Welcome to Denver
The DRCOG Region:
57 member governments
3.2 million population
1.7 million jobs
Regional growth – by 2040:

- Population
- Households
- Employment

Years: 1980, 2015, 2040
From plans to completed projects

DRCOG Metro Vision Plan (Comprehensive)

“VISION” transportation system

Metro Vision 2040 Regional Transportation Plan (MVRTP)

“Monopoly Money” transportation system

2040 Fiscally Constrained RTP

“Real $” near-term projects

Transportation Improvement Program (2016-2021 TIP)

Project Development NEPA Studies - EISs, EAs
Detailed analyses and design

Construct Project!

NEPA – National Environmental Policy Act (1970)
2040 RTP: Technology and Operation themes, outcomes, objectives, and strategic initiatives

- **Transportation Operations & Safety**
  - Traffic signal systems
  - Traveler information and services
  - Traffic control centers, video monitoring
  - Incident management

- **Technology and communications**
  - CV: Vehicle to Vehicle and Vehicle to Infrastructure
  - AVs: monitor all aspects closely and be nimble
  - Mobility services

- **2040 RTP defines funds for “operations”**
  - ~ $2.8 billion over 25 years
Regional Transportation Operations & Technology “Pool”

• One of several TIP “set-asides”
• Projects to be implemented during the next ~four years
  • Implemented by CDOT, local governments, RTD
  • Incident management related projects
  • Communications, fiber, cameras
  • Traffic monitoring and management systems
RTO&T Program Activities

- Funds technology infrastructure and service improvements that allow jurisdictions and agencies to better coordinate day-to-day transportation operations

- Build on success of *Traffic Signal System Improvement Program* and the *Intelligent Transportation Systems (ITS) Deployment Program*. (25+ years)

- DRCOG staff provides direct signal timing support services to project sponsors/practitioners (local agencies, CDOT, RTD)

- RTO Working Group (transportation system operators and other operations stakeholders) participate in planning, programming, and ITS Architecture
### Regional Transportation Operations (RTO) Improvement Program - FY2018-2021

#### Project Descriptions

**Employ consistent incident management processes**

<table>
<thead>
<tr>
<th>Location</th>
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</table>
| Denver   | Dynamic Message Sign Implementation for Incident Management  
            Deploy 3 dynamic message signs to distribute traveler information to travelers approaching I-25 on Broadway, Speer and Colorado during freeway incidents. |

**Expand transportation operators’ situational awareness**

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| Aurora  | CCTV Network Upgrade  
            Deploy 51 CCTV cameras at selected key intersections across the city. |
| Aurora  | Travel Time Monitoring System Implementation  
            Deploy a travel time monitoring system on key arterials and feed the information to the CDOT’s Traffic Management System. |
| CDOT TSM&O | CCTV Network Upgrade  
            Deploy 5 CCTV cameras on the Arapahoe Road corridor between I-25 and Parker Road expanding the existing camera system. |
| CDOT TSM&O | CCTV Network Upgrade  
            Deploy 23 CCTV cameras on the Wadsworth Boulevard corridor from Trailmark Parkway to Hampden Avenue and 20th Avenue to SH 128 expanding the existing cameras system. |
| Denver  | CCTV Network Upgrade  
            Deploy 54 cameras along Colorado Boulevard, University Boulevard, Evans Avenue, Hampden Avenue, and Yale Avenue expanding the existing camera system. |
| Denver  | Travel Time Monitoring System Expansion  
            Deploy additional field devices and system server to expand the existing travel time monitoring system to cover multiple corridors extending from Denver’s Central Business District (a total of 75 units) and feed the information to the CDOT’s Traffic Management System. |

**Employ good interjurisdictional transportation operations coordination**

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| Adams County | Traffic Signal System Equipment Upgrade  
            On Pecos and Washington Streets, deploy upgraded: traffic signal system; traffic signal controllers and cabinets; signal interconnect communications; intersection detection; and, uninterruptible power supplies. |
| Arvada  | Traffic Signal Interconnect Upgrade/Expansion  
            Deploy fiber communications expanding from the existing backbone network and upgrade 17 traffic signal controllers, cabinets and uninterruptible power supplies across the city. |
| Aurora  | Traffic Signal System Equipment Upgrade  
            At 26 intersections across the city, deploy upgraded: traffic signal controllers and cabinets; signal interconnect communications; and, uninterruptible power supplies. |
| Broomfield  | Sheridan Boulevard Traffic Signal Interconnect Upgrade  
            Deploy upgraded fiber communications along Sheridan Boulevard from 1st Avenue to Dillon Road interconnecting 8 traffic signals. |
| CDOT TSM&O | Region 1 Traffic Adaptive Feasibility Study and Pilot Implementation  
            Using CDOT’s “adaptive signal timing prioritization tool” evaluate and prioritize opportunities to deploy adaptive traffic signal control in the DRCOG area.  
            Deploy pilot installation of traffic adaptive control on TBD high priority corridor. |
## Regional Transportation Operations (RTO) Improvement Program - FY2018-2021

