to transit.

Recommendations are also not necessarily intended to be treated as discrete projects, but as opportunities. For instance, bike lanes can be striped as part of larger resurfacing projects and sidewalks can be installed or widened when parcels redevelop.

In addition, the recommendations are focused on the higher-stress portions of each route, or the gaps. Generally, the already low-stress portions (those that received a green or blue rating in the existing conditions assessment), do not have associated recommendations. This allows jurisdictions to focus on the areas with the most significant barriers, and ultimately, presents a strategic method for improving bicyclist and pedestrian access to transit.

Figure 3.4 lists the typical existing bicycle and pedestrian facilities and the typical facility recommendations for each level of comfort.

Figure 3.4. Level of Comfort-Existing Facilities and Recommendations Table

Level of Comfort	Num. of Lanes	Existing Bike Facilities*	Existing Pedestrian Facilities**	Facility Recommendation Options
Green	<=2	<ul style="list-style-type: none"> •None •Signed Shared Bike Route •Shared Lane/Bike Blvd 	<ul style="list-style-type: none"> •>=5' Attached Sidewalk •>=5' Detached Sidewalk 	<ul style="list-style-type: none"> •None
Blue	<=3	<ul style="list-style-type: none"> •Bike Lanes •Buffered or Separated Bike Lanes •-8' Detached Sidepath •>=8' Attached Sidepath 	<ul style="list-style-type: none"> •<5' Attached Sidewalk (<=25 mph) •>=5' Detached Sidewalk 	<ul style="list-style-type: none"> •None^ •Wider sidewalk •Shared Lane Markings, Wayfinding, and/or Traffic Calming Measures
Red	<=4	<ul style="list-style-type: none"> •Bike Lanes •Attached <=8' Sidepath 	<ul style="list-style-type: none"> •>=5' Attached Sidewalk •<5' Detached Sidewalk 	<ul style="list-style-type: none"> •Wider sidewalk •Stripe bike lanes •Landscaped Buffer •Buffered or Separated Bike Lanes •Shared-Use Path
Black	>=4	<ul style="list-style-type: none"> •None 	<ul style="list-style-type: none"> •None •<5' Attached Sidewalk 	<ul style="list-style-type: none"> •New or wider sidewalk •Landscaped Buffer •Buffered or Separated Bike Lanes •Shared-Use Path

*2 lane or greater roads with a double yellow line always score 3 or worse when there are no existing bicycle facilities.

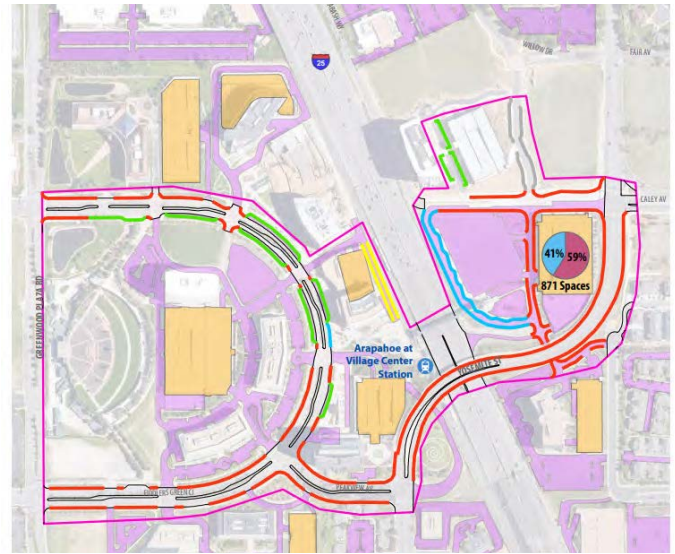
** The worst condition dictates the sidewalk score.

^Blue routes are relatively low-stress, therefore some received no recommendations.

Curbside Management and Parking Assessment Process

Identify Existing Curbside and Parking Locations

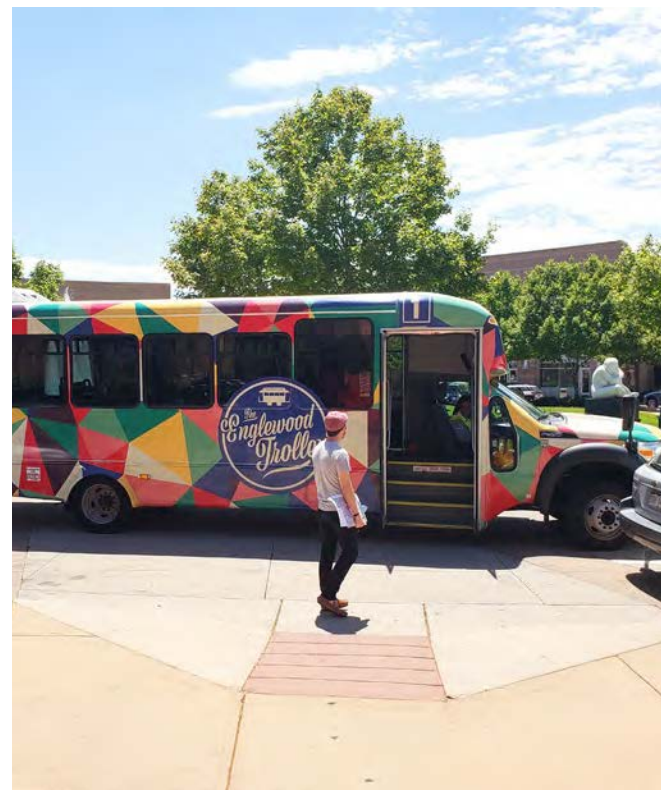
Using the DRCOG Planimetrics survey data, the project team identified all existing surface and structured parking within 500 yards of the representative station and all existing edge of pavement lines in the same vicinity. Using Google StreetView, curbs were coded in GIS within a domain of potential curb restrictions such as “2-hour parking,” “paid parking,” “permit parking,” “loading zone,” “unrestricted,” etc. RTD 2017 quarterly parking utilization data was also collected to understand historic park-and-ride use at each station with a parking facility. Lastly, parcel ownership around each station was identified to assist in implementing recommendations.



Field Survey

The project team visited all fifteen representative transit locations to review and edit the curbside use data pulled from Google StreetView and collect observational data about parking, pick-up/drop-off, and loading operations around the stations and stops. The observations provided a snapshot of current access and parking management strengths and weaknesses. Some of the typical documented issues were:

- TNC pick-ups/drop-offs occurring in travel lanes, or at RTD bus stops adjacent to stations
- Passenger drop-off occurring in parking structures
- Parking spillover onto unrestricted adjacent streets at highly-utilized RTD Park-and-Rides
- Lack of convenient passenger pick-up/drop-off space near stations



Recommendations

Using the data collected and field observations of key issues an existing conditions assessment was created that identified opportunities and challenges at each station. Opportunities identified site-specific characteristics or assets that could aid in providing FLM solutions. Challenges identified site-specific constraints that could be improved upon.

FLM TOOLKIT DEVELOPMENT

As the project team began to identify specific FLM challenges during the existing conditions analysis of the representative transit locations, they concurrently began to develop a list of strategies that would address these issues. Input and suggestions from the IWG and PPAC were incorporated into the strategies, as was input received through outreach with the public.

Once the project team determined that they had a comprehensive list of strategies, they organized them into five distinct themes:

- **Improvements and Reuse of Existing Infrastructure:** Improvements to, or leverage of, existing assets to increase transit access
- **New Infrastructure:** Construction of new infrastructure (at stations/stops)
- **First and Last Mile General Guidance:** Guidance on infrastructure types that improve FLM access
- **Transportation Demand Management (TDM):** Programs that incentivize transit use or encourage walking or biking
- **Transportation Service:** Services that complement traditional transit

Each theme has varying levels of applicability to each of the typologies. As such, the themes are intended to guide those conducting their own FLM analyses to identify strategies that are most relevant to their typology. For more information on the applicability of toolkit themes to typologies, see Chapter 4.

