APPENDIX B.
FLM STRATEGIES TOOLKIT

Introduction to the FLM Strategies Toolkit

This toolkit provides detailed information on 37 discrete FLM strategies. The toolkit is organized by FLM strategy theme.

Each toolkit sheet includes:

- Description of the strategy
- Applicability of the strategy to each FLM typology
- Applicability of the strategy to any of the six FLM overlays
- Key implementing agencies
- Potential funding sources
- A case study or resource pertaining to the strategy, including a link for more information

REUSE OF EXISTING INFRASTRUCTURE

- Curbside Management
- Innovative Park-n-Ride Management
- Car Share Parking
- Preferential Parking for Car or Vanpool Vehicles
- Prioritization of RTD Owned Land and Parking
- Provide Power

NEW INFRASTRUCTURE

- Bicycle and Micromobility Parking and Storage
- Multimodal Maps and Wayfinding
- Bike End-of-Trip Facilities and Amenities

FIRST AND LAST MILE GENERAL GUIDANCE

- Pedestrian-Scale Lighting
- Improve Bicycle and Micromobility Infrastructure
- Improve Pedestrian Infrastructure
- Transit Oriented Development

TRANSPORTATION SERVICE

- On-Demand Microtransit
- Shuttle Service
- Support Implementation of Micromobility Service
- Special Event Transit Service
- Autonomous Transit
- Point-to-point Car Share
- Round-trip Car Share

TRANSPORTATION DEMAND MANAGEMENT

- Creation of EcoPass District
- Bicycle Education and Encouragement Programs
- Promotion of RTD Discount Passes
- Website or App
- Guaranteed Ride Home (GRH)
- Variable Message Signs
- Dynamic Carpooling to Transit
- Transit Access Marketing Plan
- Commuter Expert or Commuter Buddy
- Parking Cash-Out
- TNC/Taxi Discounts
- Bike or Car share Subsidies
- Marketing Commuter Tax Benefits
- Transporation Coordinator Network (TCN)
- New Resident / Employee / Student Transportation Kits
- Promotional events/fairs/challenges

REUSE OF EXISTING INFRASTRUCTURE

- Curbside Management
- Innovative Park-n-Ride Management
- Car Share Parking
- Preferential Parking for Car or Vanpool Vehicles
- Prioritization of RTD Owned Land and Parking
- Provide Power

Curbside Management

REUSE OF EXISTING INFRASTRUCTURE

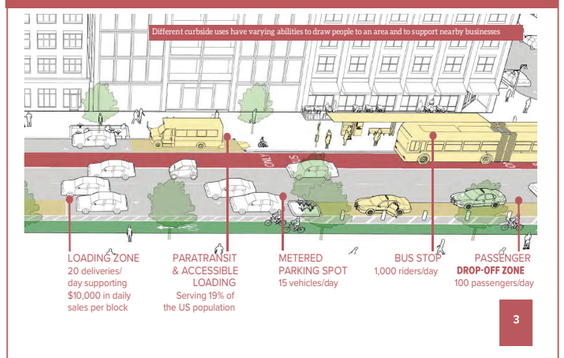
Curbside space is increasingly being recognized for its high value in the transportation network. In critical areas around transit stations, curbside space can have competing interests including vehicle travel lanes, parking, loading, dedicated transit use, dedicated bicycle lanes, or parklets.

Curbside management implements time-based restrictions on the curb space to optimize its value according to specific time-sensitive demands such as peak-hour transit, business loading and access, passenger pick-up/drop-off, or short-term parking.

Some jurisdictions are experimenting with geofencing to better manage Transportation Network Company (TNC) (i.e. Lyft/Uber) pick-ups and drop-offs in high-demand areas. Geofencing is a process that uses GPS coordinates to define which areas are restricted or permissive to enter.

Curbside management is a critical need in dense urban areas where a wide variety of competing curbside uses exist. These techniques can be applied to less-dense areas where curbside activity is prevalent (e.g., activity centers).

NACTO Curbside Management Illustration



Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	Most Applicable
Suburban-Residential	More Applicable
Rural	Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

Curbside management plans are most applicable to urband core, urban and suburban-mixed typologies. This is because generally a large number of different modes will require access to these stations. Ensuring that all modes have good access is important. In the suburban context, this may require shifting users from accessing the station by private cars to other modes. Curbside management plans may be applicable to the suburban-residential context if the station resides on a major active transportation route or has another mode that competes for access to the station.

Applicability to Overlays

Historically vulnerable populations are less likely to own a private vehicle. Managing curb space efficiently keeps transit moving faster and more reliably.

Locations with high parking utilization require improving access by other modes. Providing specific pick-up and drop-off zones for these areas will improve access.

A curbside management plan can help when a large number of people use the station at once.

People who are less mobile may not drive, and may require additional assistance when accessing a station or stop. Ensuring a curbside management plan includes pick-up and drop-off zones close to the transit service will improve their access.

Implementing Agencies:

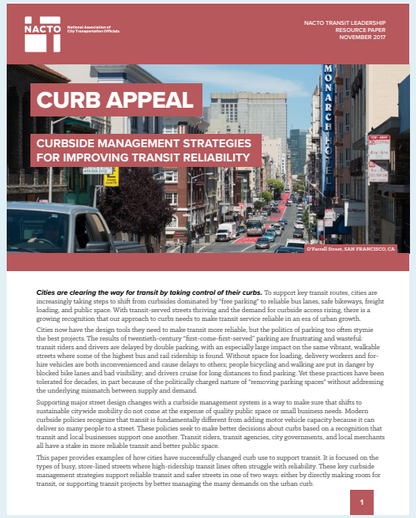
- **Local governments**
- **Business Improvement Districts (BIDs)**
- **Property owners**
- **RTD**

Funding Sources:

- **Future FTA innovative mobility grants**
- **Local funds**
- **BIDs**
- **Property owners**
- **Mobility service providers**

Resource:

NATCO—Curb Appeal: Curbside Management Strategies for Improving Transit Reliability



This resource paper provides best practices and project examples of reorganizing or changing the restrictions on curbside space in different communities across the United States. The four overarching concepts discussed in this document are:

- Shifting from Parking Lane to Flex Zone
- Clearing the Way for Transit
- Moving Loading and Access Nearby
- Looking Beyond the Corridor

https://nacto.org/tsdg/curb-appeal-whitepaper/

Innovative Park-n-Ride Management

REUSE OF EXISTING INFRASTRUCTURE

Park-n-Ride facilities are a valuable asset for RTD. Currently, RTD-operated Park-n-Rides are free for the first 24 hours for residents in the RTD district ($2.00/ day for every day after that), and $4.00/ day for nonresidents (rates may be higher or lower depending on the third party operating it).

In order to better align Park-n-Rides with changing transportation needs, RTD could experiment with additional uses and programming. Some techniques that have been implemented elsewhere include:

- Allow mid-day/short-term parking (between peak commuting times)
- Designate carpool-parking only areas
- Manage park-n-ride demand by pricing parking according to utilization rates for each location (if the lot is less than 25% utilized it could be made free, while if it is greater than 90% utilized the price could be increased)
- Repurpose parking spaces closest to the station as multi-modal parking, such as bike parking.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Innovative Park-n-Ride management is most applicable in the urban, suburban-mixed and suburban-residential typologies, as these places are most likely to have Park-n-Rides.

Applicability to Overlays

Park-n-Ride locations with high parking utilization require increased management to ensure effective use of parking capacities.

Implementing Agencies:

- **RTD**
- **Operators of privately operated RTD Park-n-Ride parking**

Funding Sources:

- **FTA public transportation innovation grants**
- **CMAQ**
- **Future FTA innovative mobility grants**

Case Study:

King County Metro Value Pricing Pilot Program

King County Metro received a grant funded by the Federal Highway Administration's (FHWA) Value Pricing Pilot Program to explore opportunities for market-priced park-and-ride spaces at commercial and multi-family properties near high frequency transit service.

The pilot creates partnerships between King County Metro and building owners near transit stations and stops to provide guaranteed reserved parking to access transit.

The ability to reserve a space at or near full park-and-ride lots could enhance the reliability of transit as a commute option. In addition to increasing the number of spaces available, a key benefit is the predictability improvements of market-priced parking.

https://kingcounty.gov/depts/transportation/metro/programs-projects/transit-corridors-parking-and-facilities/park-and-ride-partnership.aspx

Car Share Parking

REUSE OF EXISTING INFRASTRUCTURE

Car share services provide short-term rentals, often by the hour. Some services provide point-to-point rentals, meaning the vehicle can be left anywhere in a range, while other services require the car be returned to a designated parking space. Drivers can subscribe through a mobile app to find, reserve and rent a car. Car share programs increase mobility by providing access to vehicles for those who might not own an automobile, and can motivate households to forgo car ownership or reduce the number of cars per household.

By providing designated parking spaces for these car share programs near or within transit station areas, car share becomes more reliable. Car share has many benefits such as increasing traveler flexibility, providing for increased connectivity to the station, and reducing vehicle miles traveled. This service would be beneficial to covering the first and last mile for transit riders. A rider could go to work via transit, and then still run an errand or go to a doctor's appointment near work in an area that transit doesn't serve well by using car share.

RTD charges car share operators a fee in return for a designated space.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Car share parking is most applicable to the suburban-mixed typology. This is because the land use is less dense and people might be accessing the station from farther away. There may also be dense pockets of employment, meaning availability of the use of a car during the day may be an important service. Car share parking may be applicable to the urban core or urban typology, specifically where active transportation connections are difficult and other modes are needed. Car share parking is less applicable to suburban-residential or rural areas where there are few pockets of employment, and generally access to a shared car during the day is not needed.

Applicability to Overlays

Shift workers may need to access the station or bus stop at times outside usual peak periods, or run errands mid-shift despite having arrived by transit. Providing car share parking will allow them to use car sharing to access the station or bus stop if connecting services are not operational (for free-floating car share) or have a reliable vehicle available for errands or mid-shift trips (for round-trip).

Park-n-Ride locations with high parking utilization would benefit from car share parking providing an alternative to driving and parking a private vehicle.

Historically vulnerable populations are relatively less likely to own private vehicles, and may use car share to access transit or for mid-day trips.

Implementing Agencies:

- **RTD**
- **Local governments**

Funding Sources:

- **TMA funds**
- **Parking revenues**
- **Local governments**
- **Fees from car share operators**

Case Study:

LA Metro partnership with Zipcar

LA Metro partnered with Zipcar to provide car share vehicles for hourly or daily reservations at LA Metro Park-and-Ride locations.

Their rationale was that providing Zipcars at transit locations would enhance mobility and improve first and last mile connections to stations.

Due to the flexibility of reservations, users can book the car for a couple of hours up to a full day, providing for a number of different uses to support transit, or complement a transit trip.

In February 2019, LA Metro announced a similar initiative to provide parking spaces for "Getaround" car share. Getaround is a car share service that allows individual people to list and share their own private car for others to use. Early results from this partnership have yet to be published.

https://www.metro.net/projects/tod-toolkit/car-share-programs/

Preferential Parking for Car or Vanpool Vehicles

REUSE OF EXISTING INFRASTRUCTURE

Preferential parking assures convenient station access for travelers opting to use carpools or vanpools. The parking spaces should be within a short distance of the transit boarding areas and could also offer additional benefits to the rider, such as covered parking.

Wayfinding and geofencing (creating a virtual geographic boundary that is communicated through mobile apps) can lead riders to the designated parking locations.

Providing preferential parking requires a system to register carpools and enforcement of parking spaces to ensure they remain available for the intended users.

The potential benefits of providing preferential parking for rideshare vehicles include reducing traffic, improving connectivity, enhancing the transit rider experience, and reducing vehicle miles traveled.

Source: Ohlone College

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Preferential parking for carpools and vanpools is most applicable to suburban-mixed and suburban residential typology. This is because the land use is less dense and people might be accessing the station from farther away. There may also be dense pockets of employment, meaning carpooling may be a likely mode of choice. Carpool parking may be applicable to the urban typology, specifically where current feeder bus service is insufficient or where active transportation connections are difficult.

Applicability to Overlays

Carpools and vanpools can operate with flexible routes, as an area changes these routes can change. This provides a flexible route option to access transit.

Carpools and vanpools carry more than one person. Places that are at or near parking capacity require increased access by other modes to accomodate more individual users at the same level of physical capacity.

