



**COLORADO**  
Department of  
Transportation



# CDOT FY 2017-18 Performance Plan

July 1, 2017



*Demolition in progress for a CDOT project that added a climbing lane on southbound Interstate 25, south of Berthoud.*

# CONTENTS

Introduction & Overview.....	3
Department Description.....	4
Vision, Mission and Strategic Framework.....	4
Department Structure.....	5
Major Functions.....	6
Locations.....	7
Process-Improvement Strategies.....	7
Plan Overview.....	8
Strategic Policy Initiatives.....	8

Employee Involvement .....	10
Strategic Policy Initiative No. 1: Safety .....	11
Strategic Policy Initiative No. 2: Pavement Condition .....	15
Strategic Policy Initiative No. 3: Travel Time .....	19
Strategic Policy Initiative No. 4: Maintenance .....	28
Strategic Policy Initiative No. 5: Workers' Compensation Claims .....	32
Appendix 1: Organizational Chart .....	35
Appendix 2: Fiscal Year 2016-17 Performance Evaluation .....	36
Appendix 3: Executive Director's Goals .....	40

# Introduction & Overview

The Colorado Department of Transportation (CDOT) is pleased to present its Performance Plan for fiscal year 2017-18. The plan will help the Department serve Coloradans in effectively administering and delivering transportation-related programs and services.

Described in this document are one- and three-year Strategic Policy Initiatives; strategies and processes supporting those initiatives; output and outcome measures indicating performance levels; and a description of the environment, inputs and customer for each initiative. A description of the Department also is included.

The Performance Plan is required by the 2013 revision of the State Measurement for Accountable, Responsive and Transparent Government (SMART) Act. The Governor’s Office of State Planning and Budgeting (OSPB) provides guidance each year on recommended and required content.

Revisions to the plan may occur through consultations with OSPB, and as CDOT completes its annual review of the Federal Highway Administration-CDOT Stewardship and Oversight Agreement and other documents that contain many of the same or similar performance indicators.



*CDOT maintains more than 3,400 vehicular bridges, including this bridge on Interstate 70, east of Idaho Springs.*

# Department Description

The Colorado Department of Transportation is the cabinet Department that plans for, operates, maintains and constructs the state-owned transportation system, including state highways and bridges. The Department’s statutory authority resides within Title 43, Part 1, Colorado Revised Statutes (2017). Article 1 vests the Colorado Transportation Commission with authority over planning, development, and adoption of CDOT’s annual budget.

CDOT is responsible for a state highway system that encompasses more than 9,100 centerline miles (about 23,000 total lane miles) and includes more than 3,400 bridges. This system each year handles more than 30 billion vehicle miles of travel. Although the Interstate system accounts for only about 10 percent, or 952, of the centerline miles on the state system, more than 40 percent of state-highway travel within Colorado takes place on Interstate highways.

## Vision, Mission and Strategic Framework

The Department’s **vision** is to enhance the quality of life and the environment of the citizens of Colorado by creating an integrated transportation system that focuses on safely moving people, goods and information by offering convenient linkages among modal choices. CDOT’s **mission** is to provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods and information. CDOT’s core values are safety, people, respect, integrity, customer service and excellence.

From these organizational priorities, the Department establishes mid- to long-term performance goals and objectives. CDOT’s Policy Directive 14, an updated version of which was adopted by the Governor-appointed Colorado Transportation Commission in 2015, provides policy direction on investment decisions to achieve certain performance levels for the statewide transportation system, including safety, infrastructure condition, maintenance and system performance levels. The objectives in Policy Directive 14 help set direction for funding levels for various programs in the long-range Statewide Transportation Plan, the near-term Statewide Transportation Improvement Plan (STIP), and the Department’s annual budget.

CDOT in fiscal year 2017-18 will continue to execute the strategic framework the Department established in June 2015. The Department reached out to employees at all levels to help refine this framework, and an associated employee survey yielded more than 700 responses.



*CDOT intends to become the best transportation department in the country for its customers by reaching the three peaks above.*

The Department's new strategic framework focuses on reaching the "**summit**" of becoming the best transportation department in the country for our customers. Success in reaching this goal will boost the health of Colorado's transportation system and maximize the freedom of people in the state to decide how, when and where they want to go. CDOT's **purpose** is to provide freedom, connection and experience through travel.

To become the No. 1 transportation department in the country, CDOT has identified three "peaks" it must reach:

- **Leading-Edge Technology:** Deploy leading-edge technology to keep people moving more reliably and safely.
- **Our People:** Develop a workforce with a passion for coming to work every day and attract new employees who want to work for the best transportation department in the country.
- **A Healthy Multi-Modal Transportation System:** Enhance our roads, bridges, and multi-modal options to get our customers where they need to go more safely, easily, and more confidently than ever.

CDOT's Executive Director has established key goals and related strategies for each peak for fiscal year 2018. These goals, the current draft of which can be found in Appendix 3 of this plan, are aligned with the plan's Strategic Policy Initiatives.

Under guidance of the Colorado Governor's Office, state agencies have established performance goals for a project known as **Vision 2018**. CDOT's goals for the Vision 2018 project and associated [dashboard](#) are aligned with Strategic Policy No. 3 in this Performance Plan. These goals focus on reducing projected travel times for the Interstate 70 mountain corridor and the Interstate 25 corridor in the Denver metro area.

## Department Structure

The state's transportation system is managed by CDOT under the direction of the Colorado Transportation Commission, which is composed of eleven members who represent specific districts. Each commissioner, appointed by the Governor and confirmed by the Senate, serves a four-year term. The commission directs policy and adopts Departmental budgets and programs.

The Executive Director's Office leads the Department in planning for and addressing Colorado's transportation needs. The Executive Director and other members of the Executive Management Team set the direction of the Department, make recommendations to the Transportation Commission, ensure consistent communication, set internal policy, set short-term and long-range goals, and provide leadership for the Department through the execution of the Transportation Commission's policies and budgets.

CDOT's Chief Engineer, who is also the Transportation Program Director, is responsible for integrated transportation program-development functions including planning, engineering, design and construction. Reporting to the Chief Engineer and Transportation Program Director are CDOT's Division of Transit & Rail, Division of Transportation Development, Office of Major Project Development, Project Support, Civil Rights, Property Management and the Office of Program Management.

The Department's divisions and offices, along with its Transportation Regions, perform an array of functions. Examples include:

- Colorado's five Transportation Regions operate under the guidance of the Deputy Director/Chief Operating Officer and their respective Regional Transportation Directors. CDOT's Transportation Regions design highway projects and award contracts to private companies that submit the lowest bids to construct the projects. The Regions also deliver needed maintenance for the state highway system and maintain ongoing contact with local governments, industry and the public. Each Region covers all aspects of CDOT

operations for that Region, including engineering, planning and environmental management, traffic, right-of-way and surveying, and utilities.

- Regions, supported by the Division of Highway Maintenance, also take care of the highway system by plowing snow, repairing pavement, maintaining guardrails and more.
- The Division of Transportation Systems Management and Operations (TSM&O) focuses on implementing low-cost, high-value operational improvements to improve safety, mobility and reliability on the state highway system.
- The Office of Transportation Safety helps local law-enforcement agencies with special funds to provide educational programs to reduce distracted and impaired driving and to increase the use of safety belts.
- The Division of Aeronautics supports aviation interests statewide, including by awarding and administering grants to help improve local airports. The Division operates under the direction of the Colorado Aeronautical Board.
- The Division of Transit and Rail provides assistance to numerous transit systems in the state.
- The Division of Transportation Development manages the statewide transportation-planning process, ensures the Department fulfills its environmental and reporting obligations, and monitors agency performance measures.
- The Office of Major Project Development helps CDOT and the High Performance Transportation Enterprise (HPTE) more effectively and efficiently develop major projects through the promotion of consistency in the advancement, management and oversight of such projects.

## Major Functions

CDOT administers highway, aviation, transit and rail, and other programs pursuant to state laws, federal laws and the policies of the Colorado Transportation Commission. For this plan, the Department uses six functional categories to describe its work:

1. **Capital Construction:** The Department delivers bridge, pavement and other capital construction projects. CDOT ensures pavements, tunnels, bridges and other structures statewide are properly designed, constructed and maintained. **Customers:** All users of the state highway system. This includes resident, tourist and recreational travelers; "through" travelers on the Interstates; business customers such as the freight and tourism industries; the construction community; transit service providers; the military; counties; municipalities and others.
2. **Operations and Maintenance:** CDOT maintains and operates the state highway system. The Division of Transportation Systems Management and Operations (TSM&O) plans, develops, and administers a statewide program to reduce congestion and improve the safety, security, mobility, and efficient use of Colorado's existing highway system. TSM&O improves the surface transportation system through activities other than building new capacity. Examples include Variable Messaging Signs that allow travelers to adjust trips based on the latest information and traffic signals on ramps that dynamically control the rate at which vehicles enter freeways. Meanwhile, the Division of Highway Maintenance provides policy and guidance for the statewide maintenance program. This Division also maintains operational oversight for the administration of the maintenance program for the nine maintenance sections. CDOT's maintenance forces take care of the highway system in numerous ways including plowing snow, striping and repairing pavement. **Customers:** All users of the state highway system. This includes resident, tourist and recreational travelers; "through" travelers on the Interstates; business customers such as the freight and tourism industries; the construction community; transit service providers; the military; counties; municipalities and others.
3. **Safety:** CDOT strives to reduce the incidence and severity of motor-vehicle crashes and associated human and economic loss. This is done by incorporating roadway-safety engineering principles in all state

highway construction and enhancement projects, conducting safety-specific infrastructure projects, and by administering data-driven safety-education grant programs to influence driver behavior and support law enforcement and local community safety projects. CDOT works to expand safety partnerships and to provide tools for safety advocates to work with the Department. In addition to the safety of the traveling public, CDOT promotes employee safety through appropriate training, policies and procedures.

**Customers:** All users of the state highway system. This includes resident, tourist and recreational travelers; "through" travelers on the Interstates; and business customers such as the freight and tourism industries. Other customers include CDOT staff and safety partners such as Mothers Against Drunk Driving and the Colorado Department of Public Health and the Environment; law enforcement agencies including the Colorado State Patrol; transit services; the military; counties; municipalities and others.

4. **Program and Project Support:** CDOT provides administrative, planning, financial and other support for the transportation system. Project Support includes Operations, CDOT Administration, State Planning and Research, the State Infrastructure Bank, State Highway Fund Contingencies, and the Debt Service and Certificates of Participation programs. CDOT administers funds to Local Programs including the Transportation Alternatives, STP Metro, Congestion Mitigation and Air Quality (CMAQ) and Safe Routes to School programs. **Customers:** All users of the state highway system. This includes residents and visitors; CDOT staff; debt holders; the Federal Highway Administration; Metropolitan Planning Organizations; Transportation Planning Regions; counties; municipalities and others.
5. **Transit and Rail:** CDOT supports transit and rail. The Transit and Rail Division plans, develops, finances, operates, and integrates transit and rail into the statewide transportation system. The Division also operates the Bustang interregional bus system, which connects commuters along the Interstate 25 Front Range and Interstate 70 mountain corridors. The Division works with other transit and rail providers to plan, promote, and implement investments in transit and rail services statewide. The Division also is responsible for administering and expending state and federal transit funds and for developing the Statewide Transit Plan and the Freight and Passenger Rail Plan. **Customers:** Local transit agencies and their users; human service transportation providers; the Federal Transit Administration; Regional Transportation Authorities; and Transportation Planning Regions.
6. **Aeronautics:** CDOT supports statewide aviation interests. The Department's Division of Aeronautics, which is under the direction of the Colorado Aeronautical Board, collects and distributes aviation fuel tax revenue and provides services including planning; airport capital improvement program development; and airport grants administration. **Customers:** Colorado's public-use airports and their users, the flying public, and pilots and other aviation professionals, including those within the Federal Aviation Administration.

