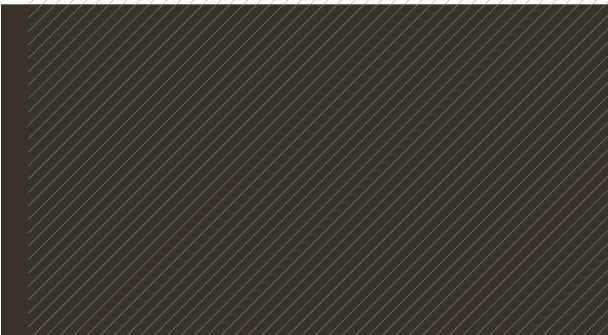
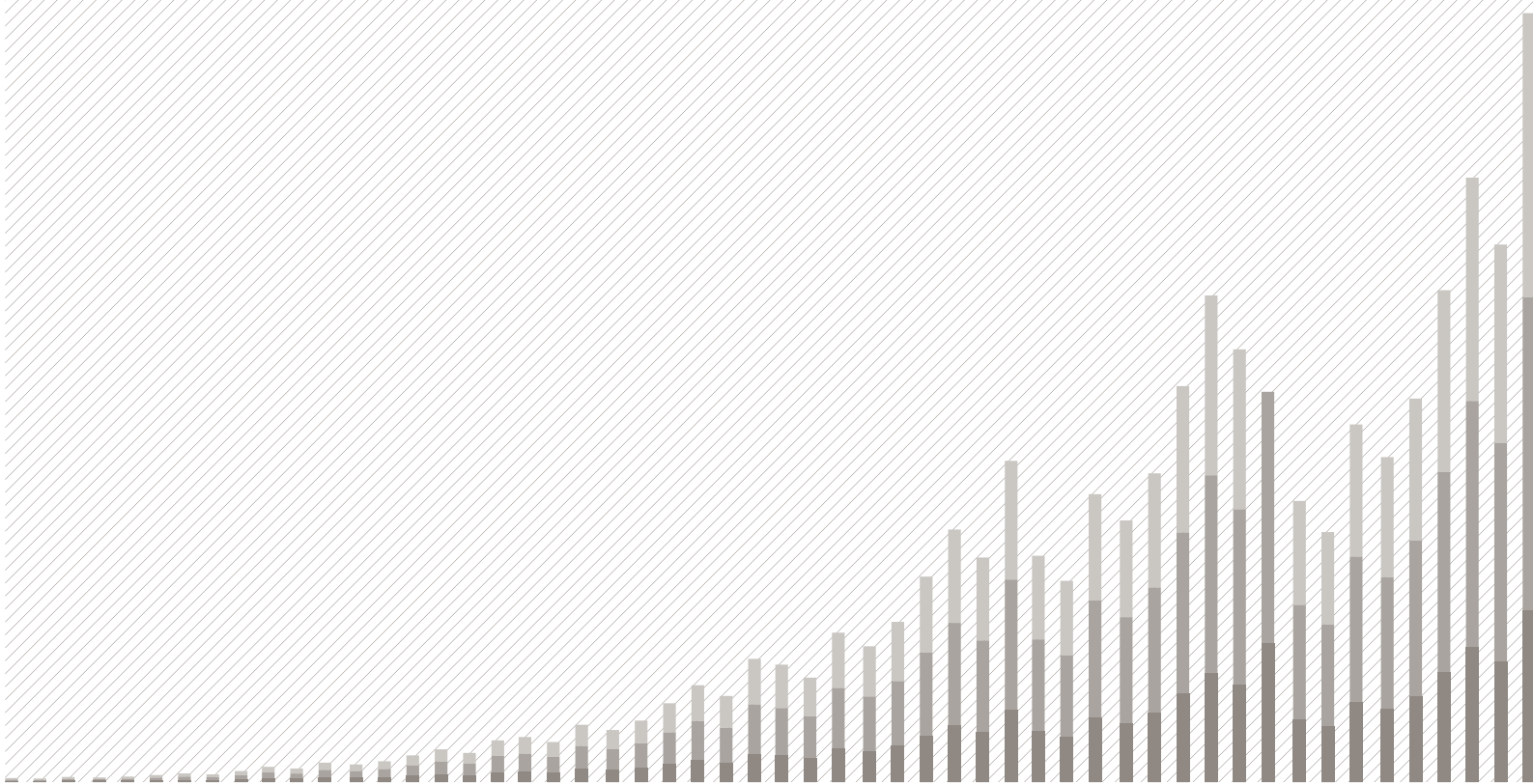


CDOT



**FISCAL YEAR**  
**2010**  
**ANNUAL PERFORMANCE REPORT**





# TABLE OF CONTENTS

## EXECUTIVE SUMMARY

1

## SECTION I: FUNDING

6

- How is CDOT Funded? 6
- How Does CDOT Invest its Revenue? 8

## SECTION 2: PERFORMANCE RESULTS OVERVIEW

10

- Why Does CDOT Report its Performance? 10
- Performance Summary 11

## SECTION 3: PERFORMANCE RESULTS DETAIL

12

- **Safety** 12
  - Driver Safety 12
  - Employee Safety 20
- **System Quality** 23
  - Bridge Condition 23
  - Pavement Condition 26
  - Maintenance 28
- **Mobility** 35
  - Intelligent Transportation Systems 36
  - Snow and Ice Removal 39
  - Transit Mobility 40
- **Program Delivery** 41
  - Project Delivery 41
  - Human Resources 46
  - Delivering Maintenance Services 49

## SECTION 4: FUTURE PERFORMANCE

51

- Acknowledgements 52

# EXECUTIVE SUMMARY

## COLORADO'S TRANSPORTATION SYSTEM

	ROADWAY CENTER LINE MILES	NUMBER OF BRIDGES
STATE	9,146	3,447
COUNTY	58,675	3,153
CITY	15,611	1,542
OTHER*	4,878	118
<b>TOTAL</b>	<b>88,310</b>	<b>8,260</b>

\*INCLUDES E-470 AND NORTHWEST PARKWAY

In 2010, Colorado celebrated 100 years of state-administered transportation. Over the past century, Coloradans and visitors have traversed an ever-evolving network of state highways and bridges. How roads and bridges are built and maintained has also changed immensely during that time, as have the demands of users. As examples, certain bridges can now be prefabricated off-site and then transported to the location of the old bridge in need of replacement. Technological advances have allowed Coloradans to receive real-time information about the condition of roadways via the COTRIP website. Cyclists and pedestrians play larger roles in planning and project decisions than ever before.

Today, the state transportation system is administered by the Colorado Department of Transportation (CDOT). CDOT's mission is to provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods, and information. Under the leadership of the governor-appointed Transportation Commission and CDOT's Executive Management Team, the department works to accomplish this mission in the most efficient manner possible. In recent years, achieving long-term performance goals has grown increasingly difficult due to rising demand for transportation services amid ever diminishing resources.

Detailing CDOT's annual performance has been the purpose of this annual performance report since the mid-1990s. Though fiscal year 2010 witnessed a decline in transportation revenues unlike any over the past decade and a half, CDOT has exceeded its annual objectives in a number of performance areas.

**THE ANNUAL PERFORMANCE REPORT ACCOUNTS FOR CDOT'S ABILITY TO MEET ITS ANNUAL OBJECTIVES, WHICH ARE SET BASED ON AVAILABLE REVENUE IN A GIVEN YEAR. THUS, ANNUAL OBJECTIVES OFTEN FALL SHORT OF CDOT'S ASPIRATIONAL GOALS FOR SYSTEM QUALITY AND PERFORMANCE.**

FUTURE

DETAIL

OVERVIEW

FUNDING

EXECUTIVE SUMMARY

## NUMBER OF FATALITIES ON COLORADO HIGHWAYS



Two prime examples of this success are CDOT's performance in the areas of safety and bridges.

Every traffic fatality is a tragedy. Colorado is proud to have reduced the number of lives lost on its roads from 743 in 2002 to 465 in 2009, a decrease of 37 percent. This drop in fatality rates can be attributed to a number of factors, including: roadway improvements; state and federal behavioral and vehicle-safety programs; heightened motor vehicle safety standards; commercial vehicle programs; and, in recent years, macroeconomic recession depressing travel demand.<sup>1</sup>

CDOT has also succeeded in raising the level of safety and quality of Colorado's bridges. For the past three years, CDOT has met or exceeded its annual objective for percent of bridge deck area in good or fair condition. Performance in Fiscal Year 2010 can be attributed in part to the passage of Senate Bill 09-108, the Funding Advancement for Surface Transportation and Economic Recovery (FASTER) Act, which created the Bridge Safety Surcharge, a dedicated funding source to rehabilitate or replace Colorado's bridges in poor condition, administered by a new entity called the Bridge Enterprise. In 2010, Bridge Safety Surcharges injected an additional \$44.1 million into CDOT's budget for poor bridges.

The effects of this incremental revenue underscore the impact funding has on performance. The dedicated funding for bridges will help CDOT work toward the established Transportation Commission goal for bridges of 95 percent good or fair deck area. But in many other program areas, lack of adequate funding prevents the department from achieving the Commission's aspirational goals.

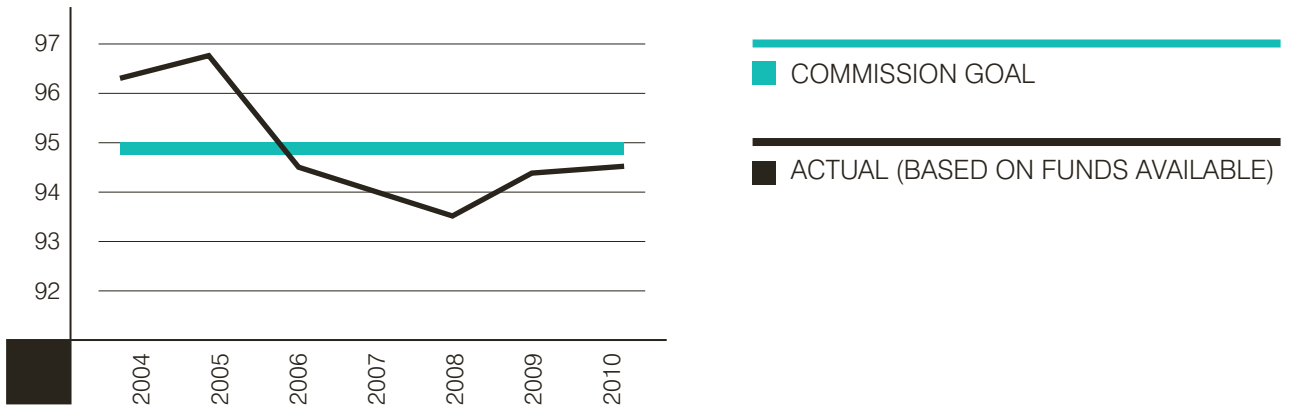
This budgetary shortfall is attributed to several causes: stagnant funding from the fuel tax, which has not been raised since 1993, despite increasing fuel efficiency across the automobile fleet; construction costs inflating at a faster pace than transportation funding; and macroeconomic and political factors putting heightened pressure on federal and state policymakers to decrease government spending.

<sup>1</sup>An Analysis of the Significant Decline in Motor Vehicle Traffic Fatalities in 2008, U.S. Department of Transportation, DOT HS 811 346, June 2010

The effects of inadequate funding are evident in the graphs below, which show the deterioration of the transportation system over time.

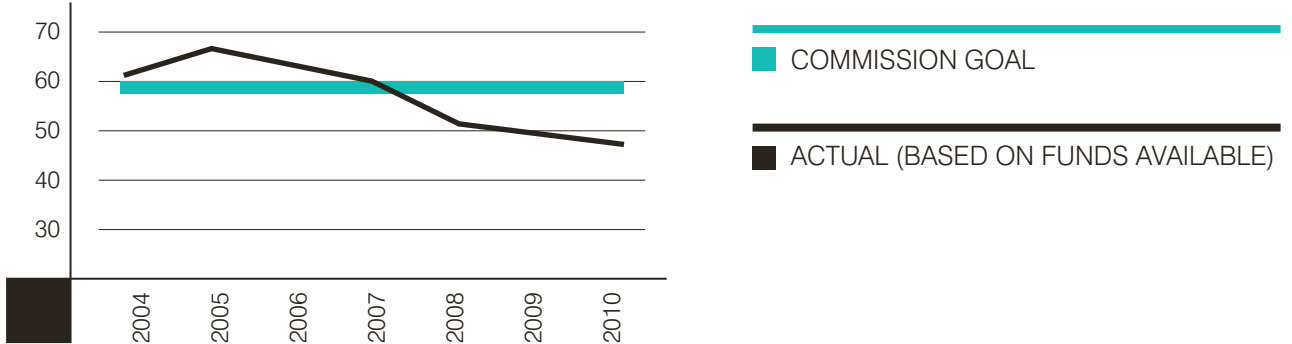
### PERCENT OF BRIDGE DECK AREA IN GOOD/FAIR CONDITION

FY 2004 - FY 2010



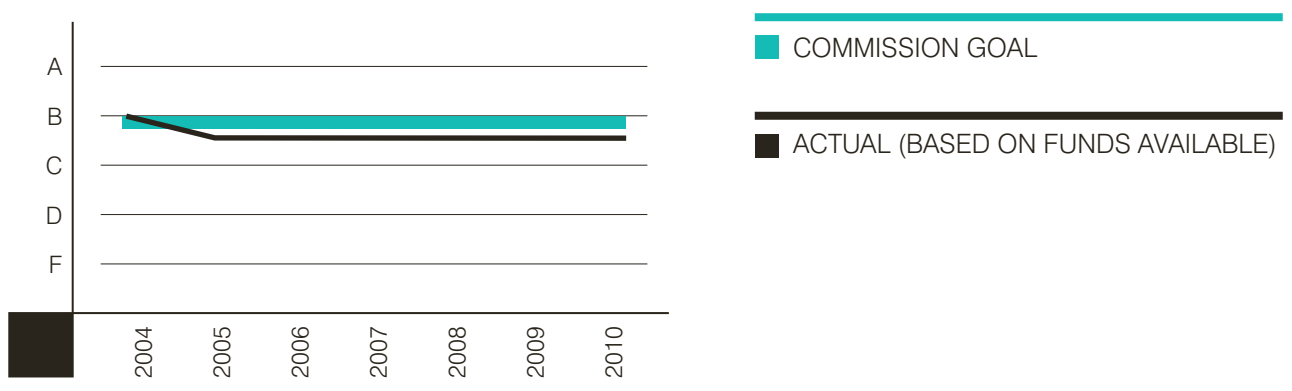
### PERCENT OF PAVEMENT IN GOOD/FAIR CONDITION

FY 2004 - FY 2010



### OVERALL MAINTENANCE LEVELS OF SERVICE

FY 2004 - FY 2010



Further, the uncertainty of federal funding has created additional challenges for CDOT. Federal transportation funding has traditionally been authorized in six-year terms by the U.S. Congress, allowing for medium and long-term transportation planning. However, Congress has not reauthorized funding for transportation since the last bill expired in 2009, instead passing temporary extensions of funding to allow for additional time to negotiate the terms of the next reauthorization bill. This somewhat restricts CDOT's ability to plan for future advances in the transportation system.

The Interstate 70 viaduct in Denver is a prime example of transportation infrastructure in need of improvement as part of a long-range plan. With a deck area of almost 570,000 square feet, the viaduct is the largest bridge in Colorado. When it was constructed in 1964, it cost \$12.5 million to build, and served an average of 31,000 vehicles a day. In 2009, it served approximately 137,000 vehicles a day. Today, it is among the 127 Colorado state bridges considered candidates for replacement; however, the amount of funding needed to replace all of those bridges exceeds the funding available to the Bridge Enterprise. CDOT is currently exploring financial alternatives that may be utilized to supplement FASTER dollars to design and reconstruct the I-70 viaduct.

The combination of these factors results in disheartening funding forecasts for the Colorado transportation system. CDOT predicts that under current budget projections, performance across the board will decrease dramatically. The graph on the next page shows the aggregate forecasted budget for CDOT's three largest programs—bridge, pavement, and maintenance levels of service—and compares the forecasted budget against the budget needed to maintain those programs at existing conditions and to maintain those programs at the Commission's stated goals.

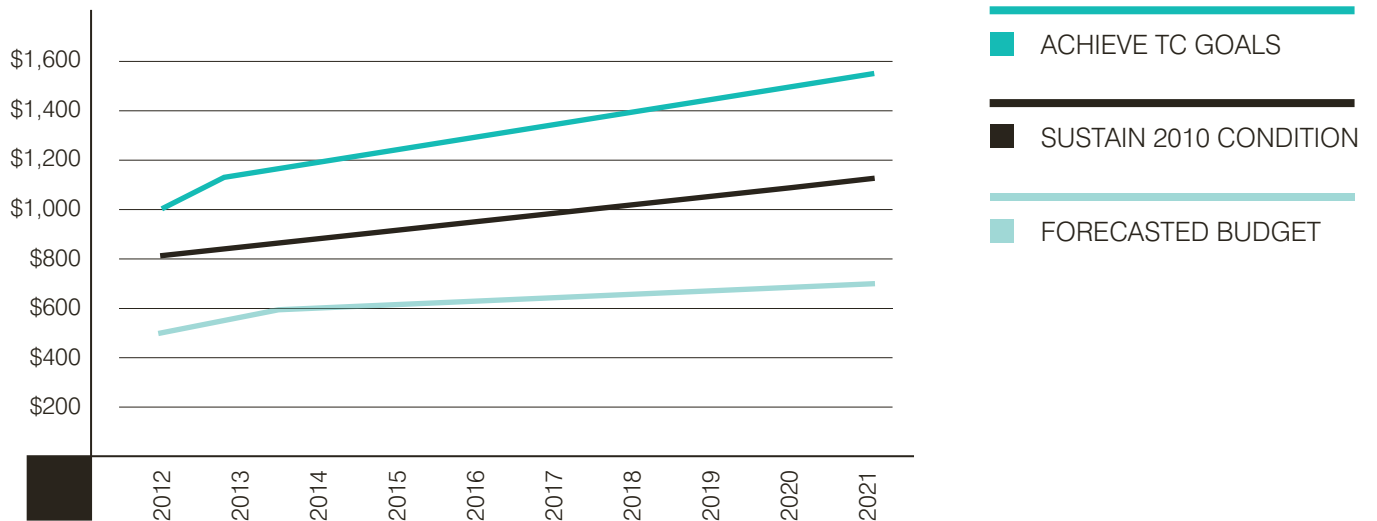


Interstate 25 in the Denver area.

