



# Transportation Master Plan Progress Update Focus Area: Complete Streets

City Council Study Session  
May 31, 2016



# Study Session Purpose

- Transportation Division
  - Safety
  - Putting People First
    - Pedestrians Primary Mode
  - Core Services
- TMP Progress Update
  - Overview
  - Focus Area:
    - Complete Streets

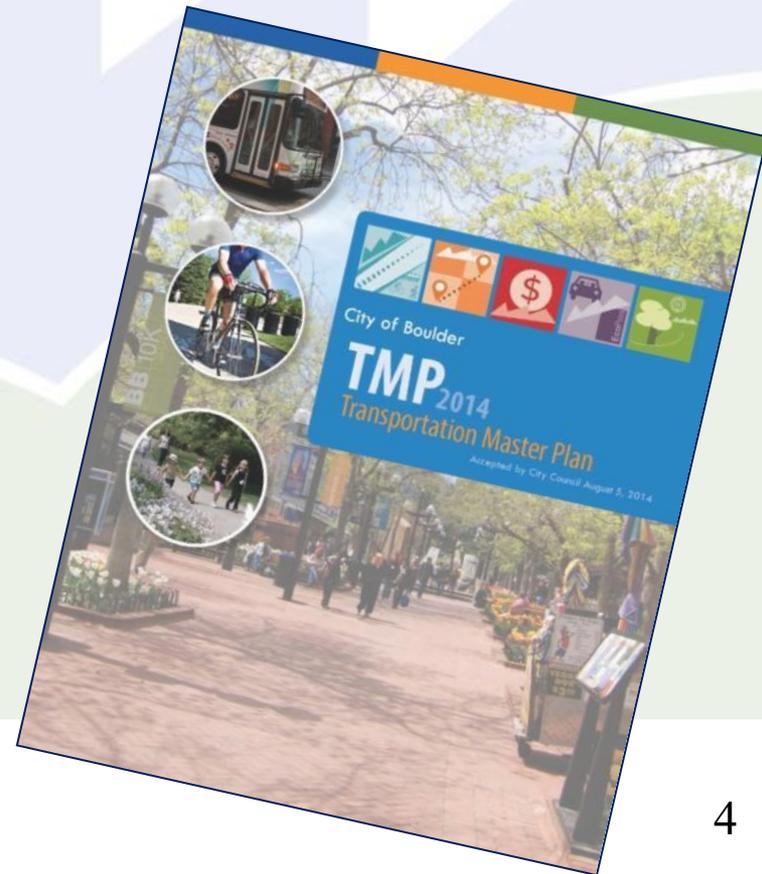


# Council Feedback Requested:

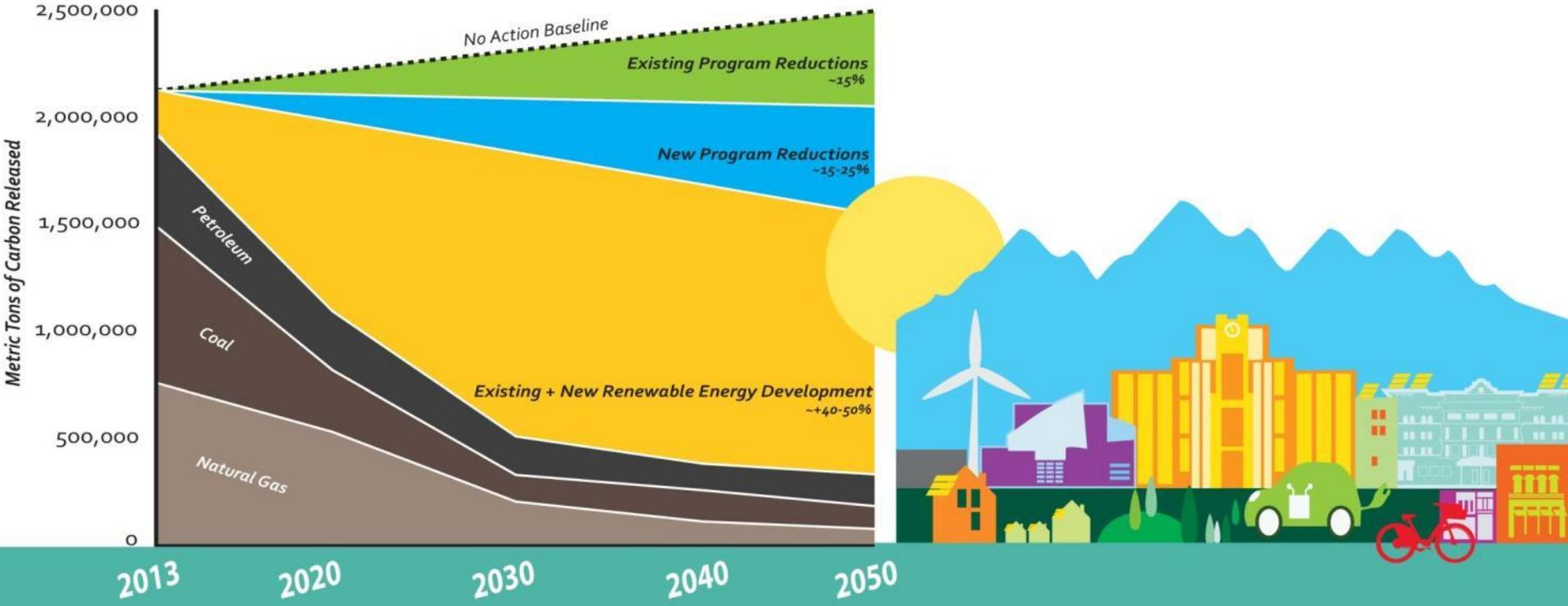
- Canyon Blvd Complete Street Study
- Renewed Vision for Transit
  - Check in on 2016-17 work program items
- Living Lab Phase II
  - Folsom Street Pilot Project
- TMP implementation progress and next steps

# Boulder's Transportation Master Plan

- Supports Boulder Valley Comprehensive Plan, Sustainability Framework, and Resiliency Strategy
- Focus Areas
- Measurable Objectives
- Investment Priorities
- Action Plan
- Report on Progress
- Living Document



# Setting Course for a Low-Carbon Future: Boulder's Climate Commitment



March 2016



## The Transportation Report on Progress



Prepared by the City of Boulder Transportation Division



# Community Report Card

## TMP Objectives Summary

TMP Objectives for 2035

Baseline

Progress

Trend

1	Reduce vehicle miles of travel (VMT) in the Boulder Valley by 20 percent by 2035	1994 level of 2.44 million daily VMT for the Boulder Valley; target now 1.9 million daily VMT	Est. 2.42 million daily VMT for the Boulder Valley in 2014	Static, needs 20 percent further reduction in daily VMT 
2	Reduce single occupant vehicle travel to 20 percent of all trips for residents and to 60 percent of work trips for nonresidents	1990 44 percent SOV mode share for residents	Reduced to 36.5 percent in 2015 for residents	Positive but needs to accelerate 
		1991 81 percent nonresident SOV commute mode share	Remains at 80 percent in 2014 for nonresident employees	Static, needs significant change 
3	Achieve a 16 percent reduction in greenhouse gas emissions and continued reduction in mobile source emissions of other air pollutants	310, 749 million metric tons of GHG in 2013	New objective	To be determined in next 2017/18 report
4	No more than 20 percent of roadways congested at level of service F	23 percent in 1998	9 percent in 2015	Positive 
5	Expand fiscally viable transportation options for all Boulder residents and employees, including older adults and people with disabilities	2002 - \$160,000 city support to Via	2015 - \$290,546 city support to Via	6.3 percent annual increase 
		2002 - 3,822 est. residents eligible for Neighborhood EcoPass	2015 - 11,922 est. residents eligible for Neighborhood EcoPass	16.3 percent annual increase 
8	Increase transportation alternatives commensurate with the rate of employee growth	<b>2002</b> Estimated Boulder Employees 84,530 Local Transit Service Hours 215,074 Avg. Local Weekday Ridership 18,631 Regional Transit Service Hours 100,956 Avg. Regional Weekday Ridership 7,446 Centerline miles of bike system 138	<b>2015</b> Estimated Boulder Employees 98,510 Local Transit Service Hours 195,205 Avg. Local Weekday Ridership 20,347 Regional Transit Service Hours 131,402 Avg. Regional Weekday Ridership 11,713 Centerline miles of bike system 163	
7	"Toward Vision Zero" for fatal and serious injury crashes: continuous	2016 Safe Streets report in progress	New objective	To be determined
8	Increase the share of residents living in complete, walkable neighborhoods to 80 percent	26 percent of residents lived in a walkable neighborhood in 2014	New objective	To be determined
9	Reduce daily resident VMT to 7.3 miles per capita and nonresident one-way commute VMT to 11.4 miles per capita	11.2 mile per day for Boulder residents in 2012	New resident data in 2016	To be determined
		14.3 nonresident one-way commute in 2014	New nonresident data will be collected in 2017	To be determined

# Safe Streets Boulder Moving Toward Vision Zero

*Engineering  
Education  
Enforcement  
Evaluation*



From 2009-2014, approximately **3,275 COLLISIONS** were reported to the Boulder Police Department each year

Collisions that resulted in a **SERIOUS INJURY** or **FATALITY** have been relatively flat at **2%** of total collisions in the past six years

## **BICYCLISTS & PEDESTRIANS**

are overrepresented in collisions that result in serious injuries or fatalities, **ONLY 8%** of all traffic collisions in the City of Boulder involve bicyclists or pedestrians.