Implementing Agencies:

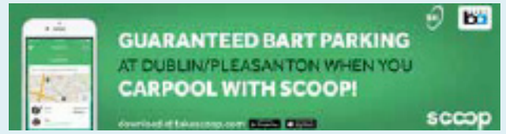
- **RTD**
- **Local TMAs**
- **DRCOG Way to Go**

Funding Sources:

- **Parking fees/revenue**
- **CMAQ grants**
- **Future FTA innovative mobility grants**

Case Study:

BART - Integrated Carpool To Transit Access (Partnership with Scoop)



Through the Federal Transit Administration's Mobility on Demand (MOD) Sandbox Program, Bay Area Rapid Transit, the Metro-politan Transportation Commission (MTC), and Scoop Technologies are partnering to integrate carpool-to-transit service and to provide preferred parking for this service at BART park-and-ride facilities.

Many BART stations are over capacity for parking, and so transit riders were driving to the park-and-ride earlier in the morning to guarantee a parking space. Leveraging this lack of parking, BART partnered with Scoop to increase the number of people carpooling to their stations.

Scoop is a dynamic carpooling app that connects carpoolers to specific BART stations.

Carpoolers using Scoop are guaranteed a parking spot if they arrive before 10am. Carpool drivers are sent a placard via email to print out and put on their windshield to designate that they carpooled and used Scoop.

https://www.bart.gov/news/articles/2018/news20180514

Prioritization of RTD Owned Land and Parking

REUSE OF EXISTING INFRASTRUCTURE

Transit riders have an increasing range of multi-modal options to access transit. RTD-owned land and parking spaces for private cars can be converted to meet the needs of other types of mobility such as bicycles, micromobility devices and ride-share.

The average parking space in North America is 7.5 to 9 feet wide and 10 to 20 feet deep, providing ample space for a converted use, such as bicycle parking. For example, bike corrals can be installed in place of one or two parking spaces and accommodate 10 to 20 bicycles. Alternatively, the footprint for a bike locker is approximately 5 feet by 2 feet, which can provide a more secure option and protection from rain and snow, depending on site conditions.

This strategy also encompasses the potential to increase reserved parking at select stations. RTD currently charges riders a monthly fee in exchange for a reserved parking space between 5 a.m. and 10 a.m. Monday to Friday. After 10 a.m, reserved parking spaces are free to anyone. Currently 15% of RTD parking can be taken for reserved parking at any one location.

In locations with high parking utilization, providing more reserved spaces will allow people who want to pay to guarantee a parking space the opportunity to do so.

Providing guaranteed car or vanpool parking at high parking utilization locations will also increase the number of people who are able to use the station, while keeping the number of parked vehicles the same.

Joint development on RTD property could be considered to add density and increase ridership where parking is underutilized or can be replaced by the development.

Applicability to Typology

Similar to curbside management plans, this strategy is most applicable to the urban and suburban-mixed typologies. This is because those locations may have a higher propensity for access by diverse modes. Ensuring that space around the station is distributed to numerous modes will increase access to more people. Suburban-residential is less applicable, as there is less density and less propensity for different modes to access these stations.

Applicability to Overlays

Alternative modes require less parking than driving alone. Places that are at or near parking capacity require increased access by other modes to accomodate more individual users at the same level of physical capacity.

Implementing Agencies:

- **RTD**

Funding Sources:

- **FTA Public Transportation Innovation Grants**
- **FTA Pilot Program for Transit-Oriented Development Planning**
- **Parking revenue**

Case Study:

Circulate San Diego, San Diego, California

Circulate San Diego is a non-profit organization promoting sustainable transportation within San Diego. They undertook an analysis of parking utilization at each parking lot associated with the Metropolitan Transit System's (MTS) trolley or bus stops.

The analysis showed that many parking lots had very low utilization rates, and so Circulate San Diego developed a number of policies to make better use of the vacant land. These include:

- Create a joint development program that issues requests for proposals for priority sites and actively solicits near-term development partners.

- Require that any residential development include a percentage of homes to be made permanently affordable for low income families.

- Eliminate the costly requirement for new developments to replace or maintain parking where it is already underutilized.

http://www.circulatesd.org/realopportunity

Provide Power

REUSE OF EXISTING INFRASTRUCTURE

Cities have increasingly been investing in electric vehicle (EV) charging stations to eliminate the barriers to electric car ownership. Transit stations could include provision and access to power as a tactic to provide reliability of convenient charging facilities. In addition, users of many modes of transportation will benefit from the charging stations beyond personal electric vehicles, including electric bikes, scooters, micro-transit vehicles, and EV TNCs.

Advances in technology have made charging stations even more eco-friendly, and now solar powered charging stations are available that can service multiple EVs all day and night.

Though currently not common, another option for providing power is energy swapping technology, such as a battery–swapping stations that allow users to access charged batteries.

Providing power should be a strategy only undertaken where feasible due to infrastructure and cost constraints.

Providing power may be a potential revenue opportunity for RTD whereby users pay to charge their EV or other device while parked at a station, or use a battery bank to swap out a battery for their mobility device.

Sponsorship deals may also be available with micromobility or shared EV companies that may promote RTD services in exchange for power.

Applicability to Typology

Urban Core

Urban

Suburban-Mixed

Suburban-Residential

Rural

Key

- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Providing power is applicable in all typologies as private ownership of various types of electric vehicles increases and transit riders would benefit from the option to charge their vehicle at the station while they continue on to work.

In the urban core, providing power is more applicable to shared electric vehicles, such as car share, electric bikes, and electric scooters.

Applicability to Overlays

Providing power for electric vehicles plan can helpful at stations that serve uses with high visitor concentrations.

Implementing Agencies:

- **RTD**
- **Local governments**

Funding Sources:

- **Sponsorship deals and fees from vendors**
- **U.S. Department of Energy's Energy Efficient Mobility Systems program**

Case Study:

Jump Charging Stations at Sacramento Transit Stations

Source: Uber

Jump, a dockless electric bike share company recently partnered with Sacramento Regional Transit District and other local government agencies to locate charging stations for the bicycles.

Transit riders benefit because the charging stations increase the likelihood of Jump bikes being available and fully charged at the transit station. This makes them a reliable first and last mile option.

https://www.sacbee.com/latest-news/article219147755.html

NEW INFRASTRUCTURE

- Bicycle and Micromobility Parking and Storage
- Multimodal Maps and Wayfinding
- Bike End-of-Trip Facilities and Amenities

Bicycle and Micromobility Parking and Storage

NEW INFRASTRUCTURE

Bicycle Parking

Short-term bicycle parking is typically used for short duration trips. It should be installed in locations with relatively high turnover, such as near commercial and retail establishments, parks, libraries, recreation centers, and medical or healthcare facilities.

The inverted U-rack is generally the preferred type of short-term bicycle rack because it is compatible with most bicycles. Short-term parking should be covered where possible.

Long-term bicycle parking is intended to be used for longer periods of time, such as all day or overnight. These types of bicycle parking facili-ties tend to offer more security and protection, such as bike lockers or secure bike cages. They are typically installed at major destinations such as transit hubs, employment centers, apartment complexes and schools.

Micromobility Parking

To support docked bike-share programs, such as B-cycle, docks for these bicycles can be placed in or adjacent to transit stations and stops. However, docks should only be placed if they are within one mile of another dock.

Shared dockless micromobility devices such as e-scooters can be accommodated at transit stations by designating specific parking areas using pavement markings, signage, and/or virtual geofencing.

There will be an increased demand for charging electric micromobility devices. To meet this demand, micromobility parking could include a charging station to provide revenue to RTD.

Additional bike racks should be installed if the transit station is within a dockless bike share area of operation).

RTD has developed a user agreement for use of shared micromobility devices and e-bike operators to park on RTD property. RTD has also installed painted stencils at multiple stations in Denver.

Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	More Applicable
Suburban-Residential	Applicable
Rural	Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

As privately owned micromobility devices become more popular it is important to provide secure parking at stations. This parking is most applicable to Urban Core, Urban and Suburban-mixed locations as these will be the locations with fastest uptake of new micro mobility devices.

Applicability to Overlays

Historically vulnerable populations are relatively less likely to own private vehicles, and may cycle to transit.

Shift workers often travel during off-peak periods when feeder bus service is limited and therefore may be more likely to access the station or bus stop by bicycle. Additionally, most shared micromobility providers limit their use at certain hours (usually overnight). This may encourage shift workers to purchase their own micromobility device to access transit outside these service hours.

Locations with high parking utilization require improving access by other modes. Dedicated bicycle and micromobility parking encourages access by those modes.

Implementing Agencies:

- **CDOT**
- **DRCOG**

Funding Sources:

- **CMAC grants**
- **Fees from micromobility providers**

Resource:

APBP Bicycle Parking Guidelines (2010)

The Association of Pedestrian and Bicycle Professionals (APBP) second edition of the Bicycle Parking Guidelines (2010) provides practical information about different types of bicycle parking facilities, installation, and site planning. It also provides policy guidance for bicycle parking, including recommendations for capacities based on land use and on ridership at transit hubs.

APBP Essentials of Bike Parking (2015)

This 12-page guide from the APBP focuses on the selection and installation of bike parking, including short- and long-term options. It also covers placement requirements.

APTA Bicycle and Transit Integration (2018)

This guide includes a series of recommended practices for transit agencies interested in addressing the growing demand for bicycle mobility and connectivity to buses and trains.

FTA Manual on Pedestrian and Bicycle Connections to Transit (2017)

This manual provides best practices to help transportation professionals improve pedestrian and bicycle safety and access to transit. It includes information on evaluating, planning for and implementing improvements to pedestrian and bicycle access.

https://www.apbp.org/general/custom.asp?page=publications

Multimodal Maps and Wayfinding

NEW INFRASTRUCTURE

Multimodal transit station vicinity map

Transit station vicinity maps are important amenities for first and last mile connectivity because they help people navigate their surroundings when they disembark the train or bus.

- Maps at transit stations should include destinations that people are likely to walk or bike to, as well as pedestrian and bicycle facilities, such as bike lanes and shared-use paths.
- If possible, active transportation and micromobility routes to destinations should be illustrated.
- Map extents should cover at least a two-mile radius and include distances and travel times by mode.

Multimodal wayfinding systems

Wayfinding provides navigational assistance to users along a route. Fundamental navigational elements include decision, confirmation, and turn signs (See Figure C). Enhanced navigational elements provide additional wayfinding assistance in the form of mile markers, gateway markers, pavement markings, and map kiosks, among others.

Other key considerations for wayfinding include:

- When implemented on-street, signage should conform with MUTCD standards.
- When possible, wayfinding should be installed as a comprehensive system to provide consistency and predictability for users. This requires strong collaboration between all agency partners involved in implementing the system.
- Locating wayfinding signage at key decision points within two miles of transit stations is essential for first and last mile access.
- Wayfinding should be made as accessible as possible, with particular focus on non-native English speakers, and people who are visually impaired.

Applicability to Typology

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

Multimodal maps are most applicable in urban core, urban, and suburban-mixed typologies to connect travelers with a comparatively higher density of local and regional denstinations. Multimodal wayfinding principles and elements (seen in Fig. B & C) are applicable to all contexts.

Implementing Agencies:

- **Local governments**
- **DRCOG**
- **Local TMAs**
- **RTD**

Funding Sources:

- **CMAQ grants**
- **Local governments**
- **Local funds**
- **RTD**

Figure A. Transit Station Vicinity Map and Kiosk

Figure B. Wayfinding Principles

Connect Places - provide guidance between destinations

Keep Information Simple - Use clear fonts and simple designs

Maintain Motion - Be sufficiently legible so that people do not have to stop walking or biking

Be Predictable - Standardize sign placement and design

Promote active travel - Illustrate how people can access places with active modes

Figure C. Fundamental Navigational Elements

Decision | Confirmation | Turn

Resources:

FHWA Manual on Uniform Traffic Control Devices (2009)
This resource includes national guidance for wayfinding signage. Refer to Section 9B.01 - Application and Placement of Signs for signage standards, including mounting height and lateral placement specifications. Section 9B.02 has additional guidance for bicycle signs.

NACTO Urban Bikeway Design Guide (2014)
This document includes a section on bicycle route wayfinding, including design guidance, and information on types of destinations and maintenance.

Case Study:

Legible London is an award-winning pedestrian wayfinding system that is integrated into the London transit system.

It was developed to assist people navigate the city after it was discovered that many pedestrians relied on transit maps for navigation, which led many to misjudge walking distances and directions.

Legible London map kiosks display 5- and 15-minute walking distances. Maps are “heads-up”, or oriented in the direction the user is facing. Other sign types in the system include directional signs and pavement plaques (see above).

https://tfl.gov.uk/info-for/boroughs/maps-and-signs

Bike End-of-Trip Facilities and Amenities

NEW INFRASTRUCTURE

Concerns about sweating and or getting dirty while bicycling may prevent some people from commuting to work by bike. Incentivizing employers to provide changing rooms, showers, and lockers at the workplace may remove that obstacle.

