



## MEMORANDUM

**TO:** TRANSPORTATION COMMISSION  
**FROM:** KYLE LESTER, DIRECTOR OF THE DIVISION OF HIGHWAY MAINTENANCE  
**DATE:** NOVEMBER 18, 2015  
**SUBJECT:** MAINTENANCE LEVELS OF SERVICE BUDGET SETTING FOR FISCAL YEAR 2016-17

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### Purpose

This memorandum provides information to the Transportation Commission (TC) on the work being done by the Division of Highway Maintenance to use a new enhanced-based budget setting process for Fiscal Year (FY) 2016-17. An in-depth overview on the entire process and the outcomes are provided in the attached presentation.

### Action

No action is required and the purpose of the memo is informational only.

### Background & Details

As part of the larger Maintenance Optimization project, the Division of Highway Maintenance has implemented an enhanced budget modeling process for FY 2016-17. On October 16, 2015 a budget workshop was held that brought together Regional Transportation Directors (RTDs), Maintenance Superintendents, Traffic Engineers and various Division Directors to come to a consensus on a projected budget for each of the nine Maintenance Program Areas.

This enhanced budget process used various inputs, including the annual Maintenance Level of Service (MLOS) survey scorecard data, asset inventory information and target level of service by section, region and state, in order to create section level budgets that are rolled up to the state level for submission of a single budget request to the TC.

### Key Benefits

The new budget setting process offers many benefits including:

- Aligns the Division of Highway Maintenance with the performance-based requirements under Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21)
- Allows limited resources to be used more effectively and the performance of CDOT assets to maximized
- Improves communication regarding annual budget need across the entire Division
- Shifts the focus to outcomes and accomplishments, while more effectively communicating maintenance needs to decision makers

Options and Recommendations

N/A

Next Steps

N/A

Attachment A: Division of Highway Maintenance: Optimization Analysis



# Division of Highway Maintenance Optimization Analysis

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TRANSPORTATION COMMISSION MEETING

NOVEMBER 18, 2015



D Y E M A N A G E M E N T G R O U P , I N C .

# Agenda

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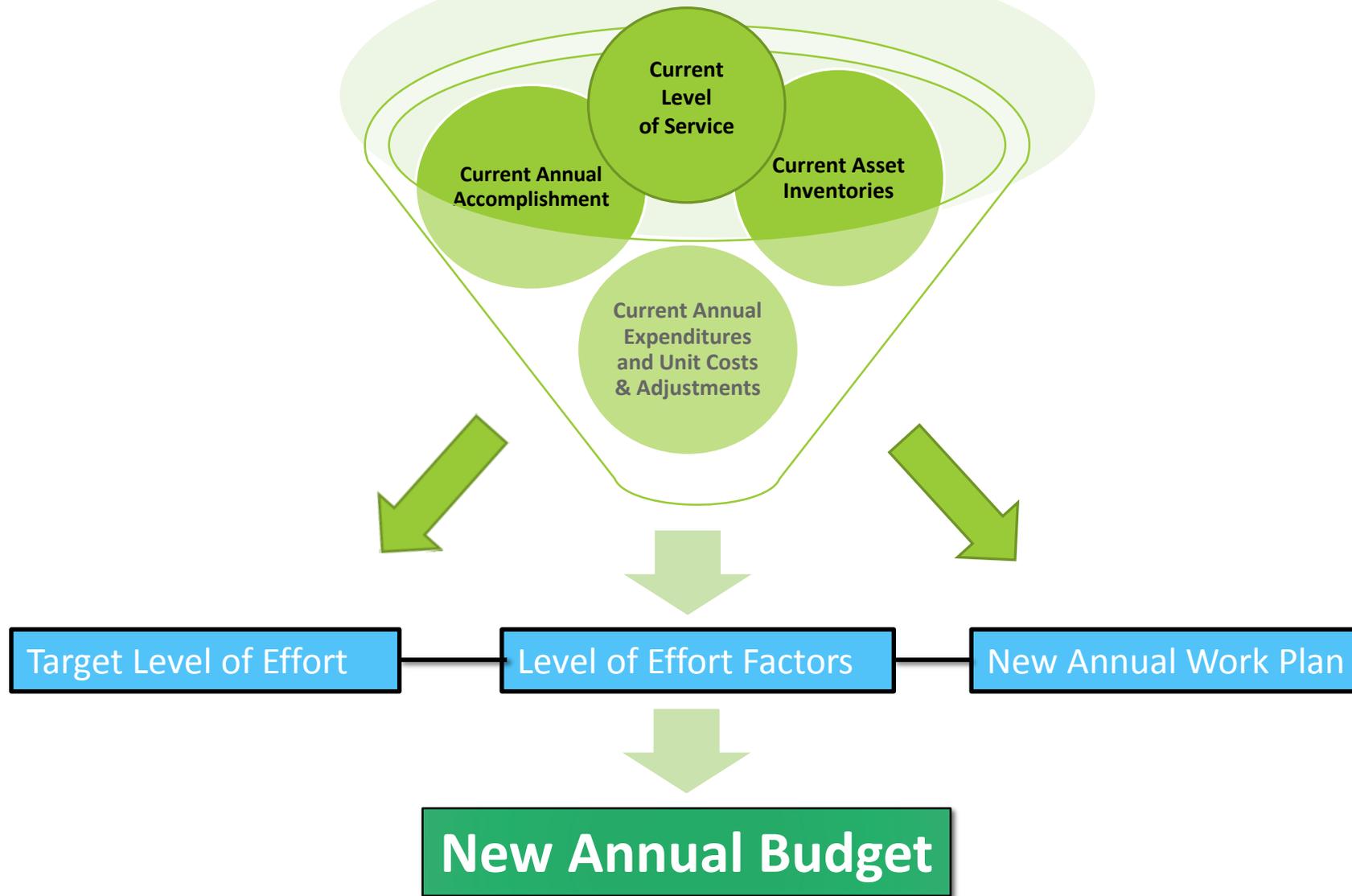
- October 16 Budget Workshop Review
- “Bottom Up” Budget Process
- LOS Target Setting Exercise
- Year-to-Year LOS Trend Analysis
- LOS Target Scenarios
- Questions

