

## Colorado Transportation System Performance Report

ANNUAL REPORT



#### **ANNUAL PERFORMANCE REPORT**

#### TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INVESTMENT STRATEGY	4
INVESTMENT STRATEGY CYCLE	6
INVESTMENT STRATEGY	
ALIGNMENT MODEL	7
INVESTMENTS	9
INVESTMENT CATEGORIES:	
GOALS, OBJECTIVES & MEASURES	10
SAFETY	14
	15
SAFE DRIVING BEHAVIOR	16
SYSTEM QUALITY	21
	22
BRIDGE CONDITION	25
	20
OF SERVICE	27
Mobility	32
STRATEGIC PROJECTS	38
PROGRAM DELIVERY	42
PROJECT AD-DATES	
PERFORMANCE	45
CDOT EMPLOYEE	
TURNOVER RATE	46
INVESTMENT STRATEGY	
CYCLE NEXT STEPS	51

## MISSION

To provide the best multi-modal transportation system for Colorado that most effectively moves people, goods and information

VISION

To enhance 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

VALUES

CDOT values people, respect, integrity, customer service and excellence

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## • Executive Summary •

#### End of Fiscal Year 2005

This report is the seventh annual transportation system performance report by the Colorado Department of Transportation (CDOT).

The purpose of this report is to demonstrate CDOT's commitment to the effective delivery of transportation services, programs and projects and to continue to improve efficiencies and accountability. This report includes 45 different Investment and Core Service Level annual performance indicators.

Another purpose of this report is to document and communicate to the public the progress of CDOT toward meeting its mission and the performance towards the adopted goals and objectives of the Transportation Commission.

This report is organized by investment categories (business functions) which are concentrated areas of service provided by the Department. The categories are Safety, System Quality, Mobility, Strategic Projects and Program Delivery. Included in this report are all investment level performance measures and three program delivery core service level measures that are linked to ten goals and twenty-six Department-wide objectives. These measures illustrate trends that reflect the progress of the Department towards accomplishing its mission and vision.

Similar to government agencies across the nation, CDOT continues to encounter challenges as it strives to meet citizen's needs and ever increasing demands for its services and infrastructure. These challenges are compounded by "If you are not measuring it, how are you managing it?"

Colorado's economic situation that has resulted in fewer revenues available to the Department to provide these services and infrastructure. As the information in this report will substantiate, many of the goals Department are being met, of the although in some instances, performance is less than optimum. Though CDOT will continue to focus on its investment strategy to ensure the best use of available funds, should current revenue forecasts prove accurate. the performance of the state highway system will experience significant deterioration over the next twenty-five years<sup>1</sup>.

#### Summary by Investment Category:

**SAFETY** – Of prime importance to CDOT, is delivering a safe transportation system to the traveling public. The two program areas that the Safety category concentrates its efforts on are roadway characteristics and driver behavior programs.



The successes in this category have varied from year to year; nonetheless the

<sup>&</sup>lt;sup>1</sup> 2030 Statewide Transportation Plan

trend has shown positive progress over the past twenty years. Of the annual measures reported, three of the five measures show improvement this year.

After four consecutive increases from 1999-2002, crash rate is the one measure that appears to be headed in the right direction.

#### <u>SAFETY</u>

Services, programs and projects that reduce fatalities, injuries and property damage for all users of the system

#### Goal:

Reduce transportation-related crashes, injuries, and fatalities and the associated loss to society

#### **Objectives:**

• Reduce the rate and severity of transportation related incidents

 Promote the education and awareness of safe driving behavior

• Emphasize applicable safety features consistent with the population growth

Injury and fatal crash rate trends show improvement during the fifteen years that data are reported. Improvement in alcohol related fatalities remains an illusive goal for the Department. However, seatbelt usage has increased significantly over the past fifteen years. Customer's perception of highway and interstate safety has risen slightly over the past three surveys.

**SYSTEM QUALITY** – The condition (quality) of the state transportation infrastructure has been improving since 1998 but the future condition projections based on projected available investments are not promising.

The pavement condition, as measured by Remaining Service Life (RSL) good and fair condition rating as a percentage of the total pavement condition, has risen from a low in 1998 of 44% good and fair condition to 65% good and fair condition in 2005. For the second consecutive year, the Department's goal of 60% good and fair pavement condition has been met.



However, the projected pavement condition for 2010 and 2023 deteriorates to 54% and 32% good and fair condition respectively based on projected revenues.

#### <u>SYSTEM QUALITY</u>

Activities, programs and projects that maintain the function and aesthetics of the existing transportation system

#### Goals:

Preserve the transportation system Keep the system available and safe for travel

#### **Objectives:**

• Enhance and maintain the transportation system to ensure maximum useful life

• Preserve & maintain the existing system at an acceptable level of service/condition state

• Develop a "travel friendly" transportation system that incorporates reasonable customer desires

• Ensure that investments into the transportation system preserves quality of life through aesthetics and environmental concerns

Bridge condition has improved slightly from 1991 through 2004 from 95.5% to 97.2% good and fair condition respectively. Despite the improvement, the long range projected bridge replacement needs, based on current funding, are \$733 million in 2010 and increases to almost \$2 billion of needs by 2030.

The significant effort to maintain the transportation system has been fairly successful from the beginning of the Maintenance Level of Service (MLOS) program in fiscal year (FY) 1999. There are nine maintenance program areas (MPA) monitored, such as snow & ice control, roadway surface, and traffic services. Over the past seven years, 70% of the MPA grades have met or exceeded the adopted goals. Six of the nine MPA met or exceeded the goal in FY2005. This demonstrates the commitment to provide high quality services to the transportation customer. Once again, without àn increase in Department funding, the future maintenance levels of service condition of the state transportation system based on projected available investment indicate deterioration through 2030.

**MOBILITY** – The movement of "people, goods and information" is in the mission statement of the Department and a high priority of transportation system users as indicated by respondents of the 2003 and earlier Statewide Customer surveys.



Because of the population growth in the already congested areas of the state and the vehicle miles traveled per individual continuing to rise, there is a respective growth in congestion. Mobility is a service provided by CDOT that is difficult and complicated to measure. Various mobility measures have been tracked since FY1999 with mixed results. Currently travel time in selected corridors, volume to capacity, and vehicle miles traveled are measured. Future condition projections indicate that congestion, as measured by volume/capacity  $\geq$  .85, will more than double between now and the year 2030.

#### <u>MOBILITY</u>

Programs, services and projects that provide for the movement of people, goods and information

#### Goals:

Improve mobility

Increase travel reliability

#### **Objectives:**

 Seek external customer feedback to improve functional and regional delivery of services

• Preserve transportation choices as a part of an integrated statewide transportation planning process

• Maximize efficiency of the existing infrastructure prior to adding new capacity

• Ensure environmental stewardship of the transportation system

• Implement transportation improvements that enhance the quality of life and promote community values

• Preserve options to anticipate Colorado's future Transportation needs in major mobility corridors

**STRATEGIC PROJECTS** – Until the recent downturn in the Colorado economy affected available transportation revenues, this investment category had substantial progress in attaining the established goals.

Of the 28 Strategic Projects, seventeen have encumbered or expended over 95% of the budgeted funds. Thirteen of the Strategic Projects are complete, four more are fully funded and eight of the remaining eleven have significant progress towards

#### completion.



**PROGRAM DELIVERY** – This investment category encompasses efforts the supporting the CDOT's delivery of programs and services. Currently there adopted investment are no level performance measures, therefore the progress for Program Delivery is reported performance Service using Core measures.

