CDOT RESPONSIBILITIES

3,454 BRIDGES

23,000 TOTAL LANE MILES OF HIGHWAY

6.1 MILLION MILES PLOWED PER YEAR

35 MOUNTAIN PASSES OPEN YEAR-ROUND

DIVISION OF TRANSIT AND RAIL
ADMINISTERS FED/STATE GRANTS AND OPERATES BUSTANG

$1.41 BILLION BUDGET
Sources of Funds

- Federal Gas Tax: $526.8M (37%)
- State Gas Tax: $321.6M (23%)
- SB-228/General Funds: $79.5M (6%)
- State Vehicle Registration: $114.8M (8%)
- Colorado Bridge Enterprise: $112.2M (8%)
- Other: $99.4M (7%)
- State FASTER: $112.5M (8%)
- State Aviation Fuel Tax: $19.5M (1%)
- Local Agency, City & County Funds: $21.6M (1%)
- High Performance Transportation Enterprise: $11.2M (1%)
- Other: $99.4M (7%)

Maintain What We Have

- Maintain What We Have: $747.2M (52.7%)
- Maximize: $128.8M (9.1%)
- Expand: $89.6M (6.3%)
- Contingency: $36.8M (2.6%)
- Debt Service: $3.4M (0.2%)
- Bridge Enterprise: $112.2M (7.9%)
- High Performance Transportation Enterprise: $11.2M (0.8%)
- Pass Through Funds/Multi-modal Grants: $205.9M (14.5%)
- Deliver - Program Delivery/Administration: $84.0M (5.9%)
Federal funds, nationally, provide an average 52% of State DOT annual capital outlays for highway & bridge projects.

FUNDING AND BUDGET
WE USE ALMOST $3 FEDERAL FOR EVERY $1 STATE
Delaware passed bills in 2014 and 2015.
COLORADO IS A DONEE STATE

Colorado Total Federal Funding (not just CDOT)
Federal Apportionment vs. Collected Motor Fuel Taxes

- **FEDERAL APPORTIONMENT**
  What We Receive

- **MOTOR FUEL TAX**
  What we send To D.C.

<table>
<thead>
<tr>
<th>Year</th>
<th>Apportionment</th>
<th>Motor Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>$200,000</td>
<td>$300,000</td>
</tr>
<tr>
<td>2008</td>
<td>$300,000</td>
<td>$400,000</td>
</tr>
<tr>
<td>2009</td>
<td>$400,000</td>
<td>$500,000</td>
</tr>
<tr>
<td>2010</td>
<td>$500,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>2011</td>
<td>$600,000</td>
<td>$700,000</td>
</tr>
<tr>
<td>2012</td>
<td>$700,000</td>
<td>$800,000</td>
</tr>
<tr>
<td>2013</td>
<td>$800,000</td>
<td>$900,000</td>
</tr>
<tr>
<td>2014</td>
<td>$900,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>2015</td>
<td>$1,000,000</td>
<td>$1,100,000</td>
</tr>
<tr>
<td>2016</td>
<td>$1,100,000</td>
<td>$1,200,000</td>
</tr>
</tbody>
</table>

**Total Apportionment** $7,759,400,000
**Total Motor Fuel** $5,700,207,124
**Donee Percentage** 36.12%

*Does not include Permanent Recovery
• New strategic framework began in June 2015. Updated summer 2016

• Performance Plan focus is mainly on “System Peak” measures
  o Asset Condition
  o Improve Customer Experience

CDOT’S STRATEGIC FRAMEWORK

Purpose
To save lives and make lives better by providing freedom, connection and experience through travel.

Values
Safety, people, integrity, customer service, excellence and respect are at the heart of all that we do.

Summit
The best DOT in the country for all customers by focusing on our people, leading-edge technology and a healthy multi-modal system.

Peaks
Technology
People
System
Asset Condition

Base Camps
Help Our People with Technology
Big Data
Internal Customer Focus
Develop Leaders
Improve Customer Experience

2017
SOME OF OUR CUSTOMERS AND HOW WE SERVE THEM

Revised and revamped all external websites to be more customer friendly and accessible

Over one million page views for codot

Over one million calls into 511

Hosted events like tours of Eisenhower Tunnel to show the public behind the CDOT curtain

Over 15,000 emails and phone calls annually from customers responded to within 36 hours.

