2015-16 CDOT Performance Plan

COLORADO
Department of Transportation

January 2016 Resubmission

CONTENTS

Introduction & Overview

The Colorado Department of Transportation (CDOT) is pleased to present its Performance Plan for fiscal year 2015-16. This plan will help the Department serve Coloradans by effectively administering and delivering transportation-related programs and services.

Described in this document are selected 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 the customer of 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.

This document is a December 2015 resubmission of the plan CDOT initially submitted in July 2015. The resubmitted draft includes two additional Strategic Policy Initiatives, for a total of four. In addition, the Department under new executive management in June 2015 began developing a new strategic framework. Page 3 of this document includes new details on the framework.

Performance measures, goals and the presentation of this plan also are changing this year due to consultations with OSPB throughout fiscal year 2014-15. (See pages 8-9.) Revisions may continue to occur through this partnership, and as CDOT completes its annual review of the Federal Highway Administration-CDOT Stewardship Agreement and other documents that contain many of the same or similar performance indicators.

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 (2015). Article 1 vests the Colorado Transportation Commission with authority over planning, development, and adoption of CDOT's annual budget.

Interstate 36 at Westminster, October 2014.

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 28 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, about 40 percent of state-highway travel within Colorado takes place on Interstate highways.

Strategic Framework, Vision and Mission

Under the guidance of new executive management, CDOT in June 2015 began developing a new strategic framework. CDOT has reached out to employees at all levels to help create this framework, and an associated employee survey in mid-2015 yielded more than 700 responses.

CDOT's **purpose** is to provide freedom, connection and experience through travel.

The Department's new strategic framework focuses on reaching the **"summit"** of becoming the best transportation department in the country. 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.

To become the No. 1 transportation department in the country, CDOT has identified three "peaks" it must reach. Each peak includes "base camps" that help the Department scale that peak. The peaks and base camps are:

- **Peak 1: Leading-Edge Technology**—CDOT will deploy leading-edge technology so Coloradans and visitors can move more reliably and safely. In August 2015, CDOT's Executive Director announced the creation of a volunteer "Tech Team," a group of CDOT employees who will help identify and implement such technology.

  A base camp of this peak will focus on **Improving the Traveling Experience,** such as through applications for mobile devices. At a time when funds for expanding infrastructure are limited, CDOT will use new technology to maximize the capacity of existing roads, bridges and more. A second basecamp will

focus on **Big Data,** or using complex data sets to improve performance. A third base camp —**Helping our People**—will involve leveraging technology to make CDOT employees' jobs safer and easier, such as by using Unmanned Aerial Systems to provide images of locations where it is unsafe or time consuming for employees to travel.

- **Peak 2: Our People**—Under this peak, CDOT will encourage employees to have a passion for coming to work every day and will attract new employees who want to work for the best transportation department in the country.

  This peak has a base camp of **Leadership Development,** under which CDOT will develop leadership, problem-solving and other skills needed to create a leading 21st Century transportation system. The second base camp is an **Internal Customer Focus.** CDOT will encourage the application of common-sense problem solving to help employees support each other's success. CDOT will foster employees who take an interest in their colleagues' well-being.

- **Peak 3: Healthy Multi-Modal System**—CDOT will enhance Colorado's roads, bridges and multi-modal options so the Department's customers can go where they want more safely, easily and confidently than ever.

  A base camp of this peak is **Asset Condition.** CDOT seeks to invest in and preserve the transportation infrastructure condition to ensure safety and mobility at a least life-cycle cost. Under this base camp, CDOT will continue to determine the right mix of infrastructure investment across urban and rural communities. A second base camp is to **Improve the Customer Experience**, such as by clearing incidents more quickly, enhancing safety and addressing bottlenecks.

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. Policy Directive 14, an updated version of which was adopted by the Governor-appointed Colorado Transportation Commission in early 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.

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 and 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 awards 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 & Operations (TSM&O) focuses on implementing low-cost, high-value operational improvements to get more out of Colorado's existing transportation 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 and ensures the department fulfills its environmental and reporting obligations.
- 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 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 also works to expand safety partnerships and to provide tools for safety advocates to work with the Department. **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 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 in coordination 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 (FTA); Regional Transportation Authorities; 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 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 owns about 1,200 buildings statewide, including the headquarters building in Denver and five regional offices in Denver, Durango, Grand Junction, Greeley and Pueblo. This inventory also includes 344 storage sheds, which is the most numerous type of building in CDOT's inventory, and 297 maintenance/repair buildings, which is the second most common type of building.

Process Improvement Strategies

CDOT's focus on improving business processes is directly 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 the principles and practices of Lean process improvement as its foundation. The key pillars of the Lean initiative are "respect for people" and "continuous improvement."

Process-improvement efforts are spread throughout the Department and include techniques and methods derived from private-sector organizations. CDOT's efforts range from individuals using "Lean Everyday Ideas" to improve their workplaces or processes to large, cross-functional "Global Lean" projects that focus on larger, cross-functional processes. At CDOT, Lean means "everyone, every day, improving every process and every product to benefit every customer."

Several large cross-functional process improvements have been undertaken, and more are underway. Examples include:

- Improvement in managing the system of maintenance work orders. This is expected to result in a 50 percent reduction in the number of work orders with errors, which in turn will reduce the amount of time spent correcting these work orders by approximately half.

- The Department's Heavy Equipment Specification and Procurement Process Improvement Project, which is working to reduce the time needed to procure heavy equipment from an average of 25 months to 14 months.

- The Department's Customer Experience Improvement Project, which streamlined the previous 70-plus step process for addressing certain customer inquiries or complaints to fewer than 20 steps.

Results of the Department's recent process-improvement efforts and a summary of upcoming projects are available at http://www.CoDOT.gov/business/process-improvement/

Plan Overview

As discussed on page 3, CDOT in June 2015 began developing a new strategic framework that will include new goals and performance measures. In its new effort to become the No. 1 transportation department in the country, CDOT will focus on the "peaks" of Leading-Edge Technology, Our People and a Healthy Multi-Modal System. The Strategic Policy Initiatives in this plan relate primarily to that last peak of creating and maintaining a Healthy Multi-Modal System, which is the traditional role of a transportation department.

Strategic Policy Initiatives

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 452 for its one-year target (Dec. 31, 2016 target, or calendar year 2016 fatalities) and 428 for its three-year target (Dec. 31, 2018 target, or calendar year 2018 fatalities).

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, up from 79 percent in fiscal year 2015. CDOT plans to achieve 74 percent High/Moderate Drivability Life for its one-year target (June 30, 2016, target, or fiscal year 2016 pavement condition) and 62 percent for its three-year target (June 30, 2018, target, or fiscal year 2018 pavement condition).

3. Travel-Time Reliability: Slow the growth of congestion on Interstate 25 (between Northwest Parkway and C-470) during daytime and early evening weekday hours. Slow the growth of congestion on Interstate 70 (between Vail and C-470) during daytime and early evening weekend hours. One- and three-year goals include:

- Reduce the Planning Time Index for NB Interstate 25 from a projected average of 2.59 per month in calendar year 2016 to an actual average of 2.50 per month. Achieve a PTI of 2.60 in 2018.
- Reduce the Planning Time Index for SB Interstate 25 from a projected average of 2.74 per month in calendar year 2016 to an actual average of 2.70 per month. Achieve a PTI of 2.80 in 2018.
- Reduce the Planning Time Index for WB Interstate 70 from a projected average of 1.67 per month in calendar year 2016 to an actual average of 1.60 per month. Achieve a PTI of 1.70 in 2018.
- Reduce the Planning Time Index for EB Interstate 70 from a projected average of 1.93 per month in calendar year 2016 to an actual average of 1.90. Achieve a PTI of 2.0 in 2018.