**CDOT'S FORECASTED BUDGET FOR ITS THREE MAIN ASSETS FALLS SHORT OF THE BUDGET NEEDED TO ACHIEVE TRANSPORTATION COMMISSION GOALS BY \$483 MILLION IN 2012 AND \$757 MILLION IN 2021.**

**BUDGET FORECAST FALLS SHORT OF ASPIRATIONAL GOALS**

(FORECAST FOR PAVEMENT, BRIDGES AND MAINTENANCE IN MILLIONS)



The chart above shows that in 2012, the projected budget will fall short of the amount needed to sustain the 2010 condition of the main assets of the state highway system –the pavement, bridge and maintenance programs–by \$290 million. In 2021, this will increase to a \$422 million deficit. Likewise, the initial 2012 budget falls short of the amount needed to achieve the Commission’s aspirational goals by \$482 million. By 2021, this deficit will balloon to \$757 million<sup>2</sup>.

Although this presents a discouraging picture for the future, the state has undertaken several measures to combat the pace of decline. For example, the Bridge Enterprise created by FASTER has issued bonds against future revenue streams, increasing bridge replacement project capacity in the short-term. Also as a result of FASTER legislation, CDOT created an Efficiency and Accountability Committee in the fall of 2009. The mission of this committee is to maximize CDOT’s efficiency to allow for increased investment in the transportation system in the short-, medium- and long-terms.

These efforts demonstrate that, in this time of economic uncertainty, CDOT is exploring new and innovative means to continue to realize its vision of enhancing the quality of life and the environment of the citizens of Colorado by creating an integrated transportation system that focuses on moving people and goods by offering convenient linkages among modal choices.

<sup>2</sup>2011 Transportation Deficit Report



## HOW IS CDOT FUNDED?

The large majority of CDOT revenue has historically been derived from fuel taxes at both the federal and state levels. Because fuel taxes are levied as cents per gallon rather than a percentage of every gas purchase, the revenue generated depends on the number of gallons sold, not the sales price of the fuel. Accordingly, when the retail price per gallon of gas approached \$4.00 in June of 2008, resulting in reduced gas consumption, the same \$0.40 per gallon in tax was being collected as when the price was \$2.00 per gallon. In December 2010, the National Commission on Fiscal Responsibility and Reform released a report calling for a \$0.15 increase in the federal fuel tax. Were this or any other increase instituted, it would be the first rise in the federal fuel tax since 1993.

The stagnant funding from motor fuel taxes is intensified by the increasing fuel efficiency of cars and trucks, which has contributed to a decline in gas tax revenue. Average vehicle mileage in the United States in 1991 was 16.9 per gallon; in 2008, it was 17.4 miles per gallon according to the U.S. Bureau of Transportation Statistics.<sup>3</sup> Consequently, fuel consumption and fuel tax revenue per mile have dropped almost three percent, resulting in fewer funds to operate and maintain the state's transportation system while use of the system continues to increase. According to the Federal Highway Administration, the average number of vehicle miles traveled in Colorado rose by 72.5 percent between 1991 and 2005, from 27.7 billion to 47.9 billion.<sup>4</sup> A solution is needed to balance the increasing demands placed on

the system with a comparable level of revenue. Colorado took the first step towards addressing this problem with the passage of Senate Bill 09-108 (FASTER). This legislation presented CDOT with a new source of revenue beginning in 2010. Through the institution of a modest increase in vehicle registration fees and additional surcharges, FASTER provided \$142.4 million to CDOT in 2010, in the form of dedicated funding sources for bridges, safety programs and transit, and rail services. These funds have been vital in allowing CDOT to maintain or improve its performance in these areas.

Though FASTER provided dedicated funding to certain programs, Senate Bill 09-228 discontinued CDOT's eligibility for state general fund transfers until certain macroeconomic indicators in Colorado reach specific thresholds. The department does not anticipate it will receive general fund transfers until at least 2013. Nevertheless, FASTER has afforded CDOT the ability to better plan for future revenues dedicated to certain programs. In the case of the Bridge Enterprise created in FASTER legislation, this dedicated funding has also allowed the department to issue bonds during a period of historically low interest rates and construction costs, accelerating the repair of many of the state's poor bridges.

---

### FUEL TAX REVENUE DECLINED BY THREE PERCENT BETWEEN 1991 AND 2008.

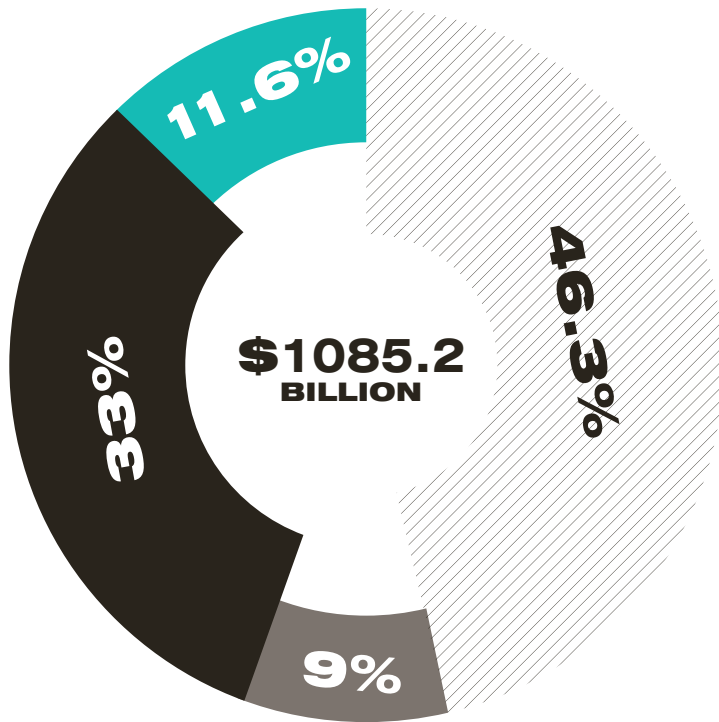
---

<sup>3</sup>[http://www.bts.gov/publications/national\\_transportation\\_statistics/html/table\\_04\\_09.html](http://www.bts.gov/publications/national_transportation_statistics/html/table_04_09.html)

<sup>4</sup><http://www.fhwa.dot.gov/policy/ohpi/hss/hsspubs.cfm>

## CDOT FUNDING SOURCES

FY 2010 (IN MILLIONS)



Federal Highway Administration and Highway Safety (federal gas tax)  
**\$568.9 MILLION**

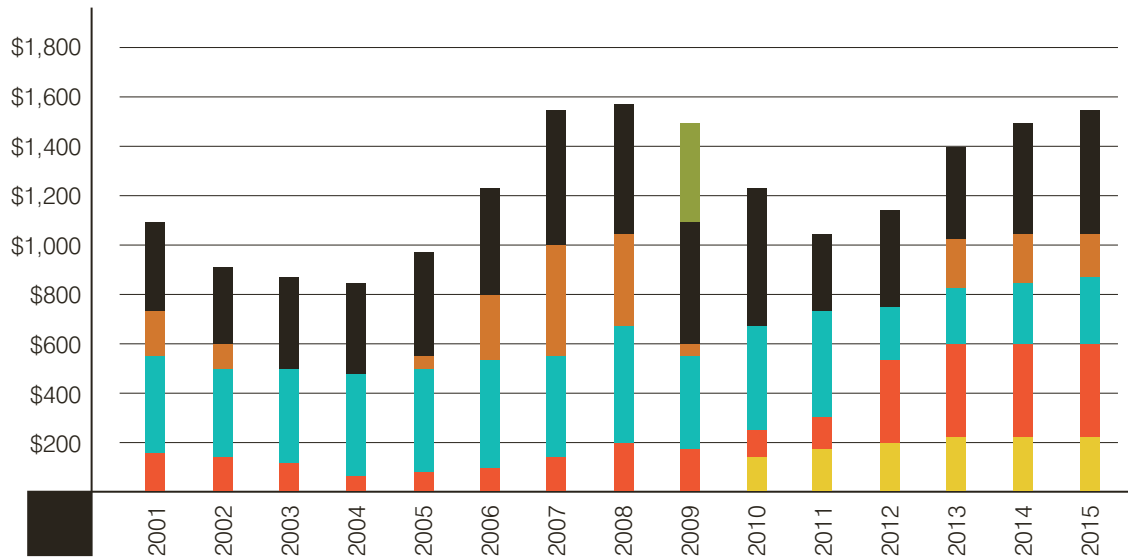
State Highway Users Tax Fund (Colorado gas tax)  
**\$405.7 MILLION**

FASTER (SB 09-108)  
**\$142.4 MILLION**

Other Federal, State and Local  
**\$110.6 MILLION**

## CDOT FUNDING SOURCES BY FISCAL YEAR

ACTUAL FY 2001 - FY 2010 AND PROJECTED FY 2011 - 2015 (IN MILLIONS)



SENATE BILL 09-108 ("FASTER") REVENUE

STATE GENERAL FUND REVENUE (SB97-01, HB02-1010, SB09-228)

OTHER FEDERAL, STATE AND LOCAL

FEDERAL HIGHWAY ADMINISTRATION AND HIGHWAY SAFETY (FEDERAL GAS TAX)

STATE HIGHWAY USERS TAX FUND (STATE GAS TAX)

AMERICAN RECOVERY AND REINVESTMENT ACT (ARRA)

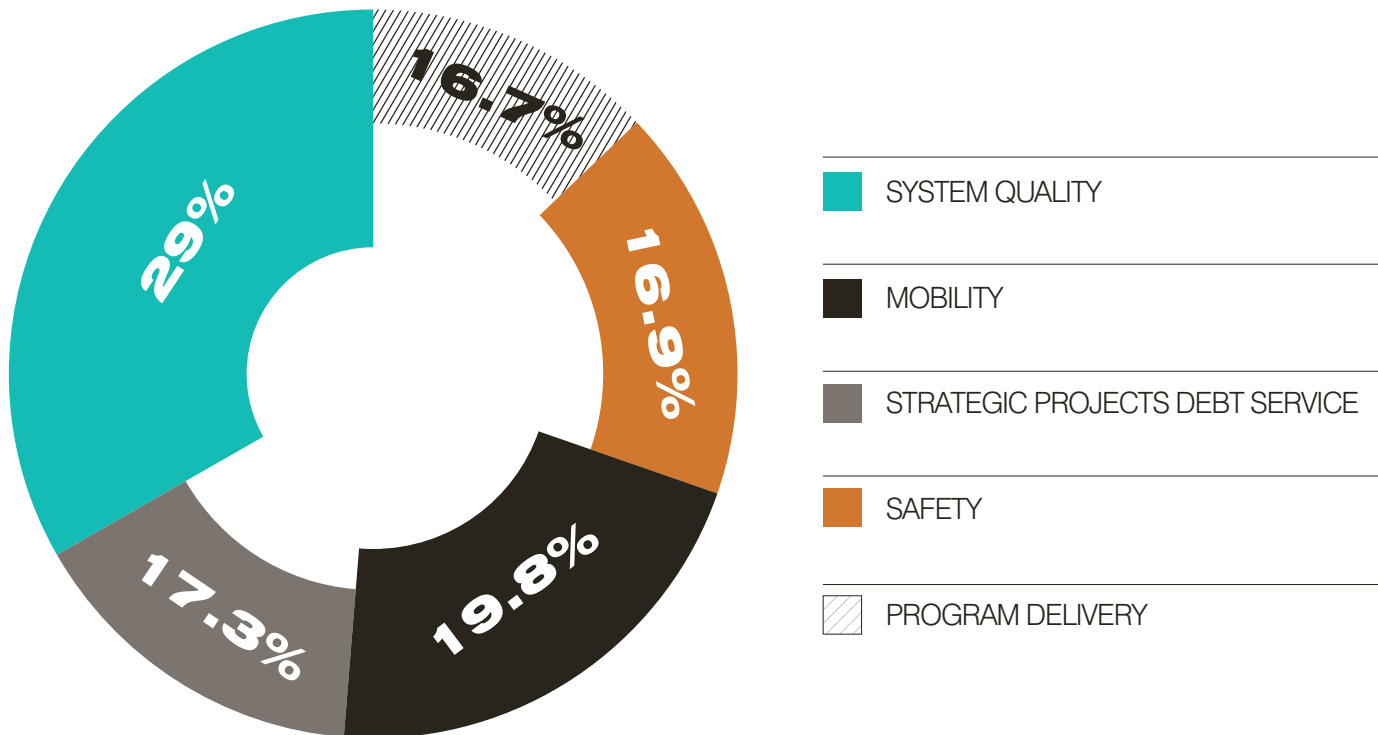
## HOW DOES CDOT INVEST ITS REVENUE?

CDOT allocates its revenues to four major investment categories—safety, system quality, mobility, and program delivery—that correspond to goals and objectives set by the Transportation Commission. To provide a comprehensive picture of CDOT’s revenue allocation, a fifth investment category represents the repayment of bonds issued for 28 strategic projects identified in 1996 as high priority projects of statewide significance. Debt service on the bonds consumes \$167 million of CDOT annual revenue until 2017. The Strategic Projects program is discussed in more detail later in this report.

As mentioned previously, FASTER Safety and Bridge funds are dedicated to specific programs. Additionally, FASTER legislation allocates funds to transit projects. Therefore, the safety, system quality, and mobility investment categories each include FASTER funds in their allocations, as noted below.

### CDOT BUDGETED INVESTMENTS BY CATEGORY

FY 2010



**SAFETY** – *services, programs, and projects that reduce fatalities, injuries, and property damage for all users of the system.*

The safety investment category focuses on resources in two key program areas: roadway safety and driver behavior. Roadway safety performance is measured by total crash rates, fatal crash rates and injury crash rates. Driver behavior performance is measured by tracking seatbelt usage rates, and alcohol related fatal crashes. The performance in these areas is impacted not only by CDOT investments in safety design, engineering, and programs, but also by many external factors such as auto manufacturer technology, law enforcement, and motorist demographics. Forty-two percent of the safety budget comes from FASTER funds.

**SYSTEM QUALITY** – *activities, programs, and projects that preserve the function and aesthetics of the existing transportation infrastructure.*

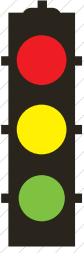
Investments in this category impact the surface quality and remaining service life of roadways and the structural condition of bridges. The primary system quality program areas are pavement, bridge, roadside facilities, and roadside appearance. The percentage of pavement and bridge deck area in good or fair condition is the measure used to assess the condition of pavement and bridges statewide. A report card style letter grade is used to assess performance for roadside facilities and roadside appearance, along with other maintenance performance areas. Fifteen percent of the system quality budget comes from FASTER funds.

**MOBILITY** – *services, projects, and programs that provide for the movement of people, goods, and information.*

This category includes investments made for accessibility to the transportation system, transportation options, and snow and ice control. Minutes of delay per traveler in congested state highway segments and a letter grade for snow and ice control are the key measures reported for mobility performance. An investment in mobility does not necessarily translate to an expansion of the state's highway system. It may represent an investment in alternative modes, such as transit, or improved efficiency of the existing system, such as Intelligent Transportation Systems. Eight percent of the mobility budget comes from FASTER funds.

**PROGRAM DELIVERY** – *efforts to ensure the efficient and successful delivery of CDOT's programs and services.*

Several indicators that capture the degree to which CDOT is successfully executing programs, such as the percent of design projects meeting established schedules and the percent of annual employee turnover, measure performance in program delivery.



## TRAFFIC LIGHT INDICATOR

- FAILURE to achieve objective
- PROGRESS made towards achieving objective
- ACHIEVED objective

## WHY DOES CDOT REPORT ITS PERFORMANCE?

CDOT stakeholders, such as highway users, the Colorado legislature, the Federal Highway Administration, CDOT's planning partners and its own decision makers, need to know how Colorado's transportation organization is performing. This annual performance report communicates the results of CDOT's efforts to deliver on its mission with the resources it is provided, allowing stakeholders to assess the effectiveness and efficiency of CDOT programs and initiatives. As CDOT continues to encounter reduced revenues along with increased travel demands, the current state of the system reflects years of underinvestment.

House Bill 10-1119, the State Measurement for Accountable, Responsive and Transparent (SMART) Government Act, declares that measures for evaluating performance-based goals should be integrated into the state planning and budgeting process. From 1995 through 2010, CDOT has published the annual performance report through an internal initiative. Starting with the 2011 report, CDOT performance reporting efforts may change as a result of the passage of this act. The Office of State Planning and Budgeting (OSPB) will be required each December 1 to publish an annual performance report of executive branch departments. CDOT will therefore work with OSPB to comply with this new legislation.

Many of the objectives within this report are established annually as the Transportation Commission sets program funding levels for the year ahead based on annual revenue. Meeting annual objectives, therefore, does not necessarily mean that a particular program is performing at the Commission's desired level. Rather it implies that given the available funding, the program is meeting or exceeding annual targets. Where the Commission has set an aspirational goal for a program, how performance differs from that goal and from the annual objective is noted.

This report communicates performance using traffic light signals. A green light indicates an objective was accomplished. A yellow light indicates progress was made but ultimate performance fell short. A red light indicates the objective was not achieved. As in years past, this report demonstrates that CDOT has done remarkably well in achieving its annual objectives given its constrained funding. In fact, this report contains only two red lights among 25 measures. But this does not indicate satisfaction with the performance of the state's transportation system. Years of prolonged underfunding have left many long-term goals of the Colorado Transportation Commission unattainable. Therefore, while annual performance objectives may have been achieved, CDOT has been unable to support the transportation system at the level that Colorado's travelers and taxpayers expect.

## 2010 PERFORMANCE SUMMARY

The Transportation Commission established aspirational goals for certain measures, as displayed in the table below. Due to budget constraints, actual performance falls below most goals.

	Aspirational Goal	2010 Actual Performance	R Y G
Fatalities per 100 Million Vehicle Miles Traveled	1.00	1.01	●
Percent Bridge Deck Area in Good or Fair Condition	95	94.5	●
Percent Pavement in Good or Fair Condition	60	48	●
Overall Maintenance Levels of Service	B	B-	●
Minutes of Delay per Traveler in Congested State Highway Segments	22	17	●
Snow and Ice Control	A	C+	●

Annual objectives are set based on available revenue in the coming fiscal year. The table below summarizes CDOT's actual performance in relation to its 2010 objectives.