Applicability to Typology

Urban Core	●	Key ● Most Applicable ● More Applicable ● Applicable ● Not Applicable
Urban	●	
Suburban-Mixed	●	
Suburban-Residential	●	
Rural	●	

Example of Curbside Management resource sheet typology ratings.

The project team also developed resource sheets for each strategy that include a description of the strategy, a discussion on how they are applicable to the overlays and typologies, implementing agencies, potential funding sources, and a case study or resource for further information. For the full range of FLM strategy resource sheets, please see Appendix B.

APPLICATION OF TOOLKIT TO REPRESENTATIVE TRANSIT LOCATIONS

Upon completion of the FLM toolbox, the strategies were applied to the 15 representative transit locations. The first step was identifying potential strategies based on the station or stop's typology and overlays. The project team then selected and prioritized specific strategies based on the information that was collected for each station or stop during the existing conditions stage. The result was a tailored set of strategies for improving FLM access to/from transit at each RTD representative location.

In addition to strategies for the FLM toolbox, the project team developed specific recommendations pertaining to active transportation and curbside management and parking for each representative station or stop. These specific recommendations address the location-specific challenges to active transportation and curbside management and parking that the project team identified during the existing conditions analyses.

The full range of strategies and recommendations were then prioritized using a simple way to help identify which should be implemented first, sometimes called “the Big Easy.” Strategies and recommendations were organized in the Big Easy matrix according to relative effort and impact. Those that require relatively less effort for relatively more impact are likely to provide the best opportunities in the near-term. Strategies that take relatively more effort for more impact, and those that take relatively less effort for less impact should be considered in the medium to long-term. Any items that require more effort for less impact should be prioritized last and should be analyzed further to determine their value. The Big Easy is intended as a guide only and each of the recommendations should be investigated more thoroughly by the implementing agency before moving forward.

Please see Appendix C for the results of the existing conditions analysis and recommendations for each of the 15 representative transit locations.

LESS IMPACT		
MORE IMPACT		
	LESS EFFORT	MORE EFFORT

The Big Easy matrix is used to prioritize FLM strategies for the representative transit locations.

IDENTIFICATION OF PILOT PROJECTS

Using all the information gathered during the development of the FLM study process, including input from RTD staff, the IWG and PPAC groups and the public, the project team developed three pilot projects to sustain momentum upon completion of the project. The pilot projects are intended to test some of the strategies identified in the Plan and will hopefully lead to accelerated implementation of said strategies throughout the District. The pilot projects are:

- Development of regional multimodal wayfinding system guidance
- Development and implementation of mobility hubs
- Integrating microtransit

WAYFINDING PILOT PROJECT

As identified in this Plan, implementing a regional wayfinding system is a priority. Consistent with this, RTD pursued and has been awarded a grant from DRCOG to complete a *Regional Wayfinding Signage Design and Programming Study*, starting in 2019. The purpose of the study is to develop a regional wayfinding design guide, with a strong emphasis on multimodal connections and to develop a universally legible wayfinding system connecting to transit.

Following completion of the Plan and prior to or as part of the study, RTD and jurisdictional partner(s) will complete a wayfinding pilot project to temporarily test the value and effectiveness of certain treatments at and in close proximity to one or two existing rail or BRT stations. The pilot will enable RTD and project staff to test whether the installations are effective and collect input from patrons /members of the public through intercept surveys. The input can be used to help inform future system-wide wayfinding investments and importantly, whether or not the treatments incentivized any new patrons to use RTD services or changed the way they arrived at the station.

As such, a station will be selected for the pilot where treatments will receive wide exposure and input can be collected from a wide range of stakeholders including residents, employees, business owners, students, youth, seniors, etc.

Treatments that will be tested may include but not be limited to temporary signs, maps, and pavement symbols. It's recommended that the pilot be conducted for a 6-12 month minimum and encompass a higher ridership season at a station that is less affected by shifts in population (e.g., Denver University Station).

Ultimately, input received through this pilot will help inform the region-wide study and address important questions such as:

- What treatments are most effective and could be employed at other stations and stops throughout the RTD system on a permanent basis?
- What symbols/logos/images most resonate with a diverse audience and encourage people to use the wayfinding to walk or bike to or from transit locations?

MOBILITY HUB PILOT PROJECT

There are currently numerous Mobility Hub initiatives underway within the RTD service area led by various agencies. These initiatives often vary greatly in their concept, planning and application, highlighting the lack of clarity and consistency across the District when considering what the term “Mobility Hub” really means.

This pilot project will aim to define what a Mobility Hub is consistently across the region by soliciting feedback from partner agencies to arrive at a mutually agreed definition or definitions.

It is important to understand what a Mobility Hub is, and what it is not. Clearly defining the parameters that make a transit service location a Mobility Hub will lead to greater regional cooperation for both funding and creating Mobility Hubs. This cross-agency effort to

improve transit access and rider experience through the use of Mobility Hubs can ultimately lead to increased transit ridership.

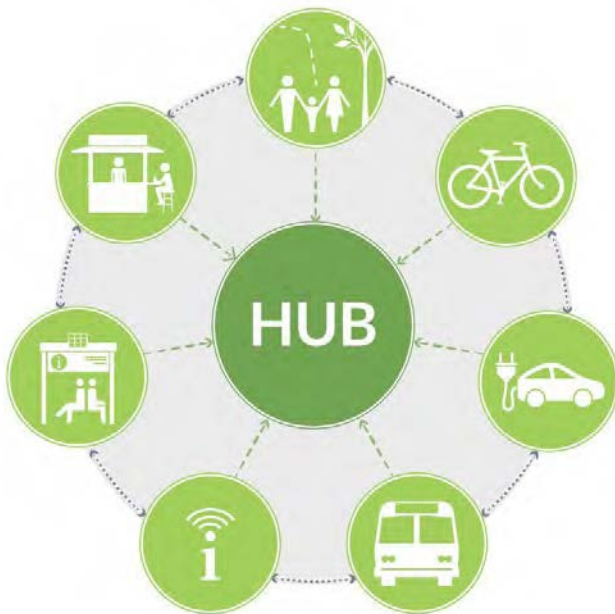
The project will rely on at least two RTD documents to help produce a definition of a mobility hub:

- **First and Last Mile Planning Framework:** Provides guidance on how to improve transit access using a variety of modes depending on the station or bus stop situation.
- **Mobility Hub Guidelines:** Provides guidance on how to improve bus stop and station internal environments and amenities to improve the transit rider’s experience.

It is assumed that using the recommendations from both documents can help define what a Mobility Hub is in different situations across the region. Specific factors that should be considered during the definition of a Mobility Hub may include:

- Bus stop versus station locations
- Service type (rail, BRT, regional bus, local bus, Park-n-Ride)
- Typology (Urban Core, Urban, Suburban-Mixed, Suburban-Residential, Rural)

These different contexts will create a variety of Mobility Hub definitions to apply to most situations across the region. For example, a Park-n-Ride station in a Suburban-Residential context may require different recommendations to achieve Mobility Hub status than a rail station in an Urban context.