Encouraging employers to provide secure indoor bicycle parking is another way to support bicycle commuting. Racks can be installed inside parking garages, which provides weather protection and some level of theft protection.

Indoor bicycle storage is the most secure. Wall mounts can be installed to more effectively utilize space when needed.

Bike repair stations provide bicyclists with the tools to complete basic repairs and maintenance. Tools may include a pump, a multi-purpose bike tool, tire levers, a tire patch kit, and tubes in common sizes.

When providing bicycle repair stations consider the following:

- Transit stations are convenient locations for bike repair stations.
- Repair stations should be located in a well-lit, more heavily-trafficked area.
- In public spaces, tools may need to be secured to a fixed object to prevent theft.
- Secure bike storage, such as Bike-n-Ride shelters, are also convenient locations for repair stations. Because the shelter itself is secure, repair items that cannot be secured directly can more easily be included in the repair station.
- Employers can also provide workplace bicycle repair stations for their employees to incentivize bicycling.

Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	Most Applicable
Suburban-Residential	Applicable
Rural	Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

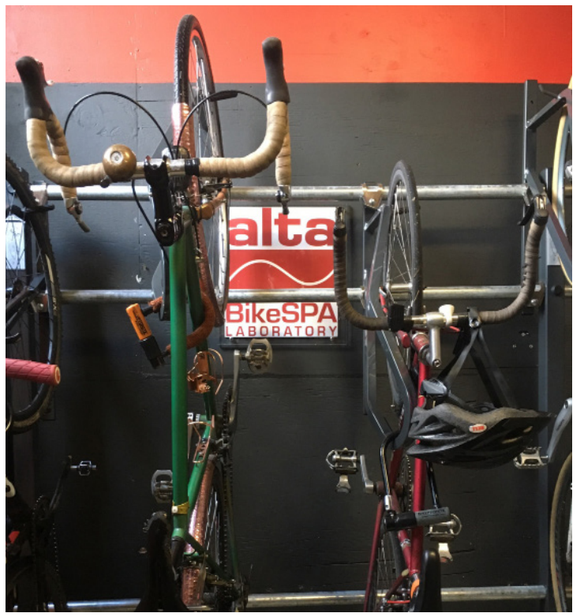
Bicycle end-of-trip facilities are most applicable to urban core, urban, and suburban-mixed locations as these will be the locations with more density and higher propensity for access by bicycle or e-bike.

Implementing Agencies:

- **Local TMAs**
- **Property Owners**
- **Employers**
- **RTD**

Funding Sources:

- **CMAQ grants**
- **Propery Owners**
- **Employers**



FIRST AND LAST MILE GENERAL GUIDANCE

- Pedestrian-Scale Lighting
- Improve Bicycle and Micromobility Infrastructure
- Improve Pedestrian Infrastructure
- Transit Oriented Development

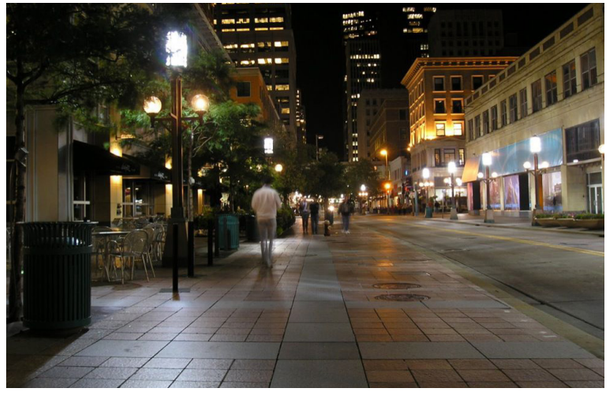
Pedestrian-Scale Lighting

FIRST AND LAST MILE GENERAL GUIDANCE

Pedestrian-scale lighting is often a separate secondary lighting system along streets (though sometimes combined with roadway lighting infrastructure). Pedestrian-scale lighting provides improved visibility and sense of safety for people walking. Many crashes involving pedestrians occur during no-light or low-light conditions, so providing targeted pedestrian/roadway lighting to improve visibility at conflict areas can also lead to safer pedestrian crossings. Pedestrian-scale lighting can also be used to enhance place-making efforts.

Some key considerations include:

- Where possible, maintain consistency of lighting along a street at regular intervals
- Provide a minimum of 0.5 foot-candles (lumens per square foot) of illumination along sidewalks or pedestrian pathways (source: SFbetterstreets)
- Use dark-sky friendly fixtures that aim light down towards the sidewalk or street and target light where it is needed, avoiding excessive lighting of adjacent properties
- Pedestrian scaled lighting is more inviting and comfortable for users, than relying on roadway-scaled lighting.



Implementing Agencies:

- **BIDs**
- **Local governments**
- **Developers**

Funding Sources:

- **Local government funding**
- **BIDs**

Resource:

SF Betterstreets

Chapter 6.3 of the San Francisco SFbetterstreets guide provides detailed discussion and guidance for providing pedestrian-scale lighting. SFbetterstreets desgin guidelines reccomend installing secondary street lighting systems specifically for pedestrian areas and sidewalks, with a high prioritiy on streets with high pedestrian volumes, key civic/downtown/commercial streets, streets with concerns about safety or security, and small alleys and pathways. Under SFbetterstreets guidelines pedestrian-scale lighting should be provided by pole mounted light fixtures less than 18 feet in height.

https://www.sfbetterstreets.org/find-project-types/streetscape-elements/streetlighting/

Improve Bicycle and Micromobility Infrastructure

FIRST AND LAST MILE GENERAL GUIDANCE

Micromobility services are those which provide shared mobility devices, such as bicycle, e-bikes, and e-scooters, to subscribers. Due to the similarities in operating speed between bicycles and other micromobility devices, the facilities described here are applicable for all types.

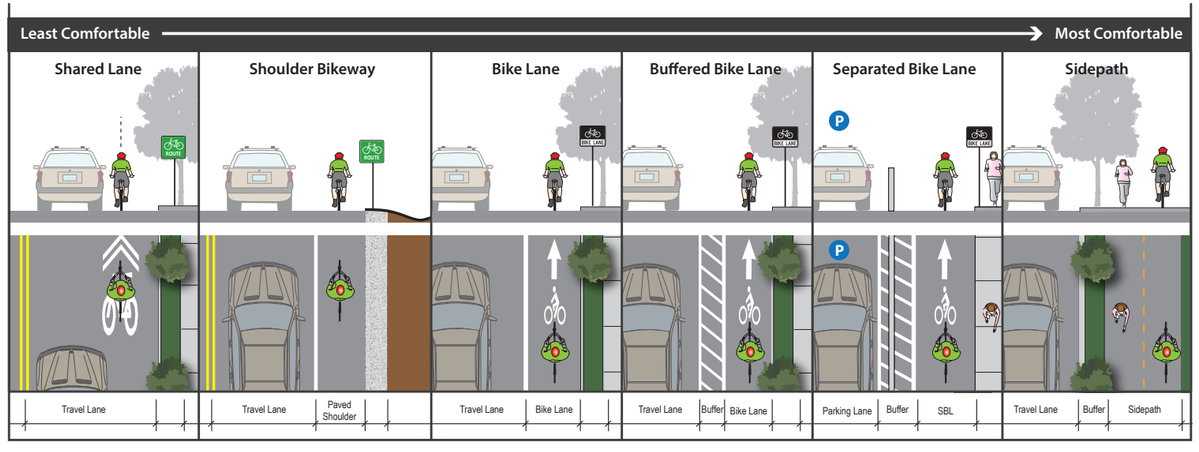
The recommended type of bicycle or micromobility infrastructure depends on the roadway context, but generally, the greater separation from motorized traffic, the more comfortable the facility.

On residential streets with relatively low traffic volumes and posted speed limits (25 mph or less), traffic calming measures such as shared lane markings (SLMs), chicanes, traffic circles, and signage can provide additional comfort for bicyclists, particularly on streets where speeding is a concern. Streets with these treatments are sometimes referred to as bicycle boulevards or neighborhood greenways.

Figure A shows the various bicycle infrastructure options available. Key infrastructure options include:

- Bike lanes provide dedicated space on the roadway for bicyclists.
- Buffered bike lanes provide additional space between bike lanes and adjacent vehicle travel lanes.
- Separated bike lanes (also referred to as cycle tracks) provide bicycles with physical separation from vehicular traffic. Separation can be provided by parked vehicles, bollards, and grade-separation, etc.
- Shared-use paths (SUPs) can typically be used by all non-motorized modes traveling in both directions. SUPs are most appropriate adjacent to very high-volume and high-speed roads where there are relatively few curb cuts.

Figure A. Bicycle Infrastructure by Comfort Level



** Also refer to Figure 3.6. Level of Comfort-Existing Facilities and Recommendations on page 3-33 in the final report.*
***Assuming consistent roadway speeds and volumes.*

Implementing Agencies:

- **Local governments**
- **CDOT**

Funding Sources:

- **Local government funds**
- **CDOT**
- **Property owners**
- **BIDs**
- **FTA flexible funding programs - Surface Transportation Block Grant Program**

Resources:

FHWA Manual on Uniform Traffic Control Devices (2009)
This manual defines the standards for installing and maintaining traffic control devices on all roads and bikeways open to public traffic in the U.S. It includes lane striping requirements, signal warrants, and recommendations for signage and pavement markings.

AASHTO Guide for the Development of Bicycle Facilities (2012)
This guide includes standards and guidance for bicycle facility dimensions, striping, signage, and pavement markings.

NACTO Urban Bikeway Design Guide (2014)
This document describes nationally recognized and state of the practice design standards for bike lanes, cycle tracks, intersections, signals, signage and pavement markings, and bicycle boulevards.

NACTO Urban Street Design Guide (2013)
This guide includes urban roadway design guidance with high-quality visual aids for all travel modes, including innovative treatments for bicycle facilities, particularly within constrained right-of-ways.

Smart Growth America
Smartgrowthamerica.org provides a host of information on “Complete Streets,” the concept that streets should be designed to allow safe access by all mode types, including bicyclists and micromobility devices. Adopting a Complete Streets policy and subsequent implementation can be an effective way to improve roadways for bicyclists and micromobility device users. The website includes examples, research, and policy, and implementation guidance.

Improve Pedestrian Infrastructure

FIRST AND LAST MILE GENERAL GUIDANCE

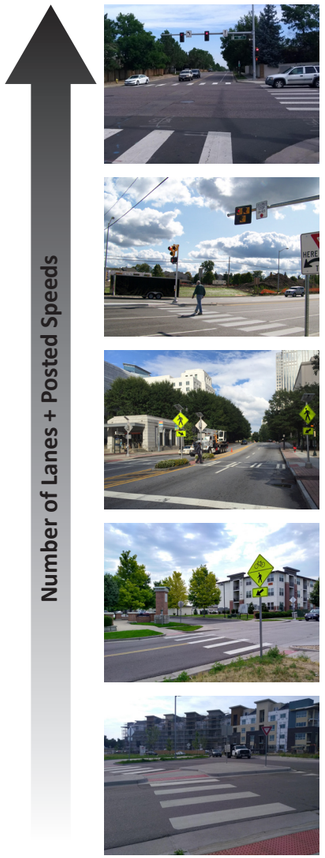
The definition of a comfortable sidewalk depends on the roadway context, but generally, greater sidewalk width is correlated with higher pedestrian comfort. (See Figure B.)

- A minimum width of five feet is ideal in all situations. Five feet is sufficiently wide for people in wheelchairs and pushing strollers to travel comfortably, and for passing.
- Landscaped buffers improve pedestrian comfort and safety by providing additional distance between pedestrians and vehicular traffic. They should be installed wherever possible on roads with four or more lanes or posted speed limits in excess of 25 mph.

There are many crossing improvements that can be implemented to allow pedestrians to safely cross roads. The selection of a particular improvement is dependent on various factors, but generally, the greater the number of travel lanes and the higher the posted speed, the more intensive the crossing improvement. (See Figure A.)

- Safe opportunities to cross should be provided at frequent intervals, especially on major roads, to discourage pedestrians from crossing outside of designated crossings.
- Curb ramps should be installed wherever the sidewalk crosses the curb and should include Detectable Warning Surfaces.

Figure A. Recommended Pedestrian Crossing Improvements



Implementing Agencies:

- **Local governments**
- **CDOT**

Funding Sources:

- **Local funds**
- **CDOT**
- **Property owners**
- **BIDs**
- **FTA flexible funding programs - Surface Transportation Block Grant Program**

Figure B. Pedestrian Infrastructure by Comfort Level

Resources:

AAHSTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (2004)
This guide provides recommendations for accommodating pedestrians on different roadway types. It also addresses the effects of land use and site design on pedestrian mobility.

