



# East Arapahoe

*Transportation Plan*

**Public Workshop**  
**November 19, 2015**

# Overview

- **Plan Context & Purpose**
- **Community Engagement**
- **Range of Conceptual Draft Alternatives**
- **Draft Alternatives Evaluation Criteria**
- **Process & Schedule**
- **Complete Streets: State of the Practice**
- **Questions & Answers**



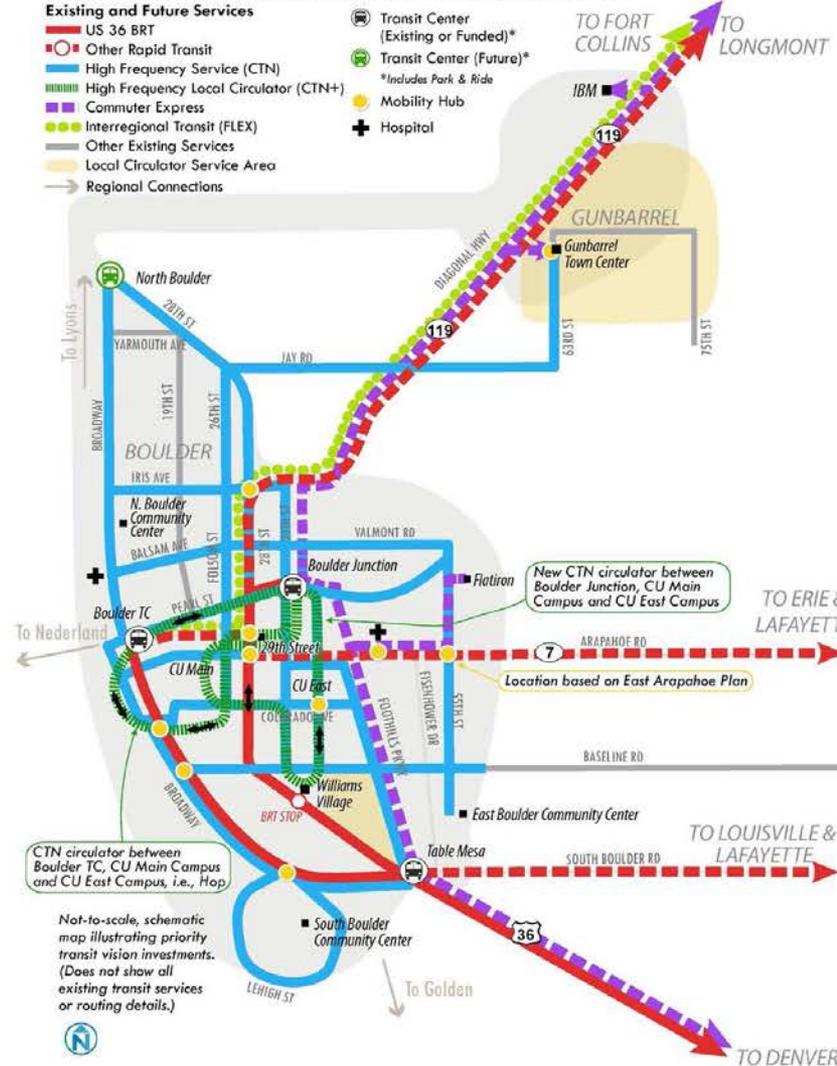
# **PLAN CONTEXT & PURPOSE**

- 01 Reduce vehicle miles of travel (VMT) in the Boulder Valley by 20 percent by 2035
- 02 Reduce single occupant vehicle travel to 20 percent all trips for residents and to 60 percent of work trips for non-residents
- 03 Achieve a 16 percent reduction in GhG emissions and continued reduction in mobile source emission of other air pollutants
- 04 No more than 20 percent of roadways congested at Level of Service (LOS) F
- 05 Expand fiscally-viable transportation options for all Boulder residents and employees, including older adults and people with disabilities
- 06 Increase transportation alternatives commensurate with the rate of employee growth
- 07 "Toward Vision Zero" fatal and serious injury crashes: continuous improvement in safety for all modes of travel
- 08 Increase the share of residents living in complete neighborhoods to 80 percent
- 09 Reduce daily resident VMT to 7.3 miles per capita and non-resident one-way commute VMT to 11.4 miles per capita