# October 16 Budget Workshop

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- RTDs, Maintenance Superintendents, Traffic Engineers, and key division directors participated
- Goals of the workshop were:
  - Introduce “bottom up” budgeting process
  - Collaboratively set asset level of service (LOS) performance targets
  - Review funding requirements to achieve target LOS
  - Develop recommendations for Transportation Commission to review

# Elements of LOS-Based Funding



# Performance-Based Budget Model

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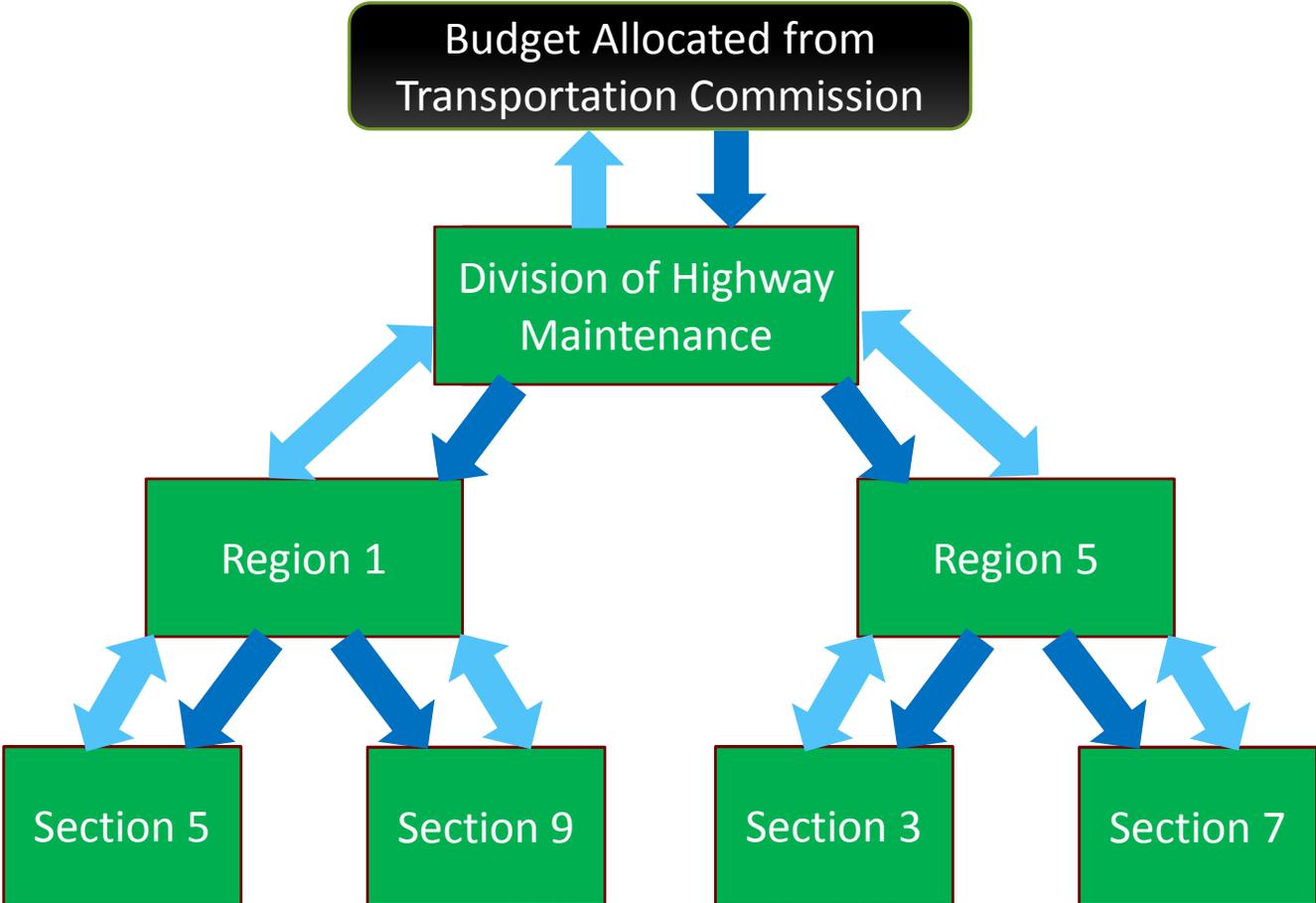
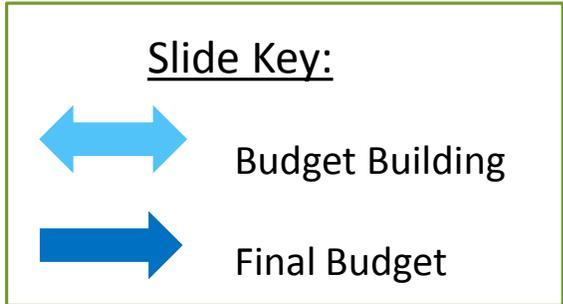
- Spreadsheet-based budget modeling tool.
- Performance-driven. LOS targets set by asset.
- Region/Section funding allocations
  - Based on inventory and priorities; Target levels of service; Funding allocated to achieve targets
- Aligns with MAP-21 performance-based requirements
- “What-if” analysis
- Transparent process
- Emphasize high priority or high visibility assets (e.g., striping, culverts)
- Annual maintenance lifecycle
  - Evaluate results, improved accountability

