DENVER
THE MILE HIGH CITY

2017 General Obligation Bond

Agency Presentation to
Transportation & Mobility Stakeholder Committee

April 6, 2017

Presentation Highlights

- Overview
- Vision and Need
- Projects
  - Critical System
  - Mobility Networks
  - Multi-modal Facilities
- Question/Answer

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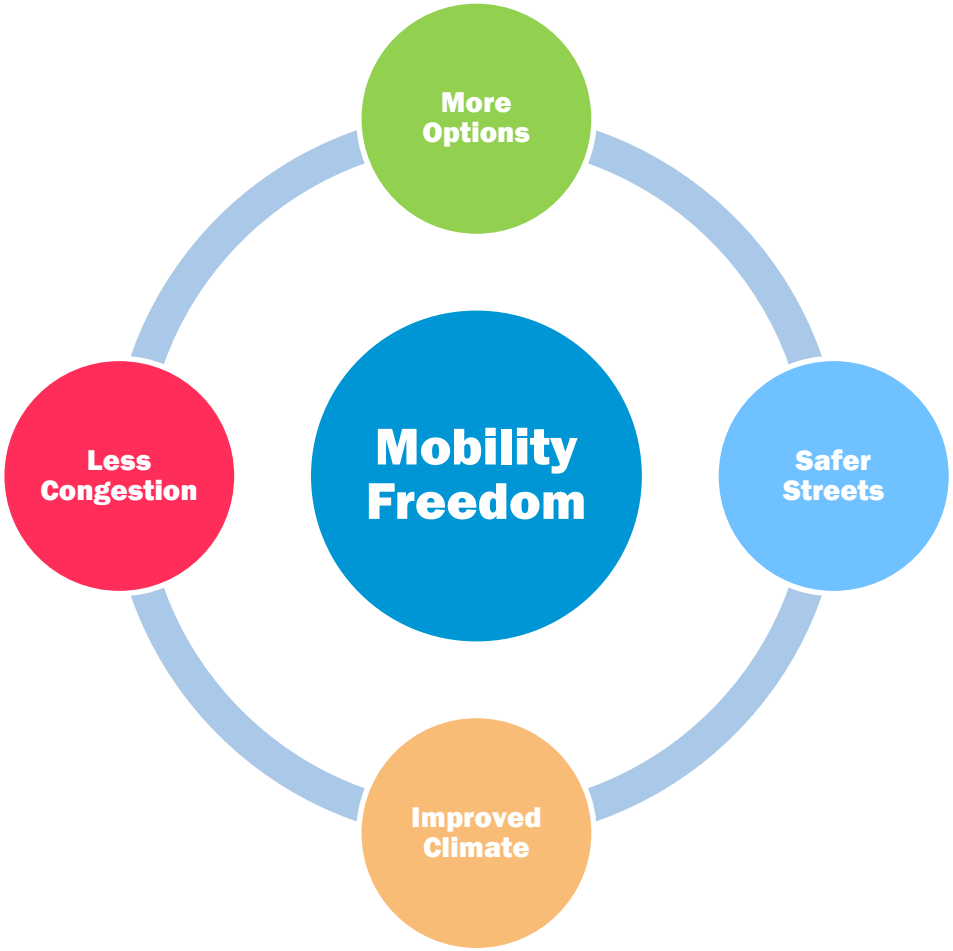
Transportation & Mobility Vision and Partners



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COMMUNITY PLANNING & DEVELOPMENT

DENVER
PARKS & RECREATION

DENVER
PUBLIC WORKS

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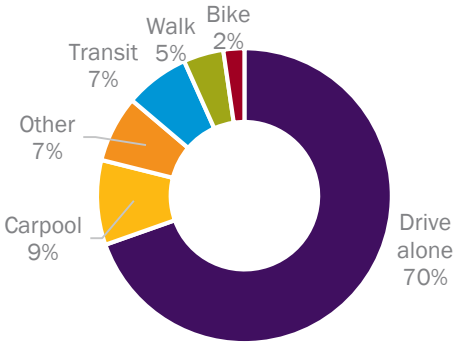
NORTH DENVER CORNERSTONE COLLABORATIVE AN INITIATIVE OF MAYOR MICHAEL B. HANCOCK

Overall Mobility Outcomes

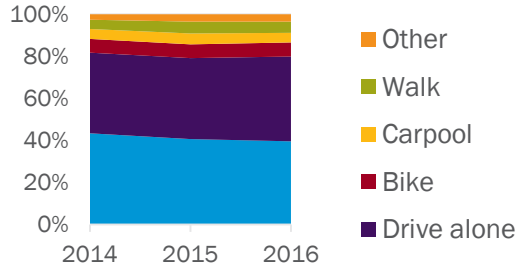
More Options » Less Congestion » Safer Streets

Citywide Commuters Mode Share



70% of citywide and 40% of downtown commuters currently drive to work alone.

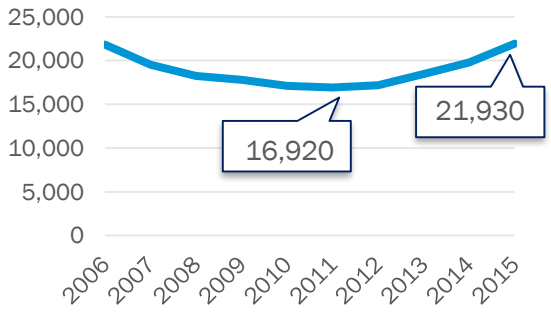
Downtown Commuters Mode Share



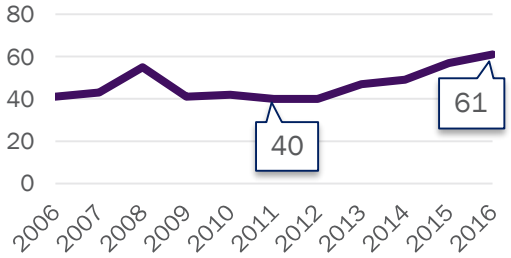
A recent analysis ranked Denver's congestion as the 21st worst in the US.