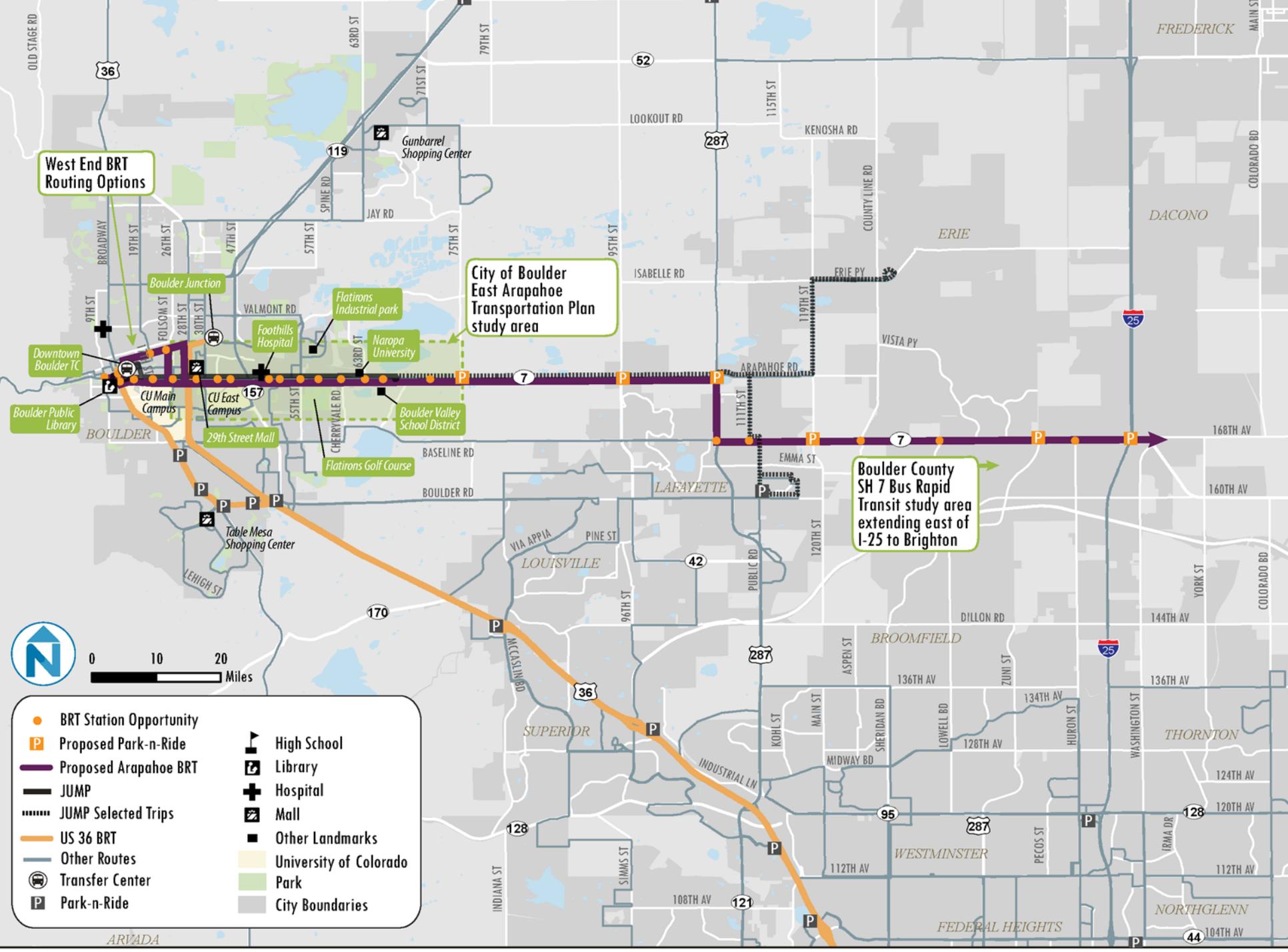
Long-Term Boulder Renewed Transit Vision: Schematic of Priority Transit Corridors

Existing and Future Services

- US 36 BRT
- Other Rapid Transit
- High Frequency Service (CTN)
- High Frequency Local Circulator (CTN+)
- Commuter Express
- Interregional Transit (FLEX)
- Other Existing Services
- Local Circulator Service Area
- Regional Connections
- Transit Center (Existing or Funded)\*
- Transit Center (Future)\*
- \*Includes Park & Ride
- Mobility Hub
- Hospital



Not-to-scale, schematic map illustrating priority transit vision investments. (Does not show all existing transit services or routing details.)