## Locations

CDOT's headquarters building is at 4201 East Arkansas Ave. in Denver. The Department is currently constructing a new headquarters near Mile High Stadium in Denver's Sun Valley neighborhood. Completion is scheduled for April 2018. The Department owns 1,257 buildings statewide, including the current headquarters building in Denver and five regional offices in Denver, Durango, Grand Junction, Greeley and Pueblo. The inventory of buildings includes 314 maintenance/repair buildings and 70 office/engineering residency buildings.

## Process-Improvement Strategies

CDOT's focus on improving business processes is tied to the Governor's goal of making government more "effective, efficient and elegant." The Department began its structured process-improvement initiative in late 2011 and uses principles and practices of Lean process improvement as its foundation, along with a robust change-management component.

The key pillars of the Lean initiative are continuous improvement and respect for people. CDOT ensures the success of process-improvement projects by employing change-management plans to ensure people affected by changes experience success with the change. This often improves rates of adoption and returns on investment.

Process-improvement efforts are spread throughout the Department. CDOT's efforts sometimes start small, such as individuals using Lean "Everyday Ideas" to improve their workplaces and processes. For example, a recent effort to reduce color printing saved \$3,300 in March 2017 alone. More examples of Everyday Ideas can be found [here](#).

Meanwhile, "Global Lean" projects focus on larger, cross-functional processes. Several cross-functional process-improvement efforts are helping advance CDOT's "Three Peaks" effort. Examples include:

- **Technology Peak:** CDOT's RoadX program has launched several initiatives to spur connected vehicles and other new technologies. A Department proposal was selected in 2016 as a global finalist for the Hyperloop, a technology that would move people or freight through a low-pressure tube at up to 700 miles per hour.
- **People Peak:** CDOT this past year created an Employee Engagement Playbook that gives supervisors techniques to reach the goal of boosting the overall employee engagement rating by at least one percentage point over 2015 survey results.
- **System Peak:** CDOT is focused on improving roadway striping, a critical component in making roads safer. A project team already has conducted striping inspections and application training statewide. In 2016, CDOT developed or updated four striping specifications. The Department also finalized regional strategic five-year striping plans and issued a decision memo to outline consistent work practices. Finally, CDOT is researching lane delineation technologies and finalizing a strategic plan for LED (light-emitting diode) striping.

Other examples of cross-functional improvements can be found [here](#).

In addition to these efforts, CDOT has established and set targets for operational metrics within this plan. These metrics are designed to improve processes that help achieve the Department's Strategic Policy Initiatives.

## Plan Overview

Below are the Strategic Policy Initiatives that form the heart of this plan. CDOT has organized these initiatives under the "peaks" the Department must reach to achieve its goal of becoming the best transportation department in the country for all its customers.

### Strategic Policy Initiatives

**1. Roadway Fatalities (System Peak):** Limit the increase in roadway fatalities in Colorado, with the long-term goal of moving toward zero deaths. CDOT, in partnership with other safety stakeholders in Colorado, aims to ensure roadway fatalities statewide do not exceed 800 for calendar year 2018, compared to 608 in 2016. The Department aims to limit fatalities to 890 in calendar year 2020.

**2. Pavement Condition (System Peak):** Attain High or Moderate Drivability Life for 80 percent of sampled lane miles of pavement on the state highway system by 2025. Achieve 73 percent High/Moderate Drivability Life for fiscal year 2018 pavement condition, compared to 80 percent in fiscal year 2016. Achieve 64 percent High/Moderate Drivability Life for fiscal year 2020 pavement condition.

**3. Travel Time (System and Technology Peaks):** Slow the increase in average travel times on Interstate 25, between Northwest Parkway and C-470, during peak weekday hours. Slow the increase in average travel times on Interstate 70, between Vail and C-470, during peak weekend hours. See page 19 for a full description of these initiatives, which includes targets for 2018 and 2020.

**4. Maintenance (System Peak):** Maintain CDOT's roadways and facilities to minimize the need for replacement or rehabilitation in a constrained funding environment. This includes achieving an overall Maintenance Levels of Service (MLOS) grade of B- for the state highway system in fiscal year 2018 and a C for fiscal year 2020, compared to a C+ in fiscal year 2016.

**5. Workers' Compensation Claims (People Peak):** Create a high-performing culture of employee safety, reducing workers' compensation claims from 267 in 2016 to 236 in calendar year 2018 and 212 in 2020.

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CDOT operates in a constrained funding environment. Greater fuel efficiency and ongoing cost inflation are weakening the ability of state and federal fuel taxes—which have not increased for two decades—to provide sufficient funding for the transportation system. At the same time, population growth means increasing wear and tear on the highway system. These challenges are demonstrated above by initiatives including Strategic Policy Initiative No. 3, under which CDOT forecasts its best efforts will at most curb the growth of congestion.

The Department's goals are not limited to initiatives outlined in this plan. Other performance goals may be found in documents including CDOT's Stewardship and Oversight Agreement with the Federal Highway Administration, the Transportation Commission's Policy Directive 14, the Department's Risk-Based Asset Management Plan, and other documents.

## Employee Involvement

Development of CDOT's Performance Plan included discussions with members of the Executive Management Team, program managers and other employees. CDOT and a representative of WINS, the state employee union, in late 2016 discussed giving increased focus in the plan to employee safety. To that end, this year's plan features a Strategic Policy Initiative related to worker's compensation claims and efforts to promote employee safety.



*CDOT's Leadership Forum in November 2016 helped educate current and emerging leaders on CDOT's Three Peaks initiatives and ensured employees were working as one team.*

## CDOT Peak: Healthy Multi-Modal System

# Strategic Policy Initiative No. 1: Safety

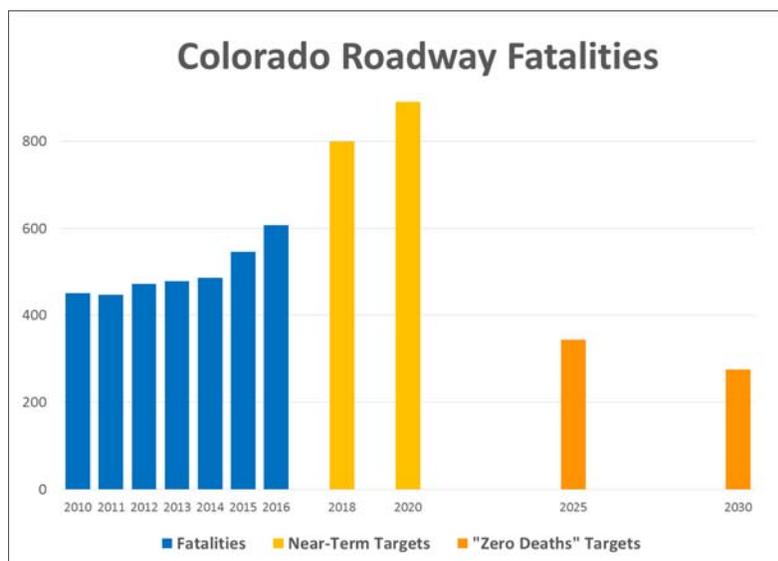
**Initiative Description:** Limit the increase in roadway fatalities in Colorado, with the long-term goal of moving toward zero deaths. CDOT, in partnership with other safety stakeholders in Colorado, aims to ensure roadway fatalities statewide do not exceed 800 for calendar year 2018, compared to 608 in 2016. The Department aims to limit fatalities to 890 in calendar year 2020.

**Metric Background:** CDOT tracks fatalities on all Colorado roadways, not only those on highways the Department owns and maintains.

**Why this matters:** CDOT has an ethical responsibility to deliver safety programs. Roadway users—motorists and non-motorists alike—expect to arrive at their destinations safely. Through infrastructure projects and campaigns to influence public behavior, the Department plays an instrumental role in ensuring that roads, bridges, tunnels and other infrastructure statewide are safe for the traveling public. In addition to the human cost, the economic cost of fatalities is considerable. The average economic cost per death in a motor-vehicle crash is about \$1.7 million, according to the most recent estimate in the *Highway Safety Manual*, a publication of the American Association of State Highway and Transportation Officials.

**Environment:** Annual fatalities on all Colorado's roadways rose from 447 in 2011 to 608 in 2016, a 36 percent increase. CDOT expects this trend of higher fatalities—which is also a nationwide phenomenon—to continue in the short term, particularly in light of Colorado's soaring population and attendant increase in vehicle miles traveled. The state's population has grown 41 percent in the past 20 years, from 3.9 million people in 1996 to 5.5 million people in 2016. The Department has revised its fatalities targets upwards to reflect these trends.

The rise in fatalities, which began in 2012, has been accompanied by an improving economy, increasing miles traveled, and adverse changes in driver behaviors. These trends are outpacing the safety benefits from improvements in vehicle engineering, roadway engineering, safety enforcement, and driver behavior programs. Over this period, CDOT has been continually evaluating the effectiveness of its safety programs.



*Recent increases in roadway deaths have prompted CDOT to revise its 2018 and 2020 fatalities targets upwards to those shown here. Despite these trends, CDOT continues to believe in a vision of zero roadway deaths. Achieving long-term "zero deaths" targets, however, will likely require substantial changes in technology, policy and legislation.*

CDOT and its safety partners in 2014 issued an updated Strategic Highway Safety Plan (SHSP), which had the vision of "Moving Toward Zero Deaths." Other states, cities, industry groups and the Federal Highway Administration also support Toward Zero Deaths visions. As Colorado's plan notes, Toward Zero Deaths is "a realistic movement that recognizes the objective for every individual, every family and every community should be zero deaths on Colorado's transportation network." In leading efforts related to the plan, the Department has stressed to stakeholders the importance of optimizing the effectiveness of the plan's strategies.

The Department continues to strive toward a goal of zero deaths. Realizing this vision, however, will require major changes in areas that influence driving safety, including technology, legislation, infrastructure funding, safety enforcement, educational campaigns, driver behavior and more.

On the policy side, the Department supports passage of a primary seatbelt law. Colorado is one of only 16 states without such a law. The state currently has a secondary seatbelt law, which prohibits law enforcement officers from issuing seat belt citations unless they pull over a vehicle for another reason. Separately, in June 2017, Colorado's Senate Bill 17-027 was signed into law and increases the penalty for texting while driving. Passage of a helmet law also would help reduce deaths.

Emerging connected vehicle technology, including vehicle-to-vehicle and vehicle-to-infrastructure technologies, also holds promise for sharply reducing fatalities. Driver behavior or human limitations are a factor in nearly 90 percent of crashes. New vehicles already are being sold with collision mitigation and lane-assist technologies, and further automations are expected to result in additional reductions in human error.

In response to rising fatalities, CDOT and planning partners who helped create the Strategic Highway Safety Plan have established action plans for eight emphasis areas (see Strategies section below).

**Strategies:** CDOT, in partnership with its safety partners statewide, employs myriad strategies to reduce the incidence and severity of motor-vehicle crashes and associated fatalities. Such strategies include:

- Developing the Strategic Highway Safety Plan, including its stakeholder vision, and implementing related safety strategies. Throughout 2016, the plan's emphasis area teams met and re-assessed the implementation plans developed in 2014 for continued deployment.
- Conducting safety-specific infrastructure projects. Examples of such infrastructure projects include pedestrian signs and markings, wildlife fencing and mitigation, rumble strips, guardrail, traffic signals, auxiliary lanes, roundabouts, signing, and LED (light-emitting diode) lane markers. CDOT's safety programs reduce crashes including those resulting in injuries and fatalities, thereby limiting increases now being seen.
- Administering data-driven safety-education and enforcement grant programs to influence driver behavior and support law enforcement.
- Monitoring and analyzing crash data to understand trends regarding the number and severity of collisions. Location-specific data identify sites requiring possible improvement actions.



*CDOT conducts safety-education programs to influence behavior. The Department's "Beware of the Beltless" campaign focuses on unrestrained fatalities in Colorado.*

- Engaging local agencies and organizations to develop safety-improvement strategies to prevent crashes and to address high-incidence locations.
- Advocating for legislation to reduce fatalities and injuries, such as a primary seatbelt law.
- Working with the motor vehicle industry to leverage connected and autonomous vehicle technology.