#### STRATEGIC PROJECTS

The 28 high-priority statewide projects that have been committed for accelerated funding

#### Goals:

• Accelerate the completion of the projects

• Increase investment in the program **Objectives:** 

Promote partnerships with all governments to enhance working relationships

• Accelerate Strategic Project delivery while minimizing the impact to all other objectives

• Maintain eligibility of CDOT's bonding program to ensure non-default and ability to bond in the future

#### PROGRAM DELIVERY

Support functions that enable delivery of CDOT's programs and services

#### Goals:

• Deliver high quality products and services in a timely fashion

• Attract and retain an effective and qualified workforce

• Foster an environment that respects workforce diversity

#### **Objectives:**

• Maintain fiscal integrity to CDOT through timely encumbrance of funds and project delivery

• Create a funding environment that preserves the base while pursuing new sources

• Ensure timely product and service delivery

• Identify innovative HR solutions that maximize existing resources to meet business needs

• Create public confidence in department accountability

• Incorporate education in project development and implementation

- Develop planning processes that enhance future project development
- Design projects that foster alternative modes in partnership with local entities

• Maintain a viable service industry to create a competitive environment

• Create an environment that fosters high employee productivity

Naturally, the Department's customers recognize that the quality of CDOT's employees is directly related to the quality of the services that the Department provides. This being the case, measures on hiring practices, retention, retirement rates and training of employees are of prime importance. Over the past eight years, employee turnover has varied from 6.3% to 11%. Last year CDOT's turnover dropped slightly from10.2% to 9.9%. In the past the turnover rate trend has closely followed the economic climate: the better the economy the higher the turnover rate.

Also, tracking the results of employee training is an essential step to help ensure quality services. 97.4% of the internal customer satisfaction survey respondents indicated they were satisfied or higher with the quality of training provided by the Office of Learning and Development.

conclusion. In the Department is improving its focus on what is important to its customers and striving to meet its objectives. With the limited resources due to economic times, the Department can be proud of the achievements made in each investment category over this past year. Continuing this success in the future, in light of anticipated revenue trends will be a great challenge and require that every dollar expended be put to optimal use.

## • Investment Strategy •

Since 1996, the transportation investment decisions process has been undergoing a continuing evolution within the Colorado Department of Transportation (CDOT). The Transportation Commission and the Department's Executive Management (EMT) Team determined that the traditional approach to transportation decisions was losing its effectiveness. The investments in transportation must gauge, on a current and continuing basis, transportation trends to anticipate and prepare to meet the challenges of Colorado's transportation future.

The achievement of this requires sound investments the planning, and determination to attain the desired longrange vision. To succeed at solving a range of complex problems and taking advantage of opportunities, the developed a Department has more comprehensive investment strategy as shown on page 8. This approach now requires a much more integrated process to investing resources that include current and accurate information and data about resources, program performance, and customer needs.

CDOT focuses on five major business functions or investment categories. The investment categories are Safety, System Quality, Mobility, Strategic Projects and Program Delivery. The categories represent the concentrated areas of services of the Department rather than the independent and individualized needs of programs and projects. This approach results an integrated in and interdependent investment strategy effort that establishes а framework for investment planning, implementation and monitoring. This will guide how resources can be deployed and managed to enable the Department to effectively carry out its mission.

During FY2001 and FY2002, CDOT's investment strategy evolved into a full cycle of strategic investment level and core service level planning. This encompasses key elements that will ensure successful implementation as well as the framework for the sustainability of evolutionary process. Through an effective communications with CDOT customers, the Department desires to raise levels of understanding, and increase support and acceptance of this transportation investment visionary strategy. This is especially important in these economic times financial of constraints.

In previous years, the investment strategy cycle was limited to alignment of CDOT's mission, performance and investments. The current investment strategy has evolved to include components of communication and linkage, implementation, and lessons learned through feedback and results. These are the key elements that will ensure continuous improvement and sustainability. The key elements that help define each component of the cycle are as follows:

#### Vision/Mission/Strategy

- Evaluates stakeholder and customer expectations
- Assess the Department's strengths and weaknesses
- Assess the Department's internal and external opportunities and limitations
- Develop policies, strategies and strategic objectives for actions by the Department

#### Performance Management

- Assess current processes and structures for strategic implementation
- Formulate a performance model of the business and identify fundamental drivers of success
- Institute a performance model based on reasonable targets
- Develop key performance measures
- Establish process for review, feedback and revision

#### Communication and Linkage

- Articulate the new investment strategy and performance plan
- Institute the investment strategy by establishing performance measurement and targets
- Cascade performance measures to all levels
- Link performance to accountability and gain Department commitment and customer understanding

#### **Implementation**

- Provide success enablers: training, system support and leadership
- Monitor progress through measures and provide process for review, feedback and revision
- Where needed, apply behavioral and Department change management
- Manage the implementation of goals, objectives and performance measures

#### Investment Feedback and Learning

- Review and summarize performance measures results versus expectations
- Continually assess the validity of the investment categories, goals, objectives, and performance measures and make necessary revisions
- Evaluate the areas of performance measures results not meeting expectations and identify root causes: internal or external influences, resource limitations, or inadequate agency capabilities
- Evaluate the areas of strengths to accentuate the program
- Document and summarize lessons learned and insights for strategic revisioning and refocusing

The above process is illustrated in Figure 1:

## **CDOT Investment Strategy Cycle**



Following through with this cycle of the CDOT's Investment Strategy, Commission Transportation and the Executive Management Team has set the broad outline for the Investment Strategy investment level bv setting qoals. objectives and performance measures. The goals state what the organization wants to accomplish or become over the next decade or more. The objectives, that support the Department's goals, channel resources to the point of implementation people and commit to action. Performance Measures were developed to allow CDOT to measure progress towards its objectives and report that progress to their employees, customers and stakeholders on the outcomes of the investments.

Of the five investment categories, the Strategic Projects category is unique because it has an impact on the Safety, System Quality and Mobility categories. Also, the categories may appear to operate independently but are designed to encompass all of CDOT's major functions that supplement and complement each other. This requires understanding the relationship between the categories for effective decision-making.

## Investment Strategy Alignment Model

The figure below demonstrates the alignment relationship that the investment have categories within the overall Department and to other organizational processes. The design ensures support of the Department's Vision and Mission while creating alignment of the and Department's Goals Objectives. Performance Measures help determine

the accomplishments within the resource parameters. Combined with the customer input, performance measures can provide the necessary data feedback that can help determine where to focus management decisions and the resources necessary to support the desired investment outcome.



# Investments in the Transportation System

The investments shown in the graph below are consistent with the budgeted investment strategies of the Department. The percentages of resources allocated to each investment category have remained fairly constant in each of the categories excepting the Strategic Projects category. CDOT's FY2005 transportation funding has been allocated into the five investment categories based on a number including previous years' of factors performance results. The use of performance results in the allocation process has been in practice for the past seven years. Performance results are data that lend assistance and guidance in the investment decision process. The credibility of the performance data in the Safety, System Quality and Strategic Projects investment categories has increased significantly over this same time

period. Mobility performance data are limited because of the difficulty of tracking the data and the cost to obtain the data on a statewide basis.

The investment increases in the Program Delivery investment category between FY2000 and FY2005 from the 1999 levels are due primarily to new programs or a change in department priorities. For example: Workplace Violence is а Program that was not included. Increases attributable to priority changes include: Worker Safety program, ITS program, Information Technology investments, road equipment, and Maintenance Level of Service (MLOS), and buildings, grounds, and rest areas. Also, Contingency Funds were increased from \$1.5 million to \$10.9 FY1999 million from FY2002 to respectively.





#### **Investments and Percentages by Year**

Furthermore, the management systems that provide some of the data have continually gone through modifications and refinements during the same period adding to the need for prudence in data comparisons and analyses. Additionally, the relationship between investment and outcome is less directly attributable in some programs than in others (e.g., There is a relatively strong relationship between Pavement investment and Remaining Service Life [RSL] performance versus Safety Behavioral investments related to seatbelt usage performance).

