

Big Shift FAIR

October 11, 2022





Background

- This presentation is in response to a Future Agenda Item Request (FAIR) from **Council Member Adam Shimoni on November 2nd, 2021**
- Staff was tasked with investigating - "City's **Engineering Standards** as it relates to speed limits and design characteristics of roadways, **Vision Zero** approach, and **adjusting values/priorities** to serve Pedestrians first, Cyclists second, Public Transit, followed by car share/taxi, and then lastly private personal vehicle."



Outline

1. Transportation Safety

- Current practices, alternative approaches

2. Engineering Design Standards

- LOS and VMT, speed limits, mode prioritization

3. Supporting the Big Shift

- Identify codes that are barriers to the Regional Plan



Current Practices

- 1. City Crash Report – Annual**
 - Identify City crash patterns, apply for grants
- 2. Regional Strategic Transportation Safety Plan – 5 year**
 - Identify regional problem areas, apply for grants
- 3. ADOT State Highway – Rail Grade Crossing Action Plan**
 - Identify rail crossing improvements to prevent fatalities
- 4. Operation Life Saver – Non-Profit**
 - Rail safety education and awareness organization



Current Practices

5. Safe Streets For All (SS4A) Grant

- Will provide MetroPlan \$200,000 to develop a Safety Action Plan for Vulnerable Road Users

6. Crash Modification Factors (CMF) Clearinghouse

- Used to compute expected number of crashes after implementing a countermeasure on a road or intersection

7. Highway Safety Manual (HSM)

- Developed by AASHTO to provide guidance for incorporating quantitative safety analysis in the highway transportation project planning and development processes.



Current Practices

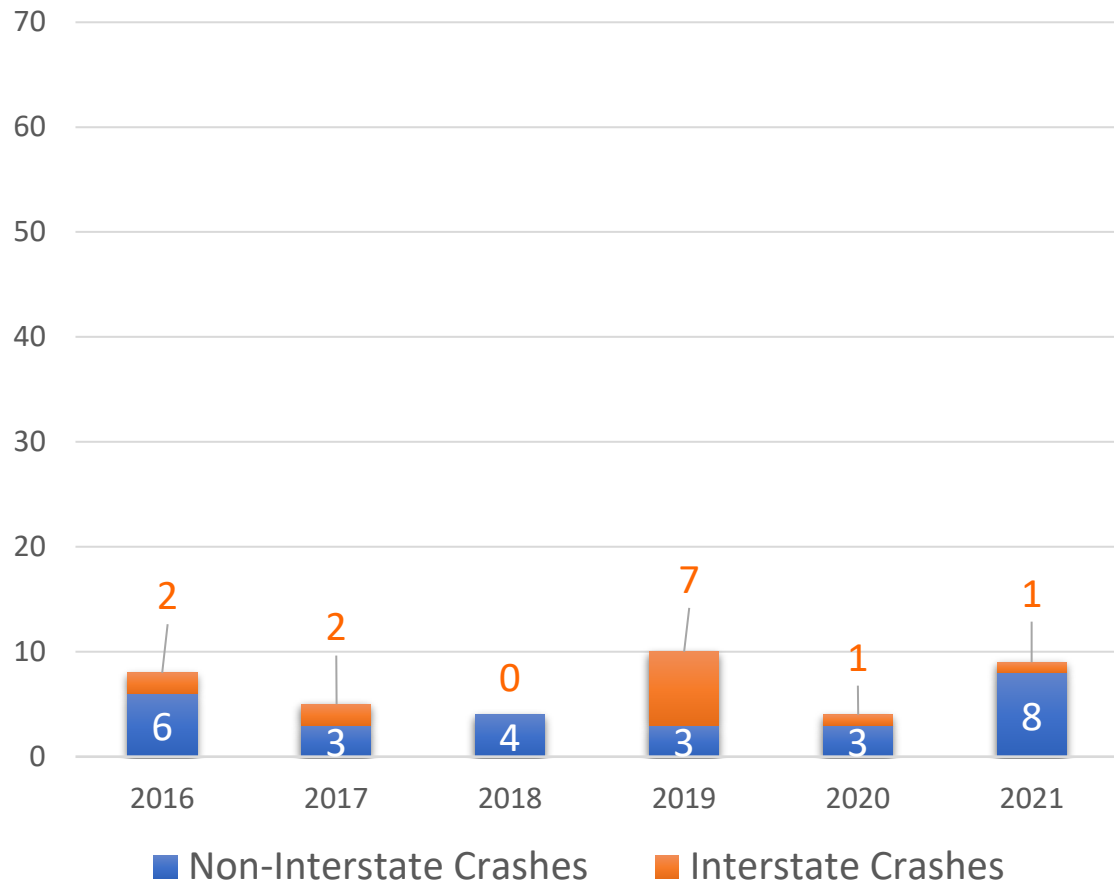
8. Highway Safety Improvement Program (HSIP) Grant

- Federal-aid program, reduce traffic fatalities and serious injuries on all public roads
 - Fourth/Cedar/Lockett roundabout
 - Sign replacement throughout city for better retro-reflectivity
 - Crosswalk crossing countdown
 - Guard rails
 - Turquoise & Switzer roundabout
 - Updated all crosswalks and stop bars with thermoplastic