AASHTO Policy on Geometric Design of Highways and Streets (2011)
This handbook includes recommendations for pedestrian facilities on streets and highways. Section 2.6 covers pedestrian facility design controls and criteria, including information about walkway level of service, intersections, and reducing pedestrian-vehicular conflicts. Section 4.17 provides guidance on sidewalks, grade-separated crossings, and curb ramps.

ADA Standards for Accessible Design (2010)
This document contains the standards for ADA-accessible facilities, including curb ramp and slope requirements.

Smart Growth America
Smartgrowthamerica.org provides a host of information on "Complete Streets," the concept that streets should be designed to allow safe access by all users, including pedestrians. Adopting a Complete Streets policy and subsequent implementation can be an effective way to improve roadways for pedestrians. The website includes examples, research, and policy and implementation guidance.

Steps to a Walkable Community (2012)
This resource produced by America Walks is a comprehensive guide for creating a more walkable community. Recommendations cover advocacy, policy, land use, design and engineering, education, and enforcement. The design and engineering section includes a variety of infrastructure types, including benefits, appropriate contexts, and examples.

Transit Oriented Development

FIRST AND LAST MILE GENERAL GUIDANCE

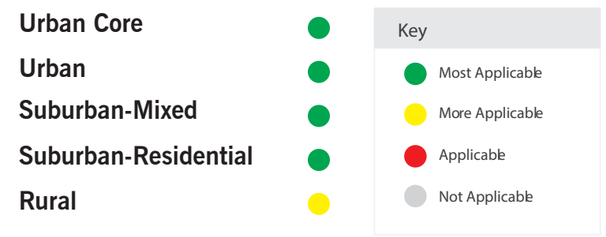
RTD's Joint Development of Real Property and TOD (Transit Oriented Development) aims to provide sustainable development around transit stations to increase transit use. Increasing density around transit is a key recommendation to improving First and Last Mile connections, as the closer someone lives to a high frequency transit option, the more likely they are to use it.

Density of housing and employment around transit increases the number of prospective riders within convenient walking distance of a bus or rail stop.

Some strategies that could be explored within this recommendation include:

- Shared complimentary amenities to promote multimodal access: Providing amenities that can be shared between different developers, for example shared secure bike facilities at residential apartment locations or shared bicycle loaning programs.
- Wayfinding systems: Use standardized wayfinding system designs across the new developments and the station area to provide seamless interaction with visitors and residents.
- Shared mobility parking: Provide locations for shared mobility parking, this can include locations for e-scooter, e-bike, car share or bike share parking.
- Other transit supporting initiatives: Other initiatives include encouraging developers to reduce the amount of parking they provide, and use the money saved to pay for transit passes to new residents and employees.

Applicability to Typology



Most applicable in Suburban-mixed locations that are more likely to be situated along a high frequency transit service, include space to develop and have pockets of high residential and employment. Urban Core and Urban locations are often (but not exclusively) already built out. Suburban-residential and Rural locations are less likely to have the right conditions for TOD.

Implementing Agencies:

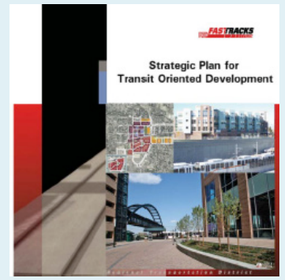
- **Property owners**
- **Local agencies**
- **RTD**

Funding Sources:

- **Private funds**
- **Public/private partnerships**
- **FTA pilot program for transit oriented development planning**

Resources:

RTD: FasTracks



FasTracks Strategic Plan for TOD (2010) describes the role of RTD in implementing TOD within the Denver region. The Plan includes RTD's TOD policies, vision, goals and strategies to achieve them.

http://www.rtd-fastracks.com/media/uploads/main/TODStrategicPlan-final_090210.pdf

City of Denver

The City of Denver also produced its own plan on TOD, the Transit Oriented Development Strategic Plan (2014). This plan includes the development of various TOD typologies and overlays to produce a framework of applicable recommendations and strategies.

https://www.denvergov.org/content/dam/denvergov/Portals/193/documents/TOD_Plan/TOD_Strategic_Plan_FINAL.pdf

TRANSPORTATION SERVICE

- On-Demand Microtransit
- Shuttle Service
- Support Implementation of Micromobility Service
- Special Event Transit Service
- Autonomous Transit
- Point-to-point Car Share
- Round-trip Car Share

On-Demand Microtransit

TRANSPORTATION SERVICE

Microtransit is a shared-ride service where vehicles deviate to pick up passengers or passengers walk to a specific pick-up location. Generally microtransit is provided in locations or for travel patterns that are too low to meet service standards for traditional fixed-route transit but with enough people making the same trip around the same time.

Transit service providers have provided microtransit for a long time in the form of Dial-a-Ride services. Recently, private providers have entered the microtransit market, and cities are conducting pilot programs to evaluate their effectiveness at providing an additional viable transportation option. There are many variations of microtransit, from Uber/Lyft type services that use personal minivans to collect people, to dedicated, privately owned and operated shuttles.

There have been a number of privately funded microtransit services that have found it difficult to make microtransit work financially. Two of the most recent private microtransit failures include Chariot and Bridj. Both companies trialled microtransit in cities throughout the US but ultimately could not find a sustainable financial model.

The business model for microtransit is still evolving, and partnerships between transit agencies and private microtranist providers are becoming more prevelant.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key

- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Microtransit will more be applicable to Suburban-mixed locations that may include dense residential and employment, and suburban-residential typologies where feeder bus service may not be adequate. This strategy is less likely to apply to urban core/urban locations where feeder transit is generally more robust than other typologies.

Applicability to Overlays

On-demand microtransit service could be effective in locations where there is a high historically vulnerable population. This population are less likely to own private vehicles, and providing microtransit services may improve their access to transit.

Where parking is highly utilized, introducing a microtransit service may encourage more people to use the station via modes that are more efficient than driving alone.

Locations with high populations of people with limited mobility may benefit from a microtransit service to connect from the transit station or stop to a medical facility. Public and private providers should ensure microtransit vehicles can accomodate riders using mobility aids such as wheelchairs, crutches, or walkers.

Implementing Agencies:

- **Large employers**
- **Local governments**
- **RTD**
- **Property owners**

Funding Sources:

- **Large employers**
- **Property owners**
- **RTD**
- **User fees/fares**
- **FTA Access and Mobility Patnership Grants**

Case Study:

RTD FlexRide

RTD recently changed the branding of their Call-n-Ride service to FlexRide and also introduced a number of additional features to make FlexRide more accessible to more people.

The most important new feasture is the introduction of an RTD booking app. The new app includes trip booking and quick access to booking from your mobile device reducing the advance reservation time from 60 minutes to approximately 10 minutes.

Trips on FlexRide can also be regularly scheduled, using a subscription service. Once subscribed, RTD FlexRide will pick up and drop off according to the schedule until cancelled.

http://www.rtd-denver.com/FlexRide.shtml

Shuttle Service

TRANSPORTATION SERVICE

A shuttle service can provide a connection for employees and residents to rail and high frequency bus stops in locations where regular transit service is not feasible. Shuttle services differ from on-demand microtransit in that they travel a fixed route and provide scheduled service. They are better when service demand is higher or a sufficient fleet cannot be offered to support on-demand service. It is most often appropriate when a specific employer or group of businesses in a geographically limited area are looking for last-mile solutions to boost transit commutes.

Source: www.lonetreelink.com/

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Shuttle services are most applicable to station and stop locations with a large institution nearby (such as a hospital, university or shopping mall). Suburban-mixed is most likely to have a large institution in close proximity, but too far to walk (e.g. 1-3 miles away). Urban core and urban locations are more likely to have services and other travel modes to access nearby locations, and suburban-residential locations are less likely to have a nearby large instiution.

Applicability to Overlays

Areas that have high historically vulnerable populations and concentrations of employment (such as warehouse work), a shuttle service from a station or stop to those employment sites may encourage increased transit use.

Locations with high parking utilization may require additional shuttle services if there are no longer places to park.

Locations that may have sustained high visitor numbers may benefit from increased shuttle services.

A shuttle service from the transit station or stop location to a medical or retirement facility could encourage increased transit use.

Implementing Agencies:

- **Local governments**
- **Large employers**

Funding Sources:

- **CMAQ grants**
- **Large employers**
- **Property owners**
- **User fees/fares**
- **Local government funding**
- **FTS Access and Mobility Partnership Grants**

Case Study:

Lone Tree Link, Lone Tree, Colorado

Link On Demand is a free shuttle service that operates within the Lone Tree city limits.

After a successful pilot throughout 2018, the Lone Tree Link has been relaunched for 2019 with new app features making it easier to book a ride .

The vehicles used for the Lone Tree Link are branded and wheelchair accessible. The shuttle can be used to access RTD transit stations within the service boundary.

Service hours for the service are

Monday-Thursday: 7am -7pm

Friday: 7am - 10pm and

Saturday: 10am - 10pm.

The service is not operational on Sundays.

The Link Circulator is another free shuttle service in Lone Tree that runs from the Lincoln Light Rail Station to the Sky Ridge Medical Center to link major employment hubs and entertainment centers to the light rail station.

http://www.lonetreelink.com/

Support Implementation of Micromobility Services

TRANSPORTATION SERVICE

Micromobility services provide dockless shared mobility devices, such as bicycle, e-bikes, and e-scooters, to subscribers. Many of these services emerged during 2018.

As these services are relatively new, many local agencies do not have the policies and ordinances in place to effectively manage shared micromobility operations. At a minimum, programs should outline requirements for right-of-way usage, parking, data-sharing, and insurance and liability.

When supporting implementation of shared micromobility services consider the following:

- Pilot programs allow cities and regions to allow micrmobility services on a trial basis and evaluate performance after a set period of time. Standards and performance measures should be designed to support city goals.
- Permits can require that micromobility services are available at transit stations to enhance first and last mile access in coordination with the transit agency.
- Policies and ordinances can also address equity considerations by subsidizing use for certain demographics or including requirements for the distribution of devices in lower-income communities.
- Some devices are self-locking, while others need to be secured to a fixed object, such as a bike rack. Bike racks for these types of devices should be made readily available in the service area.
- Micromobility services can be specifically subsidized for access to and from transit using geofencing.
- Daily redistribution of micromobility devices can be a tool to dictate type of trip. For example, they can be redistributed to bus stop locations and residential areas to encourage access to transit.

Applicability to Typology

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

Micromobility services are most applicable to contexts where first and last mile connectivity to transit needs improvement. Due to this, supporting the implementation of micromobility is most applicable to suburban-mixed typology environments. Micromobility services are also more applicable to urban core and urban typologies than suburban residential and rural contexts due to a higher density of prospective riders and destinations.

Applicability to Overlays

Historically vulnerable populations rely relatively more on diverse modes rather than driving as car ownership is lower. Encouraging increased micromobility options may improve their access to transit.

Shift workers may not follow typical peak period commuting, providing an option for them to access a station at any time, such as using shared micromobility services, could improve their access to station locations.

Implementing Agencies:

- **Local governments**
- **Service providers**

Funding Sources:

- **Local funds**
- **Fees charged to service providers**
- **User fees**

Case Studies:

Denver, CO
The City and County of Denver established a Dockless Mobility Pilot Program that allows applicants to apply for one-year, revocable permits for the operation of dockless micromobility devices, including bicycles, e-bicycles, and e-scooters. The program includes guidelines and requirements for device usage, parking, user privacy, data-sharing, and insurance and liability. Permitted operators are required to make devices available at transit stations.

Monrovia, CA
The City of Monrovia partnered with Lyft and LimeBike to provide subsidized ride-hailing and bike share through the GoMonrovia program, which replaced the suburban community's high cost and underutilized Dial-a-Ride shuttle service. Through the program, people can access dockless LimeBikes and Lyft rides at discounted rates within the GoMonrovia service area.

Los Angeles, CA
The Los Angeles County Metropolitan Transportation Authority (LA Metro) launched its own bike share system called Metro Bike. Payment is fully integrated with LA Metro, meaning that users who enroll with Metro Bike can use their reusable TAP card to pay for bike share rides as well as transit trips.

St Louis, MO
The City of St Louis's bike share program addresses equity by requiring that 20 percent of bike share bikes be available in certain neighborhoods that meet metrics for vehicle access, English proficiency, and income.