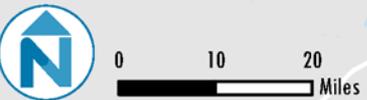


**West End BRT Routing Options**

**City of Boulder East Arapahoe Transportation Plan study area**

**Boulder County SH 7 Bus Rapid Transit study area extending east of I-25 to Brighton**

- BRT Station Opportunity
- P Proposed Park-n-Ride
- Proposed Arapahoe BRT
- JUMP
- JUMP Selected Trips
- US 36 BRT
- Other Routes
- Transfer Center
- P Park-n-Ride
- High School
- Library
- Hospital
- Mall
- Other Landmarks
- University of Colorado
- Park
- City Boundaries



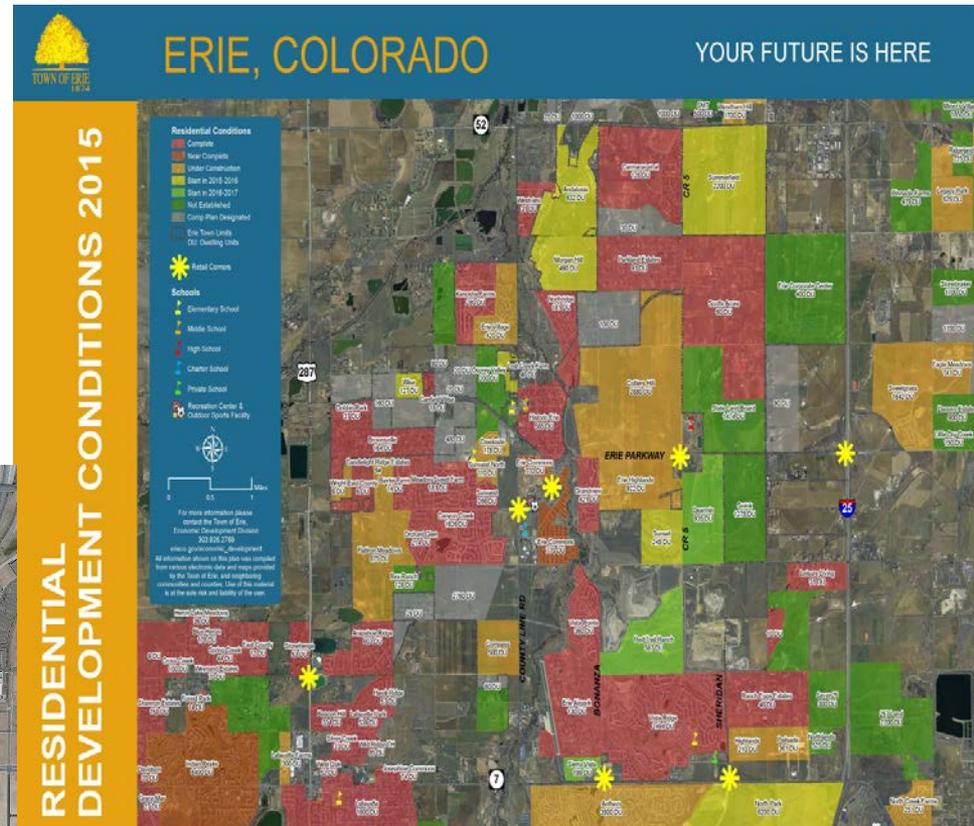
# Plan Purpose

- **Address existing & future transportation needs, including local and regional travel**
- **Facilitate safe travel & access by people using all modes – walking, biking, accessing transit & driving**
- **Support existing & future land use**
- **Advance TMP goals & NAMS recommendations**
- **Coordinate with SH7 regional BRT study**

