State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Tab 21

M e m o r a n d u m

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

CTC Meeting: October 19-20, 2016

Reference No.: 4.16
Action Item

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Subject: **ESTABLISHMENT OF GOAL CONSTRAINED STATE HIGHWAY OPERATION AND PROTECTION PROGRAM TEN YEAR PLAN PERFORMANCE TARGETS**

RECOMMENDATION

The California Department of Transportation (Department) recommends the California Transportation Commission (Commission) approve the following goal constrained performance targets (Targets) for pavement, bridges, culverts and Intelligent Transportation System (ITS) elements. The Targets reflect recommended system condition levels used to evaluate the unconstrained system needs as required by the California Streets and Highway Code for the State Highway Operation and Protection Program (SHOPP) Ten Year Plan. These Targets represent recommended condition levels without current fiscal constraint. Expected performance outcomes possible with the available SHOPP resources will depend on the level of investment recommended for all SHOPP objectives. The Department's recommendation will be defined in the 2017 SHOPP Ten Year Plan that is due to the Commission in January 2017.

Asset Class	Units	Good		Fair		Poor	
		Current	Target	Current	Target	Current	Target
Pavement – Class 1	Area	45%	60%	51%	39%	4.0%	1.0%
Pavement – Class 2	Area	35%	55%	58%	43%	7.0%	2.0%
Pavement – Class 3	Area	38%	45%	54%	53%	8.0%	2.0%
Bridges	Area	75%	83.5%	21.7%	15%	3.3%	1.5%
Culverts	Length	65%	80%	23.5%	10%	11.5%	10%
ITS Elements	Each	64.5%	90%	NA		35.5%	10%

The Good, Fair, and Poor targets for pavement and bridges in the above table are proposed state targets based on new federal performance measures. These new measures and targets differ from all prior SHOPP plans and are not directly comparable. The "Current" columns on the table represent the existing state of the asset.

The Department further recommends the targets for pavement and bridges be reviewed and revised as necessary once the Code of Federal Regulation for these performance measures is finalized.

BACKGROUND:

The Department is in the midst of developing a formal Transportation Asset Management Plan (TAMP) as required in California Government Code 14526.4 (Senate Bill 486). The development of the TAMP is governed by both federal and state regulations.

The California Government Code (14526.4) mandates that the Department, in consultation with the Commission, prepare a robust asset management plan to guide selection of projects for the SHOPP. The asset management plan must be consistent with any applicable state and federal requirements. The Government Code requires the Commission to adopt targets and performance measures reflecting state transportation goals and objectives.

The California Streets and Highway Code (164.6) requires the Department to prepare a "10-year state rehabilitation plan for the rehabilitation and reconstruction, or the combination thereof, by the State Highway Operation and Protection Program of all state highways and bridges owned by the state". Additionally, the Department is required to prepare a "Five-Year Maintenance Plan that addresses the maintenance needs of the state highway system. The rehabilitation plan and the maintenance plan shall attempt to balance resources between State Highway Operation and Protection Program activities and maintenance activities in order to achieve identified milestones and goals at the lowest possible long-term total cost". Both plans are required to be submitted to the Commission in January of odd numbered years.

As the Department implements the TAMP, we must also comply with the requirements of Moving Ahead for Progress in the 21st Century (MAP-21) and subsequent Fix America's Surface Transportation (FAST) definitions of national performance measures for pavement and bridge conditions. At the March 2015 Commission meeting, the Commission approved the performance measures recommended by the Department for the four approved asset classes (pavement, bridges, culverts and ITS elements). The recommended performance measures included the MAP-21/FAST measures for pavement and bridges. The federal government has proposed technical criteria for determining good, fair and poor pavements and bridges in a Notice of Proposed Rule Making (NPRM). The NPRM technical criteria was used by the Department to develop the recommended Targets in this book item. The final rule is currently scheduled to be released in December 2016. Any deviation in the final regulation from the NPRM will require the Department to reevaluate the appropriateness of the targets proposed in this book item.

