First and Last Mile Strategic Plan

July 12th 2018
Agenda

- Study Status
  - Purpose and goals
  - Project update
  - Project timeline

- Recap:
  - The final approved 15 stations
  - Approved typologies

- FLM analysis process
- Public Engagement

- Focus on Arapahoe Station
  - Demographics and community data (UrbanTrans)
  - Shared Mobility Analysis (SUMC)
  - Active Transportation Analysis (Alta)
  - Curbside Management Analysis (HDR)

- Next steps
Study Goals and Purpose

Reminder of Goals:
The First and Last Mile Strategic Plan will have multiple goals, as defined below:

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

Purpose:
Define strategies and policies that improve multimodal transportation and connectivity to RTD services and facilities to make RTD more accessible to more people.
Update since last meeting

Since last meeting:
• Board approved 15 representative stations and typologies
• Began requesting data for all 15 stations from various jurisdictions
• Selected Arapahoe Station as a focus for first station analysis
• Under taken initial existing condition analysis
Project timeline

- Data collection and review of other FLM studies - Complete
- Development of typologies - Complete
- Representative station criteria - Complete
- Final selection of 15 representative stations - Complete
- Analysis (including outreach) and FLM recommendations at each station – On-going
- Development of FLM ‘toolbox’ – On-going
- Development of FLM ‘toolbox’ – Upcoming
- Assignment of all RTD stations to a FLM typology - Upcoming
- Implementation strategies and identification of two FLM pilot projects - Upcoming
- Final report – Upcoming
Recap: The final 15 stations

- Final approved 15 stations are as follows:
  - Arapahoe at Village Center Station
  - Clear Creek - Federal Station
  - Englewood Pkwy - (Englewood Station to Broadway)
  - Havana St and 17th Ave
  - Iliff Station
  - S Colorado Blvd & Florida
  - S Federal Blvd & Alameda Ave
  - Sheridan Station
  - US 36 & Broomfield Station
  - US 36 & Table Mesa PnR
  - Wagon Road PnR
  - Wheat Ridge - Ward Road Station
  - 40th & Colorado Station
  - 72nd Ave Station
  - 8th and Coffman PnR

<table>
<thead>
<tr>
<th>Number of locations meeting overlays</th>
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</thead>
<tbody>
<tr>
<td>Overlay</td>
</tr>
<tr>
<td>Vulnerable Populations</td>
</tr>
<tr>
<td>Accessibility Needs</td>
</tr>
<tr>
<td>High Shift</td>
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<tr>
<td>High Visitor</td>
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<tr>
<td>High Parking Utilization</td>
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<tr>
<td>High Propensity to Change</td>
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<tr>
<td>Stations with no overlays</td>
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<table>
<thead>
<tr>
<th>Number of typologies</th>
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<tbody>
<tr>
<td>Overlay</td>
</tr>
<tr>
<td>Urban</td>
</tr>
<tr>
<td>Suburban Mixed</td>
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<tr>
<td>Suburban Residential</td>
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</tbody>
</table>
Recap: Overlays

<table>
<thead>
<tr>
<th>Prioritization Overlay</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>Historically Vulnerable Populations</td>
<td><img src="image" alt="Symbol" /></td>
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<tr>
<td>High accessibility needs</td>
<td><img src="image" alt="Symbol" /></td>
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<table>
<thead>
<tr>
<th>Recommendation Overlay</th>
<th>Symbol</th>
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<tbody>
<tr>
<td>High Shift/visitor variability</td>
<td><img src="image" alt="Symbol" /></td>
</tr>
<tr>
<td>High visitor trips</td>
<td><img src="image" alt="Symbol" /></td>
</tr>
<tr>
<td>High propensity to change</td>
<td><img src="image" alt="Symbol" /></td>
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<tr>
<td>Parking utilization</td>
<td><img src="image" alt="Symbol" /></td>
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</tbody>
</table>
Recap: Overlay details