# Access Destinations within the Corridor



# Travel between Boulder & Eastern Communities





# **COMMUNITY ENGAGEMENT**

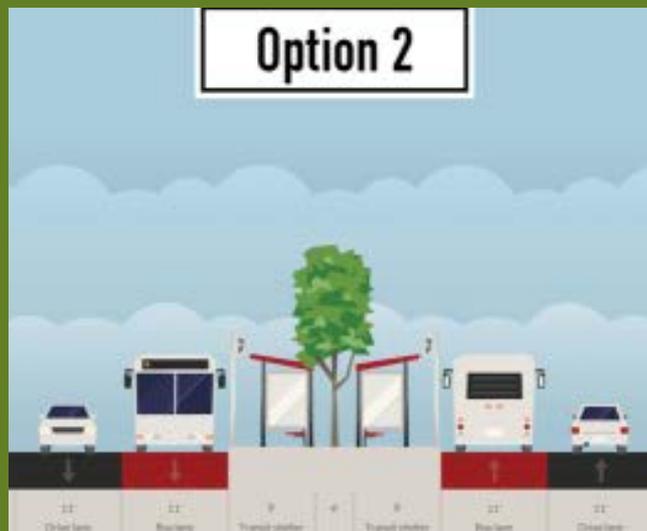
# Outreach Activities

- Walk & Bike Audits: Summer & Fall 2014
- Listening & Learning Sessions: Winter 2014
- Transportation Workshop: February 2015
- Ongoing Stakeholder Coordination: CDOT, RTD, Boulder County, Businesses, Neighborhoods



# What We've Heard

- **Pedestrian and Bicycle Facilities:** Some form of enhanced and protected on-street bike facility, as well as an off-street multi-use path. Improved access **along** and **across**.
- **BRT:** General support for BRT with many outstanding questions regarding how it would be designed and operated – like **exclusive lanes** and **station** locations?
- **Street Landscaping:** Desire to see enhanced landscaping and aesthetic improvements. More **“boulevard”** like.





**RANGE OF DRAFT  
CONCEPTUAL ALTERNATIVES**

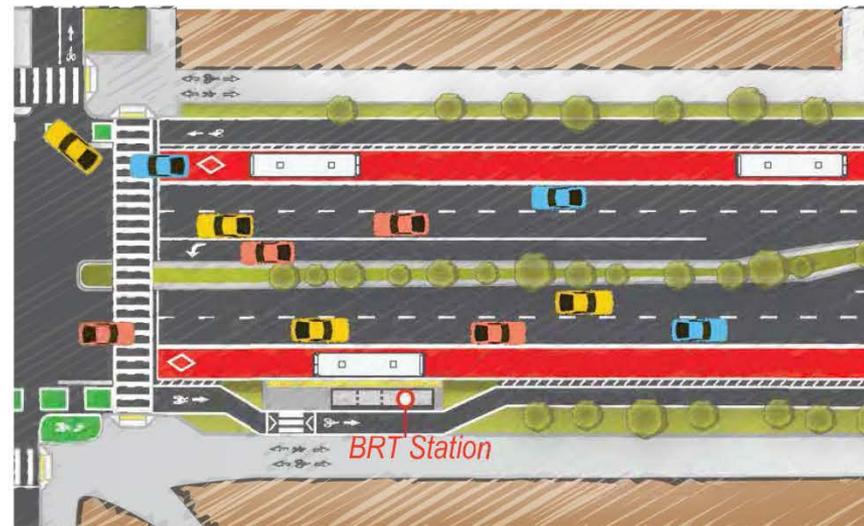
# COMPARISON OF ALTERNATIVES



	<b>Future Baseline (No-Build)</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<b>TRANSIT OPERATIONS</b>	Side-running Bus (Mixed-Traffic)	Enhanced Bus (Mixed-Traffic)	Side-Running BRT (Semi-Exclusive BAT Lane)	Center-Running BRT (Exclusive Lane)	Center-Running BRT (Exclusive Lane)
<b>GENERAL PURPOSE LANES / LANE REPURPOSING</b>	3 (per direction) / None	3 (per direction) / None	2 (per direction) / Partial	2 (per direction) / Yes	3 (per direction) / None
<b>PEDESTRIAN AND BICYCLE FACILITIES</b>	Existing Multi-Use Path with Gaps	Gaps Filled in Multi-Use Path	On-Street Bikeway and Multi-Use Path	On-Street Bikeway and Multi-Use Path	On-Street Bikeway and Multi-Use Path
<b>ROADWAY WIDENING / RIGHT-OF-WAY EXPANSION</b>	None	None / Limited	Yes	Yes	Yes (Most Expansion)

