



DATE: October 7, 2015
TO: Transportation Commission
FROM: Debra Perkins-Smith, Director, Division of Transportation Development
SUBJECT: Policy Directive (PD) 14.0 Performance Measures and Objectives

Purpose

This memo reports on progress in meeting performance objectives in Policy Directive (PD) 14.0 “Policy Guiding Statewide Plan Development”, and provides further details on ability to meet performance targets as requested by the Commission during the September PD 14 workshop. Additionally, this memo reiterates the FY17 Asset Management planning budget that was approved by the TC Asset Management Committee in November 2014, and which will be included in the FY17 budget setting process, and highlights the link between performance objectives and funding decisions.

Action

Informational to inform the FY17 budget setting process.

Background

CDOT establishes the transportation planning framework for each planning cycle through review and revision of PD 14.0, which guides the Statewide Transportation Plan development and implementation, and the distribution of resources to meet performance objectives. The current PD 14.0 is consistent with the 2012 federal authorization law, MAP-21 (Moving Ahead for Progress in the 21st Century), 23 U.S.C. 134, 135 and 450, P.L. 112-141. MAP-21, and emphasizes performance measures and targets, or objectives, to support national goals. The current PD 14.0 was developed with extensive input and direction from the Transportation Commission Statewide Plan Committee, Asset Management Committee, and Transit & Intermodal Committee. The Transportation Commission adopted the current PD 14.0 in February, 2015 in advance of the March adoption of the 2040 Statewide Transportation Plan (SWP). PD 14.0 was developed in tandem with the 2040 SWP and the plan reflects PD 14.0 goals and performance objectives.

PD 14.0 outlines goals and performance objectives in the following areas:

- Safety - Moving Colorado toward zero deaths by reducing traffic-related deaths and serious injuries by one-half by 2030.
- Infrastructure Condition - Preserve the transportation infrastructure condition to ensure safety and mobility at a least life cycle cost.
- System Performance - Improve system reliability and reduce congestion, primarily through operational strategies and secondarily through the addition of capacity. Support opportunities for mode choice.
- Maintenance - Annually maintain CDOT’s roadways and facilities to minimize the need for replacement and rehabilitation.

PD 14.0 also articulates the intention to add additional measures and objectives in the future in the areas of Economic Vitality, Environmental Sustainability, Bicycle and Pedestrian, Truck Freight, and Freight Rail.

Details

The workshop will include detail on current and forecasted performance. In general, performance results are reported on either a calendar or fiscal year basis with the most current data being for calendar and FY14. These results are compared to the state FY14 budget, and reflect that while it is possible to meet each performance objective individually, CDOT does not currently have sufficient funding to meet all performance objectives simultaneously. Please reference Attachment A for more details.

FY17 Asset Management Planning Budget

Please reference Attachment B. On August 22, 2014 staff met in a budget setting workshop to review forecasted performance and asset need, which was used to develop a proposal for the FY17 asset management planning budget for eleven asset classes. During the November 2014 Asset Management Committee meeting, the FY17 asset management planning budget was approved to assist CDOT staff in planning projects. The planning budget is consistent with Program Distribution for the Statewide Plan (adopted by the TC in spring 2014). The FY17 planning budget includes funds from RAMP and funds typically set aside for TRANs Bond debt service since the bonds are



being retired; the intention was to backfill RAMP funding with these freed up funds since RAMP would partially end in FY17 and fully end in FY18.

Next Steps

Development of FY17 CDOT Budget. Staff will continue to monitor performance and trend to determine if there is a need to change funding allocations in the future. Staff do not recommend any changes to the FY17 planning budget for asset management.

Attachments

Attachment A: PD-14 Report

Attachment B: TAM FY14-19 Planning Budgets



Attachment B: TAM FY14-19 Planning Budgets

FY14-FY19 Asset Management Planning Budgets (in millions)						
	Actual			Proposed		
Asset Class	FY14	FY15	FY16	FY17	FY18	FY19
Surface Treatment	\$238.8	\$235.2	\$235.9	\$242.1	\$231.4	\$225.4
Bridge, BE & Bridge Fixed Costs	\$173.9	\$168.2	\$164.1	\$163.2	\$155.4	\$142.5
MLOS	\$249.0	\$251.3	\$254.4	\$262.6	\$263.5	\$272.8
Road Equipment	\$20.9	\$20.9	\$18.4	\$26.4	\$23.0	\$26.8
ITS	\$21.5	\$27.6	\$21.4	\$24.5	\$23.0	\$23.5
Geohazards	\$9.0	\$9.1	\$9.2	\$10.0	\$8.5	\$8.4
Buildings	\$11.3	\$20.8	\$12.9	\$21.4	\$17.5	\$20.2
Tunnels	\$7.4	\$12.4	\$5.2	\$7.6	\$6.4	\$8.4
Culverts	\$11.5	\$9.6	\$8.2	\$11.0	\$9.1	\$7.6
Walls	\$0.0	\$0.0	\$2.4	\$5.8	\$4.6	\$4.6
Traffic Signals	\$0.0	\$0.0	\$5.7	\$16.9	\$12.6	\$14.8
TOTAL	\$743.3	\$755.1	\$738.0	\$791.5	\$755.0	\$755.0