	2010 Objective with Available Revenue	2010 Actual Performance	R Y G
<b>SAFETY</b>			
Total Crashes per 100 Million Vehicle Miles Traveled	283.7	219.7	●
Fatal Crashes per 100 Million Vehicle Miles Traveled	1.00	0.94	●
Serious Injury Crashes per 100 Million Vehicle Miles Traveled	---	23.4	●
Percent of Drivers and Occupants Using Seatbelts	85.0	82.6	●
Alcohol-Related Fatal Crashes as Percent of All Fatal Crashes	38.0	41.7	●
Striping, Signs, Signals and Guardrail Maintenance	C	B-	●
Number of CDOT Vehicle Accidents	297	222	●
Number of Workers' Compensation Claims	333	363	●
Dollar Amount of Workers' Compensation Claims (in millions)	\$2.4	\$2.1	●
<b>SYSTEM QUALITY</b>			
Percent Bridge Deck Area in Good or Fair Condition	94.4	94.5	●
Percent Pavement in Good or Fair Condition	46	48	●
Overall Maintenance Levels of Service	C+	B-	●
Roadway Surface Maintenance	C	B+	●
Structure Maintenance	C	B-	●
Roadside Facilities Maintenance	C	B+	●
Roadside Landscape Maintenance	C	B	●
Tunnel Maintenance	C	C+	●
<b>MOBILITY</b>			
Minutes of Delay per Traveler in Congested State Highway Segments	18.4	17	●
Snow and Ice Control	B	C+	●
On-time Performance for Buses on U.S. 36 (as percent)	---	99.8	●
<b>PROGRAM DELIVERY</b>			
Percent of Design Projects Meeting Established Schedule	>65.9	67.7	●
Percent of Annual Employee Turnover	8.0 - 10.0	7.2	●
Percent of Disadvantaged Business Enterprise (DBE) Participation	13.3	22.8	●
Equipment, Buildings and Grounds Maintenance	C	C+	●
Planning and Training Maintenance Workers	C	C	●



DRIVER SAFETY

OVERVIEW

A transportation system that is safe for drivers, cyclists, pedestrians, CDOT employees, and contractors is a cornerstone of a successful transportation system. This section reports on driver and CDOT employee safety.

Since a recent peak of 743 motor vehicle fatalities in 2002, Colorado has experienced a steady decline to 465. This 37 percent drop in seven years coincides with a four percent increase in vehicle miles traveled between 2002 and 2009. Colorado's reduction in motor vehicle fatalities over the past decade has been among the best in the nation and stands as one of the department's proudest accomplishments.

CDOT's efforts to save lives fall under the stewardship of the Office of Transportation Safety, which manages the department's behavioral safety programs, such as those targeting distracted driving or seat belt use, and the Office of Traffic Engineering, which uses diagnostic tools and design to implement safety enhancement projects.

The passage of traffic safety legislation has also played a role in reducing fatalities. For example, Colorado's Graduated Driver Licensing (GDL) laws, which set limits and requirements on new teen drivers, are credited with helping to halve the number of young people age 15 to 20 killed in crashes each year.

Safety experts are exploring ways that current laws can be strengthened to save additional lives, including increasing the required age for booster seats and expanding GDL laws. Certain safety-enhancing legislation, such as mandatory motorcycle helmet and primary seat belt laws, have thus far proven unpopular in Colorado. Currently, adult drivers can be ticketed for violating the seat belt law only if they are first stopped for another traffic violation.

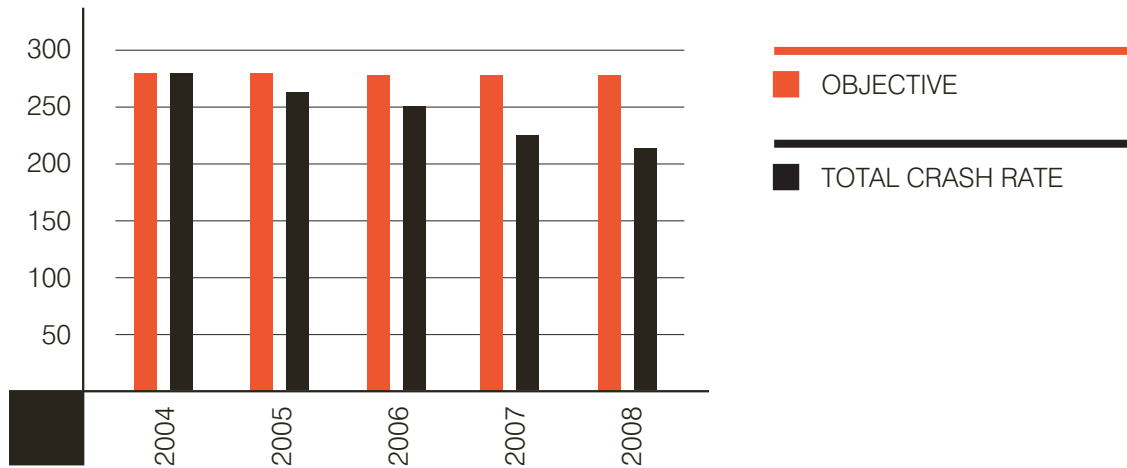
As part of its effort to improve roadways, CDOT uses a diagnostic approach to detecting and solving safety issues throughout the transportation system. CDOT examines traffic data to identify roadway sections or intersections where accidents occur at a higher rate and designs case-specific solutions to improve conditions and bring accident levels down.

An example is the section of I-225 between South Parker Road and East Mississippi Avenue in Aurora. Between 2004 and 2009, four fatal accidents occurred when a driver crossed the median separating the north and southbound lanes on the highway. In November 2009, CDOT installed median cable rail along this corridor for the purpose of preventing vehicles from crossing the median and colliding with oncoming traffic. CDOT anticipates that the number of fatal and injury-causing collisions will be minimized as a result of this safety improvement, as it will dramatically lessen the likelihood of head-on collisions and opposite-direction sideswipes.

The effectiveness of CDOT's ability to assess and mitigate safety risks on Colorado's highways was greatly improved a few years ago when CDOT engineers developed the Levels of Safety Service (LOSS) system for diagnosing safety problems on a given section of roadway. LOSS uses statewide accident data to compare similar roadway segments and identify segments that deviate from the norm. This enables CDOT to focus its resources on the roadway segments with the most severe and frequent safety problems.

## TOTAL CRASH RATE

FY 2004 - FY 2008



### PRIMARY MEASURE

Total Crash Rate (Number of Crashes per 100 Million VMT)  
 FY 2010 Roadway Safety Budget: \$142.9M  
 Annual Objective: 283.7  
 Actual: 219.7 (2008)



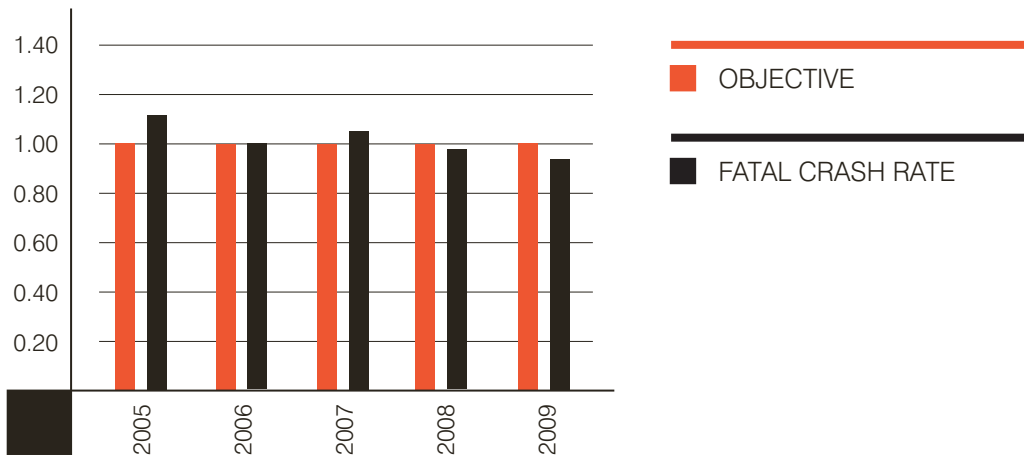
With advances in cellular phone and in-vehicle entertainment technology, today's drivers face a number of distractions they did not face 20, or even 10, years ago. As the number of demands for drivers' attention multiplies, the efforts of transportation agencies and car manufacturers to reduce safety risks grow in importance. CDOT's work to improve roadways, quickly clear roadside obstacles, educate highway users, and train law enforcement have contributed to the continued downward trend in total number of crashes despite the rise in distracted driving.

CDOT anticipates that state highway data from 2006, 2007, and part of 2008 will be cleansed and processed, resulting in updated statistics available for use in mid-FY 2011. The data will be quality-checked and geo-coded so that it can be accurately mapped.



## FATAL CRASH RATE

FY 2005 - FY 2009



### SUPPORTING MEASURE

Fatal Crash Rate (Number of Fatal Crashes per 100 Million VMT)

FY 2010 Roadway Safety Budget: \$142.9M

Annual Objective: 1.00

Actual: 0.94 (2009)

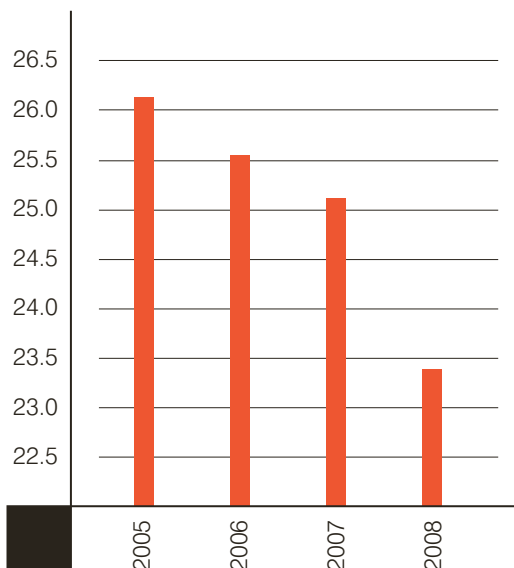
In 2007, motor vehicle fatalities accounted for just two percent of all deaths in Colorado,<sup>5</sup> but the emotional costs were immeasurable and the approximate economic costs to Colorado taxpayers were almost \$600 million.<sup>6</sup> CDOT views the prevention of fatal accidents as one of its central purposes. FASTER funds have increased CDOT's capacity to use its diagnostic tools to identify and implement solutions in roadway segments with a particularly high number of fatal crashes.

<sup>5</sup><http://www.cdphe.state.co.us/hs/mchdata/vs2007/Colorado.pdf>

<sup>6</sup><http://www-nrd.nhtsa.dot.gov/Pubs/809446.pdf>

## STATEWIDE SERIOUS INJURY CRASH RATE

FY 2005 - FY 2008

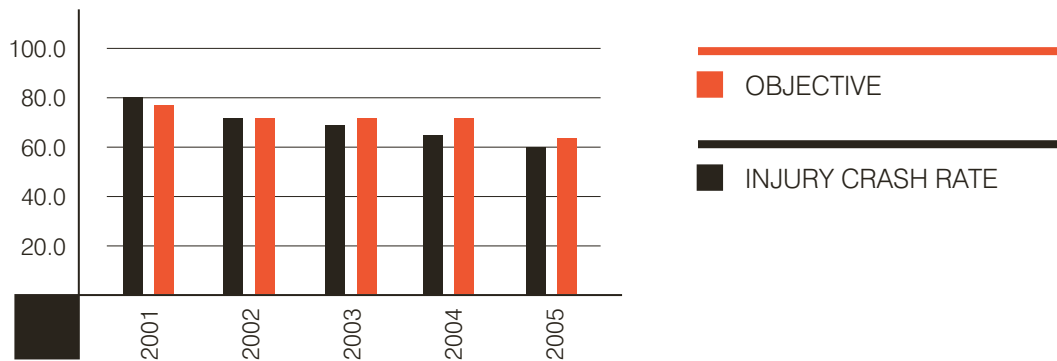


### SUPPORTING MEASURE

Number of Serious Injury Crashes per 100 million VMT  
 FY 2010 Roadway Safety Budget: \$142.9M  
 Actual: 23.4 (2008)

## STATEWIDE INJURY CRASH RATE

FY 2001 - FY 2005 (AS REPORTED IN PRIOR YEARS)



Over time, the most looming transportation safety challenges have been alcohol-related accidents, the lack of use of occupant protection devices such as seat belts, young driver behaviors, and aggressive driving. Through a combination of CDOT's efforts and traffic safety legislation, Colorado has been successful in addressing these challenges. Nowhere are the fruits of these efforts more evident than in the case of the serious injury crash rate, which decreased by almost 11 percent in four years.

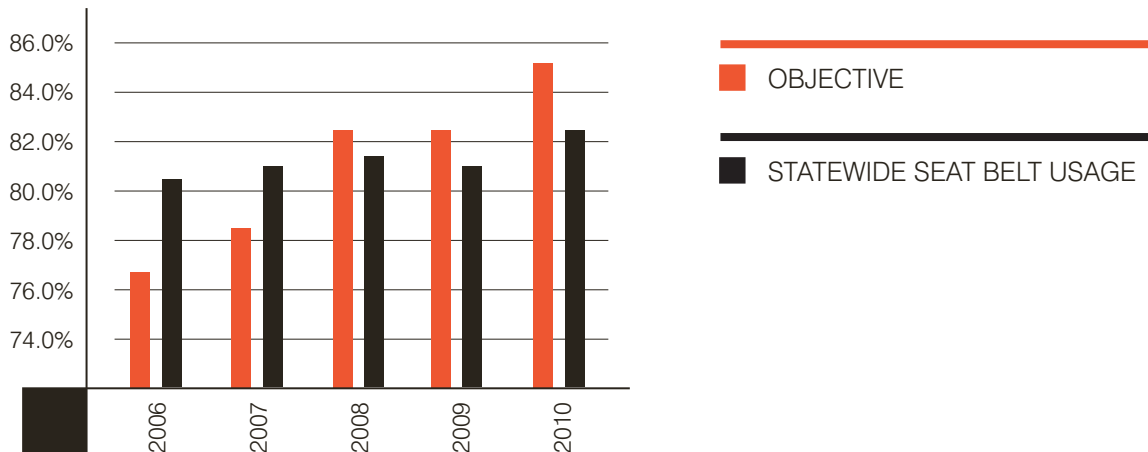
Due to CDOT efforts to comply with NHTSA reporting standards, the department has altered

the methodology it uses to report injury crash data, so that only crashes resulting in serious injury are reported above. Consequently, previously-set annual objectives no longer apply to this measure, and have been omitted. Prior to this change in methodology, this report has presented the measure of injury crash rate, which included a broader range of accident outcomes, from complaint of injury to fatality. The injury crash rate for FY 2001 through FY 2005, as presented in the FY 2009 Annual Performance Report, is included as a reference.



## STATEWIDE SEAT BELT USAGE

FY 2006 - FY 2010



### SUPPORTING MEASURE

Percent of Drivers and Occupants Using Seatbelts  
 FY 2010 Driver Safety Budget: \$6.9M  
 Annual Objective: 85.0%  
 Actual: 82.6%

Seat belt use decreases the likelihood that a person will be thrown from a vehicle, which is almost always deadly. The percent of Coloradans using seat belts rose between 2009 and 2010, from 81.1 percent to 82.6 percent, though this still falls short of the annual objective of 85 percent.

To save more lives on Colorado roadways, CDOT partners with law enforcement agencies, community coalitions and other safety advocates to educate the public about Colorado’s seat belt laws and the importance of wearing seat belts every trip, every time.



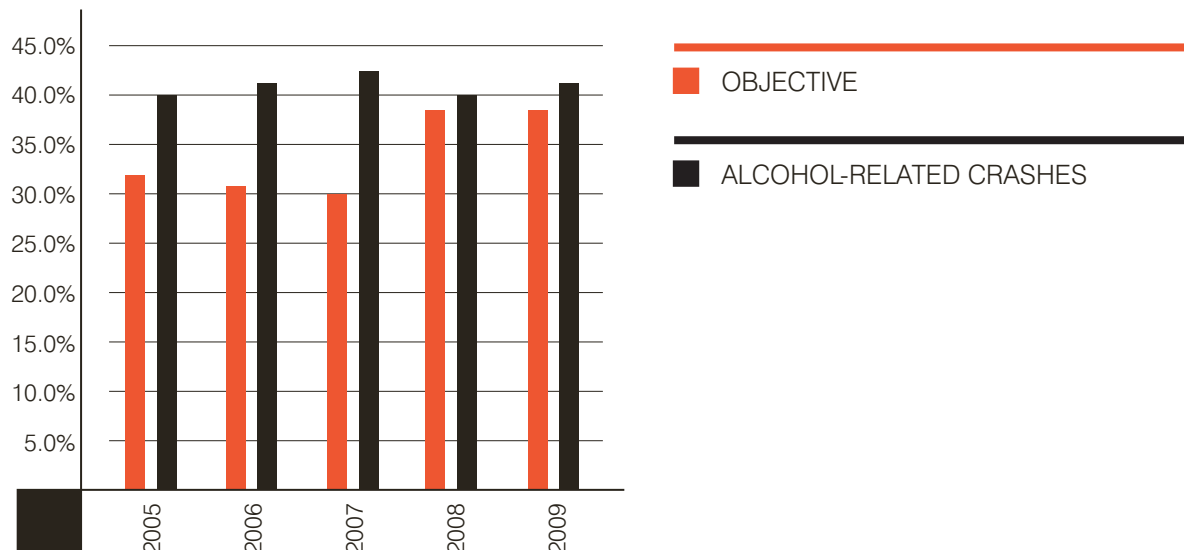
*Click It or Ticket* is a nationwide campaign from the National Highway Traffic Safety Administration (NHTSA). With federal funding from NHTSA, CDOT and local law enforcement agencies conduct periodic high-visibility seat belt enforcement waves throughout the year in an effort to save lives and increase belt use. Since *Click It or Ticket* started in Colorado in 2002, seat belt use in the state has increased from 72 percent to 82.6 percent. As a result, roughly 270,000 more people buckle up across the state every day.

Seat belt use continues to be higher in states where the vehicle operator can be stopped by law enforcement if any of the vehicle’s occupants are not using seat belts (“primary law” states) than in those with weaker enforcement laws (“secondary law” states). In 2008, the percent of drivers using seatbelts was 88 percent in primary law states and 75 percent in secondary law states. Colorado is a secondary law state. CDOT expects belt use to increase at least five percent if the state adopts a primary law.