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 years 2016 and 2018, down from a B- in fiscal year 2014.

The Department 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. As demonstrated by initiatives No. 3 and No. 4 above, CDOT forecasts its best efforts will at most curb the growth of congestion and the decline in Maintenance Levels of Service.

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

Changes from 2014-15 Plan

This draft of CDOT's Performance Plan features significant changes from the Department's 2014-15 plan.

Several changes this year resulted from consultations with the Office of State Planning and Budgeting. The number of Strategic Policy Initiatives has been reduced to four this year, down from the six such initiatives plus six Focus

Areas in the Department's 2014-15 plan. Strategic Policy Initiatives focus on areas of critical importance and have specific, directional performance targets. Strategies related to the initiatives are clearly labeled and discussed at length. Links between the Department's Strategic Policy Initiatives, Major Functional Areas and customers are clearer. The environment in which CDOT is affecting its Strategic Policy Initiatives is described.

Another driver of change is a nascent effort in the Department to better identify and more frequently monitor operational metrics (leading metrics) that most affect performance on the Department's outcomes (lagging metrics).

For example, the condition of pavement on the state highway system (an outcome) is now associated in the Performance Plan to an operational metric. This operational metric shows the percentage of Surface Treatment program projects advertised for the fiscal year that match recommendations made from CDOT's pavement management system. This measure helps ensure actual construction projects are matching the pavement models that are designed to help ensure CDOT achieves the desired pavement condition.

Employee Involvement

Development of the Performance Plan included contacts with members of the Executive Management Team, program managers and other employees. Suggestions have been provided by CDOT employees belonging to the state employee union, Colorado Workers for Innovative and New Solutions. CDOT and the WINS members in fall 2014 discussed including narrative related to employee safety in this year's plan. As a result, CDOT has included information on worker's compensation claims and efforts to promote employee safety within the narrative accompanying CDOT's safety-related Strategic Policy Initiative.

Additionally, CDOT has involved its workforce in developing its new strategic framework (see page 3). A related employee survey in summer 2015 yielded more than 700 responses.

CDOT Peak: Healthy Multi-Modal System

Strategic Policy Initiative No. 1: Safety

Initiative Description: 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 452 for its one-year target (Dec. 31, 2016, target, or calendar year 2016 fatalities) and to 428 for its three-year target (Dec. 31, 2018, target, or calendar year 2018 fatalities).

Background: Annual fatalities on all roads statewide have fallen 27 percent in the past 10 years, from 667 in 2004 to 488 in 2014.[1] For the past five years alone, however, fatalities grew from 450 in 2010 to 488 in 2014. The Department in late 2014, along with its safety partners, 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." (See "Strategies" below for more on the plan.)

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 costs, the economic cost of fatalities is considerable. The National Safety Council estimates the average economic cost per death in a motor-vehicle crash was $1.5 million in 2013.

Environment: Although declining over the long-term, fatalities since 2010 have begun to climb, as diminishing returns are being seen from improvements in vehicle manufacturing, roadway projects and behavioral education. In response, CDOT and its planning partners who helped create the Strategic Highway Safety Plan have established action plans for eight emphasis areas (see Strategies section below).

The Department is striving to reduce fatalities at a time when both population and Vehicle Miles Traveled on the highway system continue to grow. Colorado's population has grown 46 percent in the past 20 years, from 3.7 million people to 5.4 million people. The state's population will grow to six million by 2020 and to 7.8 million by 2040, according to a November 2014 report from Colorado's State Demography Office. Other factors that could limit gains from current safety efforts include the legalization of recreational marijuana in Colorado, which could increase the incidence of impaired driving, and distracted driving due to increased use of mobile devices.

Conversely, the Department sees promise in emerging technologies such as connected vehicle technologies, both vehicle-to-vehicle and vehicle-to-infrastructure. Such technologies are expected to be a key driver in helping the state move "Toward Zero Deaths." Passing a primary seatbelt law and a helmet law in Colorado also would help reduce roadway fatalities.

In addition to the safety of the traveling public, CDOT strives to promote employee safety. Since the inception of the Department's Excellence in Safety program in 2013, CDOT supervisors have conducted on average 12,500 safety engagements each fiscal year. A safety engagement is a direct conversation between a supervisor and his or her direct report specifically about safety at a specific job site. These engagements are recorded by each supervisor into a database. These efforts helped reduce worker's compensation claims from 326 claims in fiscal year 2012 to 242 in

[1] Fatalities data are subject to revision as new data become available.

fiscal year 2015. According to historical trends, this equates with preventing about 85 employees from suffering an injury who otherwise would have done so without the Excellence in Safety process.

Strategies: CDOT employs myriad strategies to reduce the incidence and severity of motor-vehicle crashes and associated fatalities. Such strategies include:

- Conducting safety-specific infrastructure projects.
- Administering data-driven safety-education grant programs to influence driver behavior and support law enforcement and local community safety projects.
- Monitoring and analyzing crash data to understand trends regarding the number and severity of collisions. Location-specific data identifies sites requiring possible improvement actions.
- 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 or helmet 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 (65+); bicyclists and pedestrians; data; impaired driving; rural and urban infrastructure; motorcyclists; occupant protection; and young drivers (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: Qualify, select, advertise and award 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 Projects. 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 increased from 481 in 2013 to 488 in 2014. This was below the Department's goal of 476. See the "Environment" section on page 10 for a discussion of recent trends.

Metric Type	Metric Description	Process	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)	CY	CY16: 452 CY18: 428	2012: 474 2013: 481 2014: 488[2]
Outcome/lag metric	Fatalities per 100 million Vehicle Miles Traveled on Colorado roadways	Implement safety program (see Strategies section above)	CY	CY16: 0.94 CY18: 0.90	2012: 1.016 2013: 1.024 2014: 0.996
Operational/ "lead" metric	Average benefit/cost ratio for Highway Safety Improvement Projects	Qualify, select, advertise and award Highway Safety Improvement Program projects	CY	CY16: 2.0 CY18: Not established	2015:[3] Q1 (year-to-date): 1.68 Q2 (year-to-date): 2.33[4] Q3 (year to-date): 2.31
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	CY	CY16: 90% CY18: Not established	2015:[5] Q1 (year-to-date): 83% Q2 (year-to-date): 80% Q3 (year to-date): 72%
Operational/ "lead" metric	FASTER Safety Mitigation program dollars spent as a percentage of the program's fiscal-year allocation[6]	Qualify, select, advertise and award FASTER Safety Mitigation program projects	FY	FY16: 100% FY18: 100%	2012: 69% 2013: 79% 2014: 84% 2015: 159%
Operational/ "lead" metric	Dedicated law enforcement contact hours for traffic safety enforcement[7]	Administer enforcement grants	CY	CY16: 65,000 CY18: 65,000	2012: 50,880 2013: 67,808 2014: 75,689
Input	Vehicle Miles Traveled on Colorado roadways	N/A	CY	N/A (input)	2012: 46.8 billion 2013: 47.0 billion 2014: 49.0 billion

2 Revised to reflect latest data.

3 Tracking of metric in current form began in late 2014.

4 Revised to reflect latest data.

5 Tracking of metric in current form began in 2015. Measure added to Performance Plan in December 2015 resubmission.

6 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. From program inception through fiscal year 2015, 68 percent of dollars allocated to the program had been spent.