Colorado's Strategic Highway Safety Plan, published in 2014, identifies eight emphasis areas related to the state's most serious traffic safety problems. These areas include: aging road users (ages 65+); bicyclists and pedestrians; data; impaired driving; rural and urban infrastructure; motorcyclists; occupant protection; and young drivers (ages 15-20). Strategies identified by each of the emphasis area teams are located in the appendix of the Strategic Highway Safety Plan. In addition, a Distracted Driving Task Force was formed.

**Selected operational process:** Among many processes to reduce fatalities, CDOT qualifies, selects, advertises and awards Highway Safety Improvement Program projects. Projects that are selected address identified crash patterns, which are mitigated by the scope of the project and meet a minimum benefit/cost ratio of 1.0. CDOT's goal is to meet a program-wide benefit/cost ratio of 2.0.

**Selected operational metrics ("lead metrics"):** Average benefit/cost ratio for Highway Safety Improvement Program Projects. Percentage of advertised FASTER Safety Mitigation projects that address Level of Safety Service 3 and 4 locations. FASTER Safety Mitigation program dollars spent as a percentage of the program's fiscal-year allocation. Number of dedicated law enforcement contact hours for traffic safety enforcement.

**Major Functional Area:** Safety.

**Customers:** All highway users, including users of all highway transportation modes. This includes resident, tourist and recreational travelers on Colorado's state highway system. Other customers are business travelers including the trucking industry; safety partners such as Mothers Against Drunk Driving and the Colorado Department of Public Health and the Environment; law enforcement agencies including the Colorado State Patrol; transit services; the military; counties; municipalities and others.

**Evaluation:** Fatalities on Colorado roadways rose from 547 in 2015 to 608 in 2016, an 11 percent increase. This was higher than the Department's goal of 452. Performance targets for 2018 and beyond have been revised to account for such increases. See the "Environment" section on the previous two pages for a discussion of recent trends. The Department continues to pursue strategies outlined above and in the Strategic Highway Safety Plan to reduce roadway fatalities.

Metric Type	Metric Description	Process	Associated Work Group or Program	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ outcome/lag metric	Fatalities on Colorado roadways	Implement safety program (see Strategies section above)	Division of Transportation Systems Management and Operations, and the Office of Transportation Safety	CY	CY18: 800 CY20: 890	2013: 481 2014: 488 2015: 547 2016: 608
Operational/ "lead" metric	Average benefit/cost ratio for Highway Safety Improvement Projects	Qualify, select, advertise and award Highway Safety Improvement Program projects	Division of Transportation Systems Management and Operations	CY	CY18: 2.0 CY20: 2.0	2015: 2.98 <sup>1</sup> 2016: 2.85 2017: (YTD in March) 2.19
Operational/ "lead" metric	Percentage of advertised FASTER Safety Mitigation projects that address Level of Safety Service 3 and 4 locations	Advertise FASTER Safety Mitigation projects	Division of Transportation Systems Management and Operations	CY	CY18: 90% CY20: 90%	2015: 75% <sup>2</sup> 2016: 86% 2017 (YTD in March): 86%
Operational/ "lead" metric	FASTER Safety Mitigation program dollars spent as a percentage of the program's fiscal-year allocation <sup>3</sup>	Qualify, select, advertise and award FASTER Safety Mitigation program projects	Division of Transportation Systems Management and Operations, Division of Accounting and Finance	FY	FY18: 100% FY20: 100%	2013: 88% 2014: 84% 2015: 159% 2016: 160% 2017 Q1: 30% 2017 Q2: 61% 2017 Q3: 81%
Operational/ "lead" metric	Dedicated law enforcement contact hours for traffic safety enforcement <sup>4</sup>	Administer enforcement grants	Office of Transportation Safety	CY	CY18: 75,000 CY20: N/A	2013: 67,808 2014: 75,689 2015: 84,146 2016: 119,762
Input	Vehicle Miles Traveled on Colorado roadways	N/A	N/A	CY	N/A (input)	2013: 47.0 billion 2014: 49.0 billion 2015: 50.4 billion 2016: N/A

<sup>1</sup> Tracking of metric in current form began in late 2014.

<sup>2</sup> Tracking of metric in current form began in 2015.

<sup>3</sup> Metric compares program dollars spent during the specified time period to current year's allocation.

<sup>4</sup> Dedicated law enforcement contact hours refer to the time spent by law enforcement conducting traffic law enforcement activities while using dedicated state funds or federal grant funds for impaired driving, speed, seat belt and other enforcement.

## Strategic Policy Initiative No. 2: Pavement Condition

**Initiative description:** Attain High or Moderate Drivability Life for 80 percent of sampled lane miles of pavement on the state highway system by 2025. Achieve 73 percent High/Moderate Drivability Life for fiscal year 2018 pavement condition, compared to 80 percent in fiscal year 2016. Achieve 64 percent High/Moderate Drivability Life for fiscal year 2020. These goals are aimed at mitigating the decline in condition stemming from the age of CDOT's pavement inventory.

**Background/Definitions:** Drivability Life is an indication in years of how long a stretch of highway will have acceptable driving conditions. Acceptable driving condition is a function of smoothness and safety, as determined by the amount of pavement cracking and depth of rutting. Pavement with High Drivability Life is expected to have acceptable driving conditions for more than 10 years. Pavement with Moderate Drivability Life is expected to have four to 10 years of acceptable driving conditions. Pavement with Low Drivability Life is expected to have fewer than four years of acceptable driving conditions. CDOT's centralized Pavement Management Program is responsible for collecting and reporting performance results for the Drivability Life metric.

**Why this matters:** Drivers navigating pavement in "unacceptable" condition may need to endure rough rides; reduce speeds to safely navigate around potholes, deteriorating shoulders and other types of pavement damage; or otherwise compensate for deteriorating conditions. Water can collect in deep ruts or other depressions in pavement, which can increase the chances of hydroplaning. Excessive and severe cracking (pavement "fatigue") can reduce the passable width of a roadway, particularly on smaller highways.

**Environment:** CDOT is responsible for the pavement on a highway system that includes more than 9,100 centerline miles—or 23,000 total lane miles. Centerline miles represent the length of the road, and lane miles represent the length and lane count for a road. About 18 percent of the state's total lane miles, and 10 percent of its centerline miles, are on the Interstate. CDOT must plan and deliver its construction projects in challenging climates and topographies, including extreme freeze/thaw cycles and high mountain passes.



*Highway 160 at the eastern base of La Veta Pass in south central Colorado. This stretch of pavement was last rehabilitated in 2001 and has a Drivability Life of six years. Longitudinal cracks such as these are sealed by CDOT's maintenance forces to prevent moisture from eroding the underlying pavement structure.*

The Department maintains highway pavement in a constrained and uncertain funding environment. State and federal fuel taxes have not increased for two decades. An act authorizing federal highway, transit and rail programs from 2016-20 was signed into law by then-President Obama in December 2015. These programs fund much of the work of state transportation departments nationwide, including much of CDOT's surface treatment work. The law—the Fixing America's Surface Transportation (FAST) Act—was the first long-term, comprehensive surface transportation legislation since 2005. The American Association of State Highway and Transportation Officials, a trade group for transportation departments, continues to anticipate funding challenges for such agencies, noting that a gap remains between anticipated transportation spending and federal Highway Trust fund income.

In planning surface treatment projects, CDOT must weigh the capacity of the contracting community that performs the rehabilitation and reconstruction of highway pavement. That capacity can be exhausted or limited during natural disasters or times of heightened economic and construction activity.

**Strategies:** The Department's strategies for pavement management include:

- Increasing preservation practices on pavements. Pavement preservation means applying lower-cost treatments at an appropriate time in the life of pavements to extend the performance of the roadway and reduce the likelihood of high-cost rehabilitation and reconstruction. Key preservation activities include crack sealing and filling; concrete joint sealing and filling; surface sealing (chip sealing, fog sealing, etc.); micro-surfacing; patching; and delivering ultra-thin asphalt overlays ( $\leq 1.5$  inches).
- Prioritizing Interstates and high- and medium-volume roadways over other roadways when selecting surface treatment projects. CDOT's long-term target is the same for all categories of pavement (80 percent High/Moderate Drivability Life), but the Department has developed different Drivability Life standards based on a roadway's traffic volume. Interstates and high- and medium-volume roadways have the highest Drivability Life standards, while low-volume roadways have lower acceptable Drivability Life standards. All acceptable Drivability Life standards consider the safety and serviceability needed by the roadway users.
- Increasing the annual miles of roadway treated, particularly for low-volume roads, by using new and more cost-efficient combinations of repairs and thin surface treatments.
- Achieving economic efficiencies by coordinating pavement activities with activities on other CDOT assets.

More details are available in CDOT's [Risk-Based Asset Management Plan](#).



*The change in pavement color seen here, on Highway 160 near Walsenburg, is the transition between one resurfacing project from 2003 and another from 2004. Crack sealant added by CDOT to this stretch of roadway should ensure the pavement reaches—and potentially surpasses—its 20-year design-life expectation.*

**Selected operational processes:** Preserving, resurfacing and rehabilitating roads with the optimized application of cost-effective pavement treatments. Selecting and advertising Surface Treatment program projects.

**Selected operational metric ("lead metric"):** Percent of Surface Treatment program projects advertised for the fiscal year that match recommendations made from the pavement management system. This measure helps ensure actual construction projects are matching the pavement models that are designed to help CDOT achieve the desired pavement condition.

CDOT's centralized Pavement Management Program monitors and reports on performance results of this metric. Materials programs in CDOT's Transportation Regions are responsible for developing and delivering a four-year surface treatment construction program comprising projects that match at least 80 percent of projects recommended by the pavement management system.

**Major Functional Areas:** Functional Areas that affect pavement condition include Capital Construction, Operations and Maintenance, Safety, and Program and Project Support.

**Customer:** Customers include all highway users. This includes resident, non-resident, tourist, recreational, and "through" travelers on Colorado's state highway system. Other customer groups include business travelers including the trucking industry; transit services; the Federal Highway Administration; law enforcement agencies; the military; counties; municipalities and others.

**Evaluation:** The percentage of pavement on the state highway system with High or Moderate Drivability Life rose in fiscal year 2016 to 80 percent, up from 79 percent for fiscal year 2015. This exceeded CDOT's goal of 74 percent for fiscal year 2016 referenced in the 2015-16 Performance Plan and meets the Department's long-term goal of 80 percent. Technical updates to CDOT's pavement management system, as well as slower-than-expected pavement deterioration, led to higher-than-expected condition. However, due in part to the age of pavement on the state highway system, the condition under current funding assumptions is expected to decline for the next several years.