Analyzing the numerous performance indicators each fiscal year can give an indication of the state of the system and the associated relational change from year to year. However, care must be taken not to conclude that there was more or less of an emphasis or result in any of the investment categories based only on one or two performance indicators. An indication of this is displayed in GRAPH 6. The allocation increased dramatically in

Vitally important to CDOT is the continued input from their customers and the desire and commitment to meet their needs. One instrument to obtain input is the Statewide Resident Survey-Opinion Survey on Transportation Issues in Colorado. The first survey was conducted in 1994 with a follow-up survey in 2000 and 2003. The Department's objective is to conduct a statewide survey on a recurring basis to obtain valuable customer perception data to supplement other data to guide transportation investments.

In the 2000 survey, the respondents ranked transportation as the second most important problem facing Colorado with growth/sprawl being number one on their list. Noteworthy is that transportation Strategic Projects in FY2001. This does not necessarily demonstrate that the completion of the high priority Strategic Projects was the emphasis over the other investment categories. It may only be an indication that there was a funding source increase for fiscal year 2001. Additionally, between FY2000 and FY2001, the overall budget percentage for System Quality decreased by 9% but the actual dollar amount increased by 14%. Also, the analysis will require awareness of a program shifting from one investment category to another, as is the case in the Mobility and. Safety categories for FY2005. Traffic Operations Program shifted from System Quality to Safety. Therefore a full analysis must be completed on the total budget dollars available, current expenditures, the need category, previous in each vears' expenditures, customer expectations and current performance indicators to form a complete picture of results associated to investments in the transportation system.

### **Customer Perception**

dropped to a tie along with growth/sprawl for fourth in the 2003 Survey following "water issues", "the economy", and "taxes/government spending" respectively. The previous two customer surveys typify the priority investment areas preferred by the general public. When compared with "providing travel options and relief from congestion", "maintenance and repair of transportation system", the and "transportation safety", that respectively are analogous to the Mobility, System Quality, and Safety Investment Categories, the statewide public's preference is investment in congestion relief (Mobility). Safety, in the minds of the transportation user, continues to be the lowest priority according to the results of the 2003 survey.



**GRAPH 8** 

Also quantified in the statewide survey conducted in early 2003 is the customer perception of CDOT performance. This information is provided statewide and in different geographical four areas (Metropolitan Denver, Rest of Front Range, Eastern Plains, and Western Slope) as it was in the 1994 and 2000 surveys. In addition to geographical areas, the 2003 customer survey data are also provided by the six Engineering Regions and the fifteen Transportation Planning Regions (TPR). The survey data

is also a valuable tool for utilization in the statewide planning process.

The results from the 2003 Statewide Customer Survey scored CDOT's overall performance at "C plus". This is the same grade as 2000 with a slight numerical increase (as shown below) and an increase from "C" in the 1994 survey.

Additional customer survey information relating to a specific investment category will be provided in the associated investment category portion of this report.



#### Safety Investment Category "Services, programs and projects that reduce fatalities, injuries and property damage for all users of the system"

The Safety Investment Category is funded in two key program areas: Roadway Characteristics and Driving Safety Behaviors. Roadway Characteristics performance is measured by: Total Crash Rates, Injury Rates, and Fatality Rates. Behaviors performance Drivina is measured by tracking: Alcohol Related Fatality Rates and Seatbelt Usage. In the development stage are the performance

indicators for the objective "Emphasize applicable safety features consistent with population growth." To measure the performance for this objective, elements of safety "Before & After" treatments as well as "Evaluation of Cost Effectiveness of Safety Improvement Strategies" are being tracked. Data have yet to be solidified enough to assess the impact on the Department's safety performance.

#### **CDOT's Investment in Safety**

Based on the Colorado Integrated Safety Plan and other safety needs, CDOT budgeted nearly \$86 million to safety related programs and projects for FY2005. This appears to be a significant increase over previous years but is primarily attributed to shifting "Traffic Services" allocation of funds from the System Quality category to the Safety Category.



#### Safety Investments by Program

#### Goal

Reduce transportation-related crashes, injuries and fatalities and the associated loss to society

#### Objective

Reduce the rate and severity of transportation related incidents

#### Performance Measure

Statewide safety incident rate including fatal and injury rate

#### Purpose

Measuring the frequency of crashes, injuries and fatalities performance by year enables CDOT to indirectly determine if their safety investments are having an impact in reducing frequency and severity of crashes.

#### **Current Condition**

The safety trend forecasts are assessed periodically and reported in the "Colorado Integrated Safety Plan (ISP)." These trend analysis conclusions are a factor used for setting safety targets.

The crash rate forecast is 306.1 and 317.4 for 2005 and 2008 respectively. This forecast is reported in the 2005-2007 ISP along with other safety forecasts. The forecast trend is contrary to the department's goal to reduce the crash rate.

#### STATEWIDE TOTAL CRASH RATE

(Crashes per 100 million vehicle miles traveled) After the substantial decrease in the total crash rate from 1989 through 1992, the rate had been slowly but steadily rising to a point higher than the 299 in 1990. However, in 2003 and 2004, the rate has made a reversal but still remains 18 points above 1992 rate of 275.4.



#### STATEWIDE FATAL CRASH RATE

(Fatalities per 100 million vehicle miles traveled)

The fatality rate has been varying from year to year with an overall downward trend from 1989 through 1999 when it reached 1.37 fatalities per 100 million vehicle miles traveled (MVMT). However, similar to the crash rate, the fatality rate started to climb until a major reversal in 2003 and continues in 2004.



The fatality rate is at an all time low. Furthermore Colorado's fatality rate is 0.16 below the national average of  $1.46^2$ .

 <sup>&</sup>lt;sup>2</sup> 2004 Traffic Safety Annual Assessment, U.S.
Department of Transportation's National Highway
Traffic Safety Administration (NHTSA)



# The statewide injury crash rate of 70.1 has improved since the 1981 high of 126.2 per 100 MVMT. Nevertheless, the rate had increased to slightly over 80 in 2001 from a low of 74.1 in 1997 before heading in a downward trend again to an all time low this past year.

The Safety performance measures data is the perfect example of "no performance measure stands alone" rule when using data to support decisions. The recent rise in "alcohol related fatal rate" (Graph 13 below) implies that the investments are not sufficient to have an impact on Safety. However, the other statewide safety rates must be assessed along with the "alcohol related fatal rate" prior to making decisions on investments in the Safety investment category.

#### **Objective**

Promote the education and awareness of safe driving behavior

#### Performance Measure

> Alcohol related incidents compared to statewide incident rate

#### Purpose

This measure determines the rate of fatal crashes resulting from driving behavior associated with driving under the influence of alcohol. It can also help determine if more emphasis needs to be focused on driver behavior specifically related to driving while impaired.

#### **Current Condition**

Although monitoring total crashes helps to determine the magnitude of problems in the safety category, differentiating between types of crashes, those that are roadway characteristics versus driver behavioral (alcohol related fatal and seat belt usage) can help determine the specific problem area. The monitoring and investments in these programs are aimed at decreasing the number of these types of crashes with the ultimate goal to minimize the associated economic and social impacts.





Again, similar to fatal crash and injury crash rate trends, alcohol related fatal crash rates had been steadily decreasing from a high in 1981 of 54% (not shown) to a low of 30.5% in 2000 but in recent years is in a disturbing upward trend.

#### **Objective**

> Promote the education and awareness of safe driving behavior

#### Performance Measure

> Incidents involving seatbelt usage compared to statewide incident rate

#### Purpose

This measure determines what percentage of the general population is adhering to safe driving behavior by wearing their safety belt.