Attachment A: PD 14.0 Objectives	Annual Objective	2014 Results	Objective Met?	FY 14 Budget	FY15 Budget	FY16 Budget	FY16 Anticipated Condition	Long-Term Forecasted Condition	Funding Sources/Budget Program Category	Notes
Safety										
All Highways										
Reduce fatalities by 12 per year from 548 in 2008 to 344 in 2025.	476	488 (2014 data as of 9/1/2015)							Highway Safety Improvement Program, FASTER Safety, Safety Education, Hot Spots Program	Beginning in FY15, \$40 M of FASTER Safety funds was allocated to asset management to fund programs with a clear safety benefit (bridge, geohazards, and surface treatment)
Reduce the fatality rate per 100 million VMT by 0.02 per year from 1.03 in 2013 to 0.79 in 2025.	1.01	1.00 (2014 data as of 9/1/2015)								Through the vision of the SHSP and with continued improvement and application of safety analysis, CDOT is being more strategic in its use of safety funding for safety projects. The SHSP identified eight strategic emphasis areas for CDOT, as well as other safety stakeholder agencies, to focus safety improvement efforts. In CDOT's dedicated safety programs, HQ and Regions are collaborating to use state of the art safety analysis techniques to find the most effective locations for crash reduction, and fund those projects in a strategic four-year plan.
Reduce serious injuries by 90 per year from 3,200 in 2013 to 2,120 in 2025.	3,110	3,217 (2014 data as of 9/1/2015)		\$123 million	\$89.7 million	\$98.7 million	see notes	see notes		
Reduce the serious injury rate by 0.2 per 100 million VMT per year from 6.86 in 2013 to 4.46 in 2025.	6.66	6.57 (2014 data as of 9/1/2015)								
Reduce the economic impact of crashes annually by 1% over the previous calendar year.	\$7.54 billion	\$7.79 billion								
Bike and Pedestrian										
Reduce the number of bicyclist and pedestrian fatalities involving motorized vehicles from 67 in 2013 to 47 in 2025.	65	73 (2014 data as of 9/1/2015)							No dedicated funding source: includes portions of TAP, Safe Routes to School, CMAQ, and Bike Safety Education Programs through SPR	Bike and pedestrian is one of three emphasis areas in the SHSP.
Reduce the number of bicyclist and pedestrian serious injuries involving motorized vehicles from 469 in 2013 to 311 in 2025.	456	470 (2014 data as of 9/1/2015)		N/A	N/A	N/A	see notes	see notes		Recommended next steps - staff will analyze crash data further to identify specific bike/ped crash types and identify appropriate response strategies including targeted bike/ped safety outreach and education
System Performance										
Highways										
Prevent the spread of congestion by maintaining a Planning Time Index (PTI) of 1.25 or less on 90% or greater of Interstate centerline miles.	90%	90% of Interstate centerline miles achieved PTI		\$25.2 million	\$28.8 million	\$28.4 million			Congestion Relief, ITS Investments, and ITS Maintenance Programs	PTI targets were met for Interstate, and Colorado Freight Corridors, but not NHS. The difference in performance is possibly attributable to a greater focus of investments, including in operations, on interstates.
Prevent the spread of congestion by maintaining a PTI of 1.08 or less on 90% or greater of National Highway System (NHS) centerline miles, excluding Interstates.	90%	88% of NHS centerline miles achieved PTI		Dedicated Funding + individual project spending	Dedicated Funding + individual project spending	Dedicated Funding + individual project spending	see notes	see notes		Recommended next steps - Staff are undertaking analysis to identify the most appropriate strategies, including the deployment of additional operational solutions including Traffic Incident Management (TIM).
Prevent the spread of congestion by maintaining a PTI of 1.25 or less on 90% or greater of Colorado Freight Corridor centerline miles.	90%	90% of Colorado Freight Corridors achieved PTI								Projections suggest that the overall extent of corridors experiencing congestion above the target (currently 10% of centerline miles) will only experience minor increases by 2025. However, the PTI on the most congested segments is projected to increase significantly.
Transit										
Increase ridership of small urban and rural transit grantees by at least an average of 1.5% statewide over a five-year period beginning in 2012.	0.30%	2.25% (CY13 Data)		\$29 million	\$29 million	\$29 million	no data	no data	FTA Programs and FASTER Transit funding for rural and small urban areas	
Maintain or increase the total number of revenue service miles of regional, inter-regional, and inter-city passenger service over that recorded for 2012.	TBD	TBD		TBD			no data	no data		
Infrastructure Condition										
Highways										
