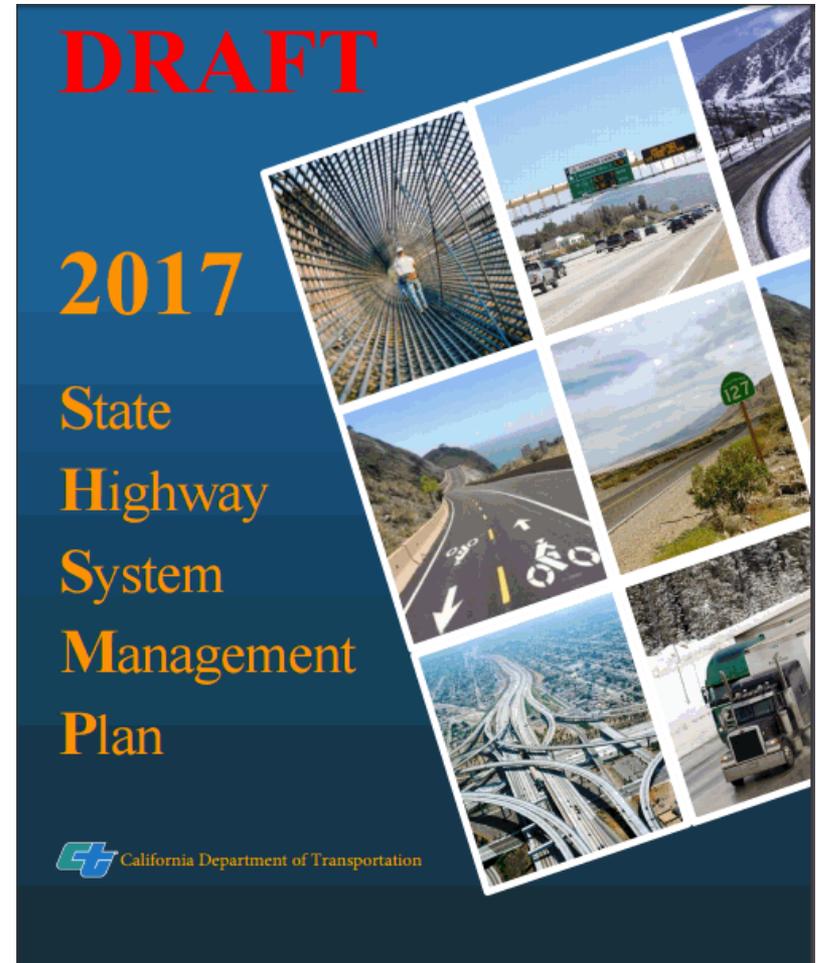


State Highway System Management Plan

Michael B. Johnson
State Asset Management Engineer
January 2017

A Single Plan

- Integrates 10 Year SHOPP and 5 Year Maintenance Plans.
- Aligns objectives with CT Strategic Plan
- Implements Performance Management
- Unprecedented Transparency



Reorganization of SHOPP Objectives

● Safety Goal

- Bridge safety rail upgrades
- Collision severity reduction
- Roadside safety improvements
- Triggered safety improvements

● Sustainability Goal

- ADA Mitigation
- Advanced environmental mitigation
- Bridge resiliency
- Hazardous waste mitigation
- Roadside rehabilitation
- Storm water mitigation
- Zero emission vehicle infrastructure

● Stewardship Goal

- Pavement & Bridge Condition
- Culverts / Pump facilities
- Major damage / Perm restoration
- Facilities (all types)
- Signs and Lighting rehabilitation
- Roadside rest rehabilitation

● System Performance Goal

- Commercial vehicle enforcement facilities
- Operational improvements
- Sign panel replacements
- Transportation management systems
- Bridge goods movement upgrades
- Weigh scales