#### **Current Condition**

Seat belts are the most effective means of reducing fatalities and serious injuries. When traffic crashes do occur, seatbelts are estimated to save more than 14,000 passenger vehicle occupants and a savings of more than \$50 billion in medical care, lost productivity, and other injury-related costs<sup>3</sup>.

Research has found that lap/shoulder belts, when used properly, reduce the risk of fatal injury to front seat passenger car occupants by 45 percent and the risk of moderate-to-critical injury by 50 percent. For light truck occupants, seat belts reduce the risk of fatal injury by 60 percent and moderate-to-critical injury by 65 percent<sup>3</sup>.

Vehicle window surveys show that use of seat belts is not uniform by area of the state, vehicle type, or age groups.

As illustrated in the graph to the right, seat belt usage in Colorado has increased substantially from 50% in 1990 to 79.2% in 2005.

The 2005 seatbelt usage is well on its way towards the 2010 goal. If the trend continues at the past linear rate, the goal should be surpassed in 2010.



<sup>&</sup>lt;sup>3</sup> U.S. Department of Transportation, National Highway Traffic Safety Administration, 6<sup>th</sup> Report to Congress 2002

#### Objective

> Emphasize applicable safety features consistent with the population growth.

#### Performance Measure

- Return on Investment for Designated Improvement Sites
- Corridor Safety Assessment

#### Purpose

The methodology to enable the reporting of the two above performance measures is in the developmental stage. Data is currently being tracked to set the baseline and allow for comparison analysis in future years. These results will allow for focusing of investments in very specific safety problem areas.

## **Customer Perception of Safety**

#### Objective

- > Emphasize applicable safety features consistent with the population growth
- > Promote the education and awareness of safe driving behavior
- > Reduce the rate and severity of transportation related incidents

#### Performance Measure

> Customer perception rating of system safety and driver behavior programs

#### Purpose

The purpose of this performance measure is to gauge overall customer perception on what they perceive to be safe or not safe. This measure will help CDOT determine if the safety improvement projects are perceived as having a positive impact on its customers. Gauging customer perception is one of the techniques used to validate investment decisions.

#### **Current Condition**

Customers rated making highways and interstates safe an above average grade of B minus on a scale of A through F. The customer perception has risen slightly over the past three surveys.

#### **Current Condition:**

#### **Customer Perception of Safety Services**

As shown in graph 15, there aren't any specific safety areas that demonstrated a significant low in customer perception grade. The customer survey results did convey a continued better than average performance in the visibility of signs and handling of rockslides and avalanches in the recent surveys.

#### Making Interstates & Highways Safe Maintain Visible Road Markings Providina Adequate Shoulders on Roads Providing Safe Railroad Crossings Handling Rockslides and Avalanches Making Highway Sians Visible GRADE F D С В Δ **GRAPH 15 1994** 2000 **2003**

#### Safety: Customer Perception

#### **Customer Perception of Crash Causes**

When asked what is perceived to be the most common cause of traffic crashes, the respondents have consistently indicated "driver behavior" as shown in graph 16.

However, contrary to this perception on causes of crashes, they also continue to prefer resource expenditures on improving the roadways rather than on public safety campaigns (driver behavior programs) to improve traffic safety.

This may be understandable given that sixty four percent of the participants also indicated that "driver behavior" campaigns have no effect on their driving behavior, thus giving tacit disapproval to investments in this area.

#### Customer Perception of Crash Causes



#### Customer Perception: Roadway safety improvements preferences.

With roadway improvements the preferred investment solution to crashes, the tradeoffs in the roadway improvements program area were posed to respondents. The Metro Denver, Rest of Front Range and West Slope respondents' highest safety priority (Graph 17) is "intersection safety improvements." The highest priority was evenly divided between "intersection safety improvements" and "guardrails and shoulders on rural roads" for the Eastern Plains respondents.



#### **Customer Safety Improvements Preference**

■ Metro Denver ■ Rest of Front Range □ Eastern Plains ■ Western Slope GRAPH 17

## System Quality Investment Category

#### "Activities, programs and projects that maintain the function and aesthetics of the existing transportation infrastructure"

The significance of this investment category is that it is responsible for the quality of the transportation infrastructure. Investment decisions in this category impact the surface quality and remaining service life of roadways and structures. The investment Program Areas are: Pavement, Bridge, Roadside Facilities, Traffic Operations, Rest Areas, Roadside Appearance and Other Modes.

#### **CDOT's Investments by Program Area in System Quality**

Based on the fiscal year 2005 Budget, CDOT allocated approximately \$278.6 million, which is 35.3% of the total budget, to System Quality programs, services and projects. The system quality budget is allocated to the program areas as shown in graph 18.



Expenditures by Fiscal Year (Missing amounts in graph above are shown below)							
In millions of dollars	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005
Undefined & Rail Corridors	\$2.19	\$0.87	\$5.26	\$5.01	\$0	\$0	\$0
Aviation Runways	\$9.46	\$10.31	\$10.55	\$10.61	\$11.24	\$14.69	\$0
Tunnels	\$2.4	\$2.7	\$4.80	\$4.98	\$4.75	\$5.14	\$4.72
Rest Areas	\$10.44	\$14.74	\$14.09	\$6.96	\$3.82	\$2.79	\$3.7
Roadside Appearance \$5.20 \$5.6 \$6.95 \$8.17 \$7.01 \$7.02 \$7.43							\$7.43
Table 1							

#### Goals

- Preserve the transportation system
- > Keep the system available and safe for travel

The pavement (includes surface treatment program, roadway surface [within Maintenance Level of Service], and gaming funds) and bridge (includes bridge program and Structures [within Maintenance Level of Service] funds) program investments, as shown in the graph above, constitute between 68% and 86% of the system quality budgeted dollars respective of the year.

#### **Objective:**

> Enhance and maintain the transportation system to ensure maximum useful life

#### Performance Measure

Percent pavement condition rating of fair or better

#### Purpose

These measures gauge the foundational strength and condition of the transportation infrastructure. The transportation investments in System Quality category can impact the performance and customer perception of other investment categories such as the level of safety and mobility performance.





#### **Current Condition**

Colorado's state highways pavement condition rating trend is reflected in the four preceding graphs. Consistent with the Department's investment strategy direction, the output of the Pavement Management System is focused on Remaining Service Life (RSL).

The graphs illustrate a substantial change in pavement condition between years 1997 and 1998, which is due to the different methodology to measure pavement condition at the juncture of these years. Instead of a ride-ability index pavement condition rating based on elements of surface smoothness and aesthetics used in 1997 and prior years, the pavement condition is rated for the length of remaining service life condition from 1998 and thereafter. Thus the data for 1997 and prior years are not comparable to 1998 and subsequent years. This change of evaluation redistributes the investment away from the obvious visible needs of the surface and more towards sustaining and maintaining the remaining value of the roadway.



**Projected Pavement Condition** 

The pavement condition objective is to attain a 60 percent Good/Fair remaining service life on highways statewide overall. This objective is further separated into three classifications: interstates, NHS (National Highway System non-interstate), and other state highways. The goals for these are 85 percent on interstate highways (976 centerline miles), 70 percent on NHS highways (2395 centerline miles), and 55 percent on all other state highways (5669 centerline miles).

As shown by the statewide pavement condition graph 19, the overall pavement condition has improved by 21% on state highways from 44% to  $65\%^4$  from 1998 to 2005 respectively.

The Interstate highways pavement condition has improved for the fifth year in a row, the NHS has improved significantly from 2004 to 2005, and the "Other State" highways have improved by 3% over the same period of time. Nonetheless, monitoring the pavement condition during the next several years will be critical based on projections represented in graph 23. The projected pavement condition graph indicates that a substantial annual<sup>5</sup> investment increase over the present investment (\$135M) will be necessary to maintain the overall statewide Good/Fair pavement condition at or above the Department's objective of 60% Good/Fair.

