



# *INVESTMENT LEVEL*

# *PERFORMANCE REPORT*

Colorado Department of Transportation

PERFORMANCE MEASURES

Division of Transportation Development  
FY 2002 Investment Analysis Unit August 2002



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## • *Executive Summary* •

This report presents the fourth year progress toward the goals and objectives that are adopted by the Transportation Commission. To succeed at solving a range of complex problems and taking advantage of opportunities the department requires integrated, current, and accurate information and data about resources, program performance and customer needs. The achievement of this requires sound planning and investments and the determination to attain the desired results.

Since 1996, the transportation investment decisions process has been undergoing an evolution within the Colorado Department of Transportation (CDOT). The Transportation Commission and the department's Executive Management Team (EMT) 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.

To accomplish this, the leadership focused on five major business functions or investment categories. The categories are Safety, System Quality, Mobility, Strategic Projects and Program Delivery. These represent the concentrated areas of services of the Department rather than the independent and individualized needs of programs and projects. The result is an integrated and interdependent investment strategy effort that establishes a framework for investment planning and monitoring to guide how resources can be deployed and managed to enable the Department to effectively carry out its mission.

During the past two years, CDOT's Investment Strategy has 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 an evolutionary process. Similar to changes in other arenas, the challenge is to effectively communicate with CDOT customers to raise their level of understanding, support and acceptance of this visionary transportation investment strategy decision process adopted by the leadership.

Whereas previous years investment strategy cycle was limited to alignment of CDOT's Mission, Performance and Investment, it 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 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
- Operationalize 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

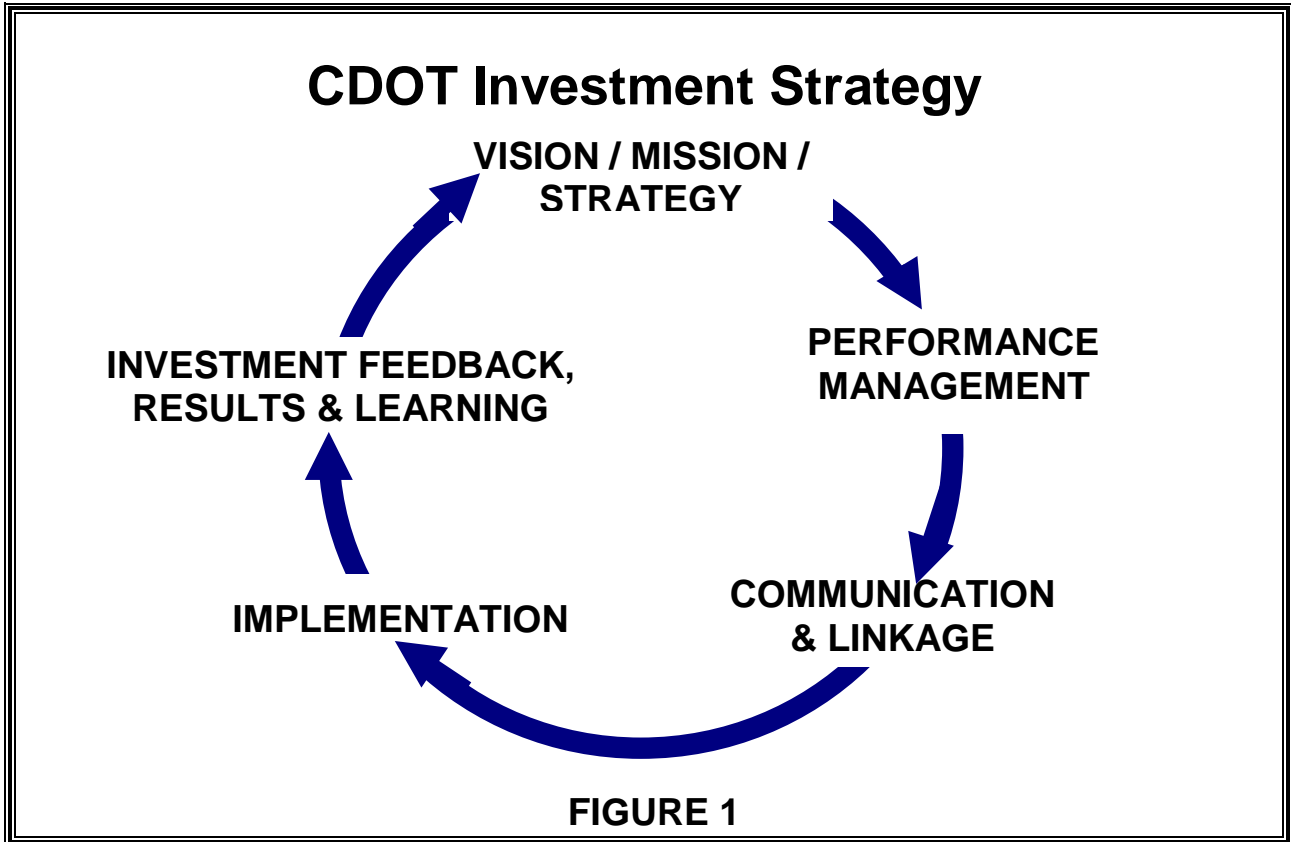
### Implementation

- 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 goals, objectives, investment categories, 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:



Following through with this cycle of the Investment Strategy, CDOT's Transportation Commission and the Executive Management Team has set the broad outline for the Investment Strategy by setting investment level goals and objectives. 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 and commit people 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.

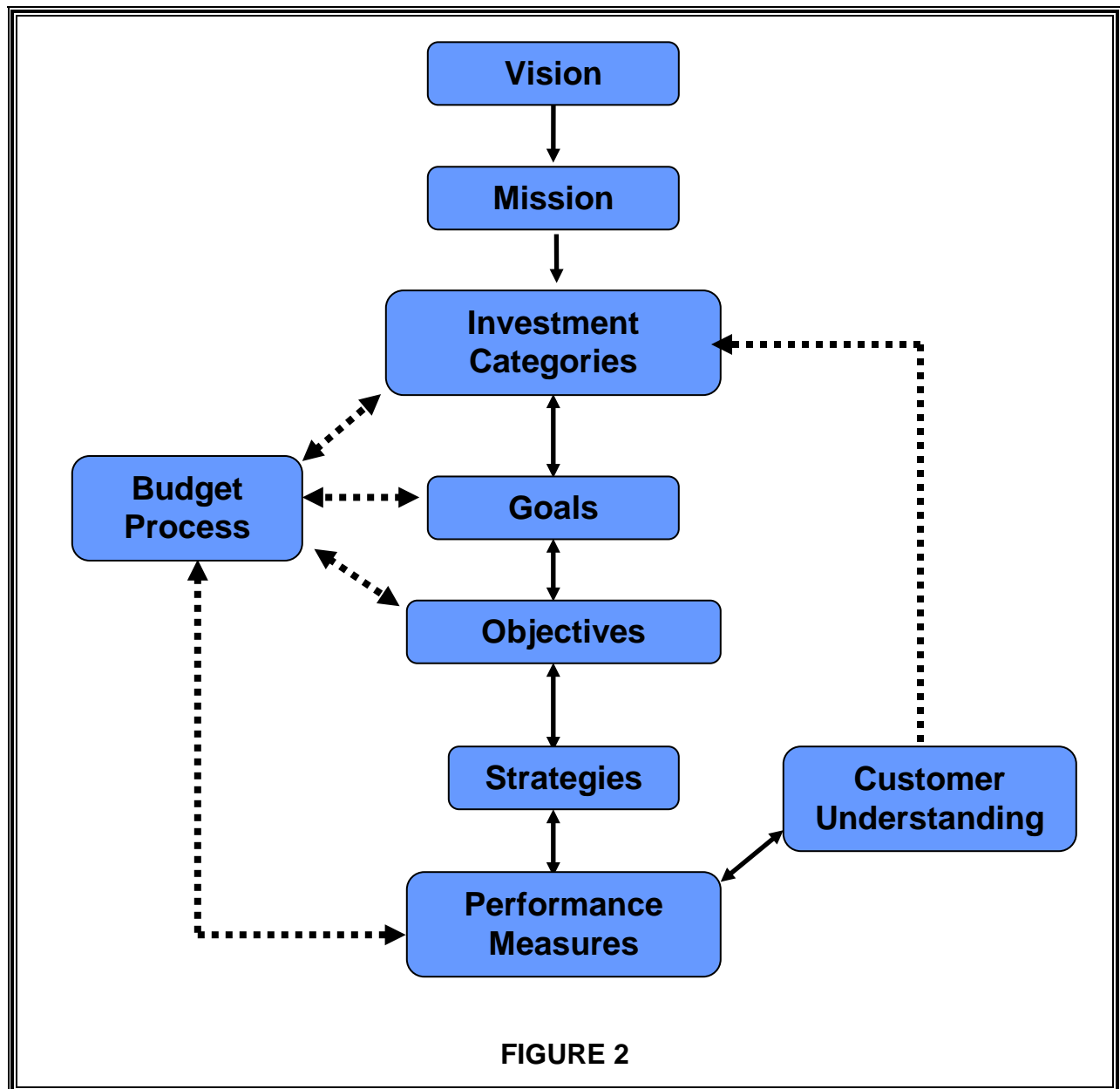
# CDOT FY 2002 PERFORMANCE MEASURES REPORT

CDOT's Investment Strategy is supported by five investment categories. The categories may appear to operate independently but are designed to encompass all of CDOT's major functions that supplement and complement each other and that require interfacing between the categories for effective decision making. Following are the five investment categories.



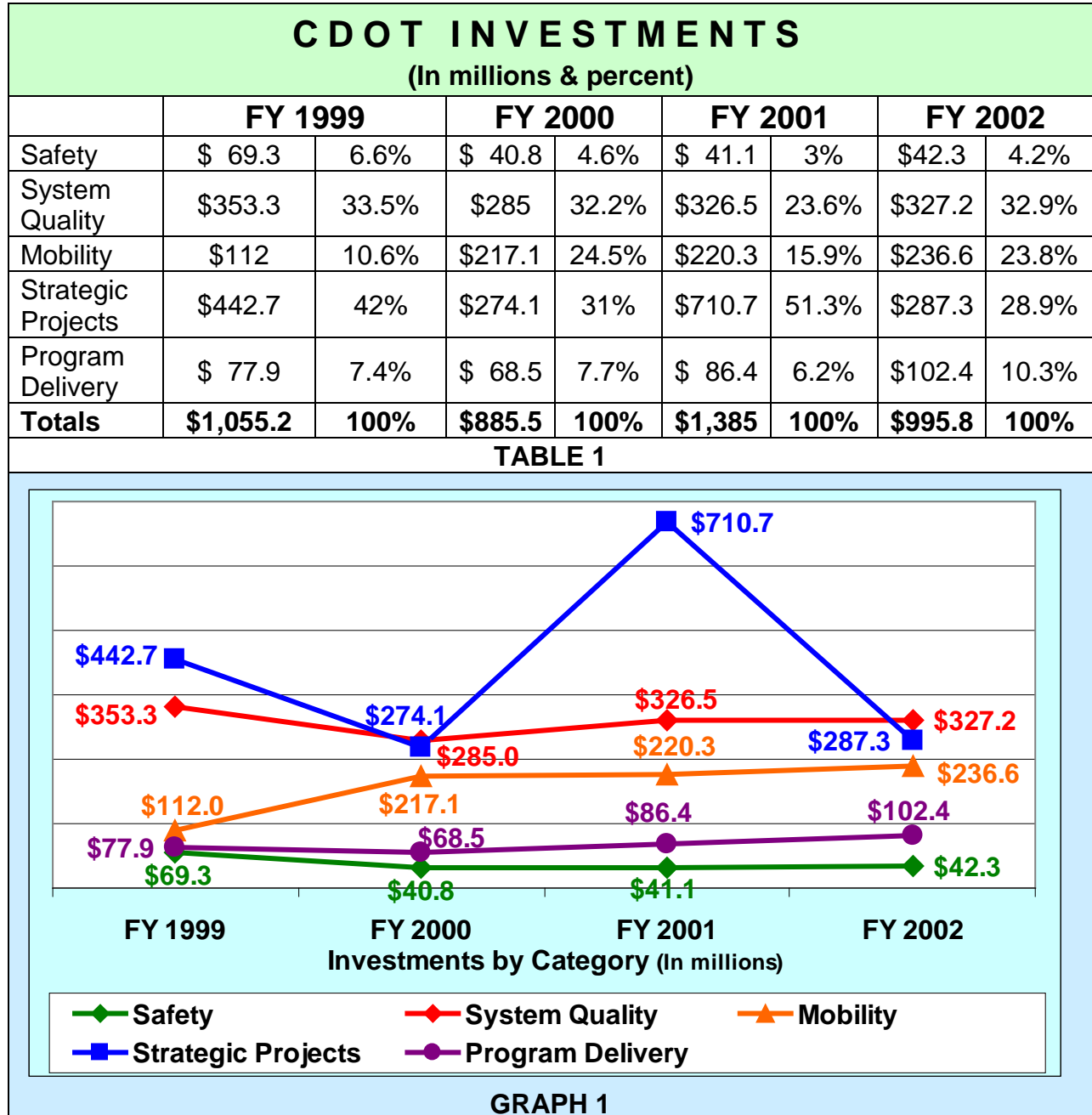
## Investment Strategy Alignment Model

The figure below demonstrates the alignment relationship that the investment categories have 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 Department's Goals and 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 management decisions need to focus and the resources necessary to support the desired investment outcome.



## Budget

Based on CDOT's fiscal year 2002 Budget, funds by percentage have been programmed into the five Investment Categories as shown below. The data from each of the investment categories will assist the Transportation Commission in resource allocation. Over the past four years, performance measures data at the investment level has been compiled to establish some baselines for comparing investments to results.





The segregation of dollars appropriated to the five investment categories has only been accomplished for the previous three years. Therefore, several additional years of data may be needed prior to arriving at conclusions about results based on investment in any one or more of the categories. Also, the management systems that provide data have been going through modifications and refinements throughout the same period adding to the prudence of data comparisons and analyses. Additionally, the relationship between investment and outcome is less directly attributable in some programs than in others (e.g., Pavement investment versus RSL and Safety behavioral investments versus seatbelt usage).

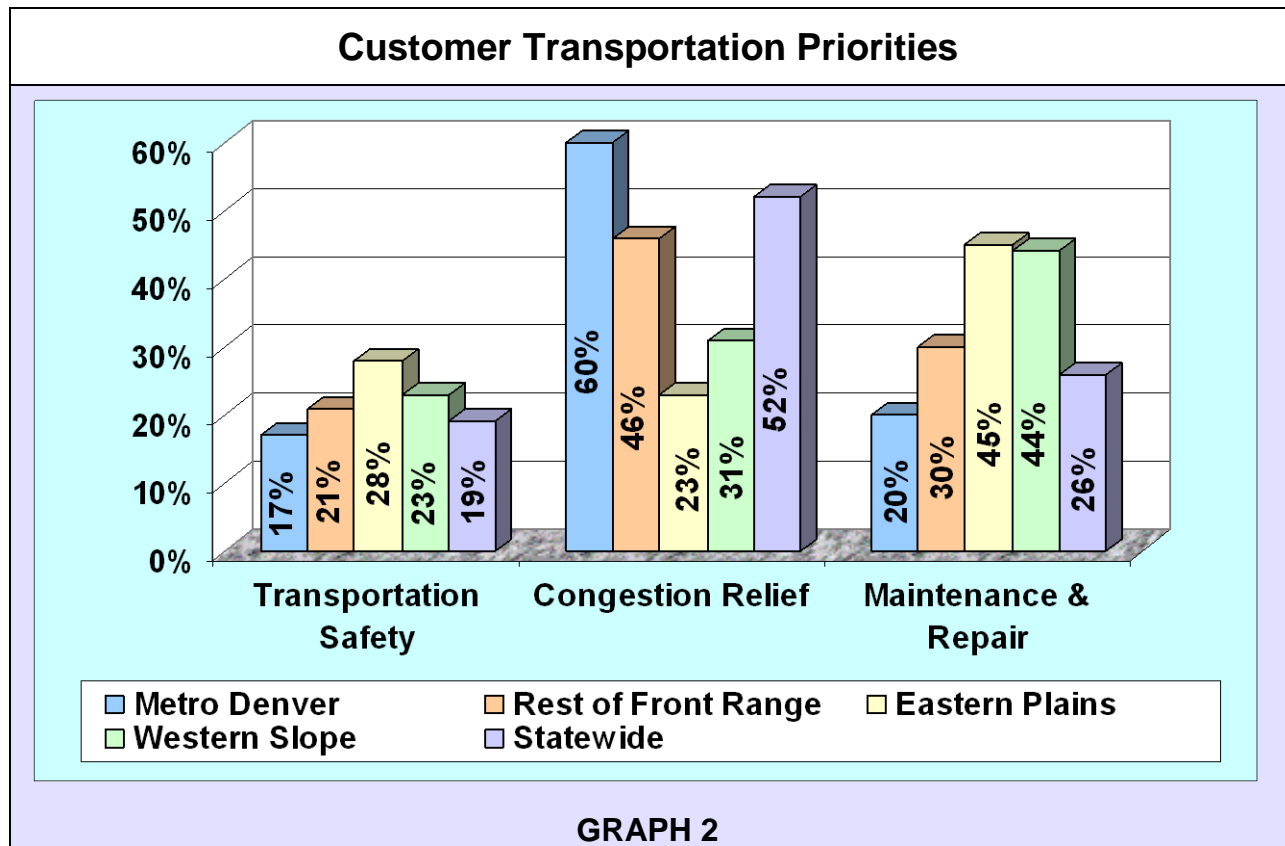
Analyzing the numerous performance indicators each fiscal year can give an indication of the state of the system and the associated relational change from year to year. As indicated in Graph 1 on page 8, the expenditures increased in Strategic Projects from FY2000 to FY2001 but took a significant decrease in FY 2002. This demonstrates that the completion of the high priority Strategic Projects may be more dependent on the funding sources than the Department's desire. However, care must be taken not to conclude that there was more or less of an emphasis in any of the categories based only on the investment percentages alone. As illustrated, the expenditure percentage in System Quality increased by 9% of the budget from FY2001 to FY2002 but only a .2 % increase in dollar amount. Therefore a full analysis must be completed on the current expenditures, the need in each category, previous years expenditures, customer expectations and current performance indicators to form an entire picture of results associated to investments in the transportation system.

## **Customer Perception**

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. 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.

The most recent customer survey typifies the priority investment areas perceived by the general public. When compared with "providing travel options and relief from congestion", "maintenance and repair of the transportation system", and "transportation safety", that respectively are analogous to the Mobility, System Quality, and Safety Investment Categories, the public's priority is investment in Congestion Relief. Safety, in the minds of the transportation user, is the lowest priority (except for the Eastern Plains) according to the results of the survey.

Additional customer survey information relating to a specific investment category will be provided in that investment category portion of this document.