**COLORADO IS ONE OF 19 STATES WITHOUT A PRIMARY SEAT BELT LAW.**

## PERCENT OF ALCOHOL-RELATED FATAL CRASHES

FY 2005 - FY 2009



### SUPPORTING MEASURE

Statewide Alcohol-Related Fatal Crashes (as a percent of all fatal crashes)

FY 2010 Driver Behavior Safety Budget: \$6.9M

Annual Objective: 38.0%

Actual: 41.7% (2009)

According to Mothers Against Drunk Driving (MADD), up to two million drivers with three or more convictions for drunk driving use America's roads each day, often illegally. Across the country in 2009, a person was killed in an alcohol-related crash every 45 minutes. In Colorado, more than 30,000 people are arrested for driving under the influence (DUI) each year. Through a combination of public awareness campaigns, collaborations with groups such as MADD, and high visibility law enforcement, Colorado is working to address the risks associated with drunk driving. CDOT provides grants to law enforcement agencies statewide to conduct overtime DUI enforcement using state and federal funding.

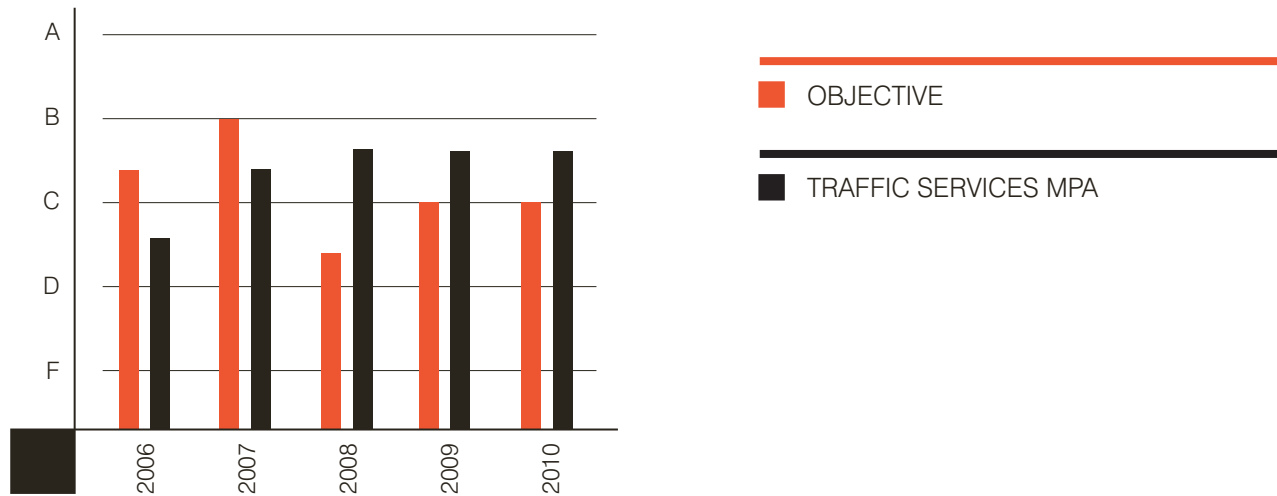
These funds are also used for media relations, advertising, and community outreach, as well as other impaired driving programs, including DUI courts, a traffic safety resource prosecutor and law enforcement coordinator, as well as training for law enforcement in the areas of drug evaluation and standard field sobriety testing.

The "100 Days of Heat" campaign, law enforcement's statewide summer crackdown on drunk driving, has contributed to a decline in deaths by taking impaired drivers off the roadways and serving as a deterrent to others who are tempted to drink and drive. Preliminary data shows 47 people were killed during the summer of 2010 in alcohol-related crashes, compared to 55 last summer and 58 the summer before, a drop of almost 19 percent from 2008 to 2010. DUI arrests made during special summer enforcement periods are also down 12 percent from 3,531 in 2009 to 3,111 DUI arrests in 2010.



# STRIPING, SIGNS, SIGNALS AND GUARDRAILS

FY 2006 - FY 2010



## SUPPORTING MEASURE

Traffic Services MPA  
 Annual Objective: C  
 Actual: B-  
 FY 2010 Budget: \$57.8M  
 Spent: \$56.0M

The traffic services maintenance performance area includes ensuring that lane stripes are clearly discernible, highway signs are visible and legible, signals are functioning properly, and guardrails are intact. These activities are critical to maintaining an optimally safe transportation system, and can require increased attention due to Colorado’s extreme winter temperatures and snowfalls. Other activities in this area include maintaining Intelligent Transportation Systems and Courtesy Patrols, which are discussed more extensively in the mobility section of this report. After years of failing to meet its annual objective through 2007, CDOT became more conservative in its objective setting for this performance area. In recent years, CDOT has consistently exceeded its objective, which may lead the department to reassess its objectives going forward.



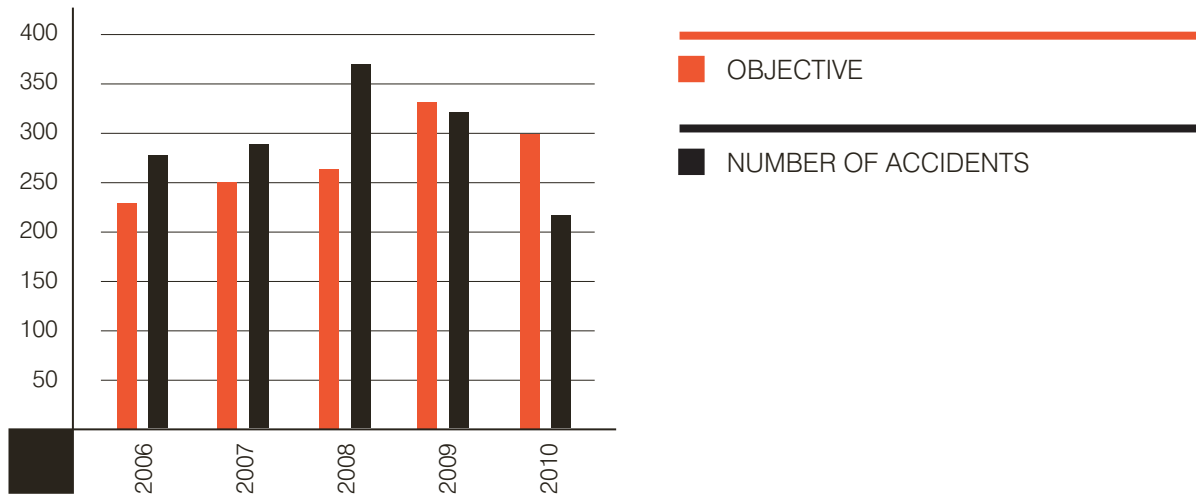
# EMPLOYEE SAFETY

CDOT values the safety of its employees as much as it values the safety of the traveling public. In 2010, some of the accomplishments CDOT saw in employee safety were:

- A continuing downward trend in the Incident Rate for on the job injuries;
- A dramatic decrease in vehicle accidents from 2009; and,
- An examination of the root causes of workplace accidents through Accident Review Boards and supervisor investigations, leading to strengthened risk mitigation tactics against potential future accidents.

## NUMBER OF CDOT VEHICLE ACCIDENTS

FY 2006 - FY 2010



### SUPPORTING MEASURE

Number of CDOT Vehicle Accidents

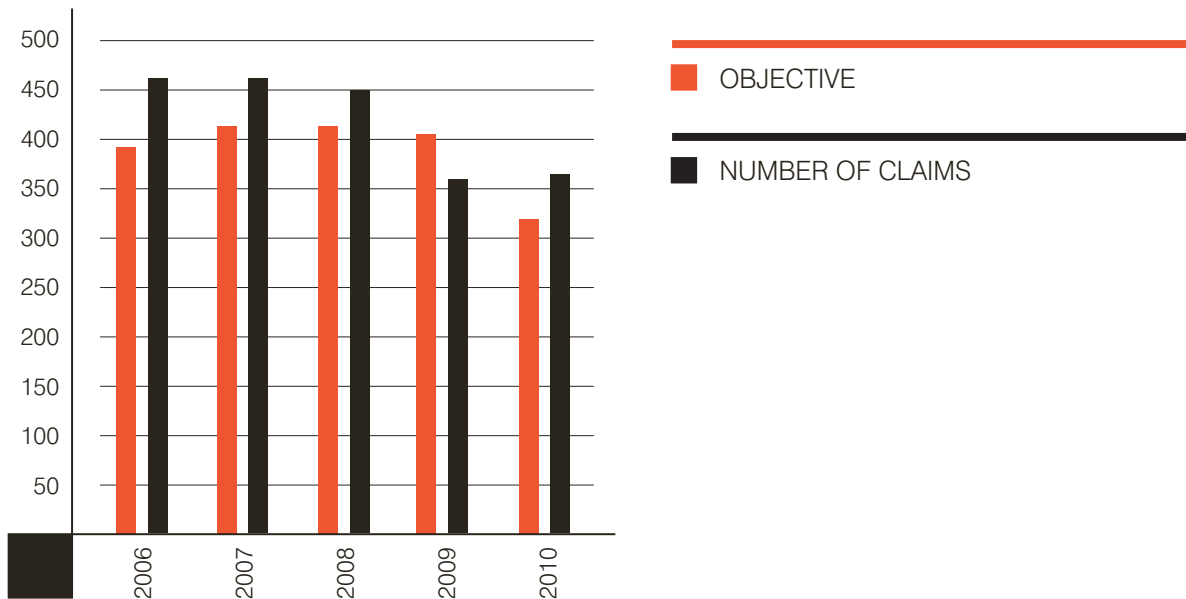
Annual Objective: 297 (10% reduction from previous year's results)

Actual: 222

Each year, CDOT aims to reduce the number of accidents in department vehicles by 10 percent from the previous year's number. In 2010, CDOT vehicles were involved in 33 percent fewer accidents than in 2009, easily meeting the annual target of 297. An important reason for this reduction is the defensive driving techniques employees have successfully implemented. Defensive driving training includes a driving simulator with emphasis on the best ways to avoid potential accidents for maintenance personnel, and a course for non-maintenance personnel that teaches techniques for avoiding distractions and the proper following and stopping distances to avoid rear-end collisions.

## NUMBER OF WORKERS' COMPENSATION CLAIMS

FY 2006 - FY 2010



### SUPPORTING MEASURE

Number of Worker's Compensation Claims  
 Annual Objective: 333  
 (10% reduction from previous year's results)  
 Actual: 363

The number of workers' compensation claims dropped a significant 2 percent from 2009 to 2010. This reduction can be credited to a number of training and operational initiatives. For example, the Click Safety training program offers courses that enable employees to be more cognizant of workplace hazards. Also, employee participation in the Regional Safety Committees has created a collaborative environment where employees are part of the solution in addressing safety concerns.

Since 2007, CDOT has conducted a summer safety awareness campaign that corresponds to the seasonal peak in construction projects. The "100 Safe Days of Summer" campaign has been very successful. In the month of July 2010 alone, there were 25 percent less vehicle accidents than the previous July.

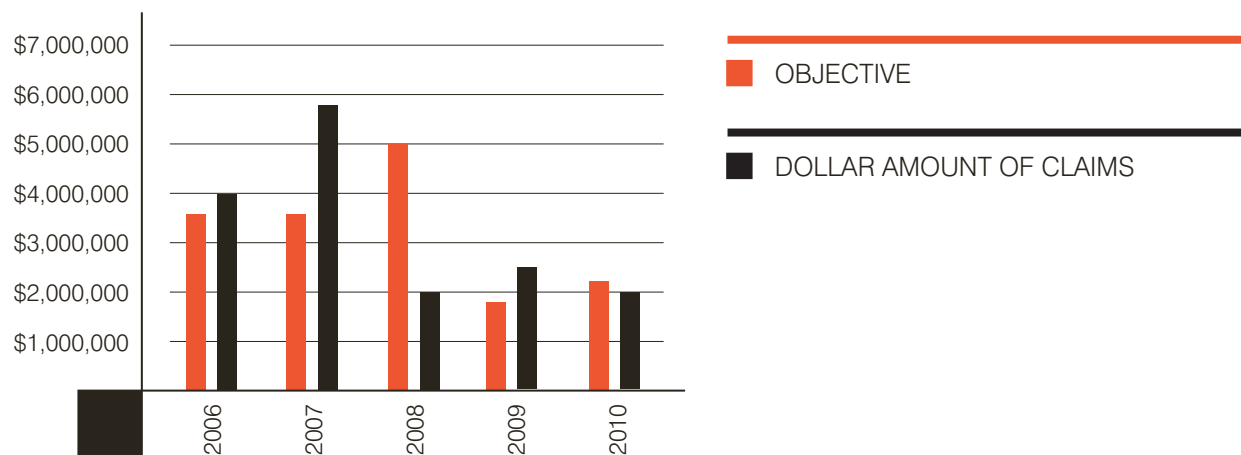


These initiatives fall within the annual Safety Action Plan, a living document that employees should be constantly aware of while conducting their daily activities. In the 2011 plan, CDOT sees several opportunities for continued improvement, including:

- The development of programs to minimize the occurrence of accidents that most frequently cause back, knee, and shoulder injuries;
- More attention given to causes of strains, sprains, and contusions;
- Increased collaboration between employees, Regional Safety Officers, and management to resolve lingering accident trends; and,
- Continued improvement in avoiding accidents while going straight and backing up in CDOT vehicles.

## DOLLAR AMOUNT OF WORKERS' COMPENSATION CLAIMS

FY 2006 - FY 2010



### SUPPORTING MEASURE

Dollar Amount of Workers' Compensation Claims

Annual Objective: \$2,372,657

(10% reduction from previous year's results)

Actual: \$2,105,515

**OVERVIEW**

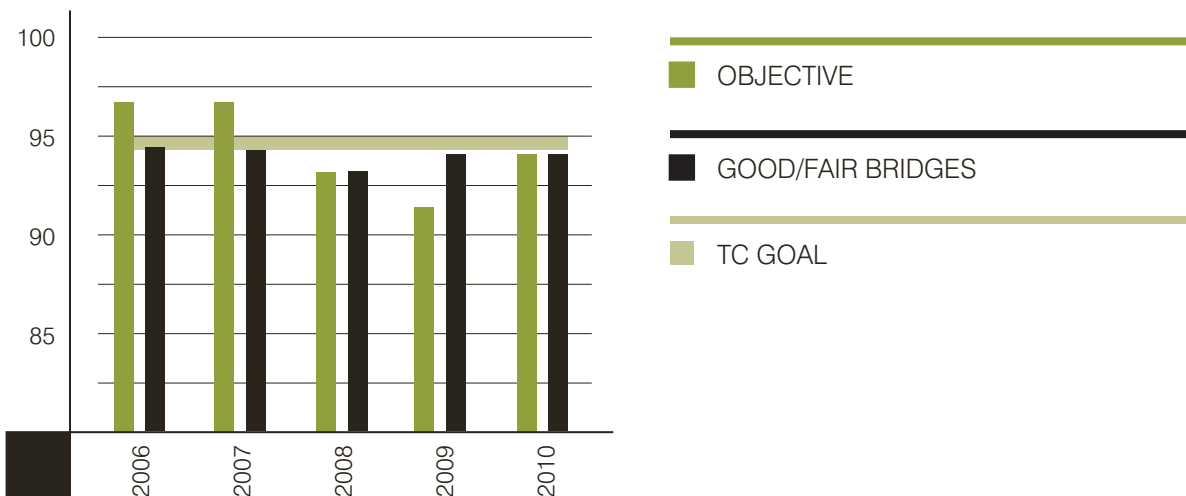
Each Colorado taxpayer is a shareholder in the multi-billion dollar investment that is the state's transportation system. CDOT is responsible for managing this investment, ensuring that its assets, mainly bridges and roads, are maintained and improved. This section reports on CDOT's performance of this function.

It is important to reiterate that annual objectives are set based on available resources. If CDOT could dedicate more resources to its assets, the annual objectives would be higher.

**BRIDGE CONDITION**

**PERCENT OF BRIDGE DECK AREA IN GOOD/FAIR CONDITION**

FY 2006 - FY 2010



**PRIMARY MEASURE**

Percent of Bridge Deck Area in Good or Fair Condition  
 FY 2010 Budget: \$39.7M for Bridge Program + \$44.1M for Bridge Enterprise  
 Annual Objective: 94.4%  
 Actual: 94.5%

Colorado's 3,447 major vehicular state highway bridges are a critical component of the state's roadway infrastructure. The temporary closing of these structures reduces capacity, can shut down corridors, push traffic onto other roadways less capable of handling the traffic, and increase travel time for drivers. The department is committed to keeping the bridges on Colorado's highways in safe condition.

### WHAT MAKES A GOOD BRIDGE?

The National Bridge Inventory standards established by the Federal Highway Administration are used to inventory and classify the condition of Colorado's major vehicular bridges. The classification is based on a sufficiency rating of 0-100 and a status of functionally obsolete or structurally deficient (see below).

- Major vehicular bridges in *poor* condition have a sufficiency rating of less than 50 and status of structurally deficient or functionally obsolete. They do not meet all safety and geometry standards and require reactive maintenance to ensure their safe service. For the purpose of determining bridge funding needs, bridges in poor condition are assumed to have exceeded their economically viable service life and require replacement or major rehabilitation.
- Major vehicular bridges in *fair* condition have a sufficiency rating from 50 to 80 and a status of structurally deficient or functionally obsolete. They marginally satisfy safety and geometry standards and either require preventative maintenance or rehabilitation.
- Major vehicular bridges in *good* condition are all remaining major bridges that do not meet the criteria for poor or fair. They generally meet all safety and geometry standards and typically only require preventative maintenance.

The department reports the condition of bridges by the percent of major vehicular bridge deck area in good or fair condition. Currently, 94.5 percent of the bridge deck area statewide is in good or fair condition. At the close of FY 2010, 127 of 3,447 major vehicular bridges were in the poor category. Each year, deteriorating bridges fall into the poor category and each year repairs and replacements improve bridges from the poor category to the good or fair category. \$1.9 billion is needed to replace the bridges currently in poor condition which includes \$800 million for the I-70 viaduct.

### STRUCTURALLY DEFICIENT AND FUNCTIONALLY OBSOLETE

- A bridge is *structurally deficient* if it does not meet minimum standards for condition or capacity. It often has one or more members in poor condition due to deterioration or other damage. Having only a small portion of a bridge in poor condition can result in the entire bridge being classified as structurally deficient. Structurally deficient bridges require monitoring, maintenance, or repair to ensure their safe use and continued service.
- A bridge is *functionally obsolete* if it does not meet current minimum geometric requirements. It often has inadequate roadway shoulders, an insufficient number of lanes to handle current traffic volumes, an overhead clearance less than minimums, or inadequate width for roadways or streams passing underneath. Functionally obsolete bridges may need signage, reduced speeds, or traffic control devices to ensure safety.