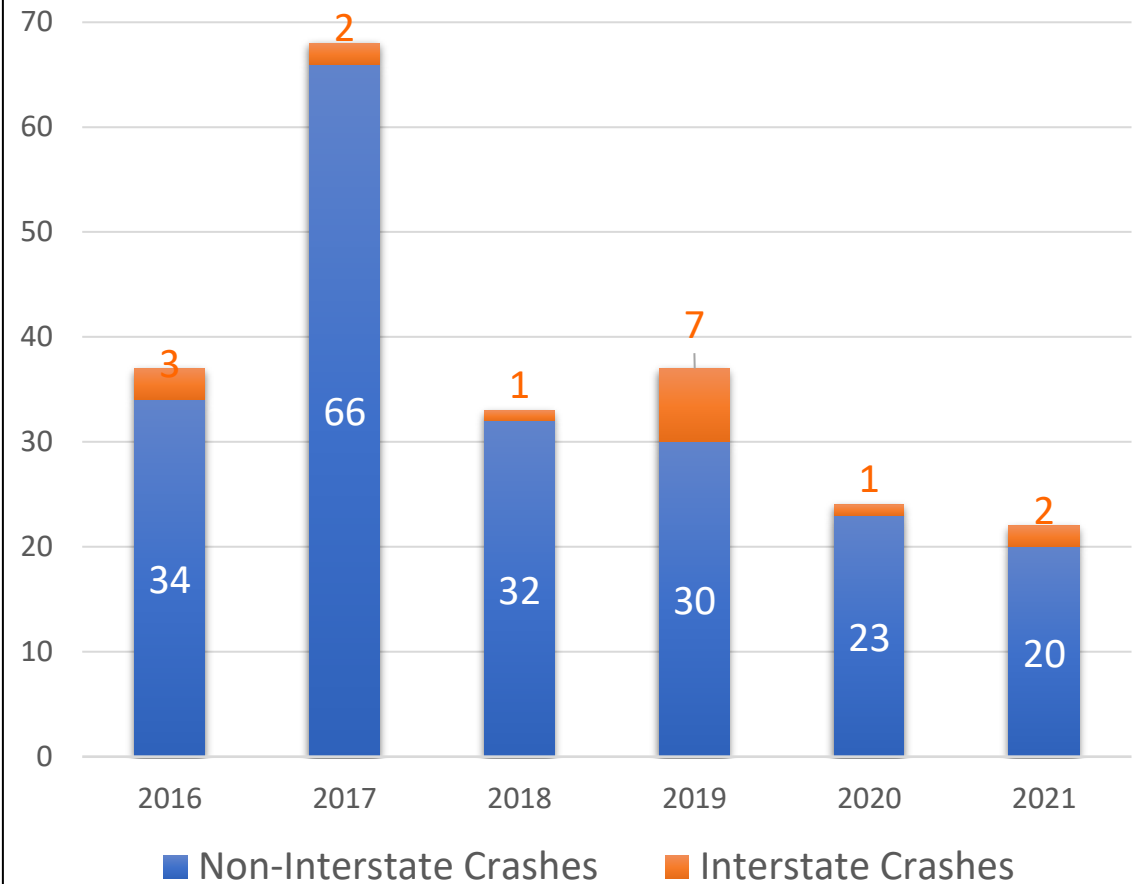


Interstate Crashes

Interstate vs Non-Interstate Fatal Crashes



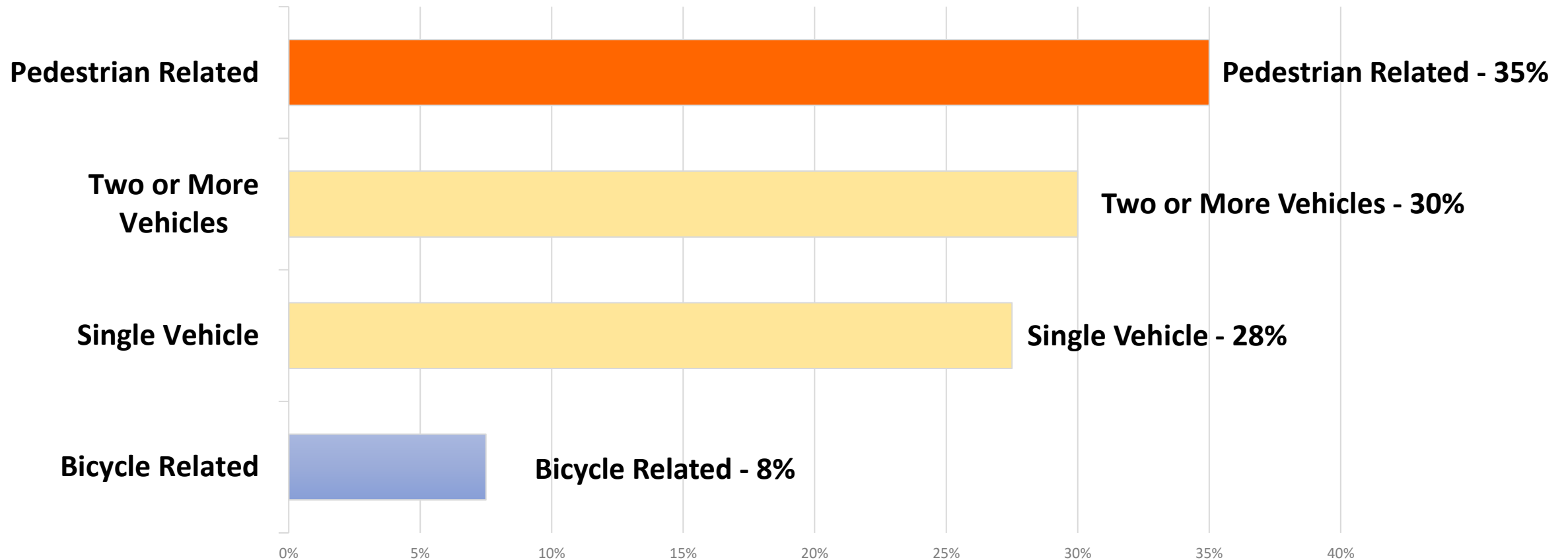
Interstate vs Non-Interstate Serious Injury Crashes





Fatal Crashes

Fatalities by Mode, 2016-2021





Safety Initiatives

1. Road to Zero

- Comprehensive 2018 report outlining strategies to eliminate traffic fatalities in the US by 2050

2. Vision Zero

- Campaign aimed at eliminating all traffic related fatalities and serious injuries. Originated in Sweden in the 1990s

3. Toward Zero Deaths

- 2014 report outlining strategies to eliminate all traffic related fatalities



Road to Zero

➤ **Three main initiatives**

1. Double down on what works through proven, evidence-based strategies
2. Advance life-saving technology in vehicles and infrastructure
3. Prioritize safety by adopting a safe systems approach and creating a positive safety culture