Engaged over 8,000 customers to talk about overall transportation priorities and issues through telephone town halls, events and fairs with Together We Go. Done in collaboration with Transportation Planning Regions.
• Helps department effectively administer and deliver transportation-related programs and services.

• Monthly meetings to review progress on measures

• Quarterly and yearly performance results submitted to Office of State Planning and Budgeting and posted online

• Aligned with goal areas set by Transportation Commission and Federal Highway Administration
• Key elements: Four Strategic Policy Initiatives (SPI) and supporting operational performance metrics
  o Safety
  o Pavement Condition
  o Maintenance
  o Travel-Time Reliability
What We’re Doing
(Sample Lead Measures)

Fund 66,750 law enforcement contact hours to enforce traffic safety

_Heat Is On campaigns_

Ensure 90% of FASTER safety projects address high priority locations around the state

1-3 Year Goal
(Lag Measure)

Achieve Reduced Fatalities of:

440 = calendar year 2017

416 = calendar year 2019
Colorado Roadway Fatalities, 2006-16

Vehicle Miles Traveled*
What We’re Doing
(Sample Lead Measure)

Ensure that 80% of advertised pavement projects match recommendations from CDOT’s pavement management system

1-3 Year Goal
(Lag Measure)

Achieve High/Moderate Drivability Life* of:

- 69%: FY17
- 57%: FY19

*Drivability Life = measurement in years of how long a stretch of highway will have acceptable** driving conditions

**Acceptable = measurement of smoothness and safety
Planned Pavement Condition

- **Planned Budget**
- **Long-term Goal**
- **$150M Less**

Percent High/Moderate Drivability Life

Years: 2015 to 2035
HOW DO WE COMPARE?
PAVEMENT CONDITION

KEY
Colorado
Utah

SCALE:
BEST
to
WORST

Source:
Highway Statistics
FHWA 2015
<table>
<thead>
<tr>
<th>What We’re Doing</th>
<th>1-3 Year Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve a B in snow and ice control for FY 17</td>
<td>Achieve Maintenance Levels of Service (MLOS) grade for the state highway system* of:</td>
</tr>
<tr>
<td>Ensure that striping achieves a minimum reflectivity score based off of monthly reports</td>
<td>C+: FY17</td>
</tr>
<tr>
<td>Reduce 30 &amp; 90 day overdue essential repairs on major structures.</td>
<td>C : FY19</td>
</tr>
<tr>
<td></td>
<td>compared to a B- in FY15</td>
</tr>
<tr>
<td></td>
<td>*Within existing fiscal constraints</td>
</tr>
</tbody>
</table>
## MAINTAINING WHAT WE HAVE

### GOALS FOR ASSET MANAGEMENT

<table>
<thead>
<tr>
<th>FY2016-17 Asset Management Category</th>
<th>Fiscally Constrained Transportation Commission Goal for Asset Management Category</th>
<th>Funding Available</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Surface Treatment</strong></td>
<td>80% of system with “high” or “moderate” drivability life</td>
<td>$242.1M</td>
</tr>
<tr>
<td><strong>Bridge</strong></td>
<td>90% of Colorado bridges not structurally deficient</td>
<td>$163.2M</td>
</tr>
<tr>
<td><strong>Buildings</strong></td>
<td>90% of buildings with a “C” condition or greater</td>
<td>$21.4M</td>
</tr>
<tr>
<td><strong>Culverts</strong></td>
<td>95% of culverts not structurally deficient</td>
<td>$11M</td>
</tr>
<tr>
<td><strong>Tunnels</strong></td>
<td>80% of tunnel length with ≥ 2.5 weighted condition index</td>
<td>$7.6M</td>
</tr>
<tr>
<td><strong>ITS</strong></td>
<td>90% of assets within useful life</td>
<td>$24.5M</td>
</tr>
<tr>
<td><strong>Road Equipment</strong></td>
<td>70% of vehicles still within useful life</td>
<td>$26.4M</td>
</tr>
<tr>
<td><strong>Geohazards/Rockfall</strong></td>
<td>80% of segments above &quot;C&quot; risk grade</td>
<td>$10 M</td>
</tr>
<tr>
<td><strong>Walls</strong></td>
<td>1% of walls sq. ft. structurally deficient</td>
<td>$5.8M</td>
</tr>
<tr>
<td><strong>Traffic Signals</strong></td>
<td>Have only 15% of intersections with at least one component above 100% useful life</td>
<td>$16.9M</td>
</tr>
<tr>
<td><strong>Annual Maintenance</strong></td>
<td>B- overall condition</td>
<td>$262.6M</td>
</tr>
</tbody>
</table>