To address the \$1.9 billion backlog, Senate Bill 09-108 (FASTER) established the Bridge Enterprise (BE). FASTER is projected to generate significant annual funding for the BE with \$71.8 million budgeted for FY 2011 and \$114.8 million budgeted for FY 2012. To be eligible for BE funding, bridges must be in poor condition and need to be transferred to the Enterprise. As of November 2010, 77 bridges have been transferred to the BE and these bridges are either in construction, design, or being programmed for design. The BE has obtained a \$40 million loan and is securing additional financing, discussed below, in order to accelerate the schedule for eliminating the current backlog of bridges in poor condition. Improvements in the percentage of bridges in good and fair condition due to the increased funding will begin to be seen next year as the construction using the new funding is completed.

The BE has recently issued \$300 million in Build America Bonds to augment revenue generated by the Bridge Safety Surcharge, and plans to issue additional bonds in 2012 and 2014, for a total of \$700 million in revenue. Funds generated by the Bridge Safety Surcharge will be used to service the debt generated by the bond issuance. Therefore, FASTER has enabled CDOT to use innovative means to nearly double the amount of projected revenue for the BE in the first four years.

In addition to the replacement or major rehabilitation of an additional 19 bridges in poor condition, the \$39.7 million in non-FASTER bridge program funding was also used to support preservation, repair, replacement, and rehabilitation activities for bridges in fair and good condition; repair culverts; and take inventory of the department's bridges, culverts, and overhead sign, signal, and high-mast light structures.

---

**IN 2010, 127 OF THE STATE'S 3,447 MAJOR VEHICULAR BRIDGES WERE IN POOR CONDITION, DOWN FROM 128 IN 2009. WITH FASTER LEGISLATION, BRIDGE SAFETY SURCHARGES WILL ALLOW THE DEPARTMENT, THROUGH ITS BRIDGE ENTERPRISE, TO FINANCE, REPAIR, RECONSTRUCT, OR REPLACE ANY BRIDGE DESIGNATED AS POOR. THIS REVENUE SOURCE IS PROJECTED TO EVENTUALLY GENERATE MORE THAN \$100 MILLION PER YEAR FOR THE BRIDGE ENTERPRISE.**

---

One of the first projects completed by the BE was the replacement or major rehabilitation of three poor bridges in Teller and El Paso counties. This \$2 million project was entirely funded by Bridge Safety Surcharge revenue, and enabled three bridges to go from poor to good condition: the 79-year old Fountain Creek Bridge on U.S. 24 in Cascade, the 73-year old Twin Creek Bridge on U.S. 24 between Florrisant and Divide, and the 71-year old Loy Gulch Bridge on SH 67, north of Woodland Park.



Twin Creek Bridge

# PAVEMENT CONDITION

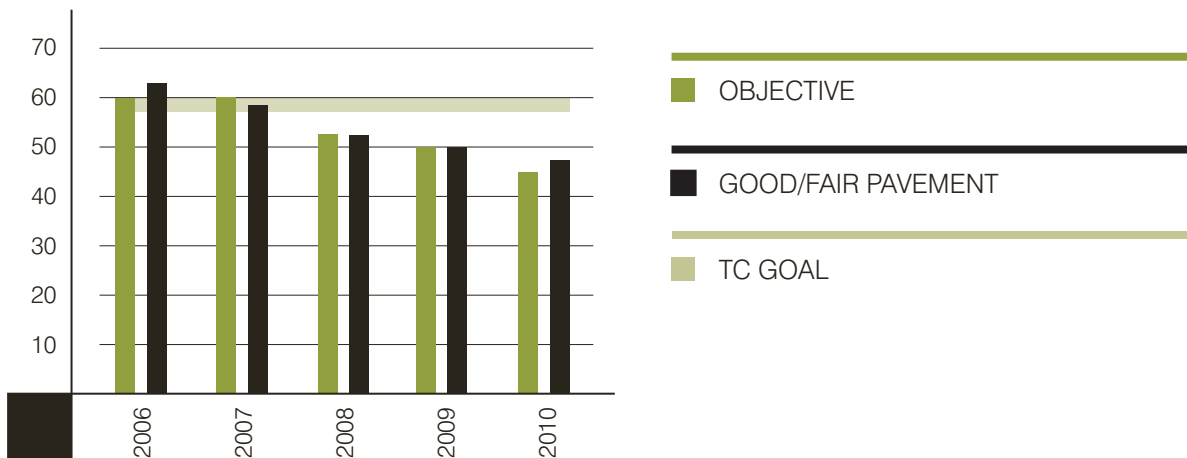
## WHAT MAKES A GOOD ROADWAY?

CDOT evaluates the condition of highway pavement based on its remaining service life (RSL), which is the number of years remaining before reconstruction is necessary.

- Pavement in *good* condition has an RSL of 11 or more years
- Pavement in *fair* condition has an RSL of six to 10 years
- Pavement in *poor* condition has an RSL of less than six years

## PERCENT OF PAVEMENT IN GOOD/FAIR CONDITION

FY 2006 - FY 2010



### PRIMARY MEASURE

Percent of Pavement in Good or Fair Condition

FY 2010 Budget: \$93.2M

Annual Objective: 46%

Actual: 48%

The primary measure of pavement quality is the percent of pavement statewide in good or fair condition. With an actual performance level of 48 percent, CDOT exceeded its annual objective of 46 percent of pavement in good or fair condition in 2010. CDOT was able to capitalize on the one-time infusion of American Recovery and Reinvestment Act (ARRA) funds into the transportation budget to achieve a higher percentage than had been targeted. However, this does not mask the fact that less than half of Colorado's highway pavement is in good or fair condition. ARRA allowed CDOT to slow the rate of decline for one year rather than reverse it. Without increased discretionary funding, performance will only continue to deteriorate as surface treatment costs escalate.

The Transportation Commission has set a long-term aspirational goal of attaining 60 percent of pavement in good or fair condition. However, as stated previously, the Commission uses funding projections to establish more realistic annual objectives for performance. As a consequence, the Commission continues to set the annual target for pavement quality at a lower level than the prior year's level of actual performance, indicating the continued system deterioration caused by insufficient investment in surface treatment. Pavement maintenance is generally provided from discretionary CDOT funds. Just less than one half of CDOT's funds are restricted to specific programs. Examples are Bridge Enterprise FASTER funds, which are dedicated for bridges by state legislation, and federally-earmarked funds dedicated to certain significant improvement projects. For the current year's budget, this leaves the Commission with about \$500 million of resources to allocate as it deems appropriate. Between 2004 and 2010, the budget for pavement has decreased by more than 50 percent, from \$200 million to \$93.2 million. This amount is insufficient to maintain current quality and drivability of the state highway system.

However, insufficient funding is only one of several factors contributing to accelerating deterioration. Increasing truck traffic, a series of harsh winters in some regions, and an aging system that requires more rehabilitation also lend to the rate of decline. Further, construction costs have risen significantly; the price of a ton of asphalt pavement has almost doubled in just ten years, from \$35.62 in 2000 to \$61.24 in 2010.

It is far more economical to maintain roadway surfaces than to reconstruct them. When roadway surfaces are not maintained, the roadway must be reconstructed from the ground up. Therefore, monitoring pavement conditions during the next several years is critical as conditions will continue to deteriorate at current funding levels. Based on revenue forecasts, the overall good/fair condition statewide is projected to drop to 31 percent by 2016. Through the Pavement Management Program, CDOT ensures that it utilizes its limited surface treatment funds cost effectively and responsibly, but the investment in the surface treatment program is insufficient to maintain the current condition of the state highway system's surface.

---

**DUE TO BUDGET CONSTRAINTS, ANNUAL OBJECTIVES FOR PAVEMENT QUALITY HAVE DROPPED BY 14 PERCENTAGE POINTS IN THE LAST FIVE YEARS.**

---

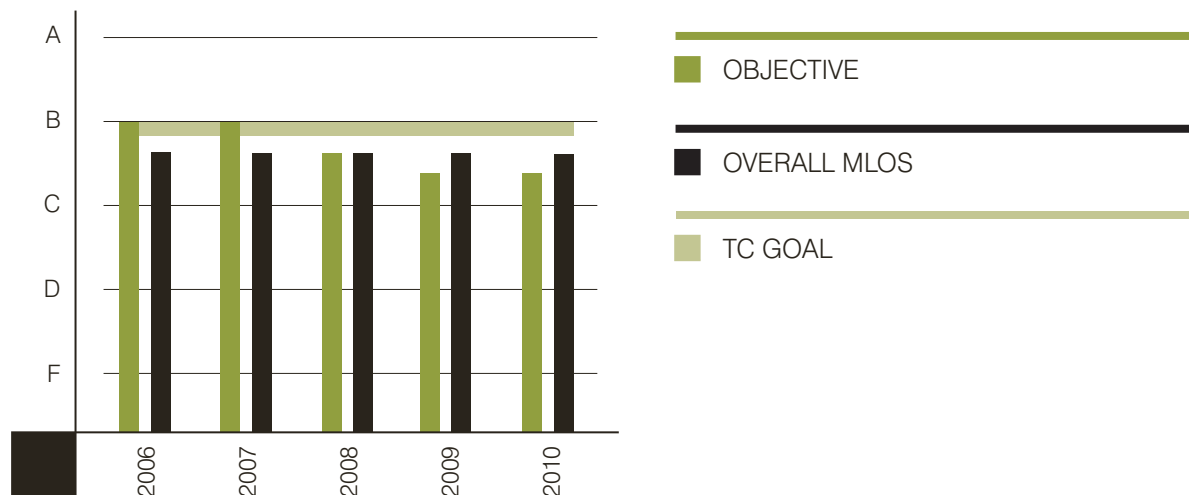
## MAINTENANCE

The CDOT Maintenance Program is designed to keep the state highway system open and safe for the traveling public. The Maintenance Levels of Service (MLOS) system helps CDOT assess its performance. Objective levels of service are compared to actual service levels accomplished to establish a basis of accountability. Relationships between levels of service and cost enable CDOT to evaluate the impacts of different funding levels, analyze tradeoffs in resource allocation, and monitor planned versus actual accomplishments against expenditures.

To measure levels of service, 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 an established set of criteria, and this data is compiled to provide grades for nine Maintenance Program Areas (MPAs). The grades range from A+ to F-, much like an academic report card. These nine grades comprise the statewide overall MLOS grade for the entire transportation network.

### OVERALL MAINTENANCE LEVELS OF SERVICE

FY 2006 - FY 2010



#### PRIMARY MEASURE

Statewide Overall Maintenance Levels of Service

Annual Objective: C+

Actual: B-

FY 2010 Budget: \$237.8M

Spent: \$231.8M

In 2010, CDOT exceeded its annual objective of C+, achieving a B- for the overall MLOS grade, while staying under budget by \$6 million. A milder early winter helped CDOT to this end, but it can also be attributed to a decrease in construction and maintenance material costs due to the overall downturn of the economy over the course of FY 2010. However, prices have already begun to rise in the first quarter of FY 2011, and it can be expected that as the national and state economies slowly grow, construction and maintenance material costs will continue to rise. Further, the effects of harsher winters in past years still impact the cost of maintaining the system.



Nine MPAs make up the overall MLOS grade: Training, Planning and Scheduling; Roadway Surface; Roadside Facilities; Roadside Appearance; Traffic Services; Structures; Snow and Ice Control; Equipment, Buildings and Grounds; and Tunnels. Four of the MPAs contribute to other investment categories, and their performance is accordingly reported in those sections. Traffic Services is reported in the Safety section, Snow and Ice Control in Mobility, and Training, Planning and Scheduling, and Equipment, Buildings and Grounds are reported in Program Delivery. The remaining five are reported here in the System Quality section.

**SPENDING BY MAINTENANCE PROGRAM AREA (MPA)**

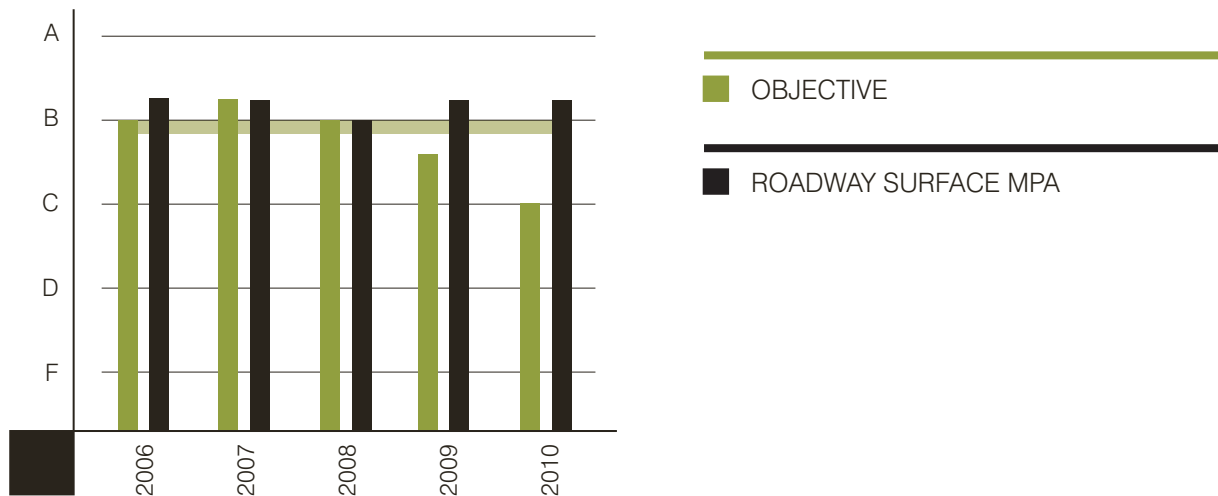
FY 2010 (IN MILLIONS)





## MAINTAINING ROADWAY SURFACE

FY 2006 - FY 2010



### SUPPORTING MEASURE

Roadway Surface MPA

Annual Objective: C

Actual: B+

FY 2010 Budget: \$45.9M

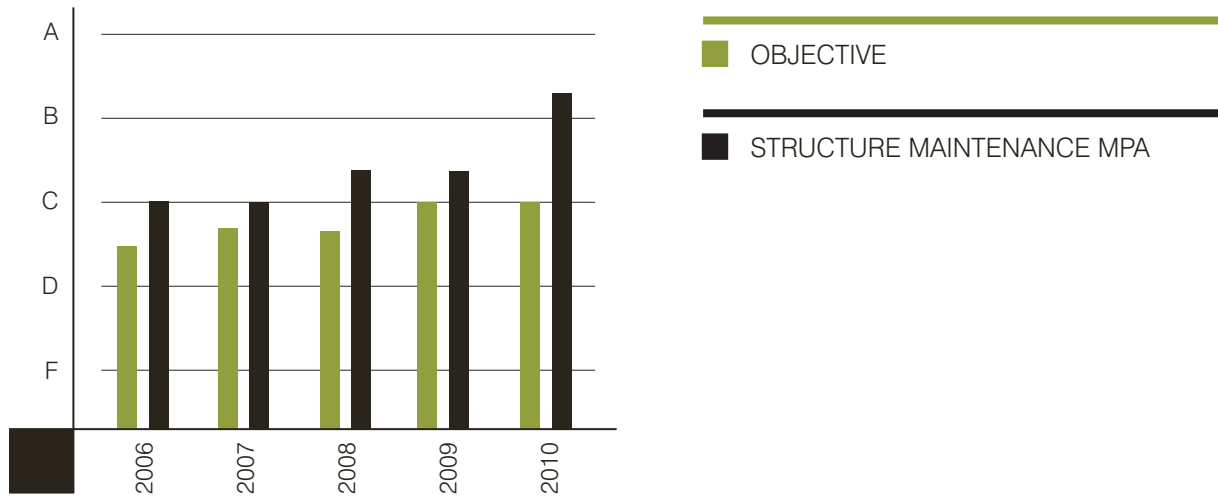
Spent: \$43.8M

An example of roadway surface maintenance work is the crack sealing performed on I-76 east of Roggen in February 2010. Crack sealing prevents water from seeping into the base of the roadway. The grade for this MPA differs from the percentage of pavement in good or fair condition in several ways. While the Pavement Management System does factor the quality of the road surface into its analysis, it also accounts for a number of other indicators, such as age, historic and current distress levels, traffic levels, environmental impacts, and frequency of maintenance treatments, to determine the remaining service life of a road. The Maintenance Program uses visual evaluation to assess the quality of the surface of the road using criteria such as the number and severity of cracks and the presence of rutting. The number of visual defects a segment of road has determines its grade from A+ to F-.

Although the Pavement Management System and the MLOS assign a road different ratings, they are not mutually exclusive. A well-maintained road will deteriorate more slowly than a poorly-maintained one. Consequently, the consistent reductions in funding for the Pavement Management Program puts added pressure on the Maintenance Program to maintain roadway surfaces. The Maintenance Program inherits the task of keeping up some roadways after they have aged beyond their expected lifespan, until funds become available for reconstruction. It costs more to maintain roadway surfaces that have exceeded their design life than to maintain newer infrastructure, forcing a disproportionate allocation of funds into maintaining older roads and leaving less for other maintenance activities.

## MAINTAINING STRUCTURES

FY 2006 - FY 2010



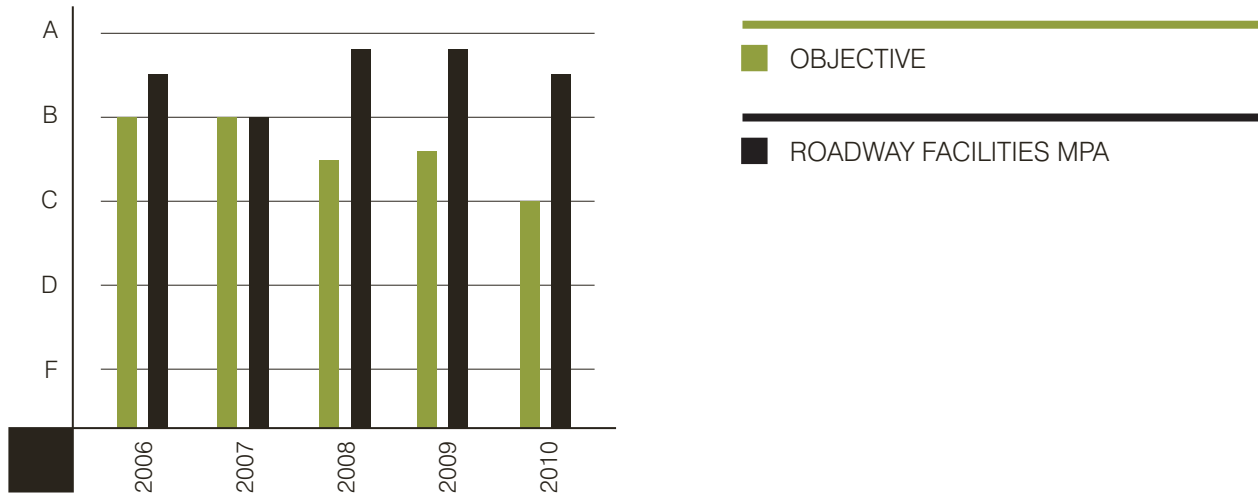
### SUPPORTING MEASURE

Structure Maintenance MPA  
 Annual Objective: C  
 Actual: B-  
 FY 2010 Budget: \$12.6M  
 Spent: \$8.0M

Much like it does with pavement, the Maintenance Program helps to preserve bridges and other transportation structures, such as culverts, through preventative and reactionary maintenance, as an addition to the repair and replacement efforts of the Structures Program. The B- grade reflects only bridge maintenance activities, like cleaning the Silverthorne Bridge on I-70 in May 2010, and represents an improvement over the C+ attained in 2009. This higher grade was achieved in spite of spending a fraction of budget for bridge maintenance. This reflects the efficiency of the Maintenance Program and the system-wide impacts of FASTER funds.