Peak Hours Spent in Congestion in Selected Cities	
Los Angeles, CA	104 hours
Atlanta, GA	71 hours
Washington, DC	61 hours
Boston, MA	58 hours
Seattle, WA	55 hours
Portland, OR	47 hours
Austin, TX	47 hours
Minneapolis, MN	40 hours
Philadelphia, PA	38 hours
Denver, CO	36 hours
Nashville, TN	34 hours
Detroit, MI	33 hours
Pittsburgh, PA	33 hours

Denver Traffic Crashes



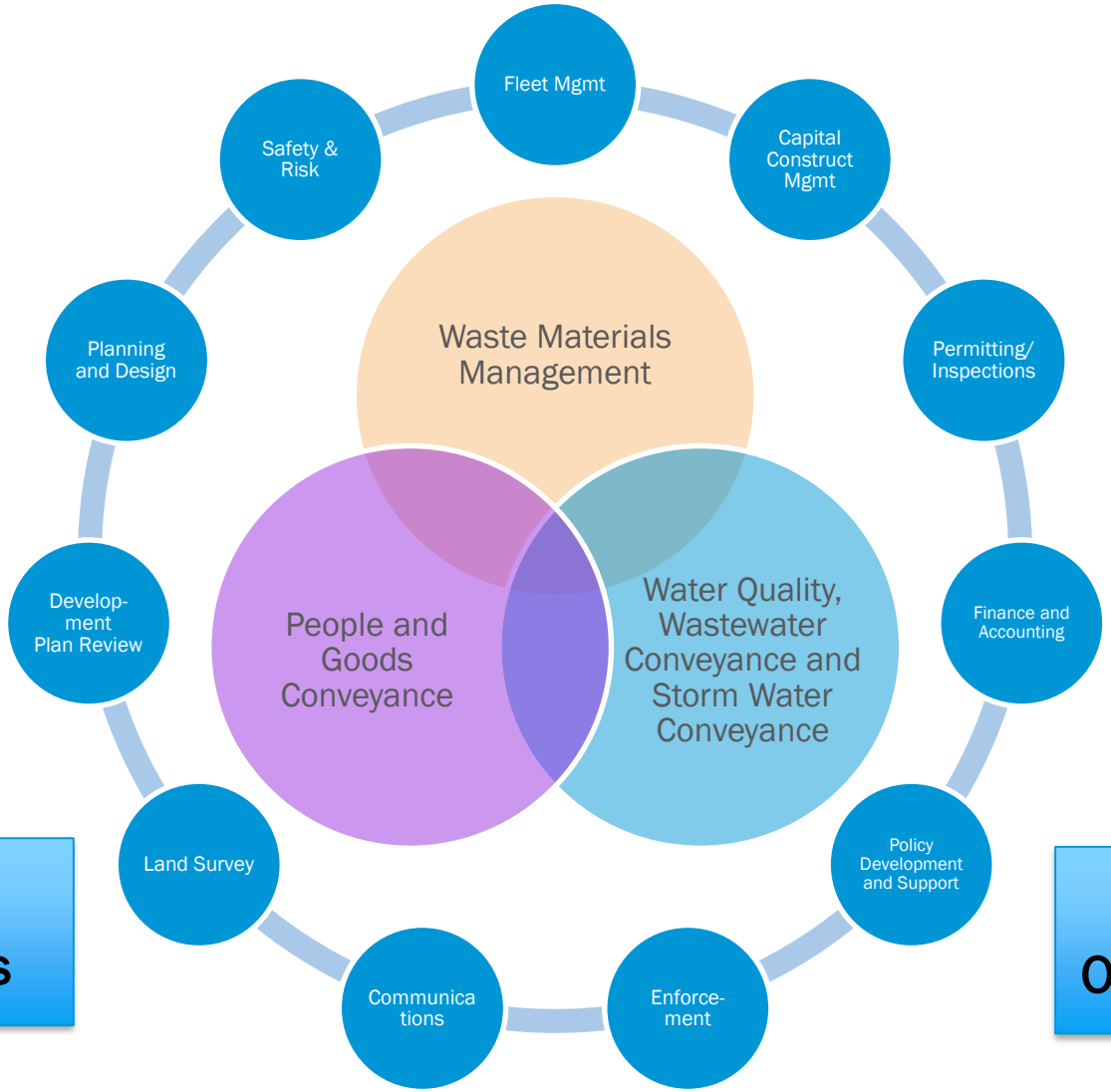
Denver Road Fatalities



Denver crashes and fatalities have increased since hitting recent lows in 2011.

Sources: US Census Bureau; Downtown Denver Partnership; INRIX; CDOT; DPD.

DPW: Implementing Agency



1,300 Employees

$265 Million – Operating Budget

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Overall Transportation & Mobility Need

100 = $1.8B

PROJECTS DOLLARS

Foundational Criteria

- G **Governmental purpose.** The proposed use of the bond proceeds is for a governmental purpose.
- 10 **10-Year Useful Life.** The proposed use of the bond proceeds must be a capital expense and have an expected useful life of at least 10 years.
- R **Project Readiness.** Projects should be able to reasonably demonstrate they can be completed and or show that an independent phase can be completed within five years.
- CS **Critical System Need / Deferred Maintenance.** Project critical to capital rehabilitation/replacement or addresses a critical system need.
- E **Equity:** Project located in/adjacent to neighborhood of need according to neighborhood equity index

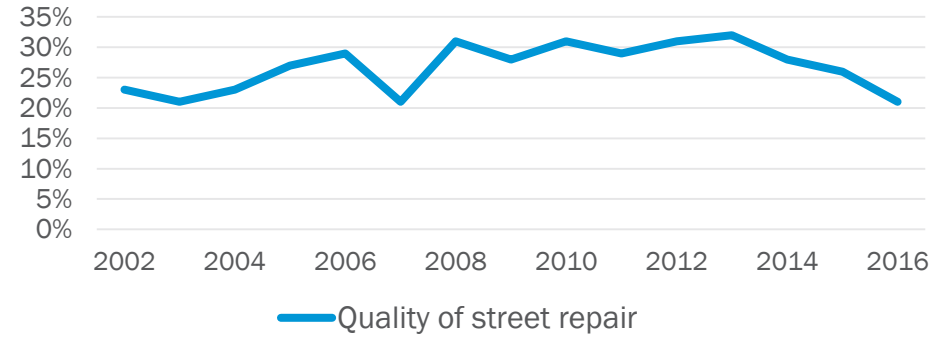
CRITICAL SYSTEM

imperative to the continued function of the transportation system

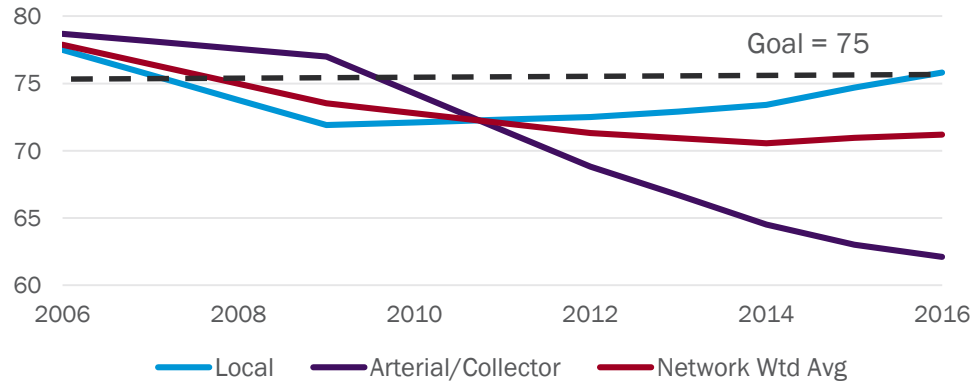
Critical System Metrics

Perceptions of Road Conditions in Denver

(% rating excellent/good)



Denver Pavement Condition Index



Bridges in Denver

600 City-owned Bridges

30% **Exceeded design life**

Multimodal Supportive Paving Needs

	Lane miles	
Arterial/Collector Need	875	
Bus routes	476	54%
Bike lanes	442	51%

Sources: Jacobs; National Citizen Survey; PW-Street Maintenance.