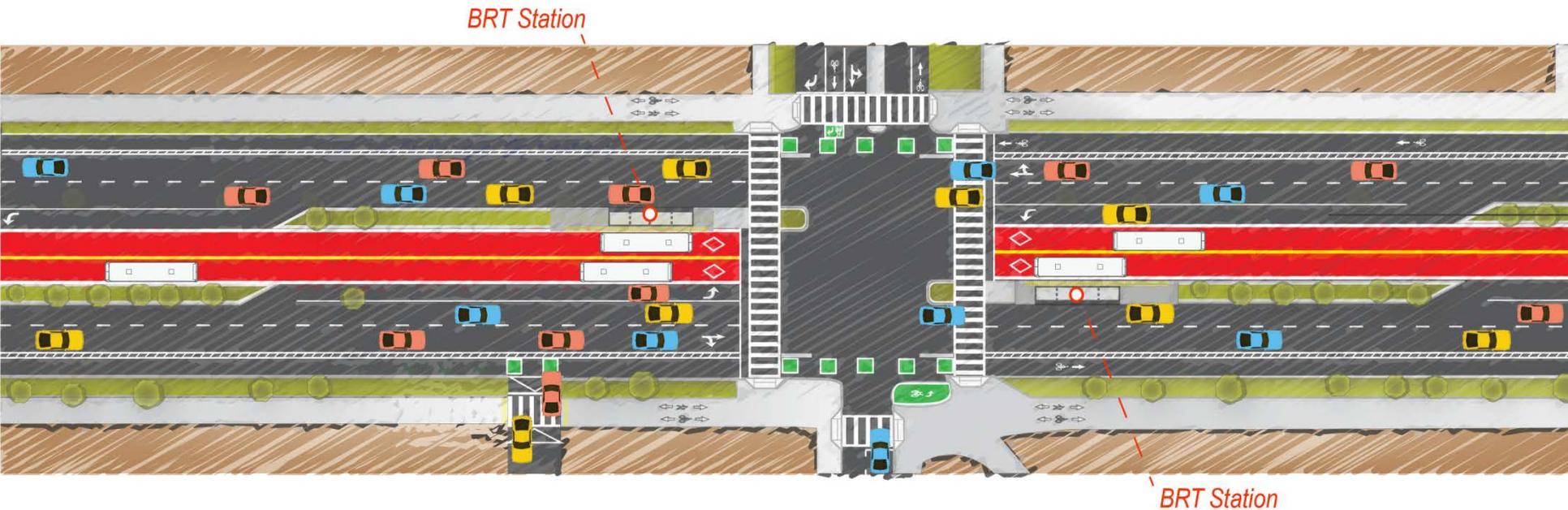
# Alt. B

**Side-running BRT in a semi-exclusive business-and-transit (BAT) lane (allows right turns) with 2 general purpose lanes, an on-street bikeway, & completed multi-use path**



# Alt. C

**Center-running BRT in an exclusive transit lane with 2 general purpose lanes, an on-street bikeway, & a completed multi-use path**





**ONE SIZE WILL NOT FIT ALL**





# **DRAFT ALTERNATIVES EVALUATION CRITERIA**

# Evaluation Criteria

- **Travel Mode Share**
- **Pedestrian & Bike Comfort & Access**
- **Safety**
- **Transit Operations**
- **Vehicle Operations**
- **Phasing & Complexity of Implementation**
- **Community Sustainability**



EXISTING	SIDE RUNNING	EVALUATION MEASURES	CENTER RUNNING
12.1-16.3 min.	 8.0-9.8 min.	 <b>TRANSIT TRAVEL TIME</b> (WB 20th-1st Ave, EB 1st-23rd Ave via Marion, PM peak hour)	 7.7-9.8 min.
7.3-14.3 min.	 5.8-6.6 min.	 <b>TRAVEL TIME RELIABILITY</b> (shortest and longest modeled travel times westbound between 13th and 6th Ave, PM peak hour)	 5.6-6.2 min.
18.7 min.	 18.8 min.	 <b>ALSO TRAVEL TIME</b> (WB 20th-1st Ave, EB 1st-23rd Ave via Marion, PM peak hour)	 21.7 min.
0	 3	 <b>INTERSECTION OPERATIONS</b> (number of intersections with Level of Service E or F, PM peak hour)	 2
N/A	 \$98M	 <b>TOTAL CAPITAL COSTS</b> (including vehicles, 2015 dollars)	 \$120M
94	 0	 <b>PARKING AND LOADING IMPACTS</b> (total number of spaces on Madison between 8th and 20th Ave)	 0

EXAMPLE

NOTE: Existing is Routes 11 and 12 with already-planned service increases. Assumes BRT service would operate every 5 mins peak and 10 mins off-peak to 23rd or MLK, and every other trip would continue to Madison Park.