## KEEPING ROADWAYS AND SHOULDERS CLEAR

FY 2006 - FY 2010



### SUPPORTING MEASURE

Roadside Facilities MPA

Annual Objective: C

Actual: B+

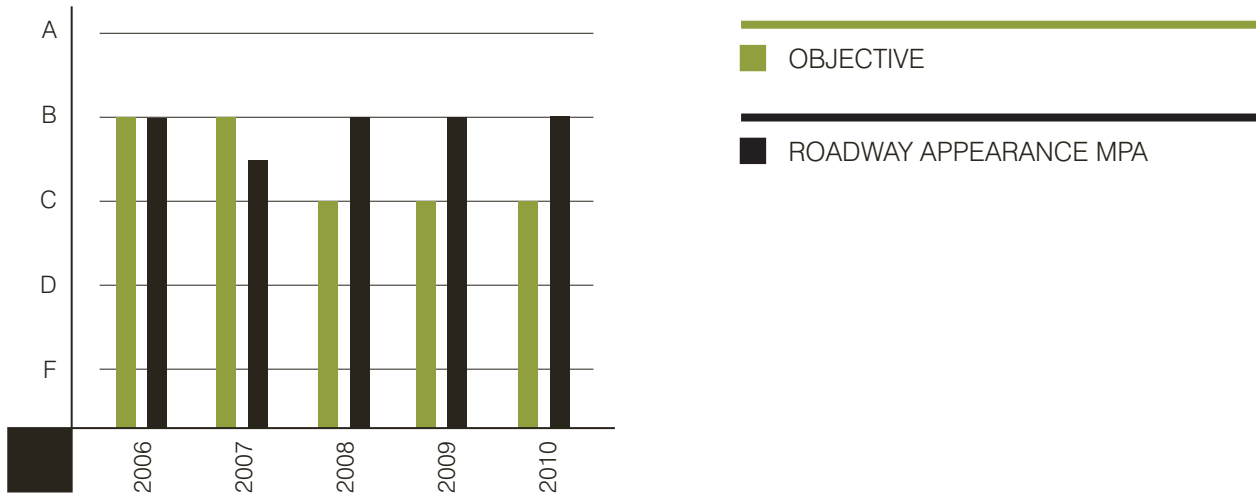
FY 2010 Budget: \$15.6M

Spent: \$19.0M

Trash, standing water, and debris on roadways present challenges to mobility and threats to the safety of travelers. After a rock slide damaged I-70 in Glenwood Canyon in March 2010, CDOT maintenance crews worked diligently to clear rocks from the roadway, in addition to other maintenance efforts, so that the highway could be reopened to travelers. CDOT surpassed its roadside facilities objective of a C, achieving a B+, though it also exceeded its budget to attain this level of performance.

# MAINTAINING ROADSIDE LANDSCAPE

FY 2006 - FY 2010



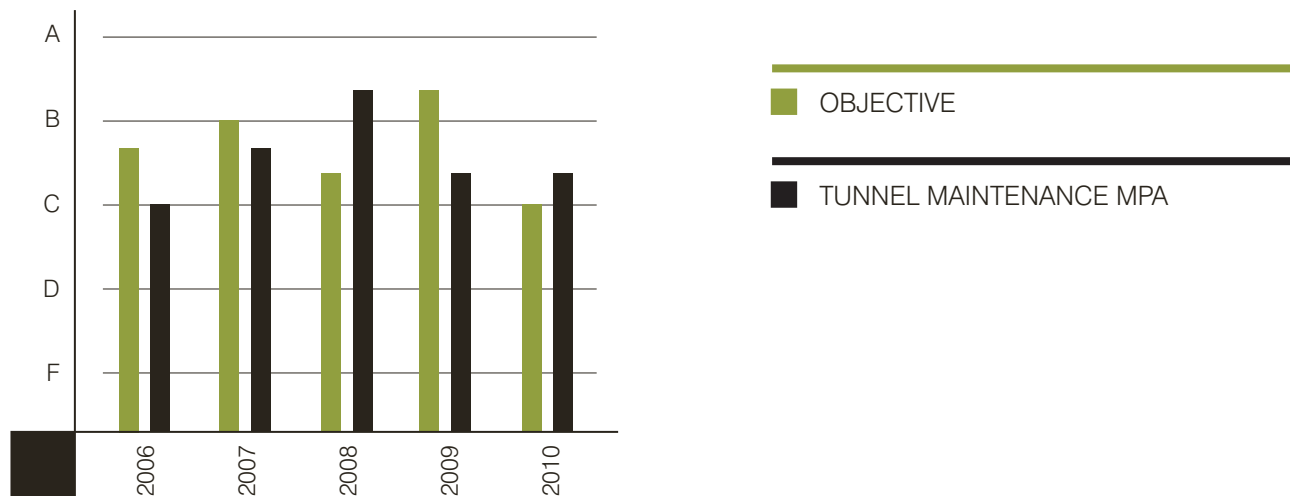
### SUPPORTING MEASURE

Roadside Appearance MPA  
 Annual Objective: C  
 Actual: B  
 FY 2010 Budget: \$7.5M  
 Spent: \$8.0M

High grasses and weeds can be dangerous. During the winter, weeds make it more difficult to keep snow off the roadways, and, in rural areas especially, they can limit visibility and hide animals about to enter the roadway. Further, federal environmental regulations often require CDOT to curtail noxious weed growth along roadways. Consequently, two key maintenance activities are mowing grass and treating noxious weeds, as CDOT crews can often be seen doing along U.S. 34. In 2010, CDOT exceeded its annual objective of a C for roadside appearance, achieving a B.

## MAINTAINING TUNNELS

FY 2006 - FY 2010



### SUPPORTING MEASURE

Tunnel Maintenance MPA

Annual Objective: C

Actual: C+

FY 2010 Budget: \$6.4M

Spent: \$5.2M

On January 20, 2010, those traveling on the I-70 through Glenwood Canyon drove through a much darker Hanging Lake Tunnel than usual. CDOT crews were performing electrical maintenance in the tunnel. The Hanging Lake and Eisenhower-Johnson tunnels are critical connections between the Eastern and Western slopes of the state. They have extensive electrical and mechanical systems that must be maintained to provide reliable service and operation. They also require washing, structural maintenance and repair, emergency response, snow removal, and sanding. In 2010, CDOT exceeded its tunnel maintenance objective of a C, achieving a C+.

Keeping Colorado on the move is one of CDOT's key responsibilities. Colorado serves as an important distribution center for the Rocky Mountain Region so its ability to efficiently move goods and people contributes greatly to the state and the region's economic prosperity. A transportation system that expedites the flow of goods to Canada and Mexico, which are the state's largest international trading partners, is vital. Additionally, tourists providing a critical source of state revenue expect easy access to ski areas in the winter and other recreational activities in the summer.

Mobility funding represented 18.3 percent of the department's budget in 2010. These funds are invested in multimodal projects, adding new lanes, improving intersections, plowing snow, providing courtesy tow service in congested areas, informing travelers of road conditions, and completing projects that are expected to reduce air pollution.



**PRIMARY MEASURE**

Minutes of Delay per Traveler on Congested State Highway Segments

Objective: 18.4

Actual: 17 (2009)

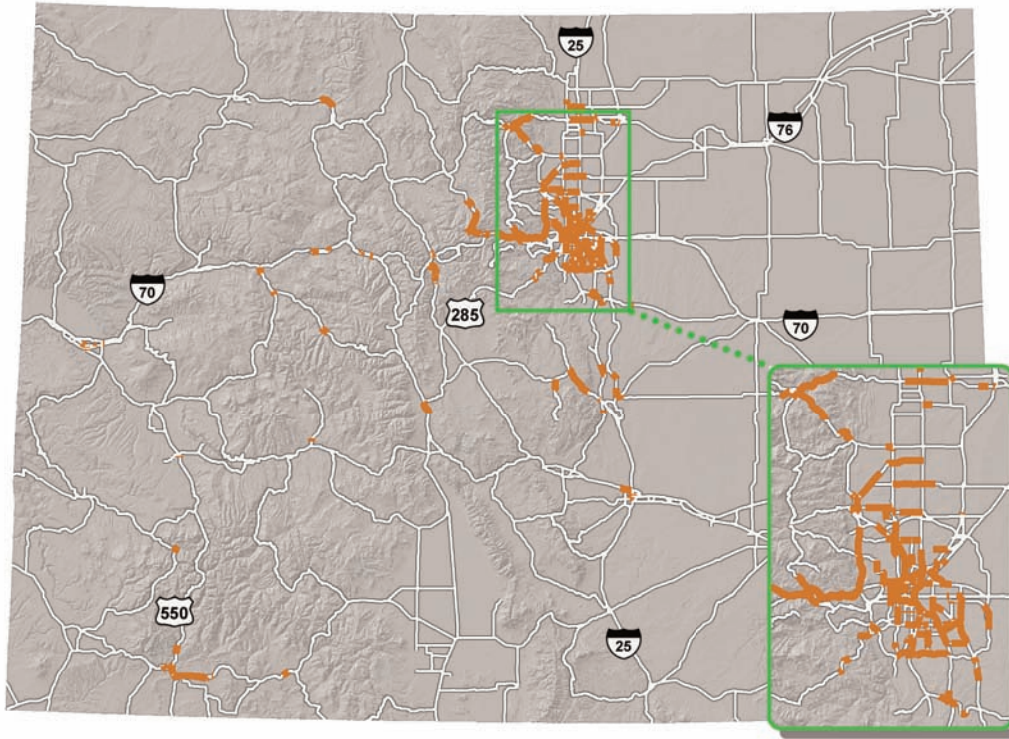
The department's primary measure of mobility is minutes of delay per traveler on congested state highway segments. Travel time delay is the difference between the travel time on highways at the free flow speed and the time it takes to travel with heavy traffic. In 2009, the latest year for which data is available, the average travel time delay on all congested corridors was calculated at 17 minutes per person, a decrease from 2008's 18 minutes. This slight decline can be largely attributed to a decrease in travel demand as a result of economic recession and a higher unemployment rate.

Each year, the annual objective for this measure is determined by a model that estimates minutes of delay in congested corridors in the year 2035 using the previous year's actual performance. Because actual congested performance in recent years has dropped, the projected number of minutes of delay in congested corridors in 2035 has been revised down from 70 minutes (calculated in 2005) to 48 minutes (calculated using 2009 data). Consequently, the annual objective for 2010 has been adjusted as well, from 20 minutes to 18.4 minutes, slightly lower than 2009's objective of 18.8 minutes.

A highway is considered congested when the peak traffic is at or over 85 percent of what the highway was designed to handle. Eight percent of Colorado's highway lane miles were congested in 2009, and 26 percent of urban highway lane miles were congested. In the Denver metro area, the annual average cost of congestion is \$1,057 per person, in Colorado Springs it is \$684 per person and in Boulder it is \$320 per person.<sup>7</sup> For businesses, reduced travel times generate cost savings associated with production and distribution. Households and businesses also benefit from reduced fuel consumption associated with less time spent in stop-and-go conditions.

The costs of congestion are not only economic. Congestion intensifies negative environmental impacts as well. Carbon monoxide emissions are higher in a congested corridor, which has the effect of lowering overall air quality.

## COLORADO CONGESTED HIGHWAYS



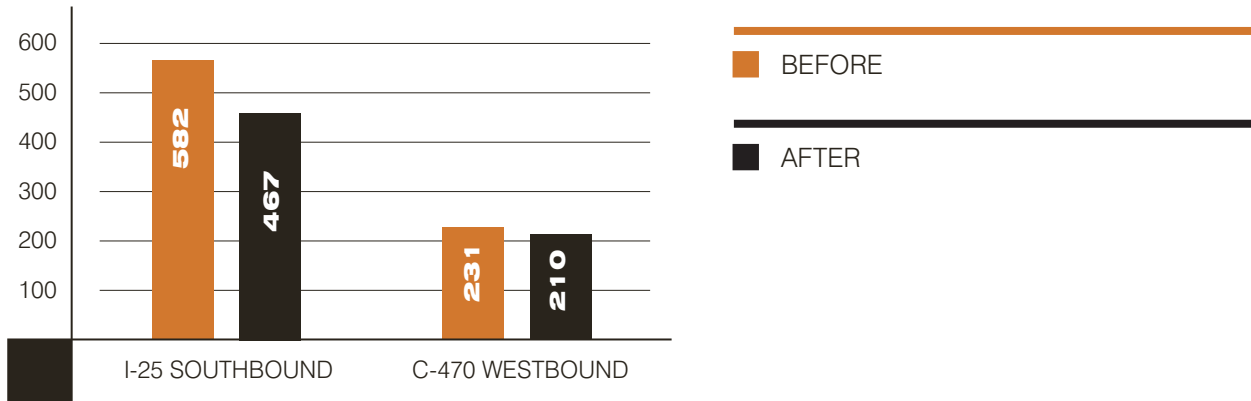
## INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent Transportation Systems (ITS) empower state highway users to make decisions about their travel timing and routes using real-time information about congestion and assist in swiftly clearing roadways after an accident has occurred to allow for the free flow of traffic. CDOT's Traffic Operations Center serves as a central location that uses a variety of technological devices to combat delays from heavy congestion: closed-circuit television cameras monitor traffic conditions, which are relayed to the public through CDOT's COTRIP website, [www.cotrip.org](http://www.cotrip.org), and the media; ramp metering systems regulate the volume of traffic entering congested segments of highway; dynamic overhead variable message signs provide travelers with traffic information before they encounter problem areas; and in congested urban areas, courtesy vehicles respond quickly to the scenes of accidents, particularly during rush hour periods. The following provides a brief summary of some ITS applications and their associated benefits.

**Ramp Metering.** CDOT currently has 70 ramp metering sites statewide. In December 2003, CDOT implemented ramp metering during the morning peak period (6:00-8:30 AM) on I-25 southbound between 104th and 84th Avenues and on C-470 westbound between Bowles and Quincy Avenues. When the travel times in these segments before and after ramp metering was implemented are compared, the result is a significant decrease.

## TRAVEL TIME BENEFITS OF RAMP METERING IN SELECT CORRIDORS

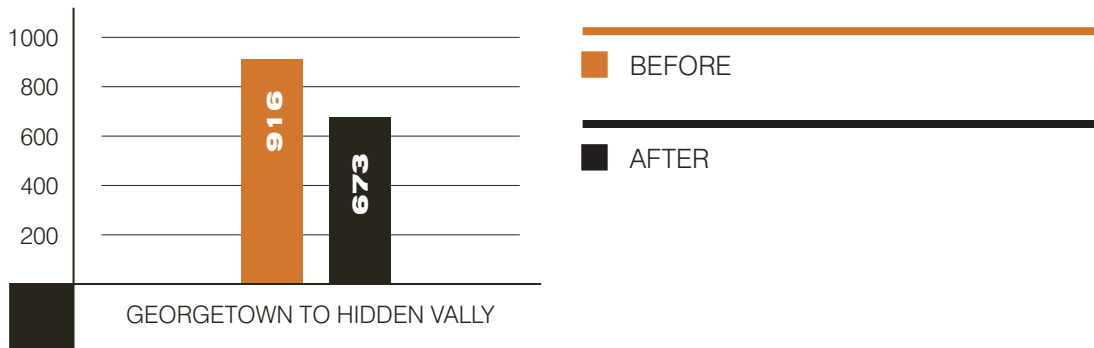
IN SECONDS



A problem on the I-70 West corridor is severe congestion at certain peak periods, mostly weekend afternoons due to traffic returning to the Denver metro area from mountain resort and recreation areas. Typically, eastbound traffic queues back for several miles from bottleneck areas at the Eisenhower-Johnson Tunnels and at the twin tunnels east of Idaho Springs. In 2005, CDOT installed three ramp meters at interchanges between Georgetown and Hidden Valley. The department found travel time in that segment during the peak period decreased over four minutes following implementation.

## TRAVEL TIME BENEFITS OF RAMP METERING ON I-70 WEST

IN SECONDS



**Courtesy Patrol.** Beginning in 1992, CDOT implemented the Mile High Courtesy Patrol (MHCP) service on multiple highway segments in the Denver area. In 2003, a CDOT study showed that the service yielded a reduction of more than 500,000 hours of vehicle delay and saved motorists more than \$9 million dollars annually as a result of MHCP assistance in more than 6,000 incidents.