<sup>&</sup>lt;sup>5</sup> Assumes 6.0% inflation in costs and 3.5% increase in budget per year.

Does not include all essential project associated costs or non-surface improvement costs such as safety and bridge enhancements.

<sup>&</sup>lt;sup>4</sup> Based on lane miles of data collected

#### **Objective**

> Enhance and maintain the transportation system to ensure maximum useful life

#### Performance Measure

> Percent bridge sufficiency rating of fair or better

#### Purpose

These measures gauge the foundational strength and condition of the transportation infrastructure. The transportation investments in system quality category can impact the performance of other investment categories such as the level of safety and mobility performance as well as customer perception of these.

#### *Current condition – Bridges*

As in previous years, the bridge condition rating for 2005 had a slight change in the Good/Fair rated bridges. The percentage of bridges in the poor rating category has been shrinking at an extremely slow pace. Bridges in the poor category typically indicate a need for replacement versus preservation. The current replacement cost for these bridges is estimated at \$295 million dollars. Obviously this presents an enormous challenge for the CDOT because of the decreased funding caused by Colorado's tight fiscal situation. The total bridge dollars represented in the graph on page 21 does not include other bridge dollars for programs such as Strategic Projects or T-Rex. This makes it difficult to ascertain an exact investment to results analysis for the bridge program.



Good	=	Structural Sufficiency Rating > 80 or NO
Fair	=	Structural Sufficiency Rating $\geq$ 50 but $\leq$ 80 and SD or FO
Poor	=	Structural Sufficiency Rating < 50 and SD or FO
SD = Struct	urally Defici	nt FO = Functionally Obsolete NO= Not Structurally Deficient or Functionally Obsolete



The preceding graph shows the estimated bridge condition needs<sup>6</sup> over the next twenty-five vear period based on alternative funding levels per year. A projected funding of \$125 million dollars per year for twenty years would eliminate the backlog of current bridge needs and thereafter funding of \$116 million per year would maintain the bridges at 100% Good or Fair condition. Obviously a higher level of initial funding would eliminate the backlog of current bridge needs sooner.

The ideal funding scenario is to provide dedicated funding against the bridge needs to preserve bridge infrastructure and thereby minimizing cost impacts due to deferred preservation/maintenance. Present direct investments of \$60 million dollars (\$30 plus million to the bridge program and \$30 million of other funds) in bridge investments fall far short of the projected needs. The alternative funding scenarios shown demonstrate the current bridge program investment needs based on the below assumptions.

- 2. \$295 million backlog of poor bridges requiring replacement
- 3. \$277 per square foot total project replacement cost
- 4. Number of bridges remains constant
- 5. Calculations in 2005 dollars not adjusted for inflation

<sup>• &</sup>lt;sup>6</sup> Assumptions:

<sup>1.</sup> Bridge life expectancy of 75 years

#### **Maintenance Levels of Service**

Within CDOT, there are three tiers of performance accountability ranging from the investment level, to core service level and finally to the tools & service level. The activities encompassed within the Maintenance Levels of Service (MLOS) are tracked and rolled up to the Maintenance Program Areas (MPAs) and then again to the statewide average. The following performance measures and levels of service have been incorporated within a process of annual maintenance development program based upon performance management principles. The

delivery of maintenance services encompasses about individual 70 activities organized within nine MPAs. They are as follows: Planning & Training; Roadway Surfacing; Roadside Facilities; Roadside Appearance; Traffic Services; Structures; Snow Ice Control: & Equipment, Buildings, & Grounds; and Tunnels. Each of the nine program areas is assessed for the service level achieved against expenditures. their Each assessment is then converted into a grading scale of A through F.



Maintenance Lev	el of S	ervice I	nvestments
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MLOS Expenditures (Missing amounts in graph above are shown below)							
In millions of dollars	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005
Planning & Scheduling	\$6.17	\$7.36	\$7.49	\$6.89	\$7.78	\$7.36	\$7.82
Roadside Appearance	\$6.18	\$7.65	\$6.47	\$7.08	\$6.50	\$7.77	\$6.51
Structures	\$1.77	\$3.95	\$4.70	\$6.33	\$7.13	\$6.37	\$9.86
Equip., Bldgs., & Grounds	\$9.43	\$10.57	\$10.93	\$10.15	\$11.63	\$10.69	\$9.52
Table 2							

#### Objective

Preserve and maintain the system in an acceptable level of service/condition state

#### Performance Measure

Maintenance condition survey

#### Purpose

This measure demonstrates the optimization of the maintenance budget and the service results achieved in each of the maintenance program areas.

#### **Current Condition**

The budget in the Maintenance Level of Service program for FY2005 was \$190.5 million dollars. The concept of gauging performance within the Maintenance Level of Service programs areas has been in place for seven fiscal years. As a result, it's expected that the current service levels remain relatively constant and near the targets from 1999 through 2005. The graph below illustrates the Department meeting or exceeding the Statewide Level of Service (LOS) overall targets in only three of the past seven years of the program. Table 2 lists the nine maintenance program areas and the associated target and performance in each MPA. Four of the nine maintenance program areas exceeded and two met the targeted performance for FY2005 and should be an area of CDOT service celebrated for accomplishments that are of importance to the traveling public.



Maintenance Condition Survey				
Maintenance Program Areas	FY 2005 Targets	Current Performance	FY 2005 Achievement	
Planning & Scheduling	В	В	Target met	
Roadway Surface	В	B +	Target exceeded	
Roadside Facilities	В	В	Target met	
Roadside Appearance	В	C +	Target not met	
Traffic Services	C +	B +	Target exceeded	
Structures	D +	С	Target exceeded	
Snow & Ice Control	В-	Α-	Target exceeded	
Equip., Bldgs., & Grounds.	В-	C +	Target not met	
Tunnels	В-	С	Target not met	
Statewide Total     B     B -     Target not met				
TABLE 3				

The following graphs illustrate seven years of investments (in millions of dollars), the levels of service targets, and the levels of service outcomes on an annual basis in the maintenance program areas. Generally, maintenance has provided expected results from resources invested.





## Customer Perception of System Quality

#### Objective

- Develop a "travel friendly" transportation system that incorporates reasonable customer desires
- Ensure that investments into the transportation system preserve quality of life through aesthetics and environmental concerns

#### Performance Measure

Perception of return on investment for quality of life

#### Purpose

The measure over time will help CDOT understand if its investments are providing value and benefit in meeting the Department's goals as well as meeting customer expectations.

#### **Current Condition**

Customer ratings related to specific aspects of services provided by CDOT included in the system quality category, ranged from "B" level for 'signage' down to the "C" level for 'maintaining road surfaces'. The customers' feedback highlights areas of concern and focus to

guide decisions for investments for CDOT.

Two questions related to Quality of Life issues in the 2003 survey were asked of the respondents for the first time. Both improving air quality and protecting the environment received a rating of "C plus."



## **Customer Perception of System Quality Services**

#### Mobility Investment Category "Programs, services and projects that provide for the movement of people, goods and information"

The Mobility Investment Category is a comprehensive category that complements other investment categories. The Mobility Investment Category Strategy encompasses

investments made in accessibility to the transportation system, transportation options, connectivity, travel time variability and overall infrastructure management.

#### **CDOT's Investment in Mobility**

CDOT allocated for fiscal year 2005 slightly over \$207 million, which is 26.3 % of the total budget, to Mobility related areas including: Highway Performance, Weather/Other Response, Travel Demand, Facility (System) Management and Alternate Modes.