LEAST DESIREABLE

MOST DESIREABLE



# **PROCESS & SCHEDULE**

# Timeframe

**Winter 2015-16**

**Winter-Spring 2016**

**Spring-Summer 2016**

**Fall-Winter 2016**

# Milestones

**Ongoing Community  
Engagement (City Council: 12/8)**

**Alts. Refinement &  
Evaluation**

**Recommended  
Improvements**

**Implementation Strategies &  
Plan Acceptance**



# **COMPLETE STREETS: STATE OF THE PRACTICE**

# Why Invest?

## PROVIDE SAFE MOBILITY FOR ALL USERS

- Facilities for biking and walking
- Attention to integration of modes
- Architecture and lighting for visibility and safety



Cleveland, OH | Image from Sasaki

## ENHANCE THE CHARACTER OF THE PLACE

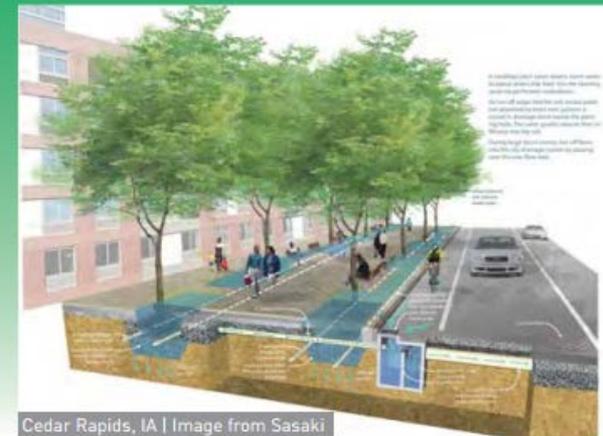
- Expressive materials and color palette
- Public art
- Interesting street furnishings and lighting



Washington, DC | Image from Sasaki

## PERFORM ECOSYSTEM SERVICES

- Permeable paving and cisterns for stormwater management
- Continuous planting systems
- Microclimate-enhancing planting strategies