(CDOT needs over $950M to meet the goals)
## Maintenance Levels of Service by Program Area

<table>
<thead>
<tr>
<th>Maintenance Program Area Description</th>
<th>Funding Needed for ‘A’ Rating</th>
<th>Budget FY2016-17 Funding</th>
<th>FY 2013-14 Actual</th>
<th>FY 2014-15 Actual</th>
<th>FY 2016-17 Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning, Training and Scheduling</td>
<td>$25.4M</td>
<td>$15.9M</td>
<td>C-</td>
<td>C</td>
<td>C-</td>
</tr>
<tr>
<td>Roadway Surfacing</td>
<td>$177.2M</td>
<td>$40.0M</td>
<td>B+</td>
<td>B+</td>
<td>C+</td>
</tr>
<tr>
<td>Roadside Facilities</td>
<td>$41.7M</td>
<td>$22.3M</td>
<td>A-</td>
<td>B+</td>
<td>C</td>
</tr>
<tr>
<td>Roadside Appearance</td>
<td>$12.7M</td>
<td>$8.6M</td>
<td>B</td>
<td>B-</td>
<td>C</td>
</tr>
<tr>
<td>Traffic Services</td>
<td>$109.5M</td>
<td>$67.7M</td>
<td>C+</td>
<td>C+</td>
<td>C-</td>
</tr>
<tr>
<td>Bridges &amp; Structures</td>
<td>$122.0M</td>
<td>$12.2M</td>
<td>B-</td>
<td>C+</td>
<td>C</td>
</tr>
<tr>
<td>Snow &amp; Ice</td>
<td>$88.5M</td>
<td>$73.5M</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Service Equipment, Buildings &amp; Grounds</td>
<td>$25.1M</td>
<td>$15.7M</td>
<td>C+</td>
<td>B-</td>
<td>C-</td>
</tr>
<tr>
<td>Tunnels</td>
<td>$9.8M</td>
<td>$6.2M</td>
<td>C+</td>
<td>B-</td>
<td>C+</td>
</tr>
<tr>
<td>US 36 (mtc. contract)</td>
<td></td>
<td>$1.2 M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OVERALL MLOS</strong></td>
<td><strong>$611.9M</strong></td>
<td><strong>$262.6M</strong></td>
<td><strong>B-</strong></td>
<td><strong>B-</strong></td>
<td><strong>C+</strong></td>
</tr>
</tbody>
</table>
MAINTENANCE OPTIMIZATION

- COORDINATE WITH CSP
- DRIVER OBSERVATIONS
- WEATHER FORECAST
- MAINTENANCE DECISION SUPPORT SYSTEM DATA PLATFORM

Treatment Protocols

- EQUIPMENT
- PERSONNEL
- MATERIALS
Winter – time to bare pavement rating: based on highway category

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>Interstate, &gt; 75,000 ADT</td>
</tr>
<tr>
<td>Category 2</td>
<td>Interstate, 15,000 – 75,000 ADT</td>
</tr>
<tr>
<td>Category 3</td>
<td>Interstate, &lt; 15,000 ADT</td>
</tr>
<tr>
<td>Category 4</td>
<td>NHS, &gt; 75,000 ADT</td>
</tr>
<tr>
<td>Category 5</td>
<td>NHS, 15,000 – 75,000 ADT</td>
</tr>
<tr>
<td>Category 6</td>
<td>NHS, &lt; 15,000 ADT</td>
</tr>
<tr>
<td>Category 7</td>
<td>Other, &gt; 50,000 ADT</td>
</tr>
<tr>
<td>Category 8</td>
<td>Other, 5,000 – 50,000 ADT</td>
</tr>
<tr>
<td>Category 9</td>
<td>Other &lt; 5,000 ADT</td>
</tr>
<tr>
<td>Category 10</td>
<td>Mountain Passes (Non-Interstate)</td>
</tr>
<tr>
<td>Category 11</td>
<td>Seasonal Highways (Mt. Evans and Independence Pass) (No survey on Cat 11 highways for winter maintenance)</td>
</tr>
</tbody>
</table>