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Critical System: Priority Projects

Project	6 Year	Council	Public	Foundational Criteria	Cost
Major Bridge Rehabilitation	X			G 10 R CS E	$53.0M
Bridge Reconstruction	X			G 10 R CS E	$40.9M
8th Avenue Bridge over Platte	X	X		G 10 R CS E	$8.6M
Arterial/Collector Repaving	X	X	X	G 10 R CS E	$99.2M
Curb and Gutter	X	X	X	G 10 R CS E	$25.0M

TOTAL: $226.7M

NOTE - With exception of 8th Ave. bridge, all projects can be phased and/or scaled.
NOTE – cost represents the $ needed from the GO Bond (as opposed to total project cost)

Bridge Rehabilitation and Reconstruction

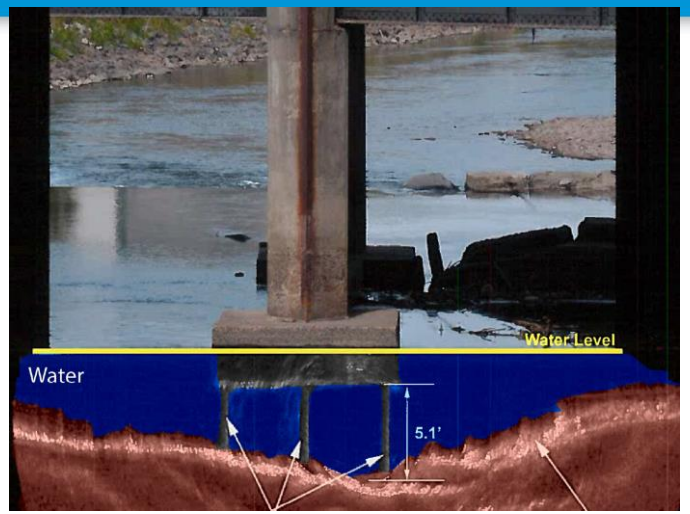
- Statement of Need
  - City owns ~ 600 bridges, with a replacement value of ~ $2B. Existing annual maintenance funds are ~ $3.5M, typically used on small to medium sized projects
  - Additional funds are needed to maintain and replace the assets in critical need (~ 75 bridges)
- Description
  - Major Bridge Rehabilitation –repair existing bridges in order to meet the intended design life. Candidate projects include: Park Avenue Viaduct, Speer Blvd Arches, etc.
  - Bridge Reconstruction –replace bridges that have met their intended design life. Candidate projects include: 14th Ave over Cherry Creek, Monaco Parkway over Cherry Creek, etc.
- Cost: Varies by project
  - Major Bridge Rehabilitation: $53 million
  - Bridge Reconstruction: $40.9 million
- Project Timeline: 11 – 33 months per location
  - Planning: Varies by location – 3 to 12 months
  - Design: Varies by location – 6 to 12 months
  - Implementation: Varies by location – 4 to 12 months

Park Avenue Viaduct – unanticipated horizontal movement in support (bearing). Could lead to bearing failure and 4" vertical drop.

14th Ave over Cherry Creek – bridge beam concrete failing directly above trail.

8th Avenue Bridge (over Platte) Reconstruction

- Statement of Need
  - Existing bridge has exceeded its design life, and is designated as both “fracture” and “scour” critical.
  - No existing sidewalks or bike lanes on the bridge
  - Access to the South Platte River Trail requires users to cross 8th Avenue at grade, with no signalization
  - Eastbound vehicles are required to shift lanes abruptly to navigate turn lanes and lane drop offs
- Description
  - Replacing existing bridge, construct multi-use sidewalks and improve trail connectivity
  - A wider bridge will correct the vehicular lane shifting
- Cost: $8.6 million
  - Future maintenance will be included in existing annual bridge program
- Project Timeline: 18 – 21 months
  - Design: 12 months
  - Implementation: 6 – 9 months



Sonar image shows missing soil below waterline, leading to unsupported foundation.

Proposed bridge widening with multi-use path and revised trail connection

Arterial/Collector Repaving & Curb and Gutter

- Statement of Need
  - 66% of arterial/collector roadways are beyond their useful life
  - Poor condition streets have higher user costs
  - Poor condition roadways create hazards for ped/bicycle/vehicles
- Description
  - 875 lane miles in poor condition will be addressed
  - Projects would be combined with curb/gutter repair or other multi-modal projects
  - Will utilize a variety of treatments to address
- Cost: $99.2M repaving + $25M c&g
  - Phased over 5 years
- Project Timeline: Annual over 5 years
  - First NTP within 3 months of funding