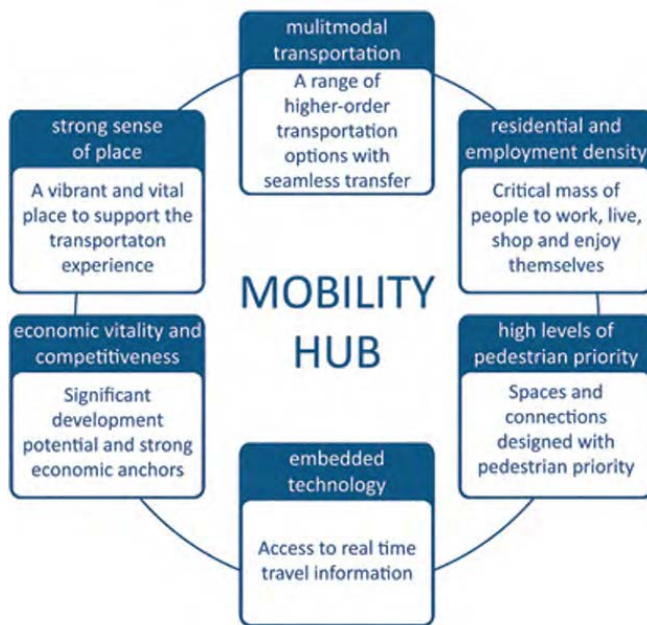
Source: “Mobility Hubs, a Reader’s Guide”
City of Los Angeles, CA

Develop Mobility Hub Recommendation Checklist and Identify Existing Mobility Hubs

A checklist of recommendations will be created for each of the different Mobility Hub definitions. This will create a clear method for analyzing whether a location currently meets Mobility Hub standards and/or where it needs to improve.

Once the Mobility Hub recommendation checklist has been developed, it can be applied to station and bus stop locations across the region to identify any that already achieve status as a Mobility Hub.

Those that do achieve Mobility Hub status can be used as examples to the rest of the RTD service area and for local agencies to aspire towards. When a transit service location meets all of the recommendations within the approved checklist, it can then achieve Mobility Hub status.



Source: Metrolinkx, Ontario Canada

Implementation of New Mobility Hubs

The creation of several new Mobility Hubs across the region should be prioritized and funding sought to ensure a diversity of Mobility Hub examples from a variety of different situations.

Priority should be given to any bus stop or station situations (e.g., bus stop in a Suburban-Residential typology) that does not currently have an example as a Mobility Hub within the RTD service area.

These projects will fill any gaps in providing examples of Mobility Hubs to cover all potential situations and provide case studies to support ongoing Mobility Hub implementation.

Mobility Hub Implementation Steps:

1. Use the recommendations checklist to assess whether any gaps exist to meet Mobility Hub status standards. These may include requirements for wayfinding, technology interface(s), micromobility parking/storage, curbside management, active transportation connectivity, etc.
2. Develop cost estimates for the required improvements to meet Mobility Hub status standards
3. Pursue funding and partnerships to implement required improvements
4. Design and construction

MICROTRANSIT PILOT PROJECT

The term microtransit can mean different things to different people; where the line is between microtransit and regular transit isn't clear. RTD, with guidance from the US DOT, defines microtransit as a publicly or privately owned and operated transportation system that can offer fixed routes and schedules as well as flexible routes and on-demand scheduling. RTD has been operating its own version of microtransit for 20+ years through its FlexRide (formerly Call-n-Ride) service.

Figure 3.5 is a summary of all Denver area operations that have defined themselves as “microtransit” over the last several years.

Service Name	Funder/ Operator	Description	Type	Status	Fare	Ridership
FlexRide	RTD	RTD operates more than 20 FlexRides throughout the region. Users can schedule rides over the phone or through a phone app or without reservation at fixed points along the flex route	Flex-route and on-demand	Active	\$3 – Local Fare (transferable to any RTD service)	Ranges from 2.5 to 7.5 boardings per revenue hour depending on service area
Chariot CityShuttle	Denver/ Chariot	Operated between Civic Center and Cherry Creek. Users signed up to ride the shuttle through a smartphone app.	Fixed-route	No longer operating	Free	0.6 boardings per revenue hour
Chariot DU Shuttle	DU/Chariot (former) & Jay's Valey (current)	Operates as an on-campus circulator at the University of Denver. Users had to be affiliated with DU to use the shuttle and signed up to ride the shuttle through a phone app.	Fixed-route	Active	Free to DU students, staff and faculty	3.7 boarding per revenue hour
Lone Tree Link Circulator	Lone Tree/ contracted through vendor	Operates fixed-route service between Lincoln Station and SkyRidge Medical Center. Service will terminate with opening of the Southeast Rail Extension.	Fixed-route	Active	Free	6.2 boardings per revenue hour
Lone Tree Link On Demand	Lone Tree/ contracted through vendor	Operates on-demand service throughout the Lone Tree city limits. Rides can be booked through a phone app or by telephone.	On-demand	Active	Free	3.8 boardings per revenue hour
Go Centennial Pilot	City of Centennial/ Lyft	Operated on-demand service within the Dry Creek station Call-n-Ride service area. Rides were booked via Lyft's app with a promo code.	On-demand	No longer operating	Free (with promo code)	10 per day

Figure 3.5. Denver Region Microtransit Operations

Microtransit Application

Microtransit is most appropriate for less dense areas of the region where fixed-route service is not productive, thus microtransit is not expected to have the same productivity. Expectations for microtransit ridership should be based on past performance of the service. Though the total costs for implementing FlexRide service is lower than comparable fixed-route service, the cost per boarding is much higher. Note in Figure 3.6 that the subsidy per boarding of FlexRide (Call-n-Ride) service ranges between \$9 and \$27 (pink box) while the subsidy per boarding of suburban fixed-route service ranges from \$2 to \$12 (blue box).