Performance Management



Performance Management

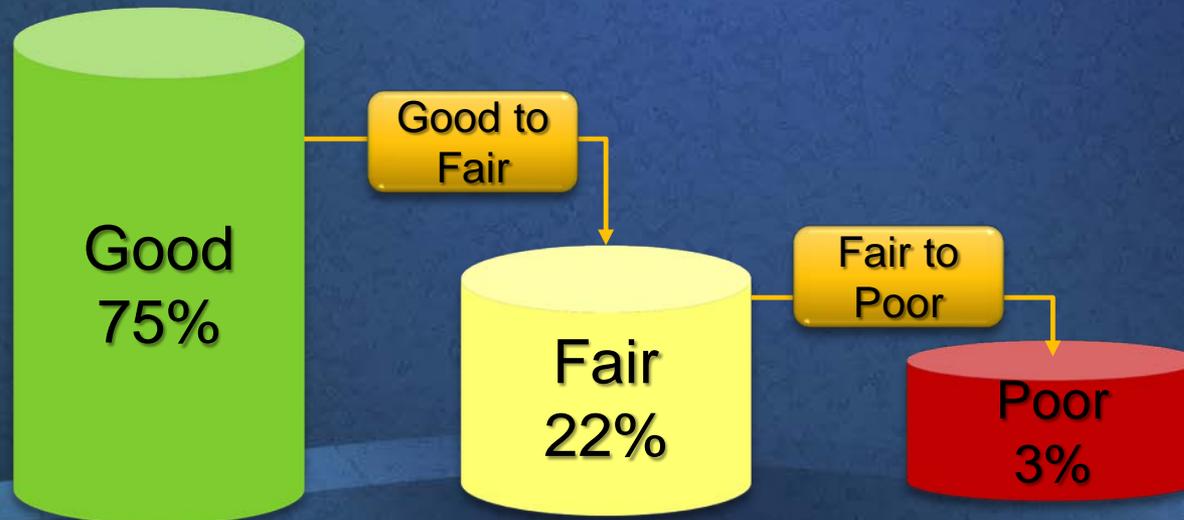
Physical Assets

- Current Condition Distribution (Bridges)



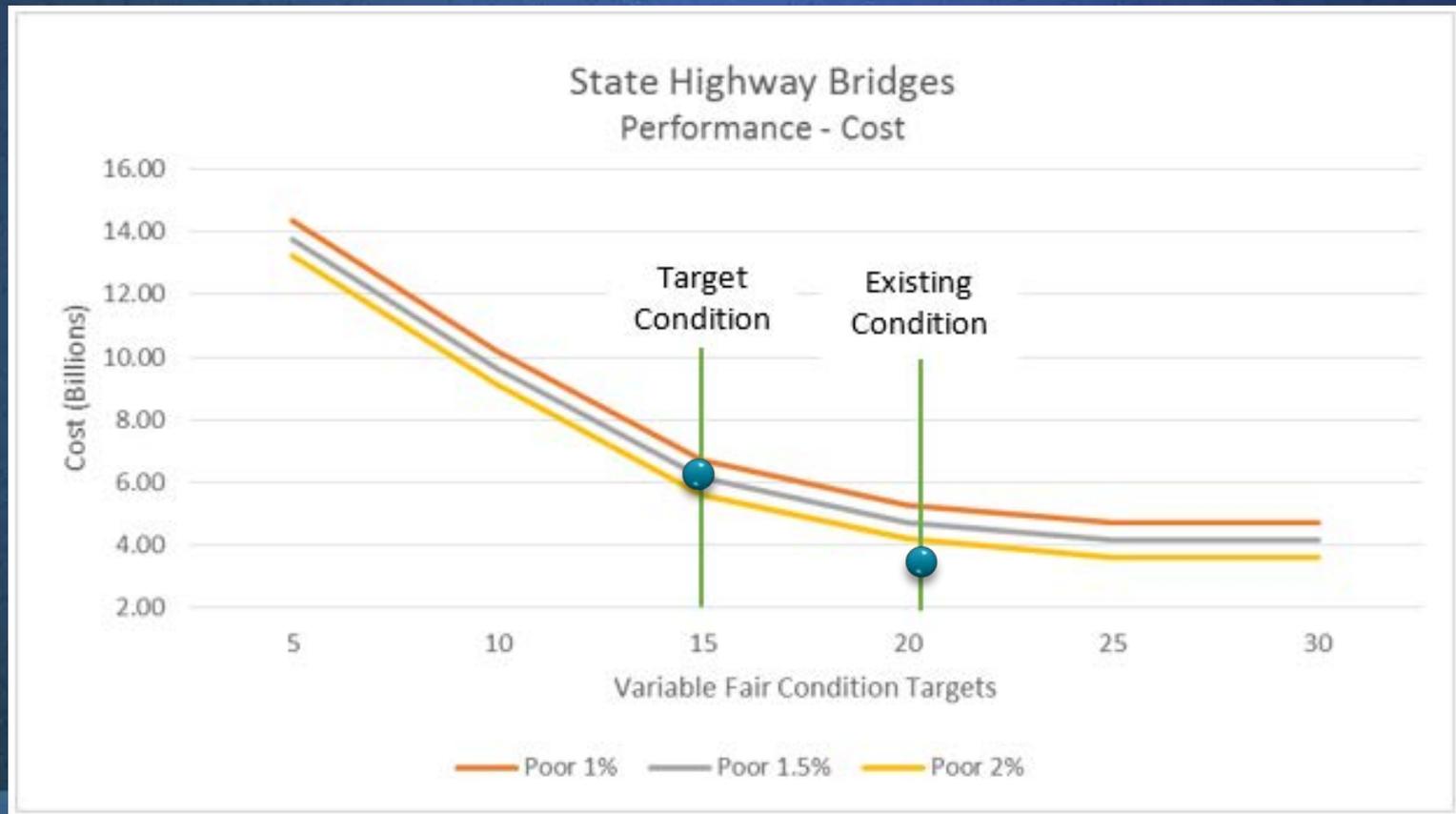
Performance Management Physical Assets

- Include Deterioration Rates
 - Use individual management systems
 - Use service life estimates / published research
 - Expert judgement