<table>
<thead>
<tr>
<th>Prioritization Overlay</th>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historically Vulnerable Populations</td>
<td>This overlay uses a combination of six socioeconomic indicators, including age, language, race, income, education, and access to a vehicle, to identify where historically vulnerable populations are concentrated. Research suggests that this combination of factors can be used to determine areas where more people may rely on walking, bicycling, and transit to complete most of their trips, relative to other areas within the District. The analysis does not assess the quality of transit services (or other transportation infrastructure) in these areas, but can be used a planning tool to guide how and where these assessments are conducted.</td>
<td></td>
</tr>
<tr>
<td>High accessibility needs</td>
<td>Different to transit equity, this focuses on locations with a high dependency on transit due to individual physical ability, e.g. locations with high numbers of elderly people, in proximity to VA hospitals or requiring increased ADA accessibility in general. FLM solutions can provide travel choices to lesser mobile people that they would not otherwise have.</td>
<td></td>
</tr>
</tbody>
</table>
## Recap: Overlay details

<table>
<thead>
<tr>
<th>Recommendation Overlay</th>
<th>Description</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Shift/visitor variability</td>
<td>Locations with a high shift/visitor variability or irregular commute pattern (e.g. outside of the usual peak times). Examples include shift work at industrial centers, retail centers or universities.</td>
<td>🗣️</td>
</tr>
<tr>
<td>High visitor trips</td>
<td>Locations with extremely high numbers of visitor trips at very specific times, e.g. Mile High stadium or Pepsi Center.</td>
<td>🗣️</td>
</tr>
<tr>
<td>High propensity to change</td>
<td>Locations in place with a high propensity for change will require more fluid recommendations as the location moves from one type of built environment and/or surrounding demographics to another.</td>
<td>🔄</td>
</tr>
<tr>
<td>Parking utilization</td>
<td>In locations with very high levels of parking utilization, or locations that are currently not meeting the demand for parking, FLM solutions can reduce the need to build more parking and encourage alternative access to stations other than SOV trips.</td>
<td>🚗</td>
</tr>
</tbody>
</table>
## Recap: The final approved typologies

<table>
<thead>
<tr>
<th>Typology</th>
<th>Examples</th>
<th>Land use Density</th>
<th>Employment density</th>
<th>Residential density</th>
<th>Accessibility/Service levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Core</td>
<td>Downtown Denver and Downtown Boulder</td>
<td>Very high</td>
<td>Very high</td>
<td>High</td>
<td>Very high</td>
</tr>
<tr>
<td>Urban</td>
<td>Downtown Arvada/Belmar/Golden/Longmont, areas of Broadway, Federal and Colfax in Denver; DU campus, Anschutz campus, Denver neighborhoods</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Suburban Mixed</td>
<td>Northglenn Marketplace Mall, Westminster Park-n-Ride area, Broomfield Plaza, Colorado Marketplace Shopping Center (Thornton)</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Suburban Residential</td>
<td>Residential areas of Lone Tree, Highlands Ranch, Northglenn, Thornton, Aurora, Littleton, Parker, Lakewood, Brighton etc..</td>
<td>Low</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Rural</td>
<td>US Highway 285 corridor, I-70 Corridor, front range communities (except Golden), plains communities</td>
<td>Very low</td>
<td>Very low</td>
<td>Very low</td>
<td>Very Low</td>
</tr>
</tbody>
</table>
FLM Analysis Process

• Request data from various jurisdictions (in process)
• Undertake field visits:
  • **Alta**: Active transportation
  • **HDR**: Curbside management and parking
  • **UrbanTrans**: Experiential Audit (select stations only)
• Further Analysis:
  • **SUMC**: Shared Mobility analysis
  • **UrbanTrans**: Existing TDM programs and demographics
• Public Engagement
  • **HDR**: Pop up events, promotional toolkits
  • **Alta**: Online comments map
Public Outreach Events

• **Pop-up events**: Five selected locations to provide both transit and non-transit users a chance to provide input on potential FLM solutions and recommendations at their station.

• **Partnering events**: 10 partnering events at station locations have been identified to promote the FLM project and seek input.