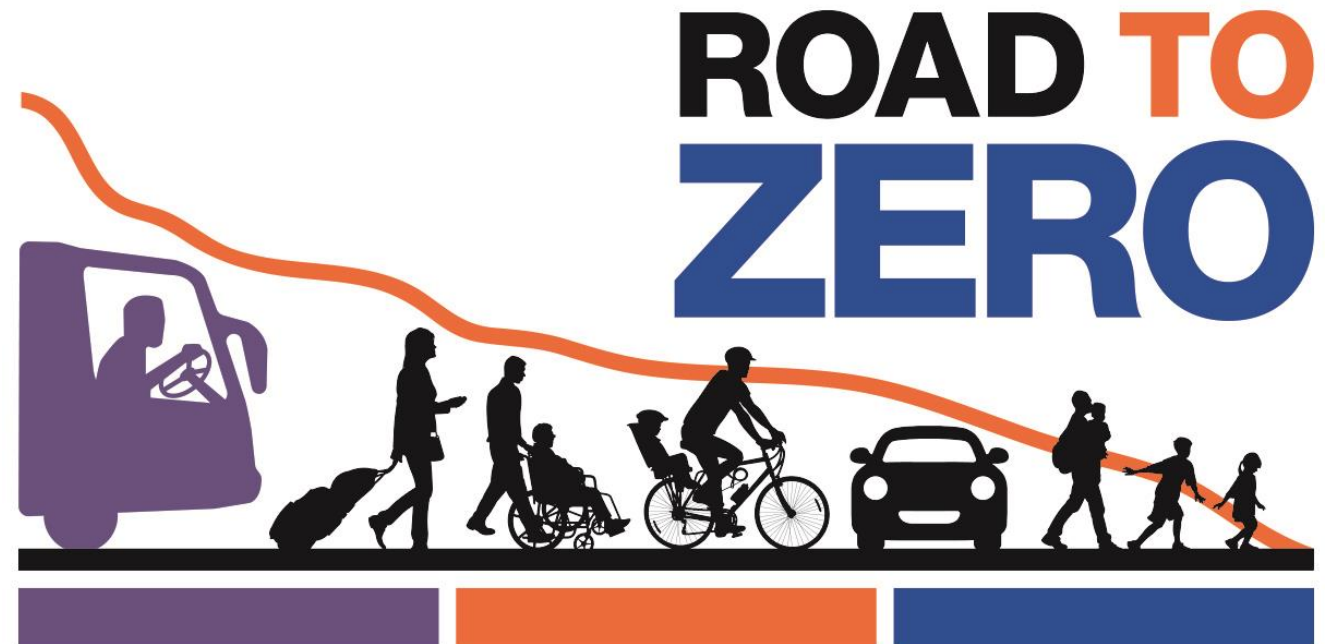
➤ **Road to Zero Coalition – Free to Join**

The coalition focuses on examining and promoting behavior-change strategies and developing a strategic plan for self-driving cars and human-vehicle-roadway communication.



Road to Zero

- The Road to Zero Coalition is managed by the National Safety Council, a nonprofit safety advocacy group





Vision Zero Network

➤ Requires Action Plan

- Example elements:
 - Manage speed
 - Multimodal planning
 - Public outreach



➤ Vision Zero City - Minimum Standards:

1. Clear goal of eliminating traffic fatalities and sever injuries
2. Top official (Mayor) has publicly committed to Vision Zero
3. Vision Zero action plan with clear objectives and schedule
4. Key City departments engaged (Police, Trans., Public Health)



Vision Zero Network



- In the United States, the Vision Zero Network is a nonprofit group that leads a collaborative campaign to help communities reach their Vision Zero goals



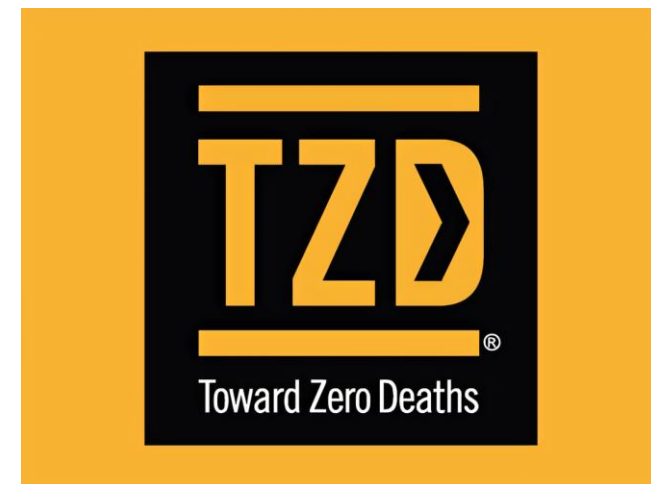


Toward Zero Deaths

➤ **Six Key Emphasis Areas**

1. Safer Drivers and Passengers
2. Safer Vulnerable Users
3. Safer Vehicles
4. Safer Infrastructure
5. Enhanced Emergency Medical Services
6. Improved Safety Management

- Encourages adopting an aggressive highway safety plan
- Plan should outline action items and a schedule
- National Strategy Recognized by AASHTO





Example: City of Boulder

- **Vision Zero goals were adopted in 2014 as part of Boulder's Transportation Master Plan**
 - Proactively applying for HSIP funding
 - Monitoring crashes across the city to identify improvement areas
 - Goal of eliminating all traffic fatalities

- **Comprehensive Vision Zero Action Plan released in 2019**
 - Example strategies:
 - Leading pedestrian intervals
 - Improved pedestrian crossings
 - Expanded red light camera program



Example: City of Boulder

- Approximately **\$450,000** annually devoted for stand alone Vision Zero projects
- Full Time Employees (FTEs) from four different divisions within the City share the work for Vision Zero activities:
 1. Transportation Operations Division – 14 FTEs
 2. Capital Projects – 13 FTEs
 3. Transportation Planning – 10 FTEs
 4. Transportation Maintenance – 19 FTEs



Example: City of Phoenix

- Released the **Safety Analysis and Strategies Report** in 2020 as part of the Key Corridors Master Plan
 - Identified crash statistics and trends.
 - Outlined strategies to increase safety on specific corridors and streets
- Approved **Vision Zero goals** on January 25th, 2022 into their comprehensive Road Safety Action Plan
- The Road Safety Action Plan should be finalized and approved in **Winter 2022**

Transportation Safety: Direction

1. Does City Council want staff to investigate development of a comprehensive transportation safety action plan:
 - Potential timeline
 - Staffing and resource requirements
 - Potential funding sources





Engineering Design Standards

Outline

1. Level of Service (LOS) and Vehicle Miles Traveled (VMT)
2. Roadway Design Speed
3. Mode Prioritization



Level of Service



- **Level of Service (LOS)** – A performance measure of roads, highways, intersections, and bicycle and pedestrian facilities determined by delay, density, and flow conditions with “A” being the best conditions and “F” the worst



Level of Service

- **Level of Service** at intersections, as defined by the Highway Capacity Manual, is measured by **delay and flow**.