Cedar Rapids, IA | Image from Sasaki



# Return on Investment

## SAFE MOBILITY



## PLACEMAKING



## ECOLOGICAL HEALTH



Source: Sasaki



# Pedestrian Realm

# Canyon Boulevard, Boulder, CO

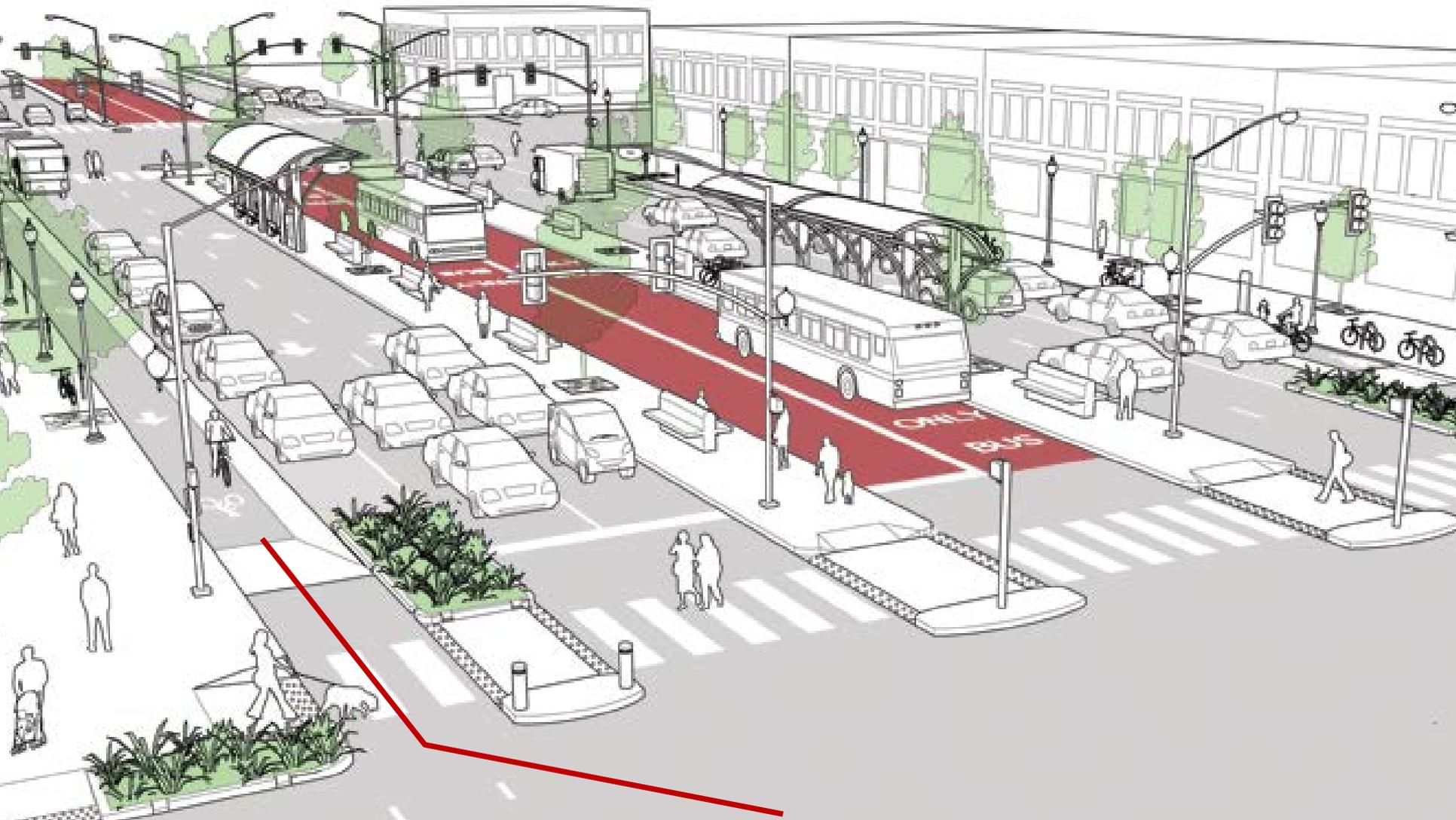
## *Mid-Block Crossing with Flashing Beacon*