# “Bottom Up” Budget Process

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- Budget process begins at Section level
  - Budget development begins at the section level where the work will be performed
- Input
  - Annual MLOS Survey
  - Accomplishment data
  - Asset inventory
  - Desired target LOS (Section, Region, State)
- Output
  - Section budgets are rolled up to state level and aggregated into a single budget request
  - Budget approval process occurs and recommended budget is presented to Commission
  - HQ provides actual budgets to sections based on what was approved
- Iterative process
  - Set LOS targets
  - Evaluate resulting budget
  - Revise as needed

Budget



# Benefits

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- Aligns with MAP-21 performance-based requirements
- Leverages CDOT/MLOS cost and accomplishment data
- Helps prioritize maintenance backlog; shows current performance; identifies performance goals; quantifies what it will take to achieve targets
- Optimizes use of resources
- Shifts focus of field managers from dollars spent to outcomes and accomplishments
- Enhances department accountability; plan versus actual
- Effectively communicates maintenance needs to decision-makers and the public; quantifies performance impact if budget request not met

# LOS-Based Budgeting, Percent of Total



- 6 of 9 MPA's included in the Budget Model that are performance-based and have sound performance data.
  - 150-Roadway Surface
  - 200-Roadside Facilities
  - 250-Roadside Appearance
  - 300-Traffic Services
  - 350-Structure Maintenance
  - 450-Buildings and Equipment
- 3 of the 9 MPA's do not have sound performance-based targets for this model
  - 100-Planning and Training
  - 400-Snow and Ice Removal
  - 500-Tunnels