Special Event Transit Service

TRANSPORTATION SERVICE

This strategy includes offering additional, frequent transit service on relevant routes for special events. Usually this involves connecting a major transit station to an event space to facilitate transportation of large numbers of visitors.

Providing free shuttle service to major events nearby transit stations encourages event attendees to use transit to access the event, providing an efficient first and last mile connection for the duration of the event.

In addition, event organizers can subsidize RTD to increase service frequency during an event to assure that adaquate transit capacity is available to assure all attendees who wish to use transit can do so.

Applicability to Typology

Urban Core

Urban

Suburban-Mixed

Suburban-Residential

Rural

Key

- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Most applicable in suburban-mixed locations that are more likely to include large event spaces, as well as good access to transit. Less applicable to suburban-residential locations where event spaces are less likely. This strategy may be applicable to urban typologies, depending on the proximity of transit to the event space.

Applicability to Overlays

In locations with a large event space or higher visitor numbers, special transit services could be introduced to ensure visitors can access their event using transit.

Implementing Agencies:

- **Event organizers**

Funding Sources:

- **Event management**

Case Study:

BroncosRide

RTD's BroncosRide service enhances transit connectivity to and from Mile High Stadium for Denver Bronco's home games. Riders can hop on special event shuttles up to 1.5-2.5 hours before regular season games at over 20 local and regional stop locations. BroncosRide service back to these special event stop locations is available immediately after the game, with the last bus departing 45 minutes after its conclusion. Additionally, the C, E, and W rail lines stop at Miles High Station on game days.

RTD's RockiesRide service offers similar service enhancements for Colorado Rockies' home games.

http://www.rtd-denver.com/BroncosRide.shtml

Autonomous Transit

TRANSPORTATION SERVICE

Autonomous transit encompasses passenger vehicles that can operate without a human driver. Although the technology is still in its infancy, applications of autonomous transit will likely become more prevalent in the future.

Applications of current autonomous transit are limited to locations with more controlled environments, such as parking lots, university campuses and locations with little additional traffic.

The slow operating speed of current technology may limit application, as many shorter trips may not be competative from a time standpoint with walking, bicycling, or using mobility devices.

As autonomous transit technology improves, the potential applications of autonomous transit will increase for first and last mile connections.

Some models, such as those operated by EasyMile, have roll-aboard ability for riders in wheelchairs.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Autonomous transit currently travel at very slow speeds and in relatively controlled environments. This service would be most applicable to the Suburban-mixed and Suburban-residential typologies where more controlled environments maybe more prevalent.

Applicability to Overlays

Locations with high number of historically vulnerable populations rely relatively more on diverse modes rather than driving as car ownership is lower. Encouraging increased travel options may improve their access to transit.

At locations with high parking utilization, an autonomous transit service could provide access from parking locations further away from the station to provide access.

Autonomous transit may provide an efficient travel option to accessing an event or location with high visitor numbers.

Implementing Agencies:

- **Private firms**
- **RTD**
- **Property owners**
- **Large employers**

Funding Sources:

- **Private funding**
- **USDOT Automated Driving System Demonstration Grants**

Case Study:

RTD: 61AV

RTD launched their first on-road transit route that uses autonomous vehicles in January 2019. The pilot project, called 61AV, uses an autonomous transit vehicle on a circuitous route from the 61st and Peña University of Colorado A Line transit station to the Panasonic and EasyMile offices nearby (a one-mile round trip). The transit service makes a total of four stops and runs every 15 minutes. There is no driver aboard the vehicle, but an "ambassador" is present at all times to answer questions and ensure passenger safety.

The vehicles hold up to 12 people and run at speeds between 12 and 15 miles per hour. The pilot will run for six months to test the feasibility of using driverless vehicles for transit.

http://www.rtd-denver.com/61AV.shtml#faq

Point-to-point Car Share Service

TRANSPORTATION SERVICE

Support point-to-point car share, such as car2go, through the provision of free and highly visible parking spaces, marketing, and subsidies.

Providing point-to-point car share spaces at transit stations and bus stop locations both promote access to the station and provide a mobility option for first and last mile connectivity. Although point-to-point car share systems predominantly work best in high density situations and are limited to a car share provider's service boundary, providers can often create "islands" where cars can be parked outside the main service area.

Providing point-to-point car share parking at transit stations and stops will also open up increased transportation opportunities for people. For example, if someone currently drives to work because they need access to a car during the work day, and if a car sharing vehicle was likely to be available at the end of their trip, they may take transit to work and use the carsharing vehicle for daytime trips instead.

Stations or stops that include point-to-point car sharing should be in a highly visible location, including signs and/or parking space markings, and close to the transit loading area.

RTD charges car share operators a fee in return for a designated space.

Applicability to Typology

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

Key: Most Applicable; More Applicable; Applicable; Not Applicable

Mostly applicable to Urban Core typologies, could also be applicable to the Urban or Suburban-mixed typology, where shorter trips and density support a network of point to point carsharing. Less applicable to less dense Suburban-residential typologies, and not applicable to Rural typologies.

Applicability to Overlays

Shift workers may not follow typical peak period commuting, providing an option for them to access a station at any time, such as using point to point car share, could improve their access to station locations.

Implementing Agencies:

- **Car share operators**
- **RTD**

Funding Sources:

- **Sponsorship agreements**
- **User fees**
- **Car share operators**

Case Study:

Car2Go

Although outside of car2go's main service area, there are two car2go parking spots at Yale Park-n-Ride Station to facilitate picking up and dropping off a shared car.

This provides an option for people travelling to Yale Station to pick up a point-to-point car share vehicle and making a first or last mile trip to their final destination, combining both transit and car share.

https://nacto.org/tsdg/curb-appeal-whitepaper/

Round-trip Car Share

TRANSPORTATION SERVICE

Round-trip car share is a transportation service whereby someone can book a car parked at a designated spot for an hour up to a few days. The car then has to be returned to the same location it was picked up from.

Round-trip car shares are generally used for longer periods of time and used for longer distances than point-to-point car share.

Round-trip car shares can be split into two categories:

- Traditional round-trip car share: Includes providers in the RTD service area such as ZipCar, eGo and Maven. Car share providers own and provide support for the vehicles, and trips generally include the cost of gasoline and insurance.
- Peer-to-peer round-trip car share: Includes providers in the RTD service area such as Turo and Getaround. Peer-to-peer car sharing allows people to rent out their personal vehicle to others. All vehicles are privately owned, and generally does not include the cost of gasoline, but does include insurance.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key

- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Most applicable the urban typology, where density and a greater proportion of carless households support the need for occasional, short term vehicle access for many trips. Less applicable to the urban core where point-to point car share is more prevalent, and suburban-mixed locations due to lower density. Less applicable to suburban-residential typologies, where most households already own one or more vehicles, although peer-to-peer car share may work here. Not applicable to rural typologies.

Applicability to Overlays

Locations with high number of historically vulnerable populations rely relatively more on diverse modes rather than driving as car ownership is lower. Encouraging increased travel options may improve their access to transit.

While round-trip car sharing is not ideal for commuting and station access applications, it can help support and enable transit commutes by letting workers feel confident that a vehicle would be available for occasional appointments or mid-shift errands that require a car.

Implementing Agencies:

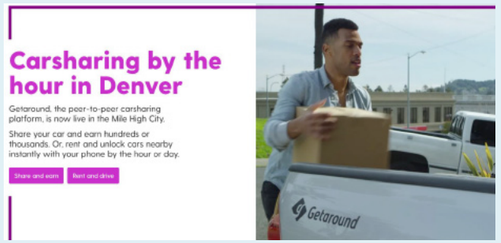
- **RTD**
- **Carshare operators**

Funding Sources:

- **Car share operators**
- **User fees**
- **Sponsorship agreements**

Case Study:

Getaround



Getaround is a peer-to-peer car share provider that launched its services in Denver in December 2018. It allows registered users to list their personal car and then allows other members to rent it for an hour up to a number of days.

A key difference from other peer-to-peer providers is that Getaround installs a device to enable the car to be opened and unopened via their app, reducing the need to pick up keys and providing more flexibility to both the owner and user.

Encouraging placement of Getaround cars around transit stations and stops will help to provide increased first and last mile options.

https://www.getaround.com/denver-car-rental

TRANSPORTATION DEMAND MANAGEMENT

- Creation of EcoPass District
- Bicycle Education and Encouragement Programs
- Promotion of RTD Discount Passes
- Website or App
- Guaranteed Ride Home (GRH)
- Variable Message Signs
- Dynamic Carpooling to Transit
- Transit Access Marketing Plan
- Commuter Expert or Commuter Buddy
- Parking Cash-Out
- TNC/Taxi Discounts
- Bike or Car share Subsidies
- Marketing Commuter Tax Benefits
- Transporation Coordinator Network (TCN)
- New Resident / Employee / Student Transportation Kits
- Promotional events/fairs/ challenges

Creation of EcoPass District

TRANSPORTATION DEMAND MANAGEMENT

One of the most effective ways to increase transit ridership is by reducing the cost. This can be achieved through the distribution of annual EcoPasses, which cover the cost of unlimited rides on all RTD bus and rail services. Besides reducing cost, EcoPasses make riding transit more convenient. With an EcoPass transit riders do not need to purchase passes or find exact change to pay fares.

EcoPasses can be purchased by employers for their employees, through a district-wide contract for all employees within the district's boundaries and by neighborhood groups for all residents within the neighborhood's boundaries. The cost of the passes is based on an insurance model that allows infrequent users to subsidize frequent users.

Within a district, EcoPasses can be purchased by a BID, parking authority, employer, master developer or property manager.

Pearl Street Mall, Boulder
Source: BoulderColoradoUSA.com

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

Creation of EcoPass districts applies most to stations or transit service areas with high densities of employment around them. This will most apply to suburban-mixed locations with good transit access and a higher likelihood of large employment centers, and least to suburban-residential and rural locations with less employment. The development of EcoPass districts may also apply to urban or urban core locations.

Implementing Agencies:

- **BIDs**
- **Parking districts**
- **Employers**
- **Property owners**
- **Homeowners associations**

Funding Sources:

- **BID funds**
- **Parking fees**
- **Employers**
- **Property owners**
- **Homeowners associations**

Case Study:

City of Boulder

DOWNTOWN EMPLOYEE ECOPASS

The City of Boulder's downtown EcoPass program provides a way for businesses that fall within the Central Area General Improvement District, the Downtown Boulder Business Improvement District or the University Hill General Improvement District an opportunity to offer their permanent, full time employees an EcoPass.

The EcoPasses are offered to businesses and employees free of charge, providing they are located within one of the three improvement districts.

The cost of the EcoPass program is covered through parking revenues.

https://bouldercolorado.gov/commercial-districts/downtown-ecopass

Bicycle Education and Encouragement Programs

TRANSPORTATION DEMAND MANAGEMENT

Bicycle education and encouragement programs/courses may improve first and last mile access by educating and empowering people to travel to and from transit by bicycle. Some people may not bicycle for transportation because they may not know how to ride a bicycle or may feel uncomfortable riding one, they may not know how to maintain a bicycle, or they may not know how to reach destinations by bicycle. Workshops and programs may lead more people to bicycle by increasing their skills, confidence, and knowledge.

Bicycle workshops and courses advertised and held at transit stations can highlight the opportunities and benefits of biking to and from transit.

Bicycle encouragement programs can be specifically designed to encourage bicycling within the first and last mile areas. Bicycle special events held at or near transit stations can be fun ways to increase awareness about bicycling to and from transit and get local businesses and organizations involved.

Hosting giveaways or raffles of bicycles, equipment, or accessories at or near transit stations can encourage people to bicycle. Providing safety equipment has the added benefit of promoting safe bicycling.

Bicycle benefits offered by employers to employees or by businesses to customers are effective ways to encourage people to bicycle more. Employers can provide annual allowances for bicycle-related purchases or maintenance; businesses can offer discounts to registered bicyclists.

Employers can also provide complimentary shared amenities that make mid-day trips easier to complete by biking (or walking), such as bike lights, bike seat rain covers, bags, ponchos, bike pumps, and high visibility safety vests.

Applicability to Typology

Urban Core	●
Urban	●
Suburban-Mixed	●
Suburban-Residential	●
Rural	●

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

Applicable to all typologies.

Implementing Agencies:

- **Employers**
- **Property owners**
- **Bicycle Colorado**
- **Local TMAs**
- **DRCOG**

Funding Sources:

- **CMAQ funding**
- **Employers**
- **Property owners**
- **Local governments**

Example Programs:

Bicycle Ambassadors
Bicycle Ambassadors are volunteers who work within their communities to encourage bicycling and improve bicycle safety. They often lead presentations on bicycling and promote safe bicycling at community events. Fort Collins has a successful Bicycle Ambassadors program.