Metric Type	Metric Description	Process	Associated Work Unit or Program	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ outcome/ lag metric	Percent of state highway pavement with High or Moderate Drivability Life	Preserving, resurfacing and rehabilitating roads with the optimized application of cost-effective pavement treatments	Division of Project Support (Pavement Management Program)	Fiscal	2018: 73% 2020: 64%	2013: 82% 2014: 73% 2015: 79% 2016: 80%
Operational/ lead metric	Percent of Surface Treatment Program projects advertised that match recommendations from the pavement management system	Selecting and advertising surface treatment projects	Division of Project Support (Pavement Management Program), materials programs in CDOT's Transportation Regions	Fiscal	2018: 80% 2020: 80% <sup>5</sup>	2013: N/A 2014: N/A 2015: 77% 2016: 91% 2017: 90% Fiscal YTD (July 2016 through March 2017 only)
Input/ environmental factor	Lane miles on state highway system	N/A	N/A	Calendar	N/A	2013: 23,022 2014: 23,018 2015: 23,017 2016: N/A
Input/ environmental factor	Annual Vehicle Miles Traveled on state highway system	N/A	N/A	Calendar	N/A	2013: 28.4 billion 2014: 29.8 billion 2015: 30.7 billion 2016: N/A
Input/ environmental factor	Annual Vehicle Miles Traveled by trucks on the state highway system	N/A	N/A	Calendar	N/A	2013: 2.4 billion 2014: 2.6 billion 2015: 2.6 billion 2016: N/A

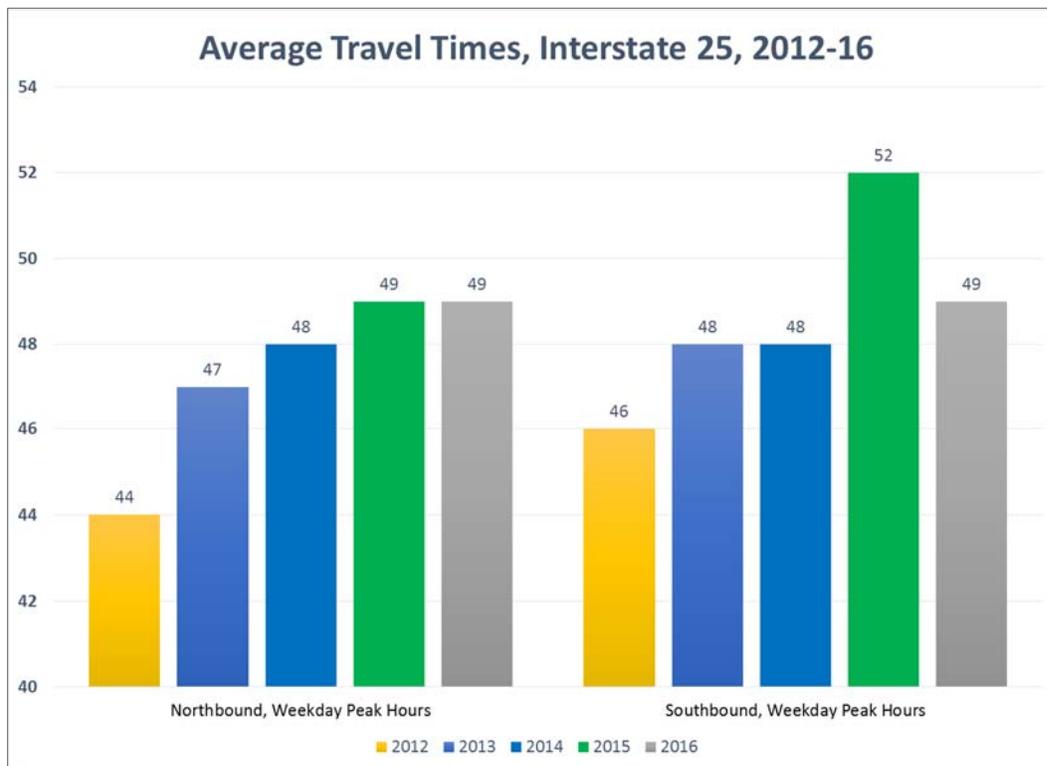
<sup>5</sup> This target is set at 80 percent to allow CDOT's Transportation Regions flexibility in selecting projects that may not match recommendations from the model. Region selections could be more cost-effective, because they can take into account factors that the pavement management system does not.

## Strategic Policy Initiative No. 3: Travel Time

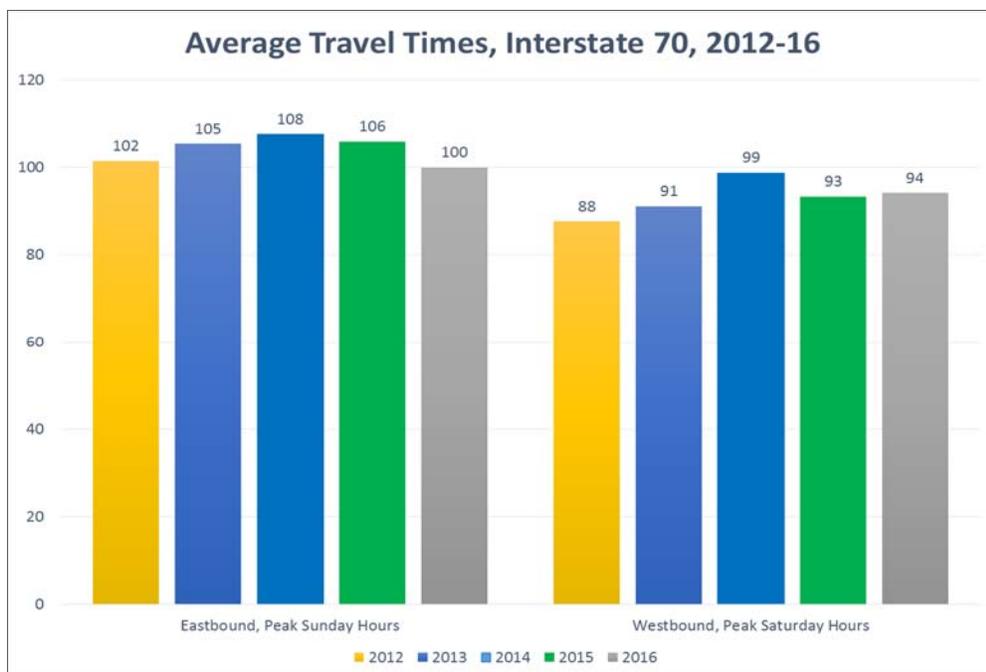
**Initiative description:** Slow the increase in average travel times on Interstate 25, between Northwest Parkway and C-470, during peak weekday hours. Slow the increase in average travel times on Interstate 70, between Vail and C-470, during peak weekend hours.

One- and three-year goals include:

- Reduce the average weekday travel time on northbound Interstate 25 from a projected average of 51 minutes per trip in calendar year 2018 to an actual average of 49 minutes. Reduce the average time for 2020 from a projected 54 minutes per trip to an actual average of 48 minutes.
- Reduce the average weekday travel time on southbound Interstate 25 from a projected average of 52 minutes per trip in calendar year 2018 to an actual average of 50 minutes. Reduce the average time for 2020 from a projected 54 minutes per trip to an actual average of 49 minutes.
- Reduce the average Saturday travel time on westbound Interstate 70 from a projected average of 99 minutes per trip in calendar year 2018 to an actual average of 94 minutes. Reduce the average time for 2020 from a projected 102 minutes per trip to an actual average of 92 minutes.
- Reduce the average Sunday travel time on eastbound Interstate 70 from a projected average of 103 minutes per trip in calendar year 2018 to an actual average of 98 minutes. Reduce the average time for 2020 from a projected 103 minutes per trip to an actual average of 92 minutes.



*At left are average travel times per trip for Interstate 25 (between Northwest Parkway and C-470) from 2012-16. CDOT aims to limit the growth of travel times during peak weekday hours.*



*At left are the average travel times per trip for Interstate 70 (between Vail and C-470) from 2012-16.*

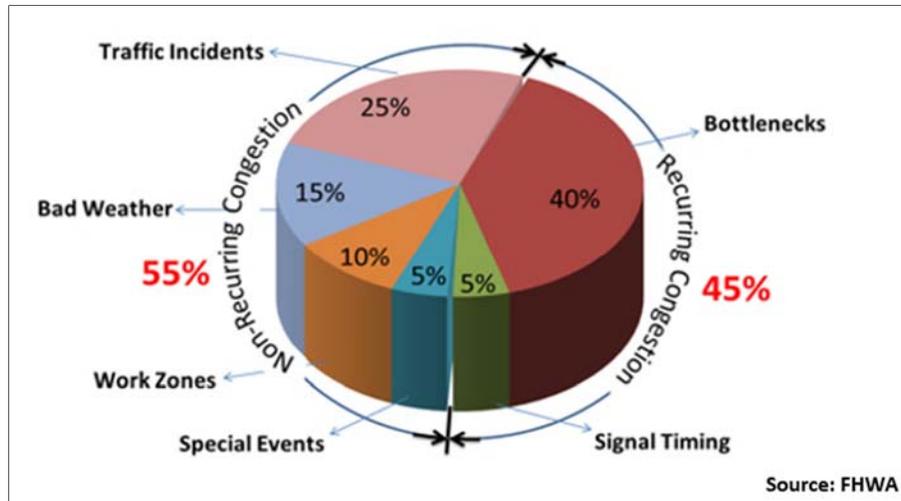
**Background:** Using data from INRIX, a private traffic data provider, CDOT calculated average historical travel times for Interstate 25 during peak daytime and evening weekday hours, and on Interstate 70 during peak weekend hours. These data were considered in forecasting and developing goals for the two corridors for 2018 and 2020. Using strategies described on the following pages, CDOT will work to decrease the rate at which travel times are projected to grow.

**Why this matters:** Travelers and freight transporters depend on reasonable and reliable travel times on the highway system. Longer travel times can result in significant economic and social costs for highway users. Congestion—a key driver of travel times—on an annual basis costs \$2.1 billion in delay and fuel in the Denver-Aurora area alone, according to the Texas Transportation Institute’s 2015 Urban Mobility Scorecard, the most recent edition of that report.

**Environment:** Traffic volumes are influenced by factors including population, tourism, freight transport, economic conditions and the size of the workforce. Various factors contribute to congestion, including increases in traffic volumes, incidents such as crashes, work zones, special events (such as concerts and football games), inclement weather, poor traffic-signal timing and highway bottlenecks. Assuming there is no increase in lane miles on the highway or major technological innovations and investments, average travel times for Interstates 25 and 70 are likely to grow.

The chart on the following page shows that in urban areas, about 55 percent of congestion is from nonrecurring resources. Twenty-five percent of congestion is caused by traffic incidents, such as an automobile crash, a disabled vehicle or roadway debris. When a lane is blocked, it typically takes four minutes for a highway to return to normal operational speed for each minute of an incident. Americans living in urban areas bought an extra 3.1 billion gallons of fuel than they otherwise would have in 2014 because of congestion, according to the Texas Transportation Institute. Moreover, congestion caused these Americans to travel an additional 6.9 billion hours that year, according to the Institute's Urban Mobility Scorecard.

Population growth and non-recurring traffic events are both contributing to congestion and reliability problems on Colorado's highways. The state's population has grown more than 41 percent in the past 20 years, from 3.9 million people in 1996 to 5.5 million people in 2016. The population will grow to about 7.8 million by 2040, according to forecasts from Colorado's State Demography Office.



Along with this growth have come higher traffic volumes.

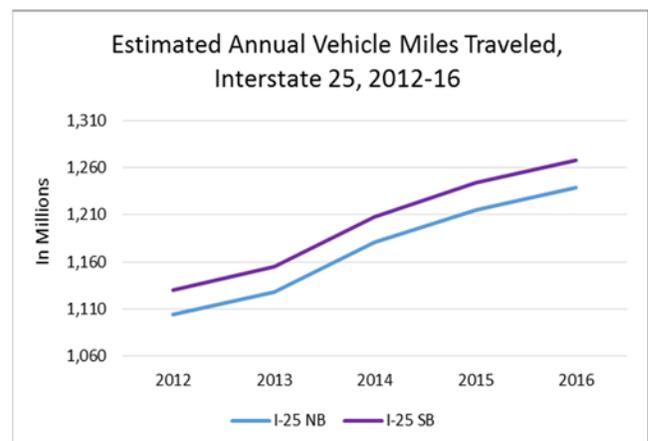
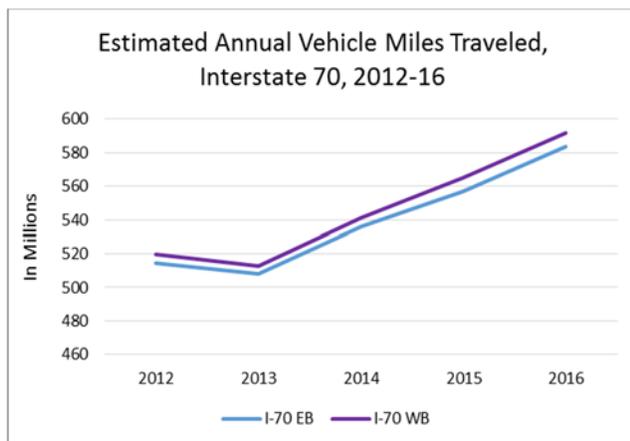
*More than half of congestion in urban areas is due to non-recurring causes.*

As the charts below show, the number of Vehicle Miles Traveled per year grew from 2012-16 by about 14 percent for Interstate 70 (between Vail and C-470, both directions) and by about 12 percent for Interstate 25 (between Northwest Parkway and C-470, both directions).