## 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 Safety Characteristics and Driving Behaviors. Roadway characteristics are measured by: Total Crash Rates, Injury Rates, and Fatality Rates. Driving behaviors are measured by tracking: Alcohol Related Fatality Rates and Seatbelt Usage. Relatively new and in the development stage are the performance indicators for the objective “Emphasize applicable safety features consistent with population growth”. Data has yet to be solidified enough to assess the impact of the Department’s performance. However, the *Colorado Integrated Safety Plan 2000* contains elements that would gauge performance around safety “Before & After” treatments as well as “Evaluation of Cost Effectiveness of Safety Improvement Strategies.”

### CDOT’s Investment in Safety

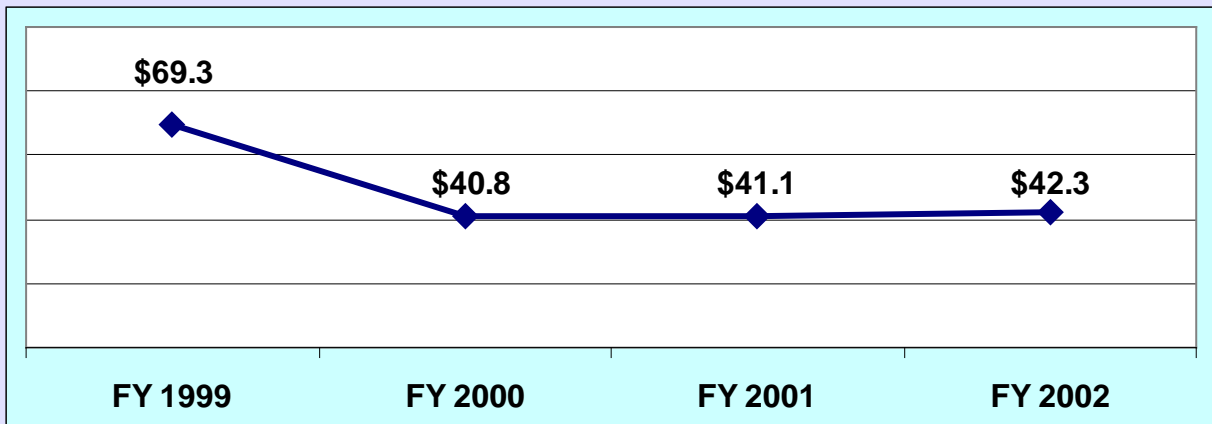
Based on the fiscal year 2002 Budget, CDOT allocated approximately \$42.3 million to Safety related programs and projects.

**GOAL**

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

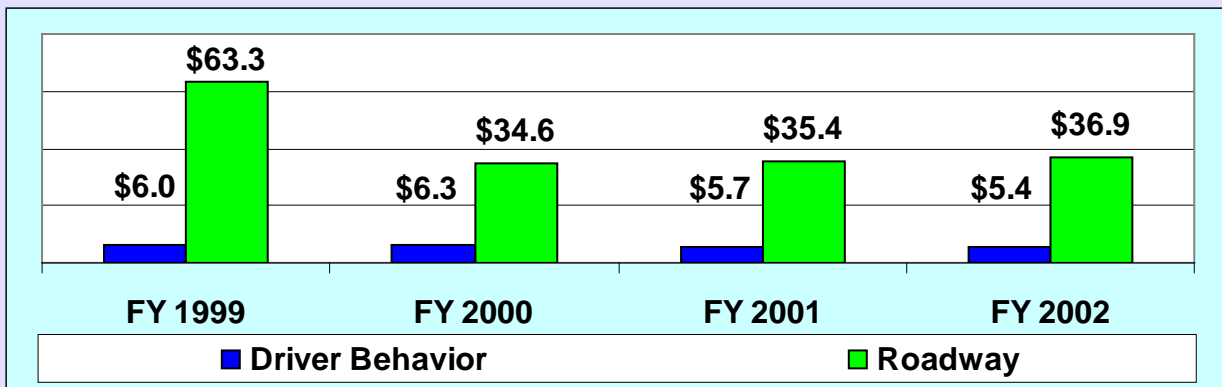
**Safety Investments**

FY 1999	FY 2000	FY 2001	FY 2002
\$69.3 Million	\$40.8 Million	\$41.1 Million	\$42.3
6.6% of Total Budget	4.6% of Total Budget	3% of Total Budget	4.2% of Total Budget



GRAPH 3 (In \$ Millions)

**Safety Program Area Investments**



GRAPH 4 (In \$Millions)

**Performance Measure**

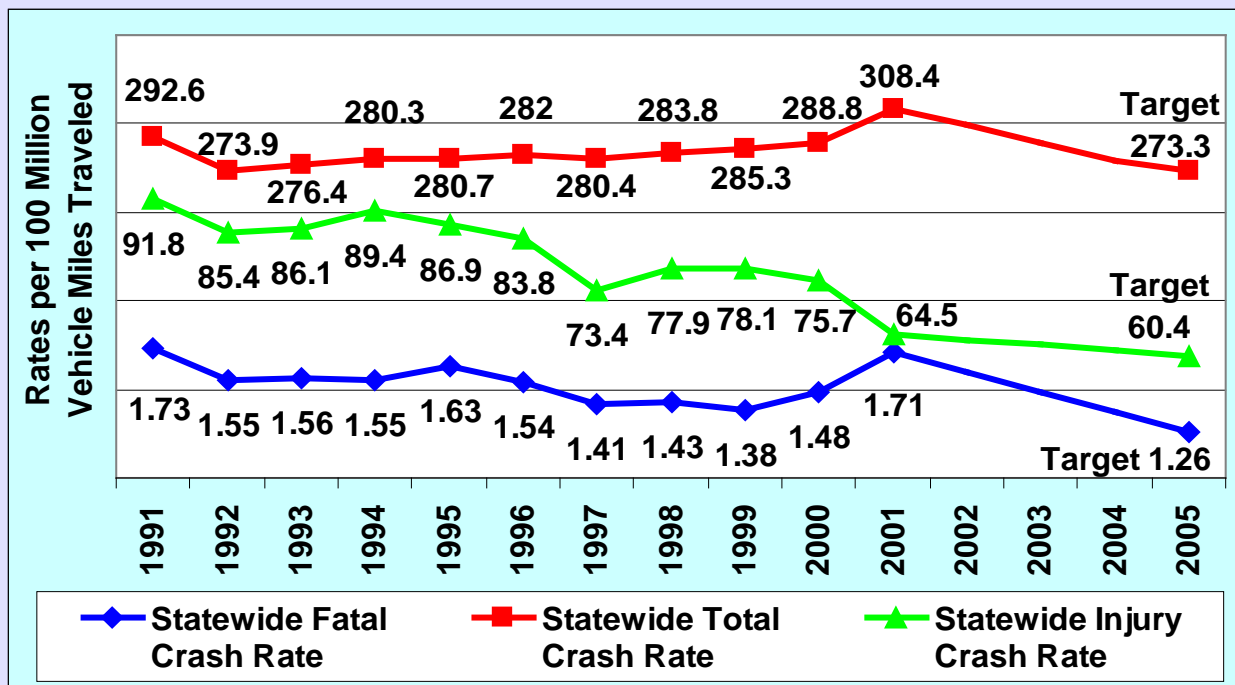
- Statewide safety incident rate including fatal and injury rate

**OBJECTIVE:**

- Reduce the rate and severity of transportation related incidents

Investment Level Performance Measure:  
Statewide safety incident rate including fatal and injury rate

	Target for Year 2005	Current Performance	Achievement
Statewide Total Crash Rate (Crashes per 100 million vehicle miles of travel)	273.3	308.4	CY 2001 projected target not met
Statewide Injury Rate (Injuries per 100 million vehicle miles of travel)	60.4	64.5	CY 2001 projected target exceeded
Statewide Fatal Crash Rate (Fatalities per 100 million vehicle miles of travel)	1.26	1.71	CY 2001 projected target not met



GRAPH 5

**Purpose**

Graph 5 illustrates the frequency of crashes, injuries and fatalities by year. This information enables CDOT to indirectly determine if their safety investments are having an impact in reducing frequency and severity of crashes. The goal of the Department is to control or reduce losses to Colorado citizens caused by motor vehicle crashes

***Current Condition***

After the substantial decrease in the total crash rate from 1990 through 1992, the rate has been slowly but steadily rising to a point higher than the 299 in 1990. The objective of monitoring total crash rates is to determine how Colorado is progressing in meeting the year 2005 target to “reduce crashes” previous goal of 270 per one hundred million vehicle miles of travel. This goal was reassessed in a FY2001 report titled “Colorado Integrated Safety Plan 2002-2004”. The non-linear (logarithmic) trend analysis conclusions surrounding the total crash rate recommended the target change from 270 to 273.3 for 2005. This is an assessment determined by the increase in vehicle miles traveled, number vehicles per household, average trip miles, population projections, and other factors.

Fatality rate increases should raise some concern and should be monitored closely over the next couple of years because of the recent trend upward contrary to the Department’s objective. The injury rate has been varying from year to year but in a general downward trend since 1991. This is indicative of the Department being on the path to meeting the target of 60.4 injuries per 100 million vehicle miles traveled for 2005. The injury and fatality rate targets also have been revised; previously the 2005 targets were 70 and 1.35 respectively.

The Safety performance measures data is the perfect example of “no performance measure stands alone” rule when using data to support decisions. The steady rise in total crash rate implies that the investments are not sufficient to have an impact on Safety. However, the declining injury rate must be assessed along with the total crash rate before making decisions on investments.

***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.

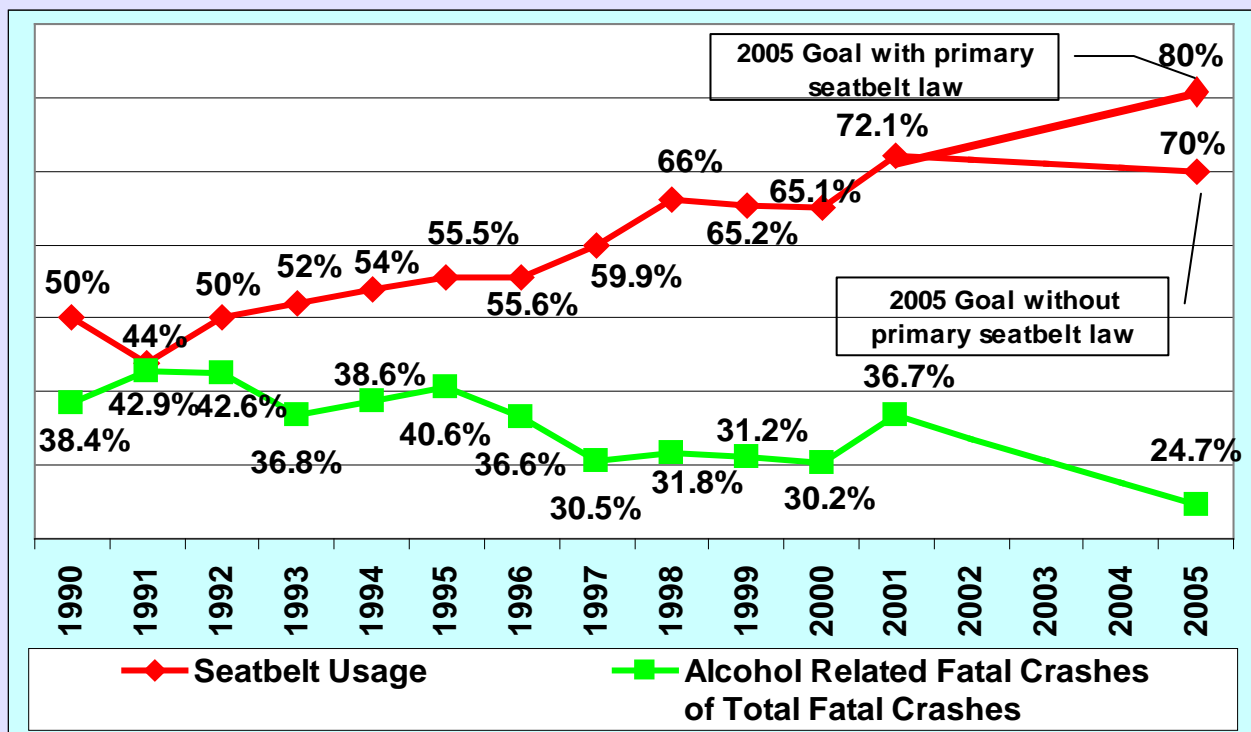
***Current Condition***

While monitoring total crashes helps determine the magnitude of problems in the safety category, differentiating the types of crashes between those that are alcohol related fatal, lack of seat belt usage or roadway environment can help determine the specific problem area. Upon that determination, the Department’s investment focus can then be established. The monitoring and investments in these programs are aimed at decreasing the number of these crashes with the ultimate goal to minimize the associated economic and social impacts.

**OBJECTIVE:**

- Promote the education and awareness of safe driving behavior

Investment Level Performance Measure	Target for Year 2005	Current Performance	Achievement
Percentage of Seatbelt Usage	70% without Primary Law 80% with Primary Seatbelt Law	72.1%	CY 2001 projected target exceeded and 2005 Goal exceeded
Alcohol Related Incidents Compared to Statewide Incident Rate	24.7%	36.7%	CY 2001 projected target not met



GRAPH 6

Since 1995, the number of alcohol related fatal crashes have improved from 40.6 percent to 30.2 percent in 2000 of all fatal crashes. However the general downward trend since 1991 took a dramatic turn upward in 2001 back to 1996 levels.

**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. Seat belts “are the most

effective means of reducing fatalities and serious injuries when traffic crashes occur and are estimated to save 9,500 lives in America each year. 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.”

**Current Condition**

As illustrated in Graph 6, seat belt usage in Colorado has increased from 44 percent to 72 percent from 1991 to 2001. The 2001, 72.1% seatbelt usage surpasses the 2005 Goal. If the trend continues, this is one area within the Safety category that should be celebrated.

The use of seat belts is not uniform by area of the state, vehicle type, or age groups. Nevertheless the goal is to increase overall seat belt usage to 80 percent in the year 2005 with a primary seat belt law, and 70 percent without a primary law. It is important to note that national statistics substantiate that “Primary” seat belt laws prove to be effective in increasing seat belt usage.

<b>OBJECTIVE :</b>			
<ul style="list-style-type: none"> <li>• Emphasize applicable safety features consistent with the population growth.</li> </ul>			
Investment Level Performance Measure	Target for Year 2005	Current Performance	Achievement
Return on Investment for Designated Improvement Sites	These two performance measures are in the development stage		
Corridor Safety Assessment			

**Customer Perception of Safety**

**Performance Measure**

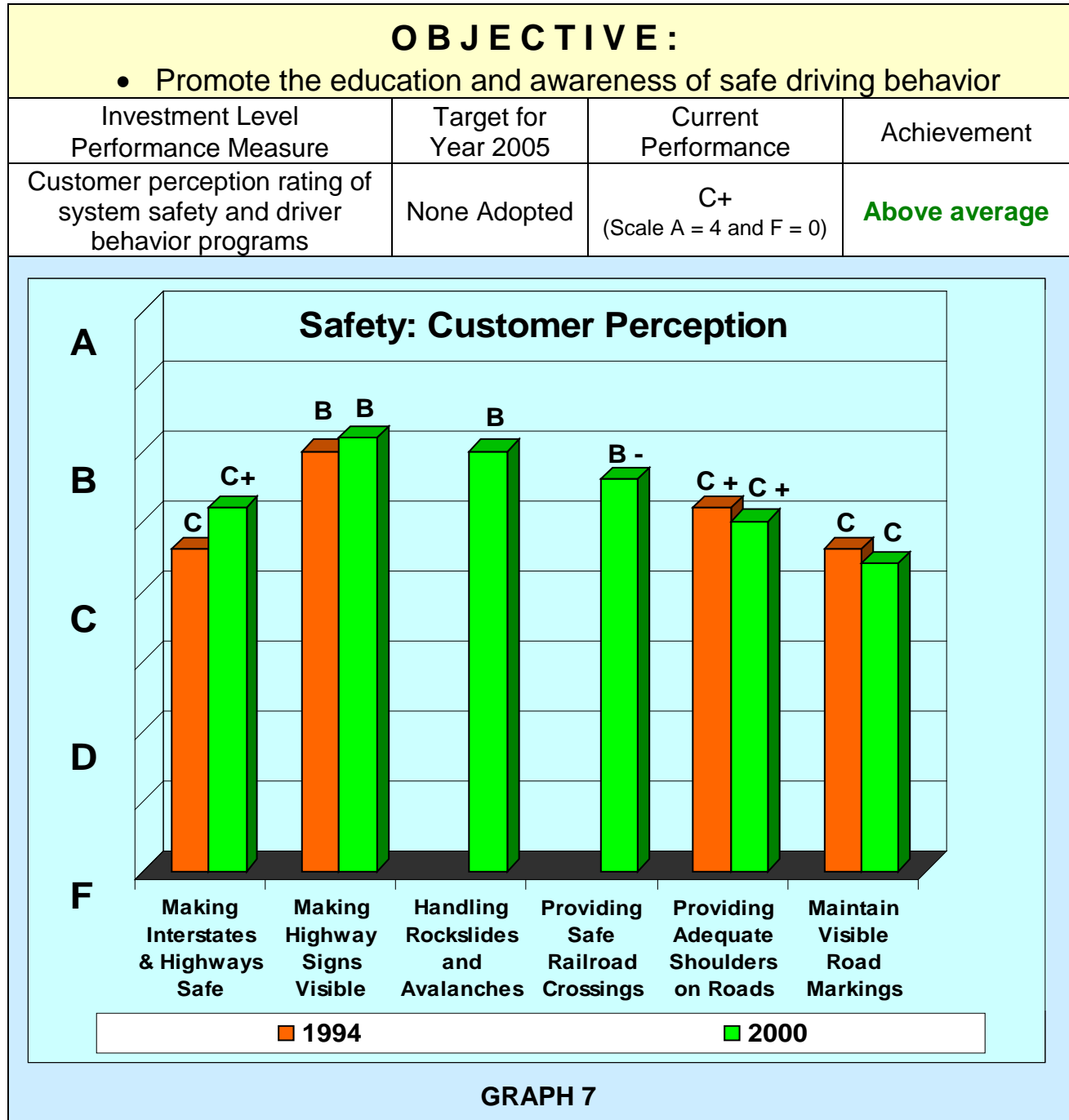
- Customer perception rating of system safety and driver behavior programs

**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 will be one of the techniques used to validate Safety investment decisions.