Bike to Work Day
Bike to Work Day is a nationally-organized event that encourages people to ride bicycles to work. Businesses and organizations participate by hosting breakfast and water stations, as well as “bike parties”. Hosting stations or parties at transit stations can introduce people to the concept of using transit in conjunction with bicycling.

Confident Commuter
This type of workshop or course focuses on increasing bicyclists’ confidence by teaching the safety, traffic, maintenance, and navigation skills necessary to commute by bike. Programs can also include guidance for taking bicycles on transit, storing bicycles at transit stations, and using bike share with transit. Bicycle Colorado offers this course in a three-part series.

Mechanics 101
A basic bicycle maintenance workshop or course, which teaches people how to patch or change a flat tire, how to oil a bike chain, and other simple tasks, can boost bicyclist confidence and encourage people to ride more.

Road User Respect Campaign
Promoting respectful behavior between bicyclists, pedestrians, motorists, and other roadway users can make roads safer.

Free Event Transit Passes

TRANSPORTATION DEMAND MANAGEMENT

Include transit passes in the cost of tickets for large events and promote the service. This strategy will help manage the large demand for parking and high traffic congestion associated with large events.

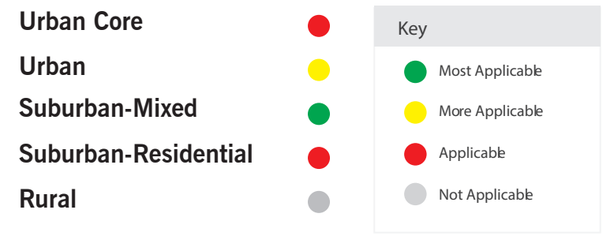
Producing event transit passes for major events can concurrently help promote transit use, and in some partnerships provide free advertising during the event for RTD/transit use.

Along with the immediate effect of using transit to access an event, this strategy also may encourage event attendees to use transit on a more regular basis.

Partnerships between event organizers and transit providers are critical to the success of this strategy.

Depending on the likely demand, it may be necessary to coordinate with RTD to provide additional transit service during an event.

Applicability to Typology



Most applicable in suburban-mixed locations that are more likely to include large event spaces, as well as good access to transit. Less applicable to suburban-residential locations where event spaces are less likely. This strategy may be applicable to urban typologies, depending on the proximity of transit to the event space.

Applicability to Overlays

High visitor population: In locations with a large visitor attractor (such as a stadium or music venue), providing a discounted transit pass along with an event ticket would encourage event attendees to use transit to get to events.

Implementing Agencies:

- **RTD**
- **Event management**

Funding Sources:

- **Sponsorship arrangements**
- **Parking fees**
- **Ticket revenue**

Case Study:

Metro Transit (serving Minneapolis/St. Paul area) occasionally partners with organizations and events to provide free trial rides in exchange for advertising and promotional opportunities. As an example, Metro Transit partnered with the Minnesota Timberwolves to offer fans with game-day tickets free rides on buses and trains before and after games. In exchange, Metro Transit receives an advertising package that promotes transit to fans before they get to the arena and during games.

https://www.metrotransit.org/timberwolves

Promotion of RTD Discount Passes

TRANSPORTATION DEMAND MANAGEMENT

Promotion of the various transit pass programs developed by RTD, targeted to specific populations around the station or transit service location.

RTD offers four discount pass programs:

- Low Income Pass (a 40% discount to qualifying riders whose incomes are at or below 185 percent of the federal poverty guidelines to be available in the Summer of 2019).
- Youth Special Discount Card (70 percent fare discount for youth ages 6-19 on all regular bus and train service).
- Senior Special Discount Card (50 percent fare discount for people ages 65+ on all regular bus and train service).
- Individuals with Disabilities Special Discount Card (50 percent fare discount for individuals with disabilities on all regular bus and train service).

These discounted pass programs encourage increased access and use of transit. Targeting the correct discount type to the corresponding population will enhance uptake.

Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	More Applicable
Suburban-Residential	More Applicable
Rural	Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

This mostly depends on the surrounding population and demographics of a transit location. Urban core and urban locations may be most applicable due to the proximity to transit services and employement opportunities. Rural locations have a more dispersed population and therefore would not be applicable.

Applicability to Overlays

Generally, people who classify in an area of historically vulnerable populations have relatively lower incomes. Marketing the low-income pass pricing here may encourage more people to use transit.

Implementing Agencies:

- **RTD**
- **TMAs**
- **DRCOG**

Funding Sources:

- **RTD**
- **CMAQ**

Case Study:

Metro Transit

Metro Transit (servicing the Minneapolis/St. Paul Area) offers reduced fare to low income riders through the Transit Assistance Program (TAP). Metro accepts a wide range of public assistance documentation to qualify riders for the program, including: State of Minnesota EBT cards, Hennepin and Ramsey County community cards, free/reduced lunch approval letters, energy assistance approval notices, Minnesota health care programs cards, and public housing certificates. All family members listed on the approved document will qualify for $1.00 fares for 365 days from the date of issuance. Riders who still meet TAP program requirements after a year can re-enroll with proper ID and updated certification documents.

https://www.metrotransit.org/tap-riders

Website or App

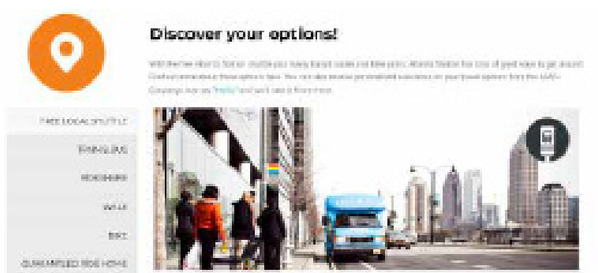
TRANSPORTATION DEMAND MANAGEMENT

Create or promote a website or app that aggregates all relevant information about local transportation options, programs, and incentives available to employees or residents surrounding transit stops and stations.

Ideally the website or app would provide a streamlined process for applying for any RTD discounted fare programs.

The website can serve as a one-stop-shop for specific transit station or bus stop locations with areas of dense employment and other destinations. Developing a website or app would be most applicable to station areas undergoing change, as the website or app can provide up-to-date information about transportation services and infrastructure. Websites and apps are also applicable to areas with numerous transportation options such as transit, car share, and micromobility.

Any website developed should be designed and developed with smart phone use in mind.



Applicability to Typology

Urban Core
Urban
Suburban-Mixed
Suburban-Residential
Rural

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Highly applicable to suburban-mixed locations that have numerous and diverse destinations, as well as different modes for accessing the station or stop location.

Applicability to Overlays

Locations with a high propensity to change have a higher chance of new transportation options and new developments occurring nearby the transit service. Developing an app or website at these locations is likely to encourage behavior change by keeping new employees, employers and residents up-to-date with the latest transportation options.

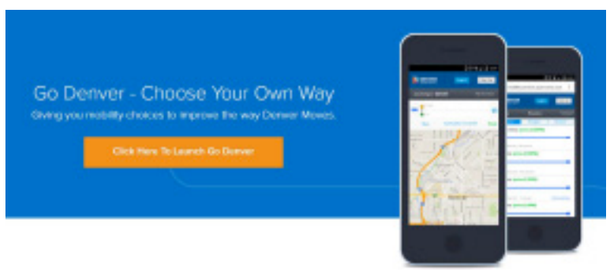
Locations that have large events may already have a website or app that can be used to promote transit and transit access.

Implementing Agencies:

- **Local TMAs**
- **RTD**
- **Local governments**
- **Property owners**
- **Private app developers**

Funding Sources:

- **Local government agencies**
- **Property owners**
- **Private app developers**



Case Study:

Go Denver
Go Denver is an app that lets users plan trips in the Denver Metro area from start to finish. The app will show the available transportation modes, travel times, arrival times, trip costs, calories burned and carbon emissions.

Go Denver does not provide transportation services, but it is a good resource to find the best transportation option for your individual trip.

https://www.denvergov.org/pocket-gov/#/mobility

Atlantic Station
Atlantic Station is a high-density, mixed-use development with numerous employment, shopping, entertainment, and housing options in Atlanta, Georgia.

A dedicated website provides information for all modes accessing the area, in particular from a nearby MARTA station. The website provides a one-stop-shop for people accessing the area, showing the key transit routes, rideshare options, tax benefits and other commuter programs. The website includes a direct link to a transportation coordinator, via an online chat option, to help with any questions about accessing the area.

The website also provides a resource for employers, showing the benefits of promoting employee commute strategies.

https://asap-plus.com/gettingaround/

Guaranteed Ride Home (GRH)

TRANSPORTATION DEMAND MANAGEMENT

Promote the regional Guaranteed Ride Home (GRH) program that provides commuters who do not drive alone to work with a free ride home in case of an approved emergency. A GRH program supports commuters who do not drive alone with a subsidized or free ride home if an unexpected emergency arises.

This "commuter insurance" for those who carpool, take transit, bicycle, walk or vanpool to work is a low-cost program that removes a barrier to employees' use of alternative modes of transportation. In case of an emergency, such as illness, the need to pick up a sick child from school, or unscheduled mandatory overtime, the program covers the full or partial cost of participants taking a taxi, Lyft/Uber, or a rental car to get home.

Applicability to Typology

The guaranteed ride home strategy is most applicable to both Urban and Suburban-mixed typologies. These locations tend to have more surrounding employment, and so employees may be more likely to use transit with the knowledge that a guaranteed ride home is available for dealing with unexpected events. This strategy relates to the promotion of EcoPass district strategy, as well as areas where a large percentage of residents use transit.

Applicability to Overlays

In places with high parking utilization, riders may not be able to use their car to access a station. Providing a guaranteed ride home program will allow them to access the station without parking, safe in mind that they can still get home if they have an emergency.

Places with higher concentrations of high shift workers are more likely to find themselves leaving home outside of the peak times. Providing a guaranteed ride home program will allow them to get home regardless of the time.

Implementing Agencies:

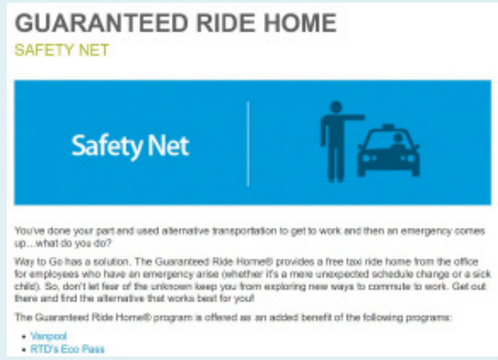
- **DRCOG**

Funding Sources:

- **Employers**

Case Study:

Way to Go's Guaranteed Ride Home program



Denver's regional GRH program is managed by DRCOG's Way to Go program and is available to commuters who use its vanpool services or have an EcoPass.

The GRH program can also be purchased as a standalone program for employers interested in promoting the use of tranist, vanpool, carpool, or other sustainable transportation options. One major employer utilizing the service, Denver International Airport (DIA), specifies that the service covers personal illness, family illness, child related emergencies, and instances where an employee misses their carpool or vanpool ride due to unexpected overtime. DIA specifies that the service does not cover disruptions in public transit service, work-related injuries, prescheduled appointments, odd shift hours, or circumstances in which an employee drove a motor vehicle alone to work.

https://waytogo.org/getting-around/guaranteed-ride-home

Variable Message Signs

TRANSPORTATION DEMAND MANAGEMENT

Variable message signs are commonly used throughout Colorado to provide travel information to drivers on state highways, specifically to highlight delays or weather changes. These signs could be used to highlight the time savings and other benefits by using transit instead of driving along congested corridors. Examples include transit versus drive time, park and ride parking availability, and potential cost savings.

Variable message signs showing transit options should be placed near Park-and-Ride exits on congested corridors. Simple information such as transit time to major destinations against driving time should be displayed during times of congestion.

The use of variable messaging signs showing transit information along highways emerged as a potential pilot project from the Mobility Choice Blueprint Initiative (2019).

Applicability to Typology

Urban Core	🔴
Urban	🟡
Suburban-Mixed	🟢
Suburban-Residential	🟡
Rural	🟢

Key
- 🟢 Most Applicable
- 🟡 More Applicable
- 🔴 Applicable
- ⚪ Not Applicable

This applies anywhere a station or stop serves a major destination with parallel congested roadways. It is more likely in locations with Suburban-mixed or rural typologies that are nearby a major congested highway. Urban and suburban-residential typologies are less likely to be situated along a major congested highway.