• **Online input map**: Promoted at pop-up and partnering events, on social media, website, newsletters, rider alerts, etc.

• **PPAC Promotional toolkit**: A toolkit for members of the PPAC to promote input from the public.

Comments and opinions gathered at the various outreach events will feed into the decision making process for FLM solutions and recommendations.
Pop-up Events

- **Timeline**: Held August and September, after the consultant team finalizes the site visit and analysis at each station

- **Invitees**: PPAC members, TMOs, local jurisdictions/municipalities, RTD staff, RTD customers, media and general public

- **Possible Activities**
  - Spin the RTD prize wheel
  - Interactive map with possible recommendations for attendees to comment
  - Photo booth for attendees to take a photo with their FLM ideas
# Suggested Pop-up Locations

<table>
<thead>
<tr>
<th>Station/Stop</th>
<th>City</th>
<th>Typology</th>
<th>Pop-up Event Location</th>
</tr>
</thead>
</table>
| Arapahoe at Village Center Station | City of Greenwood Village | Urban               | • Highline Community Church  
• Fiddler’s Green     |
| US 36 & Table Mesa PnR        | City of Boulder             | Suburban-residential | • University of Colorado Campus  
• Flatiron View Apartments |
| Wheat Ridge - Ward Road Station | City of Wheat Ridge        | Suburban-residential | • Alpine CrossFit    |
| 40th & Colorado Station*      | City of Denver              | Suburban-mixed      | • Park Hill 4000 Apartment Complex                          |
| Wagon Road PnR*               | City of Westminster         | Suburban-mixed      | • Huron Crossing Park  
• Tanglewood Apartments  
• Broomfield Community Center |
Partnering Events

• Events will be identified based on a survey that was distributed to the PPAC members, as well as team collaboration based on the station typologies and locations determined in the initial study and analysis.

• Audience at each event will vary to include transportation-focused attendees and general public.
PPAC Promotional Toolkit

• Social media content
• Newsletter/website blurb
• Photo and graphic assets
Welcome to the Online Input Map for the RTD First and Last Mile Plan. The purpose of this plan is to understand how you get to and from the station. RTD is looking to improve walking, bicycling, transit, and other means to the stations.

To get started, click on the marker on the map representing the station that you use/are most familiar with. The map will then zoom into this station and give you the opportunity to provide feedback regarding your mobility experiences around the station.

We recognize that you may not use any of the 15 stations on the map. We encourage you to still click on the station circles to view input that other users have provided. You can also click on the "I Use Other Stations" button to share feedback about your mobility experiences elsewhere.
Focus on Arapahoe at Village Center

• Demographics and community data (UrbanTrans)
• Shared Mobility Analysis (SUMC)
• Active Transportation Analysis (Alta)
• Curbside Management Analysis (HDR)
Existing plans, documents and surveys

- Important documents pertaining to Arapahoe Station:
  - Last One-Half Mile Transportation Solutions, Denver South TMA (2012)
  - Denver South TMA Employee Transportation Survey (2015)
  - I-25 Urban Corridor Study (2016)
  - DRCOG Transit Perceptions (2016)

- Specific information and data points collected from these reports to inform our analysis
Figure 1: Modal Share of Work Commute Trips on Survey Day

How did you get to work today?
(If you used more than one mode, check the one that you used for the most miles.)

- Drove alone, 87.9%
- Used light rail, 5.9%
- Rode a bus or buses, 0.5%
- Biked, 0.2%
- Walked, 0.4%
- Worked at home, 0.9%
- Taxi/Ride Service, 0.0%
- Specialized transportation (RTD Access-a-Ride or other provider), 0.1%
- Carpoled, 3.5%
- Vanpoled, 0.1%
- Other, 0.6%
Jobs within 1 mile

- 2010 jobs: 28,370
- 2015 jobs: 36,659
- Change: 8,289 (22.6% increase)

- 98% of employees travel from outside the area to work here

- Significant incoming and outgoing commuter population
Call n’ Ride (Arapahoe)