“<” means “less than”  “>” means “more than”
Winter – time to bare pavement rating: based on highway category

Traveled Way Condition (Edge Line to Edge Line):
Condition Indicator: Presence of bare pavement.
End of Event Indicator: A cessation of precipitation for two hours with clearing skies
Outcome Measurement: Elapsed time from the end of precipitation to 95% Bare Pavement in traveled way

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
<th>Category 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Bare Pavnt Maint</td>
<td>4 Bare Pavnt Maint</td>
<td>4 &lt; 2 Hours</td>
<td>4 Bare Pavnt Maint</td>
<td>4 &lt; 2 Hours</td>
</tr>
<tr>
<td>3 &lt; 1 Hour</td>
<td>3 &lt; 2 Hours</td>
<td>3 &lt; 4 Hours</td>
<td>3 &lt; 2 Hours</td>
<td>3 &lt; 4 Hours</td>
</tr>
<tr>
<td>2 &lt; 2 Hours</td>
<td>2 &lt; 4 Hours</td>
<td>2 &lt; 6 Hours</td>
<td>2 &lt; 4 Hours</td>
<td>2 &lt; 6 Hours</td>
</tr>
<tr>
<td>1 &lt; 3 Hours</td>
<td>1 &lt; 6 Hours</td>
<td>1 &lt; 8 Hours</td>
<td>1 &lt; 6 Hours</td>
<td>1 &lt; 8 Hours</td>
</tr>
<tr>
<td>0 &gt; 3 Hours</td>
<td>0 &gt; 6 Hours</td>
<td>0 &gt; 8 Hours</td>
<td>0 &gt; 6 Hours</td>
<td>0 &gt; 8 Hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category 6</th>
<th>Category 7</th>
<th>Category 8</th>
<th>Category 9</th>
<th>Category 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 &lt; 4 Hours</td>
<td>4 &lt; 2 Hours</td>
<td>4 &lt; 4 Hours</td>
<td>4 &lt; 6 Hours</td>
<td>4 &lt; 8 Hours</td>
</tr>
<tr>
<td>3 &lt; 6 Hours</td>
<td>3 &lt; 4 Hours</td>
<td>3 &lt; 6 Hours</td>
<td>3 &lt; 8 Hours</td>
<td>3 &lt; 24 Hours</td>
</tr>
<tr>
<td>2 &lt; 12 Hours</td>
<td>2 &lt; 6 Hours</td>
<td>2 &lt; 12 Hours</td>
<td>2 &lt; 16 Hours</td>
<td>2 &lt; 48 Hours</td>
</tr>
<tr>
<td>1 &lt; 16 Hours</td>
<td>1 &lt; 8 Hours</td>
<td>1 &lt; 16 Hours</td>
<td>1 &lt; 24 Hours</td>
<td>1 &lt; 72 Hours</td>
</tr>
<tr>
<td>0 &gt; 16 Hours</td>
<td>0 &gt; 8 Hours</td>
<td>0 &gt; 16 Hours</td>
<td>0 &gt; 24 Hours</td>
<td>0 &gt; 72 Hours</td>
</tr>
</tbody>
</table>
**MPA: Snow and Ice Control**

<table>
<thead>
<tr>
<th>Illustrations</th>
<th>LOS</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Illustration of LOS A" /></td>
<td>A</td>
<td>Plowing and chemicals or abrasives applications proactively maintain very high levels of mobility throughout storms (refer to accompanying tables). Snow drifts and localized ice patches are treated quickly to avoid closures and hazards. Proactive avalanche control minimizes traffic interruptions and avoids unanticipated road closures.</td>
</tr>
<tr>
<td><img src="image2.png" alt="Illustration of LOS B" /></td>
<td>B</td>
<td>Plowing and abrasives or chemicals applications maintain high levels of mobility as much as possible (refer to accompanying tables). Snow drifts and localized ice patches may be treated during storm with abrasives or chemicals. Proactive avalanche control minimizes traffic interruptions and avoids unanticipated road closures.</td>
</tr>
</tbody>
</table>
Performance Measure for Snow and Ice
Time Back to Bare Pavement

Bare Lane

Center stripe and fog lines can be covered with ice and snow.