Applicability to Overlays

In locations that may change in the near future, it is important to make sure that messaging for new transit services is widespread. Providing variable messaging information for new transit services running parallel to a major congested highway will encourage use.

Highly utilized Park-n-Rides may use variable message signs to indicate parking availability.

Implementing Agencies:

- **CDOT**
- **RTD**
- **Local TMAs**

Funding Sources:

- **CMAQ grants**
- **USDOT: Advanced transportation and congestion management technologies deployment grant program**

Case Study:

There is little information about use of variable message signs for transit purposes. The University of California, Berkeley did undertake a study describing how transit variable message signs were placed by Caltrans (page 8), but no assessment regarding their impact on behavior was conducted.

Other examples from California include wayfinding along a highway to advertise Park-n-Rides and indicate parking availability.

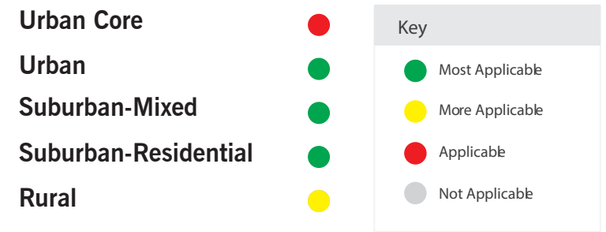
http://www.vejdirektoratet.dk/DA/viden_og_data/temaer/its/Documents/Evalueringer/Parker%20og%20rejs/UCB-ITS-CWP-2009-2.pdf

Dynamic Carpooling to Transit

TRANSPORTATION DEMAND MANAGEMENT

Facilitate or market dynamic carpool matching through services like Waze Carpool, Scoop and SPLT for rides to and from transit stations. Dynamic carpool matching and dispatch can significantly increase the number of people using carpooling, in part by getting around some of the reasons traditional carpools may be unappealing (such as having to ride with the same group of people and on the same schedule every day). Companies like Waze, Scoop and others can create neighborhood areas or pool employees from specific work-sites for improved access to the transit service location. Carpoolers should be guaranteed a parking space that is close to bus and rail loading areas at their preferred Park-n-Ride.

Applicability to Typology



This strategy can apply to all typologies, but is less likely to apply to the urban core where there are few Park-n-Ride stations. It could apply at rural stations where density is not high enough to support feeder transit service.

Applicability to Overlays

In locations with a higher proportion of shift workers providing dynamic carpooling meets the needs of commuting outside of the peak periods.

In locations with high parking utilization, dynamic carpooling can increase the occupancy rates of vehicles accessing the station.

Implementing Agencies:

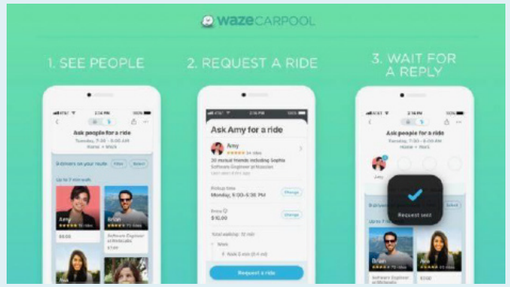
- **DRCOG**
- **Local TMAs**

Funding Sources:

- **CMAQ grants**
- **User payments**
- **Parking fees**

Case Study:

DRCOG: Way to Go and Commuting Solutions TMA



DRCOG's Way to Go program utilized the Waze app to encourage dynamic carpooling. The app was announced for use during Way to Go's "Go-Tober" campaign in 2018.

In February 2019, Commuting Solutions TMA, in partnership with DRCOG and RTD, introduced a new program for "casual carpooling" along US 36 between Denver and Boulder.

The program allows carpoolers using the Waze carpool app to drive on the US 36 express lanes free of charge.

The carpool pick-up locations are all RTD stations, providing a link between carpooling and transit.

https://commutingsolutions.org/ride-sharing/casual-carpool/

Transit Access Marketing Plan

TRANSPORTATION DEMAND MANAGEMENT

If no TMA is active within the station location, developing a transit marketing and encouragement campaign and materials through Way to Go program can help to increase ridership and spread information about a specific transit station or bus stop location.

Marketing plans should identify surrounding populations that are most likely to use transit. They should also include linking transit stations/bus stop locations to nearby key destination and origins.

Locations with high populations of non-native English speakers should have materials tailored to their native language. Similarly, populations with high accessibility needs should be provided with information about how to access and use transit.

Marketing campaigns should have a start and end date and track any rises in ridership during the campaign's lifespan. This will help to increase the effectiveness of future marketing campaigns.

Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	Most Applicable
Suburban-Residential	Most Applicable
Rural	Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

This strategy can apply to all typologies, though it will apply less to the urban core where transit information is generally readily available.

Applicability to Overlays

Locations with high number of historically vulnerable populations may include a large immigrant population that may not speak English as a first language. Transit information available in their native language could increase their use of of transit.

People who are lesser less mobile or that have other disabilities may require more direction to help get to their destination than others. Information on how to access transit with disabilities may encourage them to use transit for more trips.

Implementing Agencies:

- **DRCOG**
- **Property owners**
- **DRMAC**
- **Local TMAs**

Funding Sources:

- **CMAC**
- **RTD**
- **Local governments**
- **DROCOG**
- **FTA Enhanced Mobility of Seniors & Individuals with Disabilities grant program**

Case Study:

Denver Regional Mobility & Access Council

"The Getting There Guide" from DRMAC (Denver Regional Mobility & Access Council) provides information in a variety of languages to getting around the Denver region. This includes providing information for different online apps and tools, and a full range of transportation options alternative to driving. Similar informational guides could be developed for specific station or bus stop locations within the district.

https://static1.squarespace.com/static/59bc49549f7456435f78deaa/t/5b9fe0ce40ec9a8adc3c4695/1537204434063/GTG2018English.pdf

Commuter Expert or Commuter Buddy

TRANSPORTATION DEMAND MANAGEMENT

Commuter expert or commuter buddy programs enlist expert commuters at an employer or residential location show people how to use transit and/or volunteer to ride with people the first time they use transit.

This recommendation is not confined to transit use but can also be used for walking and cycling to transit, and then using transit.

Providing incentives, such as free rides, to regular transit commuters to become a commuter buddy or commuter expert will lead to more sustainable growth of the program.

Commuter experts or buddies can provide one-on-one guidance to using different modes or can lead a group of people. Recording group trips can then be posted online as information for others.

As this recommendation can be very flexible, it can be tailored to different populations and demographics.

Applicability to Typology

Urban Core

Urban

Suburban-Mixed

Suburban-Residential

Rural

Key

- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Applicability to Overlays

Locations with high number of historically vulnerable populations may include a large immigrant population that may not speak English as a first language. Providing a buddy or commuter program in these areas in different languages may empower people to use transit.

People who are less mobile or that have other disabilities may require more direction to help get to their destination than others. Providing a buddy service may encourage them to use transit for more trips.

Implementing Agencies:

- **Local TMAs**
- **DRCOG**
- **RTD**

Funding Sources:

- **CMAC grants**
- **FTA Enhanced Mobility of Seniors & Individuals with Disabilities grant program**

Case Study:

Smart Commute Metro North

Smart Commute Metro North TMA runs a Transit Experience and Transit Trek. These are guided transit trips and walking tours of regional transit facilities, including Wagon Road. Along with the “Transit Trek” they also developed an informational video for using RTD services. For more information please contact Smart Commute Metro North.

https://www.youtube.com/watch?v=kaopjXLIGME&feature=youtu.be

Parking Cash-Out

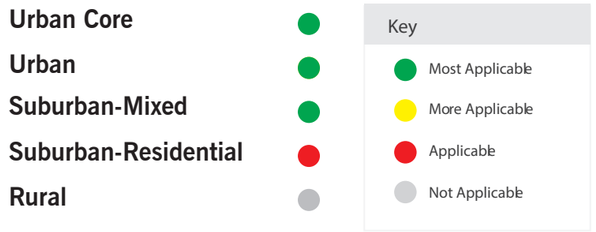
TRANSPORTATION DEMAND MANAGEMENT

With parking cash-out employees who choose to give up their employer-provided parking space are offered a payment that can be used to pay for transit or vanpool fares, to pay for bike purchases or maintenance, or kept as cash.

Parking cash-out rewards commuting via alternative modes and helps employers who provide free parking improve fairness by assuring that all employees receive a benefit regardless of how they get to work. By providing benefits for more than just parking, cash-out programs increase transit ridership.

Employers that provide cash-out can often realize cost savings when parking spaces are leased or where parking is overutilized.

Applicability to Typology



A parking cash-out program is best implemented when parking is leased, there is a shortage of parking, parking is access controlled and street parking surrounding the site is priced. Dense urban environments are likely to meet these criteria and are therefore best suited to a parking cash-out program. Since free parking is typically available in suburban environments, a parking cash-out program can lead to spill-over parking in surrounding neighborhoods and is often difficult to enforce. Suburban environments with access-controlled parking and limited street parking may be considered. Rural environments are generally not suited to parking cash-out.

Applicability to Overlays

Establishing a parking cash-out program in conjunction with a new building can prevent the need to build additional parking and inform successful program design. The money saved on avoiding additional parking infrastructure costs could be diverted to other programs such as transit pass subsidies.

Implementing Agencies:

- **Employers**

Funding Sources:

- **Employers**

Case Study:

SolidFire, Boulder, Colorado

SolidFire is a technology company located in downtown Boulder within the Central Area General Improvement District (CAGID). SolidFire experienced a shortage of parking and developed a parking cash out program to encourage employees to use alternative transportation modes to commute to and from the office. The company pays $150 per month to any employee who foregoes a monthly parking pass, which costs the company more than $200 a month on average, or reimbursement for occasional daily or hourly parking charges, which range from $17 to $25 per day. In addition, full-time employees are also eligible to receive an RTD EcoPass.

SolidFire currently has 86 employees participating in its program, 33 percent of its Boulder workforce. The company estimates that the net savings of this program amount to approximately $17,000 a month. Employees like the program and SolidFire believes it is beneficial for recruiting and retaining employees.

https://www.solidfire.com/

TNC/Taxi Discounts

TRANSPORTATION DEMAND MANAGEMENT

Many studies have found that transportation network companies (TNCs) are being used as a first and last mile solution. Consequently, transit agencies and municipalities throughout the country are establishing partnerships to subsidize the cost of using TNCs for first and last mile trips between origins, destinations and transit stops.

Subsidy scenarios and details vary by program. Though, typically, programs that offer first and last mile solutions to transit stations specify that the trip must begin or end at a qualifying transit stop or station and set service area boundaries for the opposite trip end. The subsidy structures most commonly used is a percentage of the total fare up to a maximum dollar amount.

Subsidies can be administered through promotional codes or automatically by setting up geofencing. Subsidies should be limited to those trips that transit cannot serve productively due to geographical, scheduling, or other constraints. The incentive should be made available when the TNC/taxi service supports, replaces or otherwise complements a current RTD service.

TNC/Taxi discounts can also be offered on a temporary and/or targeted basis to encourage transit ridership to mitigate temporary parking shortages or road access challenges due to construction, large events or seasonal demand, such as the holiday season for retail.

Applicability to Typology

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

A study in Massachusetts that evaluated the potential impact on transit ridership of TNC subsidies for trips between commuters' homes and nearby transit rail stations found that stations with the highest projected ridership were commuter rail stations in dense areas; where above average time savings was achieved by switching from driving to TNC and transit; and where transit station parking is oversubscribed. This study suggests that a TNC subsidy program may be most effective in suburban environments with commuter and light rail stations with high parking utilization. Additionally, suburban-mixed or suburban-residential typologies are complementary to this transit-access service because they may lack robust feeder transit service or active transportation infrastructure. Urban typologies, on the other hand typically have adequate access by transit and other modes.

Applicability to Overlays

As TNC and taxis do not follow a set route, providing discounts to the transit service in lieu of a fixed route service will provide flexibility as an area changes and develops.

Some effective first-last mile TNC subsidy programs have targeted stations that have oversubscribed parking effectively increasing the parking supply at the station by allowing more patrons to access the station without a car. These programs free up additional spaces by converting some existing drive alone trips to the station to TNC trips that do not require a parking space.

Locations that require increased accessibility may benefit from providing TNC/taxi discounts to provide a service between a transit station and a medical facility, such as a hospital.