Performance Management Physical Assets

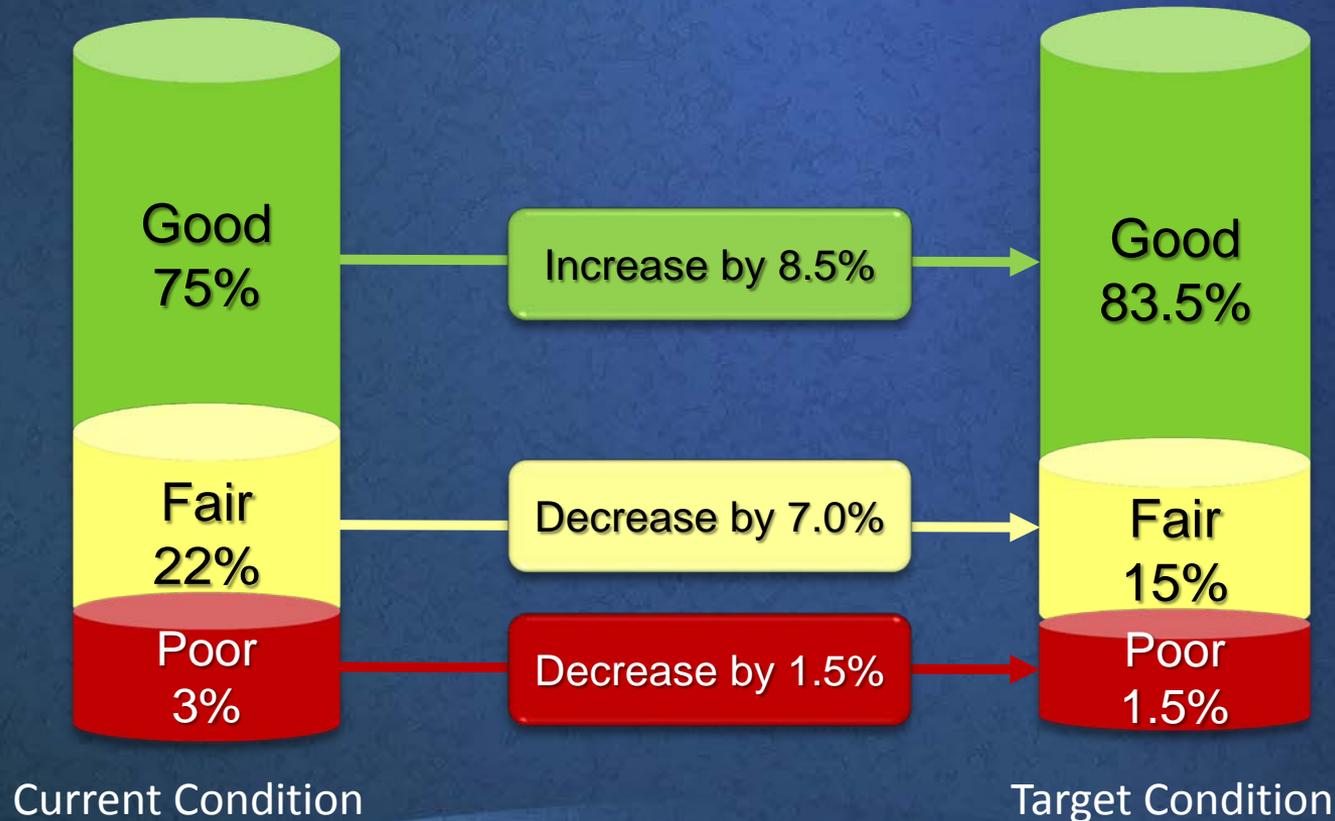
- Establish Condition Targets



Performance Management

Physical Assets

- Determine Performance Gaps



Performance Management

Physical Assets

- Deduct Pipelined Work
 - Existing project commitments need to be deducted from the measured gaps
 - The remaining gaps are the unmet need

Performance Management

- Estimate costs
 - The unconstrained costs to close the performance gaps were estimated
 - Unconstrained needs exceed available funding by about 4 times
 - A constrained investment plan was required