They account for approximately **60%** of serious injuries and fatalities

**IMPAIRED PERSONS** are overrepresented, especially those involving bicyclists and pedestrians resulting in serious injuries or fatalities

Approximately **3%** of total collisions involve an impaired person

**12%** of serious injuries and **38%** of fatalities involve an impaired person

# TMP Overview & Next Steps

- TMP guides Transportation Division's work program and investment priorities
- Integration with city-wide initiatives
  - BVCP, Climate Commitment, AMPS, Civic Area, and Chautauqua
- Focus Area: Complete Streets
  - Canyon Boulevard Study
  - Living Lab Phase II – Folsom Street
  - Renewed Vision for Transit
- Future 2016 Check-ins with City Council

# Comments from TAB

- TMP progress to-date is going in the right direction, more work is needed in many areas as pointed out in the recent 2016 Transportation Report on Progress:
  - Safety enhancements to achieve Vision Zero safety goal
  - Local and regional transit improvements
  - First and final mile connections
  - Complete Streets corridor plans, including Canyon Boulevard, East Arapahoe, and 30<sup>th</sup> Street & Colorado Avenue
  - Integrate transportation with land use planning:
    - Boulder Valley Comprehensive Plan update
    - Climate Commitment
    - Resilience Strategy

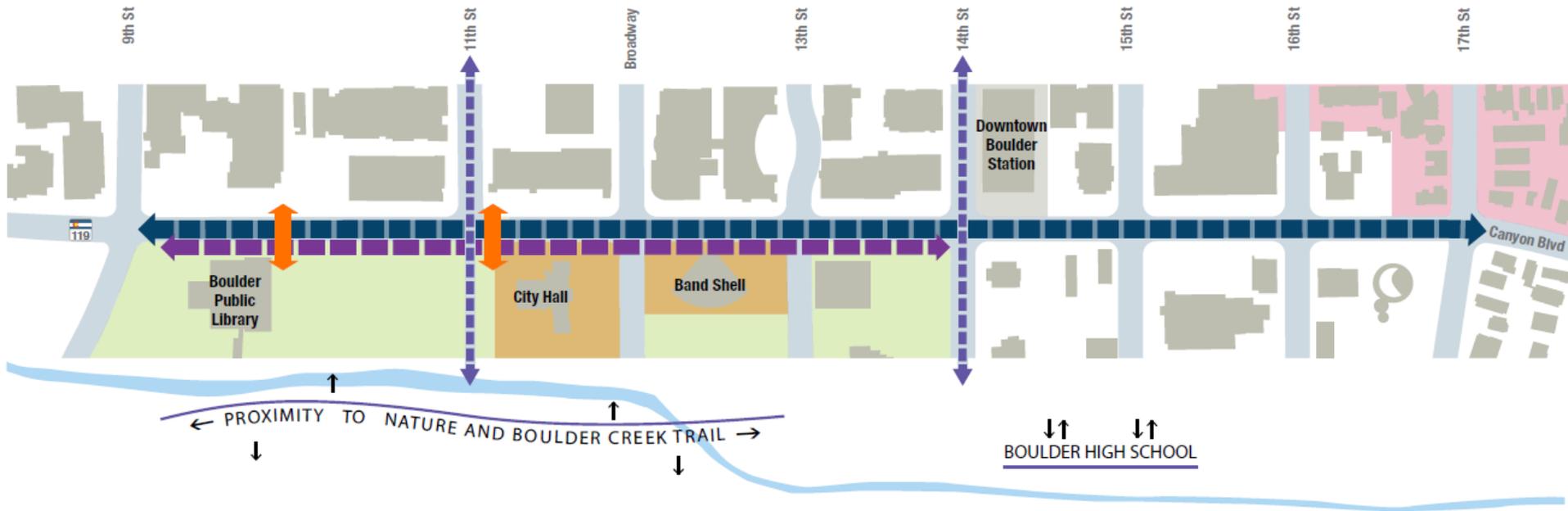


# Canyon Boulevard

## Complete Streets



# Scope and Purpose



# Project Timeline

- Late 2015/2016 Phase 1
  - Existing conditions
  - Vision, Goals and Objectives
  - Conceptual design options
  - Evaluation measures
  - Evaluation of conceptual design options
  - Preferred conceptual design option
- 2017 Phase 2
  - Preliminary engineering
  - Cost estimation for the selected design option

# Vision

*Canyon Boulevard will become a more accessible, safe and inviting travel experience for pedestrians, bicyclists, transit and cars traveling across and along the corridor*

# Goals

## > Complete Street

- Connecting people to destinations safely and conveniently for all travel modes

## > Design Excellence

- Enhance visual interest, legibility, wayfinding

## > Preserve Heritage

- Greater understanding of historic significance of corridor and surrounding area

## > With Nature

- Minimize negative impacts to natural systems and consider ways to better interact with natural systems

## > In Accordance with related plans and community feedback

# Objectives and Measures

## Complete Streets Goal

- Increase safety for people traveling in the corridor
- Improve walking and bicycling experience along and across corridor
- Maintain function as a cross-connector for vehicular through-traffic
- Accommodate existing and future plans for transit service on corridor and operations at the Downtown Boulder Station
- Integrate walking and bicycling with transit at station and throughout corridor

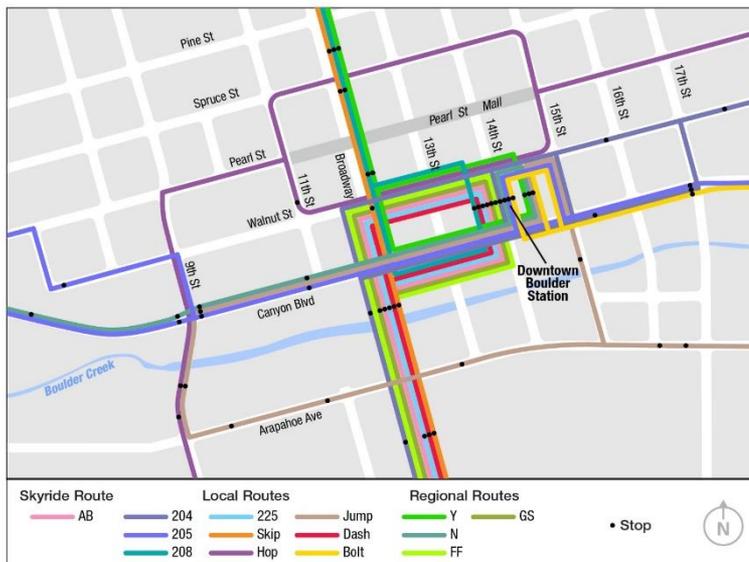
# Existing Conditions and Influences – Transportation Element

Evening Peak Period (5 pm-6 pm)

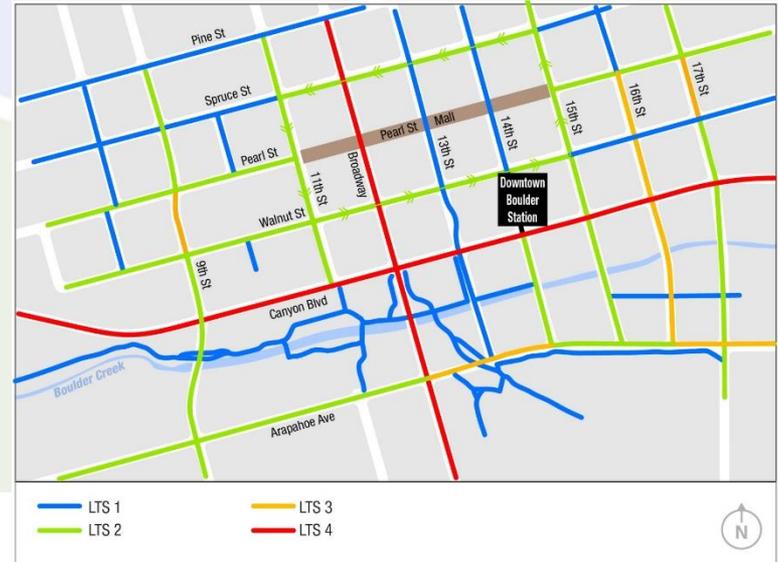


# Existing Conditions – Transportation Element

## Pedestrian



## Transit



## Bike

# Conceptual options

- Features shared by all 7 options:
  - 130 foot Complete Streets planning width
  - Maintained 4 vehicular lanes
  - Double tree rows and center medians
  - Glen Huntington Band Shell influences and impacts design but can be accommodated

# Design Options 1 and 2

Option 1 Canyon at 11<sup>th</sup> looking east



- Multi-use path on south
- Sidewalk on north
- Continuous planted center median

Option 2 Canyon at 11<sup>th</sup>



- Multi-use path on both sides
- Amenity zones
- Intermittent planted median

# Design Options 3 and 4

## Option 3



- 2-way protected bike lane on north side
- Sidewalks on both sides
- Amenity zones
- Intermittent center median

## Option 4



- 2-way protected bike lane on south
- Sidewalks on both sides
- Intermittent center median

# Design Options 5 and 6

## Option 5



- On-street bike lanes
- Sidewalks
- Amenity zones
- Continuous planted median

## Option 6



- Single direction protected bike lane on each side
- Sidewalks
- Amenity zones
- Continuous planted median

# Design Option 7

## Option 7



- Buffered bike lane on each side of street
- Sidewalks
- Amenity zones
- Intermittent planted median

# Canyon Boulevard Study

## Questions for Council:

- Next Steps
  - Update in Dec. study session
- Council questions and feedback:
  - Study vision
  - Goals and objectives
  - Evaluation measures
  - Range of conceptual design options



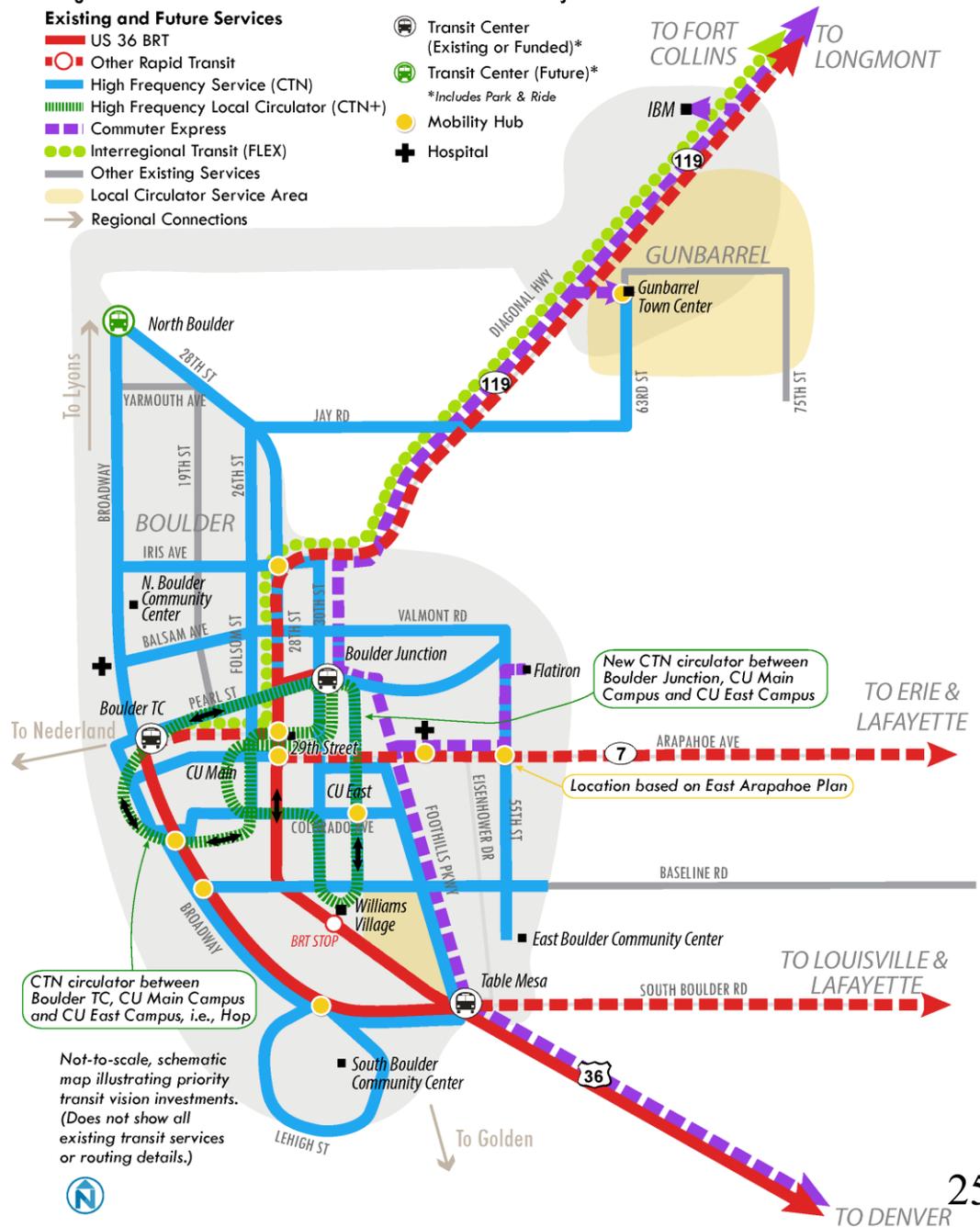
# **Renewed Vision for Transit 2016-17 Work Program**