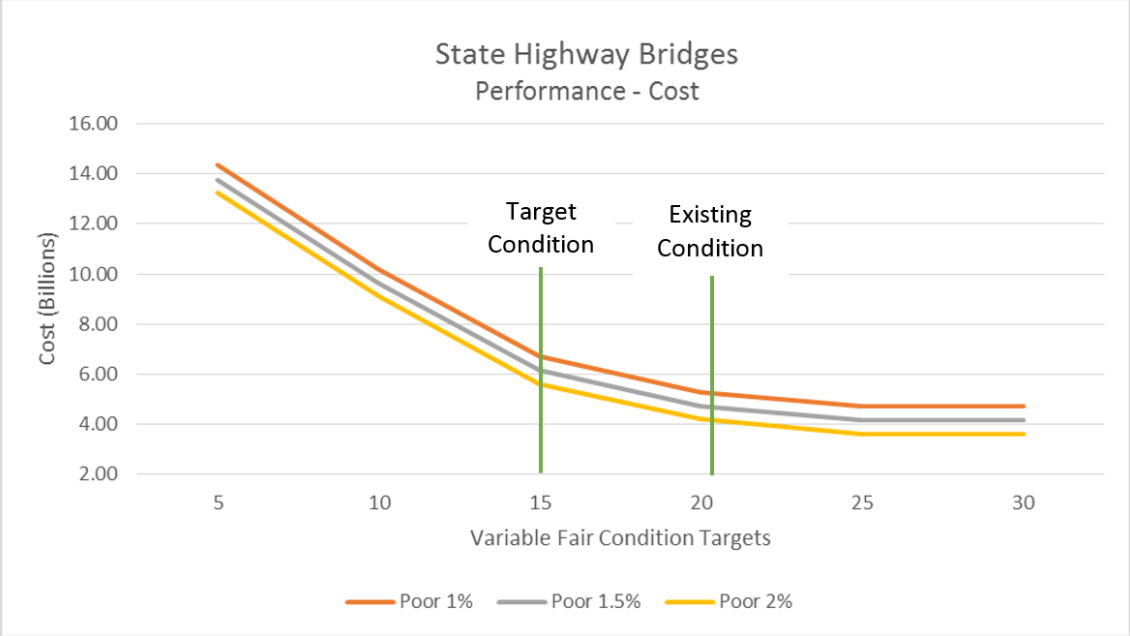
The proposed targets will influence certain aspects of the TAMP and the determination of the goal constrained State Highway System needs reported in the Ten Year SHOPP Plan and Five Year Maintenance Plan.

Target Development Methodology

The recommended Targets are influenced by a number of factors including: the rate of inventory growth, deterioration rates, cost-performance curves, project delivery time frames, and consequence of inaction. The recommended targets reflect statewide stewardship objectives and are consistent with safety, system performance and sustainability objectives.

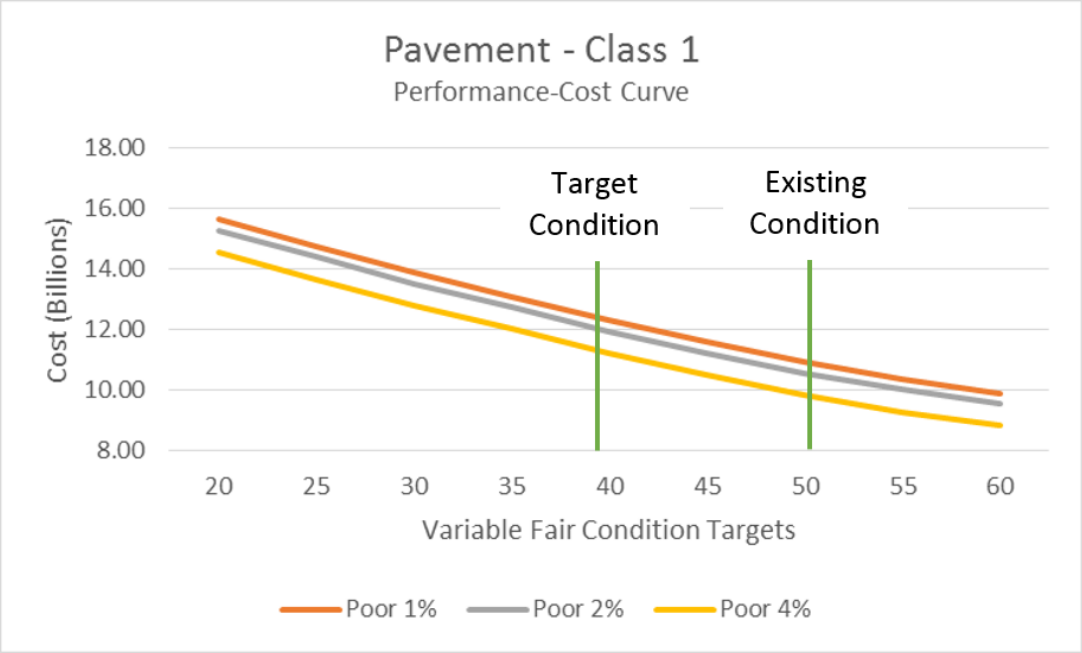
The poor condition targets consider the potentially negative consequences of inaction along with practical realities that make realizing a zero percent poor condition impossible. Accordingly, the Department recommends the poor condition targets be set at the minimum achievable levels for all assets.