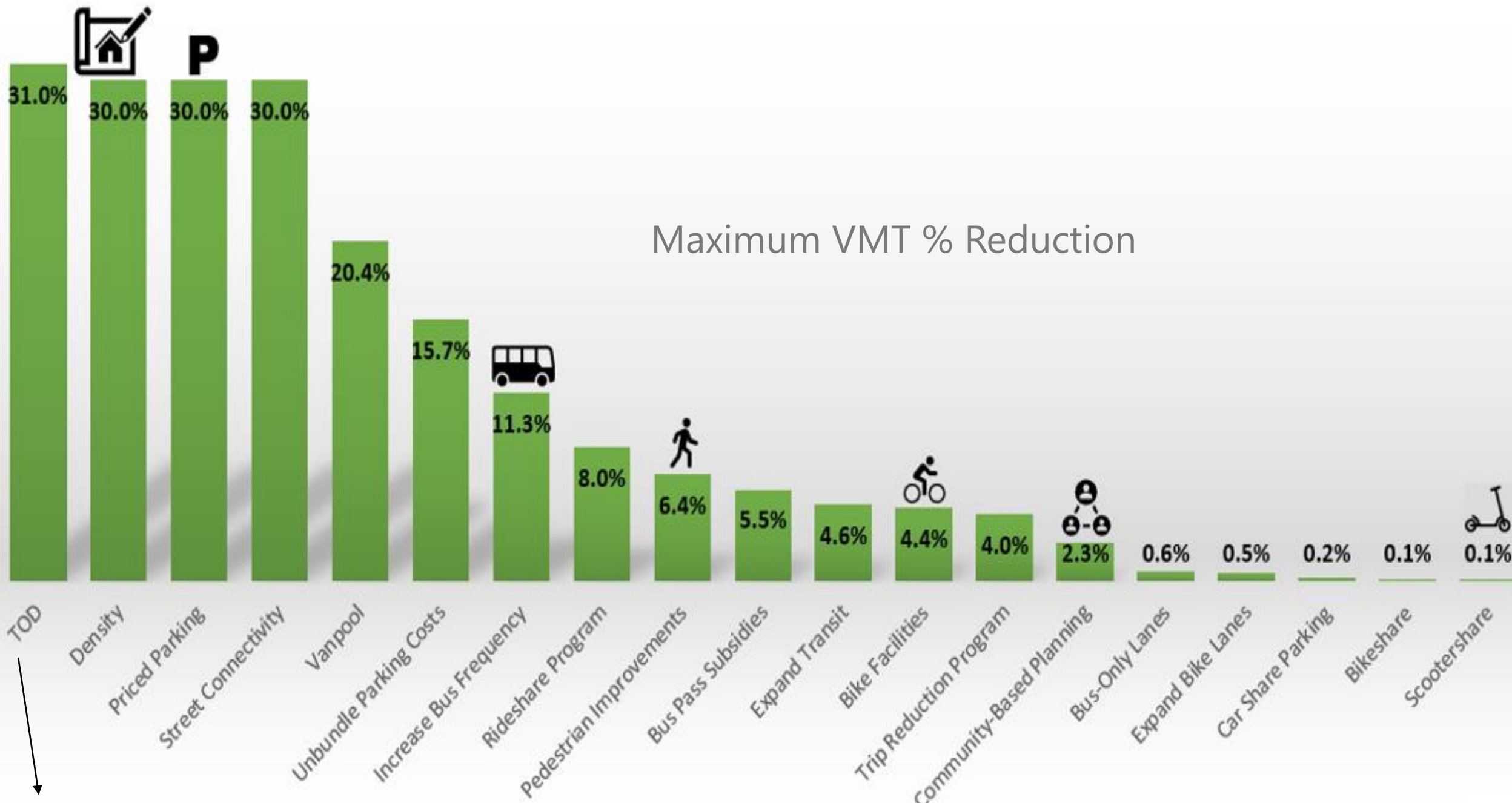
Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay (seconds/vehicle)	General Description
A	≤10	Free Flow
B	>10 – 20	Stable Flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay, occasionally wait through more than one signal cycle before proceeding)
E	>55 – 80	Unstable flow (intolerable delay)
F ¹	>80	Forced flow (congested and queues fail to clear)



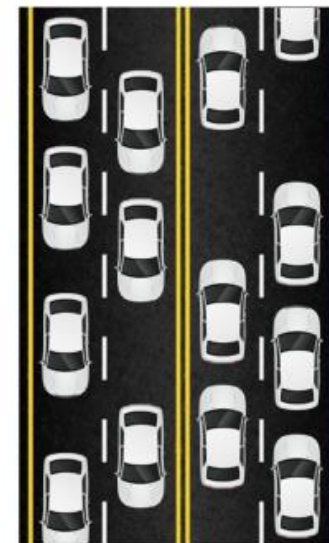
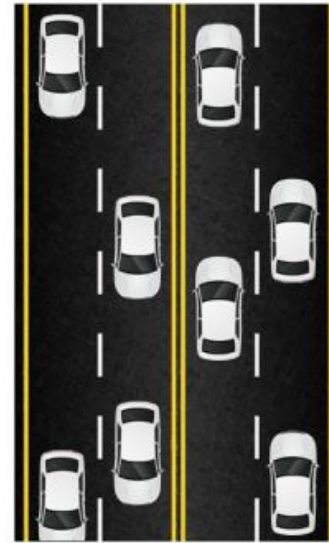
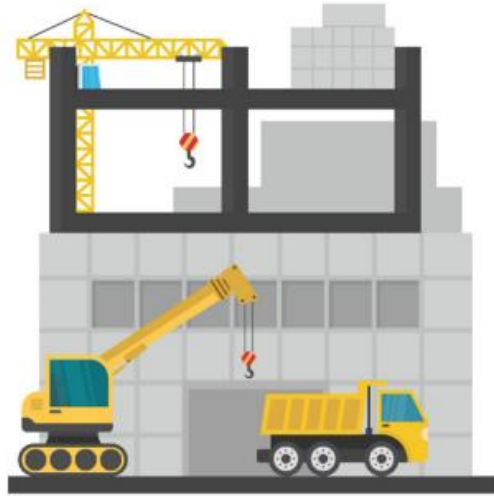
Vehicle Miles Traveled

- **Vehicle Miles Traveled:** Every trip multiplied by the length of each trip in a specific area
- Alternative mitigation strategies like **enhancing transit**, **expanding car share**, and implementing **parking costs** are used to reduce the **VMT growth** of new development applications based on established **VMT** reduction goals



(Transit Oriented Development)

Level of Service Approach



now

new development

no mitigation

typical mitigation

future conditions

Vehicle Miles Traveled Approach

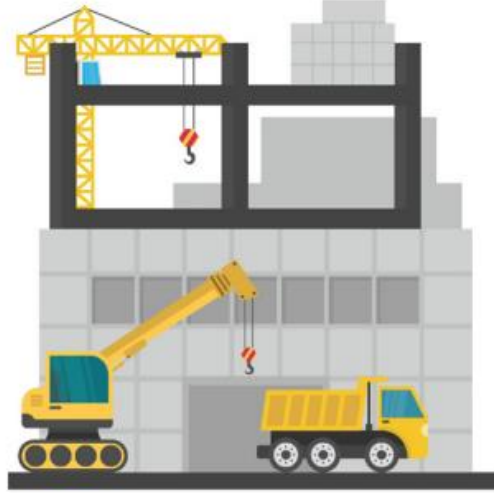


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LOS Exception Areas

Example: LOS Exception Areas, City of Scottsdale

- New performance measures as part of the 2022 Transportation Action Plan
- Maintain vehicular level of service (LOS) D or better at most signalized intersections, **except** in designated activity cores or urban roadway corridors where **walkability, transit access, and aesthetic or right-of-way considerations** are overriding.