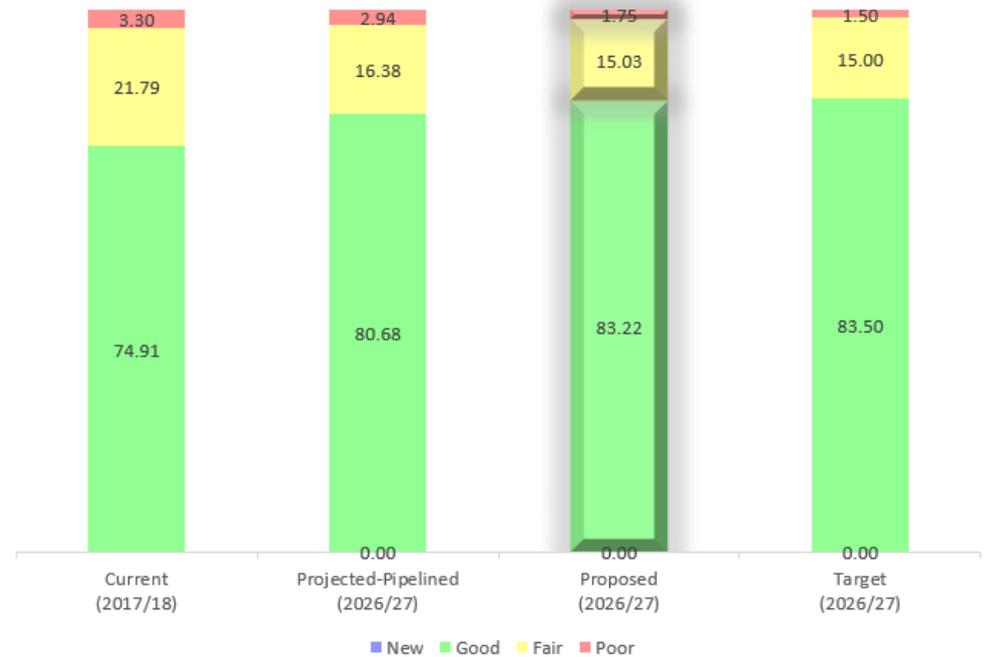
Performance Management Analysis Tool

Bridge Health

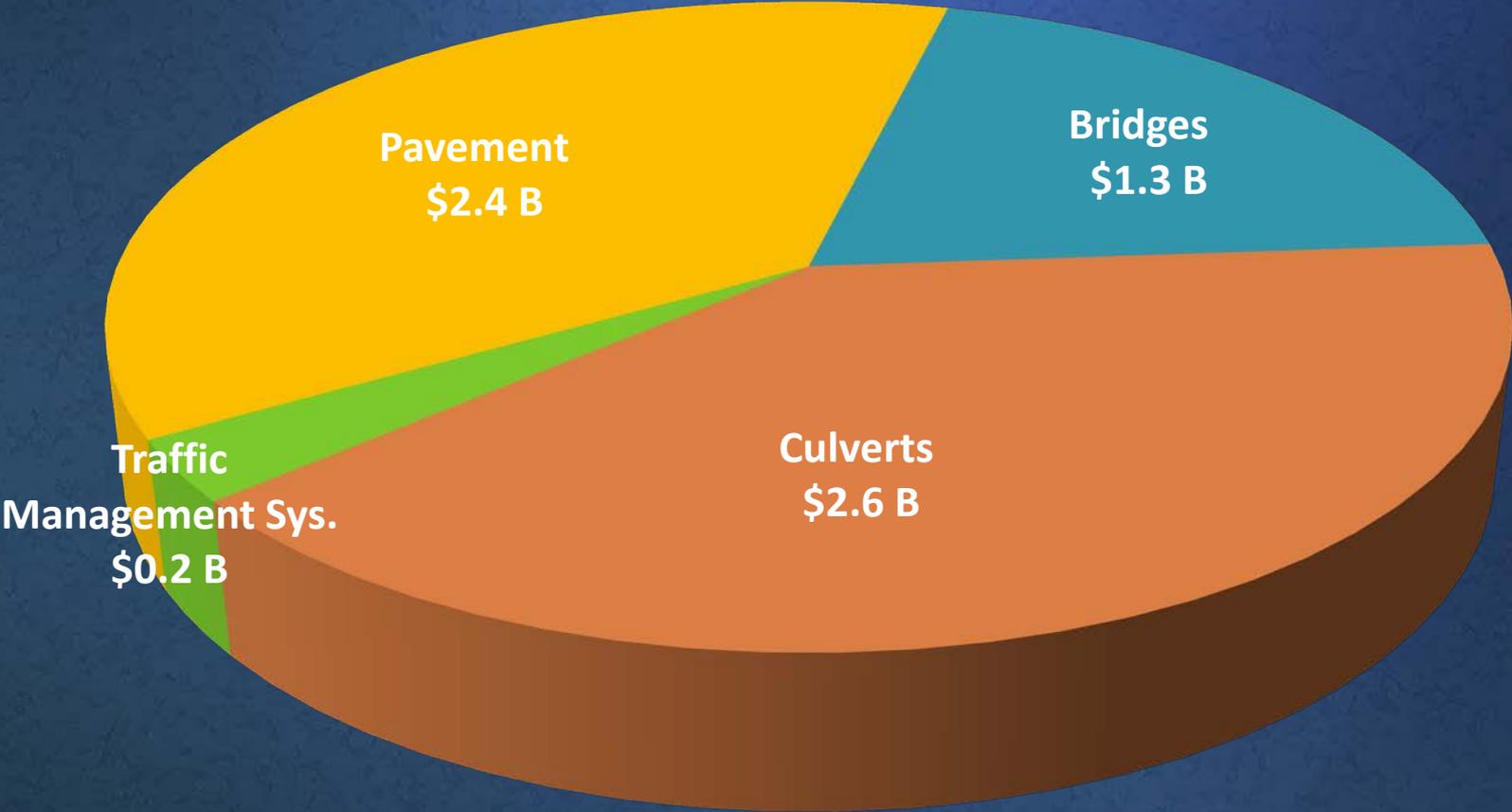
Unit = SF

% of the performance gap which is closed		Quantity Left	Quantity Fixed
Poor	81	682,105	2,907,922
Fair	57	2,506,871	3,323,062
New	0	0	0
Goal Constrained (GC)			
	First 5 Years	Last 5 Years	Sum
Maintenance	\$102,279,000	\$559,673,568	\$661,952,568
SHOPP	\$2,302,570,000	\$3,182,138,398	\$5,484,708,398
Maintenance & SHOPP	\$2,404,849,000	\$3,741,811,966	\$6,146,660,966
Last 5 Years	Maint Fair	SHOPP Fair	Poor
GC Fixed	2,331,973	3,497,950	3,590,027
GC Cost	\$559,673,568	\$1,448,111,517	\$1,733,983,041
Keep Curr Fixed	0	0	0
Keep Curr Cost	\$0	\$0	\$0
FC Fixed	1,321,201	1,993,838	2,907,922
FC Cost	\$319,013,760	\$825,448,932	\$1,404,526,326
Fiscally Constrained (FC)			
	First 5 Years	Last 5 Years	Sum
Maintenance	\$102,279,000	\$319,013,760	\$421,292,760
SHOPP	\$2,302,570,000	\$2,229,975,258	\$4,532,545,258
Maintenance & SHOPP	\$2,404,849,000	\$2,548,989,018	\$4,953,838,018
2026/27 Inventory	245,756,328		SF
2026/27 Inventory Value	\$156,055,268,280		
Ratio of FC SHOPP 10 Year Plan Investment to 2026/27 Inventory Value		3%	