# Transportation Master Plan's Renewed Vision for Transit

## 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



CTN circulator between Boulder TC, CU Main Campus and CU East Campus, i.e., Hop

New CTN circulator between Boulder Junction, CU Main Campus and CU East Campus

Location based on East Arapahoe Plan

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

# Recent Accomplishments

## Transit Service



US 36 Corridor



FLEX to Boulder

# Recent Accomplishments

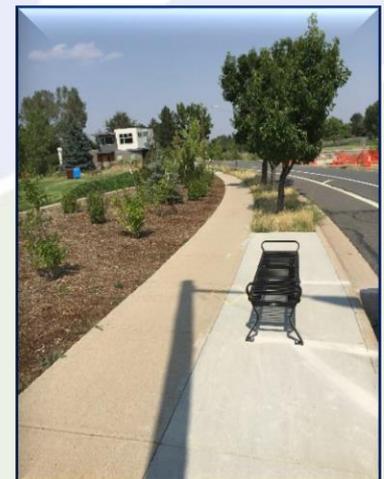
## Transit Capital



Bus then Bike



Boulder Junction



Transit Stop  
Improvements

# Recent Accomplishments

## Transit Programs

### 2015 City of Boulder Neighborhood EcoPass Programs

The Neighborhood EcoPass program is a three way effort between neighborhood volunteers, the city of Boulder, and RTD. If you live in one of these neighborhoods, you can sign up for a low-cost, annual, and unlimited ride bus and light-rail pass. For more details contact your neighborhood coordinator today or visit: <https://boulder.colorado.gov/gpboulder/neighborhood-eco-pass>

**NECO MAP KEY**

1. Neighborhood  
For the Program Coordinator Contact Info see key on the right of the map.

For more information on the Neighborhood EcoPass Program:

**RTD** **GO BOULDER**

303-299-2122 303-441-2008  
www.rtd.com www.go-boulder.com

**NECO Coordinator Contact Info:**

1. tracy.foster@bouldercolorado.gov
2. hoo@mockpm.com
3. arylebecca@gmail.com
4. jim@hartmaninvestments.com
5. gbrunser@cedenath.com
6. hunk@boulder.colorado.gov
7. happygo2@comcast.net
8. burnieecopass@gmail.com
9. nobocopass@gmail.com
10. sailonee@hotmail.com
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39. kpolar@aol.com
40. caitlinmccoy@gmail.com
41. goneflyng@yahoo.com
42. silver@coloradoatm.org
43. jhdemis@msn.com
44. whitner.ecopass@gmail.com

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Search Line or Destination

**DASH**  
Lafayette Pnr  
Broadway / Canyon Blvd  
3 minutes

**SKIP**  
Fairview HS via Broadway  
Broadway / Canyon Blvd  
4 minutes

**225E**  
Us36 / Brmfld 225e Ebcc 2...  
Broadway / Canyon Blvd  
19 minutes

**204**  
Front Range / Broadway  
Broadway / Canyon Blvd  
20 minutes

# Transit Work Program

## Local Service



HOP Transit  
Study



CTN Wraps

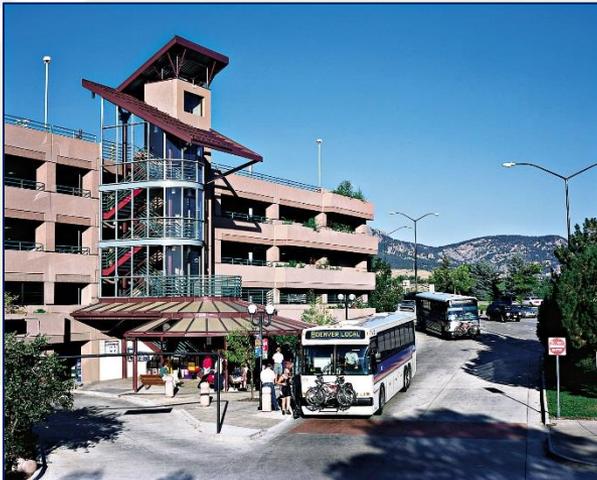
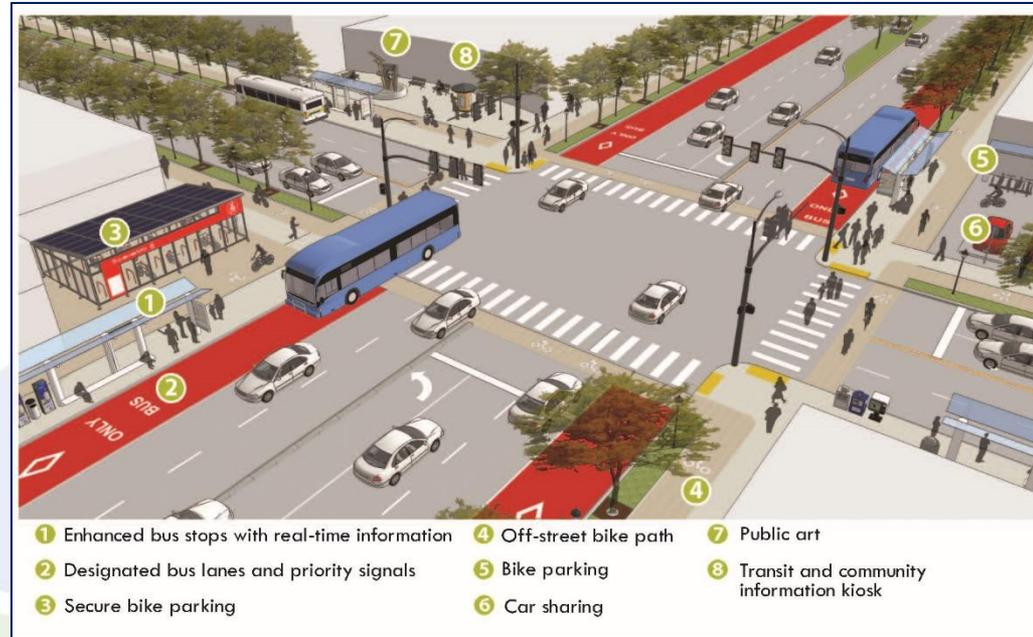


Transit Stop  
Maintenance

# Transit Work Program

## Local Capital

- Mobility Hubs
  - Table Mesa
  - North Boulder



# Transit Work Program

## Local Capital

- Transit Stop Improvements
  - Partnering with RTD
  - Coordination with new developments
- HOP Vehicle Replacement
  - Clean Fuel/E-Vehicles
- Joint Maintenance Facility
  - City, County, CDOT, RTD, CU Via, and BVSD

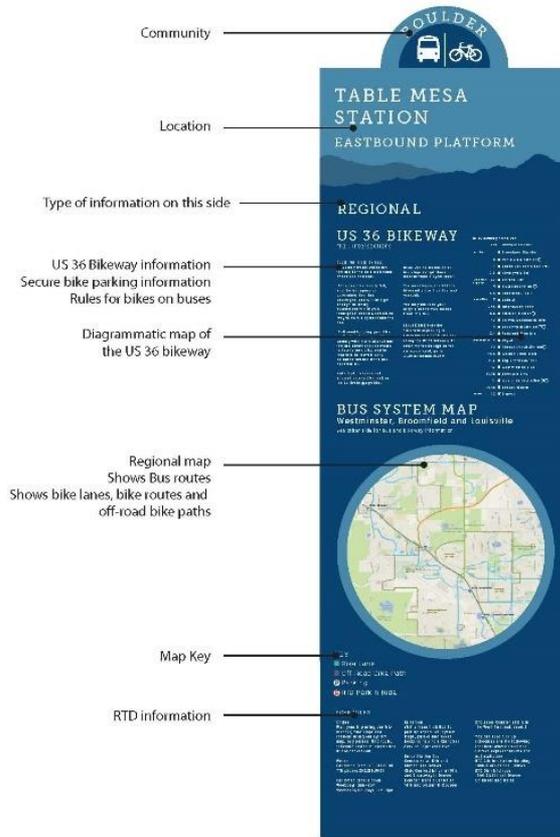
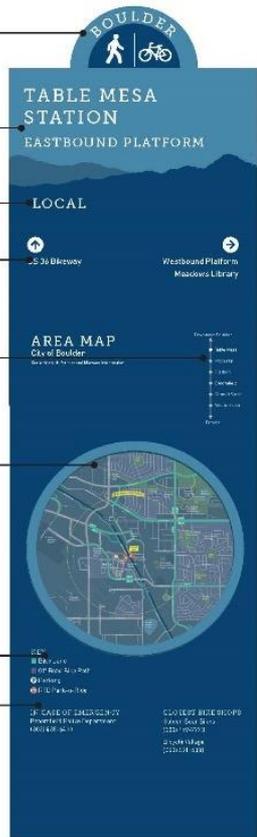