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MOBILITY NETWORKS

meaningful completion of the pedestrian, bike and transit networks

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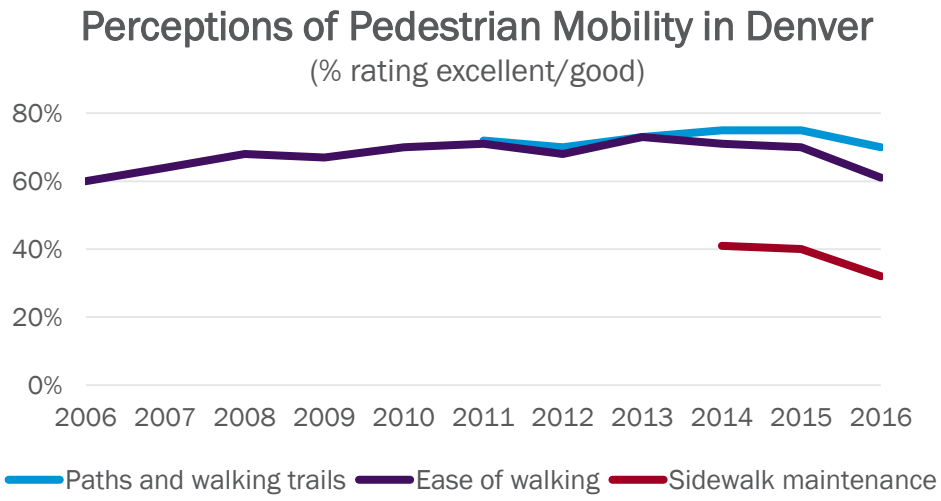
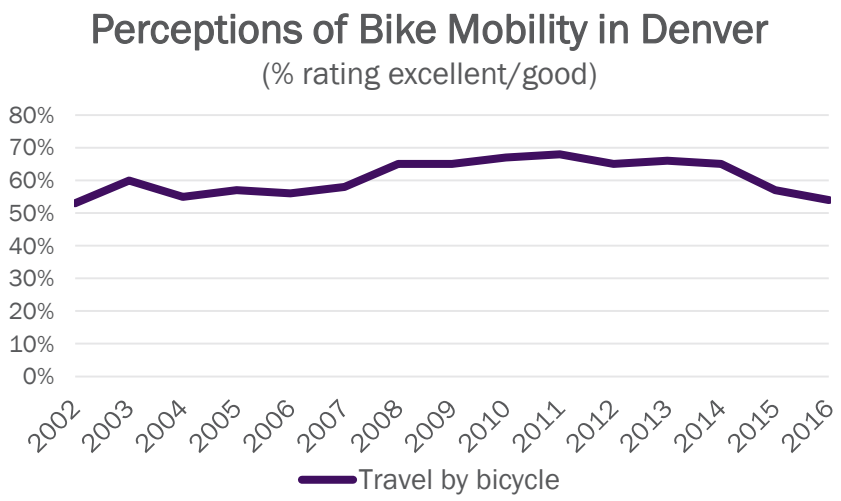
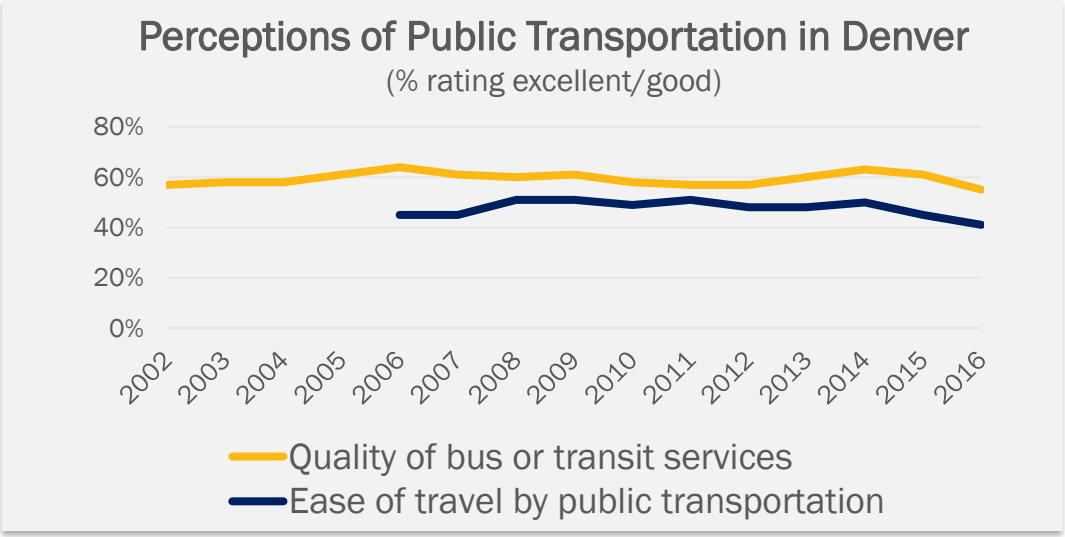
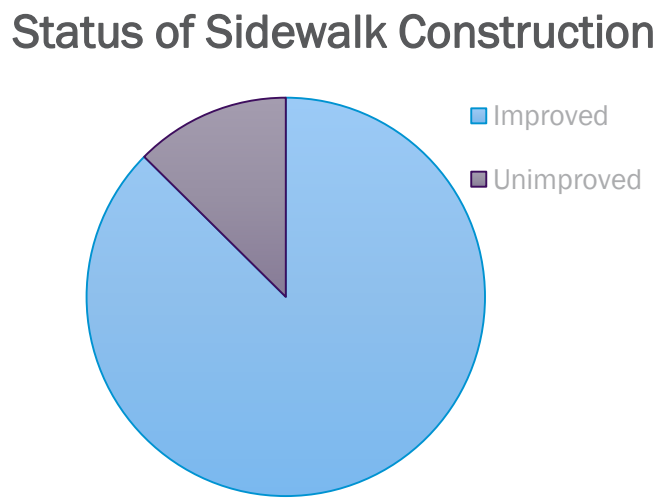
Mobility Perceptions

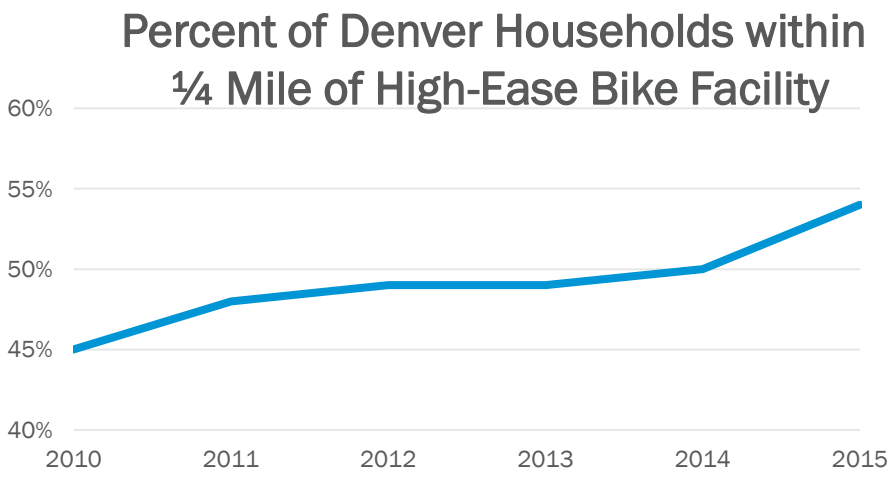






Mobility Metrics





Transit Trips Per Capita in Selected Cities	
Austin, TX	25
Minneapolis, MN	35
Denver, CO	41
Portland, OR	61
Seattle, WA	63

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Mobility Networks: Priority Projects