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<td><strong>Adaptive Signal Control Pilot</strong> Deploy the equipment necessary to implement traffic adaptive control at: 56th Avenue &amp; Quebec Street and 56th Avenue &amp; Tower Road.</td>
<td>Denver</td>
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<tr>
<td><strong>Central Business District Signal System Upgrade (Phase 3)</strong> Deploy upgraded: traffic signal controllers, signal interconnect communications, and uninterruptible power supplies.</td>
<td>Denver</td>
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<tr>
<td><strong>Multijurisdictional Monitoring and Management</strong> In partnership with CDOT and Lakewood, deploy TransSuite system configurations that allow shared monitoring and control between the three traffic signal system and other common operations strategies.</td>
<td>Denver</td>
</tr>
<tr>
<td><strong>ITS Device Performance and Reliability Improvement</strong> Deploy 12 upgraded Ethernet switches at communications hubs across the city. Deploy several upgraded fiber communications links replacing radio bridges across the city.</td>
<td>Denver</td>
</tr>
<tr>
<td><strong>Dynamic Lane Assignment System</strong> Deploy a dynamic lane assignment system at the intersection of S Plate Canyon Road and W Bowles Avenue. Deploy a wireless CCTV at the same intersection to monitor operations.</td>
<td>Littleton</td>
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<td><strong>Traffic Signal System Upgrade (Ph 5)</strong> Deploy final phase of traffic signal system upgrades on: 84th Avenue (Huron Street to Grant Street); 120th Avenue (I-25 to Quebec Street); Huron Street (84th Avenue to Fire Station #2); and, Washington Street (121st Avenue to 134th Avenue) - a total of 32 intersections. Selected intersections will also have communications and UPS upgrades.</td>
<td>Thornton</td>
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<td><strong>Coordinate management of freeway and arterial operations</strong></td>
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<td><strong>I-25 Managed Motorway Performance Measures</strong> Deploy 34 advance detectors at intersections near I-25 on University Boulevard Colorado Boulevard, Evans Avenue, Yale Avenue, and Hampden Avenue. The purpose is to collect signal performance measures on these arterials to better manage their operation in coordination with CDOT’s Smart 25 project.</td>
<td>Denver</td>
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<td><strong>McCaslin Monitoring and Management System</strong> Jointly deploy vehicle detectors, a travel time monitoring system, and a CCTV camera system along McCaslin Boulevard between South Boulder Road and Coalton Road. The purpose of the system is to jointly monitor and manage operations on McCaslin while coordinating operations with US 36.</td>
<td>Superior/Louisville</td>
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<td><strong>Provide multimodal traveler support</strong></td>
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<td><strong>Bicycle Detection</strong> Deploy bicycle detection at 33 intersections where bike lanes cross major arterials. The purpose is to provide bike phase at the intersection only when bicyclists are present.</td>
<td>Aurora</td>
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<tr>
<td><strong>Bicycle Detection</strong> Deploy bicycle detection at 37 additional intersections to support bicycle movements crossing major arterials. The purpose is to provide bike phase at the intersection only when bicyclists are present.</td>
<td>Denver</td>
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<td><strong>Overall program support projects</strong></td>
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<td><strong>Travel Time Monitoring Project Support</strong> CDOT must prepare specific software configurations to accept travel time feeds from local jurisdictions deploying travel time monitoring projects.</td>
<td>CDOT TSM&amp;O</td>
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<tr>
<td><strong>Signal Timing Support and System Design and Coordination</strong> DRCOG provides interjurisdictional signal timing plan development services for the projects identified above. DRCOG consultants will also provide design support services for traffic signal system upgrade projects.</td>
<td>DRCOG</td>
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**Total Allocated: $15 Million (CMAQ)**
Companion Efforts

- Colorado Smart Cities Alliance
  - Colorado Open Lab

- CDOT Smart Mobility Plan

- DRCOG Smart Region Initiative

- Mobility Choice Blueprint  - - - - -  Up next
  - DRCOG
  - Colorado Department of Transportation (CDOT)
  - Regional Transportation District (RTD)
  - Denver Metro Chamber