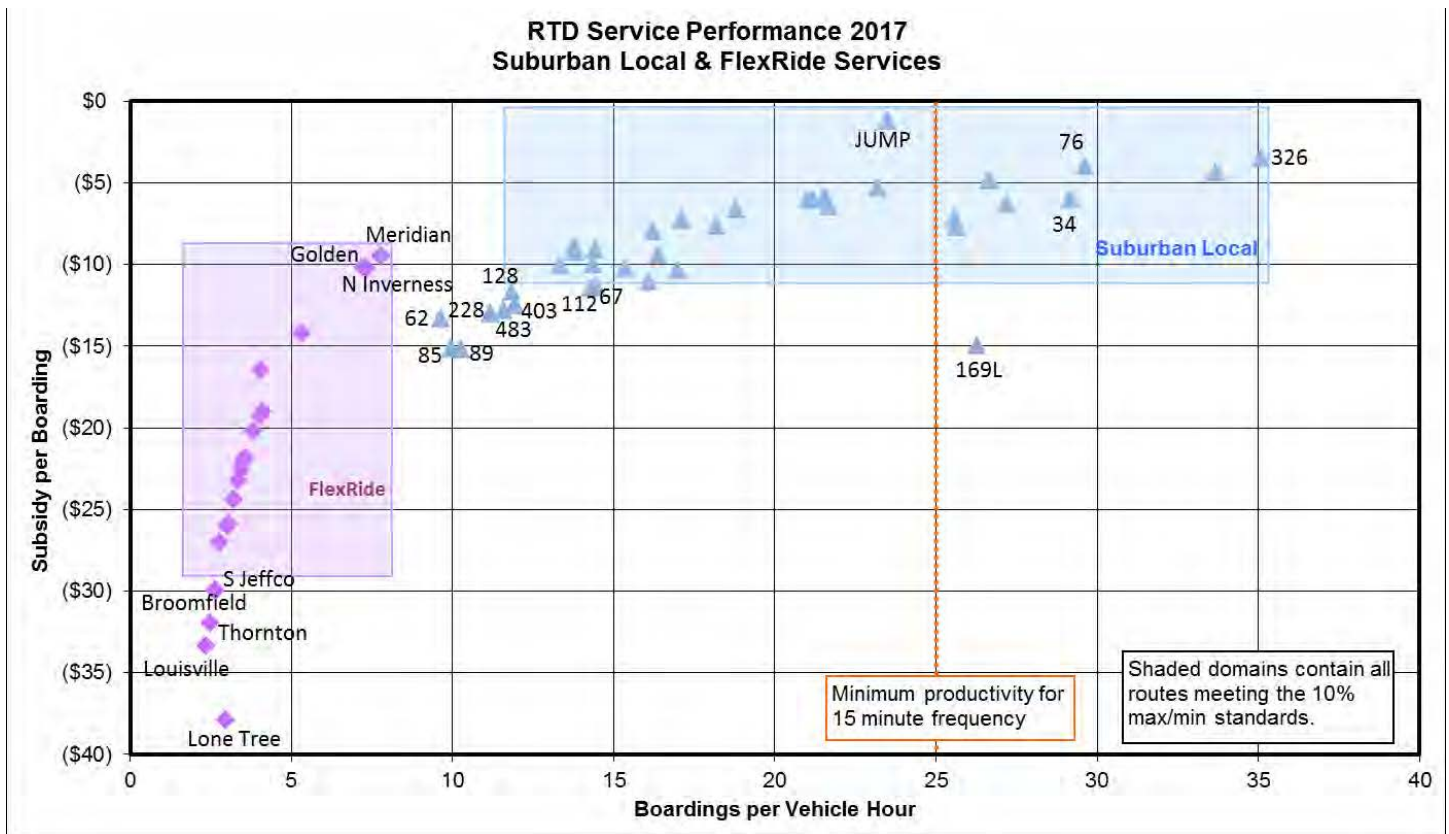


Figure 3.6. RTD Service Performance 2017, Suburban Local and FlexRide Services

Future of Microtransit

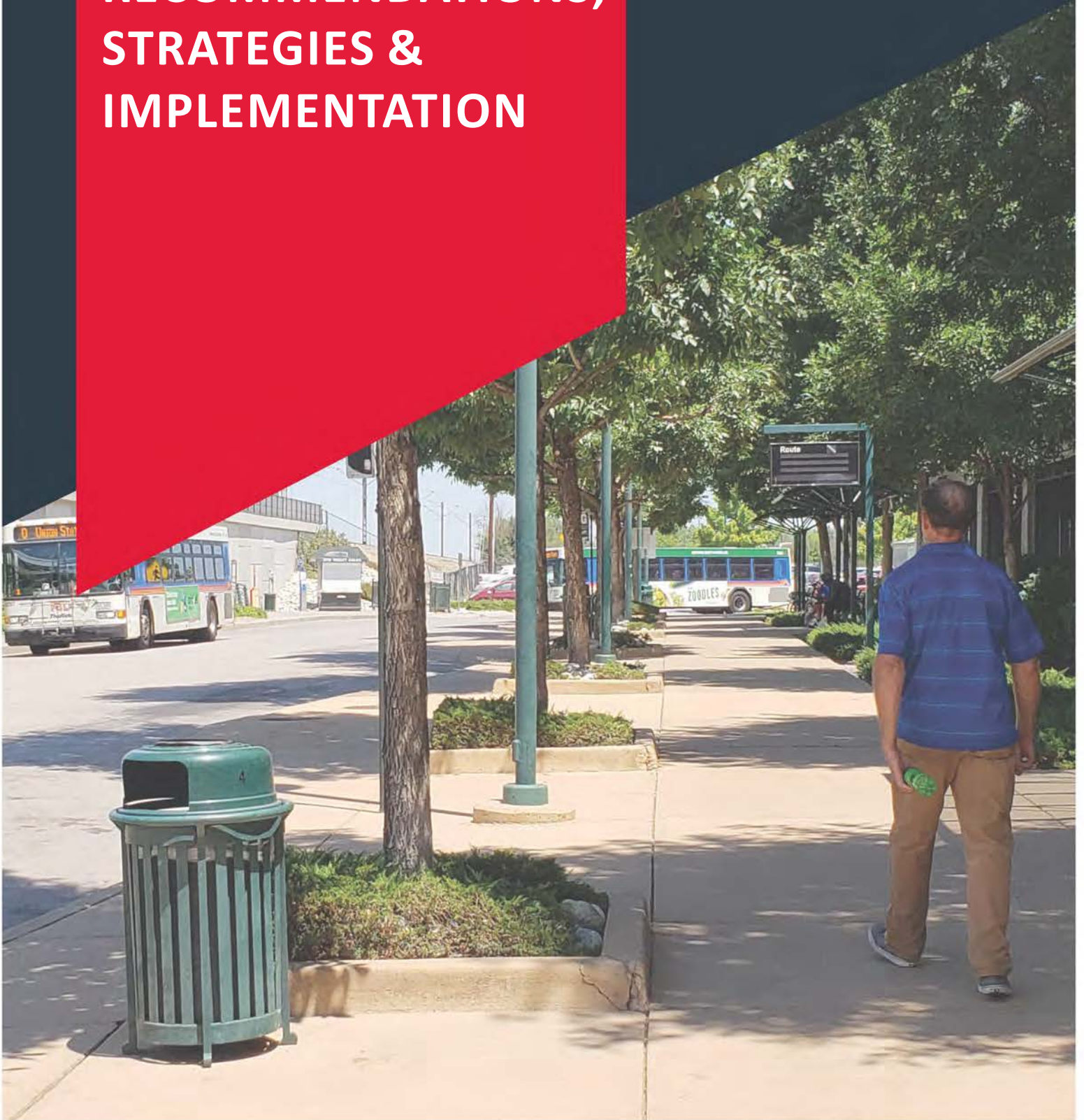
RTD is currently working on a pilot project that would supplement FlexRide vehicles with non-RTD vehicles during certain hours of the day. These vehicles would be operated by vendors that could provide certain FlexRide trips more cost-effectively, based on per trip cost structure rather than charging by service hour. Specifically, the Non-Dedicated Vehicles (NDVs) that would supplement FlexRide would be utilized during the AM and PM peaks, when demand for FlexRide service often exceeds the available supply of vehicles and during the mid-day off-peak periods when the demand is very low and does not require a dedicated vehicle in a given service area.

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4.

**DISTRICTWIDE
RECOMMENDATIONS,
STRATEGIES &
IMPLEMENTATION**



DISTRICTWIDE FLM CHALLENGES AND RECOMMENDATIONS

During the course of this project, the team learned about general FLM challenges in the District from stakeholders, the public, and from first-hand experience. Some of the major region-wide issues include:

- Lack of safe and low-stress walking and bicycling environments
- Lack of access to information about transit services and access
- Lack of awareness about available transit incentives
- Prioritization of motor vehicle access
- Inefficient and infrequent feeder transit services (local bus routes that serve higher-frequency transit)

The remainder of this section describes the issues in more detail, including selected public comments and a list of recommendations to meet the identified issues.

Safe and Comfortable Walking and Bicycling Connections to Transit

What we heard:

“No sidewalk between 122nd and 121st along west side of Huron. Goat path has been worn through prairie.” (Wagon Rd Park-n-Ride)

“...from the Adams County human service building to the park-and-ride there is not a sidewalk the whole way.” (Wagon Rd Park-n-Ride)

“Crossing at Smith Road on the sidewalk to get to the station is very difficult” (40th and Colorado Station)

Challenge: According to RTD’s 2015 On-Board survey, the majority of people walk to transit stations and stops (56% for rail stations, 86% for bus stops). However, in some situations, the design of a transit station or stop and the surrounding transportation infrastructure combine to make accessibility very difficult by any mode other than driving. Some transit locations lack sidewalks—the most basic pedestrian infrastructure—which diminishes the overall quality of the transit experience. Missing sidewalks also present safety concerns and ultimately lead to inequality in service provision.