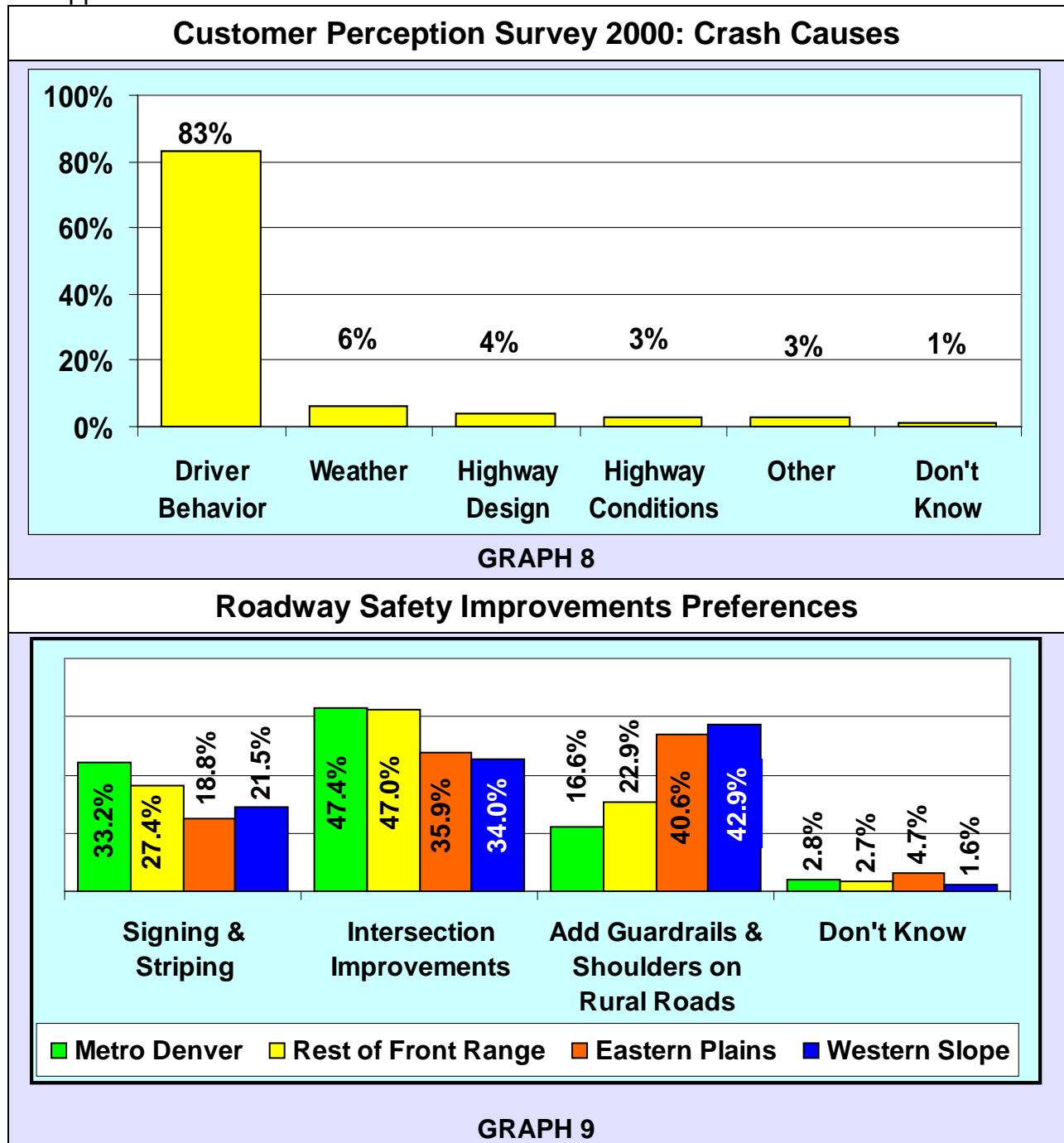
**Current Condition**

Customers rated transportation safety an above average grade of C+ on a scale of A through F. As shown in Graph 7, there weren't any specific safety areas that demonstrated a significant high or low in customer perception grade. However, the customer survey results did convey a better than average performance in the visibility of signs and handling of rockslides and avalanches.





When asked what they perceived to be the most common cause of traffic crashes in Colorado, 83 percent (Graph 8) of the respondents chose “driver behavior”. However, respondents preferred expenditure of resources on improving the roadways rather than public safety campaigns (driver behavior programs) to improve traffic safety. This may be understandable given that sixty one 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.

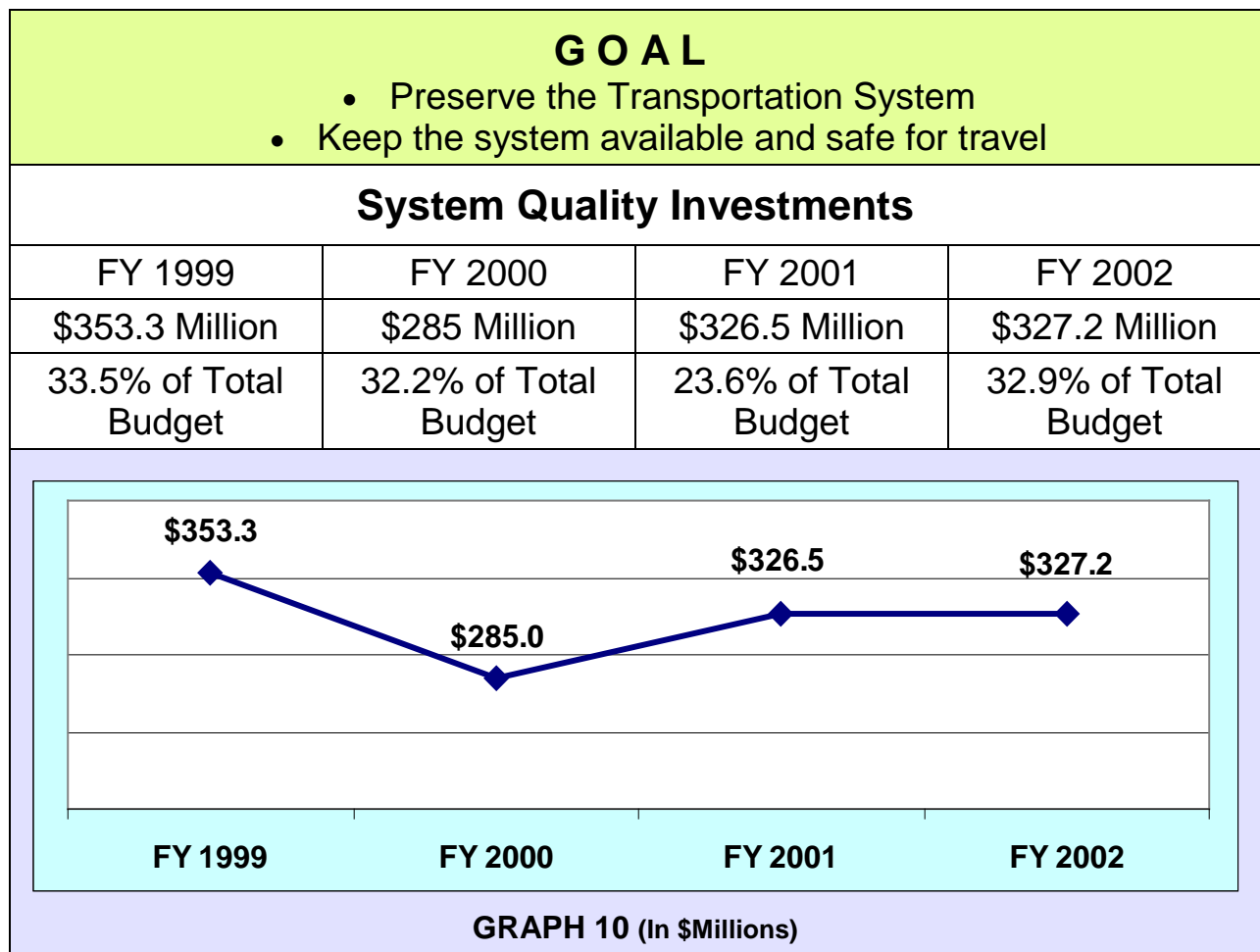


With roadway improvements the preferred investment solution to crashes, the tradeoffs in the roadway improvements program area were posed to respondents. The Front Range respondents' highest safety priority (Graph 9) was "intersection safety improvements" followed by "signing and striping". Whereas the Eastern Plains and the Western Slope respondents preferred "guardrails and shoulders on rural roads" followed by "intersection safety improvements".

## System Quality Investment Category

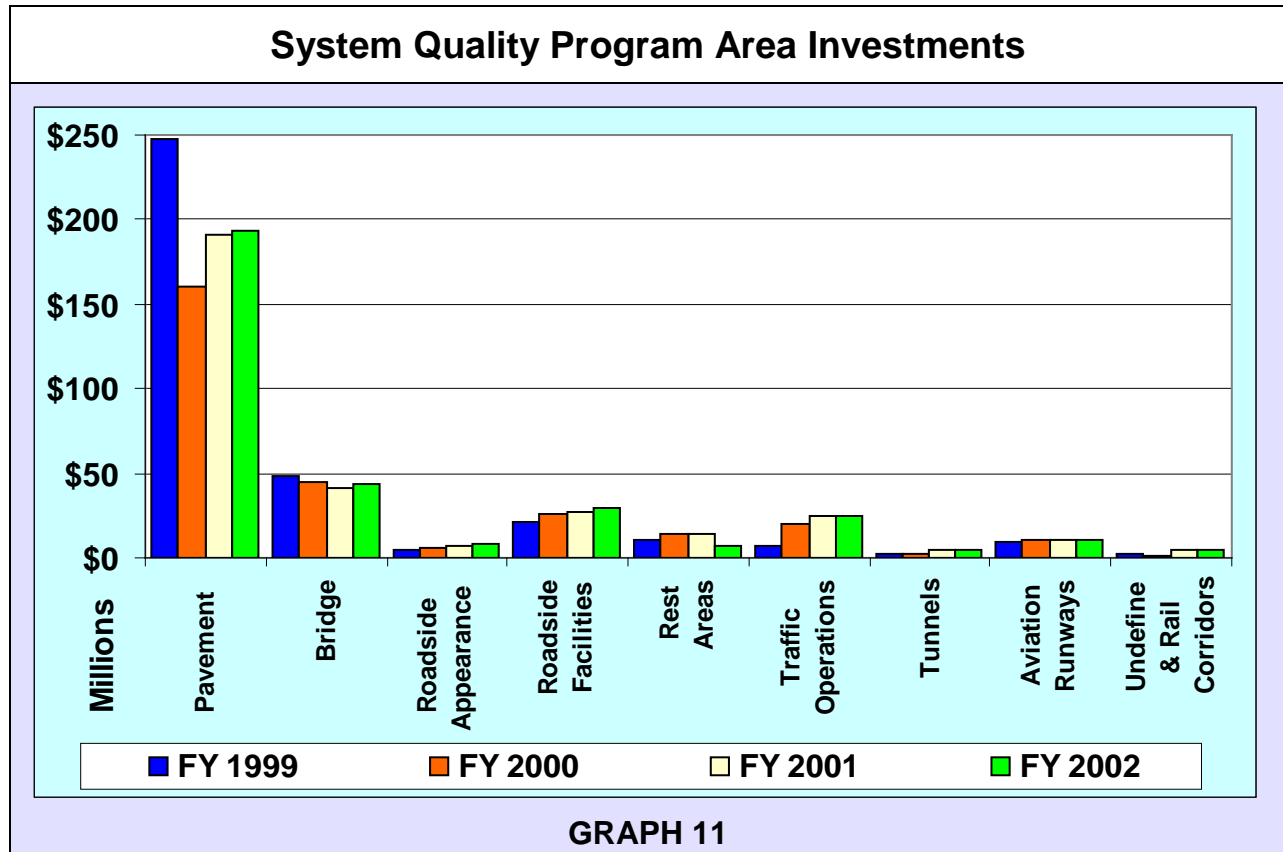
*"Activities, programs and projects that maintain the function and aesthetics of the existing transportation infrastructure."*

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 Investment in System Quality

Based on the fiscal year 2002 Budget Allocations, CDOT allocated approximately \$327.2 million, which is 32.9 % of the total budget, to System Quality programs, services and projects.



The system quality budget is allocated to nine program areas as shown in Graph 11. To support the Transportation Commission's system quality goals, pavement (includes surface treatment program, roadway surface [MLOS], gaming funds) and bridge (includes bridge program and MLOS funds) constitutes between 71.3% and 83.6% of the system quality budgeted amount respective of the year.

### **Performance Measures**

- Percent surface condition rating of fair or better
- Percent bridge sufficiency rating of fair or better

### **Purpose**

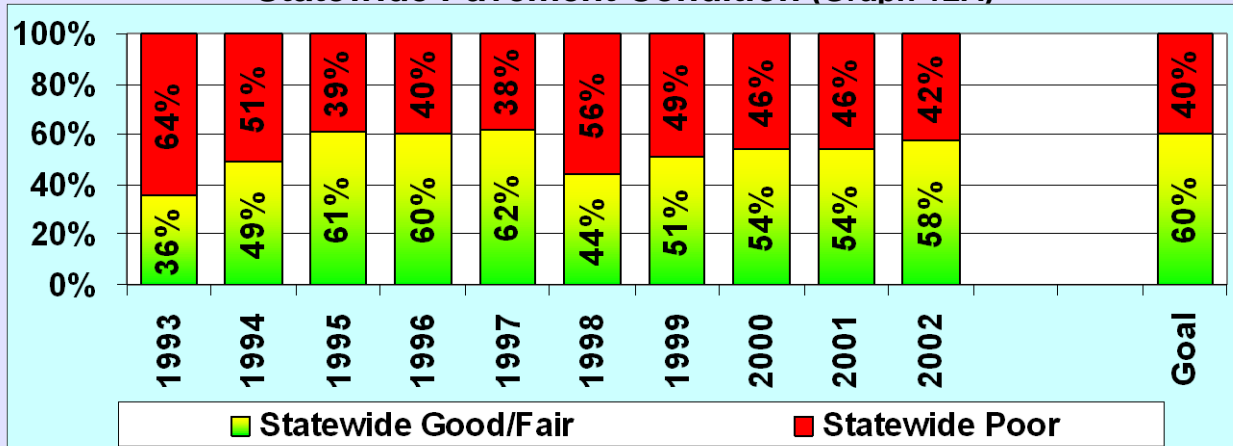
These measures gauge the foundational strength and condition of the transportation infrastructure. The transportation investments in system quality category can impact the performance of other investment categories such as the level of safety and mobility performance as well as customer perception of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

**OBJECTIVE :**

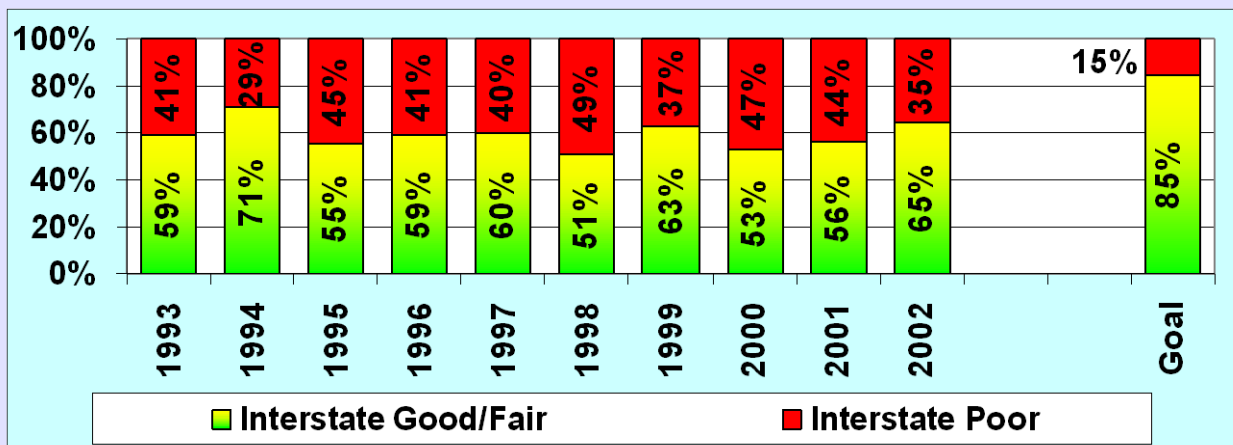
- Enhance and maintain the transportation system to ensure maximum useful life

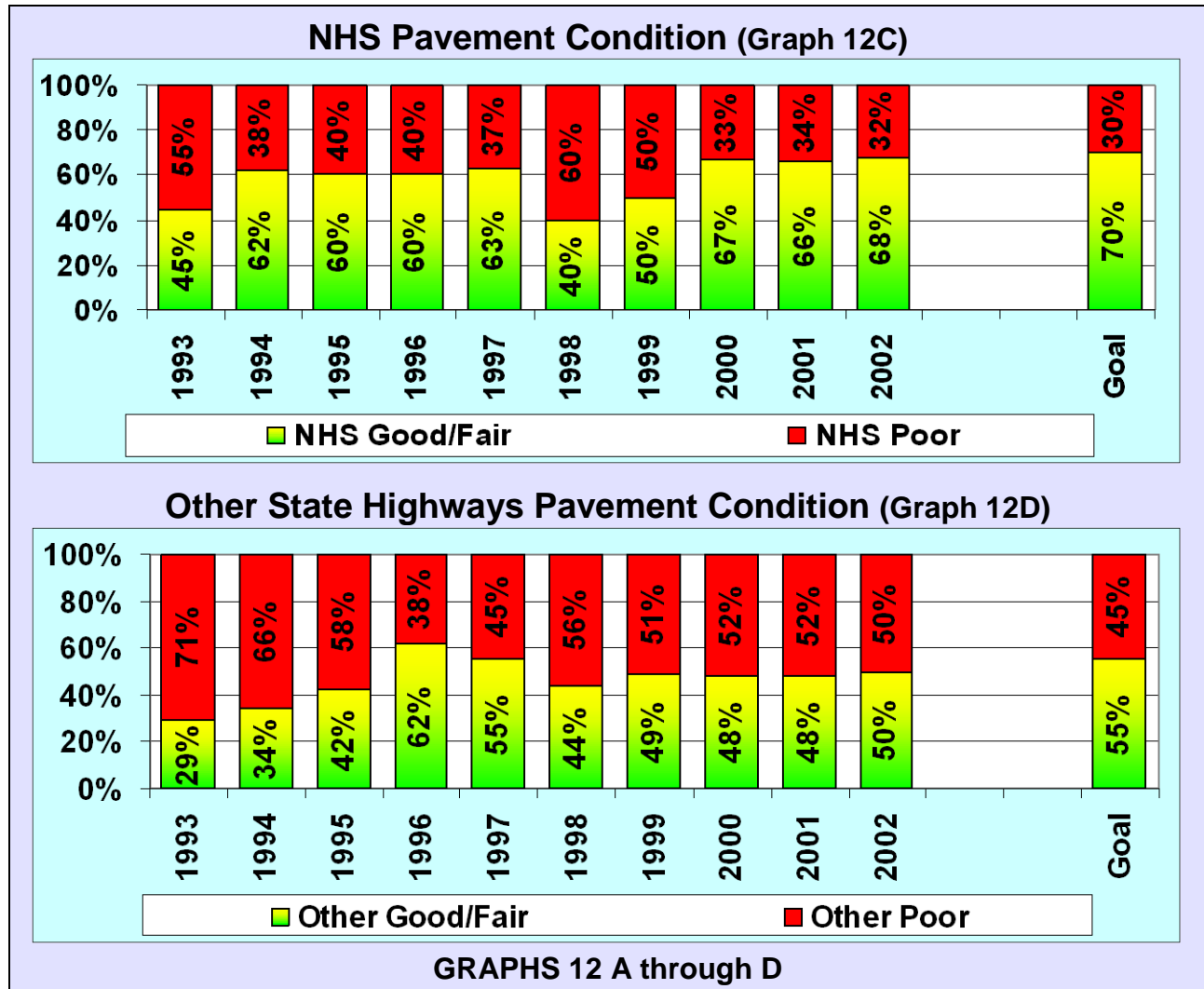
Investment Level Performance Measure	Target	Current Performance	Achievement
Percent surface condition rating of fair or better	60% Statewide System	58%	Goal of 60% not met
	85% Interstates	65%	Goal of 85% not met
	70% National Highway System	68%	Goal of 70% not met
	55% Other State Highways	50%	Goal of 55% not met

