**WATER QUALITY GOAL:**
**MAKE ALL DENVER CREEKS AND RIVER SWIMMABLE AND FISHABLE**

<table>
<thead>
<tr>
<th>Stream</th>
<th>Recreation</th>
<th>Aquatic Life</th>
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<tbody>
<tr>
<td>South Platte River</td>
<td>No (E. coli)</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>South Platte River Tributaries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bear Creak</td>
<td>No (E. coli)</td>
<td>No (Habitat)</td>
</tr>
<tr>
<td>Lakewood Gulch</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Weir, Sanderson, West Harvard and Harvard Gulches, Westerly Creek</td>
<td>No (E. coli)</td>
<td>No (Selenium)</td>
</tr>
<tr>
<td>Cherry Creek</td>
<td>No (E. coli)</td>
<td>No (Selenium and Iron)</td>
</tr>
<tr>
<td><strong>Cherry Creek Tributaries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goldsmith Gulch</td>
<td>No (E. coli)</td>
<td>No (Selenium)</td>
</tr>
<tr>
<td>Sand Creek</td>
<td>No (E. coli)</td>
<td>No (Selenium)</td>
</tr>
</tbody>
</table>

SOURCE: Dept. of Environmental Health “2015 Streams Report”
Water Quality Planning:
Scorecard Method
1. Prioritize basins with greatest water quality needs
2. Identify regional and site-scale green infrastructure projects that address wet and dry weather discharges
3. Identify project collaboration opportunities with other agencies and departments

6 High Priority Basins
- Central Platte Valley
- City Park/Park Hill
- Weir Gulch
- Valverde
- Sunnyside/311
- West Harvard Gulch

Regional and Sub-Regional:
Hampden Heights

Site-scale:
Carla Madison Rec Center

Brighton Boulevard
WATER QUALITY PROGRAM PROGRESS:
GUIDELINES, PROJECTS, AND PLANS

City and County of Denver Water Quality/Green Infrastructure Efforts

1. Hero Pond
   Regional WWI Oasis
2. National Western Center
   Regional, district, and on-site lift to ‘eliminate water’ one river center partnership with CBD
3. Brighton Boulevard
4. Arkin’s Court and River North Park
5. Confluence Park, River Vision
6. 21st Street
   Lower G. Periodical from Sewer Park (pipeline - wetlands - green cover)
7. 19th Street Green Alley
   Planned
8. Sun Valley Master Plan/GDP
   Regional, street, and on-site GI will provide 10% WQG
9. Water Gulch, River Vision
10. Frog Hollow
    Regional GI, priority buffer
11. Westwood Neighborhood Plan and Green Connection
    Westwood Green Infrastructure Utility Project
12. Johnson Habitat Park, River Vision
13. Breadmoor Station
    GI in Area Plan, Infrastructure Plan, and Estes Design and
    Development
14. Sanderson Gulch
    Stagflation waterway in partnership with on-site project
15. Tietan and Autumn Park Buffer
    Water in existing floodplain along Adams County, prioritize walkway in priority buffer
16. Grant Frontier Park, River Vision
17. Sherwood
    Celebration and escrow with WG
18. Market Lead
19. 40th and Colorado Next Steps Study
20. Plate to Park Hill
21. City Park Park Hill Residential Demonstration Projects
22. City Park Golf Course
23. Central Denver Recreations Center and Josephine
24. Kavanaugh Heights
    Regional GI in partnership with D&P and DP
25. High Line Canal and Reservoir
    Partnership and joint project with Denver Water to replicate the HLC into
    the ‘North’sтоппогропанал’ water garden
26. Cherry Creek Drive South

Legend:
- Plate to Park Hill
- Small Area Plans w/ full WQG
- Completed WG Projects (2011-15)
- WG Projects in Design and Construction

N
AIR QUALITY
2020 AIR QUALITY GOAL: ATTAIN ALL NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

- Carbon Monoxide (CO)
- Lead (Pb)
- Nitrogen Dioxide (NO₂)
- Coarse Particulate Matter (PM₁₀)
- Fine Particulate Matter (PM₂.₅)
- Sulfur Dioxide (SO₂)

• Health based standard
• Used to be out of attainment for 5 out of 6
• Standards change over time
Ozone Compliance
(3-yr avg 4th max)

<table>
<thead>
<tr>
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<tr>
<td>CAMP</td>
<td>65</td>
<td>65</td>
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<td>65</td>
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<td>65</td>
</tr>
<tr>
<td>La Casa</td>
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<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
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<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
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<td>Chatfield</td>
<td>75</td>
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<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
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</tr>
<tr>
<td>NREL</td>
<td>75 (old)</td>
<td>75 (old)</td>
<td>75 (old)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
<td>70 (new)</td>
</tr>
</tbody>
</table>

Ozone Level (ppb)
WHAT ARE WE DOING?