Recommendations:

- Create partnerships with local governments and agencies to improve pedestrian, bicyclist, and micromobility access to all RTD stations and bus stops. This not only includes creating a safe and comfortable environment surrounding the transit station, but also within transit facilities.
- Ensure that all transit stations have well-defined multimodal access points.

Transit Access Information

What we heard:

“Good place to add signage pointing riders (and passing commuters) to pedestrian tunnel under I-25.” (Wagon Rd Park-n-Ride)

“The Park Hill Village should have some wayfinding signage for residents to better understand how exactly to get to the station safely under Colorado Blvd next to the tracks vs. thinking they need to cross at the traffic light at 40th & CO Blvd.” (40th and Colorado Station)

Challenge: Major employment or residential centers are often situated within half a mile to one mile of a high frequency transit service. In many situations there is no indication of how to access the transit service from these centers.

Recommendations:

- Develop and implement multimodal wayfinding systems to and from stations, bus stops, and key origins and destinations.
- Include transit station vicinity maps at stations and bus stops, showing major destinations and multimodal routes within a two-mile radius of the station or stop.
- Develop a transit access marketing plan for all RTD stations and high-frequency bus stops, if one does not currently exist.



A shared use path leads directly from the 40th and Colorado Station to a large multi-family residential development, but there is no wayfinding signage to communicate this.

Transit Service Information

What we heard:

“I-25 to I-225 traffic - reason to take RTD - guarantees travel time” (Iliff Station)

“Main barriers - lack of knowing options and time” (40th and Colorado Station)

Challenge: During project outreach, existing riders expressed frustration at the lack of service information at transit stations and stops, particularly the lack of accurate real-time data.

Recommendations:

- Display real-time transit information on electronic screens at major stations and bus stops or further facilitate the development and marketing of mobile apps to provide this information.
- For transit stations and stops that are adjacent to a major, congested highway, provide transit travel time information on variable message signs on the highway.

Prioritization of Motor Vehicle Access

What we heard:

“Parking after 9 am is a challenge” (US 36 and Table Mesa Park-n-Ride)

“Bike to the R line everyday and since the train went down to one car, it has been crazy for the cyclists, especially during peak hours. We might have lost 1/2 the passenger seating but we lost 2/3 the bike spots with the second car.”(Iliff Station)

“This is great! I ride my kick scooter to the train for commuting. Having more options would be even better.” (Website comment)

Challenge: The focus on prioritizing access for motor vehicles at transit stations has impacted accessibility for other modes. In locations with high parking utilization rates, station design tends to favor driving at the expense of other modes. In locations with low parking utilization rates, space that is designated for parked cars is wasted. In many instances prioritized motor vehicle access directly reduces an RTD rider’s ability to safely access a transit service location by other modes.

Recommendation: Diversifying modal access to stations and bus stops across the region reduces the need to build parking lots or structures that may or may not be used, and also ensures people can still access the station when parking reaches capacity. Designing for all modes ensures the station will remain accessible if the surrounding area builds out. Improving access for a diverse range of modes also ensures access equality for those people who do not own a car. To diversify modal access to transit:

- Encourage shared micromobility access. Shared micromobility, such as bike share and scooter share, can provide an excellent FLM connection service. Encouraging micromobility providers to deploy at stations and bus stops provides a ready-made FLM transportation service.
- Define pick up and drop off locations. Defining pick up and drop off locations near transit loading and unloading reduces conflict with other modes. This can include specific locations for TNCs (such as Lyft and Uber) to pick up and drop off passengers.
- Incentivize car/vanpooling. Dynamic carpooling and guaranteed car or vanpool parking spaces close to transit loading and unloading will reduce pressure on highly-utilized Park-n-Rides and increase access to more people.
- Provide long-term bicycle and micromobility storage. The project team received numerous comments regarding the insufficient space for bicycles on RTD trains and buses. Providing secure, long-term, bicycle and micromobility storage at stations and stops will reduce the need to take bicycles and other micromobility devices onto transit. Providing charging stations for electric devices such as e-scooters and e-bikes at transit service locations may present opportunities to generate revenue for RTD.
- Expand paid reserved parking at Park-n-Rides. Some RTD riders will always access transit by driving and parking at a station or stop. Expanding the paid reserved program at high demand Park-n-Rides will allow more people to reserve a parking space, and will bring supply more in line with demand. At Park-n-Ride locations with very high utilization rates, introducing paid parking may be an effective method to manage demand.

Inefficient and Infrequent Feeder Transit

What we heard:

***“There is a large workforce draw in the two major plots north and south of 120th between Pecos and Huron that are NOT served by the Thornton Call-n-Ride.”
(Wagon Rd Park-n-Ride)***

Challenge: Some stations have inefficient and infrequent feeder transit that provides inadequate connections to higher-frequency transit. Low-density, car-oriented suburban locations generally do not generate enough ridership on feeder fixed-route services to meet RTD service standards. Therefore these services often get cut or reduced to the point where they are not dependable for a “choice” rider. This challenge occurs mostly in Suburban-Mixed typologies where there may be major employment centers, such as hospitals or warehouse fulfillment centers, located near high frequency transit service, but beyond walking distance. The project team received suggestions that transit access could be improved in some locations with additional transportation services between employment centers and transit locations. Challenges to efficiency also occur in some Suburban-Residential areas where very low-frequency feeder bus services connect to higher frequency services.

Recommendations:

- Investigate new forms of transportation services, including specific peak-period service shuttles, on-demand microtransit services, or expansion of FlexRide options to connect major employment centers and high frequency transit.
- Identify inefficient low-frequency feeder bus routes and replace with more dynamic services, such as carpooling services or TNC shared vehicle services (such as Uber or Lyft).

Availability of Transit Incentives

What we heard:

“Increase availability of EcoPasses (not just through neighborhoods or businesses) - \$500 vs. \$1,000” (Arapahoe at Village Center Station)

Challenge: Many of the people the project team spoke to during the outreach process were not aware of existing incentives to use transit, such as the RTD EcoPass program, various RTD special discount card programs and federal commuter tax benefits. Some users expressed frustration that EcoPasses are limited to employers who choose to offer it to their employees, and that they are not available to other groups or organizations.

Recommendation: Increase marketing efforts for transit incentive programs and simplify enrollment processes. More people may take advantage of such programs if they are aware of the existence of such programs and if signing up is easy. Specific transit incentive recommendations include:

- Develop targeted programs to market discount fares for youth, low-income, seniors, and disabled.
- Create a more streamlined process for the creation of EcoPass districts, making it easier for neighborhoods or groups of smaller employers to provide EcoPass to their employees and residents. EcoPass districts would be self supporting and not reliant on RTD subsidies, beyond what the EcoPass already provides. (Continued on following page)

Recommendation (continued):

- Promote commuter tax benefits more widely to employers around transit stations or bus stops.
- Promote parking cash-out programs that offer employees a cash incentive if they opt to decline free, on-site parking at the employment site.

STRATEGIES BY TYPOLOGY

The five strategy themes (Improvements and Reuse of Existing Infrastructure, New Infrastructure, First and Last Mile General Guidance, TDM, and Transportation Service), have different levels of applicability for each typology. For instance, transportation service strategies are highly applicable in a Suburban-Mixed setting where transit routes tend to be more spread out and often run less frequently. Similarly, transportation services are less applicable in the urban core where transit access and frequency are already high. The strategies also have different applicability to each of the six overlays. For example, promoting the Guaranteed Ride Home program is most applicable to shift workers who may commute outside of the usual peak periods.