- One service vehicle
- Average weekday data:
  - 13.5 in service hours
  - 46.4 boardings
  - 3.4 boardings per hour
- Annual boardings:
  - 11,810 total
Capital improvements at Arapahoe station

- A number of planned improvements, taken from 2012 study.
- Recommendations may include projects that have yet been implemented.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>Population and employment density</td>
<td>1=High density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2=High population density, lower employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3=High employment density, lower population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4=Medium density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5=Medium population density, lower employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6=Medium employment density, lower population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7=Low density</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8=Unknown</td>
</tr>
<tr>
<td>densityemploy</td>
<td>Employment density near station</td>
<td>1=High density employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2=Medium density employment</td>
</tr>
<tr>
<td>CarPark</td>
<td>Park-n-Ride at station</td>
<td>1=Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0=No</td>
</tr>
<tr>
<td>PedBikeNet</td>
<td>Quality of pedestrian-bike network</td>
<td>1=Best Ped/Bike Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2=Medium Ped/Bike Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3=Poor Ped/Bike Network</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4=Unknown</td>
</tr>
</tbody>
</table>
Survey snapshot – Arapahoe at Village Center

- **Why moved near to Arapahoe Station?** Wanted a different house type and shorter or easier commute
- Same number of people would like to see a rail station close as a highway. Not many people like to see a bus stop close by.

- **Current rail station access:**
  - Never go to rail station: 6
  - Bus or rail: 0
  - Walk or bike to access rail station: 15
  - Drive: 11

- **Would like to access the station by:**
  - Never go to rail station: 4
  - Bus or rail: 0
  - Walk or bike to access rail station: 17
  - Drive: 8
Survey snapshot – Arapahoe at Village Center

• Cars per adult: 1.1
• Bikes per person: 0.75
• Do you use the following:
  • Bike share: 0
  • TNC: 4
  • Carshare: 1
  • None: 28
• Proximity to rail station:
  • Close enough to walk to rail station: 18
  • It's a bit far, but could still walk: 7
  • Too far: 7
• Top reason why don't use trains: Free parking and have to use car before or after commute.
• Second reason: Need car at work or trip takes too long.
• When moving, desire to own either more (27) or less cars (26) cited as top reason.
Survey snapshot – Arapahoe at Village Center

- **What do you value in a location?**
  - Easy access to station was 9th (out of 41), after easy access to freeway and lots of parking.
  - Low crime and access to parks the highest.
• Top three community types:
  
  • **Metro Renters (22%):** Tech savvy, generally don’t own a house; public transportation, taxis, walking, and biking are popular ways to navigate the city.
  
  • **Professional Pride (17.5%):** Most households own three or more vehicles; long commutes are the norm.
  
  • **Top Tier (17.8%):** These are the nation’s wealthiest consumers. They hire financial advisers to manage their diverse investment portfolios but stay abreast of current financial trends and products.
Shared Mobility Analysis

- **Overall Shared Mobility Opportunity score (out of 3.0)**
  - Quarter mile radius: 3.0 (High)
  - Half mile radius: 2.57 (Medium-High)

- **Existing Shared Mobility Infrastructure**
  - Carsharing (traditional): 2 Zipcar vehicles at Fiddler’s Green Amphitheatre
  - Carsharing (one-way): not in Car2Go service area
  - Carsharing (P2P): none
  - Bikesharing: none

- **Mode specific shared mobility opportunity analysis**
  - Carsharing (traditional): up to 6 vehicles
  - Carsharing (one-way): up to 1 vehicle
  - Bikesharing: up to 16 bicycles
Active Transportation Analysis

1. BASEMAPS

2. ROUTE IDENTIFICATION

3. FIELD WORK

4. RECOMMENDATIONS
Base Map - Biking

- Existing Trails
- Existing On-Street Facilities
- Activity Generators
- Transit Routes and Stops
- Traffic Signals
- Parks and Open Space
Base Map - Walking

- Existing Trails
- Wide Sidewalks
- Activity Generators
- Transit Routes and Stops
- Traffic Signals
- Parks and Open Space
Base Map – Demographic Analysis