7 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, high-visibility enforcement, etc.

CDOT Peak: Healthy Multi-Modal System

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, up from 79 percent in fiscal year 2015. CDOT plans to achieve 74 percent[8] High/Moderate Drivability Life for its one-year target (June 30, 2016 target, or fiscal year 2016 pavement condition) and 62 percent for its three-year target (June 30, 2018 target, or fiscal 2018 pavement condition).[9]

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.

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.

The Department maintains highway pavement in a constrained and uncertain funding environment. State and federal fuel taxes have not increased for two decades. The Moving Ahead for Progress in the 21st Century Act (MAP-21), the 2012 law that funds surface transportation nationwide, expired Sept. 30, 2014. While MAP-21 has been extended for the short term, uncertainty will remain until Congress passes a long-term authorization.

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 preventive maintenance on pavements. Preventive maintenance is applying lower-cost treatments at an appropriate time in the life of pavements to extend the performance of the roadway and

[8] FY16 and FY18 targets for pavement on the state highway system were revised in December 2015 to account for recent updates to the pavement model and forecasts. Specifically, CDOT has updated the evaluation scale used for pavement smoothness, which is one component of the Drivability Life metric used by the model to determine pavement condition. This change was made to better align the model with how smoothness is described in CDOT construction specifications and federal definitions. One- and three-year targets listed here may change with further improvements to CDOT's pavement modeling system. The targets also may change as new data become available on funding, materials costs, land-use patterns, population growth, truck travel, weather and more.

[9] Due in part to the age of the pavement on the state highway system, pavement condition under current funding assumptions is expected to fall in the short term and begin improving in the 2020s.

reduce the likelihood of high-cost rehabilitation and reconstruction. Key preventive maintenance 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 (≤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 highway 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.

Selected operational processes: Operational processes related to pavement condition include preserving, resurfacing and rehabilitating roads with the optimized application of cost-effective pavement treatments.

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 ensure CDOT achieves the desired pavement condition, as measured by the Drivability Life metric. The "percent match" measure in its current form is new as of early 2015, and methodology may be refined and results may be revised for future reports.

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 2015 to 79 percent, from 73 percent in fiscal year 2014. This was just below the goal of 80 percent for fiscal year 2015 referenced in last year's Performance Plan. However, the improvement in 2015 was primarily driven by an update to the pavement model, not a change in the actual condition of pavement. (See first footnote on following page.) Updates to the model notwithstanding, pavement condition has been falling in recent years. Due in part to the age of pavement on the state highway system, the condition under current funding assumptions is expected to continue declining in the short term and begin improving in the 2020s.

For this year's Performance Plan, CDOT has included discrete short-term goals, in addition to a long-term goal of 80 percent High or Moderate Drivability Life. These shorter-term goals are subject to change as new budget, condition and other relevant information becomes available.

Metric Type	Metric Description	Process	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.	Fiscal	FY16: 74%[10] FY18: 62%	2012: N/A (new metric) 2013: 82% 2014: 73% 2015: 79%[11]
Operational/lead metric	Percent of Surface Treatment program projects advertised for the fiscal year that match recommendations from the pavement management system. Note: Results for each month are cumulative for fiscal year 2014-15 to date.	Select and advertise surface treatment projects	Fiscal	FY16: 80% FY18: 80%[12]	July 2014: 0% August 2014: 0% September 2014: 0% October 2014: 0%[13] November 2014: 55.6% December 2014: 66.7% January 2015: 70.6% February 2015: 70.8% March 2015: 71.4% April 2015: 77.1% May: 77.1% June: 77.1% (fiscal-year end)
Input/ environmental factor	Miles of roadway on state highway system	N/A (input)	CY	N/A (input)	2012: 23,023.7 2013: 23,021.5 2014: N/A
Input/ environmental factor	Annual Vehicle Miles Traveled on state highway system	N/A (input)	CY	N/A (input)	2012: 28.1 billion 2013: 28.4 billion 2014: N/A
Input/ environmental factor	Annual Vehicle Miles Traveled for trucks on the state highway system	N/A (input)	CY	N/A (input)	2012: 2.5 billion 2013: 2.4 billion 2014: N/A

[10] FY16 and FY18 targets for pavement on the state highway system were revised in December 2015 to account for recent updates to the pavement model and forecasts. Specifically, CDOT has updated the evaluation scale used for pavement smoothness, which is one component of the Drivability Life metric used by the model to determine pavement condition. This change was made to better align the model with how smoothness is described in CDOT construction specifications and federal definitions.

[11] Improvement in 2015 was driven primarily by an update to the pavement model, not a change in the actual condition of pavement. (See previous footnote.)

[12] CDOT plans to maintain this target in the short term. The target is set at 80 percent to allow the 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.

[13] Four projects were advertised in the first four months of fiscal year 2015, and none was a match. Several of these projects were delayed projects from fiscal year 2014, which was a transition year for the pavement model, and matching requirements were put on hold.

CDOT Peak: Healthy Multi-Modal System

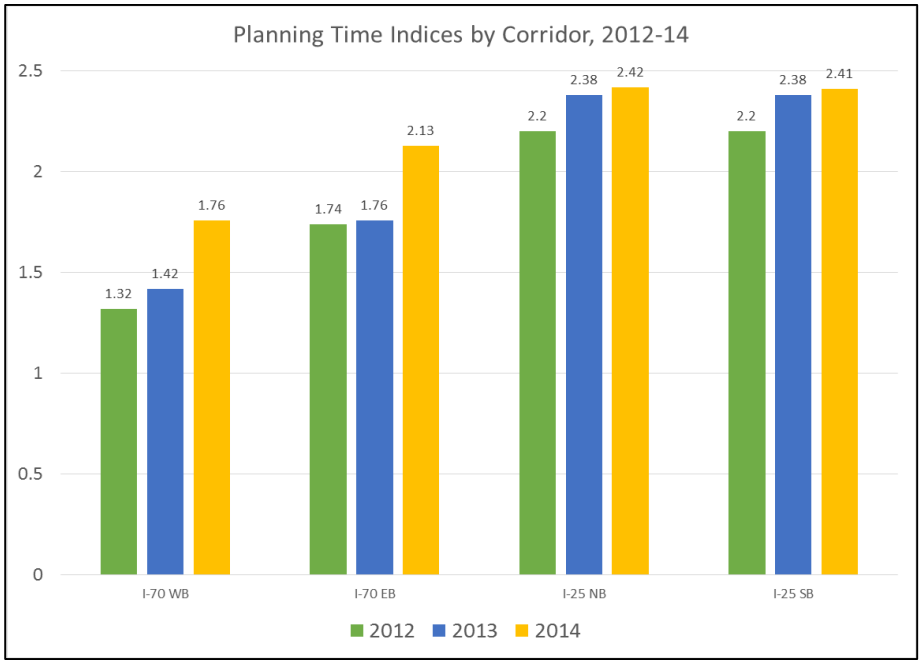
Strategic Policy Initiative No. 3: Travel-Time Reliability

Initiative description: Slow the growth of congestion on Interstate 25, between Northwest Parkway and C-470, during daytime and early evening weekday hours. Slow the growth of congestion on Interstate 70, between Vail and C-470, during daytime and early evening weekend hours. One- and three-year goals include:

- Reduce the Planning Time Index for NB Interstate 25 from a projected average of 2.59 per month in calendar year 2016 to an actual average of 2.50 per month. Achieve a PTI of 2.60 in 2018.
- Reduce the Planning Time Index for SB Interstate 25 from a projected average of 2.74 per month in calendar year 2016 to an actual average of 2.70 per month. Achieve a PTI of 2.80 in 2018.
- Reduce the Planning Time Index for WB Interstate 70 from a projected average of 1.67 per month in calendar year 2016 to an actual average of 1.60 per month. Achieve a PTI of 1.70 in 2018.
- Reduce the Planning Time Index for EB Interstate 70 from a projected average of 1.93 per month in calendar year 2016 to an actual average of 1.90. Achieve a PTI of 2.0 in 2018.