Figure 4.1 lists all the FLM strategies within the toolkit and their applicability to the five FLM typologies. Figure 4.2 shows the applicability of the FLM strategies to the six FLM overlays.







Appendix B: FLM Strategies Toolkit, includes detailed information on each of the FLM strategies.



Figure 4.1. FLM Strategies Toolkit

Key	
●	Most Applicable
●	More Applicable
●	Applicable
●	Not Applicable

		Urban Core	Urban	Suburban-Mixed	Suburban-Residential	Rural	
Improvements and Reuse of Existing Infrastructure	Curbside Management	●	●	●	●	●	
	Innovative Park-n-Ride Management	●	●	●	●	●	
	Prioritization of RTD owned land and parking	●	●	●	●	●	
	Car share parking	●	●	●	●	●	
	Preferential parking for car or vanpool vehicles	●	●	●	●	●	
	Provide power	●	●	●	●	●	
New Infrastructure	Bicycle and micromobility parking and storage	●	●	●	●	●	
	Bicycle end-of-trip facilities and amenities	●	●	●	●	●	
	Private micromobility parking	●	●	●	●	●	
	Multimodal maps and wayfinding	●	●	●	●	●	
First and Last Mile General Guidance	Improve pedestrian infrastructure	●	●	●	●	●	
	Improve bicycle and micromobility infrastructure	●	●	●	●	●	
	Pedestrian-scale lighting	●	●	●	●	●	
	Transit Orientated Development	●	●	●	●	●	
Transportation Demand Management	Bike education and encouragement programs	●	●	●	●	●	
	Parking cash-out	●	●	●	●	●	
	TNC / Taxi discounts	●	●	●	●	●	
	Financial car / vanpool incentives	●	●	●	●	●	
	Commuter tax benefits	●	●	●	●	●	
	Bike or car share subsidies	●	●	●	●	●	
	Free event transit passes	●	●	●	●	●	
	Promotion of RTD passes	●	●	●	●	●	
	New resident / employee / student transportation kits	●	●	●	●	●	
	Promotional events / fairs / challenges	●	●	●	●	●	
	Transportation Coordinator Network (TCN)	●	●	●	●	●	
	Website or app	●	●	●	●	●	
	Guaranteed Ride Home (GRH)	●	●	●	●	●	
	Variable message signs showing transit information	●	●	●	●	●	
	Dynamic carpooling to transit	●	●	●	●	●	
	Transit access marketing plan	●	●	●	●	●	
	Commuter expert or commuter buddy program	●	●	●	●	●	
	Create EcoPass districts	●	●	●	●	●	
	Transportation Service	Special event transit service	●	●	●	●	●
		On-demand micro-transit	●	●	●	●	●
Shuttle service		●	●	●	●	●	
Support implementation of micromobility services		●	●	●	●	●	
Autonomous transit		●	●	●	●	●	
Point-to-point car share service		●	●	●	●	●	
Round-trip car share		●	●	●	●	●	

Figure 4.2. Overlay Recommendation Application

High Shift Work 	High Propensity to Change 	Historically Vulnerable Populations 	High Parking Utilization 	High Accessibility Needs 	High Visitor Population 
<p>Commuter tax benefits</p> <p>Dynamic carpooling to transit</p> <p>Guaranteed Ride Home (GRH) program</p> <p>Secure long-term bike parking</p> <p>Support implementation of micromobility services</p> <p>Creation of EcoPass district</p>	<p>Joint development/RTD/business partnerships guidance</p> <p>New resident / employee / student / transportation kits</p> <p>Parking cash-out</p> <p>Website or app</p>	<p>Commuter Expert or Commuter Buddy Program</p> <p>Commuter tax benefits</p> <p>Promotion of specific RTD transit pass discounts and programs (Special Discount Cards and the Low Income Pass program)</p>	<p>Dynamic carpooling to transit</p> <p>Prioritization of RTD owned land or transit parking</p>	<p>Curbside management plan</p> <p>TNC/Taxi discounts</p> <p>Transit station vicinity map (2 miles)</p> <p>Promotion of specific RTD transit pass discounts and programs (Special Discount Cards and the Low Income Pass program)</p>	<p>Curbside management plan</p> <p>Free event transit passes</p> <p>Special event transit service</p> <p>Transit station vicinity map (2 miles)</p>
<p>Bike repair kits/station</p> <p>Car share parking</p> <p>Commuter tax benefits</p> <p>Short-term bike parking</p> <p>Short-term car share</p>	<p>Financial car/vanpool incentives</p> <p>Preferential parking for rideshare vehicles</p> <p>TNC/Taxi discounts</p> <p>Variable message signs on highways/interstates for information sharing</p>	<p>Bicycling workshops and courses</p> <p>Bike or car share subsidies</p> <p>Bike repair kits/station</p> <p>Curbside management plan</p> <p>Support implementation of micromobility services</p>	<p>Joint development/RTD/business partnerships guidance</p> <p>On-demand micro-transit service</p> <p>Short-term bike parking</p> <p>Shuttle service</p>	<p>Commuter Expert or Commuter Buddy Program</p> <p>On-demand micro-transit service</p> <p>Shuttle service</p>	<p>Joint development/RTD/business partnerships guidance</p> <p>Transportation coordinator</p> <p>Variable message signs on highways/interstates for information sharing</p> <p>Website or app</p>
<p>Bicycling workshops and courses</p> <p>New resident/employee/student/transportation kits</p> <p>Point-to-point car share service</p> <p>Private micromobility parking</p>	<p>Promotional events/fairs/challenges within station/transit location area</p> <p>Transportation coordinator</p>	<p>Autonomous transit</p> <p>New resident/employee/student/transportation kits</p> <p>On-demand micro-transit service</p> <p>Short term car share</p> <p>Shuttle service</p>	<p>Autonomous transit</p> <p>Guaranteed Ride Home (GRH) program</p>		<p>Autonomous transit</p> <p>Shuttle service</p> <p>Valet bike parking</p>

Key
 Most Applicable
 More Applicable
 Applicable

PILOT PROJECTS

An output of this project was the identification of three pilot projects to test some of the Plan’s recommendations. This section includes descriptions of each of the three pilot projects, and the key next steps to implement them.

Development of Regional Multimodal Wayfinding System Guidance

A lack of multimodal wayfinding signage in and around transit locations was found to be a key barrier to first and last mile access. This pilot project will provide regional guidance to implementing multimodal wayfinding systems to improve transit access. Key next steps include:

1. RTD staff will review several examples of existing wayfinding systems and signage from around the country and abroad to determine what elements (e.g., map kiosks) and design types they prefer and would like to test.
2. RTD staff will identify up to two existing transit locations where a pilot project is most likely to yield broad input from existing and prospective patrons on what elements and designs are effective.
3. Once station(s) are selected, targeted engagement will be conducted with populations and individuals with disabilities to determine their unique needs and preferences. This input will help inform more permanent wayfinding installations following the pilot.
4. RTD staff will test and evaluate the effectiveness and benefits of different elements (sign types) and designs (styles).
5. RTD staff will create regional multimodal wayfinding system guidance based on evaluation of tested elements.



Examples of wayfinding elements that could be integrated into the pilot project.