CDOT is responsible for a highway system that includes 23,000 total lane miles of highway, including more than 9,100 centerline miles. In addition, the Department maintains more than 3,400 bridges with more than 33 million square feet of deck area. CDOT is responsible for managing a total of 20 tunnel bores throughout Colorado with a total length of 6.9 miles.

Disruptions to any of this infrastructure can result in longer and unreliable travel times. CDOT must manage travel times in challenging climates and topographies, including extreme freeze/thaw cycles and high, heavily traveled mountain passes.

**Strategies:** CDOT is focused on improving travel times on Interstates 25 and 70, which are among the most congested stretches of Interstate in Colorado. CDOT formed the Division of Transportation Systems Management &



*From 2012-16, the number of Vehicle Miles Traveled per year grew by 14 percent for Interstate 70 (between Vail and C-470, both directions) and 12 percent for Interstate 25 (between Northwest Parkway and C-470, both directions).*

Operations (TSM&O) in 2013. The division focuses on implementing low-cost, high-value operational improvements to the transportation system. Initiatives include:

1. Improving Traffic Incident Management (TIM) and clearance times through statewide training efforts, which are critical to improving the safety of first responders, to decreasing incident clearance times, and to decreasing the potential for secondary crashes. TIM efforts include detecting, verifying and responding to incidents; clearing the incident scene; and restoring traffic flow. The Federal Highway Administration offers a National TIM Responder Training program. The multi-disciplinary program advocates a shared vision to implement safe, quick clearance at traffic incident scenes; prompt, reliable and open communications; and motorist and responder safeguards. CDOT can help save lives, time and funds by promoting the TIM training program. As of June 2017, more than 5,200 first responders in Colorado have received the TIM training. First responders include personnel from CDOT, the Colorado State Patrol, local law enforcement, fire and rescue, towing and recovery, the Federal Highway Administration, public works and EMS (Emergency Medical Staff).



*Increasing the percentage of first responders trained in Traffic Incident Management (TIM) is among CDOT's strategies to shorten the time it takes to clear accidents on the highway, thereby improving travel times.*



*Investing in Variable Messaging Signs and other technologies is another strategy CDOT is using to prevent accidents and empower highway users to make more efficient travel decisions.*

2. Targeting corridor improvements, such as bottleneck reduction funded through the Colorado Bottleneck Reduction Assessment (COBRA) program.
3. Delivering safety improvements funded through the Highway Safety Improvement Program.
4. Implementing managed lanes through tolled express lanes, variable speed limits, peak-period shoulder lane operations and Active Traffic Management (ATM). ATM is the ability to dynamically manage recurrent and non-recurrent congestion based on prevailing and predicted traffic conditions. ATM approaches seek to

increase vehicle throughput and safety through the use of new technology, such as dynamic routing, dynamic junction control, adaptive signal control and transit signal priority.

5. Adding ramp meters to Interstates to better manage system flow.
6. Using Intelligent Transportation Systems devices to provide real-time weather and roadway information to travelers. CDOT also is participating in a Federal Highway Administration initiative called Pathfinder, which is designed to improve agencies' communication to the public on how weather events will affect the transportation system.
7. Partnering with law enforcement and other stakeholders to develop and implement Incident Action Plans for large events such as concerts at the Pepsi Center, Denver Broncos games, U.S. Air Force Academy graduation events, Presidential motorcades and others.
8. Implementing new technologies through CDOT's RoadX program. RoadX projects combine public and private efforts to bring innovative Intelligent Transportation System (ITS) technology to the Interstate system. For example, CDOT's SMART 25 project will feature coordinated ramp metering for 14 northbound interchanges on Interstate 25. Coordinated meters would help optimize traffic flow and reliability of travel. Reduced crashes are also expected. CDOT is scheduled to complete the design of the project and conduct stakeholder outreach in 2017. Another RoadX project is a new "text-to-voice" mobile application for Interstate 70. The application, part of a pilot program, will warn drivers of slick roads, curves, incidents and work zones.

Each strategy will address causes of congestion, improve reliability and help slow the increase in average travel times on Interstates 25 and 70. CDOT also plans to increase the effectiveness of programs such as the Motorist Safety Patrol and Heavy Tow programs by working with corridor Incident Commanders to enable faster responses to incidents and to reduce secondary incidents.



*Decreasing incident clearance times is a key strategy to improve travel times.*

**Selected operational processes:** Train first responders, clear crashes and other incidents, conduct after-action reviews of incident clearance.

**Selected operational metrics ("lead metrics"):** CDOT has created several operational measures and targets to help slow the growth of travel times for Interstates 25 and 70. They include:

- Reducing the average incident clearance time<sup>6</sup> on eastbound and westbound Interstate 70 (between Vail and C-470), and on northbound and southbound Interstate 25 (between Northwest Parkway and C-470), by 10 percent in 2018 compared to the average 2016 time. CDOT also aims to reduce the average incident clearance times on these roadways by 20 percent in 2020 compared to the 2016 times. Please see the tables on the following pages for specific targets. Clearance times will be addressed by training first responders, deploying new Highway Incident Commanders, expanding the Interstate 25 Courtesy Patrol, working with law enforcement to incentivize private and heavy towing services, conducting after-action reviews, and developing and updating Traffic Incident Management Plans.
- Increasing the percentage of first responders statewide who have received Traffic Incident Management training to 50 percent in 2018, up from 20 percent in 2016.<sup>7</sup>

**Major Functional Area:** Operations and Maintenance.

**Customers:** All users of the state highway system. This includes all resident, tourist and recreational travelers on the highway system; business customers such as freight transporters, the tourism industry, the U.S. Postal Service and Federal Express; transit services; city and county law enforcement agencies; emergency services personnel; the military; and others.

**Evaluation:** CDOT in spring 2017 set its first goals for the travel time metrics in this plan, so a comparison of performance to targets is not available. Travel times on both Northbound and Southbound Interstate 25 remained static or slightly decreased on weekdays in 2016 compared to 2015 levels, but have been rising in the past five years. This has occurred in a period that also saw the number of Vehicle Miles Traveled on the corridor increase (*see page 21*).

Average westbound travel times on Interstate 70 on Saturdays were slightly higher in 2016, at 94 minutes compared to 93 minutes in 2015. Compared to five years ago, average westbound times on Saturdays are up six minutes. Meanwhile, average travel times on Sundays for Eastbound Interstate 70 continued to improve in 2016 and are down six minutes from 2015 and eight minutes from 2014. One factor in the improvement is the opening of the Interstate 70 eastbound Mountain Express Tolloed Lane, a tolled shoulder lane that is opened during peak travel periods.

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<sup>6</sup> Incident clearance times include recorded incidents, such as those cleared by CDOT's Courtesy Patrol, the Heavy Tow program and others. The clearance time is from the time an incident is reported to the time at which an incident is cleared and all first responders have left the scene.

<sup>7</sup> While this performance metric is statewide, CDOT plans to develop corridor-specific measures of responders trained.

Metric Type	Metric Description	Process	Associated Work Unit or Program	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ Outcome A	Average travel time per trip for NB I-25, peak weekday periods	Clear highway incidents; install and operate current technologies (e.g., Variable Messaging Signs); implement new technologies (e.g., connected vehicle infrastructure)	Division of Transportation Systems Management and Operations	CY	2018: 49 minutes 2020: 48 minutes	2014: 48 minutes 2015: 49 minutes 2016: 49 minutes
Operational /lead metric	Average incident clearance time on NB I-25, weekdays	Train first responders, deploy new Highway Incident Commanders, expand I-25 Courtesy Patrol, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	Division of Transportation Systems Management and Operations	CY	2018: 48 minutes 2020: 43 minutes	2014: 60 minutes 2015: 50 minutes 2016: 53 minutes
Operational /lead metric	Percentage of first responders trained in Traffic Incident Management	Promote and track Traffic Incident Management training	Division of Transportation Systems Management and Operations	CY	2018: 50% 2020: N/A	2014: 7% 2015: 12% 2016: 20%
Input	Annual Vehicle Miles Traveled on NB I-25	N/A	N/A (input)	CY	N/A (input)	2014: 1.18 billion 2015: 1.22 billion 2016: 1.24 billion
Strategic Policy Initiative/ Outcome B	Average travel time per trip for SB I-25, peak weekday periods	Clear highway incidents; install and operate current technologies (e.g., Variable Messaging Signs); implement new technologies (e.g., connected vehicle infrastructure)	Division of Transportation Systems Management and Operations	CY	2018: 50 minutes 2020: 49 minutes	2014: 48 minutes 2015: 52 minutes 2016: 49 minutes
Operational /lead metric	Average incident clearance time on SB I-25, weekdays	Train first responders, deploy new Highway Incident Commanders, expand I-25 Courtesy Patrol, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	Division of Transportation Systems Management and Operations	CY	2018: 44 minutes 2020: 39 minutes	2014: 59 minutes 2015: 47 minutes 2016: 49 minutes

Metric Type	Metric Description	Process	Associated Work Unit or Program	Year Type	1- and 3-Year Targets	Performance Results
Operational /lead metric	Percentage of first responders trained in Traffic Incident Management	Train first responders	Division of Transportation Systems Management and Operations and X.	CY	2018: 50% 2020: N/A	2014: 7% 2015: 12% 2016: 20%
Input	Vehicle Miles Traveled on SB I-25	N/A (input)	N/A (input)	CY	N/A (input)	2014: 1.21 billion 2015: 1.24 billion 2016: 1.27 billion
Strategic Policy Initiative/ Outcome C	Average travel time per trip for WB I-70, peak Saturday period	Clear highway incidents; install and operate current technologies (e.g., Variable Messaging Signs); implement new technologies (e.g., connected vehicle infrastructure)	Division of Transportation Systems Management and Operations	CY	2018: 94 minutes 2020: 92 minutes	2013: 99 minutes 2014: 93 minutes 2015: 94 minutes
Operational /lead metric	Average incident clearance time on WB I-70, Saturdays	Train first responders, deploy new Highway Incident Commanders, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	Division of Transportation Systems Management and Operations	CY	2018: 41 minutes 2020: 36 minutes	2014: 74 minutes 2015: 63 minutes 2016: 45 minutes
Operational /lead metric	Percentage of first responders trained in Traffic Incident Management	Promote and track Traffic Incident Management training	Division of Transportation Systems Management and Operations	CY	2018: 50% 2020: N/A	2014: 7% 2015: 12% 2016: 20%
Input	Annual Vehicle Miles Traveled on WB I-70	N/A (input)	N/A (input)	CY	N/A (input)	2014: 541 million 2015: 565 million 2016: 592 million

Metric Type	Metric Description	Process	Associated Work Unit or Program	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ Outcome D	Average travel time per trip for EB I-70, peak Sunday period	Clear highway incidents; install and operate current technologies (e.g., Variable Messaging Signs); implement new technologies (e.g., connected vehicle infrastructure)	Division of Transportation Systems Management and Operations	CY	2018: 98 minutes 2020: 92 minutes	2014: 108 minutes 2015: 106 minutes 2016: 100 minutes
Operational /lead metric	Average incident clearance time on EB I-70, Sundays	Train first responders, deploy new Highway Incident Commanders, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	Division of Transportation Systems Management and Operations	CY	2018: 57 minutes 2020: 51 minutes	2014: 77 minutes 2015: 77 minutes 2016: 63 minutes
Operational /lead metric	Percentage of first responders trained in Traffic Incident Management	Promote and track Traffic Incident Management training	Division of Transportation Systems Management and Operations	CY	2018: 50% 2020: N/A	2014: 7% 2015: 12% 2016: 20%
Input	Vehicle Miles Traveled on EB I-70	N/A (input)	N/A (input)	CY	N/A (input)	2014: 536 million 2015: 557 million 2016: 584 million

## Strategic Policy Initiative No. 4: Maintenance

**Initiative description:** Maintain CDOT's roadways and facilities to minimize the need for replacement or rehabilitation in a constrained funding environment. This includes achieving an overall Maintenance Levels of Service (MLOS) grade of B- for the state highway system in fiscal year 2018<sup>8</sup> and a C for fiscal year 2020, compared to a C+ in fiscal year 2016.