Metric background and definitions: A Planning Time Index is a measure of the total travel time that should be planned for a trip. It includes sufficient buffer time to ensure that a driver and any passenger(s) arrive on schedule, according to a definition from the Federal Highway Administration. For this plan, the PTI value represents the 95th percentile travel time divided by travel time at free-flow speed. In other words, the index represents the extra time needed to arrive on time for 19 of 20 trips. For a stretch of road with a PTI of 1.5, a driver should plan 45 minutes for a trip that takes 30 minutes in free-flow conditions (30 minutes multiplied by 1.5 equals 45 minutes) to be on-time 95 percent of the time.

Using data from INRIX, a private traffic data provider, CDOT calculated historical PTI values for Interstates 25 during daytime and early evening weekday hours, and on Interstate 70 during daytime and early evening weekend hours. These data were carefully considered in developing goals for each of the two corridors for 2016 and 2018. The PTI goals are generally higher than historical PTI values due in part to recent increases in Colorado's population and traffic volumes. For future reporting of performance metrics, PTI data will be tracked on a monthly basis by CDOT using INRIX.

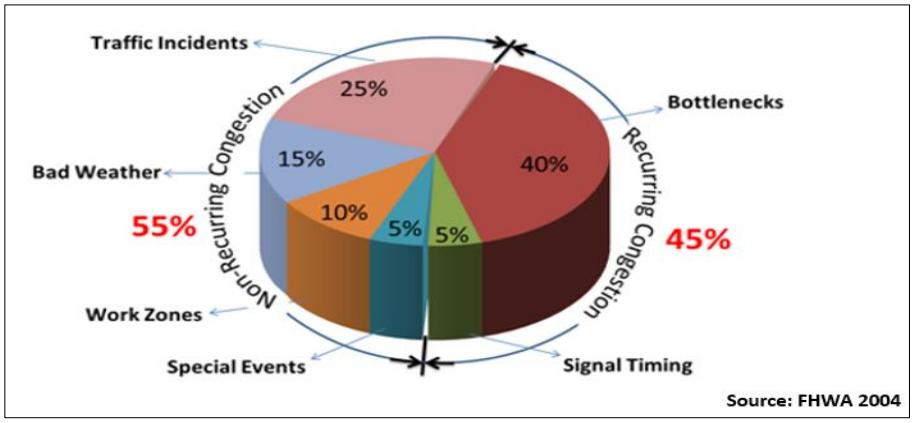


CDOT aims to slow the projected growth of Planning Time Index values for Interstates 25 and 70. Above are the average PTI values per month for the past three years for Interstate 70 (between Vail and C-470) and Interstate 25 (between Northwest Parkway and C-470). The values represent peak travel times.

Using the strategies described on pages 18-19, CDOT will work to decrease the rate at which the PTI values are projected to grow.

Why this matters: Travelers and freight transporters depend on the reliability of the highway system for planning purposes. Unpredictable travel times can result in significant economic and social costs for highway users, such as missed appointments, delayed packages and late employees. Congestion—a key driver of reliability—on an annual basis causes $1.6 billion in delays and wasted fuel in the Denver-Aurora area alone, according to the Texas Transportation Institute's 2012 Urban Reliability Report.

Environment: Traffic volumes are influenced by factors including population, the size of the workforce, freight transport and tourism travel. 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. The worse the congestion, the higher the Planning Time Index value for a roadway. Assuming there is no increase in highway capacity, PTI values for Interstates 25 and 70 are expected to grow.

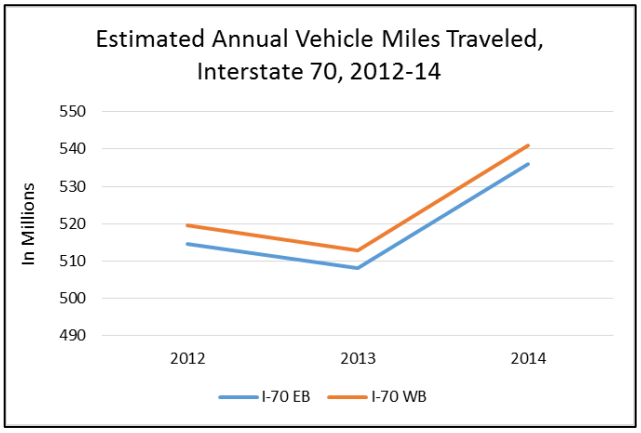


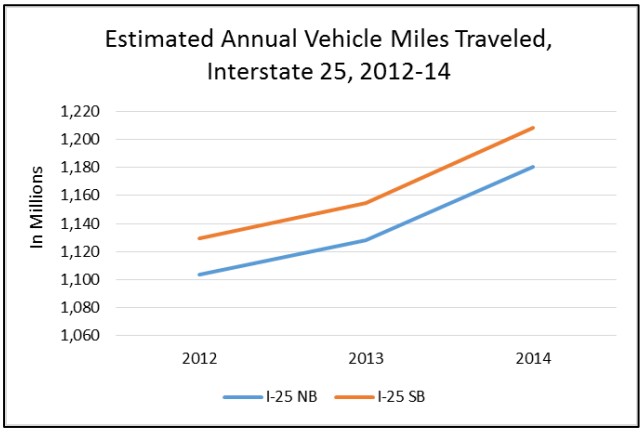
More than half of congestion in urban areas is due to non-recurring causes.

The chart above shows that in urban areas, about 55 percent of congestion is nonrecurring. Twenty-five percent of congestion is caused by traffic incidents, such as an automobile crash, a disabled vehicle, or roadway debris. For each minute that a freeway travel lane is blocked during peak use, an estimated four minutes of delay occur after the incident is cleared. Americans living in urban areas bought an extra 2.8 billion gallons of fuel than they otherwise would have in 2007 because of congestion, according to the Texas Transportation Institute. Moreover, congestion caused these Americans to travel an additional 4.2 billion hours that year, according to the Institute's Urban Mobility Report.

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 46 percent in the past 20 years, from 3.7 million people to 5.4 million people. The population will grow to six million by 2020 and 7.8 million by 2040, according to a November 2014 report from Colorado's State Demography Office. Along with this growth has come higher traffic volumes. As the charts on the following page show, the number of Vehicle Miles Traveled per year grew from 2012-14 by 4 percent for Interstate 70 (between Vail and C-470, both directions) and about 7 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 owns about 3,400 bridges with almost 33 million square feet of deck area. CDOT is responsible for managing a total of 21 tunnel bores throughout Colorado with a total length of 6.9 miles. Disruptions to any of this infrastructure can result in unreliable travel times. CDOT must manage





From 2012 to 2014, the number of Vehicle Miles Traveled per year grew by 4 percent for Interstate 70 (between Vail and C-470, both directions) and about 7 percent for Interstate 25 (between Northwest Parkway and C-470, both directions).

reliability in challenging climates and topographies, including extreme freeze/thaw cycles and high, heavily traveled mountain passes.