Development and Implementation of Mobility Hubs

Currently the term “Mobility Hub” means different things to different people. This pilot project will first aim to define what a Mobility Hub is before selecting several station or bus stop locations to develop into Mobility Hubs. Key next steps include:

1. Define what a Mobility Hub is in different situations (for example, a Park-n-Ride station in a Suburban-Residential context will require different recommendations to achieve Mobility Hub status than a rail station in an Urban context).
2. Develop a Mobility Hub recommendation checklist based on the various Mobility Hub definitions and identify any existing Mobility Hubs in the region.
3. Identify several transit service locations to develop into Mobility Hubs using the recommendations checklist.
4. Use the checklist to develop an implementation plan, identifying funding and establishing partnerships from design through construction.

Integrating Microtransit

RTD staff have investigated the different forms microtransit can take and where it might work best in the District. This pilot project will identify a specific station area to supplement existing FlexRide vehicles with non-RTD vehicles during certain times of the day. Key next steps include:

1. Identify goals and performance measures for the pilot that will be used to judge the pilot’s success.
2. Gauge interest from the operator community on integrating vehicles into RTD FlexRide fleet. Identify any barriers to entry as well as the benefits and drawbacks of this integration to RTD and its customers.
3. Analyze the best locations for a microtransit pilot. This could include areas that cannot meet passenger demand or where current fixed-route or FlexRide service delivery is inefficient.
4. Identify support and funding for the pilot, as needed. Potential sources could include internal RTD funds, external grants or jurisdictional funds.
5. Implement and test the microtransit pilot in the chosen service zone. Evaluate performance of the pilot and determine if the pilot is worth continuing based on its ability to meet established goals. Feedback from customers should also be gathered at this point.

IMPLEMENTATION AND NEXT STEPS

Implementing the recommendations and strategies put forth in this Plan will require partnership and coordination between RTD, local governments, private mobility service providers, and stakeholder groups across the region. Figure 4.3 on page 4-53 is an overview of the implementing agencies for different types of FLM strategies. Figure 4.4 on page 4-54 identifies the implementing agencies for each toolkit strategy. It is intended as a guide to facilitate discussions during implementation. Equipped with the typology profiles outlined in this Plan, RTD and project partners will utilize this framework to approach different contexts with the sensitivity and flexibility that their unique opportunities, challenges and needs require.

The steps to implementing recommendations will be firstly to ensure local agencies know about the existence of this framework and secondly how it can be used to streamline their FLM planning process. This will be achieved through meeting with the various local agencies and presenting the FLM framework at various conferences.

The three pilot projects will provide RTD and partners with the invaluable opportunity to test how a capital project, program or service functions on a limited-term basis. The three pilot projects identified for testing the Plan's recommendations (regional wayfinding system design and development, mobility hub development, and integrating microtransit) will all require extensive collaboration and stakeholder/rider engagement. The pilot projects will ensure momentum for districtwide FLM improvements continues upon completion of this Plan.

Next steps for the recommendations and results of this Plan include:

1. Integrate FLM Recommendations into Transportation Transformation (T2) Comprehensive Plan

- a. The T2 Comp Plan, scheduled to begin in summer 2019, will be a wholesale evaluation of RTD's current and anticipated resources in order to chart a roadmap for RTD's future as a Mobility Integrator and public transit provider for the Denver metro region. Recommendations from the FLM Strategic Plan will play a part in the T2 Plan by:
 - Integrating FLM solutions into RTD's larger goals and determining their priority
 - Further defining RTD's role to implement FLM Solutions
 - Recommending an FLM budget based on above priorities
- b. Parking, Access to Transit, and Mobility as a Service will be evaluated as part of the Mobility Plan for the Future section of the T2 Comp Plan. Accordingly, the Scope of Work states that "the selected consultant is expected to delve into this issue from multiple angles including evaluating RTD's policy and approach to parking, what role first and last mile solutions to transit play in the future and how the concept of mobility as a service impacts the role of transit and access to transit."

Within this context, RTD will determine where increased emphasis on FLM solutions will be most effective in improving access to transit, determine where FLM solutions may be better suited to improve access in place of increasing parking and make recommendations for RTD's role and resources for FLM based on this analysis.

The concept of Mobility as a Service (MaaS) continues to evolve as a technological approach to addressing FLM. Accordingly, the T2 Plan will make recommendations as to how RTD can better integrate transit into MaaS including the potential for strategic partnerships with MaaS providers such as TNCs and micromobility operators, best approaches to mitigating risks with MaaS partnerships, and clearly defining RTD's role as a mobility integrator. This section of T2 will also seek to better understand the goals of MaaS partnerships, so they clearly relate back to the priorities of the Agency.

2. Support Implementation of Mobility Choice Blueprint Tactical Actions

- a. The Mobility Choice Blueprint (MCB) was a recent (2018-19) planning effort between the Colorado Department of Transportation (CDOT), the Denver Regional Council of Governments (DRCOG), and the Regional Transportation District (RTD), in partnership with the Denver Metro Chamber to jointly understand how to harness the benefits of new transportation technologies to enhance mobility for future metro Denver residents, employees and visitors. The resulting plan produced several Tactical Actions to be led and supported by the respective members of the MCB, including RTD. Several of the Tactical Actions RTD will lead complement the FLM recommendations including:
 - Establish a Mobility Technology Advisory Committee (MTAC)
 - Establish new public-private partnership mobility entity or entities to pursue mobility technology implementation
 - Make Mobility as a Service available to all
 - Develop a universal mobility app for trip planning and payment
 - Develop incentives to improve ridehailing and ridesharing operations
 - Implement curbside management standards
 - Pilot neighborhood-scale mobility hubs
 - Partner with the private sector to provide transportation in mobility challenged communities
 - Pilot smart parking at Park-n-Rides
 - Pilot driverless microtransit to increase public exposure to automated vehicle technology
- b. The MCB Tactical Actions (TAs) will filter into the T2 Comp Plan process along with FLM recommendations; however, implementation of several of these initiatives has already been initiated by RTD staff. To support the implementation of both the FLM and MCB recommendations/Tactical Actions, RTD has developed a strategic framework to track and pursue implementation. This framework will involve RTD inter-departmental coordination, as well as coordination with CDOT, DRCOG, local governments and private sector partners.

3. Transition existing Bike-n-Ride Program to FLM Program

With the arrival of new mobility options such as e-bike share, e-scooters, and other micro-mobility devices, the conventional bicycle is no longer the only small-scale first/last mile transportation option. Given these expanded range of options, the Bike-n-Ride program proposes to expand its purview to include these new modes and bolster its recommendations with more data. This program expansion will enable RTD Planning staff to advance many of the recommendations from the FLM Plan and Mobility Choice Blueprint (MCB), and to modernize the program to RTD customers.

The FLM program will serve as the focal point for implementation of micromobility recommendations for the FLM and MCB plans and, as the program evolves, will aim to include other privately operated FLM modes into the program as well. The re-branded FLM program will include a cross-departmental team that will bring a multi-disciplinary approach to implementing FLM projects. The updated program will not only provide a stable foundation for implementing previous FLM and MCB recommendations, but also remain dynamic enough to integrate future FLM projects and guide them towards successful implementation.

4. Implement FLM Pilot Projects

An output of the FLM project was the identification of three (3) pilot projects to test some of the Plan's recommendations. RTD will prioritize the pilot projects identified in this FLM Plan, including:

- a. Development and installation of temporary multimodal wayfinding elements at and in close proximity to one or two selected transit stations
- b. Development and implementation of the FLM framework and recommendations from RTD's Mobility Hub Guidelines at a selected station to transform it into a temporary mobility hub and improve FLM access
- c. Integration of microtransit in an area within the District where analysis suggests it may be most successful

Figure 4.3 shows the various FLM strategies from the FLM toolkit, and their associated implementing agency.