**Metric background and definitions:** Maintenance Levels of Service is a "report card" style grading system that CDOT uses to rate its maintenance performance. An A+ is the highest service level achievable, while an F is the lowest. Six of nine Maintenance Program Areas are given a grade, and those individual grades are used to determine an overall MLOS grade.<sup>9</sup> To measure service levels, several work units within CDOT contribute condition data used in the grades. These units include Staff Bridge, Pavement Management, Property Management and Traffic Safety. Surveys completed by maintenance employees also are used.

The Maintenance Asset Management Branch, part of CDOT's Division of Highway Maintenance, provides policy and guidance for the statewide maintenance program and maintains operational oversight for program administration. Under the nine Maintenance Program Areas, CDOT performs an array of activities:

1. The **Roadway Surface** area includes patching and sealing potholes and blading unpaved services.
2. The **Roadside Facilities** area includes cleaning drainage structures, repairing eroded slopes and repairing guardrails.
3. The **Roadside Appearance** area includes controlling vegetation, sweeping the road surface and removing trash.
4. The **Traffic Services** area includes maintaining roadway signs and striping, maintaining traffic signals, and maintaining roadway lighting.
5. The **Structure Maintenance** area includes painting bridges, repairing expansion joints and patching decks.
6. The **Snow and Ice Control** area includes plowing snow and taking avalanche-control measures.
7. The **Equipment, Buildings and Rest Areas** program area includes maintenance for all buildings and grounds.
8. The **Tunnel Activities** area includes providing structural maintenance and repair, as well as tunnel washing and maintenance of the tunnels' electrical, mechanical and ventilation systems.
9. The **Planning and Scheduling** area includes providing performance budgeting and training maintenance staff.

**Why this matters:** Maintaining roads, bridges, tunnels and other infrastructure minimizes the need for replacement and rehabilitation. Maintenance activities, such as striping roadways and clearing highways of snow and ice, also improve safety and mobility. Highway maintenance is the most common topic of comments received by CDOT from the public through sources including phone calls, emails, Facebook comments and other media.

**Environment:** CDOT's maintenance patrols serve a system that includes 23,000 travel lane miles of highway, including more than 9,100 centerline miles. In addition, the Department owns about 3,400 bridges with almost 33 million square feet of deck area. CDOT is responsible for managing a total of 20 tunnel bores throughout the state. The Division of Highway Maintenance administers various programs to maintain this system, including the Snow and Ice Control program, Traffic Services, Vegetation Management, Debris Removal and more.

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<sup>8</sup> CDOT's fiscal year 2018 target for Maintenance Levels of Service has been updated since publication of the Department's 2015-16 Performance Plan.

<sup>9</sup> The six Maintenance Program Areas that receive a performance grade are the Roadway Surface, Roadside Facilities, Roadside Appearance, Traffic Services, Structure Maintenance and Snow-and-Ice Control areas.

CDOT owns a large number of safety and traffic-related devices that the Department must maintain. The most recent counts for the following asset categories are:

- 192,726 signs
- 511,000 delineators
- 1,709 linear feet of cable guardrail
- 2,589,908 linear feet of metal guardrail
- 174,246 linear feet of concrete guardrail
- 50,779 miles of striping
- 29,890 roadway lights
- 2,000 traffic signals
- 936 attenuators

The list above is not a comprehensive account of assets served by CDOT's maintenance forces, but it provides a sense of the scope of work performed by the maintenance program. In the past few years, CDOT has updated its inventories of guardrail and culvert assets. The signs, striping, roadway lights, traffic signals and attenuator asset categories have not been updated due to budget constraints. However, efforts to inventory these and other assets are underway.

CDOT must plan and deliver maintenance services in challenging climates and topographies, including extreme freeze/thaw cycles and high, heavily traveled mountain passes. The Department also maintains the highway system in a constrained and uncertain funding environment. The maintenance program budget allocation rose less than 1 percent for fiscal year 2018 compared to fiscal year 2017. Compared to anticipated costs, CDOT's 2017 Transportation Deficit Report estimated the Department will face a significant funding deficit over the next 10 years even to maintain a C+ grade for overall Maintenance Levels of Service.

**Strategies:** CDOT strategically invests in maintenance areas of critical importance. The Department devotes well over half of its maintenance budget to its two largest maintenance areas: Snow and Ice Control and Traffic Services, which includes maintaining signs and striping. The maintenance program in recent years has seen inflation rising at a faster rate than its annual budgets. In this environment, the program's focus will remain on snow and ice removal and pavement markings. CDOT will adjust the funding of each Maintenance Program Area (MPA) to maintain as high a level of service as possible in the two focus areas, while funding for other MPAs will decline.

Other current strategies include:

- **Maintenance Optimization Study:** This ongoing study is a third-party review of the Department's Maintenance Performance Standards, budget planning, resource allocation and staffing levels. CDOT already has implemented certain study recommendations to increase efficiencies and maximize resources, such as the purchase and implementation of a new performance-based budgeting system. Also included in the study were analyses of facility locations and opportunities to sell, combine or replace facilities, as well as an analysis of maintenance staffing and organizational structure.
- **Winter Operations and Operational Readiness:** Under these strategies, CDOT is focusing on continuously assessing the Maintenance Division's preparedness levels for winter operations and other operations throughout the year. Monitoring personnel, equipment, and materials readiness rates gives visibility into how prepared the Department is to respond to events and emergencies.
- **Level of Service (LOS) Mapping:** LOS Mapping is a program that reports to managers and patrols the level of service they achieve for snow and ice removal operations. Each patrol gives a report after winter storms on the service level they provided during the last storm event. This allows managers to conduct

after-action reviews with the patrols, discuss what went right and wrong, and provide direction on providing more efficient and effective services.

- **Maintenance Decision Support System (MDSS):** The MDSS is a computer program that provides managers and patrols weather forecasts and roadway treatment recommendations. MDSS bases recommendations off of weather and pavement temperature forecasts, the capabilities of a patrol, and available materials. The system maximizes the effectiveness of materials.

**Selected operational process:** See description of processes associated with Maintenance Program Areas on page 28.

**Selected operational metric/"lead" metric:** Retro-reflectivity score for long-line striping.

**Major Functional Area:** Operations and Maintenance.

**Customers:** Customers include all highway users. This includes resident, tourist, recreational, and "through" travelers on Colorado's state highway system; business customers such as the freight and tourism industries; transit services; law enforcement agencies; the military; counties; municipalities and others.

**Evaluation:** CDOT achieved a C+ for overall Maintenance Levels of Service in fiscal year 2016, which was above the goal of C for that year listed in the 2015-16 Performance Plan. CDOT forecasts it will achieve a B- in fiscal year 2018 and a C for fiscal year 2020 for overall Maintenance Levels of Service<sup>10</sup>. The Department achieved a B- for Snow and Ice Control for 2016, below the target of a B listed in the 2015-16 plan.

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<sup>10</sup> The target for fiscal year 2018 has been revised since publication of the FY15-16 Performance Plan.

Metric Type	Metric Description	Process	Year Type	Associated Work Unit or Program	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ outcome/ lag metric	Maintenance Levels of Service grade	Deliver maintenance program <sup>11</sup>	FY	Division of Highway Maintenance, CDOT Maintenance and Traffic Sections	2018: B- 2020: C	2013: B 2014: B- 2015: B- 2016: C+
Operational/ lead metric	Snow-and-Ice Control grade	Plow and remove snow, apply chemicals and abrasives, proactively control avalanches	FY	Division of Highway Maintenance, CDOT Maintenance and Traffic Sections	2018: B- 2020: B-	2013: B 2014: B 2015: B 2016: B-
Operational/ lead metric	Retro-reflectivity score for long-line striping. Sampled monthly at random locations.	Stripe and evaluate state highway-system pavement	FY	Division of Transportation Systems Management and Operations, Division of Highway Maintenance, CDOT Maintenance and Traffic Sections	2018: $\geq 80$ mcd/m <sup>2</sup> /lux 2020: $\geq 80$ mcd/m <sup>2</sup> /lux	<u>FY15:</u> <sup>12</sup> April 2015: 146 May 2015: 173 June 2015: 166 <u>FY16:</u> July 2015: 161 August 2015: 176 September 2015: 223 October 2015: 195 November 2015: 178 December 2015: 135 January 2016: 128 February 2016: 96 <sup>13</sup> March 2016: 155 April 2016: 159 May 2016: 135 June 2016: 131 <u>FY17 (YTD through March)</u> July 2016: 144 August 2016: 144 September 2016: 161 October 2016: 181 November 2016: 193 December 2016: 202 January 2017: 135 February 2017: 112 March 2017: 138
Input	Maintenance program spending	Deliver maintenance program	FY	Division of Highway Maintenance, Maintenance and Traffic Sections	N/A input	2013 actual: \$249 million 2014 actual: \$249 million 2015 actual: \$260 million 2016 actual: \$259 million

<sup>11</sup> See page 28 for a more complete description of Maintenance Program Areas (MPAs) and associated processes.

<sup>12</sup> CDOT began tracking this metric in this format in early 2015.

<sup>13</sup> Does not include Region 5.

## Strategic Policy Initiative No. 5: Workers' Compensation Claims

**Initiative Description:** Create a high-performing culture of employee safety, reducing workers' compensation claims from 267 in 2016 to 236 in calendar year 2018 and 212 in 2020.

**Background:** The Department in 2013 launched Excellence in Safety, a behavior-based safety program, to reduce workers' compensation claims and ensure the well-being of employees. Claims have continued a downward trend under the program and are down 33 percent since 2010.

**Why this matters:**

CDOT has an ethical responsibility to ensure the health and well-being of its employees. Besides representing fewer injuries, fewer workers' compensation claims mean reduced costs, which enables the Department to provide more services to the public.

**Environment:** Before implementing the Excellence in Safety program, CDOT followed a more

traditional, compliance-based approach to promoting safety throughout the Department. Under that system, CDOT used a set of formal policies and procedures, standard training methods and incentive programs as the primary methods to promote safety. In both 2010 and 2012, however, the total number of workers' compensation claims peaked, surpassing 350 both years. CDOT officials determined a more modern approach was needed to reduce claims.

Excellence in Safety, the new approach, focuses on the employee-supervisor relationship and improving the organization's safety culture. Launched in March 2012, Excellence in Safety is CDOT's first behavior-based safety program. The program focuses on changing work behaviors through techniques including positive reinforcement and proactive goals.

For example, supervisors of maintenance, traffic and specialty trades workers strive to have a "safety engagement"—a conversation specifically about safety at a specific job site—once per month with each of their employees. Employees become invested in the safety process, because they help to create related programs, policies and procedures, and to test and select personal protective equipment. Before the formal launch of Excellence in Safety, CDOT maintenance, traffic and specialty trades supervisors were trained in performing safety engagements



*Workers' compensation claims at CDOT have fallen by a third since 2010.*

and in coaching strategies. Supervisors have subsequently received reinforcement training, and new supervisors are provided safety engagement training by Region Safety Officers.

CDOT's Maintenance Training Academy has been a key venue for providing supervisors and employees other practical training that directly supports the Excellence in Safety mission. Training focuses on employee empowerment strategies, such as performing pre-job hazards assessments that enable them to become more confident in communicating with supervisors and in making appropriate decisions to lower risks. Supervisors have been provided a leadership curricula focused on positive coaching, empowering employees and building a consistent and sustainable safety culture.

The Department also bestows the designations of Safety Champion for employees and Safety Leaders for supervisors. Workers receiving these honors exhibit consistently safe work behaviors, advocate for CDOT's mission and values, have no at-fault incidents, and meet goals during a set performance period. Recognition is provided during staff meetings, presentations and special events.