Strategies: CDOT is focused on improving reliability on Interstates 25 and 70, which are among the most congested stretches of Interstate in Colorado. CDOT formed the Division of Transportation Systems Management & 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. The Federal Highway Administration offers a National TIM Responder Training program. This 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 critical funds by promoting the TIM training program. The program focuses on a response effort that protects motorists and responders while minimizing the impact on traffic flow. TIM efforts include detecting, verifying and responding to incidents; clearing the incident scene; and restoring traffic flow. Based on the severity or type of incident, first responders may represent law enforcement, transportation, emergency medical services, public safety, towing and recovery, public works, hazardous materials (HAZMAT) and firefighting disciplines.
2. Targeting corridor improvements, such as bottleneck reduction funded through the Highway Safety Improvement Program.
3. Implementing managed lanes through tolling, 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. Focusing on trip reliability, it maximizes the effectiveness and efficiency of the highway. ATM approaches seek to increase throughput and safety through the use of integrated systems with new technology, such as dynamic routing, dynamic junction control, adaptive signal control and transit signal priority.
4. Adding ramp meters to Interstates to better manage system flow.
5. Using Intelligent Transportation Systems devices to provide real-time weather and roadway information to travelers.
6. Developing command-level partnerships with law enforcement and other stakeholders to implement integrated event traffic management for safe and reliable travel during these significant temporary increases in traffic. Events could include a major concert at the Pepsi Center, a Denver Broncos football game, or a Presidential motorcade.

7. Implementing new, innovative technologies through CDOT's RoadX program, which is under development. RoadX projects will combine public and private efforts to bring innovative Intelligent Transportation System technology to the Interstate system. For example, coordinated ramp metering on Interstate 25 is currently in design.

Each strategy will address the causes of congestion, improve reliability and help slow the increase in the Planning Time Indices on Interstates 25 and 70. CDOT also plans to increase the effectiveness of programs such as the Courtesy Patrol and Heavy Tow programs by working with Incident Commanders to enable faster responses to incidents and reduce incidents through active traffic and incident management.

Selected operational processes: Train first responders, conduct after-action reviews of incident clearance.

Selected operational metrics ("lead metrics"): CDOT has created several operational measures and targets to help offset the growth of the Planning Time Indices for Interstates 25 and 70. They include:

- Reducing the average incident clearance time[14] on Northbound and Southbound Interstate 70 (between Vail and C-470), and on northbound and southbound Interstate 25 (between Northwest Parkway and C-470), by 10 percent in 2016 compared to the average 2014 time. CDOT also aims to reduce the average incident clearance times on these roadways by 20 percent in 2018 compared to the 2014 times. Please see the table on the following pages for specific targets.
- Reducing the duration of road closure events on northbound and southbound Interstate 70 (between Vail and C-470), and on northbound and southbound Interstate 25 (between Northwest Parkway and C-470) by 10 percent in 2016 compared to the total 2014 time on each corridor. CDOT plans to reduce the closure time on the same roadways by 20 percent for calendar year 2018 compared to 2014 times. Please see the table on the following page for details. Road closures can drive up the Planning Time Index. Closure 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.
- Additional metric(s) under development.

Major Functional Area: Operations and Maintenance.

Customers: All users of the state highway system are customers of CDOT's efforts to promote travel-time reliability. Highway users include 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, town and county law enforcement agencies; emergency service personnel; the military; and others.

Evaluation: Metrics for the individual corridors in this Strategic Policy Initiative are new to the Performance Plan this year, so no previous targets existed. Past data for the Strategic Policy Initiatives, operational metrics and other performance measures related to this Strategic Policy Initiative are shown in the following table.

[14] 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.

Readers should note that Interstate 25 metrics in the table represent performance in the Denver metro area, between Northwest Parkway and C-470. Performance is for daytime and early evening weekday hours, with the exception of Vehicles Miles Traveled, which represents the entire year. Interstate 70 metrics represent performance in the mountain corridor, between Vail and C-470. Performance represents daytime and early evening weekend hours, which the exception of Vehicle Miles Traveled, which represents the entire year.

Metric Type	Metric Description	Process	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ Outcome A	Planning Time Index for NB I-25	Improve incident management, decrease road closure times, and implement new technologies through CDOT's RoadX program.	CY	Reduce PTI for NB I-25 from a projected average of 2.59 per month in calendar year 2016 to an actual average of 2.50. Achieve an average PTI of 2.60 per month in 2018.	Average PTI per month 2012: 2.20 2013: 2.38 2014: 2.42
Operational /lead metric	Average incident clearance time on NB I-25	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.	CY	2016: 46 minutes (10% reduction[15] from 2014) 2018: 40 minutes (20% reduction from 2014)	2012: N/A 2013: N/A 2014: 51 minutes
Operational /lead metric	Average monthly road closure time, per event, on NB I-25	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, and develop and update Traffic Incident Management Plans.	CY	2016: 55 minutes (10% reduction from 2014) 2018: 48 minutes (20% reduction from 2014)	2012: 41 minutes[16] 2013: 42 minutes[17] 2014: 61 minutes
Input	Annual Vehicle Miles Traveled on NB I-25	N/A (input)	CY	N/A (input)	2012: 1.10 billion 2013: 1.13 billion 2014: 1.18 billion

15 Clearance and closure time data and associated targets in this chart have been rounded to the nearest minute, so targets do not always equal exactly 10 and 20 percent reductions.

16 Results include at least nine months of data, but not a full calendar year.

17 Results include at least nine months of data, but not a full calendar year.

Metric Type	Metric Description	Process	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ Outcome B	Planning Time Index for SB I-25	Improve incident management, decrease road closure times, and implement new technologies through CDOT's RoadX program.	CY	Reduce the PTI for SB I-25 from a projected average of 2.74 per month in calendar year 2016 to an actual average of 2.70. Achieve an average PTI of 2.80 per month in 2018.	Average PTI per month 2012: 2.20 2013: 2.38 2014: 2.41
Operational /lead metric	Average incident clearance time on SB I-25	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.	CY	2016: 44 minutes (10% reduction from 2014) 2018: 39 minutes (20% reduction from 2014)	2012: N/A 2013: N/A 2014: 49 minutes
Operational /lead metric	Average monthly road closure time, per event, on SB I-25	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, and develop and update Traffic Incident Management Plans	CY	2016: 52 minutes (10% reduction from 2014) 2018: 46 minutes (20% reduction from 2014)	2012: 39 minutes[18] 2013: 51 minutes[19] 2014: 58 minutes
Input	Vehicle Miles Traveled on SB I-25	N/A (input)	CY	N/A (input)	2012: 1.13 billion 2013: 1.15 billion 2014: 1.21 billion
Strategic Policy Initiative/ Outcome C	Planning Time Index value for WB I-70	Improve incident management, decrease road closure times, and implement new technologies through CDOT's RoadX program.	CY	Reduce the Planning Time Index for WB I-70 from a projected average of 1.67 per month in calendar year 2016 to an actual average of 1.60 per month. Achieve a PTI of 1.70 in 2018.	Average PTI per month 2012: 1.32 2013: 1.42 2014: 1.76
Operational /lead metric	Average incident clearance time on WB I-70	Train first responders, deploy new Highway Incident Commanders, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	CY	2016: 40 minutes (10% reduction from 2014) 2018: 36 minutes (20% reduction from 2014)	2012: N/A 2013: N/A 2014: 45 minutes

[18] Results include at least nine months of data, but not a full calendar year.
[19] Results include at least nine months of data, but not a full calendar year.