Wheel tracks and everything in between must be free from ice and snow.
MAINTENANCE LEVELS OF SERVICE

Snow and Ice History
Original Budgets and Contingency Usage

- **2006**: $46.9 (Original Budget)
- **2007**: $40.6 (Original Budget)
- **2008**: $50.0 (Original Budget)
- **2009**: $60.9 (Original Budget)
- **2010**: $62.8 (Original Budget)
- **2011**: $56.5 (Original Budget)
- **2012**: $64.3 (Original Budget)
- **2013**: $60.9 (Original Budget)
- **2014**: $56.9 (Original Budget)
- **2015**: $64.3 (Original Budget)
- **2016**: $73.4 (Original Budget)

- **Contingency Funds**:
  - **2006**: $5.2
  - **2007**: $19.8
  - **2008**: $43.8
  - **2009**: $10.9
  - **2010**: $3.8
  - **2011**: $10.0
  - **2012**: $3.9
  - **2013**: $15.4
  - **2014**: $10.0
  - **2015**: $72.3
  - **2016**: $74.3

*No contingency funds received and did not expend entire budget.*
What We’re Doing (Sample Lead Measures)

• Reduced incident clearance times:
  • Launch enhanced Motorist Safety Patrol
  • Increase % of first responders trained in Traffic Incident Management on I-25 corridor.
  • Establish Traffic Incident Management quarterly meetings with I-25 corridor first responders
  • Expand incident detection video analytics software on I-70 and I-25 cameras to reduce time to detect and respond to incidents.

• Complete construction on US-6 Acceleration Lane project to improve traffic flow on EB I-70 from Loveland Pass.

1-3 year Goal (Lag Measure)

Minimize the increase in travel time on I-70 and I-25
Express Lane delivers operational improvements and all lanes benefit

- Compare speeds from 2012 pre-construction to present/Express Lane (2012 - 2016):
  - More consistent speeds, improved incident clearance and faster overall speeds.
  - Travel times reduced by 26-52%

Travel Time Index (EB Sundays on I-70 from MM 228-243-Georgetown-Veterans Memorial Tunnel)
ROAD X Projects

- Intelligent ramp metering project on NB I-25 from Ridgegate to University
- Complete construction of 12 ramp meters on I-25
- Conduct 1,000 smartphone-connected vehicle tests and begin design for the Dedicated Short Range Communication (DSRC) connected vehicle pilot
- Complete construction on US-6 Acceleration Lane project to improve traffic flow on EB I-70 from Loveland Pass
- Deploy chain station management contractors to improve safety of chain station operations and commercial vehicle compliance with chain law
- Expand incident detection video analytics software on I-70 and I-25 cameras to reduce time to detect and respond to incidents
Efficiency Examples

- Using Unmanned Aircraft Systems (drones) as a more efficient way of identifying rockfall hazards and creating safer ways to monitor geohazards across the state.

- Reduced training burden on contractors by approx. 80% by implementing specialty software Erosion Sediment Control Assessment Notebook (ESCAN)

- Additional new software that is better able to analyze best pavement for projects - resulted in $15M savings to taxpayers

- Integration of Colorado Oversize Overweight Permitting and Routing (COOPR) system improvements for trucking customers and companies
Bills:

- Snowplow safety

Budget Requests:

- Drive High Get a DUI Campaign = $1M

Other Potential Legislation:

- Primary Seat Belts
- Autonomous Vehicles
- Funding for Transportation

Planned Rule Revisions

- Transport Permits for Movement of Extra-Legal Vehicles or Loads
- State Highway Utility Accommodation

Publicly Available

CDOT Website

https://www.codot.gov/business/rules