Design Standards

Speed Types

- **Operating Speed:** The speed at which drivers are observed during free-flow conditions.
- **Design Speed:** The selected speed used to determine geometric design features of a roadway, such as horizontal/vertical curves and sight distance.
- **Posted Speed Limit:** The enforced speed on a roadway, typically reflects the 85th percentile speed along the road.





Design Standards

Factors that Affect Operating Speed

- Horizontal and vertical curves
- Road function/purpose
- Available sight distances
- Traffic volume:
vehicles, pedestrians, and bicycles
- Driveways with restricted visibility
and other roadside developments
- High driveway density
- Pavement conditions
- Weather and visibility
- A vehicle's mechanical condition
and characteristics
- Driving ability/capabilities
- Crash frequency and severity
- Rural, residential, or developed
areas
- Lane and shoulder width
- Paved or improved shoulders



Design Standards

Speed Limit Signs

- The speed chosen by drivers on roadways is determined by multiple factors, such as the design of the horizontal and vertical curves. The number on speed limit signs tend to have little to no effect on speeds - the design of the road is the critical determining factor.
- This is supported by a report from the City of Boulder, where all the 25 mph speed limit signs were changed to 20 mph, and the average, median and 85th percentile speeds saw no change



Design Speed

Design speed per functional classification for Urban Roadways

Urban							
Functional Classification	Major Arterial	Minor Arterial	Major Collector	Minor Collector	Commercial Local	Residential Local "Wide"	Residential Local
Design Speed	45 MPH	40 MPH	35–40 MPH	30 MPH	25 MPH	20 MPH	20 MPH
Horizontal Curve (ft)	900'	667'	667', 454'	300'	181'	100'	100'

Table 13-10-011-01 – Engineering Standards



Mode Prioritization



H = High Use Priority
(H) - High LOS

M = Medium Use Priority
(M) = Medium LOS

L = Low Use Priority
(L) = Low LOS

URBAN	Use Priority and Level of Service (LOS)									
	Automobiles*		Transit		Bicycle		Pedestrian		Parking	
	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General
Area LOS	n/a	n/a	(H)	(M)	(H)	(H)	(H)	(H)	n/a	n/a
Arterials	M (L)	H (H)	H	H	M	M	H	M	M	M
Collectors	M (M)	M (M)	H	H	H	M	H	H	H	M
Locals	L	M	L	L	H	H	H	H	H	H

SUBURBAN	Use Priority and Level of Service (LOS)									
	Automobiles*		Transit		Bicycle		Pedestrian		Parking	
	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General
Area LOS	n/a	n/a	(H)	(M)	(H)	(M)	(H)	(M)	n/a	n/a
Arterials	H (M)	H (M)	H	H	M	M	M	M	L	L
Collectors	M (M)	M (M)	H	M	H	H	H	H	H	M
Locals	L (H)	L (H)	L	L	H	H	H	H	H	H

RURAL	Use Priority and Level of Service (LOS)									
	Automobiles*		Transit		Bicycle		Pedestrian		Parking	
	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General	Activity Center	General
Area LOS	n/a	n/a	(L)	n/a	(M)	(L)	(M)	(L)	n/a	n/a
Arterials	H (H)	H (H)	L	L	H	M	L	L	H	H
Collectors	H (H)	H (H)	n/a	n/a	H	M	M	M	M	M
Locals	M(H)	M(H)	n/a	n/a	M	M	M	M	M	M

The tables are used to determine which features to enhance when right-of-way is scarce or when different uses hinder the functionality of each other

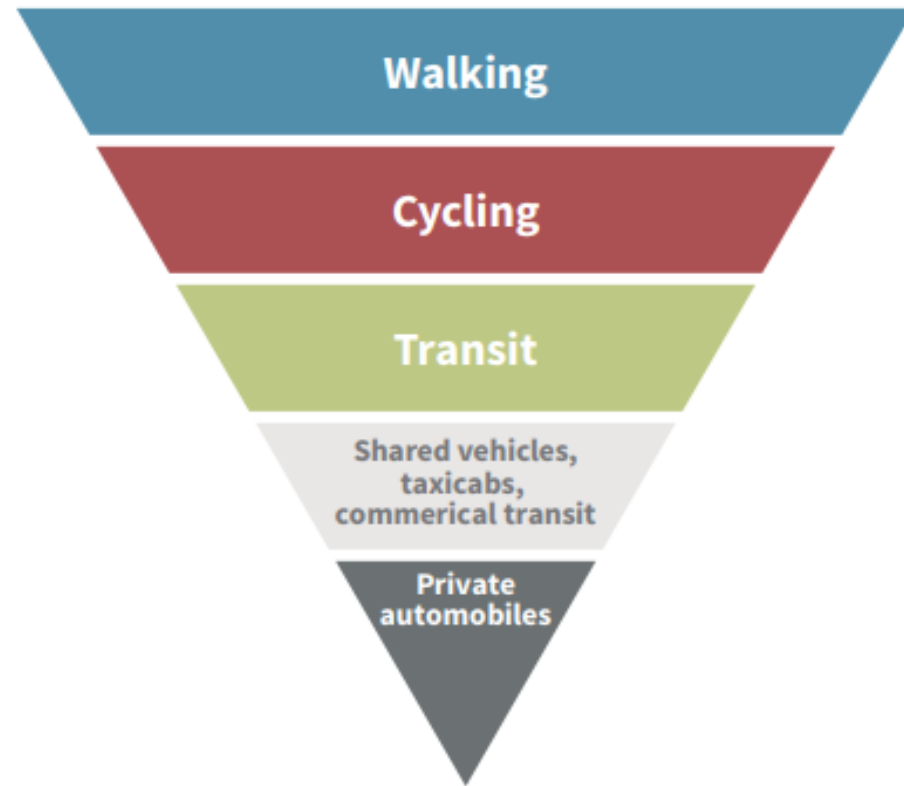


Example: City of Portland

Transportation hierarchy for people movement

The City will implement a hierarchy of modes for people movement by making transportation system decisions according to the following prioritization:

1. Walking
2. Cycling
3. Transit
4. Taxi, commercial transit, shared vehicles
5. Other private vehicles



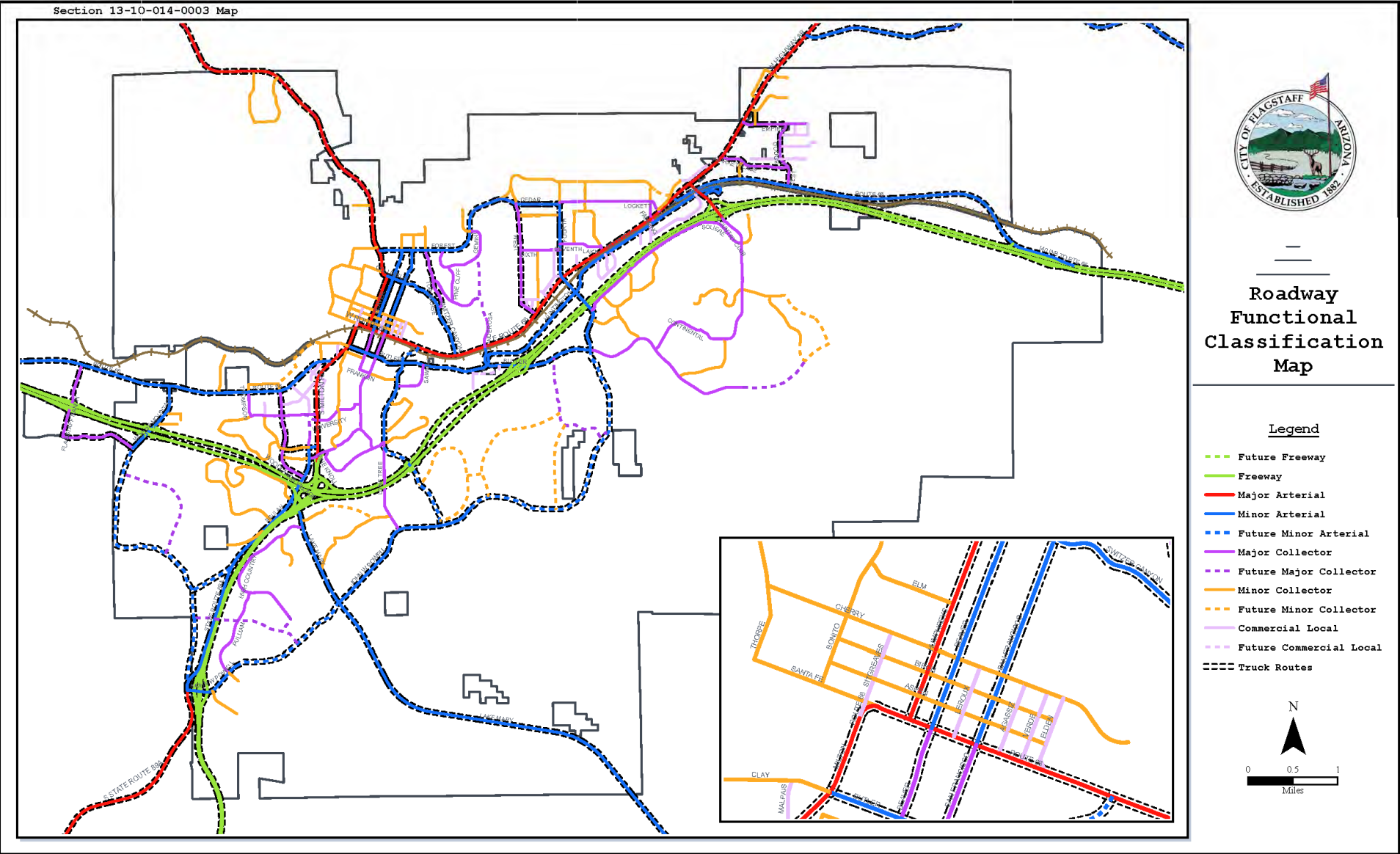


Example: City of Portland

When implementing this prioritization, ensure that:

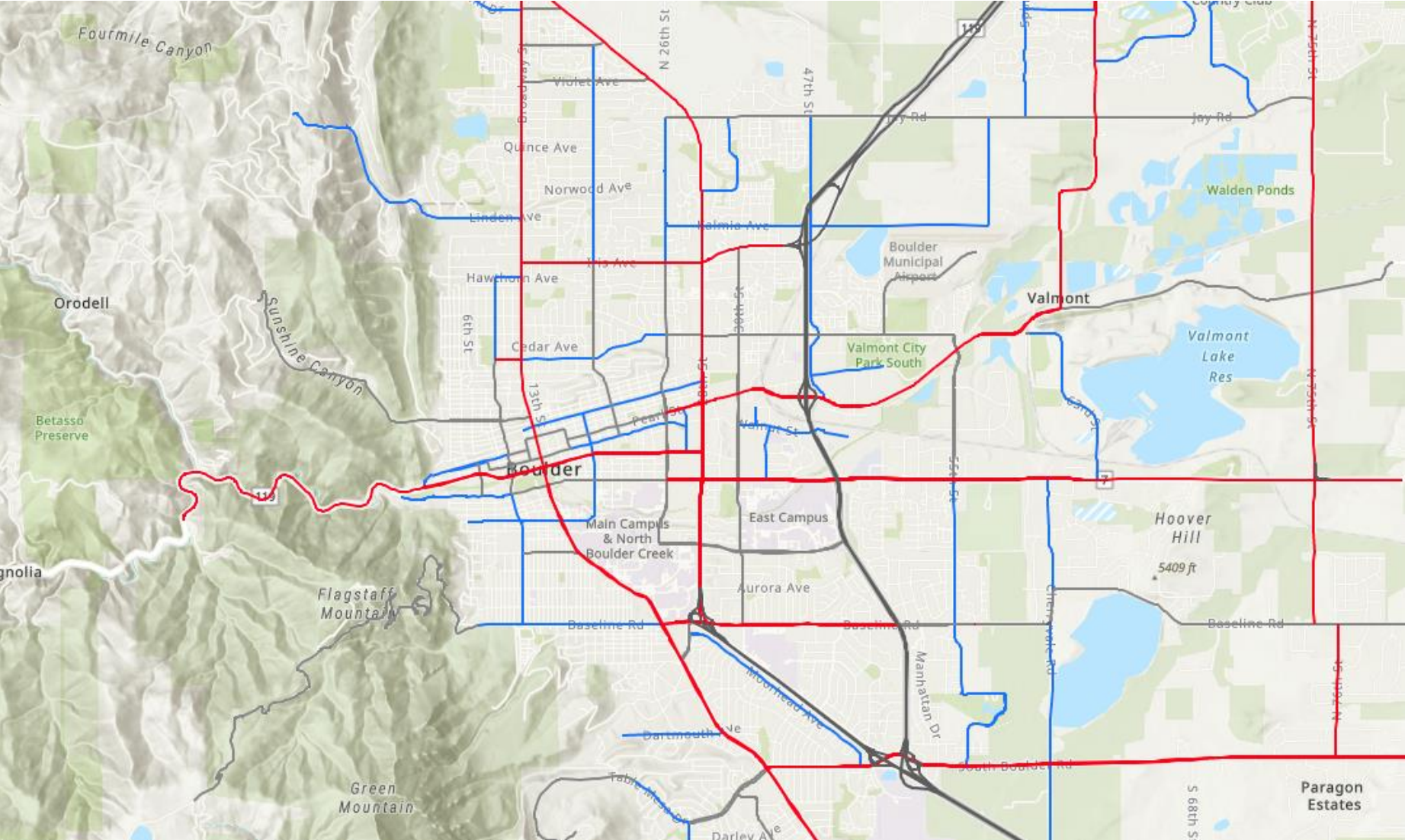
- The needs and safety of **each group** of users are considered, and changes do not make existing conditions worse for the most vulnerable users higher on the ordered list.
- **All users' needs are balanced** with the intent of optimizing the right of way for multiple modes on the same street.
- When necessary to ensure safety, **accommodate some users on parallel streets** as part of a multi-street corridor.
- Land use and system plans, network functionality for all modes, other street functions, and complete street policies, are maintained.
- Policy-based rationale is provided if **modes lower in the ordered list are prioritized.**