Metric Type	Metric Description	Process	Year Type	1- and 3-Year Targets	Performance Results
Operational /lead metric	Average monthly road closure time per event on WB I-70	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, and develop and update Traffic Incident Management Plans.	CY	2016: 149 minutes (10% reduction from 2014). 2018: 133 minutes (20% reduction from 2014).	2012: N/A 2013: N/A 2014: 166 minutes
Input	Annual Vehicle Miles Traveled on WB I-70	N/A (input)	CY	N/A (input)	2012: 519 million 2013: 513 million 2014: 541 million
Strategic Policy Initiative/ Outcome D	Planning Time Index for EB I-70	Improve incident management, decrease road closure times, and implement new technologies through CDOT's RoadX program.	CY	Reduce the Planning Time Index for EB I-70 from a projected average of 1.93 per month in calendar year 2016 to an actual average of 1.90. Achieve a PTI of 2.0 in 2018.	Average PTI per month 2012: 1.74 2013: 1.76 2014: 2.13
Operational /lead metric	Average incident clearance time on EB I-70	Train first responders, deploy new Highway Incident Commanders, work with law enforcement to incentivize private and heavy towing services, conduct after-action reviews.	CY	2016: 44 minutes (10% reduction from 2014) 2018: 39 minutes (20% reduction from 2014)	2012: N/A 2013: N/A 2014: 49 minutes
Operational /lead metric	Average monthly road closure time per event on EB I-70	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, and develop and update Traffic Incident Management Plans.	CY	2016: 250 minutes (10% reduction from 2014). 2018: 222 minutes (20% reduction from 2014).	2012: N/A 2013: N/A 2014: 278 minutes
Input	Vehicle Miles Traveled on EB I-70	N/A (input)	CY	N/A (input)	2012: 515 million 2013: 508 million 2014: 536 million

CDOT Peak: Healthy Multi-Modal System

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 C for the state highway system in fiscal years 2016 and 2018, down from a B- in fiscal year 2014.

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. Nine Maintenance Program Areas (listed below) are each given a grade, and those individual grades are used to determine an overall MLOS grade. To measure service levels, CDOT employees conduct condition surveys across the transportation network on an ongoing basis. Inspectors rate each maintainable feature in a given section of the network according to established criteria.

The Staff Maintenance and Operations Branch provides policy and guidance for the statewide maintenance program and maintains operational oversight for program administration. Under 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 and 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 the highways of snow and ice also improve safety and mobility.

Environment: CDOT's maintenance patrols serve a system that includes 23,000 total 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 21 tunnel bores throughout the state. The Division of Highway Maintenance administers various programs to maintain this system, including the Snow and Ice Removal program, Traffic Services, Vegetation Management, Debris Removal and more.

CDOT owns a large number of safety and traffic-related devices that the Department must maintain. In the past, CDOT had completed annual inventories of these items. Due to budget constraints, this annual inventory has not been completed in several years. The most recent counts are:

- 192,726 signs

- 511,000 delineators
- 1,156,402 linear feet of cable guardrail
- 7,300,476 linear feet of metal guardrail
- 2,568,675 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.

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 was flat from fiscal year 2013 to fiscal year 2014, and rose less than 1 percent in fiscal year 2015. Compared to anticipated funding, CDOT's 2015 Transportation Deficit Report estimated the Department from 2016-25 will face a deficit of roughly $22 million per year, on average, to maintain a B- grade for overall Maintenance Levels of Services, which was the goal in last year's Performance Plan. Such a funding environment has prompted CDOT to revise the goal to a C grade.

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 study is a third-party review of the Department's Maintenance Performance Standards, budget planning, resource allocation and staffing levels. CDOT will implement study recommendations to increase efficiencies and maximize resources.
- **Winter Operations and Operational Readiness:** Under these strategies, CDOT is a 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 the previous page.

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

Major Functional Area: Operations and Maintenance.

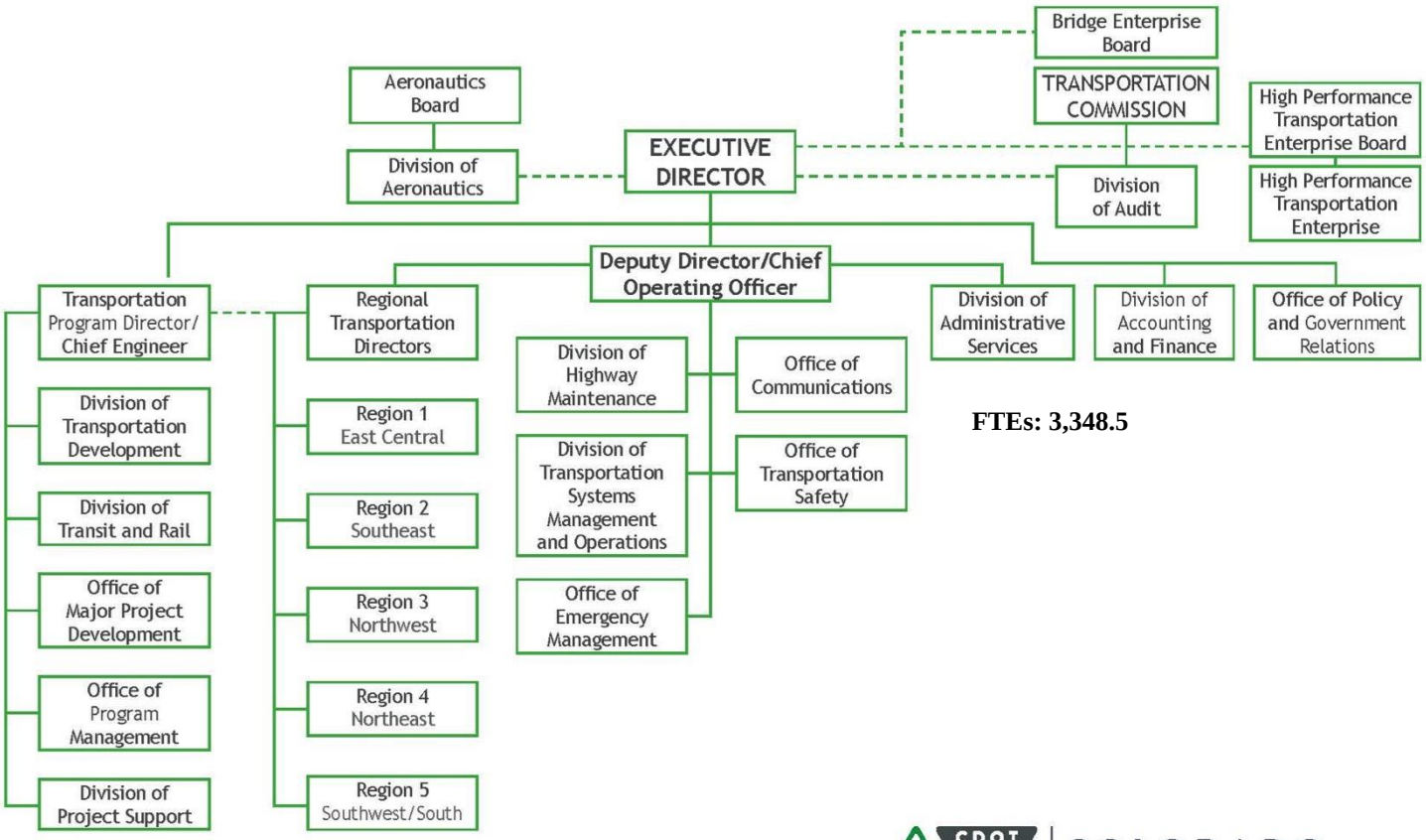
Customers: Customers include all highway users. This includes resident, tourist, recreational, and "through" travelers on Colorado's state highway system; business customers such as the freight and tourism industries; transit services; law enforcement agencies; the military; counties; municipalities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