Project	6 Year	Council	Public	Foundational Criteria	Cost
16th Street Mall (CPD)	X		X	G 10 R CS E	$26.0M
47th/York Bike/Ped Bridge (NDCC)	X	X	X	G 10 R CS E	$9.4M
Additional Transit Implementation	X	X	X	G 10 R CS E	$18.5M
Broadway Multi-modal Improvements	X	X	X	G 10 R CS E	$22.0M
Colfax Bus Rapid Transit	X	X	X	G 10 R CS E	$110.0M
Protected Bike Lanes & Neighborhood Bikeways	X	X	X	G 10 R CS E	$30.0M
Sidewalks	X	X	X	G 10 R CS E	$41.9M

TOTAL: $257.8M

NOTE – cost represents the $ needed from the GO Bond (as opposed to total project cost)

16th Street Mall

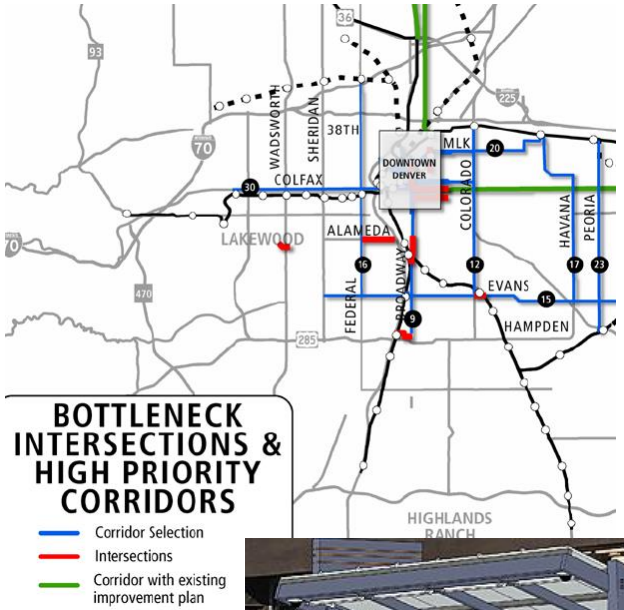
- Statement of Need
  - Update the Mall's aging infrastructure
    - reducing ongoing maintenance costs
    - support economic development by attracting and retaining visitors and vital public, commercial and residential uses for years to come.
  - Maintain vital link as first and last mile connector
    - links Civic Center Station and Union Station
    - primary pedestrian link to shops, restaurants, hotels, and special events.
- Description of Scope
  - Streetscaping and related amenities along the Mall's original 13 blocks
  - Includes, urban canopy; mobility and connectivity; drainage and water quality; communications, power, lighting and water utilities; wayfinding and signage; pedestrian experience improvements to sidewalks; and planters/irrigation and furnishings (benches, bike racks, trash receptacles, etc.)
- Cost: $26 million
  - Roughly $2 million per block of the original 13-block Mall.
- Project Timeline: 60 months
  - Planning: 9 months
  - Design: 15 months
  - Implementation: 36 months

47th Avenue/York Street Bicycle/Pedestrian Bridge

- Statement of Need
  - Critical connection between Elyria and Swansea
  - Limited crossings of the rail corridor do not adequately serve pedestrians and cyclists
  - Rail operations result in the crossing being blocked for long periods
  - Pedestrians and cyclists illegally move between or around trains
  - 75% of pedestrians using the crossing are elementary age children.
- Description
  - Bicycle and pedestrian bridge over an active rail corridor
- Cost: $9.4 million
  - Total cost is $11.9, but already secured $2.5 million of CDOT TAP funds in support
- Project Timeline: 24 months
  - Planning: complete
  - 30% design: in progress
  - Final design: 12 months
  - Construction: 12 months

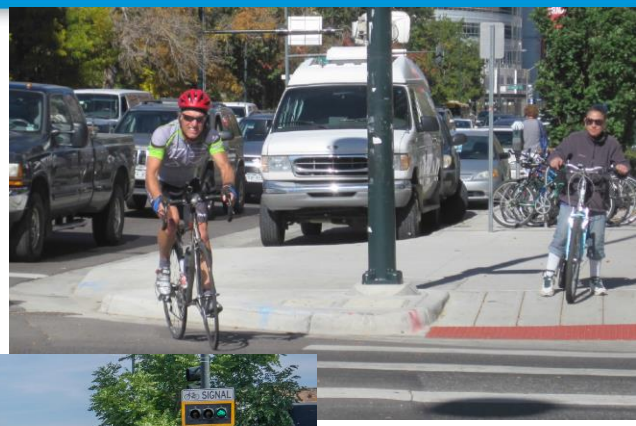
Additional Corridor Implementation

- Statement of Need
  - The City's Strategic Transportation Plan focus on moving people in the current roadway footprint and transit provides the greatest opportunity.
  - RTD's has identified several corridors where improvements to bus speed/delay would boost service; and subsequently ridership,
- Description
  - Traffic signal and bus stop enhancements to support transit operations,
  - Pedestrian/bicycle access improvements.
  - Fiber network upgrades, water quality best management practices and electric vehicle charging stations.
- Cost: $18.5-50 million
  - MLK, Federal and Alameda: $18.5
  - Speer Leetsdale: $56 million
- Project Timeline: Varies by project



Broadway Multi-modal Improvements

- Statement of Need
  - Transportation and land use support Living Street Vision
  - Broadway is a high crash corridor for bicycles and pedestrians.
  - Identified as priority on RTD's "Bottleneck" Study
- Description
  - Broadway Corridor between 16th Ave and Broadway Station
  - Design and construction of a two-way protected bike lane, intersection improvements, transitway and bus stop enhancements, and parking management.
- Cost: $22 million
  - I-25 to 6th Ave: $12 million
  - 6th to 16th Ave: $10 million
- Project Timeline: 15- 21 months
  - Planning: 6 months
  - Design: 6-9 months
  - Construction: 3-6 months