Monitoring

Modeling

Regulatory
THANK YOU!
2020 Sustainability Goals: Peak Report Out

Public Works – Transportation & Mobility

September 19, 2016
<table>
<thead>
<tr>
<th>Goals</th>
<th>Current State</th>
<th>Reason and Opportunity</th>
<th>Future State</th>
<th>Next Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2020 Goal</strong></td>
<td>200 people in 177 cars</td>
<td>Reduce trips in single-occupant vehicles to no more than 60% of commutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“There are no big problems, there are just a lot of little problems.”

Henry Ford
Related 2020 Goals

**Mobility**
- Reduce trips in single-occupant vehicles to no more than 60% of commutes

**Workforce**
- Help at least 40% of workers living in transit deserts get to work without driving alone

**Land Use**
- Move Denver’s Walk Friendly rating to Platinum from Gold
Citywide Mode Share

73.00%

7.10% 6.80% 6.10% 4.00% 2.10%

0.00%

Drove Alone (SOV)

Work at Home

Carpooled

Transit

Walking

Biking

Goals | Current State | Reason and Opportunity | Future State | Next Steps

Mode Share (SOURCE: ACS 1-YR)
Citywide Mode Share: 10-year Trend

Goals | Current State | Reason and Opportunity | Future State | Next Steps

(Source: ACS 1-YR)
Downtown Mode Share

### Downtown

- **Walk**: 4.5%
- **Carpool**: 4.6%
- **Bike**: 6.6%
- **Drive Alone**: 38.40%
- **Other**: 2.6%

**Source:** 2014 Downtown Denver Partnership Commuter Survey

### Citywide

- **Walk**: 7.1%
- **Transit**: 43.4%
- **Carpool**: 9.3%
- **Bike**: 2.3%
- **Drive Alone**: 69.6%

**Source:** ACS 5-year estimates, US Census Bureau, 2014
Downtown Mode Share: 9-year Trend

Methodology Changed

(DkręŚE: DDP SURVEY)
What do you think is the single most pressing issue facing Denver today and why?
### Perceptions of Mobility

<table>
<thead>
<tr>
<th>Aspect of Community Characteristics</th>
<th>Denver’s 2015 Score (% rating positively)</th>
<th>...relative to Denver’s 2014 Score</th>
<th>...relative to 2015 avg. of cities that conducted NCS with &gt; 300K people</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paths &amp; walking trails</td>
<td>75%</td>
<td>Similar (75%)</td>
<td>Higher</td>
</tr>
<tr>
<td>Ease of walking</td>
<td>70%</td>
<td>Similar (71%)</td>
<td>Higher</td>
</tr>
<tr>
<td>Travel by bicycle</td>
<td>57%</td>
<td>Lower (65%)</td>
<td>Higher</td>
</tr>
<tr>
<td>Travel by public transportation</td>
<td>45%</td>
<td>Similar (50%)</td>
<td>Higher</td>
</tr>
<tr>
<td>Travel by car</td>
<td>32%</td>
<td>Lower (45%)</td>
<td>Lower</td>
</tr>
<tr>
<td>Overall ease of travel</td>
<td>58%</td>
<td>Similar (60%)</td>
<td>Similar</td>
</tr>
<tr>
<td>Traffic flow</td>
<td>23%</td>
<td>N/A</td>
<td>Similar</td>
</tr>
<tr>
<td>Public parking</td>
<td>21%</td>
<td>Lower (33%)</td>
<td>Similar</td>
</tr>
</tbody>
</table>

Source: National Citizen Survey/NHTS
Current Transit Network

Denver Transportation Network Map: RTD Transit - Local & Regional

Legend RTD Calcs. are in-district
- City and County of Denver Boundary
- Streets 2671.11 Miles
- Regional 936.84 Miles
- Local 2231.17 Miles

For: Mobility Working Group
Created: 9/22/2014
Current Pedestrian Network
Current Street Network

Denver Transportation Network Map: Streets
Why so Little Change?