**Statewide Pavement Condition (Graph 12A)**



**Interstate Pavement Condition (Graph 12B)**





**Current Condition**

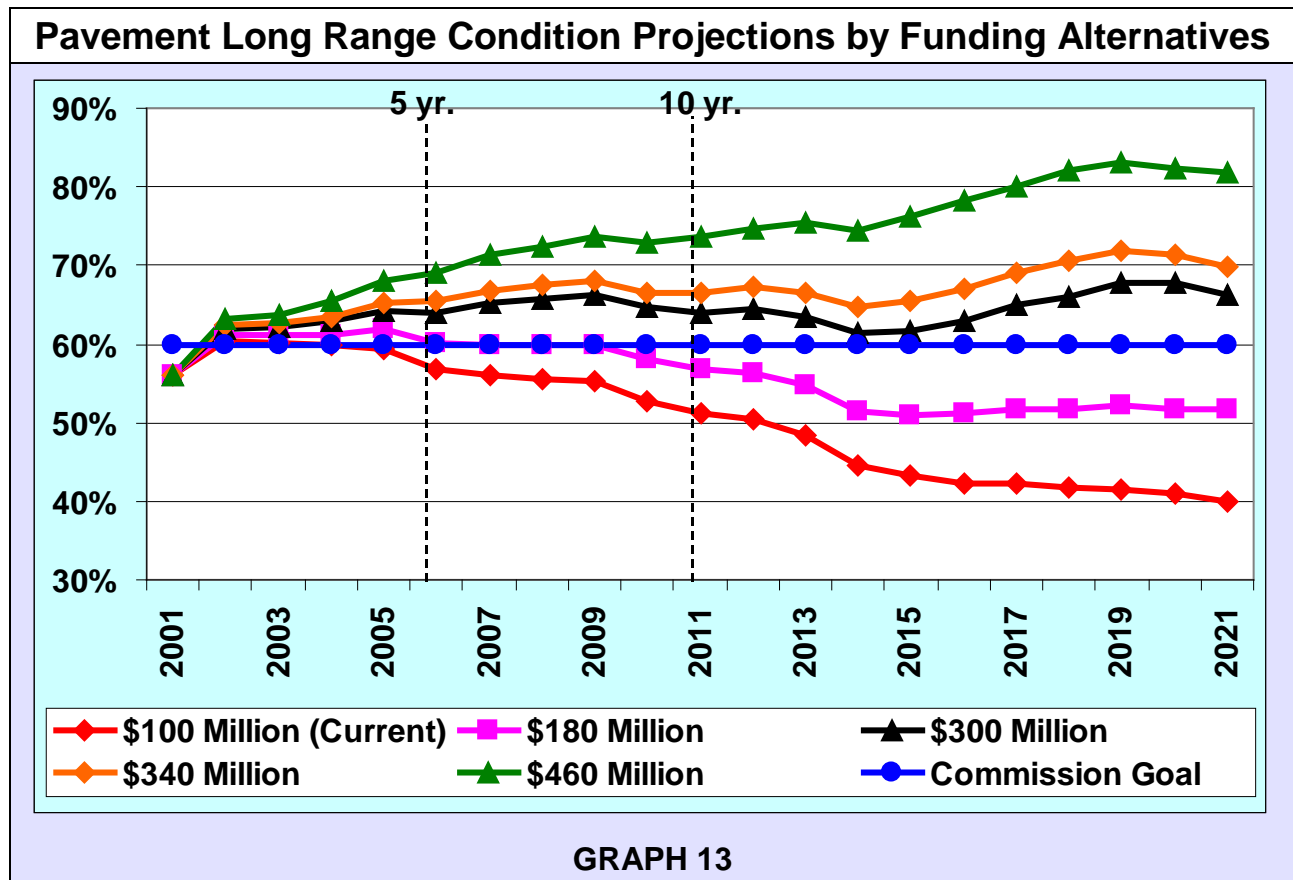
Colorado’s state roadways pavement condition rating trend is reflected in the four graphs above. Consistent with the Department’s investment strategy direction, the output of the Pavement Management System is focused on Remaining Service Life (RSL).

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.

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The pavement condition target is to attain a 60 percent Good/Fair remaining service life on highways statewide overall. This target is further separated into three classifications: interstates, NHS (non-interstate), and other state highways. The targets for these are 85 percent on interstate highways (976 miles), 70 percent on NHS highways (2264 miles), and 55 percent on all other state highways (5905 miles).

As shown by Graphs 12A through 12D, the pavement condition has improved in all categories of state highways from 1998 to 2002. However, Graph 13 indicates that even with \$180 annual investment<sup>1</sup>, the overall statewide Good/Fair pavement condition falls below the objective established by the Department by 2010.



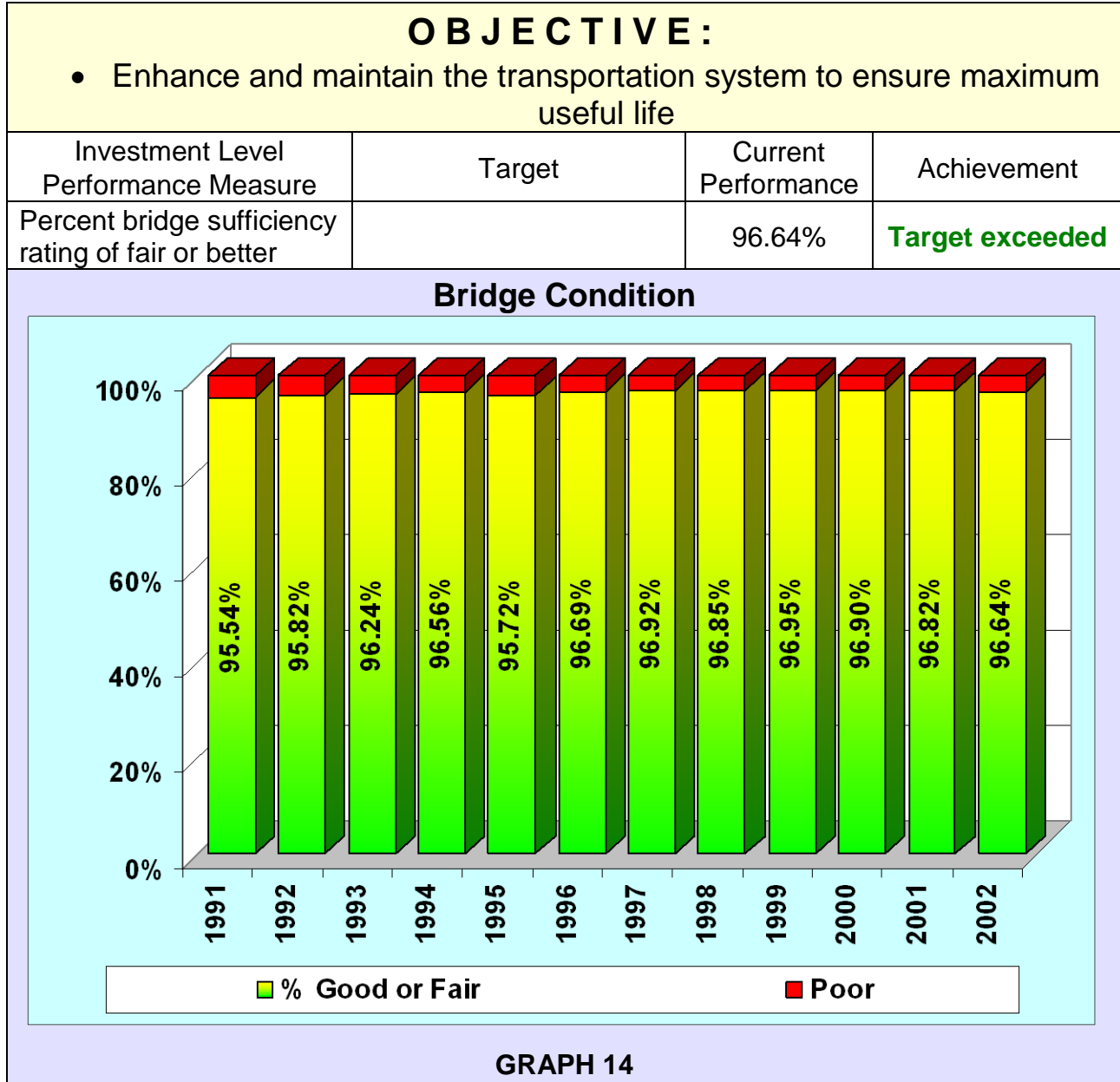
<sup>1</sup> Assumes 6.0% inflation in costs and 3.5% increase in budget per year.

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

Includes a transfer of \$21 million to the maintenance level of service (MLOS).

**Current condition – Bridges**

As in previous years, the bridge sufficiency rating for 2002 had a very slight change in the Good/Fair rated bridges. The bridges in the poor category typically indicate a need for replacement versus preservation.



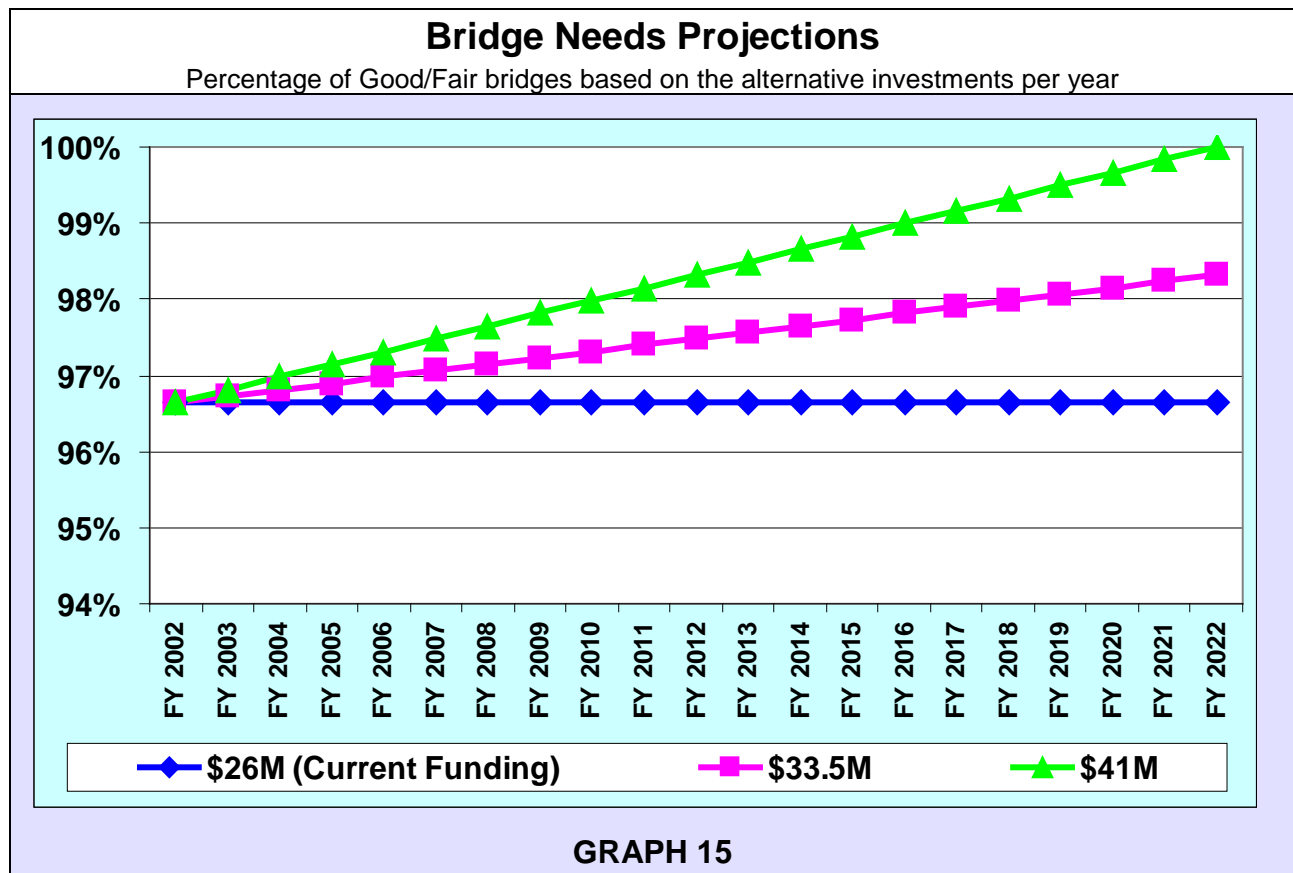
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Number of Bridges – Rating and Total												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Good</b>	3,226	3,242	3,249	3,277	3,060	3,098	3,082	3149	3134	3126	3110	3100
<b>Fair</b>	242	261	284	285	477	497	496	454	452	465	479	470
<b>Poor</b>	162	153	138	127	158	123	114	117	113	115	118	124
<b>Total</b>	3,630	3,656	3,671	3,689	3,695	3,718	3718	3720	3699	3706	3707	3694

**TABLE 2**

Good = Structural Sufficiency Rating  $\geq$  80 or not SD or FO  
 Fair = Structural Sufficiency Rating  $\geq$  50 but  $<$  80 and SD or FO  
 Poor = Structural Sufficiency Rating  $<$  50 and SD or FO  
 SD = Structurally Deficient      FO = Functionally Obsolete

The following graph is the current Pontis calculation<sup>2</sup> of bridge condition needs over the next twenty-year period based on alternative funding levels per year.



<sup>2</sup> The Bridge Sufficiency Rating graph represents a model demonstration on how the PONTIS system can describe future utilization of resources. Efforts are currently underway to upgrade the Bridge Management System that will provide a more accurate estimate of bridge conditions and needs.



The goal is to retain consistent funding against the bridge needs to preserve the bridge infrastructure and minimize cost impacts due to deferred preservation/maintenance. The alternative funding scenarios demonstrate that with the current \$26 million dollar investment the Department never addresses the needs within the twenty-year period. The 124 bridges in the poor rating category represent more than \$300 million dollars in replacement costs.

## **Maintenance Levels of Service**

Within the Colorado DOT, 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 encompassing the Maintenance Levels of Service (MLOS) represent performance accountability at the tools & service level that are rolled up to the investment level within the maintenance program. The following performance measures and levels of service have been incorporated within a process of annual maintenance program development based upon performance management principles. The delivery of maintenance services encompasses about 70 individual activities organized within nine Maintenance Program Areas (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 their expenditures. Each assessment is then converted into a grading scale of A through F.

### ***Performance Measure***

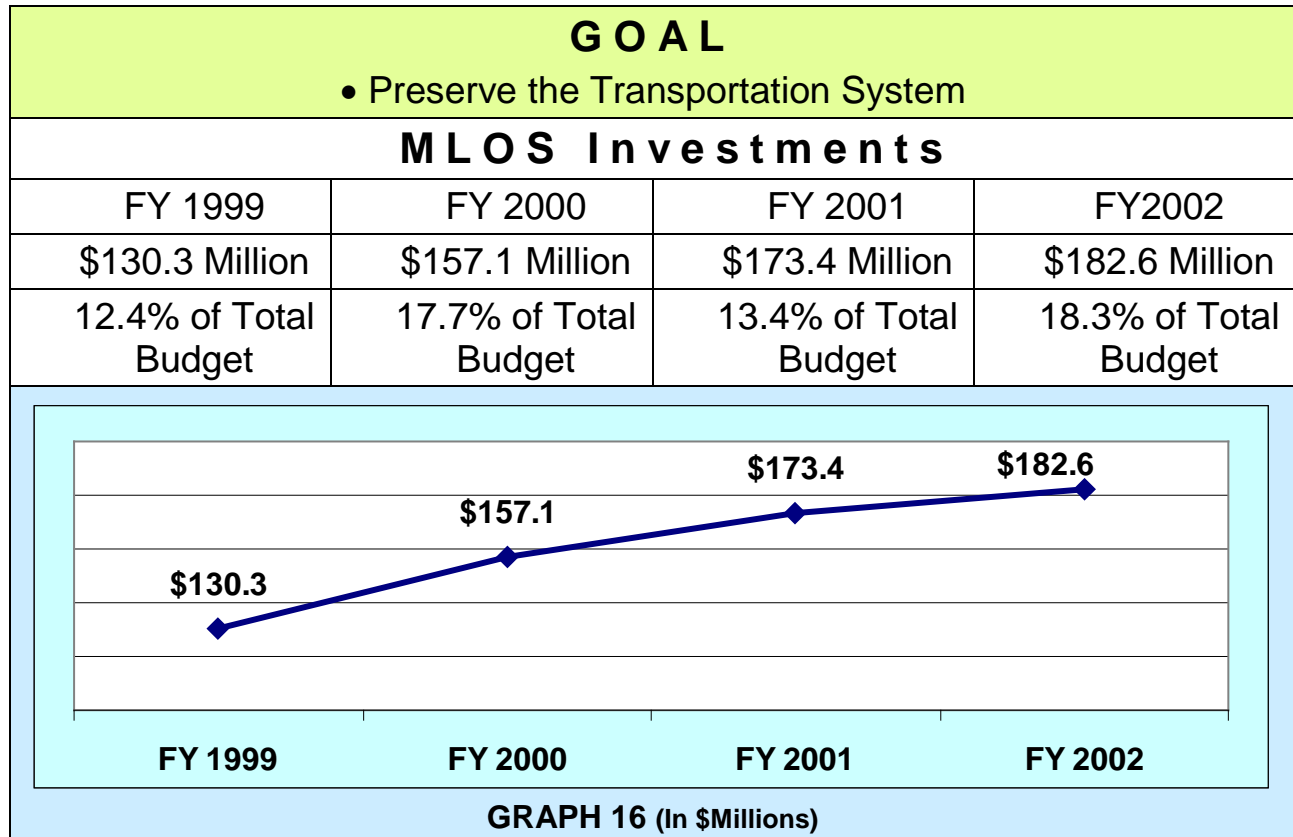
- Maintenance condition survey

### ***Purpose***

This measure demonstrates the optimization of the maintenance budget and the service results achieved.

### ***Current Condition***

The concept of gauging performance within the MLOS has been in operation for only a few years. As a result, it's not surprising that the current service levels remain relatively constant from the 1999 through 2002. The total expenditures for the MLOS program for FY 2002 were \$182.6 million dollars. Table 3 illustrates the Department meeting or exceeding targets in more than half of the maintenance program areas. Road surface is another performance area that should be celebrated for exceeding projections in an area of importance to the traveling public.