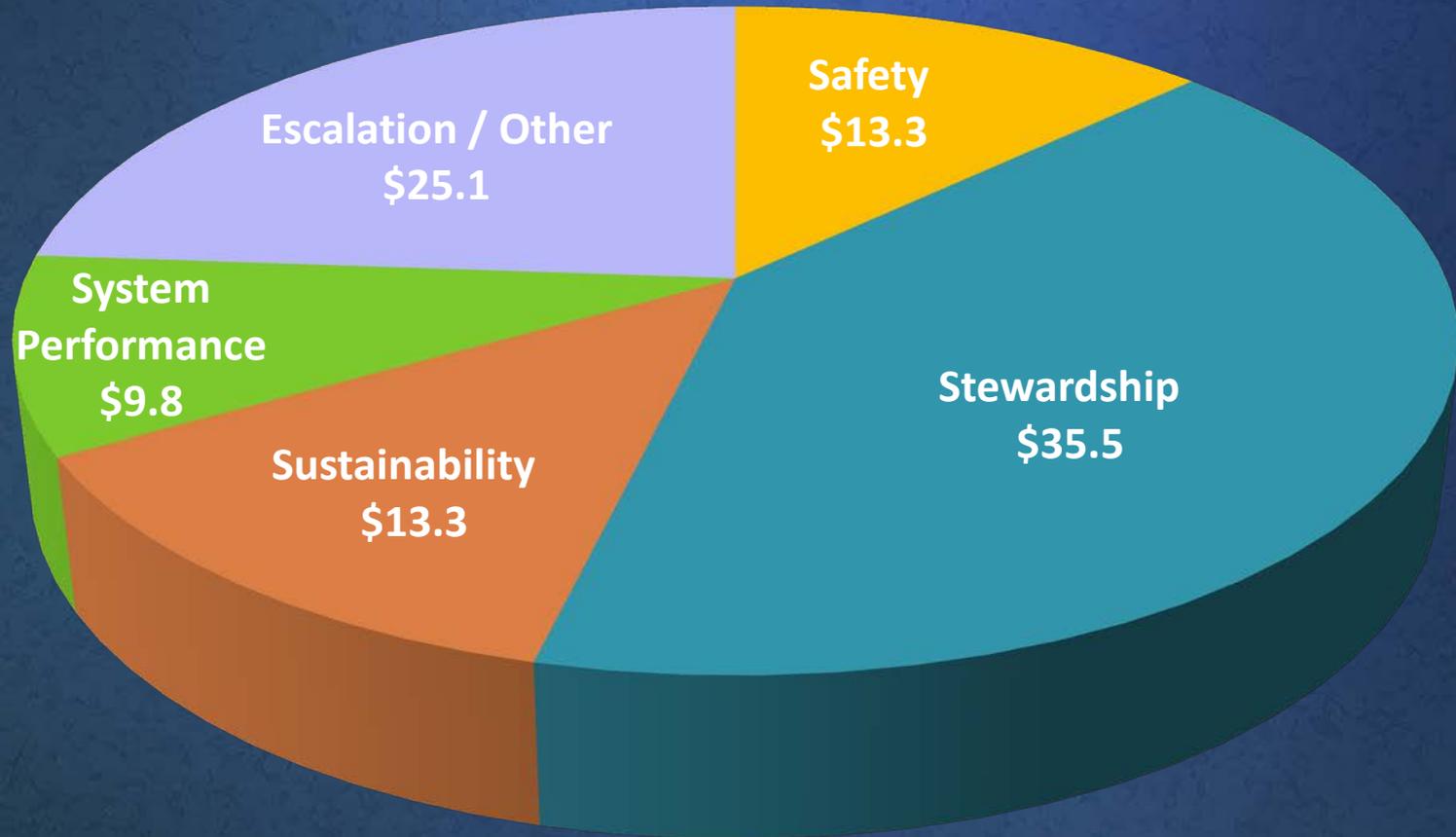
Performance



Maint Needs Assessment - \$6.5 B



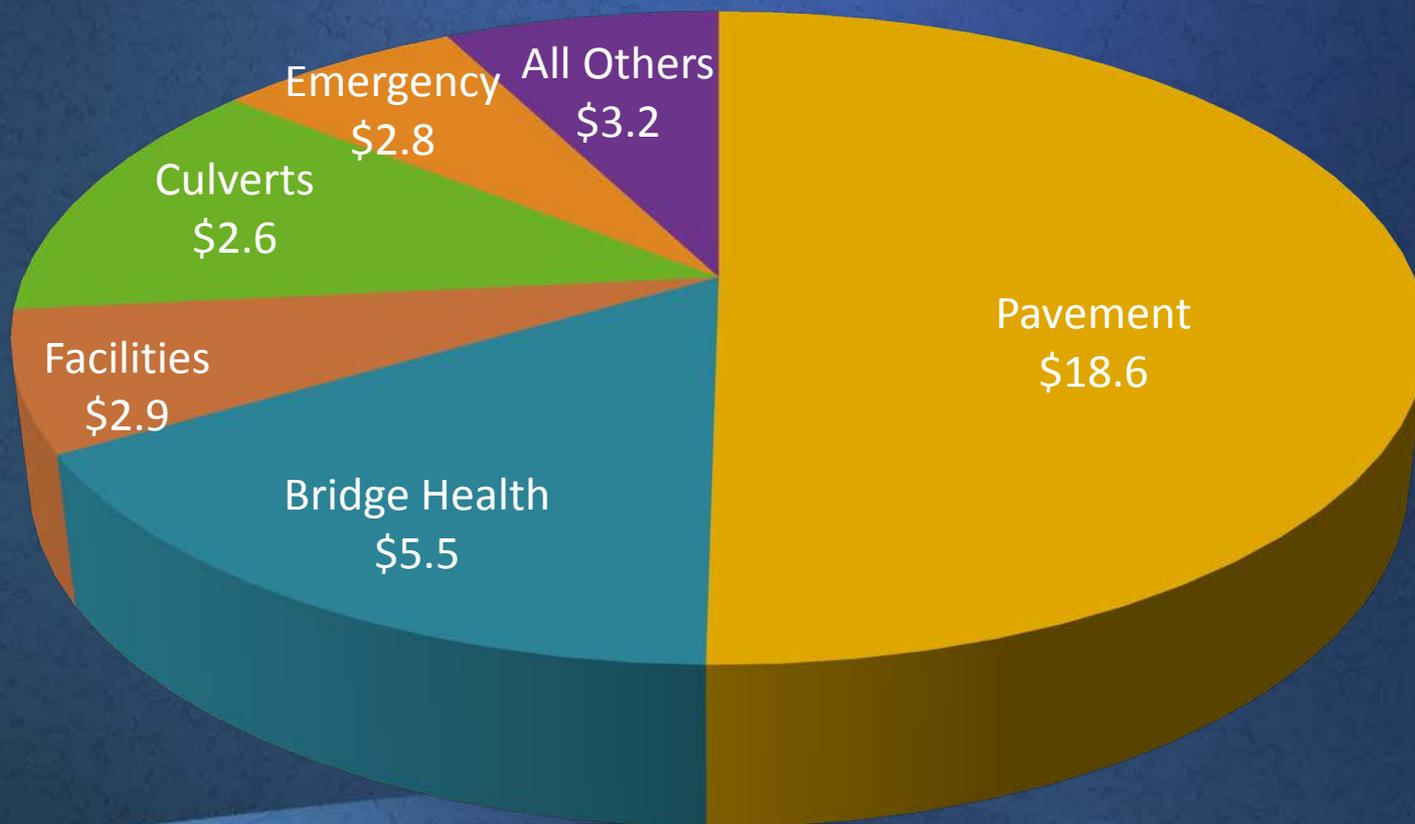
SHOPP Needs Assessment - \$97 B



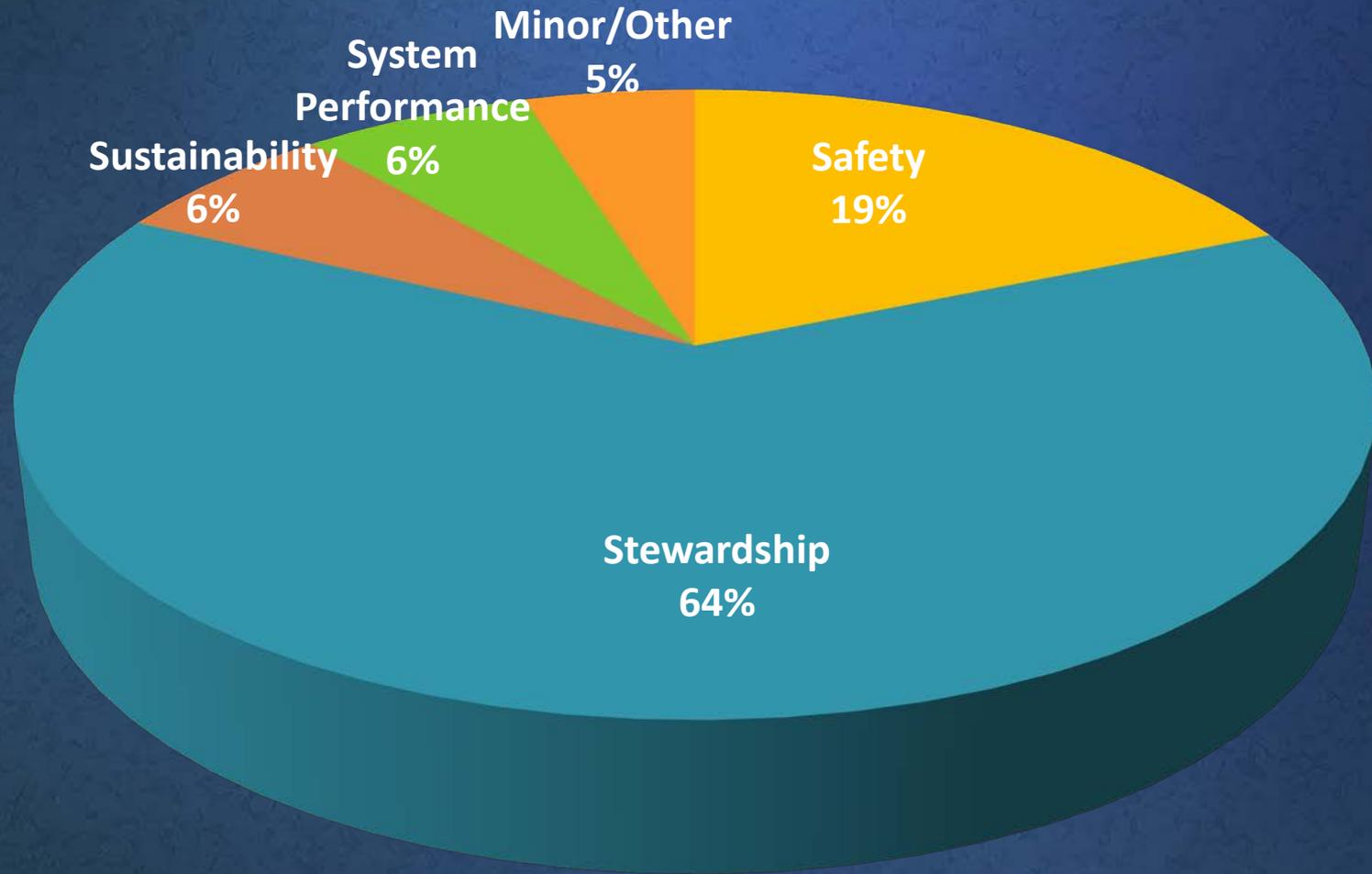
SHOPP Stewardship Needs

(Unescalated)

10 Year Needs (Billions)



SHOPP Investment Plan- \$24 B



Performance Management Summary Dashboard

Objectives	Fiscally Constrained SHOPP				Fiscal / Goal Constrained SHOPP
	Unfunded Pipelined Projects	Performance Gap	Sum	% of the Sub Total	
Safety	\$3,100,137,900	\$1,502,006,390	\$4,602,144,290	18.70%	34.52%
Bridge Rail Replacement and Upgrade	\$314,194,000	\$0	\$314,194,000	1.28%	5.07%
Collision Severity Reduction					
Roadside Safety Improvements					
Safety Improvements					
Stewardship					
Bridge Health					
Drainage Pump Plants					
Drainage System Restoration					
Lighting Rehabilitation					
Major Damage (Emergency Opening)					
Major Damage (Permanent Restoration)					
Office Buildings					
Overhead Sign Structures Rehabilitation					
Pavement Class I					
Pavement Class II					
Pavement Class III					
Relinquishments					
Roadway Protective Betterments					
Safety Roadside Rest Area (SRRAs) Rehabilit					
Transportation Related Facilities					
Water and Wastewater Treatment at SRRAs					