# Transit Work Program

## Regional Capital & Programs

### US36 Wayfinding



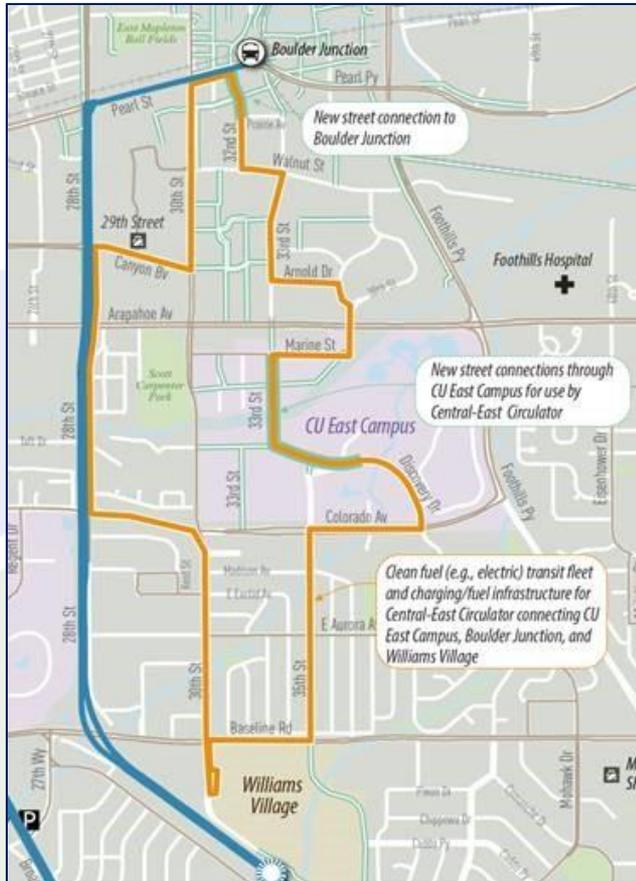
### Community-wide EcoPass



### Bus to Work Day 2016



# What's Coming

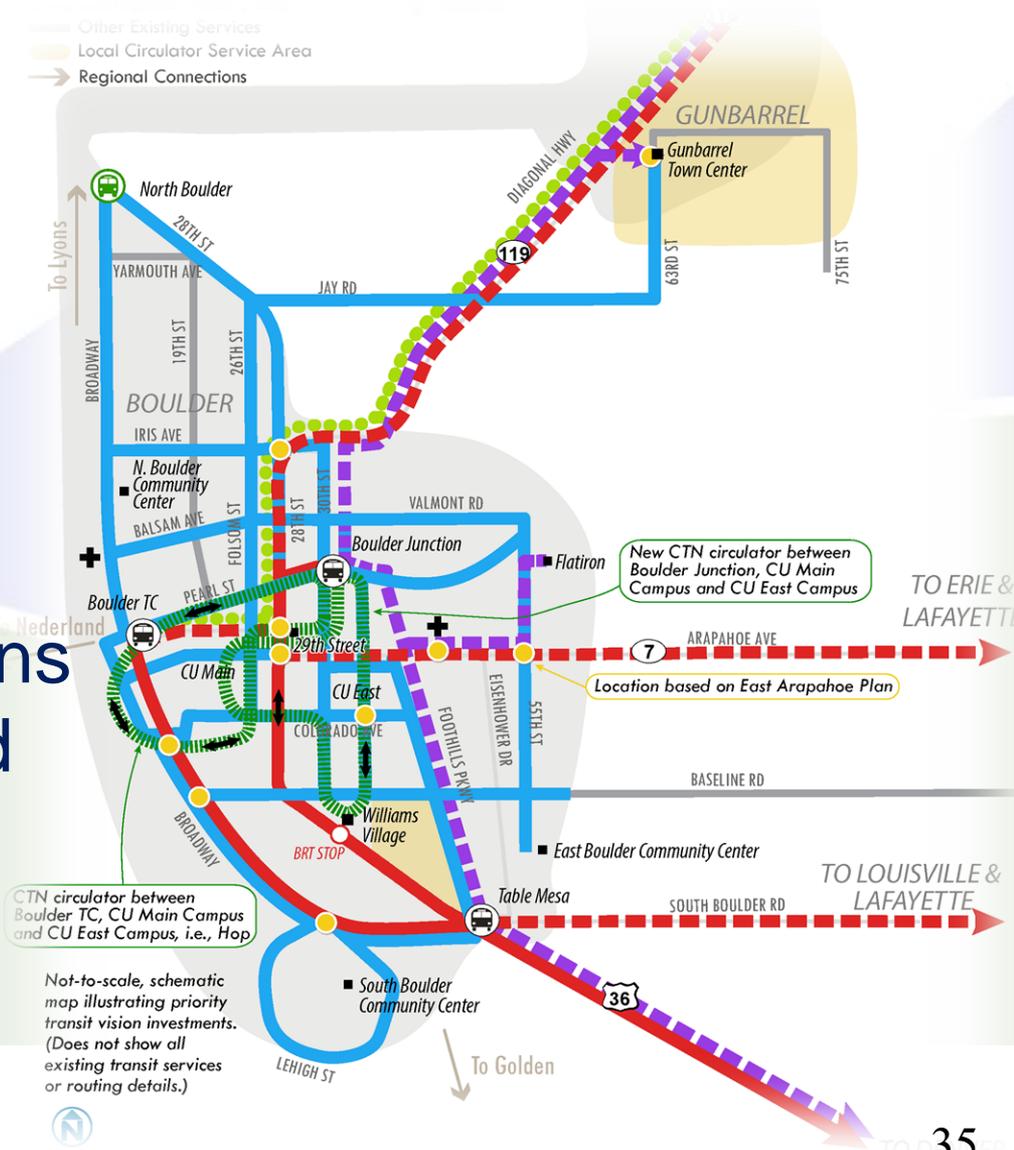


Eastside Circulator

Via Strategic Planning

# What's Coming

- Transit Service Delivery Model Study
  - Build on current local and regional partnerships
  - Explore delivery options for local, regional, and interregional service
  - Advance Renewed Vision for Transit



# Next Steps

- Continuation of Transit Work Program
- Ongoing Outreach & Working Groups
  - HOP Study
  - East Arapahoe Transportation Plan
  - Integrated planning with BVCP & CAMP
- City Council Study Session
  - Focus on Transit - September 27, 2016

# Question for Council:

Does Council have input to guide next steps on the elements of the city's Renewed Vision for Transit 2016 work program items?



# **Complete Streets: Living Lab Phase II Folsom Street Pilot Project**



- Action item of the 2014 TMP
- Enhance on-street system to be safe and comfortable to all users
- Test innovative engineering treatments and programs
- Develop tools for city's Street Design Guidelines
- Inform 2.0 network and corridor planning, north/south bike connections & bike boulevards





The TMP sets ambitious yet realistic mode share goals of:



## Objectives

Reduce Vehicle Miles Traveled (VMT) by 20%

Reduce Single Occupant Vehicles (SOV) to 20% of all trips

Reduce mobile source emissions

Max of 20% roadways at LOS F

Expand fiscally viable alternatives for residents & employees

Increase alternatives with rate of employee growth

Toward Vision Zero traffic injuries

Increase neighborhood accessibility

Reduce VMT per capita by 20% for residents and employees

# Folsom Street Pilot Project Phase II Valmont Road to Colorado Avenue



# Living Lab Evaluation

## (Before, During and After)



### Technical data

- Speed
- Volume
- Travel time
- Intersection delay

### Observations

- Demographics
- Behavior
- Conflicts

### Community Input

- Open House
- Online questionnaire
- Pop-up events
- Stakeholder meetings

# Technical Analysis and Observations

- Traffic operations have stabilized and reflect the before condition.
- Additional bicycle count data is needed to determine trends in bicycle travel along the corridor.



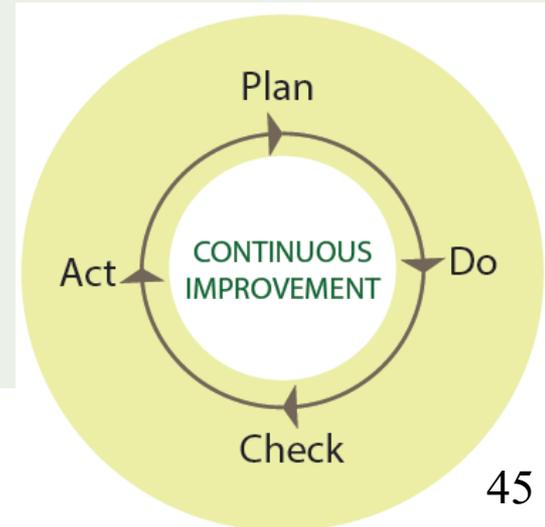
# Community Feedback

- Public events, on-line questionnaire, social media
- Input on pilot project:
  - Maintain, refine, or remove
- Feedback mixed on north segment, more consistent on middle, and south segments



# Learning from National Experiences

- National cities interviews
  - Share & Learn:
    - Public engagement and outreach
    - Evaluation criteria and decision making
    - Lessons Learned
- Feedback from Portland/Eugene
- Host Complete Streets panel/public event - Fall 2016.



# Recommendations & Next Steps

- Continue Folsom Street pilot project, with on-going monitoring through 2016
- Safety mitigation
  - Folsom & Taft
  - Folsom & Canyon
- Apply Lessons Learned
  - Corridor plans,
  - 2.0 Network Planning
- Host Complete Street Panel - Fall 2016



# Question for Council:

- Does Council have questions and feedback regarding the Living Lab Phase II Folsom Street pilot project update, including input for the Complete Streets panel event in fall 2016?

# Next Steps and Overall TMP Question

- Next steps:
  - June 14: Development Related Impacts Fees and Excise Taxes
  - Sept. 27: Renewed Vision for Transit scheduled
  - Oct. 25: AMPS
  - Dec. 13: TMP Overview
- Feedback on overall TMP progress to-date on implementation activities and next steps?