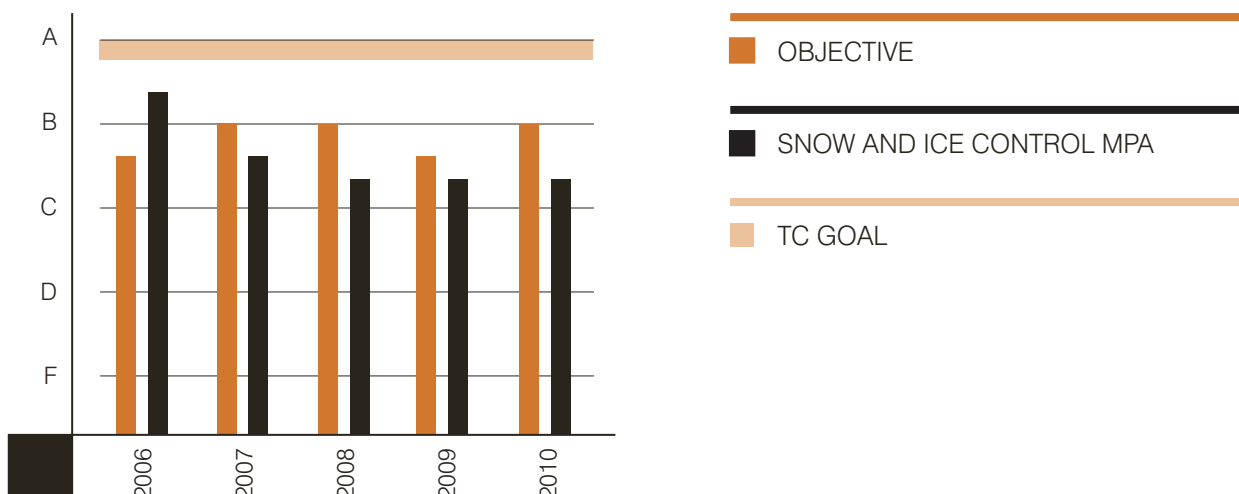
**Travel Time Applications.** Multiple devices along several corridors, such as I-70 West, I-25 South and U.S. 6 in the Denver metro area, acquire data that CDOT processes into real-time traffic speeds and calculated travel times. This information is disseminated to drivers along the highway using Variable Message Signs and to potential drivers via the COTRIP website and displays at mountain resorts. Highway users can use this information to modify their travel routes or times.



## SNOW AND ICE REMOVAL

### SNOW AND ICE CONTROL

FY 2006 - FY 2010



#### SUPPORTING MEASURE

Snow and Ice Control MPA

Annual Objective: B

Actual: C+

FY 2010 Budget: \$69.3M

Spent: \$66.6M

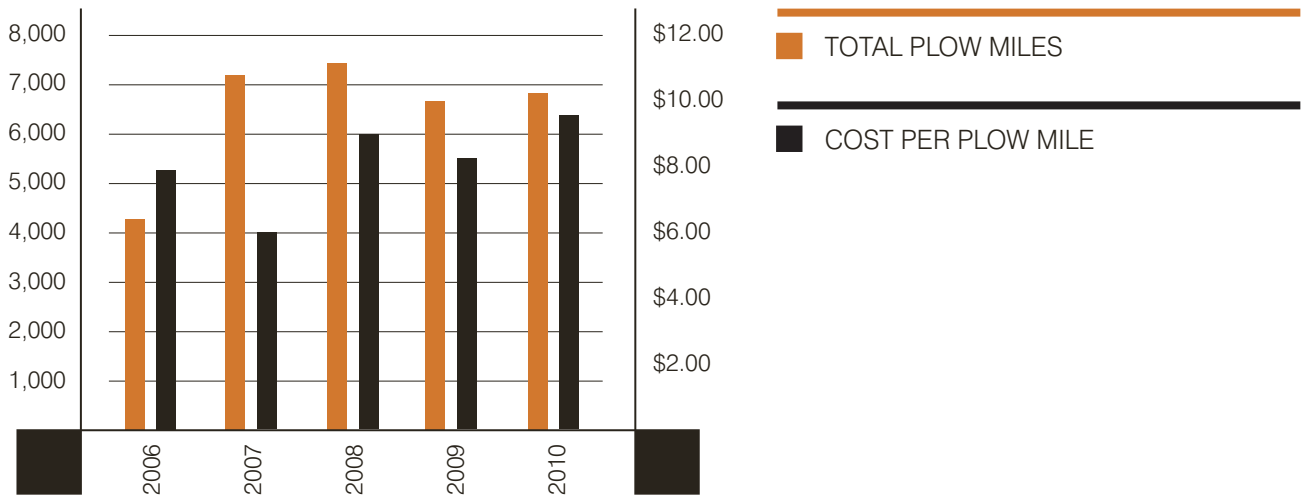
As the lone mobility maintenance measure, keeping major roads clear of snow and ice is one of the most important activities of the Maintenance Program, and receives the most funding of the nine MPAs. Snowy and icy roads are a danger to the traveling public and can also result in significant travel delays. As a means to keep Colorado moving, snow and ice control is reported as a supporting performance measure for the mobility investment category. Unlike other maintenance activities, it does not leave a lasting positive effect on the transportation infrastructure and in fact negatively impacts the infrastructure as heavy plowing activity stresses the roadway surface; however, it does enable safer, less congested travel during inclement weather.

In 2010, CDOT missed its annual objective of B, achieving a C+. In 2008, amid rising costs per plow mile, maintenance policy was revised, so that highway segments with an annual average daily traffic count of less than 1,000 vehicles are not plowed between the hours of 7:00 PM and 5:00 AM. Exceptions may be made for school bus or hospital/emergency routes or segments with high accident rates. However, the survey procedures used to determine actual performance in snow and ice control were not changed to reflect this new policy. The Maintenance Program is revising the survey form to take this policy into account, which should result in improved performance reporting in years to come, if funding levels and costs remain stable.

CDOT is implementing some key technological advancements that it hopes will enable higher levels of performance in the future. Recent innovations adopted include the Maintenance Decision Support System (MDSS), and some under evaluation include carbide steel plow edges and the tow plow.

### TOTAL PLOW MILES AND COST PER PLOW MILE

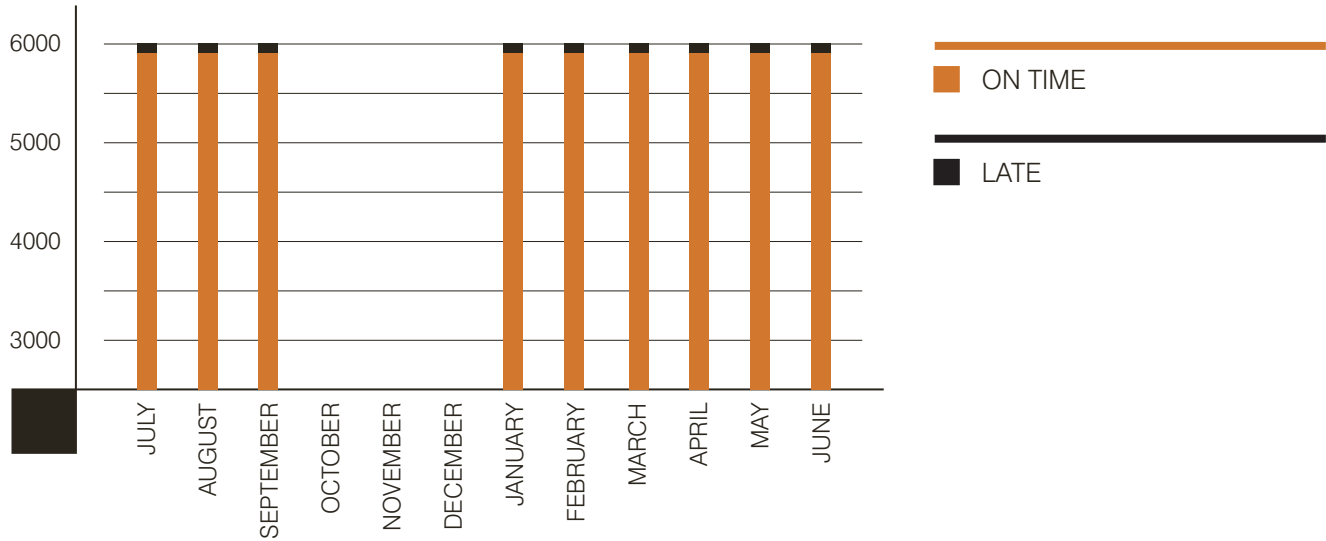
FY 2006 - FY 2010



# TRANSIT MOBILITY

## MONTHLY TRAVEL ON-TIME PERFORMANCE

FY 2010



### SUPPORTING MEASURE

On-time Performance for Buses on U.S. 36

Actual: 99.8%

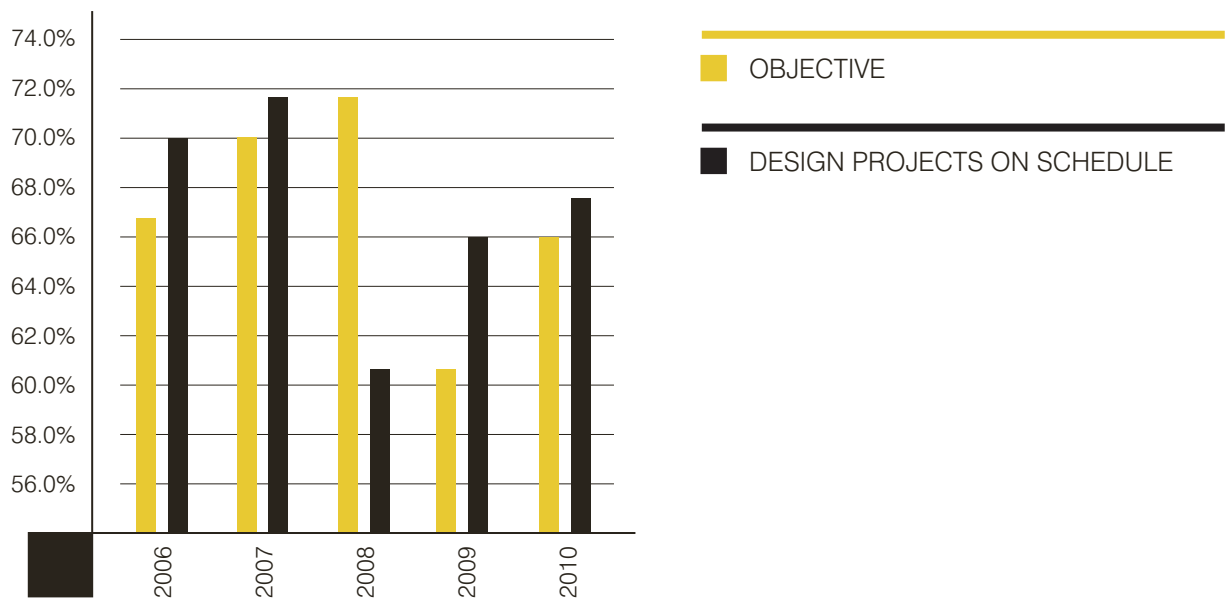
On average, 275 buses travel in Denver between the Pecos Street on-ramp on U.S. 36 and 19th Street each weekday. These buses help to shorten travel times on a congested corridor during peak traffic hours. Nearly 100 percent arrived on-time in FY 2010. Buses were not tracked in October, November, and December because of an electrical outage, so those months are not included in this percentage. In past years, CDOT has reported on transit mobility in the I-25 Express Lanes. However, it is no longer tracking buses on this route.

**PROJECT DELIVERY**

CDOT uses several measures to gauge how efficiently and effectively it delivers its programs, which range from construction to maintenance to human resources.

**PERCENT OF DESIGN PROJECTS MEETING ESTABLISHED SCHEDULE**

FY 2006 - FY 2010



**SUPPORTING MEASURE**

Percent of Projects Delivered Within 30 Days of Planned Ad Date

Annual Objective: >65.9% (improvement over prior year)

Actual: 67.7%

For many highway and bridge projects, CDOT engineers design the project and then the department solicits bids from private contractors to build the project. CDOT project managers oversee the construction phase to ensure contractors are meeting federal, state, and local standards. The “ad date” for a project is the targeted date by which CDOT plans to finish the design of a project and begin soliciting bids. The ad date for planned projects is estimated at the beginning of each fiscal year. CDOT uses the percent of projects that meet their planned ad date as its measure for on-time project delivery. The Transportation Commission established the objective of improving year over year percent of projects delivered within 30 days of their planned ad date.

## THE AMERICAN RECOVERY AND REINVESTMENT ACT

The American Recovery and Reinvestment Act (ARRA) of 2009 was crucial in allowing CDOT to move ahead with projects in 2010 that would have otherwise been cancelled or altered in scope to accommodate a smaller budget. Last year, CDOT was proud to report that it met the requirement of obligating 50 percent of ARRA funds 50 days before the federal deadline. This year, CDOT is happy to report that, at the end of the Fiscal Year 2010, 20 percent of projects have already been completed, and 48 percent are under construction.

As part of ARRA, the U.S. Department of Transportation announced in February 2010 that it had awarded a \$10 million Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant to Colorado to improve mobility and provide multi-modal options for travelers on a section of U.S. 36 between Denver and Boulder. The entire project includes: one managed lane in each direction on U.S. 36; bus rapid transit operations for the corridor; a commuter bikeway; and an intelligent transportation system for toll collection and incident management.



## ARRA PROJECTS STATUS AS OF JUNE 30, 2010

	Under Construction <sup>a</sup>	Under Contract	Construction Completed	Under Ad	Ad Date Estimated	Total
<b>CDOT-Owned &amp; Administered Projects</b>	23	8	18	4	0	<b>53</b>
<b>Enhancement Projects</b>	7	3	2	7	3	<b>22</b>
<b>Local Agency Projects</b>	19	1	0	3	4	<b>27</b>
<b>Total</b>	<b>49</b>	<b>12</b>	<b>20</b>	<b>14</b>	<b>7</b>	<b>102</b>

More information on all of CDOT's ARRA-sponsored projects can be found at <http://www.colorado.gov/recovery>.

### FASTER PROJECTS

With the passage of FASTER, CDOT has increased capacity to implement projects that enhance safety or repair or replace poor bridges. In 2010, FASTER generated \$93.2 million for safety projects, 100 percent of which has been obligated, and \$44.1 million for bridge projects, 63 percent of which has been obligated. At the end of FY 2010, 47 FASTER-funded projects were in various stages of production, as listed below.

	SAFETY	BRIDGE
<b>UNDER CONSTRUCTION</b>	12	6
<b>UNDER CONTRACT</b>	9	4
<b>UNDER AD</b>	2	1
<b>AD DATE SCHEDULED</b>	13	0
<b>TOTAL</b>	<b>36</b>	<b>11</b>

<sup>a</sup>Includes projects shut down for the winter season

## STRATEGIC PROJECT DELIVERY

Established in 1996, this program identified 28 high priority projects of statewide significance based on the overall visibility, cost, and return on investment in addressing on-going needs of safety, mobility, and reconstruction. As of December 2010, 21 of the 28 projects are either complete or have received the total funding established for them by the Commission when it initially set up the strategic investment program. Bonds were issued to accelerate the funding of some of the projects. The proceeds from the bond issuance are expended, and payments to bond holders will consume about \$167 million of CDOT's resources annually through 2017. However, estimates show issuing bonds for the Transportation Expansion (TREX) on I-25 and I-225 and the Colorado Springs Metro Interstate Expansion (COSMIX) saved taxpayers over \$1 billion in construction-related inflation costs. The table below shows projects' status as of December 2010.

Project	Completed or Percent Funded
I-25/U.S. 50/SH 47 Interchange	✓
I-25/S. Academy to Briargate	✓
I-25/U.S. 36/SH 270	✓
I-225/Parker Rd.	✓
I-76/120th Ave.	✓
I-70/I-25 Mousetrap Reconstruction	✓
I-25/Owl Canyon Rd. to Wyoming	✓
East I-70/Tower Rd. to Kansas	✓
North I-25/ SH 7 to SH 66	✓
U.S. 50/Grand Junction	✓
U.S. 285/Goddard Ranch to Foxton Rd.	✓
U.S. 160/Wolf Creek Pass	✓
U.S. 40 Berthoud Pass	✓
C-470 Extension	✓
U.S. 34/I-25 to U.S. 85	✓
U.S. 287/Broomfield to Loveland	✓
SH 82/Basalt to Aspen	✓
Santa Fe Corridor	✓
Southeast MIS/I-25/Broadway to Lincoln	✓
U.S. 550/New Mexico State Line to Durango	✓
U.S. 160/SH 3 to the Florida River	✓
U.S. 287/Campo to Hugo	96%
Powers Boulevard - Colorado Springs	65%
I-70/DIA to Eagle County	11%
I-25/Denver to Colorado Springs	54%
I-25/Denver to Fort Collins	51%
I-70/East Corridor	45%
U.S. 6/West Corridor	21%



## SENATE BILL 97-001 TRANSIT CAPITAL PROJECTS

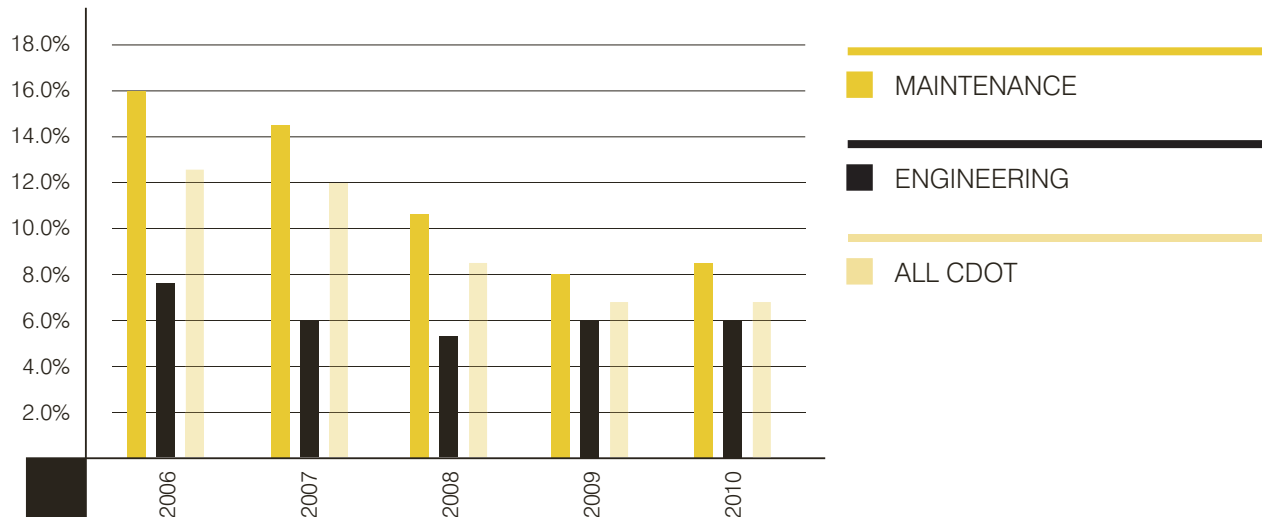
Beginning in 2006, 10 percent of the Senate Bill 97-001 general funds made available to the department have been invested in strategic transit capital projects. At the conclusion of FY 2009, the Transportation Commission approved over \$69 million for 26 transit capital projects across Colorado. Awarded projects include transit vehicles, intermodal centers, and planning studies. As noted previously, CDOT did not receive any general fund transfers in 2010. However, the Transportation Commission did allocate \$15.4 million towards transit service and capital. As a result of this decrease in funding, the RTD Access-A-Ride buses only received partial funding and the City of Longmont Rail Extension Design project will not be funded.