Historically Vulnerable Populations

- Age
- Race
- Income
- Limited English Proficiency
- No Motor Vehicle Access

Legend:
- Low
- High
Route Identification

- Connect Activity Generators
- Identify gaps in transit network
- Make East-West, North-South connections
- Utilize low-stress streets when possible
- Prioritize routes with local staff
Analysis - Walking

Attached Sidewalks

Repurpose unused travel lane as wider sidewalk

Pathway Connections

Remove and replace sidewalk with wider path
Analysis - Walking

Commercial Driveways

- Maintain sidewalk grade across driveway

Curb Ramp Design

- Install perpendicular curb ramps
Analysis - Walking

Unshaded Sidewalk

Shade Trees

Plant shade trees in tree lawn
Analysis - Biking

Pinch Points

Assess right-of-way opportunities

Bikeway Network Gaps

Assess cross-section (48’ curb-to-curb)
Analysis - Biking

Multi-Lane Intersections

- Assess signal timing; Construct larger landings

Long Distances Between Crossings

- Install mid-block crossings
Analysis - Biking

Neighborhood Streets

- Develop bicycle boulevards

Neighborhood Trails

- Design trails to facilitate shared uses
Analysis - Biking

Bike Rack Quality

Install cost-effective U-Racks

Bike Rack Quantity

Install two-tier parking or covered parking
Analysis – Biking/Walking

Lack of Wayfinding

Wayfinding from station

Wayfinding to station
Curbside Management and Parking Analysis

- Identifying existing edge of pavement (DRCOG 2016 Planimetrics)
- Identifying existing surface and structured parking (DRCOG 2016 Planimetrics)
Curbside Management and Parking Analysis

- Field Work
  - Marking curb restrictions
  - Identifying existing occupancy
Curbside Management and Parking Analysis

• Pull data from RTD Park n Ride shapefile:
  • 2016 & 2017
    • Yearly average occupancy
    • Quarterly average occupancy
Curbside Management and Parking Analysis

- Field Work Observations
Curbside Management and Parking Analysis

• Field Work Observations
Curbside Management and Parking Analysis

• Field Work Observations
Curbside Management and Parking Analysis

- Field Work Observations
Curbside Management and Parking Analysis

• Field Work Observations
Curbside Management and Parking Analysis

• Opportunities
  • Loading and Unloading
Curbside Management and Parking Analysis

- Denver South TMA Commuter Survey

**Figure 5: Reasons for Not Using Alternate Modes**

If you most often drive to get to work, which of the following is(are) the main reason(s)? (Please check all that apply.)

- Quickest/Most convenient: 79.1%
- Need to/want to make stops or run errands: 37.3%
- Takes too long to take transit: 35.6%
- Need to/want to come and go from the workplace: 30.1%
Curbside Management and Parking Analysis

• Denver South TMA Commuter Survey

![Figure 6: Frequency of Off-Site Work-Related Travel](image)

About how often do you make trips during your workday, not including your work commute, but including trips like lunch, personal errands, work errands or meetings.

- Daily: 11.1%
- Several times a week: 26.7%
- About once a week: 22.5%
- About once every two weeks: 11.5%
- About once a month: 7.8%
- Less than once a month: 11.6%
- Never: 8.3%
- Other (please specify): 0.5%

Percent of Respondents
Curbside Management and Parking Analysis

• Opportunities
  • Short term car rental
Curbside Management and Parking Analysis

- Opportunities
  - Bike Corrals
Feeder Bus Connectivity

• Identifying all routes within a 1-mile radius
• Identifying key intersections or movements that may be adding to delay on transit routes
DRCOG FOCUS Model Mode Share

- Mode Share breakdown at TAZ level surround stations
  - 1 mile radius
  - 3 mile radius
- Demographic snapshot of traveler market
Next Steps

- Presentation of the analysis from the 15 representative stations
- Initial toolbox of recommendations
- Online map feedback received
Thank you!

Questions and Answers