**• OBJECTIVE :**

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

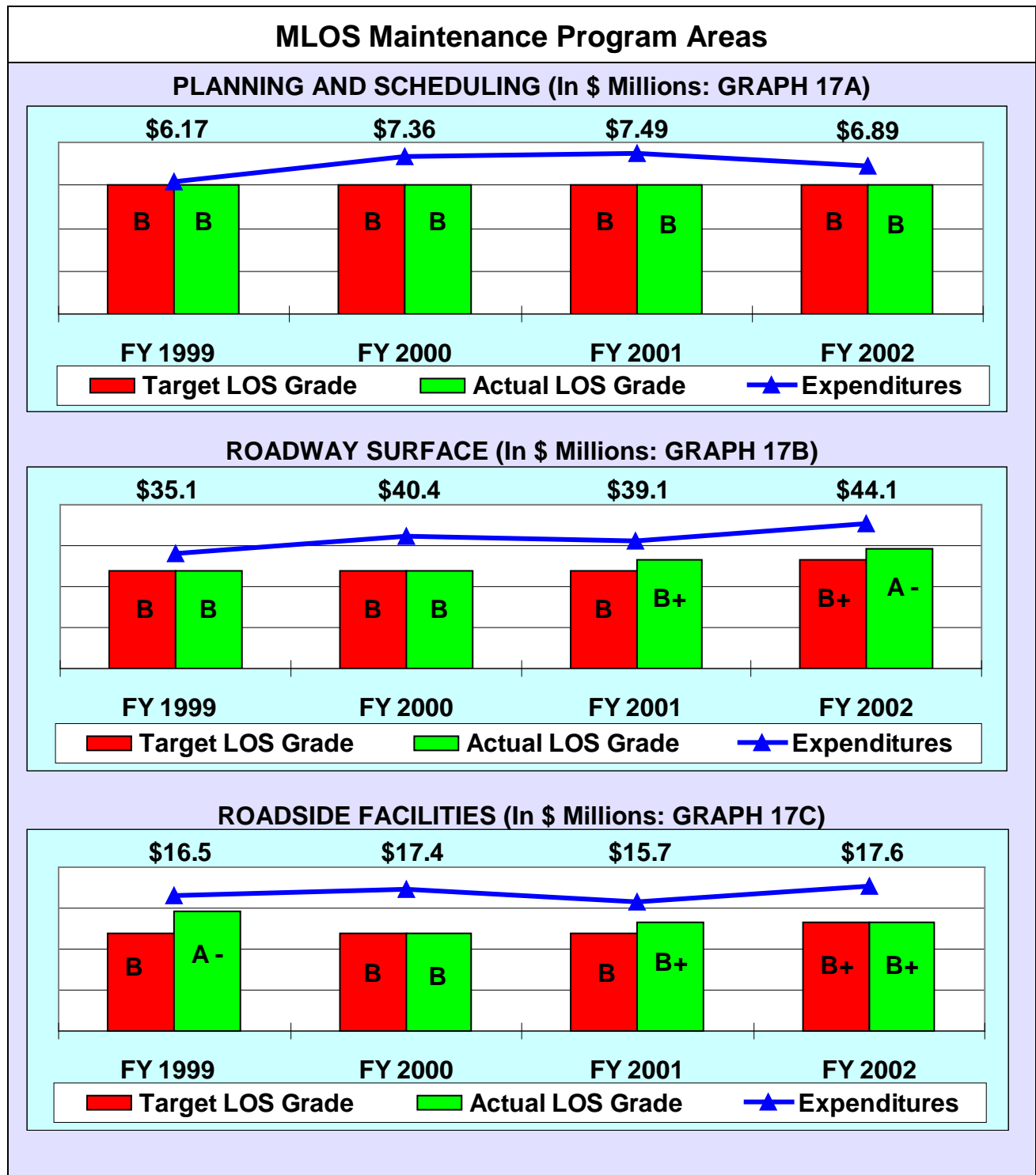
**Maintenance Program Areas**

Investment Level Performance Measure	FY 2002 Targets	Current Performance	FY 2002 Achievement
Maintenance condition survey			
Planning & Scheduling	<b>B</b>	<b>B</b>	Target of "B" met
Roadway Surface	<b>B+</b>	<b>A -</b>	Target exceeded
Roadside Facilities	<b>B+</b>	<b>B+</b>	Target of "B+" met
Roadside Appearance	<b>B</b>	<b>B+</b>	Target exceeded
Traffic Services	<b>B</b>	<b>B</b>	Target of "B" met
Structures	<b>C -</b>	<b>D+</b>	Target of "C-" not met
Snow & Ice Control	<b>B</b>	<b>B -</b>	Target of "B" not met
Equip., Bldgs., & Grounds.	<b>B -</b>	<b>C</b>	Target of "B-" not met
Tunnels	<b>A</b>	<b>B -</b>	Target of "A" not met
<b>Statewide Total</b>	<b>B</b>	<b>B</b>	Target of "B" met

**TABLE 3**

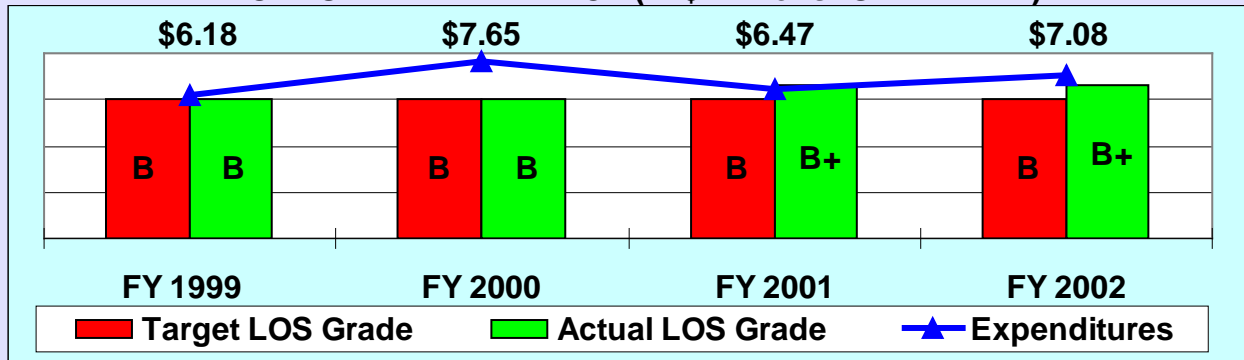
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The following graphs give the investments in the maintenance program areas, the levels of service targets adopted by the Transportation Commission and the levels of service outcomes on an annual basis for the past four years.

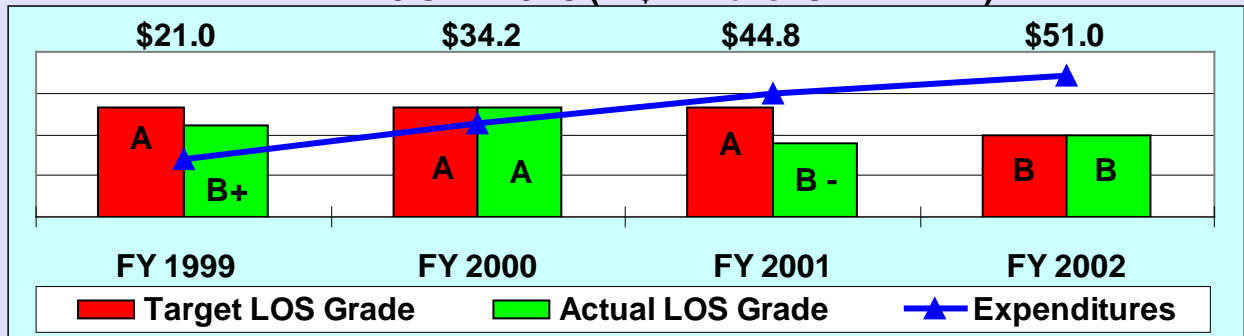


**MLOS Maintenance Program Areas (Continued)**

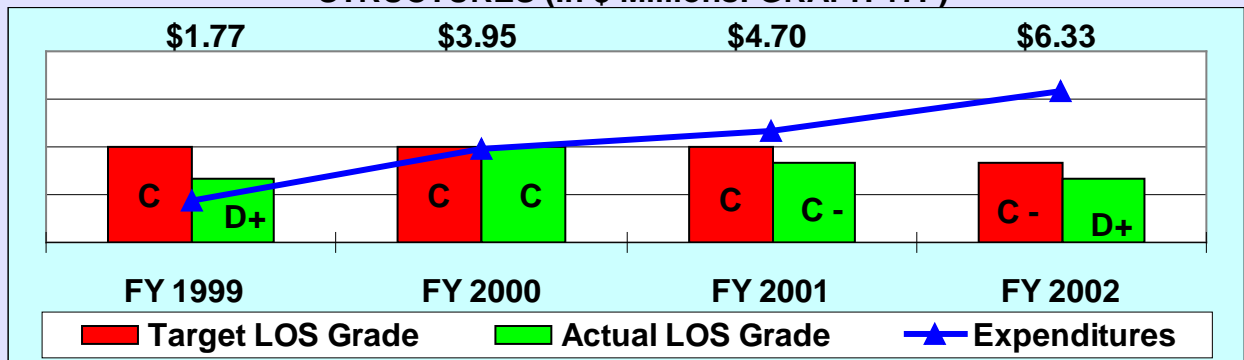
**ROADSIDE APPEARANCE (In \$ Millions: GRAPH 17D)**



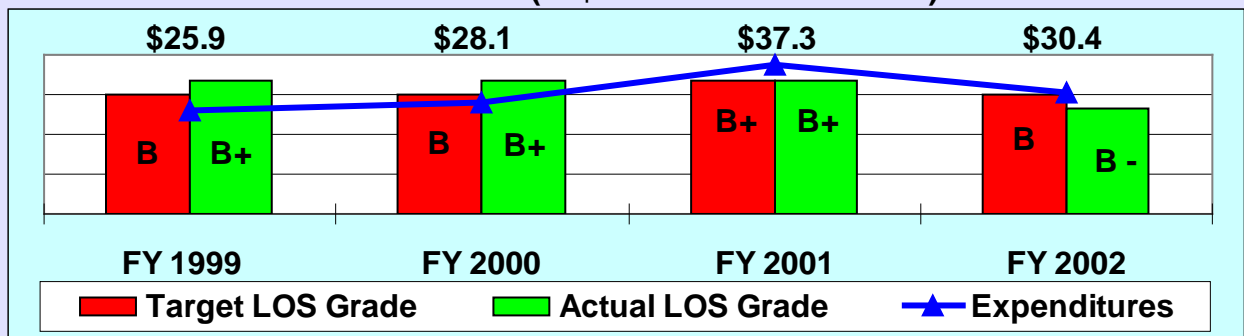
**TRAFFIC SERVICES (In \$ Millions: GRAPH 17E)**

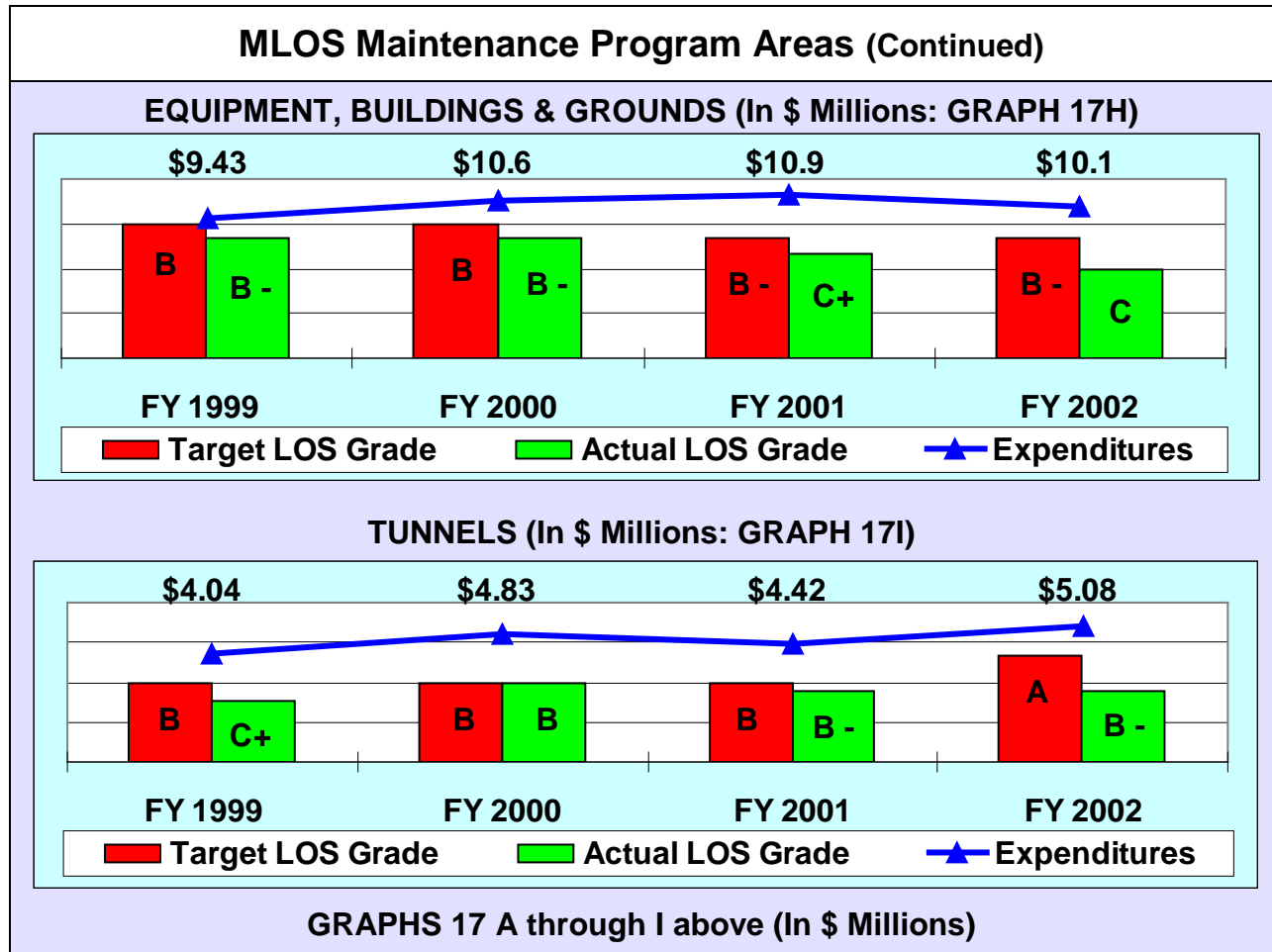


**STRUCTURES (In \$ Millions: GRAPH 17F)**



**SNOW & ICE (In \$ Millions: GRAPH 17G)**





## Customer Perception of System Quality

### 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

The Customer Perception of CDOT Performance is quantified in a report of the statewide survey conducted in early 2000. The state was divided into four different demographic areas to correlate with the 1994 survey.

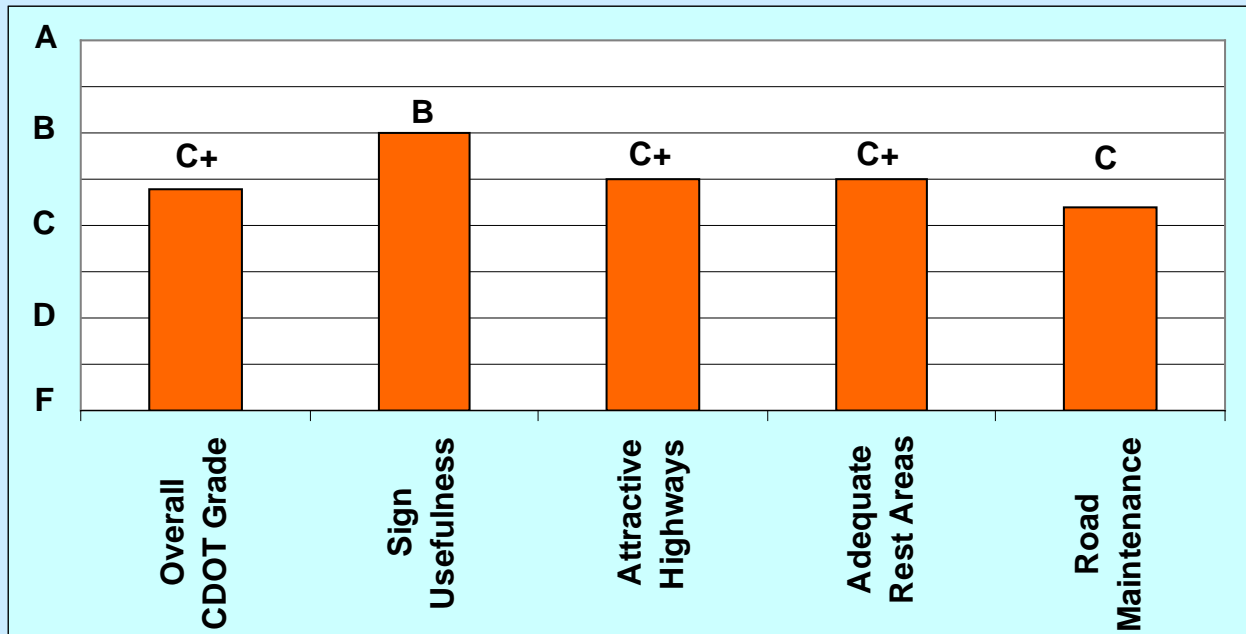
The results from the 2000 Statewide Resident Survey scored CDOT's overall performance at "C+". This is a slight increase from "C" in the 1994 survey. The "C+" overall rating is comprised of 5% at A, 42% at B, 42% at C and the remaining respondents in the D, F or don't know portion of the scale. Average ratings (Graph 18) of specific aspects of services provided by CDOT ranged from the mid to high "B" level related to 'signage' down to the "C" level related to 'maintaining road surfaces'. The resident's feedback highlights areas of concern and focus for CDOT.