RENEWED VISION FOR TRANSIT

Support Slides

# TMP Investment Priorities

- Highest priority - system operations, maintenance and travel safety;
- Next priority – operational efficiency improvements and enhancement of the transit, pedestrian and bicycle system;
- Next lowest priority - quality of life, such as sound walls and traffic mitigation; and
- Lowest priority - auto capacity additions (new lanes and interchanges).
  - \* *Within each priority level, all items are given equal weight.*

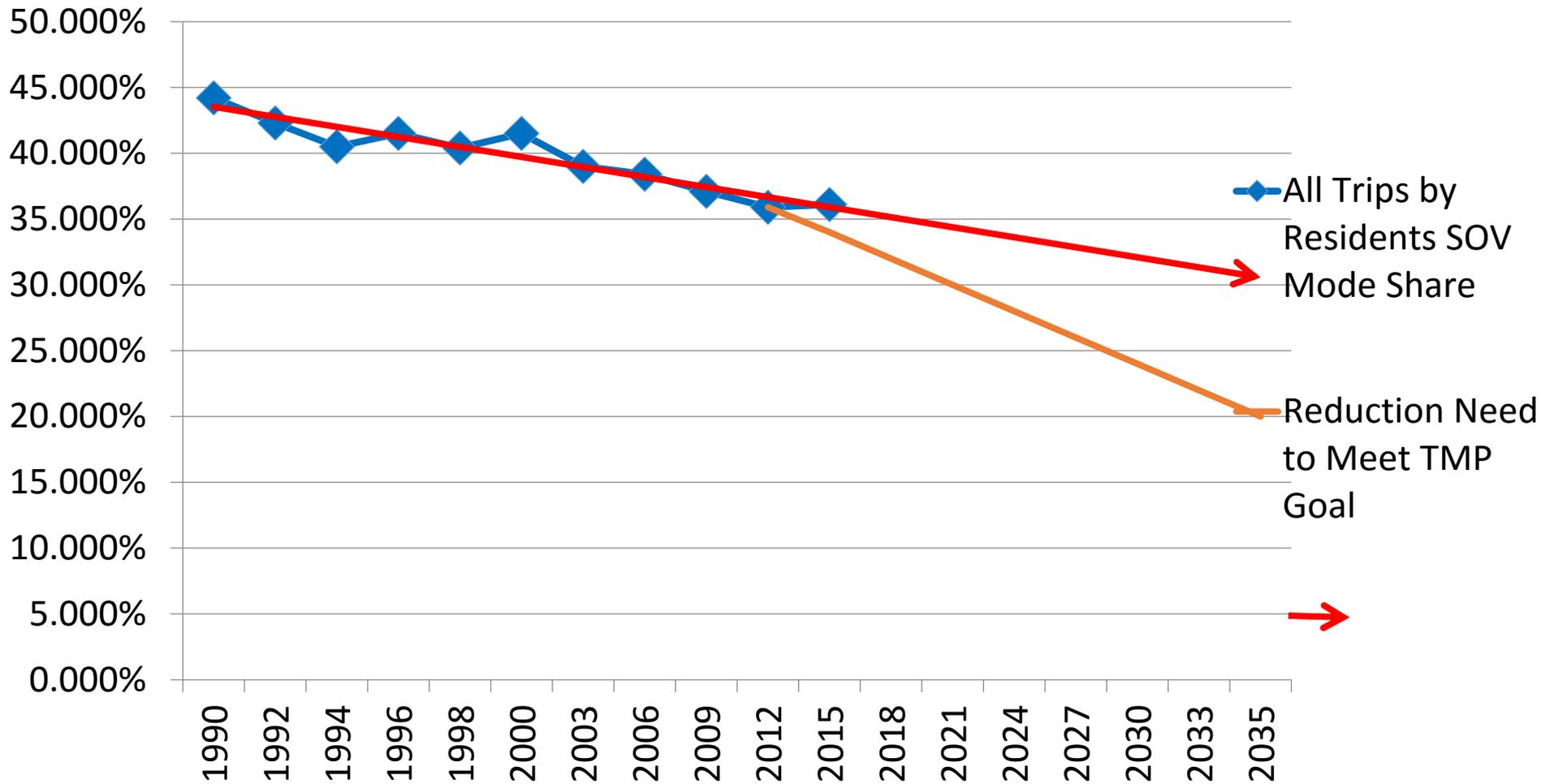
# TMP Investment Priorities

- Investment in modal enhancements will be integrated between all modes, focused in the designated multimodal corridors, and prioritized by the ranked multimodal corridor segments.
- As the street network is the primary infrastructure for all modes, it will be managed and expanded to balance its use by all the modes. Roadway capacity will not be added at the expense of the non-auto modes.

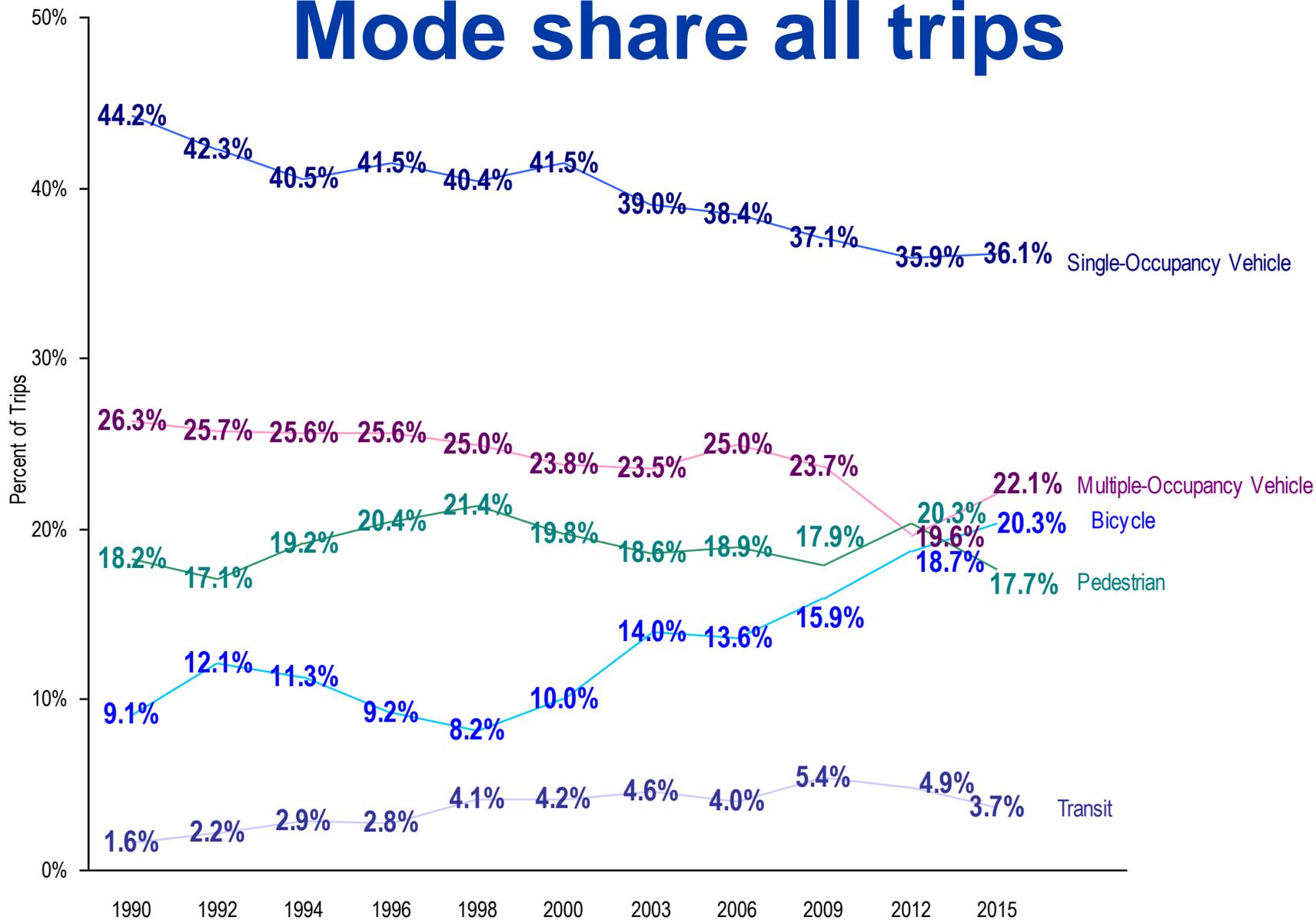
# TMP Investment Priorities

- The city's transportation system includes all the modes and the resources needed for the sustainable operation of the system.
- Any consideration of the share of system funding allocated to future growth will be based on this system.