City of Flagstaff



All municipalities have a hierarchy of roads to serve the complex needs of the communities they serve

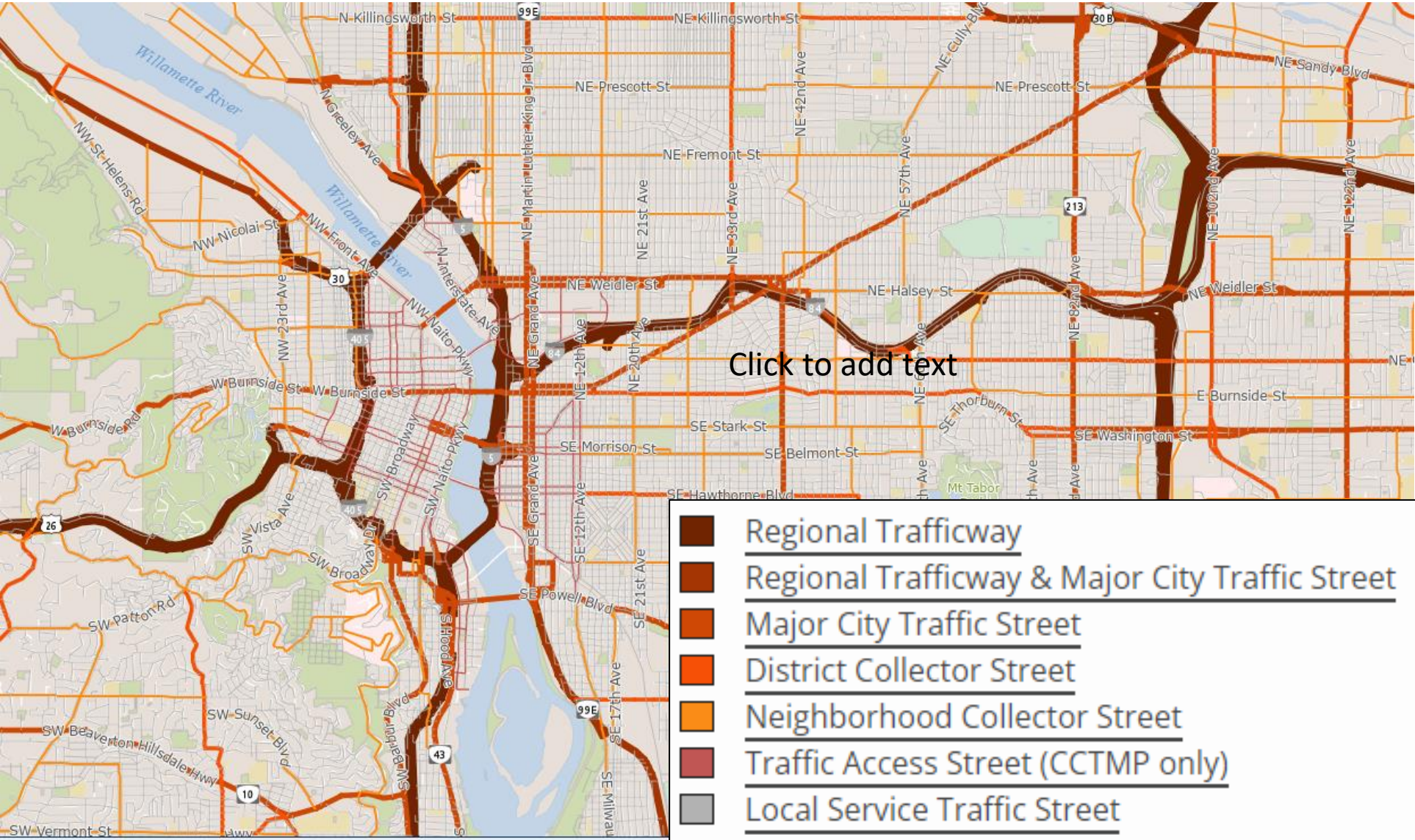
City of Boulder



Legend

- Expressway/Freeway**
— 45-60 MPH
- Principal Arterial**
— 35-45 MPH
- Minor Arterial**
— 25-35 MPH
- Collector**
— 25-30 MPH

City of Portland



Click to add text

	<u>Regional Trafficway</u>	
	<u>Regional Trafficway & Major City Traffic Street</u>	55-35 mph
	<u>Major City Traffic Street</u>	45 mph
	<u>District Collector Street</u>	25-35 mph
	<u>Neighborhood Collector Street</u>	25 mph
	<u>Traffic Access Street (CCTMP only)</u>	20-25 mph
	<u>Local Service Traffic Street</u>	

Engineering Design Standards: Direction



Engineering Design Standards Summary

1. Does City Council want us to further investigate VMT as a performance measure for future transportation impact analysis?
2. Does City Council want us to further investigate zones within the City that should be LOS exceptions?
3. Does City Council want us to further investigate changes to standard design speeds for future roadway planning?