**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

Investment Level Performance Measure	Target for Year 2004	Current Performance	Achievement
Perception of return on investment for quality of life	None Adopted	C+ (2.4) Overall (Scale A = 4 and F = 0)	<b>Above average</b>

**Customer Perception of CDOT Performance**

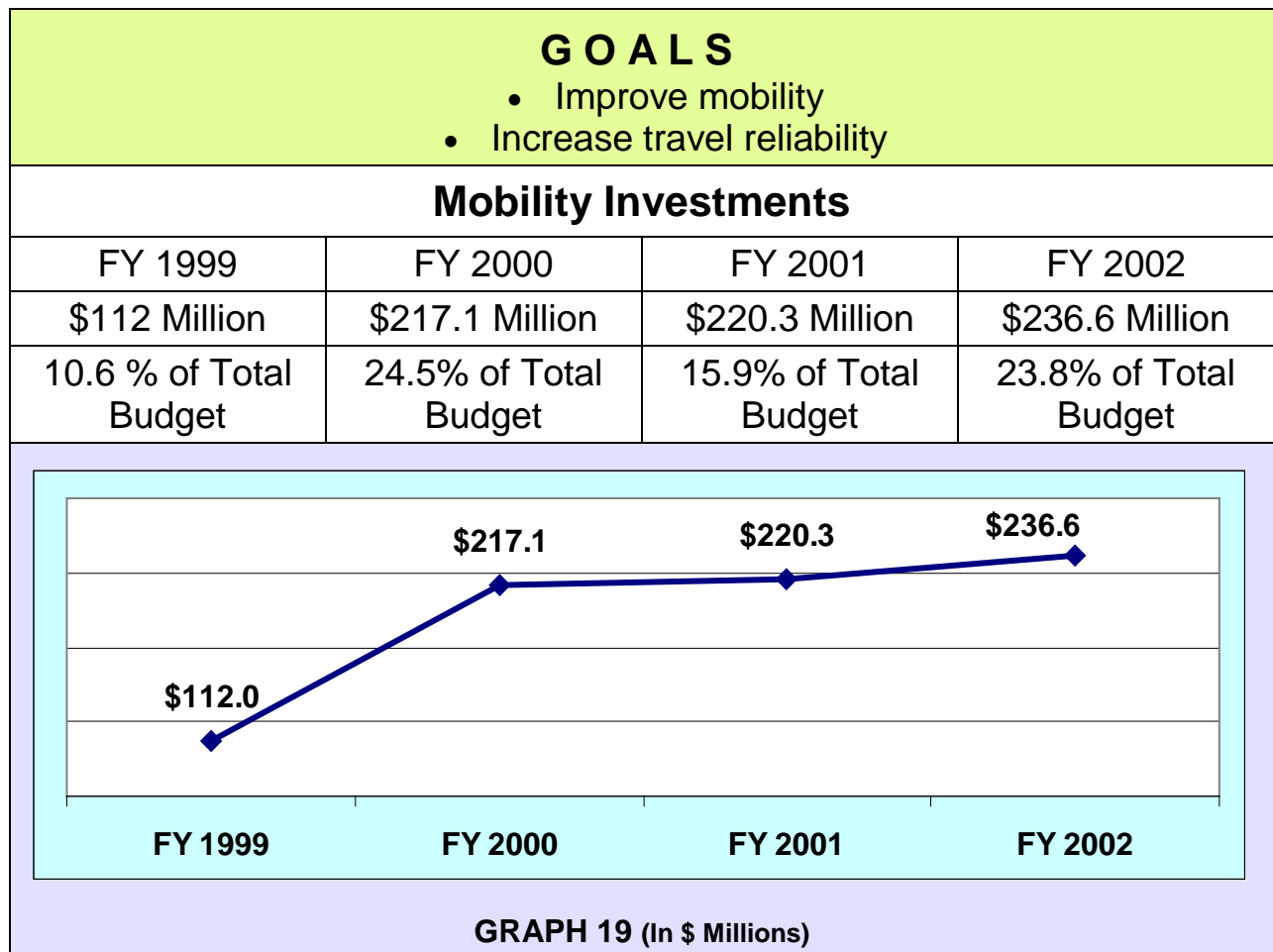


**GRAPH 18**

## Mobility Investment Category

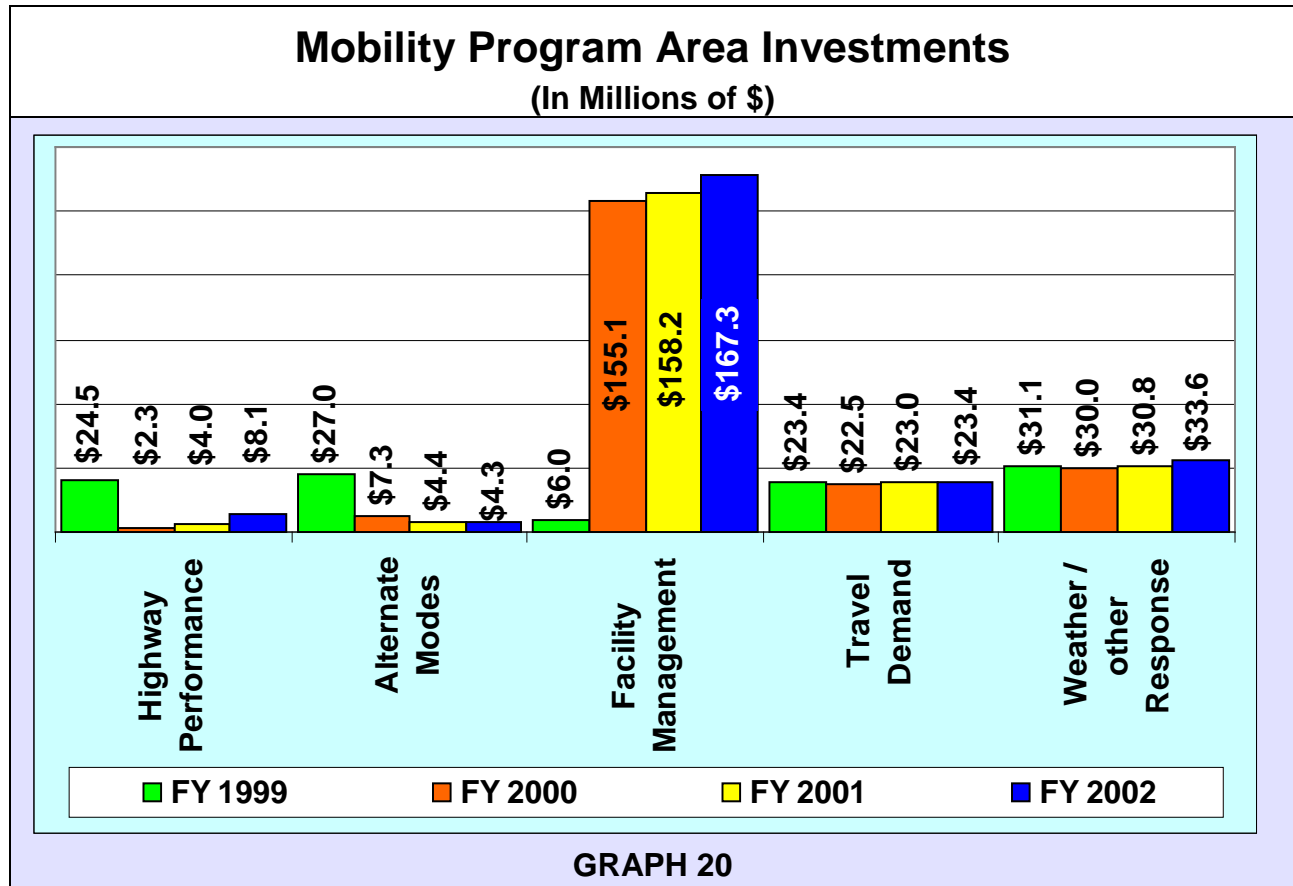
*“Programs, services and projects that provide for the movement of people, goods and information.”*

The Mobility Investment Category is a comprehensive category that relates to other investment categories. The Mobility Investment Category Strategy encompasses investments made in accessibility to the transportation system, transportation options, environmental impacts, connectivity, travel time variability and overall infrastructure management.



### CDOT’s Investment in Mobility

CDOT allocated for fiscal year 2002 over \$236 million, which is 23.8 % of the total budget, to Mobility related areas including: Highway Performance, Weather/Other Response, Travel Demand, Facility (System) Management and Alternate Modes.



**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 Growth in Annual Vehicle Miles of Travel
- Volume to Capacity  $\geq .7$
- Congested Person Miles Traveled
- Travel Rate Index
- Customer Perception Rating of Travel Reliability and Ability to Travel
- Percent of Travel Needs Met



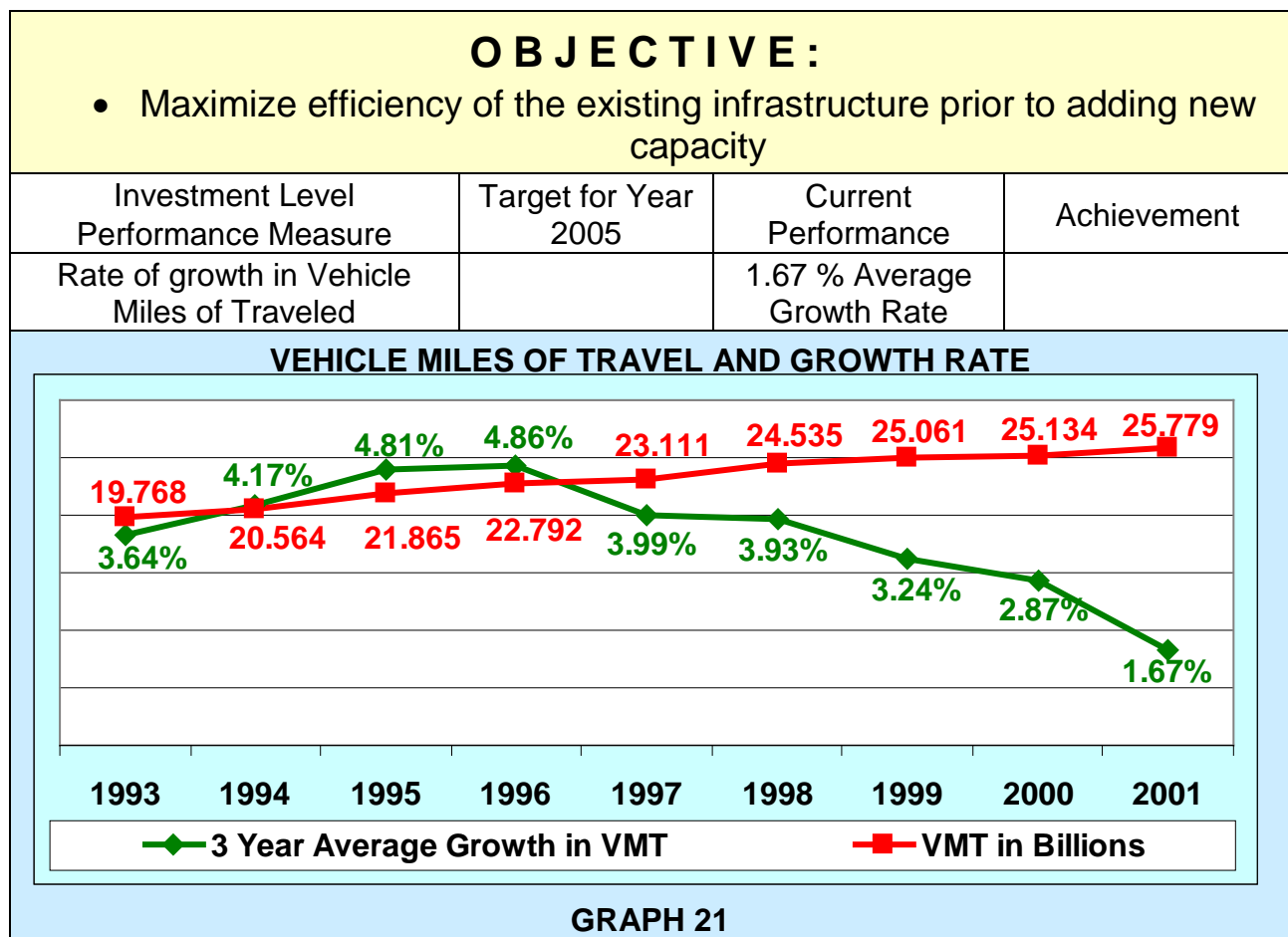
**Purpose:**

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 economic and environmental impacts to the communities.

**Current Condition**

In the previous CDOT's Performance Reports, a significant portion of the mobility data was provided from the Texas Transportation Institute (TTI) Urban Mobility Study. Because the data was focused on the major metropolitan areas and not on the entire state highway systems, the value of such data was limited and is being excluded from this years report.

The emphasis on Travel Rate Index (TRI) to provide data statewide was also limited by the enormous data requirements of TRI. TRI will continue in specific corridors in the future. The effort to illustrate mobility performance statewide led to the consideration being given to using vehicle miles traveled (VMT) as a rate of the population growth and controlling the rate of growth in volume to capacity (V/C).



The number of miles traveled are continuing to increase but at a slower rate than during the middle 1990's.

CDOT FY 2002 PERFORMANCE MEASURES REPORT

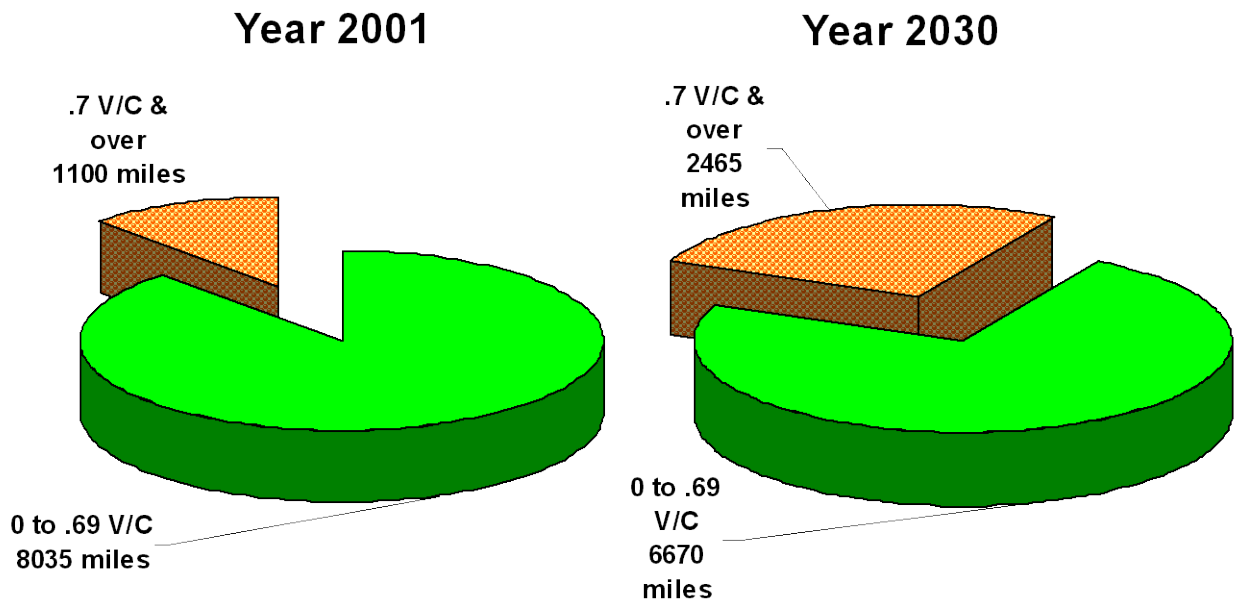
The following table illustrates the miles with V/C ratio of greater than .85 for the calendar years 1996 through 2001. The methodology and data availability used for calculation purposes has changed from year to year which restricts the ability to compare results but do give a general trend indicator of congestion in Colorado. The methodology and consistency in data to calculate congestion indicators in future years will enable better comparison analysis.

YEAR	MILES > .85	Percent of Road Miles
1996	582	6.4%
1997	635	7.0%
1998	N/A	N/A
1999	860	9.4%
2000	867	9.5%
2001	724.4	7.9%

N/A = Not Available

**TABLE 4**

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 segments of .85 volume to capacity ratio and over are identified in red on the statewide map on page 34. A close observation of the map reveals that the majority of the congestion resides along the Front Range. The volume to capacity changes on the highway system gives valuable data for trend line projections on possible future growth or mitigation of congestion. Current condition and future forecast of volume to capacity are shown below.