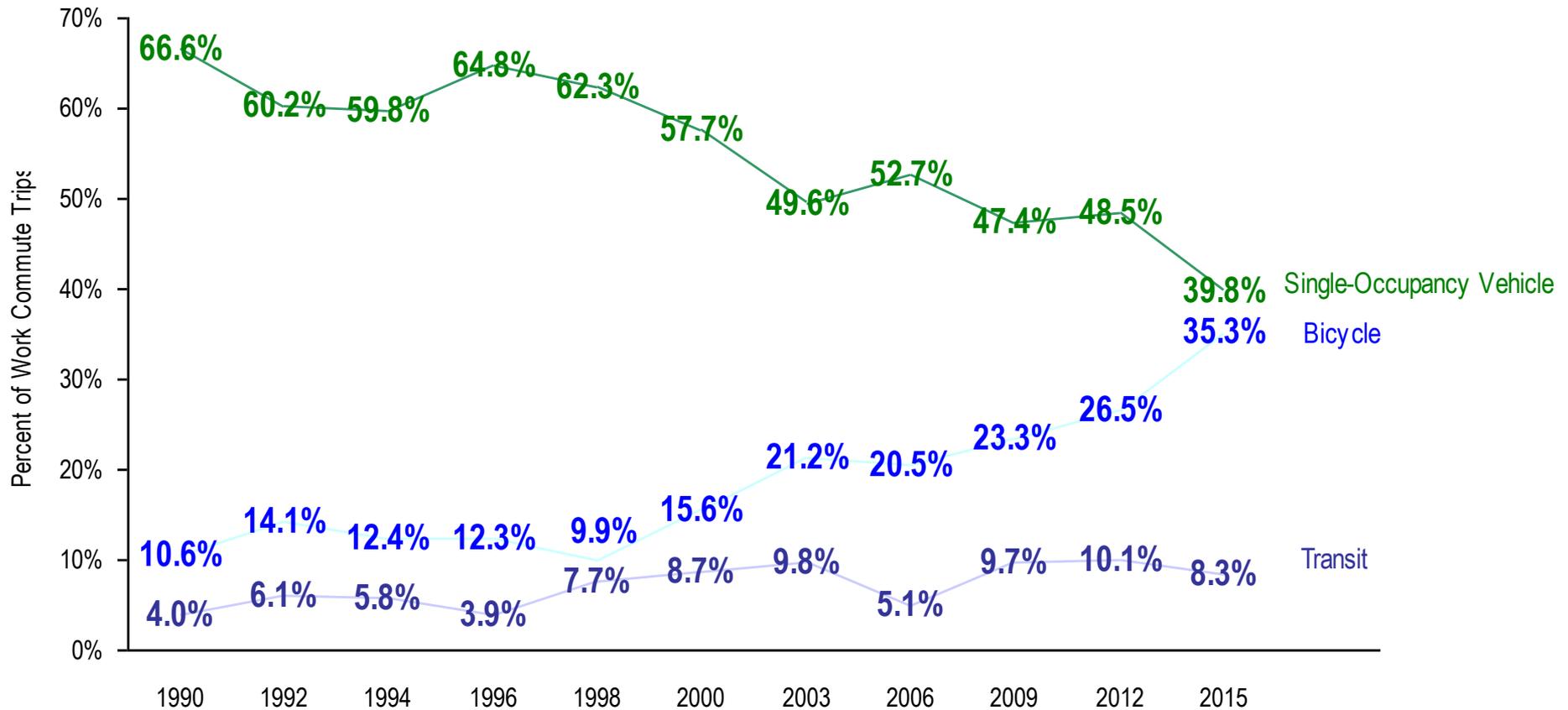
# 2015 Travel Diary Survey



# 2015 Travel Diary Survey: Mode share all trips



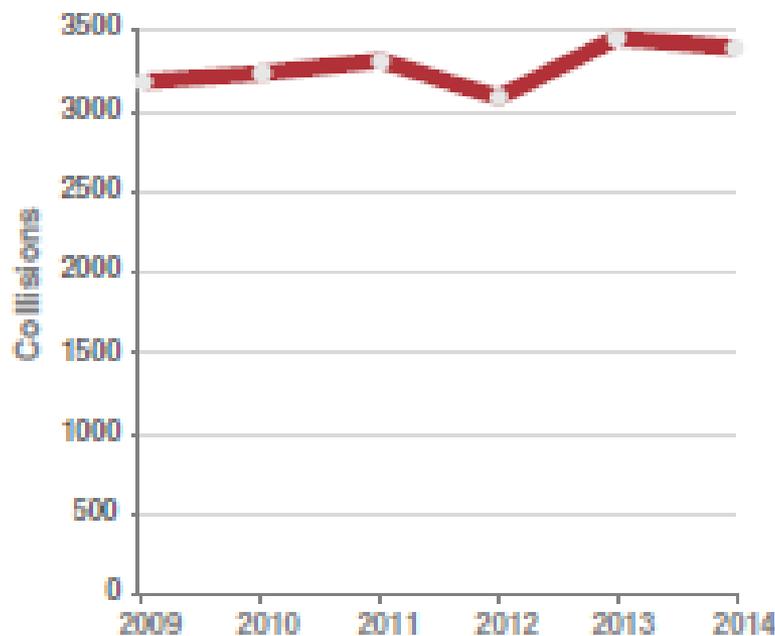
# 2015 Travel Diary Survey: Mode share for Work Commute



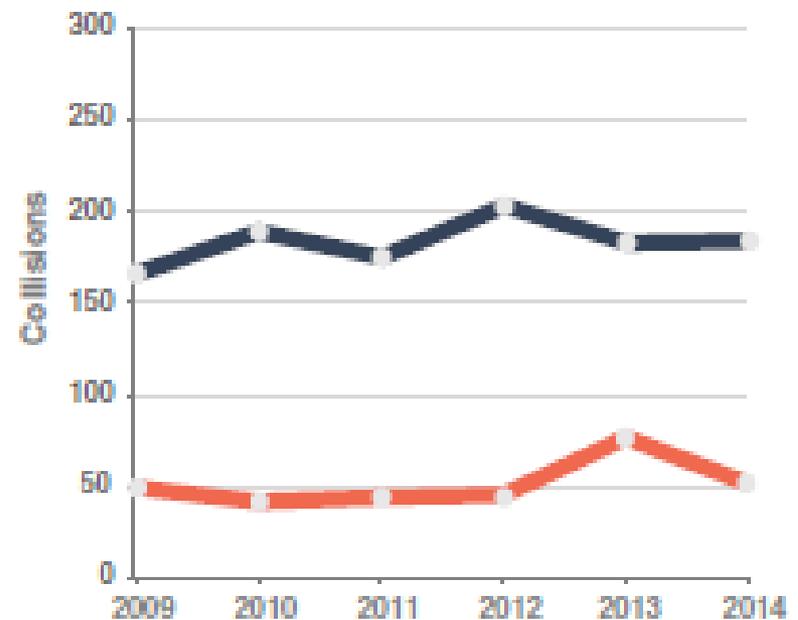
Progress towards the TMP safety objectives is measured using the following metrics:

- Total collisions, fatalities and serious injuries
- Total bicycle collisions, fatalities and serious injuries
- Total pedestrian collisions, fatalities and serious injuries

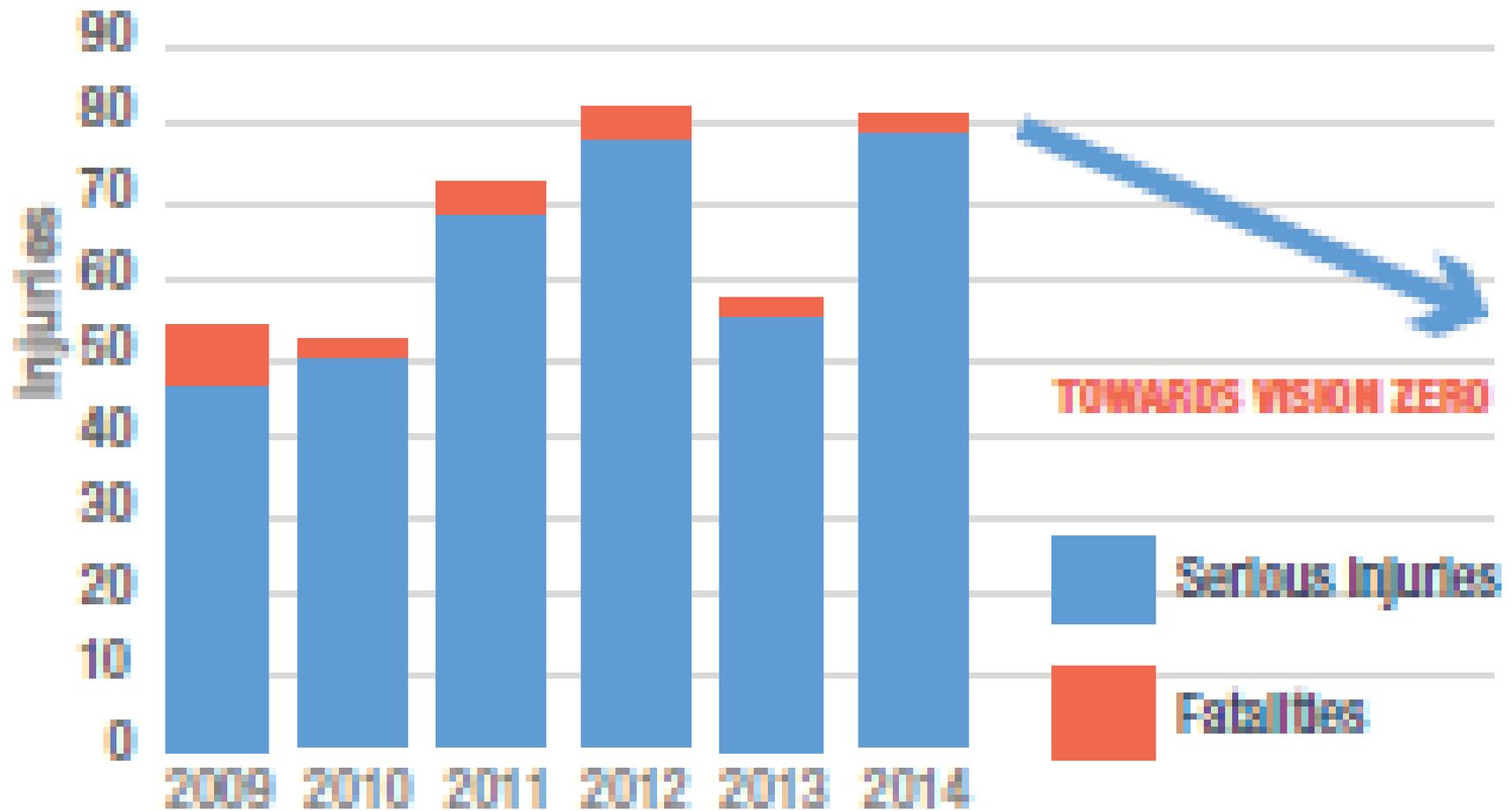
### Total Collisions



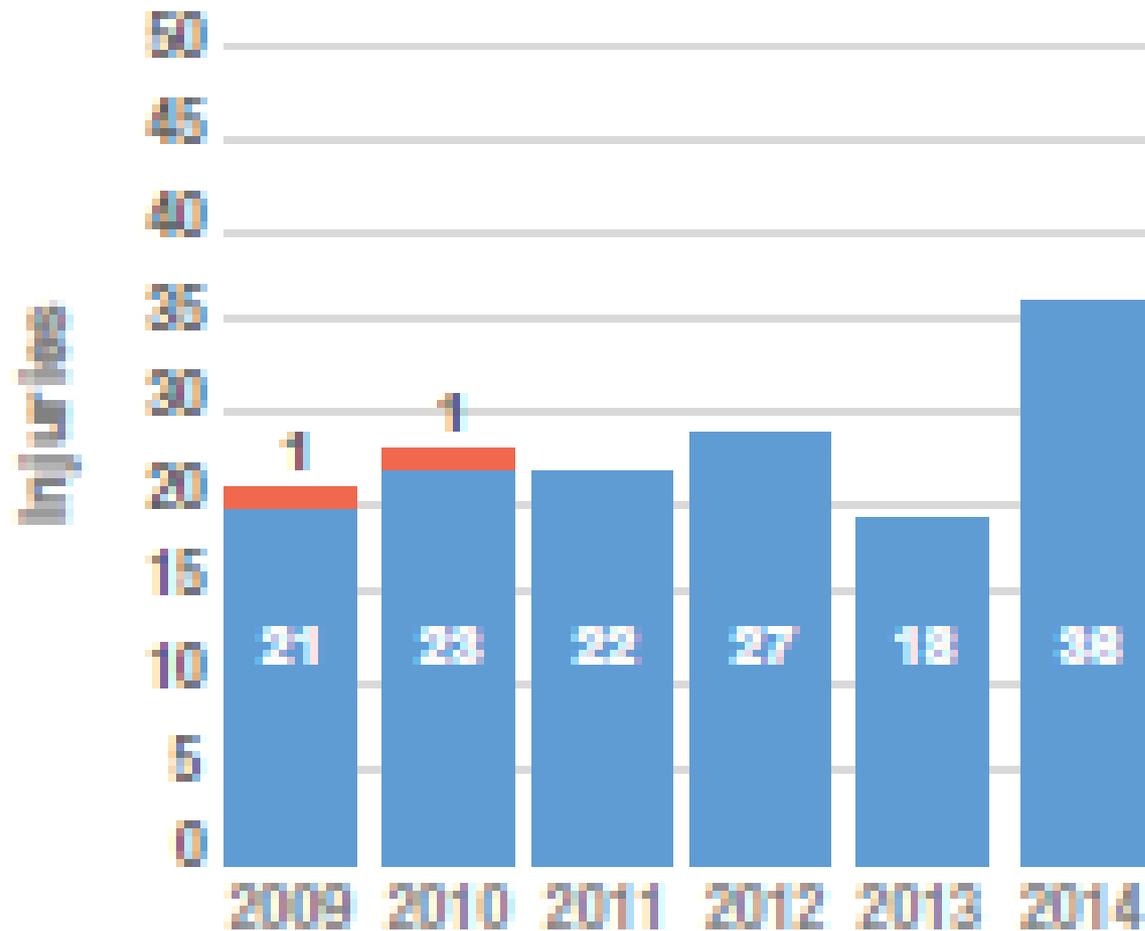
### Bicycle & Ped Collisions



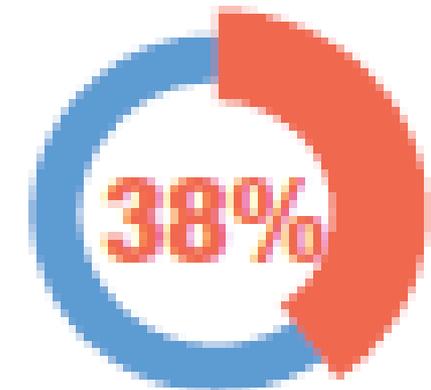
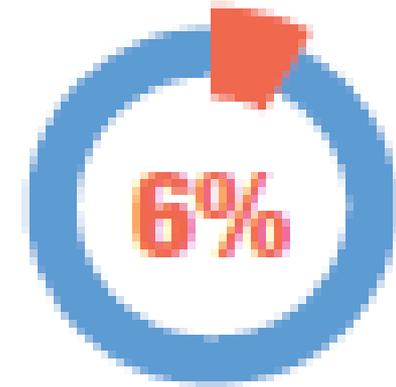
# Serious Injuries & Fatalities