Figure 4.4 is a list of the various FLM strategies from the FLM toolkit, and their associated implementing agencies. The figure is intended to guide discussions upon the decision to implement some or all of the recommended FLM strategies at any location.

Implementation Roles

In general, the FLM recommendations fall into two major categories – Infrastructure and Non-infrastructure. In the infrastructure category, the location of the infrastructure improvement will dictate who the primary implementing agency is. For example, FLM improvements that fall within the station area would typically be led by RTD, whereas a local government or CDOT would likely lead those FLM improvements adjacent to the RTD station area. Some projects may be jointly led or funded, depending on the scale of the project.

Non-infrastructure FLM recommendations, such as new transportation services or transportation demand management (TDM) programs, typically involve a greater number of implementing agencies including TMAs and private operators. For example, an FLM recommendation that proposes a new transportation service like microtransit, may involve the local government (grant applicant), DRCOG (grant reviewer), RTD or private operator, and a TMA (promotion/marketing the new service)

Figure 4.3 provides an illustration of the likely implementing agencies for different types of FLM strategies. The figure is meant to depict a generalized scenario of how implementing agencies might work together, depending of which FLM strategy is selected. Figure 4.4 lists each toolkit strategy and the associated implementing agencies.

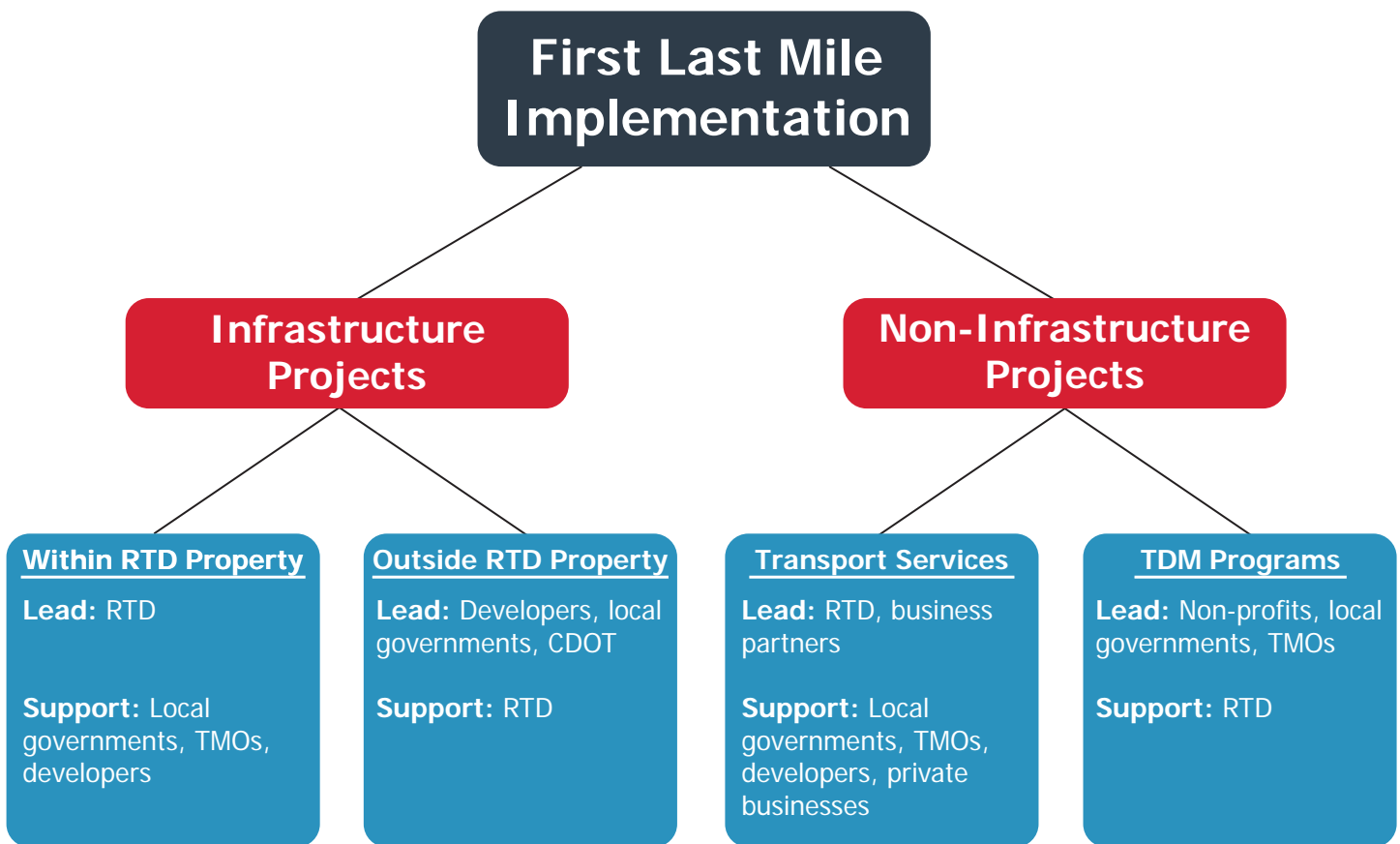


Figure 4.3 Implementation Roles by Project Type

Figure 4.4. FLM Strategies by Implementing Agencies

Improvement Type	Strategy	RTD	Local Govts	TMA's	DRCOG	CDOT	Employers	Property Owners	Private Service Providers	Other
Improvements and reuse of existing infrastructure	Car share parking	X	X					X		
	Innovative Park-n-Ride Management	X								Private RTD Park-n-Ride operators
	Preferential parking for car/vanpool vehicles	X	X	X						
	Curbside management	X	X			X		X		
	Prioritization of RTD owned land or transit parking	X								
	Provide power to electric vehicles (EVs)	X	X	X			X		X	
New infrastructure	Bicycle and micromobility parking and storage	X	X	X					X	For fee bike security manufacturers (i.e. bikelinks)
	Bicycle end-of-trip facilities and amenities	X		X			X	X		
	Multimodal wayfinding signage	X	X	X	X	X		X		
	Improve pedestrian infrastructure	X	X			X		X		
	Improve bicycle and micromobility infrastructure		X	X		X		X		
	Pedestrian-Scale Lighting	X	X			X		X		
First and Last Mile General Guidance	Transit oriented development	X	X					X		
	Bicycling education and encouragement programs		X	X		X	X	X		Bicycle Colorado
	Parking cash-out						X			
	TNC/Taxi discounts	X	X	X	X			X		
	Marketing commuter tax benefits				X		X			
	Bike or car share subsidies			X	X		X	X		Universities
	Free event transit passes		X	X	X		X			Event organizers
	Promotion of RTD discount passes	X	X	X	X		X			Universities
	New resident/employee/student/transportation kits		X	X	X		X	X		
	Promotional events / fairs / challenges	X		X	X		X	X		
	Transportation coordinator			X			X			
	Website or app	X	X	X	X		X	X		Private app developers
	Guaranteed Ride Home (GRH)				X	X				
	Variable message signs	X	X	X	X		X			
	Creation of EcoPass District			X	X		X	X		BIDs, Parking districts, Home owners associations.
	Dynamic carpooling to transit				X	X				
Transit access marketing plan	X			X	X			X	DRMAC	
Commuter Expert or Commuter Buddy Program				X	X		X			
Special event transit service	X								Event organizers	
Transportation Service	On-demand micro-transit	X	X				X	X	X	
	Shuttle service		X				X		X	
	Support implementation of micromobility services	X	X	X					X	
	Autonomous transit	X					X	X	X	
	Point-to-point car share service	X					X		X	
	Round-trip car share	X					X		X	

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