## Customer Perception of Mobility

### Performance Measures:

- Customer Perception Rating of Travel Reliability and Ability to Travel

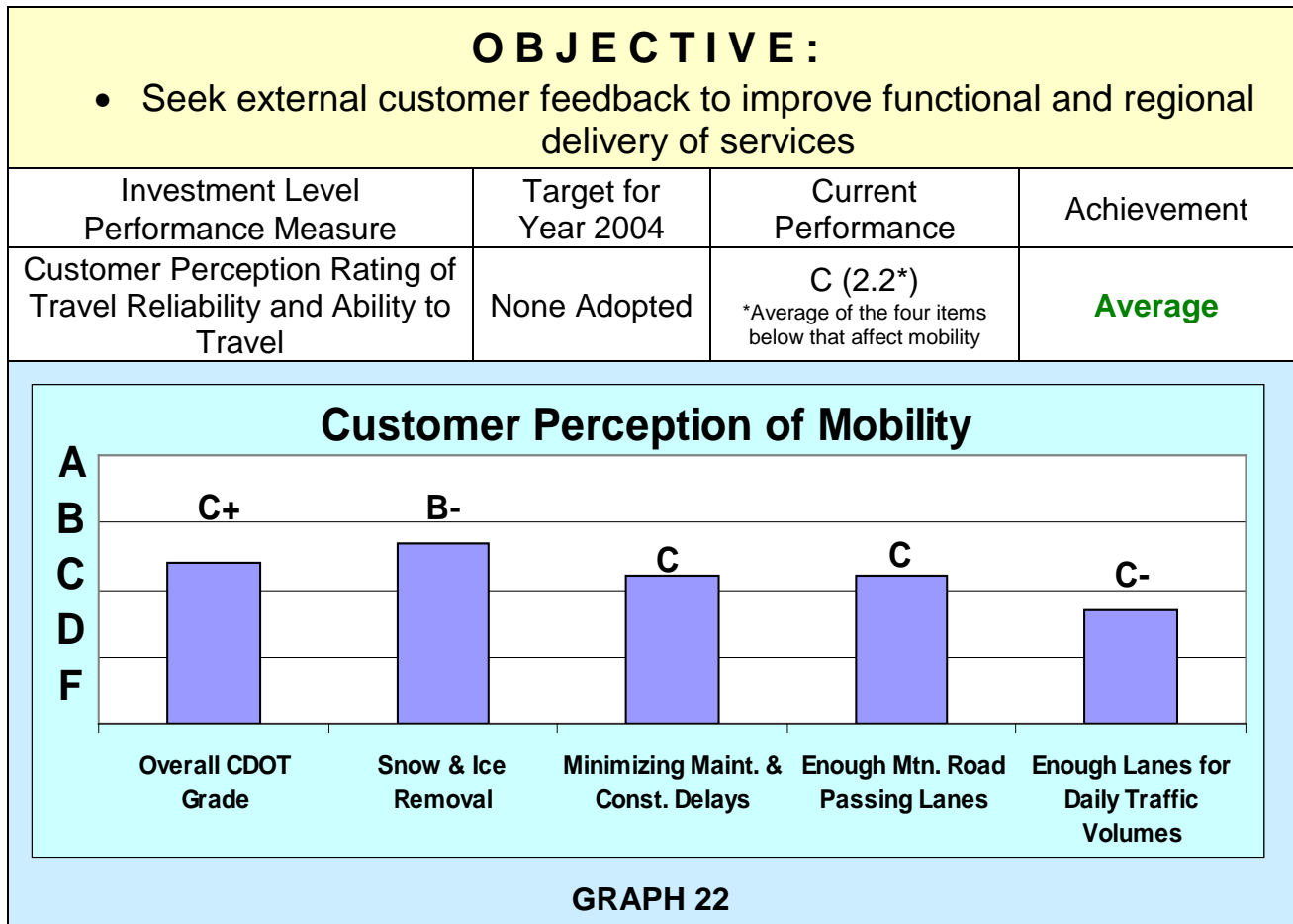
### Purpose

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

### Current Condition

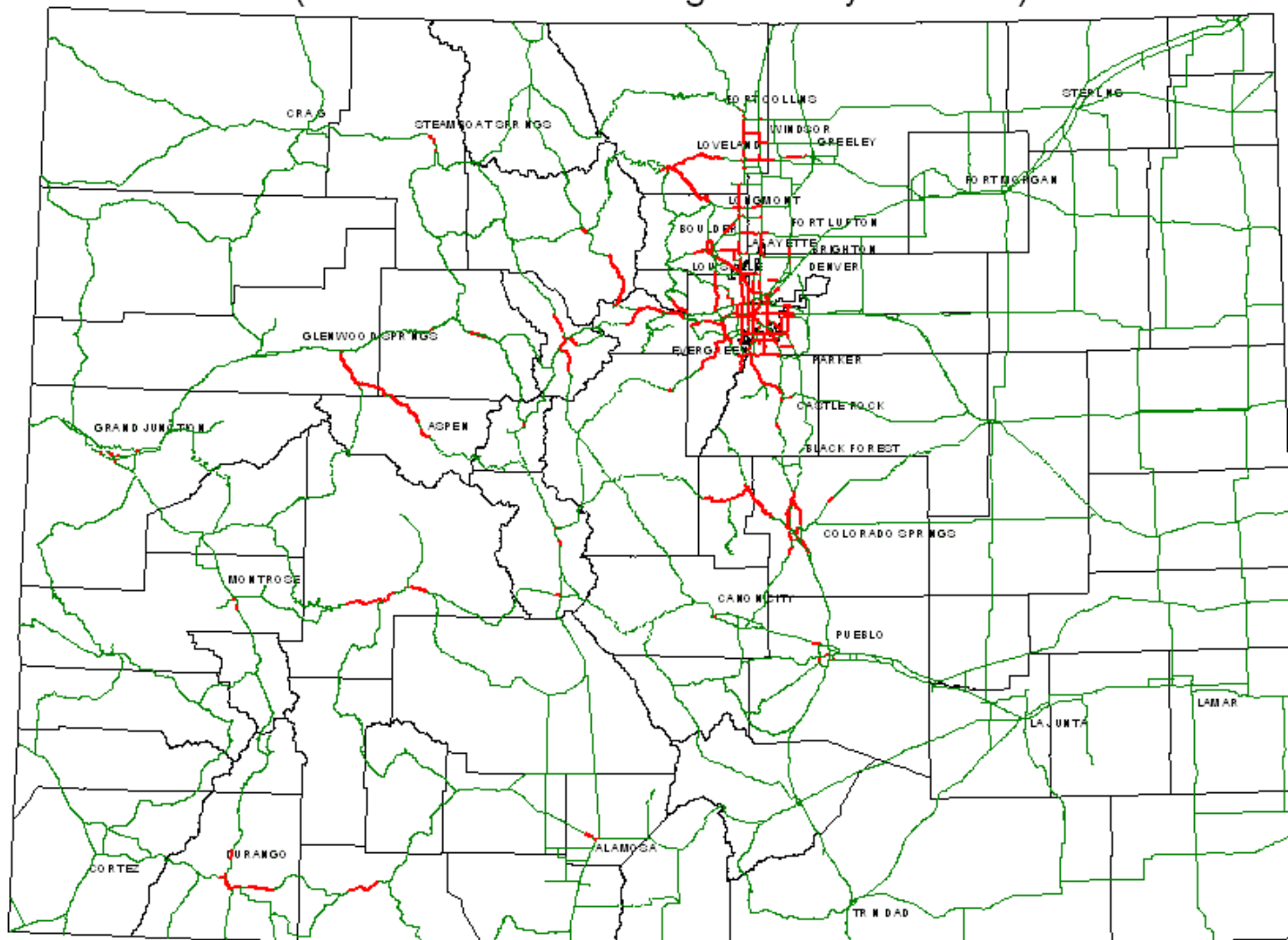
According to the 2000 Statewide Resident Survey, congestion (one element of Travel Reliability) continues to remain a high priority transportation related problem in each of the surveyed regions within the state.

This high concern is also reflected in the mobility areas, as shown in Graph 22, rated by the travelers in Colorado. The lowest grade of 1.7 is in "providing enough lanes". Of significance, is that there was more than a half percentage point difference between the geographical areas surveyed. The Denver metropolitan area gave a 1.6 rating to a 2.2 for the western slope.





# Mobility Conditions on Colorado State Highways

(Based on 2001 Design Hourly Volume)



State Highways 2001

-  Uncongested  $0.00 < V/C < 0.85$
-  Some Congestion  $0.85 < V/C < 1.2$

V/C = volume-to-capacity ratio

Design Volume = the 30th highest hourly volume

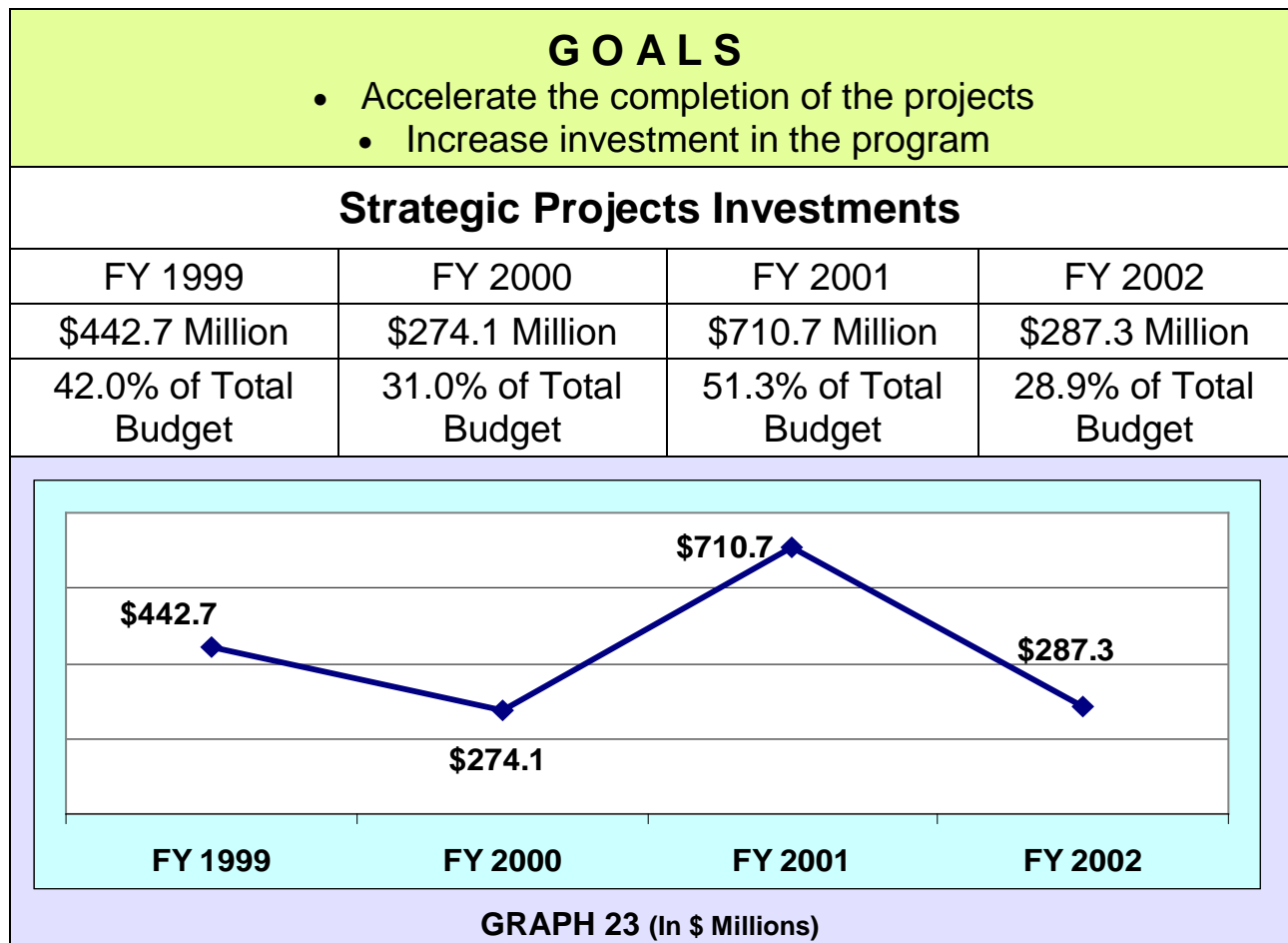
## Strategic Projects Investment Category

*“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, mobility and reconstruction.

### CDOT’s Investment in Strategic Projects

As adopted by the Transportation Commission, the total original cost to build the 28 strategic projects was \$4.65 billion dollars. The current cumulative programmed cost is \$2.635 billion dollars. For fiscal year 2002, CDOT allocated approximately \$287.3 million to continue towards the completion of these Projects.



**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

***Performance Measures:***

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

***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.

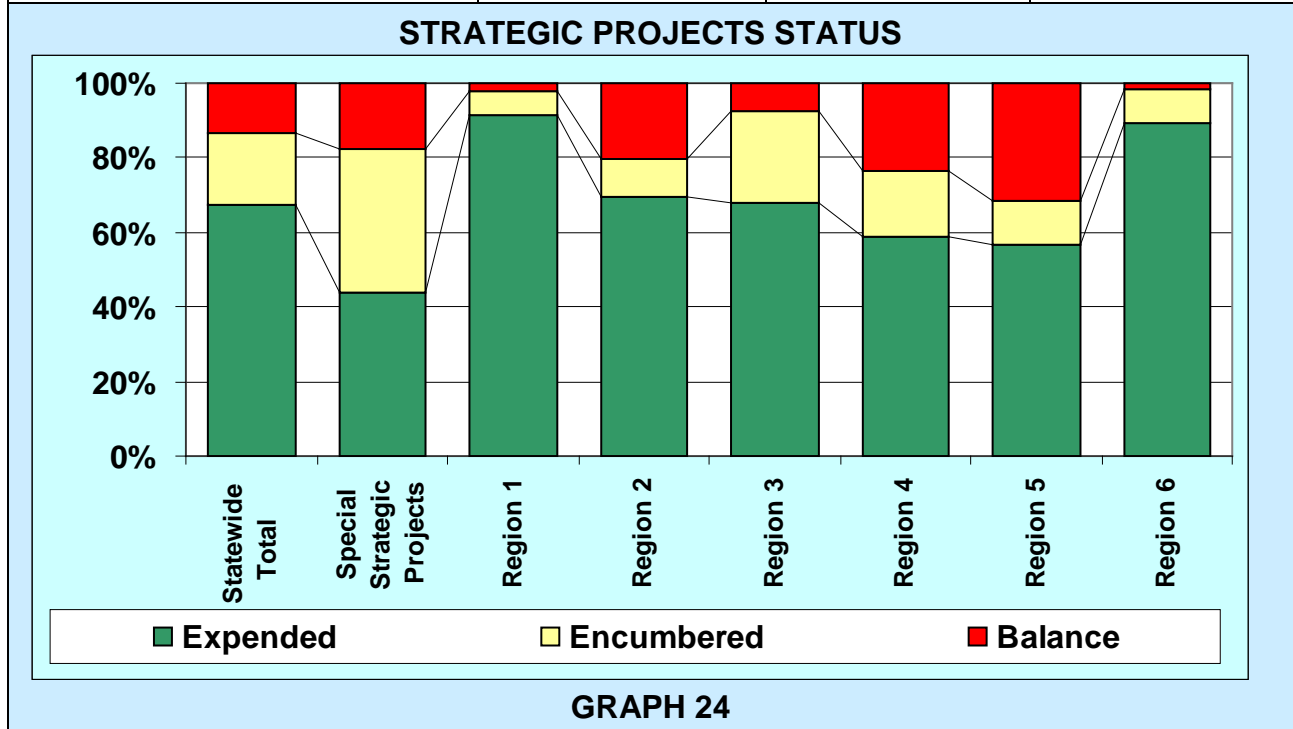
***Current Condition:***

Of the 28 Strategic Projects, 73.4% of the projects have expended and encumbered the project dollars for fiscal year 2002 to expedite the delivery of the project. The continued challenge is to obtain 100% encumbrance of funds. The target 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, CDOT's pursuit of this 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.

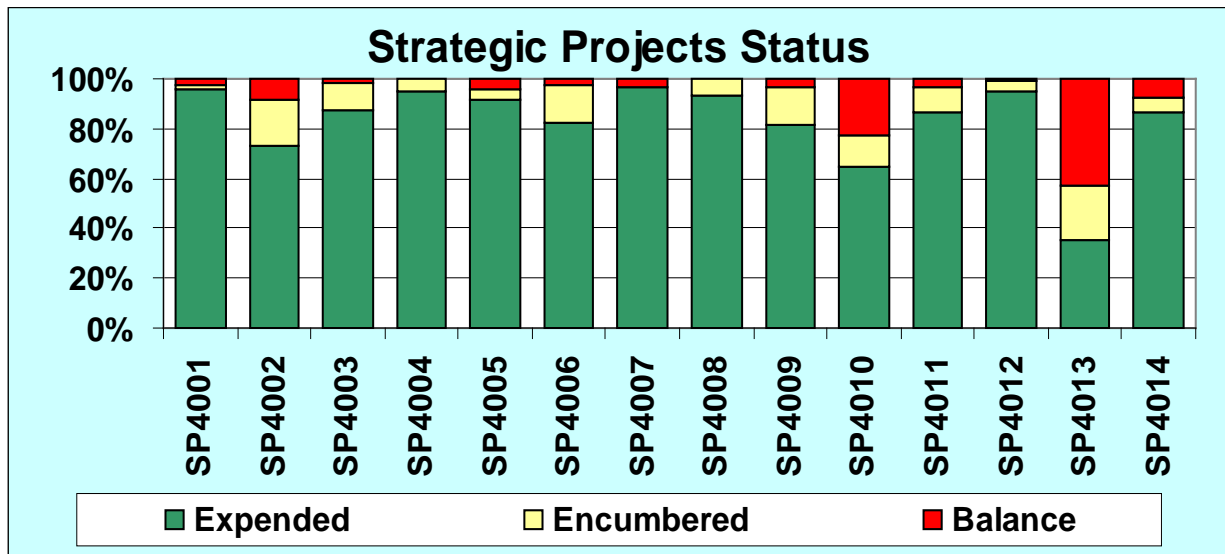
**OBJECTIVE:**

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

Investment Level Performance Measure	Target for Year	Current Performance	Achievement
Actual Funds Expended and Encumbered		86.7%	

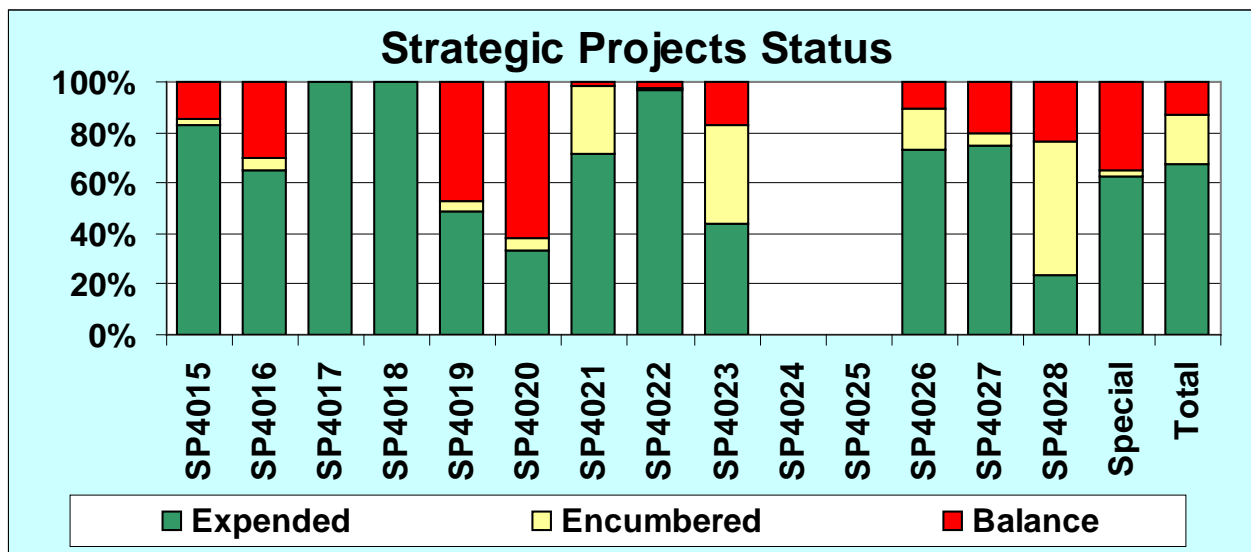


The graph on the next page illustrates the Strategic Projects status in budgeted to date terms. The Department's current status indicates that 86.7 percent of the budgeted dollars have been expended or encumbered since the adoption of the Strategic Projects program. The following projects I-25/US50/SH47 Interchange, I-25 (Owl Canyon Rd. to Wyo.), 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 Foxtan Rd.), and SH82 (Basalt to Aspen) are complete or nearing completion.



GRAPH 25A

SP 4001	I-25 / US 50 / SH 47	SP 4008	I-70, Tower Rd to Kansas
SP 4002	I-25, S. Academy to Briargate	SP 4009	I-25, SH 7 to SH 66
SP 4003	I-25 / US 36 / SH 270	SP 4010	US 50 Grand Jct. to Delta
SP 4004	I-225 / Parker	SP 4011	US 285, Goddard Ranch Ct to Foxton Rd.
SP 4005	I-76 / 120th Ave	SP 4012	US 287, Kiowa County to Oklahoma
SP 4006	I-25 / I-70 (Mousetrap)	SP 4013	US 160, Wolf Creek Pass
SP 4007	I-25, Owl Canyon Rd / Wyo.	SP 4014	US 40, Berthoud Pass



GRAPH 25B

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



## **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 enable 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, goods, and information, specific programs are used including Right-of-Way Services, the Office of Environmental Review and Analysis, Aeronautics, Staff Construction and Materials, Staff Design, 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**

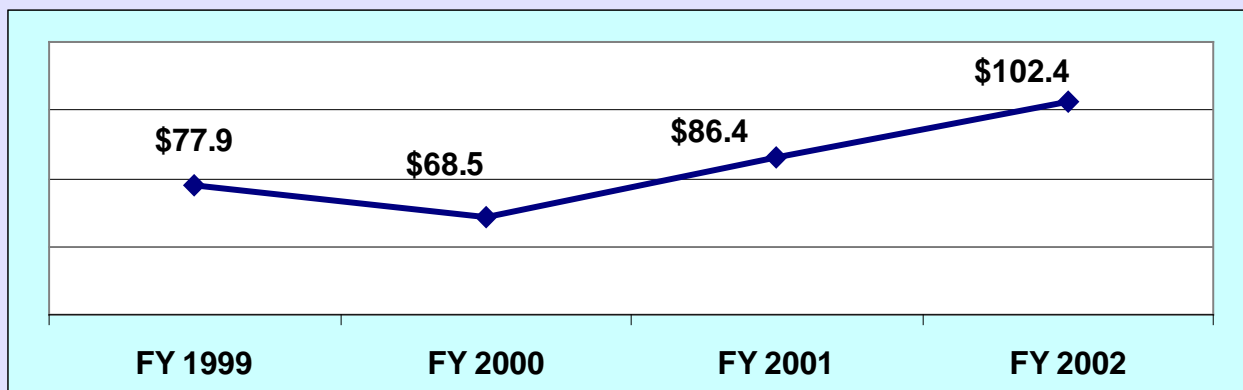
For fiscal year 2002, CDOT allocated approximately \$102.4 million, 10.3% of the budget, to disburse in the above five program areas and illustrated in Graph 27. This area of investment is somewhat limited in significant change from year to year because of the legislative cap on the number of personnel within CDOT. However, because there is an overriding concern by the public to ensure efficiency in government and the recognition by the transportation commission and management team of this fact, the Department has been tracking performance measures at the core service level for the past year and tools and service level for several years and including the data within the budget.