Colfax Bus Rapid Transit

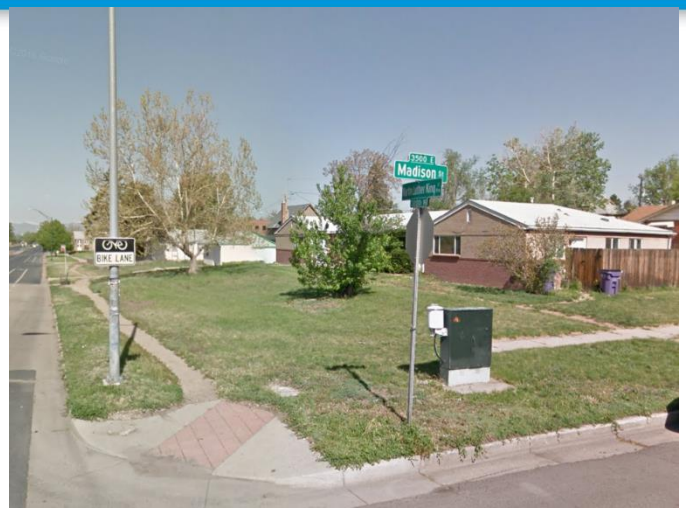
- Statement of Need
  - RTD's highest ridership bus corridor, carrying ~24,000 people per day.
  - Need to move more people, increased mobility choice, catalyst for economic development and TOD,
- Description
  - Exclusive lanes, new passenger stops and amenities, and related roadway improvements: Auraria to Yosemite
  - Sidewalk and bicycle facility improvements for first/last mile connections
- Cost: ~$110 million
  - Capital: $110 million (Full version w/o Fleet)
  - Capital $55 million (no fleet, bike/ped access, WQ, Maintenance facility)
  - Grants (FTA Small Starts, TIGER, etc)
- Project Timeline: 36 months
  - Planning: 6 months
  - Design: 18 months
  - Implementation: 12 months

Protected Bike Lanes & Neighborhood Bikeways

- Statement of Need
  - Goal of 100% of households within ¼ mile a low-stress bikeway; however, currently just over 50%.
  - Denver Moves Bicycles contains approximately $60+ million dollars of linear projects, split into 3 phases. Half of Phase 1 projects are complete.
- Description
  - Design and construction of 25 miles of protected bike lanes and approximately 70 miles of neighborhood bikeways.
  - Complete protected bike lanes and neighborhood bikeways types through Phase 2
- Cost: $30 million
  - Complete Phase I --$5 million.
  - Phase II protected bike lanes -- $10 million.
  - Phase II neighborhood bikeways -- $15 million.
- Project Timeline: 18-24 months/project
  - Planning: 9 months
  - Design: 4 months
  - Implementation: 6 months

Sidewalks

- Statement of Need
  - Significant gaps in sidewalk network make walking difficult for people to access destinations critical to their daily lives.
  - Pedestrian mobility key to robust multi-modal transportation network
  - 355 miles of missing sidewalk gaps, over 4400 individual segments.
- Description
  - Construct new sidewalk segments according to updated standards
- Cost: $41.9M
  - Estimated cost of total network - $600M
  - $41.9M funds first two years of 30 year buildout
- Project Timeline: 5 years
  - Planning: 6-12 months
  - Design: 1-2 years
  - Implementation: 1-2.5 years



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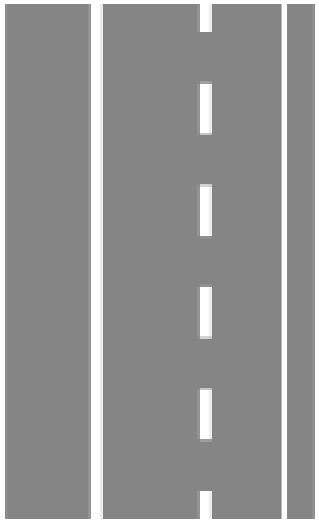
Mobility Networks: Additional Consideration

Project	6 Year	Council	Public	Foundational Criteria	Cost
Colfax Pedestrian Improvements	X	X	X	G 10 R CS E	$20.0M
Festival Sts/Downtown Loop (Parks)	X		X	G 10 R CS E	$47.0M
Globeville-Elyria Swansea Pedestrian Connectivity (NDCC)	X	X	X	G 10 R CS E	$17.0M
Jewell/Evans and Overland to Ruby Hill Bike/ Ped Bridges (Parks)	X	X	X	G 10 R CS E	$15.4M
West Colfax Transit	X			G 10 R CS E	$1.9M

TOTAL: $101.3M

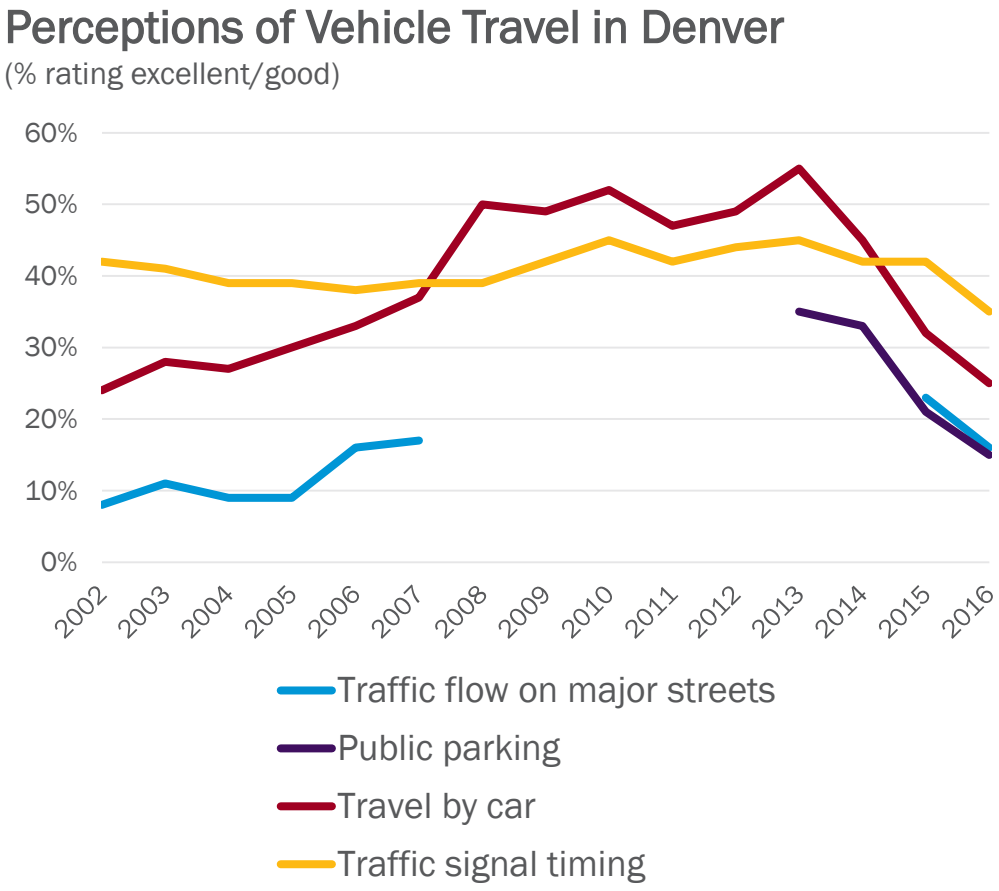
NOTE – cost represents the $ needed from the GO Bond (as opposed to total project cost)



MULTI-MODAL FACILITIES

contain more than one mobility element

Multi-modal Facilities Metrics



24.8 minutes for the average commute in Denver

20.8 daily vehicle miles traveled (VMT) per capita in Denver

14% of peak driving time spent in congestion in Denver

7% of daytime driving time spent in congestion in Denver

Note: "Congestion" is defined by Inrix as speeds below 65% free-flow speed.