Evaluation: CDOT achieved a B- for overall Maintenance Levels of Service in fiscal year 2014, which met the goal in the Department's 2014-15 Performance Plan. The Department has achieved a B- each year from 2010-14, except for 2013, when a B was achieved. For fiscal year 2016, CDOT forecasts it will achieve a C grade for overall Maintenance Levels of Service, while a B level of service is projected for Snow and Ice Removal and a C- is projected for Traffic Services. For fiscal year 2018, the department forecasts it will achieve a C grade for overall Maintenance Levels of Service, while a B is forecast for Snow and Ice Control, and a D+ is forecast for Traffic Services. Future initiatives will be focused on increasing the level of service for Traffic Services.

Metric Type	Metric Description	Process	Year Type	1- and 3-Year Targets	Performance Results
Strategic Policy Initiative/ outcome/lag metric	Maintenance Levels of Service grade	Deliver maintenance program[20]	FY	FY16: C FY18: C	2012: B- 2013: B 2014: B- 2015: B-
Operational/lead metric	Snow-and-Ice Control grade	Plow and remove snow, apply chemicals and abrasives and proactively control avalanches	FY	FY16: B FY18: B	2012: B 2013: B 2014: B 2015: B
Operational/lead metric	Retro-reflectivity score for long-line striping. Sampled monthly at random locations.	Stripe and evaluate state highway system pavement	FY	FY16: ≥80 mcd/m²/lux FY18: ≥80 mcd/m²/lux	FY14:[21] April: 146 May: 173 June: 166 FY15: July: 161 (Rev.) August: 176 (Rev.) September: 223 (Rev.)
Input	Maintenance program spending[22]	Deliver maintenance program	FY	N/A input	2012 actual: $242 million 2013 actual: $249 million 2014 actual: $249 million 2015 (budget): $251 million
Input	Maintenance Full Time Equivalents at fiscal-year end[23]	Hire and retain maintenance workforce	FY	N/A input	2012: 1,177.0 2013: 1,166.5 2014: 1,166.5

[20] See page 23 for a more complete description of Maintenance Program Areas (MPAs) and associated processes.
[21] CDOT began tracking this metric in this format in early 2015.
[22] Per CDOT's FY 2015 and FY 2016 Final Budget Allocation Plans.
[23] Includes Trans Mtc I, II, and III and LTC Ops I.

Appendix I: Organizational Chart



FTEs: 3,348.5

COLORADO
Department of Transportation

Appendix 2: Fiscal Year 2014-15 Performance Evaluation

Strategic Policy Initiatives

The Colorado Department of Transportation (CDOT) has identified several Strategic Policy Initiatives for FY 2014-15 and beyond. For this performance evaluation, the Department has updated progress on the selected initiatives used in the Nov. 3, 2014, Annual Performance Report that best capture some of the Department's strategic and operational priorities, and reflect the overall direction as identified by Department leadership. The updates reflect data available as of fall 2015. The Department initiatives include:

- **Safety -** Reduce traffic fatalities and serious injuries and work toward zero deaths for all users.
- **Infrastructure Condition -** Preserve the transportation infrastructure condition to ensure safety and mobility at a least life-cycle cost.
- **System Performance -** Improve system reliability and reduce congestion, primarily through operational improvements and secondarily through the addition of capacity. Support opportunities for choice among transportation modes, including automobiles, bicycles, transit and rail, aviation and pedestrian modes.
- **Environmental Stewardship -** Enhance the performance of the transportation system while minimizing the impact to and encouraging the preservation of the environment.
- **Reduced Project-Delivery Delays -** Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process.

These initiatives provide context for much of CDOT's day-to-day work, some of which is highlighted in the measures section of this report. Additional detail for these and other strategic policy initiatives is available in the Department's Performance Plan, which may be accessed here.

Operational Measures

Safety[24]

Process – Implement safety programs.

Measure	CY11 Actual	CY12 Actual	CY13 Actual	CY14 Actual	CY15 Actual	CY15 Goal	CY17 Goal
Fatalities per 100 million Vehicle Miles Traveled	0.96	1.016	1.024	0.996	Updated annually	0.97 (for CY15, revised)	0.92 (for CY17, revised)
Serious injuries per 100 million vehicle miles traveled	6.80	6.98	6.85	6.57	Updated annually	6.18 (for CY15, revised)	5.82 (for CY17, revised)

The fatality rate on Colorado's roadways decreased in calendar year 2014 to 0.996 fatalities per 100 million Vehicle Miles Traveled (VMT), from 1.024 per 100 million VMT in calendar year 2013. This was slightly above CDOT's 2014 target of 0.99 fatalities per 100 million Vehicle Miles Traveled. The long-term trend remains downward due in part to a continued focus on safety from CDOT's behavioral, enforcement and engineering programs. These programs are made possible because of funding from the FASTER Safety program, the Highway Safety Improvement Program (HSIP), the National Highway Traffic Safety Administration (NHTSA), and other sources. There also has been increased coordination with safety stakeholders through the State Strategic Highway Safety Plan. Readers should note that the fatalities rate in last year's Performance Plan ("FY14-15 CDOT Performance Plan Update") was reported as a five-year rolling average. CDOT has returned to reporting performance and targets on a single-year basis due to the belief that this presentation is clearer. This change has been discussed in previous Performance Plan evaluations. The rate of serious injuries on Colorado's roadways in 2014 fell to 6.57 per 100 million VMT, short of the Department's goal of 6.35 per 100 million VMT. The calendar year 2014 goals discussed here for fatalities and serious injury rates, as well as the 2015 and 2017 goals listed above, have been revised to reflect goals in the 2014 Strategic Highway Safety Plan.

[24] Safety targets were updated in summer 2015 to reflect targets in the Strategic Highway Safety Plan. Fatalities and injuries shown in the charts on this page and on page 2 reflect data as of fall 2015 and are subject to revision as new data become available. Final results for the fatalities and injuries *rates* for 2015 will not be available until official Vehicle Miles Traveled statistics are available in mid-2016.

Process - Select and deliver FASTER safety projects.

CDOT in 2015 learned from the Office of the State Auditor of inconsistencies in its methodology for reporting the percentage of the FASTER Safety fiscal-year budget that was encumbered or expended by June 30 each year. The target for this metric was to spend or encumber 80 percent of the budget by June 30. See page 12 for the Department's new spending metric, which measures FASTER Safety Mitigation program expenditures as a percentage of the program's fiscal-year allocation. The new measure does not include encumbrances.