Achieve 80% High/Moderate Drivability Life for Interstates based on condition standards and treatments set for traffic volume categories.	80%	89%							Surface Treatment Program (including FASTER Safety)	In FY15 pavement is expected to achieve 91% high/moderate DL on Interstates, 84% high/moderate DL for NHS, and 79% high/moderate DL for all state highways.
Achieve 80% High/Moderate Drivability Life for NHS, excluding Interstates, based on condition standards and treatments set for traffic volume categories.	80%	78%		\$238.8 million	\$235.2 million	\$235.9 million				Preliminary review of the newest forecast data indicates that we will achieve 79% high/moderate DL for all state highways in 2016. The primary reason for an uptick in condition is a change to the equation that calculates our IRI Index, specifically for non-interstate asphalt highways (which is a majority of our facilities). It should be noted that the forecast shows that these levels of DL are not maintainable over time.
Achieve 80% High/Moderate Drivability Life for the state highway system based on condition standards and treatments set for traffic volume categories.	80%	73%					79%	78% in 2026		Recommended next steps – staff will work to improve/tighten the link between pavement maintenance and pavement model recommendations, and evaluate the effect of pavement preventive maintenance on drivability life to identify strategies.
Bridges										
Maintain the percent of NHS total bridge deck area that is not structurally deficient at or above 90%.	90% or greater	95%					95%	95% in 2026	On-System Bridge Program (including FASTER Safety), Off-System Bridge Program, and Colorado Bridge Enterprise	Currently exceeding target and will continue to exceed target through 2036 (the last year analyzed); however, the bridge program has 7 metrics geared towards mitigation of risk (below), and four of those are not achieving their target.
Maintain the percent of state highway total bridge deck area that is not structurally deficient at or above 90%.	90% or greater	94%								A structurally deficient bridge is typically one where corrosion or deterioration has resulted in a portion of the bridge being in poor condition; for example, where water leaking through an expansion joint has caused the end of a steel girder to rust.
Percentage of CDOT-owned bridges over waterways that are scour critical	5%	7%								Scour critical bridges are at risk of failure during a storm event of sufficient size. Estimated \$49 M total to achieve target.
Percentage of bridge crossings over Interstates, U.S. routes and Colorado state highways with a vertical clearance less than the statutory maximum vehicle height of 14 feet-6 inches	0.4%	0.4%								A bridge with a vertical clearance less than 14'-6" statutory maximum vehicle height has a high risk of being hit by a tall load or legal load. Estimated \$36 M total to achieve target.
Percentage of bridge crossings over Interstates, U.S. Routes and Colorado state highways with a vertical clearance less than the minimum design requirement of 16 feet-6 inches	4.8%	4.8%		\$185 million	\$168.2 million	\$164.1 million				16'-6" is the minimum clearance used when designing new bridges over a roadway. A bridge with a vertical clearance less than 16'-6" but greater than or equal to 14'-6" has a medium to high risk of being hit by a tall load. Estimated \$265 M total to achieve target.
Percentage of CDOT-owned bridges posted for load	0%	0.1%								Legal Loads: Vehicles meeting the legal load limits (as defined in C.R.S. 42-4-502 - 42-4-504) can travel on Colorado Interstates, US and State Highways without an approved permit. Our older bridges may need to be posted since some of these bridges were not designed for legal loads. Load posted Structures do impact mobility by restricting both legal and permitted loads. Estimated \$5 M total to achieve target.
Percentage of CDOT-owned bridges with a load restriction	3%	3%								Permit Vehicles: Permit loads (as defined in the Colorado Bridge Weight Limit Map/CDOT Bridge Rating Manual) are typically heavier and longer than the legal loads and require an approved permit in order to travel on Colorado Hwys. Our older bridges may need to be restricted for passage since some of these bridges were not designed for permit loads. Permitted loads have a certain combination of axle weight and spacing of that distributes the load in an acceptable combination for crossing over structures. Estimated \$99 M to achieve target.
Percentage of leaking expansion joint by length on CDOT-owned bridges	15%	19%								Leaking expansion joints allow water and deicing chemicals onto superstructure and substructure elements which can accelerate corrosion and lead to early onset of a structural deficiency. Keeping expansion joints sealed slows the rate of bridges dropping into structurally deficient.
Percentage of CDOT-owned bridge deck area that is unsealed or otherwise unprotected	30%	31%								Unsealed bridge decks deteriorate faster than sealed bridge decks.