Sustainability					
ADA Pedestrian Infrastructure					
Advanced Mitigation					
Bridge Scour Mitigation					
Bridge Seismic Restoration					
Hazardous Waste Mitigation					
Roadside Rehabilitation					
Storm Water Mitigation					
	\$493,466,000	\$678,988,842	\$1,172,454,842	4.77%	30.16%

- Planned commitments for each objective over the first 5 years of the plan period
- Investment level for each objective for the last five years of the plan period
- Combined ten year totals

Performance Management

District Performance Targets

Objectives	Unit	D1			D2			D3		
		Fair	Poor	New	Fair	Poor	New	Fair	Poor	New
Bridge Rail Replacement and Upgrade	Linear Feet									
Collision Severity Reduction	Injuries									
Roadside Safety Improvements	Locations									
Safety Improvements	-									
Stewardship										
Bridge Health	SF									
Drainage Pump Plants	Locations									
Drainage System Restoration	Linear Feet									
Lighting Rehabilitation	Each									
Major Damage (Emergency Opening)	-									
Major Damage (Permanent Restoration)	-									
Office Buildings	SF									
Overhead Sign Structures Rehabilitation	Each									
Pavement Class I	Lane Miles									
Pavement Class II	Lane Miles									
Pavement Class III	Lane Miles									
Relinquishments	-									
Roadway Protective Betterments	Locations									
Safety Roadside Rest Area (SRR) Rehabili	Locations									
Transportation Related Facilities	SF									
Water and Wastewater Treatment at SRRAs	Locations									
Sustainability										
ADA Pedestrian Infrastructure	Locations									
Advanced Mitigation	-									
Bridge Scour Mitigation	SF									
Bridge Seismic Restoration	SF									
Hazardous Waste Mitigation	-									
Roadside Rehabilitation	acre									
Storm Water Mitigation	acre									
Zero Emission Vehicle Infrastructure	Locations									
Performance										
Commercial Vehicle Enforcement Facilities	Stations									
Operational Improvements	Daily Vehicle Hours of Delay									
Sign Panel Replacement	Each									
Transportation Management Systems	Each									
Transportation Permit Requirements for Brid	SF									
Weigh-In-Motion Scales	Stations									
Total										

- District level performance targets are defined for each objective
- Preservation work is isolated from rehabilitation and replacement
- Proposed lump sum project portfolio targets for each district

Next Steps

- Draft plan due to Legislature/CTC Jan 31st
- Make plan available for public comment
- Finalize the plan by May 1 , 2017