Goals | Current State | Reason and Opportunity | Future State | Next Steps
Influences of Safety on Choice

Impact speeds, pedestrian fatality and injury

Collision Outcome

Impact speeds, pedestrian fatality and injury

- 20 mph: 65% Fatality, 5% Injury, 30% No Injury
- 30 mph: 50% Fatality, 45% Injury, 5% No Injury
- 40 mph: 15% Fatality, 85% Injury, 0% No Injury
- 50 mph: 100% Fatality, 0% Injury, 0% No Injury
Opportunities to Shift the Trend

• POLICY

• PROJECTS

• PROGRAMS
Policy Considerations

- Metrics
- Prioritize non-SOV
- Parking Pricing

<table>
<thead>
<tr>
<th>Goals</th>
<th>Current State</th>
<th>Reason and Opportunity</th>
<th>Future State</th>
<th>Next Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$0.00</td>
<td>$0.50</td>
<td>$1.00</td>
<td>$1.50</td>
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<tr>
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<td>$2.00</td>
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<td>$3.00</td>
<td>$3.50</td>
</tr>
<tr>
<td></td>
<td>$4.00</td>
<td></td>
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</table>

Average Price per Hour

Peer City Parking Pricing

- Denver
- Seattle
- Boulder
- Portland
- SLC
- Minnea polis
- Dallas
- Phoenix
“Adding highway lanes to deal with traffic congestion is like loosening your belt to cure obesity.”

-Lewis Mumford

“If I had asked people what they wanted, they would have said faster horses.”

-Henry Ford (Attributed)
Project Considerations

**MAJOR PROJECT APPROACH**

15 million:
- 1.1 mile roadway
- 4 travel lanes
- Medians
- Multi-use trail
- 1 bike/ped bridge

**PROGRAMMTIC PROJECT APPROACH**

- 3 million:
  - 25 miles of bikeways
- 3 million:
  - 10 miles of sidewalk
- 2 million:
  - 10 enhanced xwalks
  - 3 ped signals
- 7 million:
  - 10 miles of transit enhancements
Example: Bicycle Program

Funding Levels over Time

- Denver Moves Implementation
- Signs and Markings
- Other
- PDF


Goals | Current State | Reason and Opportunity | Future State | Next Steps
Example: Bicycle Program

Implementation over Time

Goals | Current State | Reason and Opportunity | Future State | Next Steps
Example: Bicycle Program

Biking Mode Share over Time

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<tbody>
<tr>
<td>Value</td>
<td>1.6</td>
<td>1.8</td>
<td>2.2</td>
<td>2.4</td>
<td>2.9</td>
<td>2.0</td>
<td>2.5</td>
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</table>
Investing in Programs

- Transportation Demand Management for CCD and city
  - EcoPass Expansion
  - Education and Promotion
- Partnerships with Service Providers
- TMA Funding Increases

Goals | Current State | Reason and Opportunity | Future State | Next Steps
Future Citywide Mode Share

<table>
<thead>
<tr>
<th>Mode Share</th>
<th>Redistribution to Meet 2020 SOV Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drove Alone (SOV)</td>
<td>7.10%</td>
</tr>
<tr>
<td>Work at Home</td>
<td>6.80%</td>
</tr>
<tr>
<td>Carpoled</td>
<td>6.10%</td>
</tr>
<tr>
<td>Transit</td>
<td>4.00%</td>
</tr>
<tr>
<td>Walked</td>
<td>3.50%</td>
</tr>
<tr>
<td>Biked</td>
<td>2.10%</td>
</tr>
</tbody>
</table>

Goals | Current State | Reason and Opportunity | Future State | Next Steps

Graph showing mode shares for Future Citywide with a goal of 60.00%.
Future Project Types

**Major Capital**
- One-time large investment
  - New, upgrade, rehab
- Specific project
- $Multi-million/project

**Programmatic Capital**
- Building new assets
- Grouping of projects
- <$Million/project

**Tech + Programs**
- VZ campaigns
- TDM
- Transit Options
- Go Denver
- <$500,000-1 mil/project

**Maintenance Capital**
- Upgrade to standard or rehabilitate existing assets
- Grouping of projects
- <$500,000/project
Peer City Funding Comparison

Transportation Spending

- Denver: Annual Budget 100, 10-year Bond 100
- Seattle: Annual Budget 400, 10-year Bond 1000
- Portland: Annual Budget 300, 10-year Bond 300
- Austin: Annual Budget 200, 10-year Bond 700

Goals | Current State | Reason and Opportunity | Future State | Next Steps
Next Steps