# Bicycle Serious Injuries & Fatalities

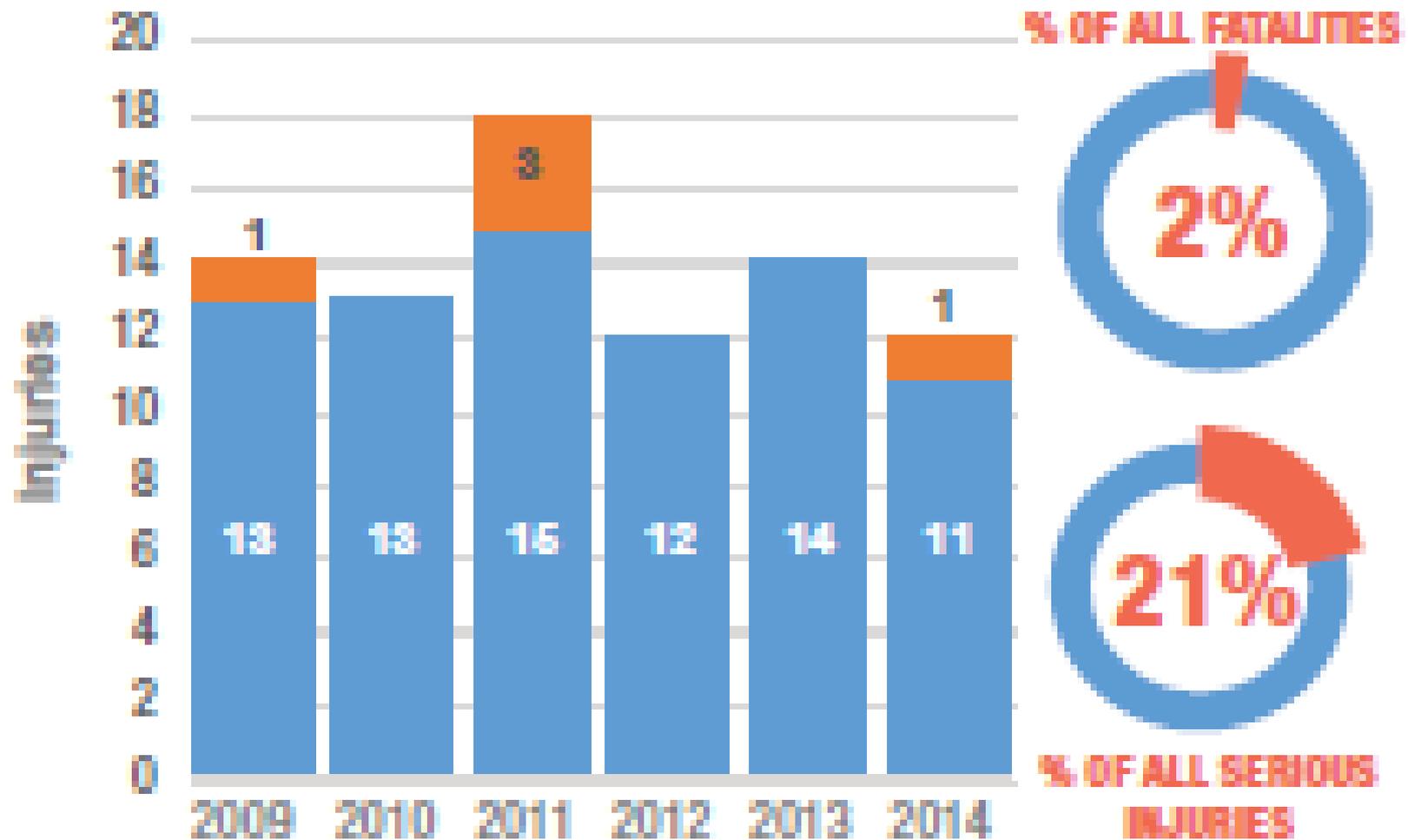


% OF ALL FATALITIES

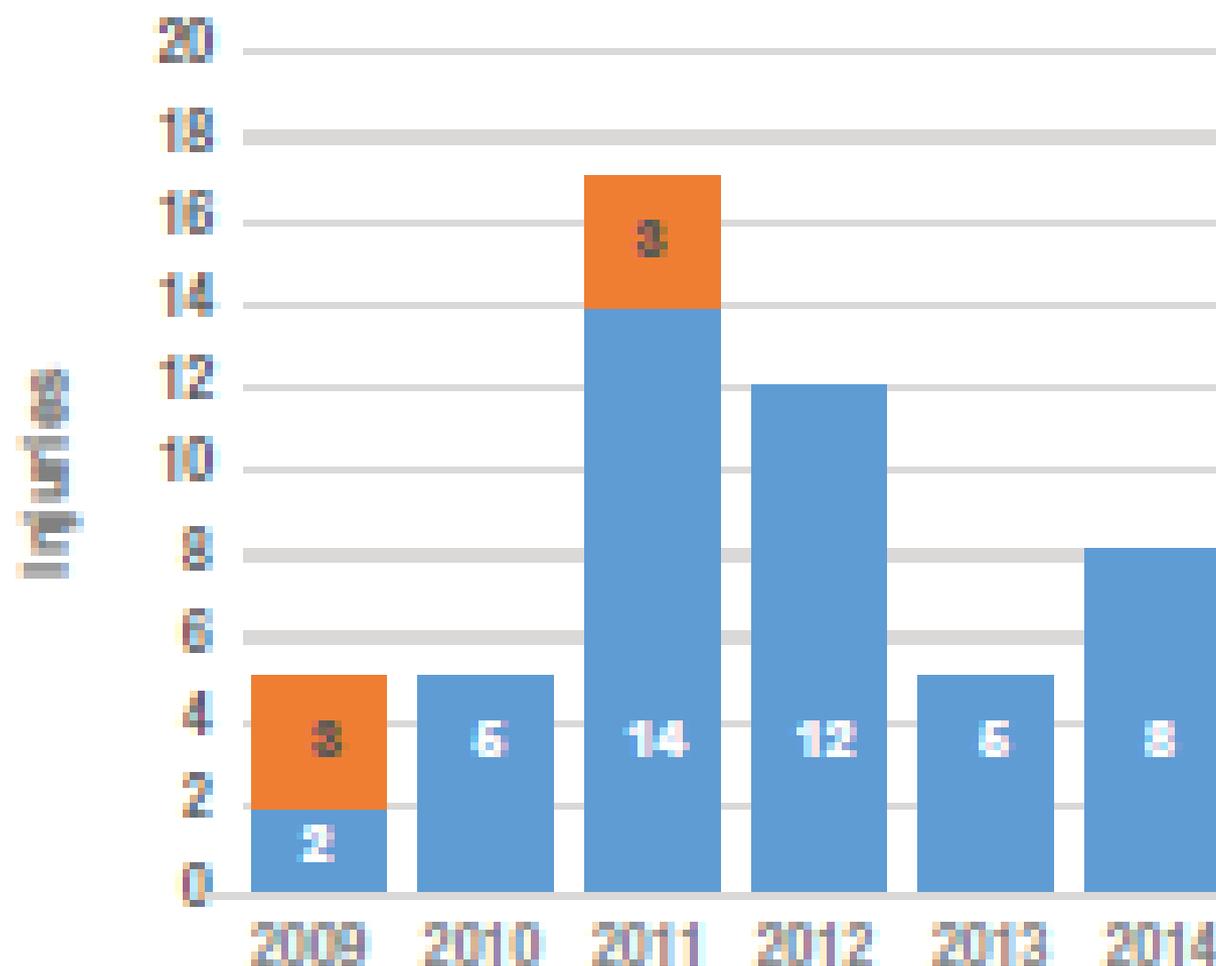


% OF ALL SERIOUS INJURIES

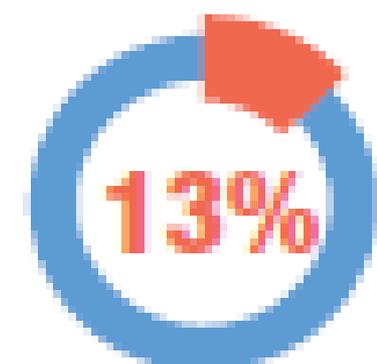
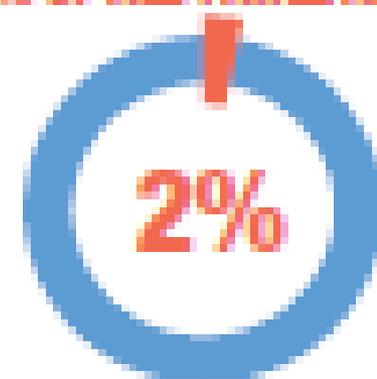
# Pedestrian Serious Injuries & Fatalities