Attachment A: PD 14.0 Objectives	Annual Objective	2014 Results	Objective Met?	FY 14 Budget	FY15 Budget	FY16 Budget	FY16 Anticipated Condition	Long-Term Forecasted Condition	Funding Sources/Budget Program Category	Notes
Buildings										
Statewide Letter Grade	90%; C or Better	86%; C or Better		\$11.3 million	\$20.8 million	\$12.9 million	78% C or Better	81% C or Better in 2026	Property Capital Expenditure Program	Given the current planning budgets, buildings will not achieve its target between now and 2036, the last year of the analysis. In 2036 the expected performance is 79%. Estimated \$29 M annually needed to achieve target. Recommended next steps – staff will improve awareness of preventive maintenance as a priority, and determine level of funding needed for building preventive maintenance.
ITS										
Average Percent Useful Life	90% or less	126%		\$21.5 million	\$27.6 million	\$21.4 million	154%	89% in 2026	ITS Maintenance	Given the current device count ITS is anticipated to reach its target in 2026 and then hover around it through 2033, when performance will decline again through 2036. However, by 2026 the number of devices will likely double, which will have an impact on performance. Recommended next steps – staff will investigate the benefits of preventive maintenance for select devices, and track asset service life and compare to manufacturer estimates.
Fleet										
Average Percent Useful Life	70% or less	97%		\$20.9 million	\$20.9 million	\$18.4 million	107%	134% in 2026	Road Equipment Capital Expenditure Program	Given the current planning budgets, fleet will not reach its target of 70% or less between now and 2036, the last year of the analysis. Estimated \$42 M annually to achieve target. Recommended next steps – staff will communicate the importance of fleet planning and develop Regional fleet optimization recommendations, develop a fleet performance measure that reflects cost effectiveness rather than asset life, and monitor implementation of fleet preventive maintenance work orders.
Culverts										
Percentage Critical Culverts	5% or less	3%		\$11.5 million	\$9.6 million	\$8.2 million	5%	5% in 2026	Bridge On-System and Off-System Programs (Separate Culverts Program funding began in FY 15)	The FY19 analysis looked at culverts in terms of % culverts structurally deficient (with a target of 5%). Given that metric, culverts exceeds the target today, and will continue to exceed for most years of the analysis, except for a drop to 6%-8% between 2022-2027.
Geohazards										
Number of Sites with letter grade C or better	60%	47%		\$9.0 million (rockfall)	\$9.1 million	\$9.2 million	47% Sites C or Better	40% Sites C or Better in 2026	Rockfall Mitigation Program (Including FASTER Safety) (Geohazards Program as of FY15)	Given the current planning budgets, geohazards is not expected to meet its target between now and 2036, the last year of the analysis. Recommended next steps – staff are undertaking analysis to identify strategies.
Tunnels										
Key components of fire/life safety must not exceed 100% of useful life, based on manufacturer's specification, the condition inspections, and maintenance history	100%	TBD		\$7.4 million	\$12.4 million	\$5.2 million	N/A	N/A	Tunnel Activities Maintenance Program Area	This metric is being refined, as are the tunnels inspections. The initial AIMS results will be available in January 2016. Recommended next steps – staff are undertaking analysis to identify strategies.
Traffic Signals										
Percent intersections with at least one component beyond 100% Useful Life	15%	52%		Program initially funded in FY 16	\$0 million	\$5.7 million	60%	42% in 2026	Traffic Signals Program	Given the current planning budgets, signals will not reach its target of 15% between now and 2036, the last year of the analysis. Estimate \$34 M annually is needed to achieve target. Recommended next steps – staff are undertaking analysis to identify strategies.
Walls										
Percentage of CDOT-owned walls, by square foot, that are in condition state 3 or 4 (poor or severe).	1%	1%		Program initially funded in FY 15	\$0 million	\$2.4 million	N/A	N/A	Bridge On-System and Off-System Programs (Separate Walls Program funding began in FY 15)	The walls inspections are in progress and the initial results will be in AIMS in January 2016. Recommended next steps – staff are undertaking analysis to identify strategies.
Maintenance										
Maintain a LOS B grade for snow and ice removal.	B	B		\$59.7 million Final Budget: \$72.5 million	\$74.3 million	\$77.7 million	B	B in 2026	Snow & Ice Program and Contingency	The MLOS system is undergoing a review by a consultant and will be modified over the next couple of years. Recommended next steps – staff will evaluate maintenance design options based on life-cycle cost considerations and update standards, develop a preventive maintenance tool kit, and establish a funding program for preventive maintenance activities.
Maintain an overall MLOS B minus grade for the state highway system.	B -	B-		\$249 million Final Budget: \$262 million	\$261.3 million	\$264.4 million	C	C- 2026	CDOT Maintenance Program and Contingency	