Potential Regional Plan Changes

- Plan amendments
- Incorporation into Regional Plan Update



Supporting the Big Shift

1. City Code Analysis

- Scope
- Deliverables

2. Progress on the Big Shift CCR

- Transportation workshop
- MetroPlan Mini-grant
- Stride Forward Regional Transportation Plan

3. Stride Forward Regional Transportation Plan



Supporting the Big Shift

City Code Analysis Project

- **A collaborative process** with Housing, Sustainability, Engineering, and Community Development.
 - Also involving Economic Vitality, Water Services and IT.
- Designed to **accelerate** the achievement of the goals of the 10-year Housing Plan and the Carbon Neutrality Plan.
- **Paired** with the Land Availability and Suitability Analysis project.
- **Status:** Working now with procurement to develop the Scope of Work.



Supporting the Big Shift

City Code Analysis - Deliverables:

1. A report that systematically reviews all City development codes and processes.
2. Identification of codes that produce barriers to reducing greenhouse gas emissions, increasing community resilience, and/or improving community equity.
3. Recommendations for code revisions and policy changes that will better support the achievement of the Carbon Neutrality Plan and 10-year Housing Plan. Examples:
 - Recommendations for where to focus public investment, to enable and encourage development patterns such as 15-minute neighborhoods.
 - Revisions that will reduce auto-dependence and vehicle miles traveled.
 - Revisions that yield a wider variety of housing types and increased densities.
4. Testing of recommended changes on real projects in Flagstaff.



Supporting the Big Shift

Transforming Transportation Workshop

A chance to learn from national experts and get all regional transportation-related staff in the same room.



Key topics:

- Closing the planning ↔ implementation gap.
- Envisioning the next 1, 5, and 10 years.
- Learning how other cities are working to reduce vehicle miles traveled.

Transforming Transportation Workshops — Summary



Introduction

MetroPlan and the City of Flagstaff have policy positions supportive of and requiring the management of transportation demand, the encouragement of multi-modal transportation choices, and the reduction of transportation emissions in order to address climate change. A Sustainable Transportation Toolbox is being developed to direct and implement this effort. Phase 1 will build from the existing policies and develop performance targets for existing and new development that will help achieve carbon neutrality goals.

On May 3 and 4, 2022 a series of workshops focused on best practices and emerging trends were held as the first step in developing the Sustainable Transportation Toolbox. Workshop topics included:

- Changing Transportation Culture
- Vehicle Miles Traveled (VMT) Reduction Strategies
- Bicycle and Pedestrian Best Practices
- Transit Options

The workshop included attendees from MetroPlan, City of Flagstaff, Coconino County, the Arizona Department of Transportation (ADOT), Northern Arizona University (NAU), and Mountain Line.

The workshops focused on Jason Barger's Thermostat Culture and 6A's shown here. Attendees were encouraged to act not as thermometers reacting to their surroundings, but instead as thermostats actively setting their organization's cultural temperature.

Anchor...Our Values

What actions need to become habits?

- Sharing of facts
- Consistent messaging amongst plans



Assess... Where We Are

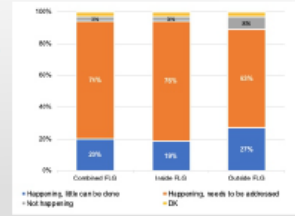
An overview of existing socioeconomic conditions, developments, barriers, and transportation network was presented. Results of an online public survey were shared.

What are we doing well?

- Planning and Policies in place
- Positive outlook
- Collaboration

What can we improve?

- Connectivity
- Planning to Implementation
- Public Engagement



Align... Our Thoughts

An overview of results from a random sample survey, and goals and strategies from existing plans were presented.

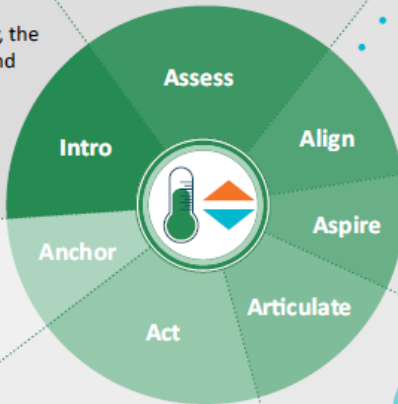
What is our WHY?

- Environment
- Health of Community
- Changing Lives

How can we better align our teams and the community?

- Partnerships
- Guidance for Planning to Implementation
- Update standards to policies

62% of respondents expressed a willingness to switch modes.



Aspire... Towards Stride Forward Sustainability Goals

Attendees were asked to describe the finest transportation system, how it can be created and promote our sustainability goals. Responses included: clean, convenient, safe, quiet, affordable, maintained, connected, beautiful, accessible, and one that serves all modes.

What do we want to be different in...?

- The next year? More signage, expanded micromobility, alternative routes during construction
- Five years? Travel demand management program, updated codes and standards, maintenance funding
 - Ten years? Land use changes away from decentralized development

Act... Bias Toward Action

Attendees discussed possible near-term options, obstacles, and changes that can be controlled and led to achieve Stride Forward Sustainability Goals.

- Clear Core Values
- Organizational Education
- City-wide Transportation Plan
- Street typology



Articulate ... Towards Stride Forward Sustainability Goals

Attendees discussed how the core values and WHY could be implemented across plans and disciplines. A need for a consistent WHY was identified as the first step. This would allow for policy implementation across codes and standards. Attendees also identified a need for consistent language and messaging for Management, Council, and public engagement.



Supporting the Big Shift

Citywide progress:

- Infrastructure Law funding for the Downtown Mile - CONGRATULATIONS!

Upcoming:

- Active Transportation Master Plan
- Incorporating vehicle miles traveled (VMT) into transportation modeling and analysis
- Developing performance standards to guide projects – will help us to incorporate transportation demand management, VMT calculations, etc.



Supporting the Big Shift



Stride Forward Regional Transportation Plan

- Close to completion!
- The Upward Concept will identify ways to meet the goals of the CNP.
- MetroPlan will present to City Council in early 2023.



Recap and Discussion

1. Direction requested:

- a. Transportation Safety initiative
- b. VMT as a performance measure for future transportation impact analysis
- c. LOS exception zones
- d. Standard design speeds for future roadways

2. Further Discussion?

Thank You!