Implementing Agencies:

- **DRCOG**
- **Local TMAs**
- **Property owners**
- **RTD**

Funding Sources:

- **Local funding**
- **Property owners**
- **Emloyers**

Case Study:

SEPTA-Uber Pilot Program, Philadelphia, Pennsylvania

SEPTA ran a 14-month Uber subsidy pilot for travel to and from 11 regional rail stations. The subsidy, in effect from May 2016 to September 2017, provided a 40 percent discount (up to $10) to encourage commutes from suburban rail stations. The stations selected for the pilot were among SEPTA's busiest, with high ridership and limited availability of parking spaces. Several stations had parking that was temporarily restricted due to construction. Uber reported an increased number of riders at all 11 stations, however the program was not renewed at the end of the pilot in October 2017 in part due to the need for better data to evaluate its performance.

Pilot projects across the country are underway to test the financial feasibility of providing ongoing subsidies, including subsidies by developers to help residents access transit.

http://www.septa.org/media/releases/2016/05-25-16a.html
https://www.iseptaphilly.com/blog/Uber

Bike or Car share Subsidies

TRANSPORTATION DEMAND MANAGEMENT

Car share, bike share and scooter share programs allow people to rent cars, bikes and scooters for short periods of time and at a low cost.

Subsidies can be an effective way to encourage employees or residents to use these services to travel between transit stops and work and to provide employees with ways to get around for mid-day trips on days they choose not to drive to work.

Subsidies could be provided at targeted transit stations and stops and their corresponding surrounding communities to encourage access and use of transit services.

These programs have been shown to decrease private automobile use and ownership while increasing mobility.

Car share, bike share and scooter share companies may offer discounts to specific groups to encourage use. These are often specific to large institutions, such as medical facilities and university campuses, but could be expanded to new developments nearby transit stations and stops.

In addition, property owners and employers can purchase and distribute discount codes or membership subsidies to employees and visitors who use car share, bike share and scooter share to access their properties.

Courtesy: eGo

Applicability to Typology

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

This strategy is most applicable to mixed-use locations where share services are already available. Vehicle share services tend to be in mixed-use environments due to the complementary demand (e.g.: days and time of day) for services. Residential land use is more likely to generate demand for services in the evenings and weekends and in commercial environments employees make trips during the workday.

This strategy is less applicable to suburban-residential locations however, a subsidy might still help some employees who live in the service area bridge the first mile access to transit. While less dense urban locations may benefit from this strategy, many already have adequate connections.

Applicability to Overlays

High historically vulnerable populations rely on transit and other non-auto modes relatively more than other groups in the district. Providing subsidies to bike, car or micromobility share memberships may open new ways for people to access transit.

Subsidizing car share, bike share and scooter share rides near oversubscribed stations can increase the number of people who can access the station without having to park.

Implementing Agencies:

- **Local TMAs**
- **Universities**
- **Property owners**

Funding Sources:

- **Local funding**
- **Employers**
- **Property owners**
- **Service operators**

Case Study:

University of Denver

Numerous car share providers at the University of Denver offer car share discounts to students and staff to join and use their services.

Car share providers that offer a discount for University of Denver affiliates include:

- Car2Go
- Zipcar (Discounted annual membership fee of $15 instead of $70)
- Maven

https://www.du.edu/parking/mobility/carshares.html

Marketing Commuter Tax Benefits

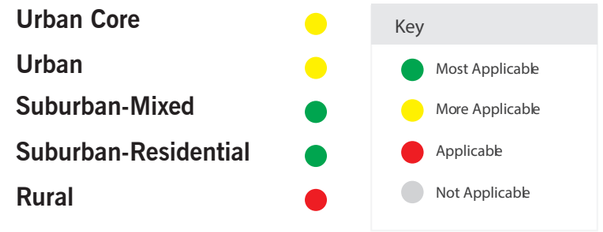
TRANSPORTATION DEMAND MANAGEMENT

The federal commuter tax benefits based on Section 132(f) of the federal tax code enables commuters to pay for "qualifying transportation expenses" which include transit passes, vanpool fares, and parking fees using pre-tax income. Employees can use pre-tax income to pay for transit, vanpool, and parking expenses through a payroll deduction up to a maximum amount designated by the IRS every year, much like a flexible savings plan.

When employees purchase a transit pass, vanpool seat, or a monthly parking spot they pay no income tax (up to the allowable amount) on the benefit and the employer saves money through reduced payroll taxes. This financial benefit can incentivize employees to choose to commute via public transit.

This strategy includes encouraging employers that are located near transit stations and stops to both inform and provide commuter tax benefits to their employees to encourage them to use transit as part of their commute.

Applicability to Typology



This strategy is highly applicable to typologies in the urban core and urban areas where many employees receive free parking but no transit benefits.

This strategy is also applicable to suburban-mixed, where there may be good transit connections and high density of employment. It is less applicable to suburban-residential locations that may have less employment and relatively fewer transit connections.

Applicability to Overlays

Shift employees may not be aware of the pre-tax benefits. Similarly, business owners that employ shift workers may also not be aware. Ensuring that businesses and employees are aware of commuter benefits may encourage increased access to the station.

High historically vulnerable populations rely on transit relatively more than other groups in the district. Ensuring that business owners and employees understand the pre-tax benefits that are available to them could increase their access to transit.

Implementing Agencies:

- **Local TMAs**
- **Employers**

Funding Sources:

- **Employers**

Resources:

The National Center for Transit Research

The National Center for Transit Research compiles and regularly updates a summary of the tax benefits available to commuters. The summary provides a simple table to explain the commuter benefits available that employers can offer their employees.

https://www.nctr.usf.edu/programs/clearinghouse/commutebenefits/

The Best Workplaces for Commuters

The Best Workplaces for Commuters (BWC) provides qualified employers with national recognition for offering commuter benefits based on the standards described by The National Center for Transit Research. Employers that achieve the standard are recognized on the BWC website. The website also provides employers with resources on how to promote their recognition and support their employees to commute more sustainably.

https://www.bestworkplaces.org/

Transportation Coordinator Network (TCN)

TRANSPORTATION DEMAND MANAGEMENT

TCNs can help to spread information about transportation options to specific groups of people in a sustainable and organic way. Most often, but not exclusively, TCNs are situated within employer groups to encourage more sustainable commute modes.

The goal of a TCN is to build a network of knowledgeable people to support information sharing on commuter benefits, hold transit encouragement events, and support commuter challenges.

Often, TCNs are built up from volunteers who are passionate about bringing change to a workplace. Usually a dedicated individual from a TMA or local agency helps to support the development of Transportation Coordinator Networks to create sustainable change.

TCNs can also be developed within residential communities, for example, a community with a neighborhood association may include someone dedicated to spreading information about new transit initiatives at neighborhood meetings and within neighborhood newsletters.

Transportation Coordinator Networks work well because of their flexibility and “grassroots” style of implementation. They can be especially useful in locations with new developments, where new employees and residents may be moving into an area near a transit station or stop.

Applicability to Typology

Urban Core	Most Applicable
Urban	Most Applicable
Suburban-Mixed	Most Applicable
Suburban-Residential	Applicable
Rural	Not Applicable

Key: Most Applicable; More Applicable; Applicable; Not Applicable

This strategy is most applicable to locations with numerous major destinations, areas where significant redevelopment is taking place or transit stations where ridership is dropping. These characteristics are most commonly found in urban and suburban-mixed typologies.

Applicability to Overlays

Locations with a high propensity to change have a higher chance of new transportation options and new developments occurring nearby the transit service. A transportation coordinator network at these locations are likely to encourage behavior change to keep on top of the changing characteristics around a station or stop.

Locations that have large events may already have a coordinator. Making sure the event coordinators are aware of all transit options and discounts will make it more likely that transit is promoted to access the event.

Implementing Agencies:

- **Local TMAs**

Funding Sources:

- **TMA funding**

Commuting Solutions

WORKPLACE COMMUTE AMBASSADORS

Connect. Inspire. Achieve.

Case Study:

Commuting Solutions TMA: Workplace Commute Ambassadors

Commuting Solutions runs a TCN program that aims to recruit and empower employees to meet the following objectives:

- Reduce the number of single-occupancy vehicle (SOV) trips
- Educate and inspire co-workers to use sustainable transportation options
- Set realistic goals in the workplace to measure effectiveness

Commuting Solutions provides the following support and resources to the Workplace Commute Ambassadors:

- Information and resources on commute options
- New employee packets
- Employee commute surveys
- RTD pass consultations
- A “commute resources corner” in the office
- Exclusive access to events, such as transportation fairs and lunch-n-learns
- Carpool and vanpool matching assistance
- Telework consultations
- Individual trip-planning assistance

Commuting Solutions holds monthly events for the Workplace Commuter Ambassadors inviting different agencies to present and share information about programs operating within their agency.

https://commutingsolutions.org/news-events/workplace-commute-ambassadors/

New Resident / Employee / Student Transportation Kits

TRANSPORTATION DEMAND MANAGEMENT

Welcome kits provide information to educate new residents, employees, and students about their transportation options. The kits should include transit schedules, bicycle maps, information on available subsidies and transportation programs, and, ideally, multiple free bus passes.

New employees should be provided with information on the travel options and programs available to help them get to work. Starting a new job is one of several behavior change moments when a person is more willing to try new travel options (others include moving to a new home, starting an educational program and having a child). Taking advantage of this moment can increase the rate at which employees take transit to work. Similarly, workplace relocations present an opportunity to take advantage of this behavior change moment for the entire workforce.

Onboarding transportation education is a cost-effective way to educate new employees and incentivize alternative commute options at a time when commuting is front of mind for employees. This in turn leads to reduced parking demand, higher employee satisfaction and retention.

Providing these kits and incentives at new developments around transit stations increases knowledge of how to access and use transit.

Applicability to Typology

Urban Core	
Urban	
Suburban-Mixed	
Suburban-Residential	
Rural	

Key
- Most Applicable
- More Applicable
- Applicable
- Not Applicable

Applies to all typologies, but most relevant to locations where riding transit, or how to ride transit, may not be obvious to travelers.

Applicability to Overlays

Historically vulnerable populations often include high migrant populations. These populations may not speak English, therefore providing packages of information in a range of languages is important.

Generally, shift workers require additional travel information as they may not have a set commuting pattern. Providing improved information regarding how to use transit outside of the peak periods may increase the numbers of shift workers accessing and using transit.

Locations with a high propensity to change may include new residential and commercial developments. New residential/employee transportation information packs are critical at these locations to ensure new residents and employees are aware of their travel options.

Implementing Agencies:

- **Local TMAs**
- **Employers**
- **Universities**
- **Property owners**

Funding Sources:

- **Local funding**
- **Employers**
- **Universities**
- **Property owners**

Case Study:

Transportation Solutions TMA

Transportation Solutions, a TMA that services the south of Denver, developed a welcome kit for residents at a new apartment building called “The Henry” near RTD’s I-25 and Broadway station. Door hangers were left on apartment doors for new residents with information about the Transit App, two free transit tickets, a bike map, and information about how to enter a sweepstakes to win a bike.

Promotional events/fairs/challenges

TRANSPORTATION DEMAND MANAGEMENT

The strategy encompasses all promotion events and incentives that encourage transit ridership. They can range from information tables at an employment site to regional month-long competitions or challenges that allow individuals and organizations to compete against each other. Targeted "Try It" days or weeks are another way to encourage transit use.

Challenges that utilize "gamification" often increase user participation. Gamification is the notion of providing points and badges to achieve individual and group goals. The theory behind gamification is to tap into people's self-esteem, giving them a feeling of achievement when they perform a particular action. Providing points and badges also increases the competitiveness of people, encouraging them to continue to perform the action to rank higher among their peers.

Applicability to Typology

This applies predominantly to the denser locations with high employment, such as in the Urban Core, Urban and Suburban-mixed. Less applicable to Suburban-residential and Rural typologies with less employment.

Applicability to Overlays

Locations with a high propensity to change have a higher chance of new transportation options and new developments occurring nearby the transit service. Developing events, fairs and challenges at these locations are likely to encourage behavior change.

Implementing Agencies:

- **Local TMAs**
- **DRCOG**
- **Employers**
- **Property owners**

Funding Sources:

- **CMAQ**
- **Employers**
- **Property owners**

Case Study:

GO-TOBER Challenge: DRCOG/Way To Go

GO-TOBER Challenge: DRCOG/waytogo

Go-tober is a month-long challenge run by waytogo (a program of DRCOG). The annual challenge pits employers against each other to encourage employees to try different ways of getting to and from work during the month of October.

The challenge ranks employers by how many of their employees participate in the challenge and try other modes of commuting. Winning organizations receive recognition as well as awards and prizes.

https://waytogo.org/gotober

RideAmigos provide the platform for the Go-tober challenge and provide a number of pointers towards how gamification can lead to behavior change.

https://rideamigos.com/platform/commuter-gamification-incentives/