Sources: Jacobs, National Citizen Survey; US DOT; Inrix.

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Multi-modal Facilities: Priority Projects

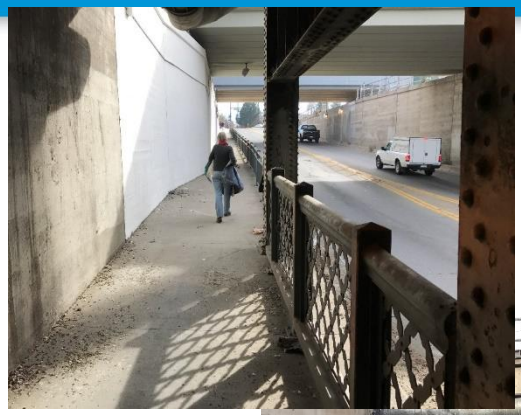
Project	6 Year	Council	Public	Foundational Criteria	Cost
38th St Underpass (NDCC)	X		X	G 10 R CS E	$67.0M
56th Ave: Peoria St to Peña Blvd	X	X	X	G 10 R CS E	$27.0M
Broadway and Kentucky Ave Intersection reconfiguration	X	X		G 10 R CS E	$9.4M
Peoria Multimodal Improvements	X	X		G 10 R CS E	$7.6M
Quebec @ I-70/Sand Creek connection (Parks)	X			G 10 R CS E	$25.0M
Washington St: 47th Ave to 52nd Ave (NDCC)	X	X	X	G 10 R CS E	$23.0M

TOTAL: $159.0M

NOTE – cost represents the $ needed from the GO Bond (as opposed to total project cost)

38th Street Underpass

- Statement of Need:
  - Constrained and congested cycle, pedestrian, freight, and auto link under the rail corridor
  - Limited crossings of the rail corridor in RiNo
  - Rapidly developing area with increased densities and demand on the network
- Description:
  - Widen the underpass to safely and adequately move pedestrians, cyclists, trucks, and vehicles
- Cost: ~$67 million
  - Potential to phase the bicycle and pedestrian connection first at $15 million
  - Added roadway widening at $52 million
- Project Timeline: 35-39 months
  - Planning: 9 months
  - Design: 12-18 months
  - Construction: 12 months

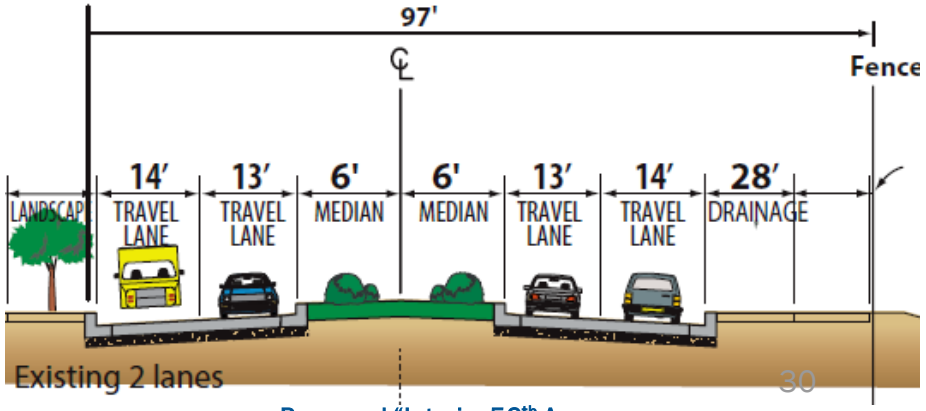


56th Avenue- Peoria St to Pena Blvd Improvements

- Statement of Need
  - Improve safety of peds, bicyclists and vehicles along this congested corridor
  - Improve capacity and limit access which will decrease accidents by up to 65%
- Description
  - Widen the roadway from 2 to 4 lanes includes a median (native grass)
  - All widening to the north
  - Complete missing section of multi-use path on south side (east end)
- Cost: $24.8M
  - Phasing could occur but safety or congestion issues would remain in unimproved phases
- Project Timeline: 36-48 months
  - Design & ROW: 18-24 months
  - Construction: 18-24 months

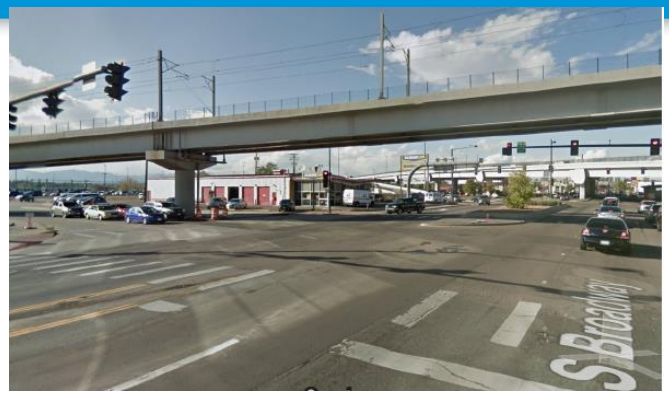
Ex. 56th Ave looking East


Ex. 56th Ave looking West



Broadway & Kentucky Intersection Improvements

- Statement of Need
  - One of the final phases of Broadway corridor reconstruction
  - Confusing, closely spaced and congested intersections have resulted in high number of accidents per year
  - Provides an improved connection to the RTD-Broadway Station
  - This project will improve safety of peds, bicyclists and vehicles along this congested corridor
- Description
  - Combine the Kentucky Ave and South I-25 off Ramp into one intersection
  - Includes a new traffic signal, concrete pavement, median and new street-scaping
- Cost: $9.4M
- Project Timeline: 39- 48 months
  - Planning: 18 months
  - Design: 9-12 months
  - Construction: 12-18 months