**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

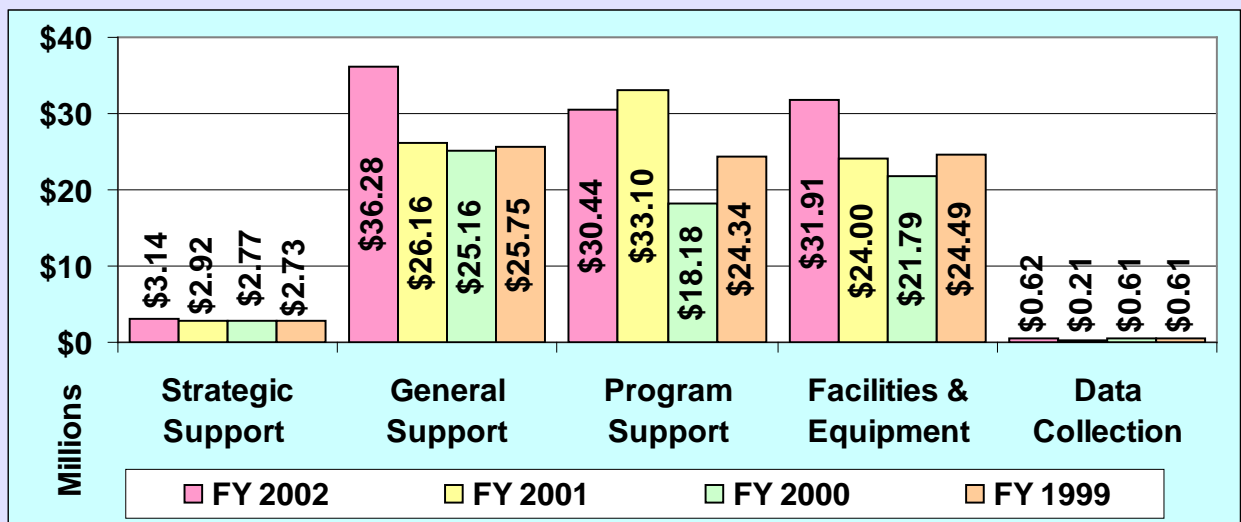
**Program Delivery Investments**

FY 1999	FY 2000	FY 2001	FY 2002
\$77.9 Million	\$68.5 Million	\$86.4 Million	\$102.4 Million
7.4% of Total Budget	7.7% of Total Budget	6.2% of Total Budget	10.3% of Total Budget



GRAPH 26

**Program Delivery Investments by Program Area**



GRAPH 27

**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:***

## CDOT FY 2002 PERFORMANCE MEASURES REPORT

- Percent Funds Encumbered Within Reporting Period
- Percent of Projects Completed Within the Fiscal Year Scheduled
- Percent Ad Dates Met Prior, 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 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:***

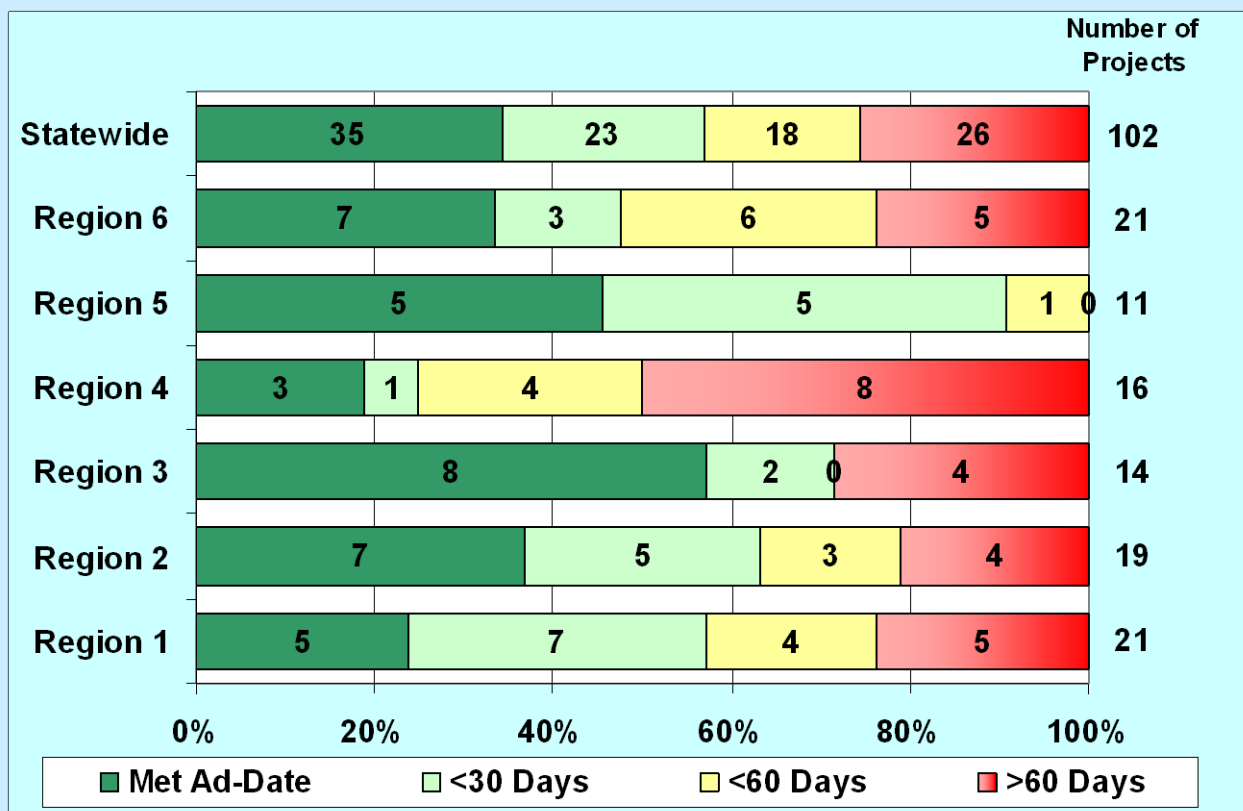
A key driver in meeting both the Strategic Projects and Program Delivery Investment Category goals is gauging how well project advertisement dates (Ad dates) are being met (Graph 28). In FY 2002 34.3% of the Ad-dates were met prior to or on the scheduled date. This is a slight increase over the previous year. Also of note is that 25.49% of the projects were beyond the 60-day scheduled Ad-date: an improvement of 13% over the previous year. 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 for the Department to begin projects on time has tremendous impacts on the Department's credibility with customers 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

Core Service Level Performance Measure	Target for Year 2002	Current Performance	Achievement
Percent Ad Dates On-Time, Within 30 Days, Within 60 days, or beyond 60 days		34.3% Met Ad-dates 74.5% within 60 Days	<b>Improved</b>

**PROJECT AD-DATE PERFORMANCE**



**GRAPH 28**

## 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
- Employee satisfaction survey rating

### **Purpose:**

Annual turnover rate contributes to the optimization of the Department's capability in retaining a qualified workforce. Level of employee satisfaction contributes to whether employees remain with the Department.

### **Current Condition:**

CDOT's Center for Human Resource Management (CHRM) has collected and analyzed CDOT's annual employee turnover rate for several years. CHRM completed CDOT's initial annual employee survey in FY 2001 and repeated the survey in FY 2002.

### **Employee Turnover:**

CDOT's annual turnover rate has dropped below 8% for the first time since 1998. This indicates that 8 out of every 100 CDOT employees terminate employment with CDOT on an annual basis. Employees terminate employment voluntarily through retirement or for job opportunities outside the Department. Additionally, employees separate involuntarily, such as through being fired. The turnover rate for fiscal year 2002 is lower than the recent historical high of 11% in fiscal year 1999 but is higher than the 6-7% turnover rate experienced during the prior three fiscal years.

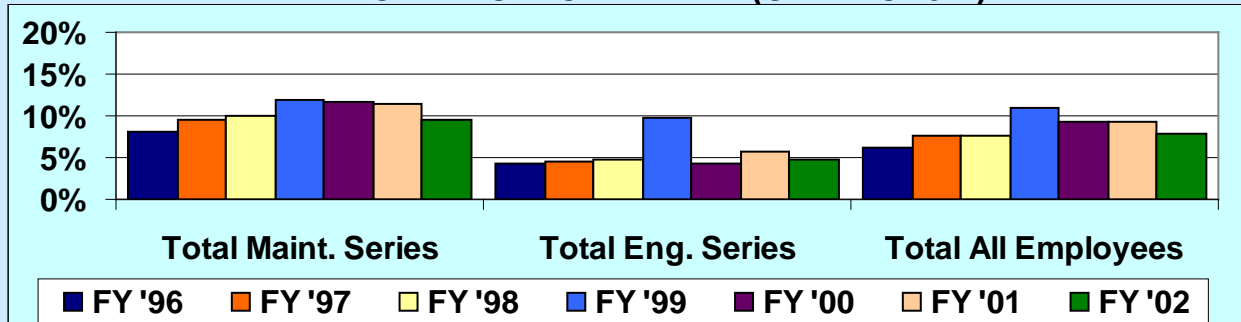
The rate of transportation maintenance turnover over the past six years has been generally higher (9.5 to 11.9%) than the rate of engineering turnover (4.3 to 9.7%). The annual turnover rate of Maintenance I and II employees continues to be high (9.7% and 11.3% respectively). Similarly, the annual turnover rate of Professional Engineer III's has experienced a varying high rate from 9.1% to 17.4% over the last several years.

**OBJECTIVE:**

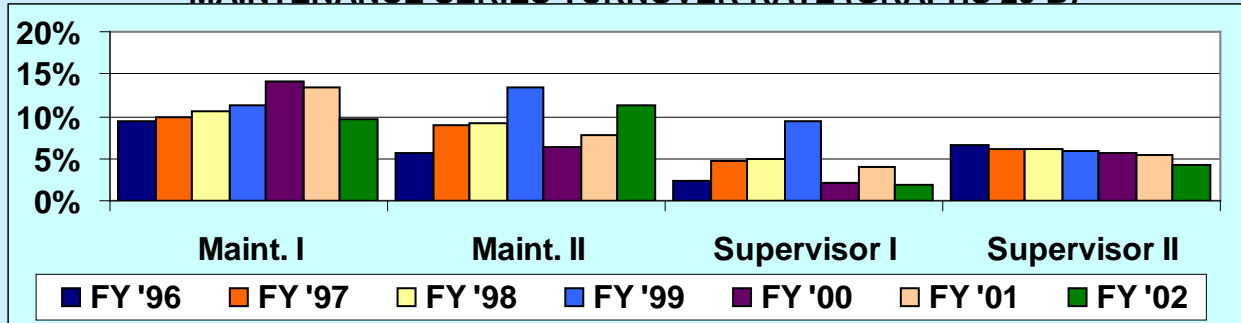
- Create an environment that fosters high employee productivity

Core Service Level Performance Measure	Target for Year 2002	Current Performance	Achievement
Average Employee Turnover Rate Per Year Per Critical Job Class	None Adopted	7.9% Overall 4.8% Engineers 9.6% Maintenance	<b>Rate decreased</b>

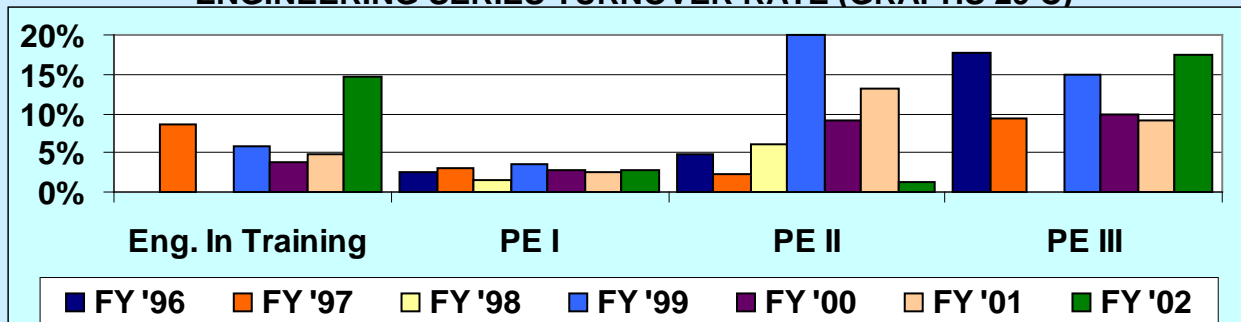
**EMPLOYEE TURNOVER RATE (GRAPHS 29 A)**



**MAINTENANCE SERIES TURNOVER RATE (GRAPHS 29 B)**



**ENGINEERING SERIES TURNOVER RATE (GRAPHS 29 C)**



GRAPHS 29 A, B and C

## CDOT FY 2002 PERFORMANCE MEASURES REPORT

Turnover can also be examined specifically for short-term employees. Probationary employees are those CDOT employees within their first year of state employment. The annual turnover rate of probationary employees for fiscal year 2002 increased to 26.1% from 22.9% in FY 2001. This is more than triple the turnover rate for CDOT as a whole (7.9%). 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 and reduced productivity. 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 between co-workers. Therefore, it is in CDOT's interest to minimize the rate of avoidable turnover wherever possible.

Data on employees' reasons for separation from CDOT over the past five years indicate that of the total number of separations from CDOT, approximately 48% was attributed to voluntary resignation, and approximately 37% was attributed to retirement. Employee separation attributed to retirement is something that will consistently contribute to annual employee turnover rates, and should therefore be monitored for succession planning purposes.

CDOT can expect to lose approximately 11% of its workforce over the next five years due to full retirement. This number does not take into account employees who will 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.

Over the next five years, almost half of CDOT's senior highway maintenance supervisors (Transportation Maintenance Supervisor II's) are eligible for full retirement benefits. Smaller projected 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.

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 CDOT as an employer, nature of work, satisfaction with pay, effective leadership and freedom job stress are all-important contributors to an employee's intent to remain employed with CDOT.

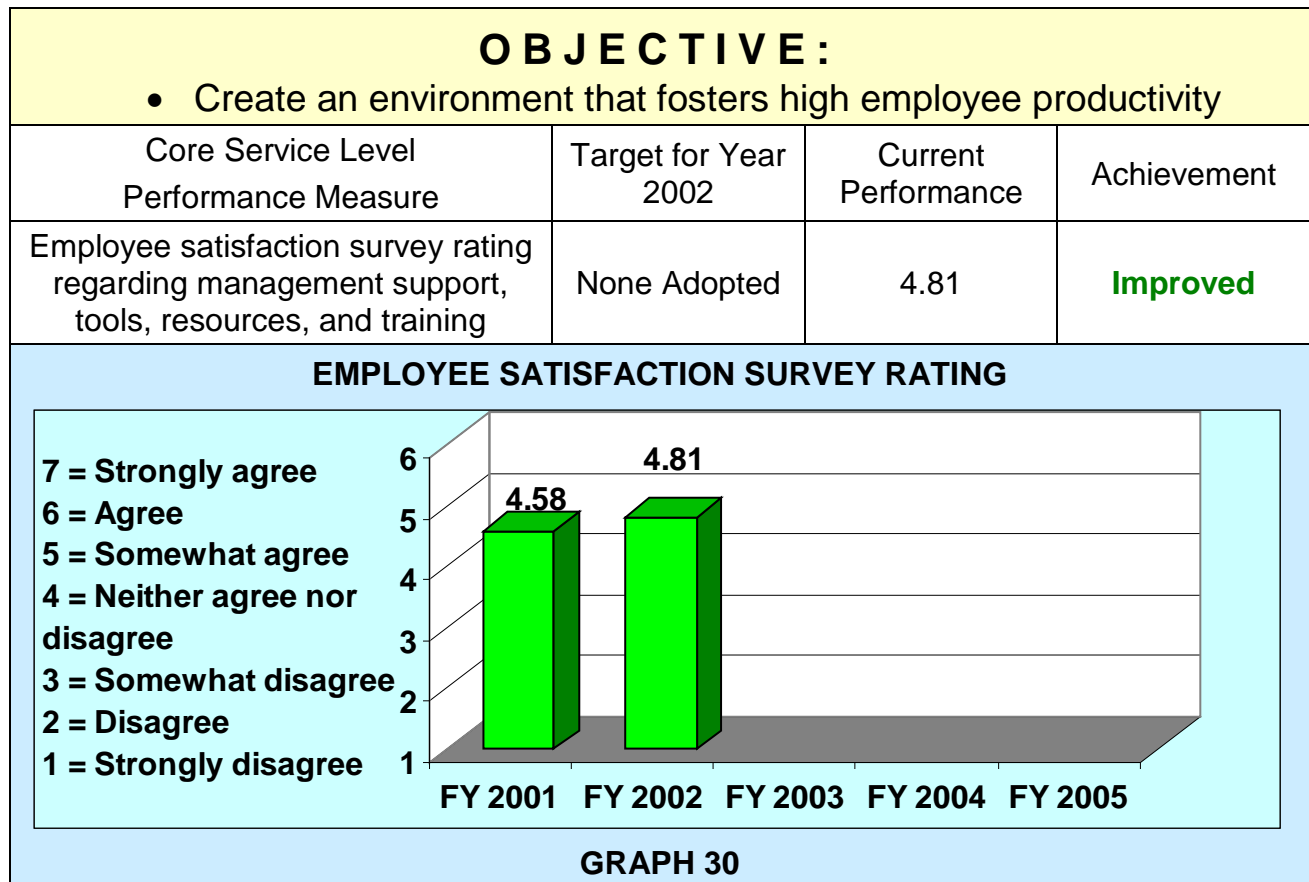


**Employee Satisfaction:**

CDOT's employee satisfaction survey conducted in 2002 measured employee attitudes toward 33 aspects of CDOT. CDOT employees were most satisfied with the nature of their work, the high social standards of CDOT (i.e., freedom from workplace violence, harassment, 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 (opinion areas) 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 average of all employee responses to all items on the employee survey. The scores represent the overall favorableness of employee opinions of working at CDOT. 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 an increase of 5.0%.



## 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 learnings 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
- Articulate insights and learnings and communicate 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