The primary tenet of the Excellence in Safety program is "to promote and apply consistent and sustainable safe work behaviors in everything we do." To realize this principle, CDOT has identified, tracked and reported safety hurdles, solutions, expectations, and overall progress to all levels of the organization. To ensure management support, key elements of the Excellence in Safety program have been embedded into formal policies, annual employee performance plans and organizational performance objectives.

**Strategies:** CDOT has developed myriad strategies to improve its safety culture and to reduce the frequency and severity of employee injuries. Examples include but are not limited to:

- Communicating, acting upon, and tracking Excellence in Safety program goals and strategies throughout all levels of the organization. These goals and associated metrics help gauge program performance and guide future changes. Examples of such goals include decreasing snow plow accidents; meeting targets for the number of safety engagements performed by supervisors; and decreasing workers' compensation claims.
- Recognizing individual employee performance that consistently meets specific criteria, including by awarding Safety Leader or Safety Champion status to appropriate maintenance, traffic and specialty trades employees. Additionally, CDOT in 2016 implemented a new Instant Recognition Program to reward employees embodying the values of Excellence in Safety in real time. Region Safety Officers manage this program and give on-the-spot awards to employees who demonstrate strong safety behaviors.
- Identifying safety problems by analyzing injury and accident trends and by developing employee training and tools to address those problems. For example, to combat rising snow plow incidents, CDOT in 2015 launched an initiative to identify the root causes of incidents, create tangible solutions, and deliver focused, behind-the-wheel training. This training is tracked and analyzed to see whether there is a causal relationship between the training and the reduction of incidents. After implementing the initiative and related reporting, CDOT lowered incidents at a time when the number of road miles traveled by the plows increased.

**Selected operational process:** CDOT uses safety engagements between supervisors and employees as an operational process that can reduce injuries and resultant workers' compensation claims.

**Selected operational metrics ("lead metrics"):** Number of safety engagement performed. Number of employees who receive recognition as Safety Champions and Safety Leaders.

**Major Functional Area:** Safety.

**Customers:** CDOT employees benefit when their health and safety are maintained. All highway users benefit from a better roadway system when CDOT employees can perform their duties without injury. Highway users include

resident, tourist, recreational, and "through" travelers on Colorado's state highway system; business customers such as the freight and tourism industries; transit services; law enforcement agencies; the military; counties; municipalities and others.

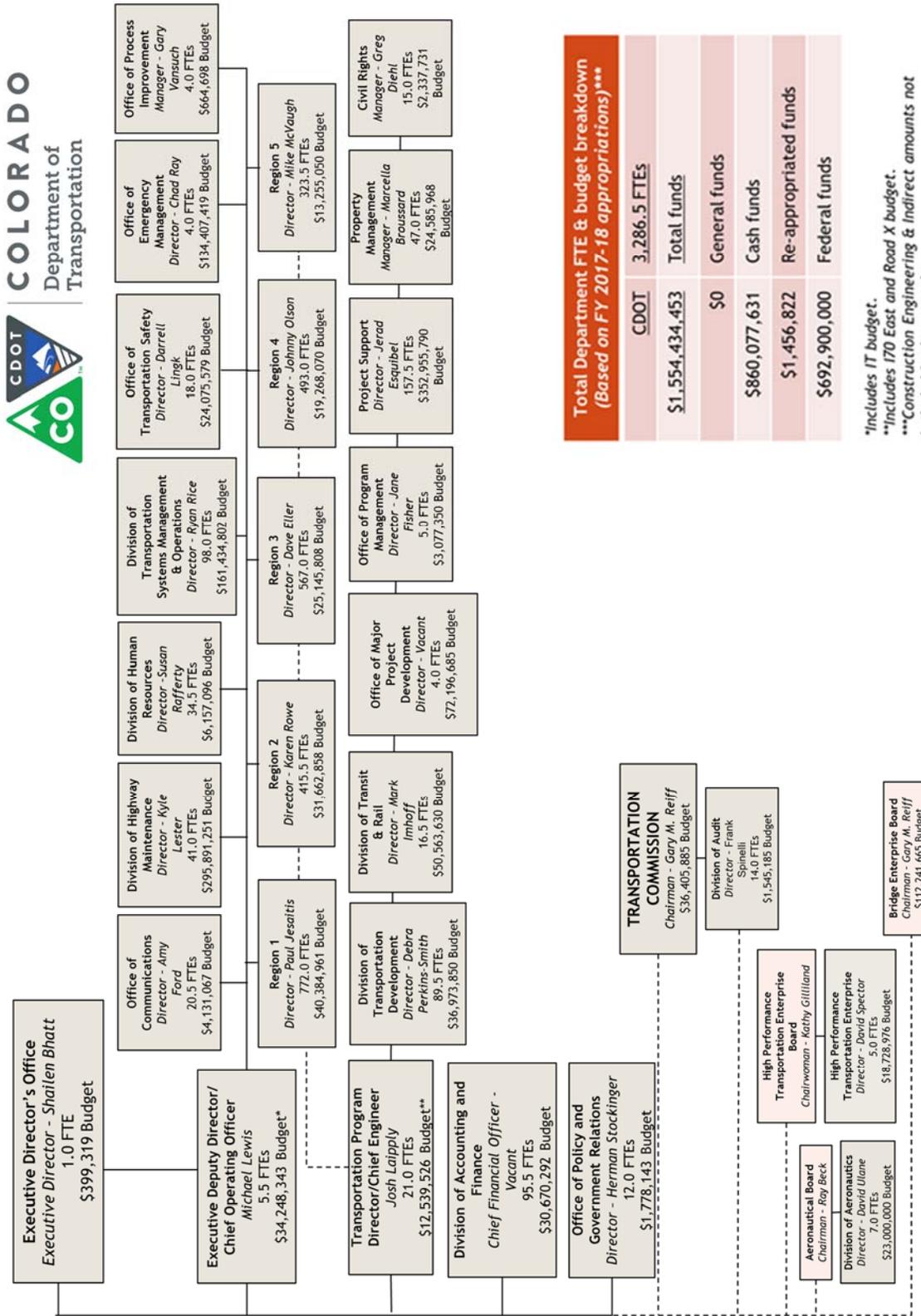
**Evaluation:** This is the first year this initiative has appeared in the Performance Plan. Workers' compensation claims rose to 267 in calendar year 2016, up 7 percent from 2015 levels. However, claims remain a third lower than 2010 levels. Safety engagements fell significantly in 2016, to 8,859, compared to 13,689 for 2015.

Metric Type	Metric Description	Process	Associated Work Group or Program	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/outcome/lag metric	Number of workers' compensation claims	Establish and adhere to safety procedures to reduce injuries. Conduct safety engagements.	Office of Transportation Safety.	CY	2018: 236 2020: 212	<u>2014:</u> Q1: 84 Q2: 74 Q3: 70 Q4: 81 Total: 309  <u>2015:</u> Q1: 68 Q2: 49 Q3: 57 Q4: 76 Total: 250  <u>2016:</u> Q1: 69 Q2: 72 Q3: 57 Q4: 69 Total: 267
Operational/"lead" metric	Number of safety engagements performed	Maintenance, traffic and specialty trades supervisors perform safety engagements with direct reports.	Office of Transportation Safety and CDOT employees in maintenance, traffic and specialty trades.	CY	2018: 10,000 2020: 11,000	2014: 10,455 2015: 13,689 2016: 8,859
Operational/"lead" metric	Number of Safety Leaders Recognized	Provide safety training; communicate criteria for "Leader" status; track and recognize performance.	Office of Transportation Safety and CDOT employees in maintenance, traffic and specialty trades.	CY	2018: 125 2020: 175	2014: 173 2015: 95 2016: 80 (New criteria introduced) <sup>14</sup>
Operational/"lead" metric	Number of Safety Champions Recognized	Provide safety training; communicate criteria for "Champion" status; track and recognize performance.	Office of Transportation Safety and CDOT employees in maintenance, traffic and specialty trades.	CY	2018: 900 2020: 1,000	2014: 1,038 2015: 926 2016: 640 (New criteria introduced) <sup>15</sup>

<sup>14</sup> Criteria for achieving Safety Leader status were revised in 2016. Results are no longer comparable to previous years.

<sup>15</sup> Criteria for achieving Safety Champion status were revised in 2016. Results are no longer comparable to previous years.

# Appendix 1: Organizational Chart



<b>Total Department FTE &amp; budget breakdown (Based on FY 2017-18 appropriations)***</b>	
<b>CDOT</b>	<b>3,286.5 FTEs</b>
<b>Total funds</b>	<b>\$1,554,434,453</b>
<b>General funds</b>	<b>\$0</b>
<b>Cash funds</b>	<b>\$860,077,631</b>
<b>Re-appropriated funds</b>	<b>\$1,456,822</b>
<b>Federal funds</b>	<b>\$692,900,000</b>

\*Includes IT budget.  
 \*\*Includes I70 East and Road X budget.  
 \*\*\*Construction Engineering & Indirect amounts not included in these totals.

# Appendix 2: Fiscal Year 2016-17 Performance Evaluation

*This evaluation includes data supplied for CDOT's Performance Plan update for the third quarter of fiscal year 2017. Data for the full fiscal year were not available at the time of publication.*

## Strategic Policy Initiatives

The Colorado Department of Transportation (CDOT) has identified several Strategic Policy Initiatives (SPIs) for fiscal year 2016-17 and beyond. For this performance evaluation, the Department has updated progress on initiatives from its Fiscal Year 2017 Performance Plan that capture the Department's strategic and operational priorities. The updates reflect data available in spring 2017. Additional details on these initiatives are available in the Department's Performance Plan, which may be accessed [here](#).

**Safety:** Move Colorado toward zero deaths by reducing traffic-related deaths by one-half by 2030. This includes reducing fatalities by 12 per year, from 548 in 2008 to 344 in 2025. CDOT aims to reduce fatalities to 440 for its one-year target (Dec. 31, 2017 target, or calendar year 2017 fatalities) and 416 for its three-year target (Dec. 31, 2019 target, or calendar year 2019 fatalities).

**Pavement Condition:** Attain High or Moderate Drivability Life for 80 percent of sampled lane miles of pavement on the state highway system by 2025. CDOT plans to achieve 79 percent High/Moderate Drivability Life for its one-year target (June 30, 2017 target, or fiscal year 2017 pavement condition), down from 80 percent in fiscal year 2016. The three-year target is 69 percent (June 30, 2019 target, or fiscal year 2019 pavement condition).

**Travel-Time Reliability:** Slow the growth of congestion and achieve satisfactory travel-time reliability on Interstate 25 in the Front Range and in the Interstate 70 West Mountain Corridor. One- and three-year goals include:

- Reduce the Planning Time Index for Northbound Interstate 25 from a projected average of 2.57 in calendar year 2017 to an actual average of 2.50. Achieve a PTI of 2.70 in 2019.
- Reduce the Planning Time Index for Southbound Interstate 25 from a projected average of 2.73 in calendar year 2017 to an actual average of 2.70. Achieve a PTI of 2.90 in 2019.
- Reduce the Planning Time Index for Westbound Interstate 70 from a projected average of 1.71 in calendar year 2017 to an actual average of 1.70. Achieve a PTI of 1.80 in 2019.
- Reduce the Planning Time Index for Eastbound Interstate 70 from a projected average of 1.82 in calendar year 2017 to an actual average of 1.80. Maintain a PTI of 1.80 in 2019.

**Maintenance:** Maintain CDOT's roadways and facilities to minimize the need for replacement or rehabilitation in a constrained funding environment. This includes achieving an overall Maintenance Levels of Service (MLOS) grade of C+ for the state highway system in fiscal year 2017 and a C for fiscal year 2019, compared to an actual grade of C+ in fiscal year 2016.

## Operational Measures

**SPI 1—Safety:** Move Colorado toward zero deaths by reducing traffic-related deaths by one-half by 2030. This includes reducing fatalities by 12 per year, from 548 in 2008 to 344 in 2025. CDOT aims to reduce fatalities to 440 for its one-year target (Dec. 31, 2017 target, or calendar year 2017 fatalities) and to 416 for its three-year target (Dec. 31, 2019 target, or calendar year 2019 fatalities).