Travel Demand: are primarily CMAQ funds

Facility Management: are "Other Regional Priorities" – Mobility share

Alternate Modes: are Aeronautics, Transit, LTAP, Enhancements (Bike/Pedestrian), Highway Performance: are primarily "Metro" funds

#### Goals

- Improve mobility
- Increase travel reliability

#### **Objectives**

- Seek external customer feedback to improve functional and regional delivery of services
- Preserve transportation choices as a part of an integrated statewide transportation planning process
- > Maximize efficiency of the existing infrastructure prior to adding new capacity
- Ensure environmental stewardship of the transportation system
- Implement transportation improvements that enhance the quality of life and promote community values
- Preserve options to anticipate Colorado's future transportation needs in major mobility corridors

#### **Performance Measures**

- Rate of change in Vehicle Miles of Travel
- Rate of change in Volume to Capacity
- Congested Person Miles Traveled
- Travel Rate Index
- Customer Perception Rating of Travel Reliability and Ability to Travel
- Percent of Travel Needs Met

#### Purpose

The collective Mobility measures will be able to assess the reliability as well as the accessibility of the transportation system to provide consistent travel, connectivity of the system, the ability to choose alternative modes of travel and the overall movement to the traveler.

#### **Current Condition**

The measure of "Mobility" performance is an area that has been evolving since the beginning of the investment strategies program. There are numerous suggested measures that have been proposed, not only in Colorado but also in many other States, to measure Mobility with little concurrence on best practices. Mobility means many different things to many different transportation users. The effort to illustrate mobility performance statewide led to CDOT being committed in the near term to measure mobility by the growth in vehicle miles traveled (VMT) and volume to capacity (V/C). As well as, measures indicating travel reliability by measuring road closures in major corridors. Customer perception of mobility is an important tool to balance the priorities of mobility reliability, accessibility, variability, availability, and connectivity.

#### Vehicle Miles Traveled

The number of vehicle miles traveled is continuing to increase, but prior to 2005 at a slower pace than during the early 1990's. In 2005, the 3-year average growth rate increased for the first time since 1996.



#### Vehicle Miles Traveled and Average Growth Rate

#### Volume to Capacity by Centerline Miles

The following table illustrates the centerline-miles with V/C ratio of greater than .85 for the calendar years 1996 through 2003. The methodology and data availability used for calculation purposes changed from 2000 through the current year which restricts the ability to compare results before and after of congestion in Colorado. A consistent methodology and data to calculate congestion will enable better comparison analysis in future years.

Year	Congested Centerline Miles ≥ .85 V/C	Percent of Total Centerline Miles Congested		
1996	582	6.4%		
1997	635	7.0%		
1998	N/A	8.2%		
1999	860	9.4%		
2000	867	9.5%		
2001	724*	7.92%*		
2002	734	8.03%		
2003	623**	6.81%**		
2004	596.6**	6.5%**		
TABLE 3				

\* NOTE: The drop from 2000 to the 2001 is attributable to a change in the methodology used to update the Directional Distribution (DD) and Design Hour Volumes (DHVs).

\*\* NOTE: From 2002 through 2004, the drop in total congested miles was mostly due to lane additions that were not reflected in the 2002 and 2003 capacity values. Also, decreases in Average Annual Daily Traffic (AADT) in some segments or substantial changes in DHVs in other segments account for further reduction in total congested miles.

#### Volume to Capacity by Lane Miles

CDOT conducts annual analysis of highways to determine congested segments of volume-to-capacity (V/C) ratio and will continue to track these changes over time. The congested lane miles of less than .7, from .7 to .85, .86 to .99, and over 1 volume to capacity ratios are identified in the chart below. On page 38, the statewide map shows the corridors with .85 and greater volume to capacity in red. It should be no surprise that the map reveals that the majority of the congestion resides along the Front Range where the majority of Colorado's population resides.

The congestion data, tracked over a period of time, on the highway system gives valuable data for trends to develop strategies for mitigation of congestion.



**2004 Congested Lane Miles** 

#### **Customer Perception of Mobility**

#### **Objective**

Seek external customer feedback to improve functional and regional delivery of services

#### Performance Measures

Customer Perception Rating of Travel Reliability and Ability to Travel

#### Purpose

This measure over time will help CDOT understand if their investments are providing value and benefit in meeting the Department's Mobility goals as well as meeting customer expectations.

#### **Current Condition**

According to the 2003 Statewide Customer Survey, congestion remains the highest transportation related priority issue in three of the four geographical Regions.

This high concern is also reflected in the mobility related areas, as shown in the graph at right, rated by the travelers in Colorado. The lowest grade of "C" is in "providing enough lanes." Of significance, is that there was more than a half percentage point difference between the four geographical areas surveyed. The Denver metropolitan area gave a 1.9 rating to a 2.5 given by the western slope. The combined Mobility related response averages for 2000 and 2003 are 2.2 and 2.6 respectively.



#### **Customer Perception of Mobility**



State Highways V/C ratios lesser than 0.85 V/C ratios equal or greater than 0.85 County Lines

Volume-to-Capacity Ratios on State Highways for 2004 (based on 30th highest hourly volumes and old capacities)

## Strategic Projects Investment Category

#### "The 28 high-priority state-wide projects that have been committed for accelerated funding."

The Strategic Projects Investment Category was established to accelerate the funding and development of high priority transportation projects throughout the state. A base of 28 specific projects is maintained within this investment category. The elements that qualify a project for high priority status are based on the overall visibility, cost and return on investment of the project in addressing on-going needs of safety, system quality and mobility.

#### **CDOT's Investment in Strategic Projects**

As approved by the Transportation Commission, the total 1999 projected un-inflated cost to build the 28 strategic projects was \$4.65 billion dollars. The current cumulative programmed dollars are \$2.983 billion dollars<sup>7</sup>. For fiscal year 2005, CDOT budgeted \$100 million dollars to the Strategic Projects.



#### Goals

- Accelerate the completion of the projects
- Increase investment in the program

#### Objective

- Accelerate Strategic Project delivery while minimizing the impact to all other objectives
- > Promote partnerships with all governments to enhance working relationships
- Maintain eligibility of CDOT's bonding program to ensure non-default and ability to bond in the future

<sup>&</sup>lt;sup>7</sup> Funds were encumbered and expended prior to 1999 on the 28 Strategic Projects Cumulative dollars are inflated dollars

#### Performance Measures

- Actual Funds Encumbered Versus Total Encumbrance Planned by Program
- Actual Funds Expended Versus Planned reported on a quarterly and yearly basis

#### Purpose

The combined efforts of the Strategic Projects measures will provide the fiscal accountability to managers necessary to plan and prepare for project development and delivery. These measures will provide quantifiable data to management to assist in determining project shortfalls or overages that impact project delivery timelines and high priority project investments.

#### **Current Condition**

Of the 28 Strategic Projects, The Regions have monitored the project dollar expenditures and encumbrances since the inception of the program to expedite the delivery of the projects. The continuing challenge is to encumber or expend 100% of funds within a specified timeframe on projects planned. The difficulty of this measure is the environment in which projects are managed. Project delays can and do occur outside of the direct control of CDOT project managers. Despite this somewhat difficult situation and challenge. this CDOT's pursuit of measure. combined with other performance data, should ultimately provide the necessary information to improve the encumbrance and expenditure of funds that will effectuate project completions.

The graph on the next page illustrates the Strategic Projects status by project in

budgeted to date terms. The Strategic Projects current status indicates that 97.8% percent of the budgeted dollars have been expended or encumbered since the adoption of the Strategic Projects program. These projects are complete or nearing completion: US 50 Delta to Grand Junction, I-25/US50/SH47 Interchange, Parker I-225 and Interchange, I-76 and 120th Avenue Interchange, I-25 (Owl Canyon Rd. to Wyo.), I-70: Tower Rd. to Kansas, U.S. 287, C-470 Extension, US34 (I-25 to US 85), Santa Fe Dr. corridor, I-76/120<sup>th</sup> Interchange, US285 (Goddard Ranch Ct. to Foxton Rd.), SH82 (Basalt to Aspen), and Santa Fe Corridor. In addition, four more are fully funded and significant progress has been made on eight of the remaining eleven.