# Tilikum Way, Portland, OR

## *Physical Separation for Bikes/Peds*





Places for People to Bicycle



**Broadway, Boulder, CO**  
*Multiuse Path with bike/ped zones*

# Dexter Avenue, Seattle

## *Protected Bike Lane, Floating Bus Stop*



# Broadway, Seattle

## *Transit & 2-Way Protected Bike Lane*



# *Kvikke Vej (Smart Street), Copenhagen Protected Bike Lane, Bike Markings*





Fast Reliable Transit

# State Hw. 99, Snohomish County, WA

## *SWIFT Bus Rapid Transit*



Community Transit



Swift

Aurora Village



29701

TERRIT STREET



# Franklin Blvd., Eugene, OR

## *EmX Bus Rapid Transit*





6101

www.EMX.org



EMX

# Franklin Blvd., Eugene, OR

## *Planning a Complete Corridor*



**Base Condition:** 40,000 Vehicles Daily, Center Lane BRT, Poor Pedestrian Environment

# Franklin Blvd., Eugene, OR

## *Planning a Complete Corridor*



**Phase I: Slip Lane for Retail Access  
and Bikes, Housing Infill**

# Franklin Blvd., Eugene, OR

## *Planning a Complete Corridor*



**Phase II:** South Side Expanded,  
Second BRT Lane, Additional Infill

# Franklin Blvd., Eugene, OR

## *Planning a Complete Corridor*



**Phase III: Stadium and Mixed Use  
Street Fronting Infill**

# Franklin Blvd., Eugene, OR

## *Planning a Complete Corridor*



**Phase IV:** Realization of Concept Plan  
Build Out



Moving Vehicles

# Los Angeles, DOT

## *Automated Traffic Control and Surveillance*



# New Hampshire Ave, Washington D.C

## *Arterial Speed Management*





# Street Realm

# E Street, San Bernardino, CA

## *sbX Bus Rapid Transit*





Green Line  
All Directions

CSUSB

CSUSB

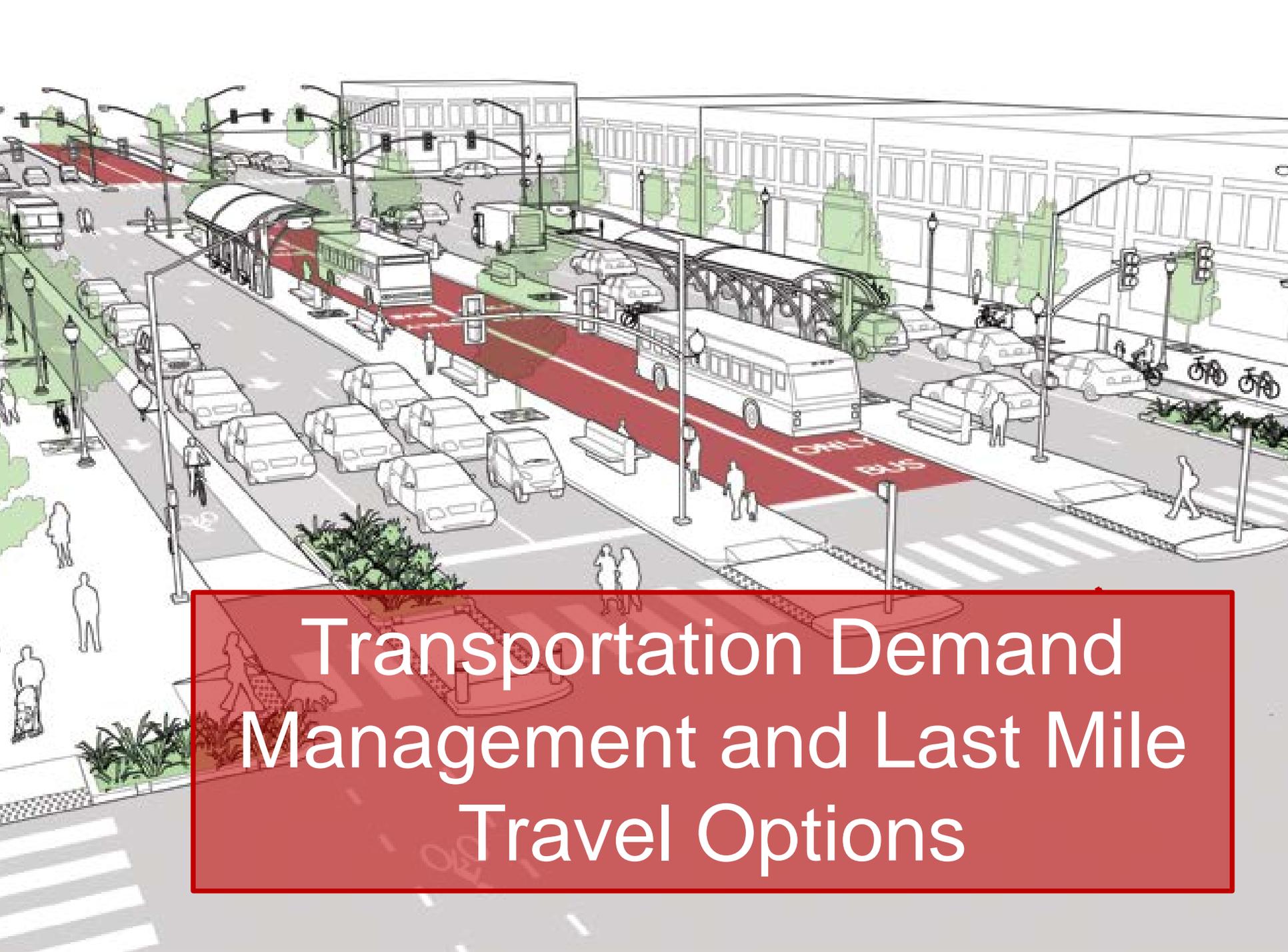
6011

EXIT DOOR



**Oklahoma City (okc180)**  
***Streetscape and Green Infrastructure***





# Transportation Demand Management and Last Mile Travel Options

# Orange Line, Portland, OR

## *TDM and Active Transportation*



Catch  
the  
●.

HOW WE ROLL



**QUESTIONS?**