# Impaired Person: Serious Injuries & Fatalities



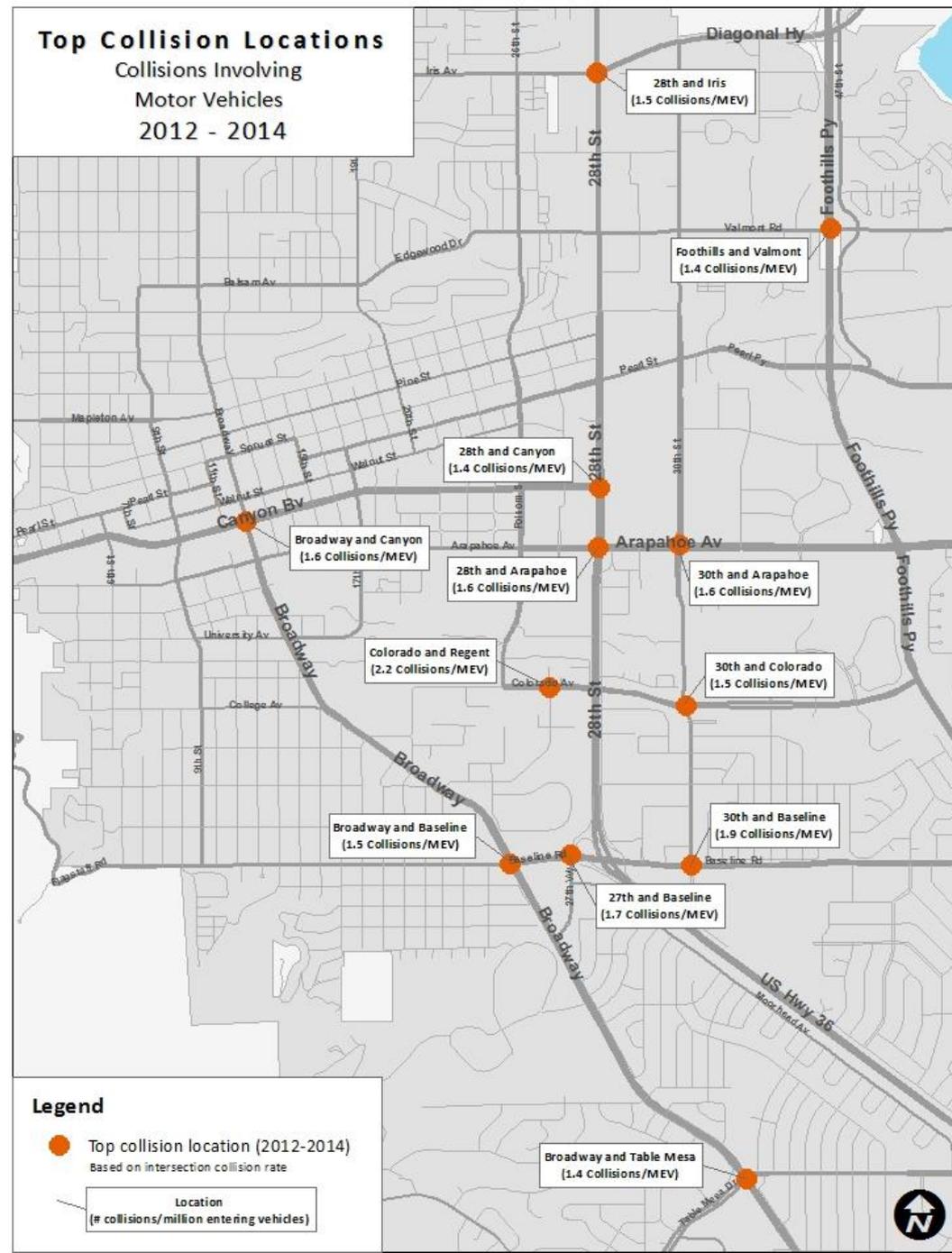
**% OF ALL FATALITIES**



**% OF ALL SERIOUS  
INJURIES**

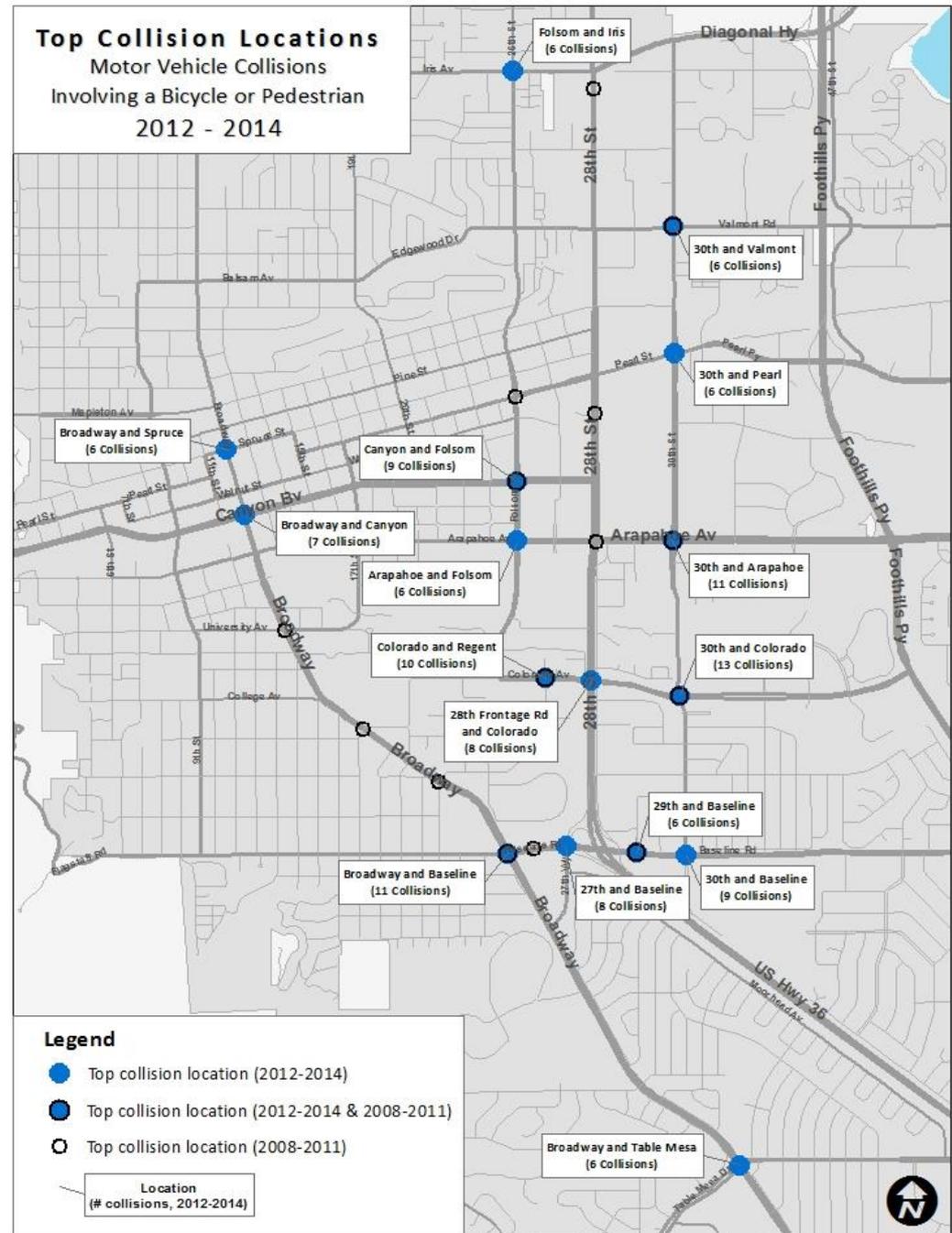
# High Collision Locations

- Reviewed individual accident reports and narratives
- Analyzed collision trends for each location
- Identified possible mitigation measures



# Top Collision Locations: Bike & Ped

1. 30<sup>th</sup> & Colorado
2. 30<sup>th</sup> & Arapahoe
3. Broadway & Baseline
4. Colorado & Regent
5. Canyon & Folsom
6. 30<sup>th</sup> & Baseline
7. 28<sup>th</sup> St Frontage Rd & Colorado
8. Baseline & 27<sup>th</sup> Way
9. Broadway & Canyon
10. 30<sup>th</sup> & Pearl
11. Arapahoe & Folsom
12. Broadway & Table Mesa
13. Baseline & 29<sup>th</sup>
14. Broadway & Spruce
15. 30<sup>th</sup> & Valmont
16. Folsom & Iris



# Toward Vision Zero

## Strategies

- **Engineering**
  - Traffic signal operations, signs and pavement markings, enhanced pedestrian crossing treatments
- **Education**
  - Heads Up Boulder and Way of the Path
  - Safety messages for bicyclist traveling against traffic on sidewalks/multiuse paths, motorcycle awareness, and impaired driving/biking/walking
- **Enforcement**
  - On-going enforcement, including crosswalks, impaired driving/biking/walking, red-light running, and no turn on red
- **Evaluation**
  - On-going monitoring to identify trends, and additional mitigation strategies

# Engineering

- Traffic signal operations
  - At key locations, converting left-turn signal phasing to protected-only phasing (left turn on green arrow only) during certain periods of the day or providing additional green time during certain portions of the left-turn phasing.
- Signs and pavement markings
  - Installation of signs, striping and other pavement markings to provide additional warning or clarification about lanes ending, merging lanes or yield conditions in order to address rear end or sideswipe collisions.
- Enhanced pedestrian crossing treatment
  - Installation of enhanced pedestrian crossing treatments such as flashing crosswalks, pedestrian signals or underpasses may be recommended in accordance with the city's Pedestrian Crossing Treatment Installation Guidelines (PCTIG)

# Education

- Heads Up Boulder Campaign
  - Continue education and enforcement efforts to increase crosswalk safety at top locations for motor vehicle collisions involving bicyclists or pedestrians.
- The Way of the Path
  - Continue annual campaign each fall to coincide with back to school in an effort to reduce conflicts between users, ensuring that everyone can safely share and enjoy Boulder's path.

New messaging will be introduced to address collision trends:

- Bicyclists traveling against traffic on sidewalk/multi-use path
- Impaired bicyclists and pedestrians
- Collisions involving motorcycles

# Enforcement

- Crosswalk-related offenses
  - As part of the Heads Up Boulder program, the city will continue to partner with Boulder and CU-Boulder Police Departments and the cycling community to conduct education and enforcement activities at high collision locations.
- Impaired driving, walking and biking
  - The Transportation Division will coordinate with the Police Department on enforcement strategies at the top locations for impaired person collisions.
- Red-light running
  - When red-light running collisions trends cannot be successfully mitigated through engineering improvements, targeted enforcement or the installation of photo red-light may be appropriate.
- No turn on red restriction
  - There are a number of intersections with a restriction prohibiting right turn on a red signal. These are usually because of potential or identified conflict with bicycles and pedestrians in a busy crosswalk the right turn movement would need to cross.

# Transit Service Delivery Model Analysis- Scope & Timeline

- Develop governance model scenarios
- Analyze legislative environment, funding, organizational development/needs
- Select Preferred Scenarios by evaluating:
  - Capital and operational needs
  - Customer experience and fare payment types
- Develop financial analysis and funding mechanisms to support the Scenarios
- **Timeline:** Summer 2016 through 2017-2018