### Major Functional Area – Safety

**Process – CDOT implements a variety of processes to mitigate injuries and fatalities on Colorado’s roadways. For example, the Department qualifies, selects, advertises and awards Highway Safety Improvement Program projects. Projects that are selected address identified crash patterns, which are mitigated by the scope of the project and meet a minimum benefit/cost ratio of 1.0. CDOT’s goal is to meet a program-wide benefit/cost ratio of 2.0.**

Measure	CY14 Actual	CY15 Actual	CY16 Actual	Q1 CY17			CY17 Goal	CY19 Goal
Outcome: Fatalities on Colorado Roadways.	488	547 (rev.)	608 (rev.)	109			440	416
Outcome: Fatalities per 100 million Vehicle Miles Traveled on Colorado roadways.	0.996	1.09 (rev.)	N/A*	N/A*			0.92	0.88
Lead Metric 1: Average benefit/cost ratio for Highway Safety Improvement Program projects.	N/A	2.98	2.85	3.35			Minimum 2.0	Minimum 2.0
Lead Metric 2: Dedicated law enforcement contact hours for traffic safety enforcement.	75,689	84,146	119,762 (rev.)	24,663			66,750	92,000
Lead Metric 3: Percentage of advertised FASTER Safety projects that address Level of Safety Service 3 and 4 locations.	N/A	75%	86%	86%			90%	90%
Measure	FY14 Actual	FY15 Actual	FY16 Actual	Q1 FY17	Q2 FY17	Q3 FY17	FY17 Goal	FY19 Goal
Lead Metric 4: FASTER Safety Mitigation program dollars spent as a percentage of the program's fiscal-year allocation**	84%	159%	160%	30% (YTD)	61% (YTD)	81% (YTD)	100%	100%

*Note: Fatalities and injuries statistics are subject to frequent revision as new data become available. These data were current in spring 2017.*

*\*Official 2016 Vehicle Miles Traveled data will not be available until mid-2017, and 2017 data will be unavailable until mid-2018.*

*\*\*Metric compares program dollars spent during the specified time period to current year's allocation. The dollars spent may be revenue accumulated in any year.*

**SPI 2—Pavement Condition:** Attain High or Moderate Drivability Life for 80 percent of sampled lane miles of pavement on the state highway system by 2025. CDOT plans to achieve 79 percent High/Moderate Drivability Life for its one-year target (June 30, 2017 target, or fiscal year 2017 pavement condition), down from 80 percent in fiscal year 2016. The three-year target is 69 percent (June 30, 2019 target, or fiscal year 2019 pavement condition).

### Major Functional Area – Various, including Capital Construction; Operations and Maintenance; Safety; and Program and Project Support

**Process – Operational processes related to pavement condition include preserving, resurfacing, and rehabilitating roads with the optimized application of cost-effective pavement treatments.**

Measure	FY14 Actual	FY15 Actual	FY16 Actual	Q1 FY17	Q2 FY17	Q3 FY17	FY17 Goal	FY19 Goal
Outcome: Percentage of sampled lane miles of state highway pavement with High or Moderate Drivability Life.	73%	79%	80%	Annual Metric	Annual Metric	Annual Metric	79% (rev.)	69% (rev.)
Lead Metric: Percentage of Surface Treatment program projects advertised for the fiscal year that match recommendations from CDOT's pavement management system.	N/A	77%	90%	57% (Fiscal YTD)	80% (Fiscal YTD)	90% (Fiscal YTD)	80%	80%

**SPI 3—Travel-Time Reliability:** Slow the growth of congestion and achieve satisfactory travel-time reliability on Interstate 25 in the Front Range and in the Interstate 70 West Mountain Corridor. (See specific targets in chart below.)

**Major Functional Area – Operations and Maintenance**

**Process – Various processes will be used to achieve this goal, such as improving incident management, decreasing road closures and training first responders.**

Measure	CY14 Actual	CY15 Actual	CY16 Actual	Q1 CY17 Actual	CY17 Goal	CY19 Goal
<b>Outcome A:</b> Average monthly Planning Time Index value on Northbound Interstate 25*	2.42	2.47	2.45	Jan.: 2.65 Feb.: 2.49 March: 2.42	2.50	2.70
Lead Measure 1: Average incident clearance time on NB I-25.	51 minutes	51 minutes	53 minutes	Jan.: 23 minutes Feb.: 23 minutes March: 32 minutes	46 minutes	41 minutes
Lead Measure 2: Average monthly road closure time on NB I-25.	61 minutes	50 minutes	51 minutes	Jan.: 32 minutes Feb.: 50 minutes March: 20 minutes	45 minutes	40 minutes
<b>Outcome B:</b> Average monthly Planning Time Index value on Southbound Interstate 25	2.41	2.62	2.29	Jan.: 2.35 Feb.: 2.21 March: 2.00	2.70	2.90
Lead Measure 1: Average incident clearance time on SB I-25.	49 minutes	44 minutes	49 minutes	Jan.: 25 minutes Feb.: 21 minutes March: 23 minutes	40 minutes	35 minutes
Lead Measure 2: Average monthly road closure time on SB I-25.	58 minutes	47 minutes	49 minutes	Jan.: 33 minutes Feb.: 33 minutes March: 42 minutes	42 minutes	38 minutes
<b>Outcome C:</b> Average monthly Planning Time Index value on Eastbound Interstate 70**	2.13	1.78	1.64	Jan.: 1.07 (rev.) Feb.: 1.05 (rev.) March: 1.16 (rev.)	1.80	1.80
Lead Measure 1: Average incident clearance time on EB I-70.	49 minutes	74 minutes	52 minutes	Jan.: 31 minutes Feb.: 30 minutes March: 18 minutes	67 minutes	59 minutes
Lead Measure 2: Average monthly road closure time on EB I-70.	278 minutes	124 minutes	75 minutes	Jan.: 55 min. (rev.) Feb.: 55 min. March: 49 min. (rev.)	112 minutes	99 minutes
<b>Outcome D:</b> Average monthly Planning Time Index value on Westbound Interstate 70	1.76	1.45	1.54	Jan.: 1.08 (rev.) Feb.: 1.05 (rev.) March: 1.25 (rev.)	1.70	1.80
Lead Measure 1: Average incident clearance time on WB I-70.	45 minutes	71 minutes	64 minutes	Jan.: 36 minutes Feb.: 32 minutes March: 41 minutes	64 minutes	57 minutes
Lead Measure 2: Average monthly road closure time on WB I-70.	166 minutes	163 minutes	92 minutes	Jan.: 48 minutes Feb.: 61 minutes March: 25 minutes	147 minutes	130 minutes

**NOTE:** CDOT has revised the presentation of the metrics above to reflect performance for individual months, rather than year-to-date performance.

\*Termini for Interstate 25 metrics are C-470 and E-470. Results and goals are for daytime and early evening weekday hours. \*\*Termini for Interstate 70 metrics are Vail and C-470. Results and goals are for daytime and early evening weekend hours.

**SPI 4—Maintenance:** Maintain CDOT’s roadways and facilities to minimize the need for replacement or rehabilitation in a constrained funding environment. This includes achieving an overall Maintenance Levels of Service (MLOS) grade of C+ for the state highway system in fiscal year 2017 and a C for fiscal year 2019, compared to an actual grade of C+ in fiscal year 2016.

**Major Functional Area – Operations and Maintenance**

**Process – Under nine Maintenance Program Areas, CDOT performs an array of processes to maintain the state highway system. For example, the Roadway Surface area includes patching and sealing potholes and blading unpaved surfaces. The Structure Maintenance area includes painting bridges, repairing expansion joints and patching bridge decks. The Snow and Ice Control area includes plowing snow and taking avalanche control measures.**

Measure	FY14 Actual	FY15 Actual	FY16 Actual	Q1 FY17	Q2 FY17	Q3 FY17	FY17 Goal	FY19 Goal
Outcome: Overall Maintenance Levels of Service Grade.	B-	B-	C+ (rev.)	Annual Metric	Annual Metric	Annual Metric	C+	C
Lead Measure 1: Snow and Ice Control Grade.	B	B	B-	Annual Metric	Annual Metric	Annual Metric	B	B
Lead Measure 2: Retro-reflectivity score for sampled long-line striping.*	N/A	April: 146** May: 173 June: 166	July: 161 Aug.: 176 Sept.: 223 Oct.: 195 Nov.: 178 Dec.: 135 Jan.: 128 Feb.: 96 March: 155 April: 159 May: 135 (rev.) June: 131	July: 144 Aug: 144 Sept: 161	Oct.: 181 Nov.: 193 Dec.: 202	Jan.: 135 Feb.: 112 March: 138	≥80 mcd/m <sup>2</sup> /lux***	≥80 mcd/m <sup>2</sup> /lux

\*Aggregate numbers do not include yellow striping for Region 3. February 2016 results do not include Region 5. Data since June 2016 do not include Region 1. December 2016 data do not include white striping in Region 3. \*\*First month of reporting with current methodology. \*\*\*CDOT's goal is to achieve, at minimum, a retro-reflectivity score for longitudinal pavement markings of 80 mcd/m<sup>2</sup>/lux (millicandelas per square meter per lux), a measure of luminous intensity. Properly implemented and maintained longitudinal pavement markings convey directional information, location of the road center and edges, the presence of passing or no-passing zones, and an indication that a driver is occupying the correct lane.

# Appendix 3: Executive Director's Goals

The following *draft* goals have been submitted by CDOT's Executive Director to the Colorado's Governor's Office for 2018. They include many of the goals in this Performance Plan.

## CDOT Peaks: Healthy Multi-Modal System/Technology

**Strategic Policy Initiative 1:** Slow the growth of travel times on Interstate 70 (between Vail and C-470) and Interstate 25 (between Northwest Parkway and C-470). Slowing the growth of travel times enables highway users to arrive at their destinations more quickly than otherwise and mitigates the social, economic and environmental costs of congestion.

1. Achieve actual travel times of 98 minutes on average in calendar year 2018 for eastbound Interstate 70 during peak Sunday hours versus a projected average of 103 minutes.
2. Achieve actual travel times of 50 minutes on average in calendar year 2018 for southbound Interstate 25 during peak weekday hours versus a projected average of 52 minutes.
  - **Strategy:** Reduce average incident clearance times on eastbound Interstate 70 to 57 minutes on Sundays in calendar year 2018.
  - **Strategy:** Reduce average incident clearance times on southbound Interstate 25 to 44 minutes on weekdays in calendar year 2018.

## CDOT Peak: Healthy Multi-Modal System

**Strategic Policy Initiative 2:** Limit the recent surge in roadway deaths, ensuring that roadway fatalities statewide do not exceed 800 for calendar year 2018, compared to 608 in calendar year 2016.

- **Strategy:** Achieve an average benefit/cost ratio of at least 2.0 for Highway Safety Improvement Program projects in calendar year 2018.
- **Strategy:** Ensure at least 90 percent of advertised FASTER Safety Mitigation projects address Level of Safety Service 3 and 4 locations in calendar year 2018.

**Strategic Policy Initiative 3:** Achieve an overall Maintenance Levels of Service (MLOS) grade of B- for the state highway system in fiscal year 2018, up from a C+ in fiscal year 2016. Maintenance activities improve the safety and mobility of the traveling public and minimize the need for replacing infrastructure.

- **Strategy:** Achieve a B- for snow and ice removal in calendar year 2018.
- **Strategy:** Achieve a retro-reflectivity score for striping (longitudinal pavement markings) of at least 80 mcd/m<sup>2</sup>/lux (millicandelas per square meter per lux), which is a measure of luminous intensity.

**Strategic Policy Initiative 4:** Attain High or Moderate Drivability Life for 73 percent of sampled lane miles of pavement on the state highway system for fiscal year 2018, down from 80 percent in fiscal year 2016. Maintaining healthy pavement is important, because drivers navigating poor pavement must endure rough rides and reduce speeds to navigate around potholes and other damage. Pavement with deep ruts can increase the chances of hydroplaning.

- **Strategy:** Ensure at least 80 percent of advertised Surface Treatment Program projects match recommendations from the pavement management system in fiscal year 2018.



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