GRAPH 47					
SP 4015 SP 4016 SP 4017 SP 4018 SP 4019 SP 4020 SP 4021	US 550, Durango to New Mexico US 160, Jct. SH 3 to Florida River C-470 Extension US 34, I-25 to US 85 US 287, Broomfield to Loveland Powers Blvd in Colorado Springs SH 82, Basalt to Aspen	SP 4022 SP 4023 SP 4024 SP 4025 SP 4025 SP 4026 SP 4027 SP 4028	Santa Fe Corridor in Denver SE Corridor (I-25, Broadway to Lincoln) East Corridor (Denver to DIA) <sup>8</sup> West Corridor (US 6, I-25 to I-70) <sup>8</sup> West Corridor (DIA to Eagle Cty. Airport) I-25 (Denver to Colorado Springs) I-25 (SH 66 to Fort Collins)		

SP4021

Encumbered

SP4022

SP4023

SP4024

SP4018

SP4019

SP4020

0%

SP4015

SP4016

Expended

SP4017

SP4028

SP4026

**SP4027** 

SP4025

Balance

<sup>&</sup>lt;sup>8</sup> No resources were originally allocated to these strategic projects over the initial 20 year period

#### **Objective**

- > Promote partnerships with all governments to enhance working relationships
- Maintain eligibility of CDOT's bonding program to ensure non-default and ability to bond in the future

#### Performance Measures

- Percent Ad Dates Met Prior, On-Time, Within 30 Days, 60 days, or beyond 60 days
- Days to Complete Payment Processing and Billing Compared to Indenture and Continuing Disclosure

#### **Current Condition**

The performance of meeting Ad-Dates is material to the Strategic Projects but is shared with the Program Delivery investment category. Though the data measures strategic projects timeliness, Ad-Dates is a measure of the support services leading up to the project completion. Accordingly this measure is being included in the Program Delivery section of this report. The days to complete payment processing measure tracking system has not been pursued as of this date.

## **Program Delivery Investment Category**

## "Support functions that enable the delivery of CDOT's programs and services"

The Program Delivery Investment Category contains the organizational support that enables the delivery of CDOT's programs and services.

- Strategic Support is responsible for the policy and communication functions.
- General Support is responsible for those functions that assist in the day-to-day operational support such as Finance Management and Budget, Administrative Services, Human Services, Procurement and Project Development.
- Program Support includes functions that are unique to CDOT, which would not normally be found in most governmental agencies. Since CDOT's mission supports the movement of people and information, specific programs are used including Right-of-Way Services, Staff Construction and Materials, the Environmental Programs, Staff Design, Aeronautics, and Staff Maintenance.
- Facilities and Equipment is responsible for the maintenance and management of CDOT facilities, vehicles and equipment.
- Data Collection is responsible for all of CDOT's data collection programs.

#### CDOT's Investment in Program Delivery

For fiscal year 2005, CDOT allocated approximately \$117 million, an increase of 9.7% from FY2004. The Program Delivery investments are disbursed in the above five program areas and illustrated in Graph 48. The majority of the increases from 2004 to 2005 are in Worker Safety programs, Information Technology, and Worker Compensation Insurance areas. This area of investment is somewhat limited in volatility from year to year because of the legislative cap on the number of personnel within CDOT. Regardless, there is an overriding concern by the public to ensure accountability and efficiency in government. The Transportation Commission and Executive Management Team recognize this fact and have been tracking performance at the investment level for the past seven years and the core service level for the past three vears to focus on delivery of services results.



#### Goals

- > Deliver high quality products and services in a timely fashion
- > Attract and retain an effective and qualified workforce
- > Foster an environment that respects workforce diversity

#### **Objectives**

- Maintain fiscal integrity to CDOT through timely encumbrance of funds and project delivery
- Create a funding environment that preserves the base while pursuing new sources
- > Ensure timely product and service delivery
- > Create public confidence in Department accountability
- > Incorporate education in project development & implementation
- > Develop planning processes that enhance future project development
- > Design projects that foster alternative modes in partnership with local entities
- > Maintain a viable service industry to create a competitive environment
- > Create an environment that fosters high employee productivity

#### The following performance measures are at the core service level. Investment level performance measures are to be developed as the Transportation Investment Strategies evolve.

#### Strategic Support Level Performance Measures:

- Customer Assessment Survey Rating (General Public)
- Percent of Projects Accelerated With Additional Funds
- > Percent of Projects Ahead of Schedule
- Percent of Projects That Incorporate a Wide View (includes multi-modal elements) of Transportation
- Post Project Quality Assurance Rating (includes project elements such as conformance to standards, rules & regulations, policies, design)

#### General Support Level Performance Measures:

- Employee Satisfaction Survey Rating Regarding Management Support, Tools, Resources & Training
- Internal Customer Satisfaction Survey Rating
- > Average Employee Turnover Rate Per Year Per Critical Job Class
- > Average Employee Replacement Time from Vacancy to Hire

- Average Contract Development Days From Project Scope to Contract Implementation
- Percent of Contracting Documents Encumbered within Five Days of Contract Execution
- Percent Technology Needs Implemented Versus Technology Requirements
- > Percent of Vendor Payments processed within Established Goals
- > Operational Cost Vs. Average Age of Facility or Equipment

#### Program Support Level Performance Measures:

- > Percent Funds Encumbered Within Reporting Period
- > Percent of Projects Completed Within the Fiscal Year Scheduled
- Percent Ad Dates Met On-Time, Within 30 Days, 60 days, or beyond 60 days
- Percent of Projects Accelerated Resulting From Improved Environmental Assessments
- > Average Length of Time for Environmental, ROW, and Utilities Clearance
- > Three Year Average Percentage of "project overhead"
- Percent of Budget Spent on Contractor Work vs. Total Budget

#### Purpose

The measures will provide quantifiable data that will help determine to what extent funding is spent and encumbered and the contribution of support services to the delivery of projects and programs within planned timeframes. The measures balance the need to fiscally manage the resources while ensuring high caliber product delivery and customer service. The Program Delivery performance measures included in this report are in the evolutionary process and may change from year to year as the Investment Strategies are implemented.

#### **Current Condition:**

A key driver in meeting both the Projects and the Program Delivery Investment Category goals is gauging how well project advertisement dates (ad-dates) are being met (Graph 49). In FY2005, 45.9% of projects' ad-dates<sup>9</sup> were met prior to or on the scheduled ad-date. This is an on-time ad-date performance increase of 4% from FY2004 to FY2005 but the performance remained below FY2003. The projects beyond the 60-day scheduled ad-date timeline increased to 27.1% from 25.6% but remains 28% better than in FY2001. For each delayed day, not only are the project timelines impacted but also the ability to manage project resources effectively is impacted. More importantly, fiscal accountability becomes difficult to manage. The ability of the Department to begin projects on time tremendous impacts has on the Department's credibility with customers

<sup>&</sup>lt;sup>9</sup> State ad-date plan projects only are part of the data tracking: Prior years data adjusted to same criteria

and stakeholders, as well as bonding firms. The reality is that there will always be external barriers affecting this achievement. However, monitoring this performance will assist in understanding the magnitude of the problem, impacts and reasons for change to improve.

#### **Objective**

Maintain fiscal integrity to CDOT through timely encumbrance of funds and project delivery

#### Performance Measure

Percent Ad Dates met On-Time, Within 30 Days, Within 60 days, or beyond 60 days



#### **Statewide Project Ad-Dates Performance**

#### **CDOT Employee Turnover Rate**

#### **Objective**

Identify innovative human resource solutions that maximize existing resources to meet business needs.