The fair condition targets are established by considering the rate of new inventory and needs being identified, project delivery timeframes and cost versus performance analysis. Activities targeting fair condition assets have a strong preservation focus that serve to delay major rehabilitation or replacement and minimize the life cycle costs of the assets. The 10 year cost performance chart for the bridges is shown below. Costs are reflective of SHOPP and major maintenance investments needed to achieve fair and poor targets.



The fair targets also have a practical minimum level that can control the recommended Targets. For example in the bridge chart above, the 5% fair performance level has an associated cost of approximately $14 billion, however this level of performance is not achievable due to the rate of needs being identified annually and typical project delivery time frames. Finally, the estimated cost to achieve the recommended targets were calculated to assess the impact on statewide needs. All of these factors were considered in the proposed target levels.

Pavement preservation and rehabilitation represents the single largest asset class investment in the SHOPP. The Class 1 pavement cost-performance curve shown below accounts for over 65% of all pavement expenditures in the SHOPP. Like all other asset classes, the poor targets are set very low to minimize risk and improve the ride quality. The fair targets for pavement consider life cycle cost, unit cost, deterioration rates and typical project delivery time periods. The Pavement –Class 1 Ten Year Plan performance-cost curve with the current condition and recommended target is shown below (see definition of pavement classes below).



Pavement Route Classifications

The pavement performance measure is broken down by class of route to allow for possible tailoring of investments in pavement based on usage and freight demands. The following table provides a definition of the pavement classes and breakdown of the total system miles.

Route Class	Lane Miles	Description
Class 1 (52%)	26,045	Interstates, other principle arterials and urban freeways / expressways
Class 2 (34%)	16,759	Rural freeways / expressways and minor arterials
Class 3 (14%)	6,871	Major and minor collector routes owned by the State

Estimated Investments

The following table summarizes the estimated SHOPP investments necessary to achieve the recommended unconstrained targets.

Asset Class	Proposed 2017 Ten Year Plan (Annual Estimates)	2015 Ten Year Plan (Annual Estimates)
Pavement	$1.86 Billion	$2.0 Billion
Bridges	$ 0.55 Billion	$ 0.40 Billion
Culverts	$ 0.26 Billion	$ 0.49 Billion
ITS Elements	$ 0.19 Billion	$ 0.19 Billion
TOTALS	$ 2.86 Billion	$ 3.09 Billion

As the Department continues our implementation of asset management we are using new technics and systematic processes to develop performance goals and cost estimates to achieve defined objectives. In some cases this transition into asset management will result in differences from prior plans the Department has published. For example, there is a reduced cost estimate to achieve our culvert targets from our 2015 Plan. This change is being influenced by a more complete inventory, changing our performance units from a simple count to linear feet and changes in the fair condition target. Similar changes are expected as the Department continues with the implementation of asset management. The 2017 SHOPP goal constrained plan, due to the Commission in January 2017, will define the needs for the remaining SHOPP objectives and the expected performance levels possible with the available SHOPP resources.

Attachment: State Highway System Performance Measure Matrix