Project	Completed, In progress or Percent Funded
North Front Range Metropolitan Planning Organization - 3 Buses	✓
City of Steamboat Springs - Intermodal Center in Craig	✓
City of Colorado Springs - 19 Buses for FREX (Front Range Express)	✓
North West Colorado Council of Governments - Rail Implementation Study	✓
Town of Avon - Intermodal Center	✓
North Front Range Metropolitan Planning Organization - 14 Vans for Vanpool	✓
City of Durango - Intermodal Center	✓
Gunnison Valley Regional Transportation Authority (Gunnison) - 4 Buses	✓
Special Transit (Boulder) - Bus	✓
Southern Ute Community Action Programs (Ignacio) - Bus	✓
Neighbor to Neighbor - Salida Intermodal Facility	✓
Eagle County Regional Transit Authority - Maintenance & Storage Facility in Leadville	✓
Rocky Mountain Rail Authority - High Speed Rail Feasibility Study	✓
City of Greeley - 4 Buses	✓
Grand Valley Transit/Mesa County - Grand Junction Intermodal Center	In progress
City of Fort Collins - Bus Rapid Transit Implementation	In progress
City of Fort Collins - Intermodal Center	In progress
Special Transit (Boulder) - Operations/Maintenance Facility	In progress
City of Pueblo - 3 Buses	In progress
Regional Transportation District (RTD) - 16th Street Mall Shuttle	In progress
RTD - Colfax Ave. Transit Improvements	In progress
RTD/U.S. 36 Mayors - Bus Rapid Transit Improvements at Table Mesa in Boulder	In progress
RTD - Denver Union Station Improvements	100% funded
RTD - 45 Access-a-Ride Buses	39% funded (will not receive more funding)
City of Longmont - Rail Extension Design	Not funded

## HUMAN RESOURCES

### EMPLOYEE TURNOVER RATES

FY 2006 - FY 2010



#### SUPPORTING MEASURE

CDOT's Annual Employee Turnover Rate

Annual Objective: 8-10%

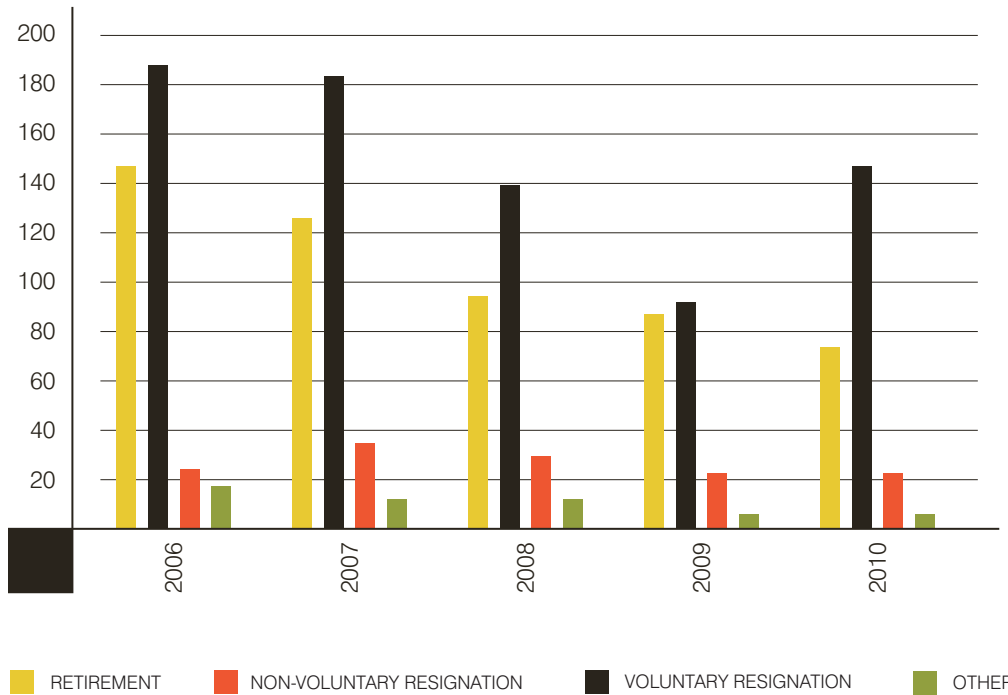
Actual: 7.2%

A healthy employee turnover rate generally falls between 8-10 percent. Maintaining a knowledgeable and motivated workforce is central to accomplishing CDOT's mission, which requires hiring and retaining the best possible candidates for a given position. The department defines its turnover rate as the number of separated employees during the fiscal year divided by the total number of employees on the last day of the fiscal year, June 30. Prior to the economic recession taking hold in FY 2009, CDOT's overall turnover rate fell within this target; however, with an unemployment rate of eight percent in Colorado, CDOT employee turnover is suppressed.<sup>9</sup> The department did not reach its targeted turnover rate range in 2010. It did improve from 2009's rate of 7.1%, and therefore receives a yellow light.

<sup>9</sup> U.S. Bureau of Labor Statistics, Nov. 17, 2010.

## CDOT EMPLOYEE SEPARATIONS

FY 2006 - FY 2010



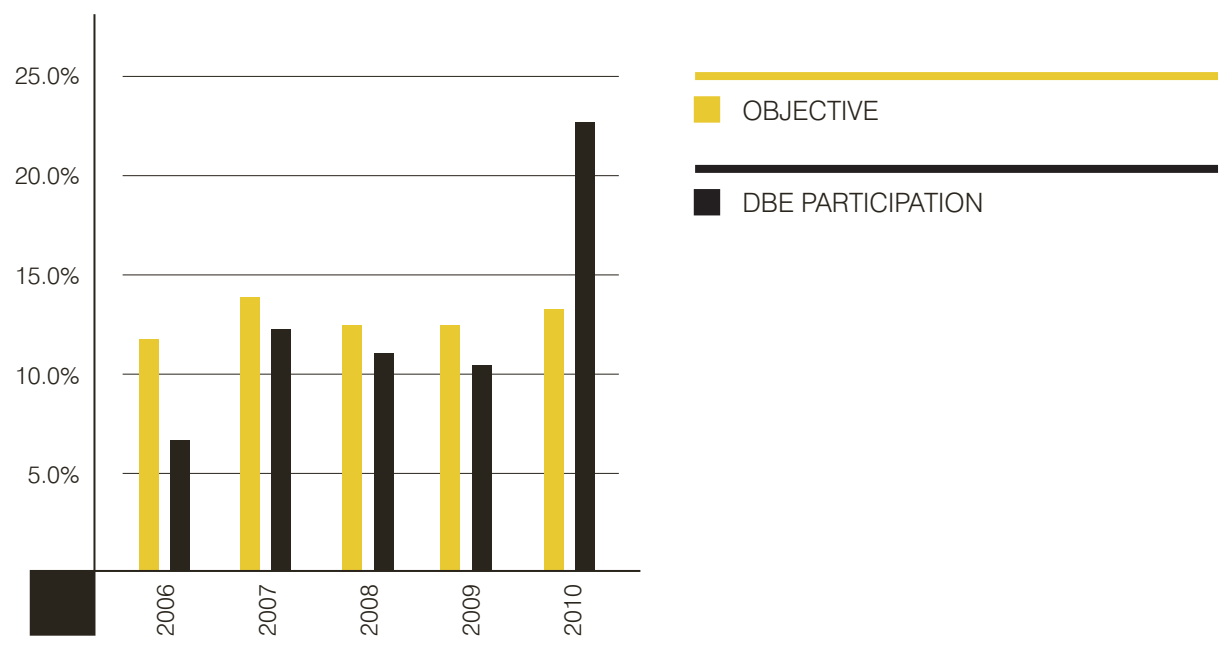
The total number of separations in FY 2010 was 246, excluding temporary employees, a 15 percent increase over the 213 separations in 2009. This is, in part, attributed to a higher than anticipated number of employees deciding to retire after a change in the rules of the Public Employees' Retirement Association of Colorado. "Retirement" includes reduced, full, and disability retirements. The "Other" category includes deaths and separations resulting from a change in gubernatorial administration.

During lean times such as these, CDOT relies on vacancies as a source of savings. Revenues that would have otherwise gone to hiring, training, and compensating staff to fill vacant positions can instead be reallocated to meet other urgent funding needs. As of November 2010, 15.6 percent of engineering positions, 5.9 percent of maintenance positions, and 30.3 percent of support positions were vacant. While these vacancies do allow CDOT needed flexibility in its budget, they also constrain the department's ability to maintain the level of services it has provided in economically healthier years.

# EQUAL OPPORTUNITY

## DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION

FY 2006 - FY 2010



**SUPPORTING MEASURE**  
 Percent DBE Participation in CDOT Projects  
 Annual Objective: 13.3%  
 Actual: 22.8%

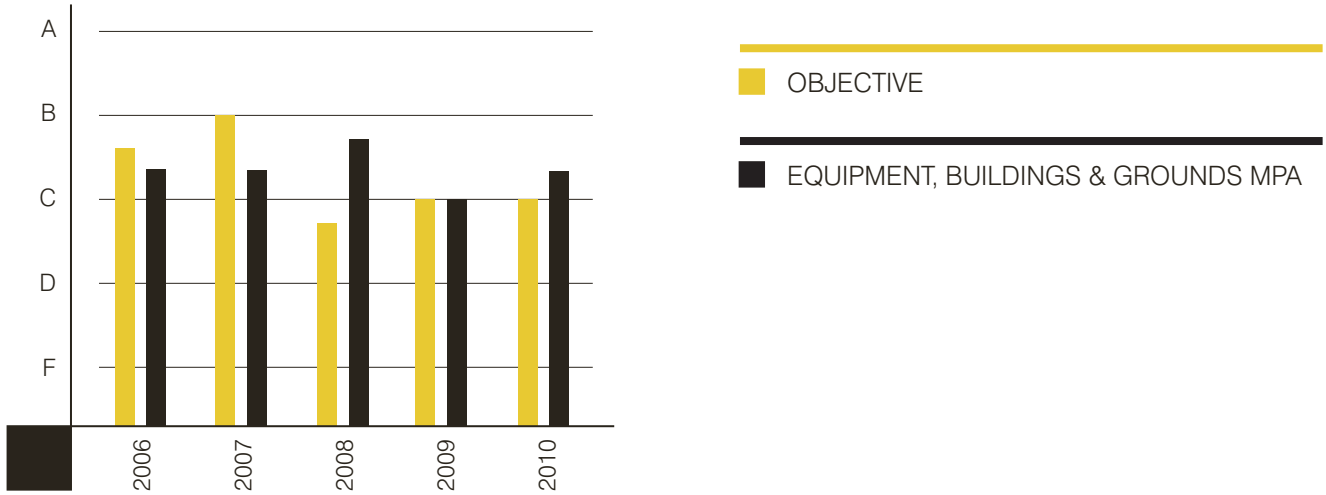
The federal government requires that at least 10 percent of the funds authorized for highway and transit financial assistance programs be expended on Disadvantaged Business Enterprises (DBEs). The intent is to open the construction market to DBEs and foster increased competition. The Federal Highway Administration (FHWA) has set a national aspirational goal for DBE participation of 10 percent. Each state uses an FHWA formula based on the demographic composition of the market to calculate an annual objective, so one state may have a goal of five percent and another state a goal of 15 percent.

In 2010, CDOT had an annual objective of 13.3 percent, which it exceeded, achieving a DBE participation percentage of 22.8 percent.

## DELIVERING MAINTENANCE SERVICES

### MAINTAINING EQUIPMENT, BUILDINGS & GROUNDS

FY 2006 - FY 2010



#### SUPPORTING MEASURE

Equipment, Buildings & Grounds MPA

Annual Objective: C

Actual: C+

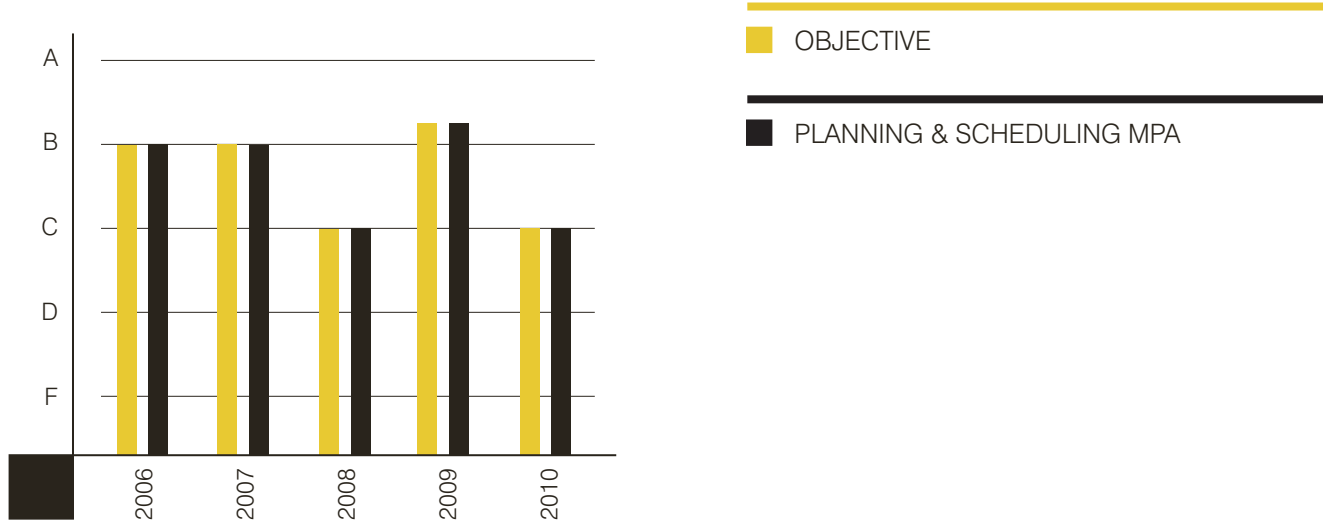
FY 2010 Budget: \$11.4M

Spent: \$13.8M

The upkeep of capital assets, including small equipment, buildings, grounds, and rest areas, is a component of CDOT's maintenance activities and helps ensure the efficient delivery of its services. The department was able to exceed its annual equipment, buildings and grounds objective of a C in 2010, achieving a C+. This MPA does not account for CDOT's road equipment fleet, which is managed separately.

# PLANNING MAINTENANCE SCHEDULE & TRAINING MAINTENANCE STAFF

FY 2006 - FY 2010



## SUPPORTING MEASURE

Planning & Scheduling MPA  
 Annual Objective: C  
 Actual: C  
 FY 2010 Budget: \$11.3M  
 Spent: \$11.4M

As budgets grow increasingly constrained, reliance on the maintenance staff increases. New construction or reconstruction of existing infrastructure has decreased with the fall in funding. Consequently, this places greater emphasis on maintenance of the existing infrastructure, requiring a larger number of resources dedicated to maintaining the current system at the best possible level. As a result, planning of work activities and training of maintenance staff need to be as efficient and cost-effective as possible. CDOT is one of the leading state departments of transportation in training its staff. This is a direct result of the value seen in enabling the department's workforce to be the safest, best trained, and most efficient among its peers. In 2010, CDOT met its annual training objective of a C level of performance.



Given anticipated funding levels, the future of CDOT's performance is varied and uncertain. Dedicated funding for some programs will help them to improve performance, maintain the current level of quality or at least slow the rate of decline, while other programs with less reliable revenue streams are likely to continue to suffer reduced performance at an increasingly rapid rate.

Among performance of programs reviewed within this report, CDOT's bridge program and certain safety elements within many highway projects will reap the greatest benefits from FASTER, the department's largest new dedicated revenue stream. Despite projected declines in annual revenue for Colorado's entire transportation system, FASTER will enable CDOT to repair or replace bridges in poor condition and enhance highway user safety on roadways. Colorado's transit and rail network will also benefit from greater CDOT support thanks to FASTER legislation.

However, several programs, including surface treatment and maintenance, will face tough decisions in the coming years as budgets are not estimated to rise at the same rate as construction and maintenance costs. The department's Pavement Management System has a model for optimizing available funds; however, less than half of the pavement on

the state highway system is in good or fair condition, and this percentage will only decrease if the projected budgets for surface treatment do not increase. This intensifies the workload for the Maintenance Program because keeping a poor road in working condition is more expensive than maintaining a good or fair road.

This is a reality that Colorado cannot ignore. However, growing national recognition that transportation and infrastructure improvements are vital to the U.S. economy may eventually spur much needed investment in Colorado's transportation system. CDOT recognizes its role in the state's economic recovery, and it will continue its efforts to make its operations more efficient, identify program areas where service can be improved, and optimize available funding to provide the best possible transportation system for the state and its visitors.

Cities, counties, private enterprises, community organizations, and the public each have a role in deciding what Colorado's transportation system will become. Federal transportation authorization requires states to design a long-range plan every four years, defining the vision state highway users have for their transportation system in the next 20 years or longer. CDOT spearheads the effort to develop this plan, and will soon begin soliciting stakeholder input in advance of drafting the 2040 plan.

As CDOT looks back on more than 100 years of state-provided transportation in Colorado, it is preparing for the next century. With advances in technology, such as Intelligent Transportation Systems, automated anti-icing and tow plows, and dedicated funding sources like FASTER, CDOT continues to strive to improve overall services to travelers in vehicles and trains and on bikes and foot.



## ACKNOWLEDGEMENTS

This report was prepared by Scott Richrath and Kate Dill in CDOT's Division of Transportation Development under the supervision of Sandi Kohrs and Jennifer Finch.

Special thanks are due to the CDOT personnel that served as report advisors providing data and perspective on the department's performance.

### Report Advisors

Bryan Allery	Stephen Henry	Mike Nugent
Mehdi Baziar	Lizzie Kemp Herrera	Juan Robles
David Bourget	Danny Herrmann	Adam Rolstad
Patrick Byrne	Myron Hora	Pat Saffo
Bruce Coltharp	Pam Hutton	Ben Stein
Lynn Crosswell	Betsy Jacobson	Herman Stockinger
Glenn Davis	Jeri Jo Johnson	Tracie Smith
Ken DePinto	William Johnson	Stephen Sperry
Eric Ellis	Marina Krasny	Rick Tenuta
Ilana Erez	Tamela Lang	Bill Vincent
Regina Eslary-Buena	Mark Leonard	Will Ware
Debra Gallegos	Rahim Marandi	Steven White
Heather Halpape	JoAnn Mattson	Dave Wieder
Debra Haglund	B.J. McElroy	Jim Zufall
Lou Henefeld	Mark Nord	