Intersection looking North

Plan View Existing

Peoria St Multimodal Improvements

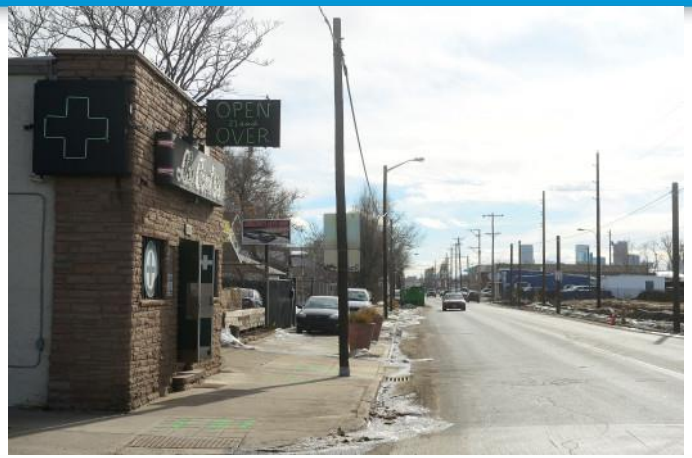
- Statement of Need
  - No multimodal connectivity at I-70 between Montebello neighborhood and the Peoria Station on the A-Line
  - Sidewalk needed along a busy arterial with a freeway interchange and a transit (bus) line running along the roadway
- Description
  - Peoria Street improvements between 56th Avenue and 37th Avenue
  - A 10' wide multiuse path along the east side of Peoria
  - Sidewalks connecting to the I-70 improvements between the on/ off ramps for the interchange
  - Balancing travel lanes between the north and south side of the freeway (re-striping)
- Cost: $6 million
  - Sidewalk improvements: $6 million
  - Does not include drainage costs
- Project Timeline: 15- 21 months
  - Planning: 6 months
  - Design: 6-9 months
  - Construction: 3-6 months

Quebec Street @ I-70 (35th-53rd)

- Statement of Need
  - Currently no sidewalk connectivity between the north and south side of I-70.
  - No connection exist to the Sand Creek Greenway
  - Lane widths are too narrow for the amount of truck traffic at the interchange
- Description
  - Balancing travel lanes between the north and south side of the I-70
  - Rebuild bridge of Sand Creek
  - Sidewalk and trail connections
  - Right of Way will be needed for sidewalk between the interchange and Smith Road
- Cost: $25+ million
  - Sand Creek connection: $1.6 million*
  - Sidewalk improvements: $5 million
  - Lane balancing and bridge: $20 million
  - Potential to leverage I-70 construction
- Project Timeline: 15- 21 months
  - Planning: 6 months
  - Design: 6-9 months
  - Construction: 12-18 months

Washington Street: 47th – 52nd

- Statement of Need:
  - Major arterial corridor, gateway to City from Adams County and main street to Globeville
  - Unimproved existing condition and lacking basic infrastructure
  - No bicycle infrastructure and severely insufficient pedestrian facilities



- Description:
  - Reconstruction of roadway, including:
    - Roadway, curb and gutter
    - Sidewalk and bicycle infrastructure
    - Utilities & lighting

- Cost: $23 million
- Project Timeline: 24-30 months
  - Planning and 10% design underway
  - Final design & Acquisition: 12-16 months
  - Construction:14 months

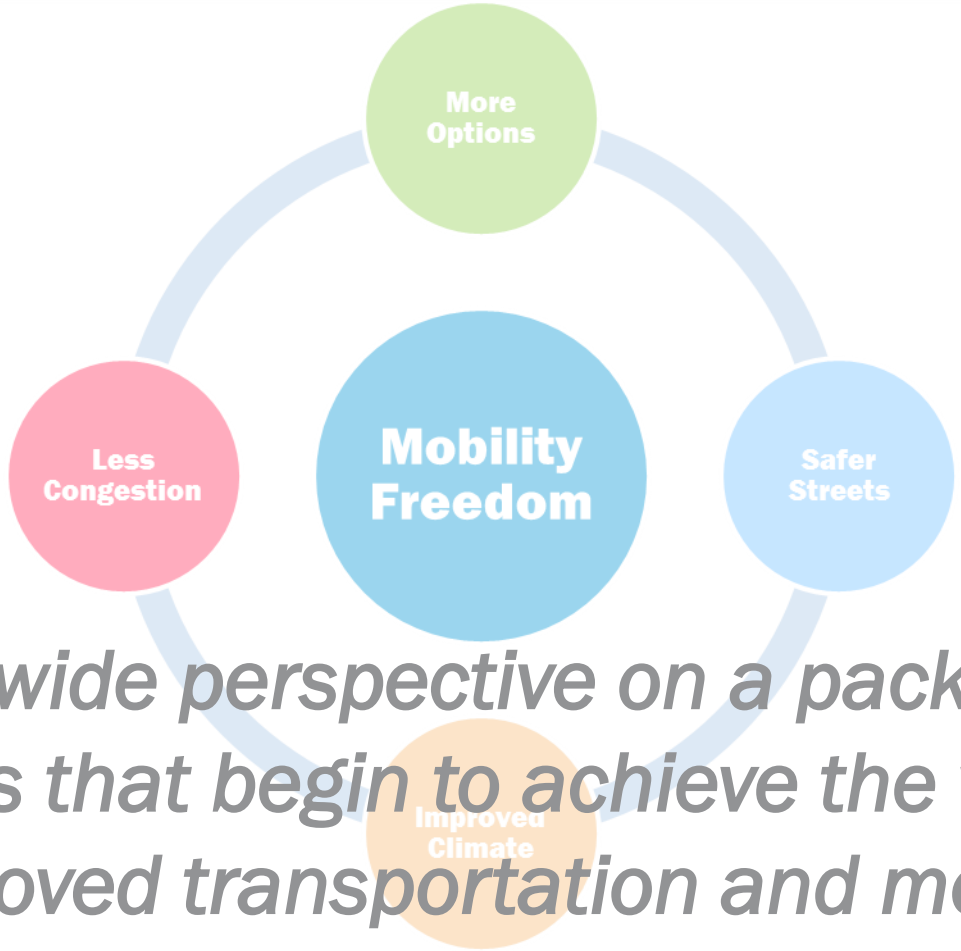
Multi-modal Facilities: Additional Consideration

Project	6 Year	Council	Public	Foundational Criteria	Cost
1st Ave and Steele St Improvements	X	X	X	G 10 R CS E	$10.0M
Alameda Ave underpass: Santa Fe Dr to Broadway	X	X	X	G 10 R CS E	$49.0M
GVR Additional Lanes & Medians	X			G 10 R CS E	$4.6M
Quebec St: 6th Ave to 26th Ave	X			G 10 R CS E	$39.0M
W 13th Ave: Osage St to Federal Blvd	X	X	X	G 10 R CS E	$41.7M
Washington Street Connections to NWC Bridge Landings (NDCC)	X			G 10 R CS E	$11.6M

TOTAL: $155.9M

NOTE – cost represents the $ needed from the GO Bond (as opposed to total project cost)

Closing



A citywide perspective on a package of priorities that begin to achieve the vision for improved transportation and mobility in Denver.

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Questions