#### **Performance Measures**

> Average employee turnover rate per year per critical job class

#### Purpose

Annual turnover rate contributes to the optimization of the Department's capability in retaining a qualified workforce.

#### **Current Condition**

The Center for Human Resource Management (CHRM) has collected and analyzed CDOT's annual employee turnover rate for several years.

CDOT's annual turnover rate for FY2005 decreased for the first time in three years. The percent indicates that approximately ten out of every 100 CDOT employees terminate employment with CDOT on an annual basis. Employees generally terminate employment voluntarily through retirement or for job opportunities outside the Department. Additionally, employees separate involuntarily through lay off or termination. The turnover rate for fiscal year 2005 remains just below the historical high of 11% in fiscal year 1999 but is substantially higher than the 6-7% turnover rates experienced during fiscal years 1996 through 1998.

The rate of transportation maintenance turnover over the past nine years has been generally higher (8.1 to 12.8%) than the rate of engineering turnover (4.2 to 9.7%). The annual turnover rate of Maintenance Worker I employees is at the highest point since FY1996 (14.9%).





Maintenance Worker II employee turnover dropped to 6.6% in FY2005 from 11.5% in FY2004 and an overall high of 13.3%. The Engineering series that had a low turnover rate for FY2003 and FY 2004 increased substantially for FY2005 as shown below. Only the Professional Engineer III classification remained static for the past three years at 0%.

Turnover can also be examined specifically for short-term employees. Probationary employees are those CDOT employees within their first year of state employment. The FY2005 turnover rate of 19.6% for probationary employees is at the lowest point since a high in FY2000 of 26.5%. This is approximately twice the turnover rate for CDOT as a whole (9.9%). This suggests that a more effective job at selecting, orienting and retaining new employees may be a useful strategy. High turnover of new employees results in increased costs for CDOT in the area of selection, new employee training productivity. and reduced However, because the probationary period is the final step of the selection process, it is anticipated that the turnover rate would be higher during this period of time.



While the loss of probationary employees occurs at a higher rate than with tenured employees, this loss may not have as much impact to the Department as the loss of long-term employees. Long-term employee turnover can be of great costs to the Department because it involves the loss of valuable organizational knowledge, training, skills, experiences, productivity, and cohesiveness among co-workers. Therefore, it is in CDOT's interest to minimize the rate of avoidable long-term employee turnover wherever possible. Data substantiating employees' reasons for separation from CDOT between 1999 and 2003 indicate that of the total number of separations from CDOT, approximately 48%, attributed was to voluntary resignation (e.g., accepted new job, personal reasons), and approximately 38% was attributed to retirement. Employee separation attributed to retirement will consistently contribute to annual employee turnover rates, and therefore should be monitored and managed for succession planning purposes.

#### Performance Measures

Five-year projection of employees in critical job classifications eligible for full retirement.

#### Purpose

This measure gives CDOT information on how large a pool of workers it will need to draw on internally and externally to fill its need for qualified workers.

#### **Current Condition**

CDOT can expect to lose close to 10% of its workforce over the next five years due to full retirement. This number does not include employees who may take early retirement with reduced benefits or those employees who have purchased retirement service credit. As expected, anticipated retirement projections increase at the higher classifications within a job series. The more tenure an employee has, the more likely they are to be in supervisory / management-level positions and the closer to retirement.



\*The data above represents the cumulative percentage of employees in that job classification eligible for full retirement benefits for that and all preceding fiscal years

On a positive note, the smaller projected maintenance personnel retirement rates for classifications lower in the class series suggest that adequate numbers of employees should be in the applicant pool to promote into these supervisory-level positions as they become vacant.

Over the next five years, approximately one-in-four Professional Engineer III

employees are eligible for full retirement benefits. Similarly, the smaller projected retirement rates for classifications lower in this class series also suggest that adequate numbers of employees should be in the applicant pool to promote into these supervisory-level positions as they become vacant.



**Engineer Series Retirement Projections** 

Identify innovative human resource solutions that maximize existing resources to meet business needs.

#### Performance Measures

Employee satisfaction survey rating regarding management support, tools, resources, and training

#### Purpose

Level of employee satisfaction contributes to whether employees remain with the Department.

#### **Current Condition**

A CDOT employee satisfaction survey has not been conducted since 2002. Nevertheless, the data is important in managing employees so is retained in this report. CHRM completed CDOT's initial annual employee survey in 2001 and repeated the survey in 2002. Results from CDOT's second annual employee survey highlight several important elements that are strongly related to employees' intentions to stay employed with CDOT. Satisfaction with employment, nature of work, satisfaction with pay, effective leadership and freedom from job stress all-important contributors to are an employee's intent to remain employed with CDOT.

CDOT's employee satisfaction survey conducted in 2002 measured employee attitudes on 33 aspects (opinion areas) of CDOT's work environment. The results of the 2002 survey revealed that CDOT employees were most satisfied with the nature of their work, the high social standards of CDOT (i.e., freedom from violence, harassment, workplace substance abuse, etc.), job security.

retirement benefits, and CDOT as an employer. Employees expressed the least satisfaction with issues involving the linkage between performance and pay, medical benefits. and elements of management decision-making. CDOT's Executive Management Team is working on strategies to build upon the strengths and deal effectively with the areas of concern by employees.

The aforementioned 33 aspects were measured by having a statistically valid sample of CDOT employees complete 96 items on a scale from 1 (Strongly disagree) to 7 (Strongly agree).

The following chart presents the overall average of all employee responses to all opinion areas on the employee survey. The ratings represent the overall favorableness of employee opinions of CDOT. working at The overall favorableness of employee opinions of working at CDOT increased from 4.58 to 4.81 from FY 2001 to FY 2002. This represents a 5% increase.



#### **CDOT Employee Satisfaction Survey**

- 7 = Strongly Agree
- 6 = Agree
- 5 = Somewhat Agree
- 4 = Neither Agree nor Disagree
- 3 = Somewhat Disagree
- 2 = Disagree
- 1 = Strongly Disagree

N/A = No Survey in 2003 - 2005

#### Next Steps within the Investment Strategy Cycle

#### Strategy:

- > Assess opportunities to provide improved service
- > Evaluate customer segment needs and behavioral changes
- > Analyze program/service use and cost
- Evaluate resource allocations

#### Performance Management:

- Plan data collection strategy, design data collection process and identify required technology
- Identify current performance level, deploy measures, compare and link to departmental objectives
- Identify sources of core competencies and alternative strategies to deliver customer service
- > Identify leverage points and key learning from the investment strategy
- Compare investment strengths and weaknesses to customer needs

#### Communication & Linkage:

- Communicate the investment strategy to the Department, to customers and to stakeholders
- > Check and validate support with necessary levels of management
- Continue the development of performance measures throughout the Department

#### Implementation:

- Continue to provide performance measurement training and reemphasize linkages to investment strategy and departmental objectives
- Facilitate the use of performance measurement to evaluate performance and proactively manage results
- > Implement data collection technology for performance measurement
- > Monitor progress towards departmental goals
- Revisit Investment Strategy Cycle

#### Strategic Feedback & Learning

- > Conduct feedback process to evaluate progress, identify gaps and redirect efforts
- > Articulate insights and learning and communicate that to employees
- > Emphasize the importance of good measures for decision making

## **Results of a Successful Investment Strategy**

- > A clear future direction is set for the organization
- > A clear set of priorities is established
- Coherent decision making is the norm
- > The organization can focus on its priorities
- > Decisions are made across levels and programs
- Organizational performance improves
- > Teamwork and expertise are expanded