Infrastructure Condition

Process – Preserve, resurface and rehabilitate roads with optimized application of cost-effective pavement treatments.

Measure	FY12 Actual	FY13 Actual	FY14 Actual	FY15 Actual	FY15 Goal	3-Year Goal
Percentage of pavement on state highway NHS, excluding Interstates, with High and Moderate Drivability Life	N/A	83%	78%	84%	80.0%	80.0%
Percentage of Interstate pavement statewide with High and Moderate Drivability Life	N/A	86%	89%	91%	80.0%	80.0%

CDOT in fiscal year 2015 achieved its goal of 80 percent High/Moderate Drivability Life for Interstate pavement and National Highway System pavement, excluding Interstates. Drivability Life is an indication of how long a stretch of highway will have acceptable driving conditions. The percentage of pavement in the High or Moderate category on the entire state highway system in 2015 (79 percent) was higher than previously forecast due to recent updates in the pavement management model. Specifically, CDOT has updated the evaluation scale used for pavement smoothness, which is one component of the Drivability Life metric used by the model to determine pavement condition. This update was made to better align the model with how smoothness is described in CDOT construction specifications and federal definitions. Updates to the pavement metric and model notwithstanding, pavement condition has been declining over the past several years.

Process - Maintain the state's transportation infrastructure. This includes processes such as plowing and removing snow; proactively controlling avalanches; and maintaining traffic signals, striping and guardrails

Measure	FY12 Actual	FY13 Actual	FY14 Actual	FY15 Actual	FY15 Goal	FY17 Goal
Overall Maintenance Levels-of-Service grade for state highway system	B-	B	B-	B-	B-	C (revised to reflect updated forecasts)
Level-of-Service grade for snow-and-ice control	B	B	B	B	B	B
Level-of-Service grade for traffic services	C+	B-	C+	C+	C	C- (revised from N/A)

In fiscal year 2015, CDOT met or exceeded its targets for the three maintenance metrics on the previous page. This included meeting the target of a "B-" grade for overall Maintenance Levels of Service (MLOS); meeting the "B" target for Snow and Ice Control; and exceeding the "C" target for Traffic Services. The Traffic Services Maintenance Program Area (MPA) includes striping, signals, signing, guardrail and lighting. With limited maintenance funds, CDOT continues to weigh the appropriate funding level for each Maintenance Program Area. The Department formed a Striping Task Force in fall 2014 to re-evaluate striping production and associated performance targets. The task force's focus is identifying creative and innovative improvements to the striping program.

Process – Regularly inspect bridges. Replace, repair, or conduct major rehabilitation to Structurally Deficient bridges.

Measure	FY12 Actual	FY13 Actual	FY14 Actual	FY15 Actual	FY15 Goal	FY17 Goal
Percentage of state highway bridge deck area that is Not Structurally Deficient	93%	94%	94%	94%	90%	90%
Percentage of National Highway System bridge deck area that is Not Structurally Deficient	94%	95%	95%	95%	90%	90%

CDOT in 2015 met its goals of ensuring that 90 percent or more of deck area on both the state highway system and the National Highway System is Not Structurally Deficient. Colorado's bridges are among the best in the nation, thanks in part to replacements funded by the Colorado Bridge Enterprise. Operating as a government-owned business within CDOT, the CBE was created by FASTER legislation to finance the repair and reconstruction of state-owned vehicle bridges.

System Performance

Process – Implement Intelligent Transportation Systems, performing effective maintenance and other strategies.

Measure	CY11 Actual	CY12 Actual	CY13 Actual	CY14 Actual	CY15 Actual	CY15 Goal	CY17 Goal
Planning Time Index value for Interstates	1.23	1.23	1.25	1.23	Annual Metric	1.25	1.25

CDOT met the Planning Time Index goal of 1.25 or less in 2014. This metric represents all Interstate segments statewide, including all directions. Data represent all times of day on Tuesdays, Wednesdays and Thursdays throughout the year. The index is just one metric that CDOT is exploring to measure reliability, and the Department will have greater ability in future years to provide context for performance results for such metrics. The Department in mid-2015 acquired more extensive data sets that were used as a basis for new reliability metrics in its fiscal year 2015-16 Performance Plan. The new metrics focus on segments of Interstates 70 and 25 during peak times.

Environmental Stewardship

Process – Obtain permits from the Colorado Department of Public Health and the Environment to discharge storm water from roadway projects. Mitigate project-area water discharge.

Measure	FY12 Actual	FY13 Actual	FY14 Actual	FY15 Actual	FY15 Goal	FY17 Goal
Number of Environmental Compliance Violations to CDOT from the Colorado Department of Public Health and the Environment	0	0	0	0	0	0

The Department in fiscal year 2015 met its goal of zero violations. This was accomplished through the efforts of environmental staff in the Regions and at CDOT's headquarters, which included working in partnership with the Colorado Department of Public Health and the Environment.

Reduced Project-Delivery Delays

Process – Manage the preconstruction phases (design, environmental, right-of-way, utilities) of projects effectively.

Measure	FY12 Actual	FY13 Actual	FY14 Actual	FY15 Actual	FY15 Goal	FY17 Goal
Percent of projects advertised before or within 30 days of ad date estimated on July 1	50.0%	70.0%	49.0%	N/A	N/A*	N/A*

*Goal had been 80% for FY15 and FY17.

CDOT is no longer tracking this metric, because the Department's focus shifted more from delivering a very discrete list of projects each year to ensuring the delivery of a multi-year program of projects. Managing a multi-year program allows more flexibility to adjust specific project schedules to meet program delivery goals. New metrics related to this approach are being refined and others remain in development.

Influence of Performance Plan on CDOT operations and updates to the 2015-16 plan

Metrics and historical results outlined in this document have influenced CDOT's operations and its 2015-16 Performance Plan in several ways. CDOT's Transportation Commission and the Department's asset managers review asset condition metrics, such as the Drivability Life of highway pavement, to help determine annual budgets for asset programs. Grades each year for Maintenance Levels of Service and maintenance program areas, such as Snow and Ice Control, help the Department calculate the budgets needed to achieve future performance levels.

Several changes in CDOT's 2016 Performance Plan are the result of lessons learned from the Department's 2014-15 plan, including modifications resulting from consultations with the Office of State Planning and Budgeting on last year's plan. The number of Strategic Policy Initiatives has been reduced to four this year, down from the six such initiatives and six Focus Areas in the Department's 2014-15 plan. Strategic Policy Initiatives focus on areas of critical importance and have specific, directional performance targets. Strategies related to the initiatives are more clearly labeled and discussed at length. The environment of each Strategic Policy Initiatives is described.

Another driver of change in the 2015-16 Performance Plan is a nascent effort within the Department to better identify and more frequently monitor operational metrics that most affect performance on the Department's outcomes. For example, the condition of pavement on the state highway system (an outcome) is clearly associated in the 2015-16 Performance Plan to an operational metric. This operational metric shows the percentage of Surface Treatment program projects advertised for the fiscal year that match recommendations made from CDOT's pavement management system. This measure helps ensure actual construction projects are matching the pavement models that are designed to help assist CDOT with achieving the desired pavement condition.

COLORADO
Department of Transportation