# LOS Target Setting Results – 300 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
300 - Traffic Services	Traffic Signs	B+	B+	2018	1	302	Single Post Signs - Install Mtce Replace	2,473,308	853,564	1,300,914	5,965	\$ 4,633,751
						303	Multi Post Signs - Install Mtce Replace	526,925	232,434	389,083	1,284,050	\$ 2,432,493
								<b>\$ 3,000,233</b>	<b>\$ 1,085,998</b>	<b>\$ 1,689,997</b>	<b>\$ 1,290,015</b>	<b>\$ 7,066,244</b>
	Delineators, Mile Markers	A	B+	2018	1	304	Delineator Post Install Mtce & Replace	2,330,534	747,779	710,425	836	\$ 3,789,574
								<b>\$ 2,330,534</b>	<b>\$ 747,779</b>	<b>\$ 710,425</b>	<b>\$ 836</b>	<b>\$ 3,789,574</b>
	Metal Guardrail	A-	B+	2018	1	306	Metal Guard Rail Mtce Install Straighten	1,421,167	469,439	951,999	96,658	\$ 2,939,263
								<b>\$ 1,421,167</b>	<b>\$ 469,439</b>	<b>\$ 951,999</b>	<b>\$ 96,658</b>	<b>\$ 2,939,263</b>
	Concrete Guardrail	A-	B+	2018	1	307	Concrete Rail Mtce & Installation	56,109	32,317	40,883	65	\$ 129,374
								<b>\$ 56,109</b>	<b>\$ 32,317</b>	<b>\$ 40,883</b>	<b>\$ 65</b>	<b>\$ 129,374</b>
	Cable Guardrail	A-	B+	2018	1	305	Cable Rail Mtce Install & Repair	424,824	110,808	678,899	-	\$ 1,214,531
								<b>\$ 424,824</b>	<b>\$ 110,808</b>	<b>\$ 678,899</b>	<b>\$ -</b>	<b>\$ 1,214,531</b>
	Striping	D	C	2020	3	308	Pavement Striping - Machine	2,226,023	1,714,503	14,304,588	9,375,425	\$ 27,620,540
								<b>\$ 2,226,023</b>	<b>\$ 1,714,503</b>	<b>\$ 14,304,588</b>	<b>\$ 9,375,425</b>	<b>\$ 27,620,540</b>
	Markings	D-	C	2018	1	310	Pavement Marking/Removal - Hand Machine	598,120	309,815	1,402,237	4,975,982	\$ 7,286,153
								<b>\$ 598,120</b>	<b>\$ 309,815</b>	<b>\$ 1,402,237</b>	<b>\$ 4,975,982</b>	<b>\$ 7,286,153</b>
	Lighting	A+	C	2018	1	312	Roadway & Sign Lighting	636,581	359,569	1,360,141	10,035	\$ 2,366,326
								<b>\$ 636,581</b>	<b>\$ 359,569</b>	<b>\$ 1,360,141</b>	<b>\$ 10,035</b>	<b>\$ 2,366,326</b>
Traffic Signals	A-	C+	2018	1	314	Traffic Signal Mtce & Repair	881,836	626,974	2,659,984	918,773	\$ 5,087,567	
					326	Traffic Signal Interconnect Systems	167,708	73,568	1,451,364	-	\$ 1,692,640	
							<b>\$ 1,049,544</b>	<b>\$ 700,542</b>	<b>\$ 4,111,348</b>	<b>\$ 918,773</b>	<b>\$ 6,780,207</b>	
Energy Attenuators	A	A	2018	1	316	Energy Attenuator Mtce	198,384	66,360	906,946	-	\$ 1,171,690	
							<b>\$ 198,384</b>	<b>\$ 66,360</b>	<b>\$ 906,946</b>	<b>\$ -</b>	<b>\$ 1,171,690</b>	
Electrical Systems, Wires	A	B	2018	1	320	Electrical Wiring - Refurb & Mtce	600,165	153,424	143,037	-	\$ 896,625	
							<b>\$ 600,165</b>	<b>\$ 153,424</b>	<b>\$ 143,037</b>	<b>\$ -</b>	<b>\$ 896,625</b>	
ITS Equipment	A	B	2018	1	321	Intelligent Transport Systems	75,823	8,765	22,652	-	\$ 107,239	
							<b>\$ 75,823</b>	<b>\$ 8,765</b>	<b>\$ 22,652</b>	<b>\$ -</b>	<b>\$ 107,239</b>	
MPA 300 Summary		C+	C+				<b>\$ 12,617,508</b>	<b>\$ 5,759,320</b>	<b>\$ 26,323,152</b>	<b>\$ 16,667,787</b>	<b>\$ 61,367,766</b>	

# Striping Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Striping	D	C	2020	3	308	Pavement Striping - Machine	2,226,023	1,714,503	14,304,588	9,375,425	\$ 27,620,540
								\$ 2,226,023	\$ 1,714,503	\$ 14,304,588	\$ 9,375,425	\$ 27,620,540

## 3 Year Target

LOS Target	Labor	Equipment	Materials	Other	Total
C-	\$2,017,634	\$1,586,704	\$13,397,427	\$8,794,257	\$25,796,022
<b>C</b>	<b>\$2,226,023</b>	<b>\$1,714,503</b>	<b>\$14,304,588</b>	<b>\$9,375,425</b>	<b>\$27,620,540</b>
C+	\$2,434,413	\$1,842,302	\$15,211,750	\$9,956,593	\$29,445,058
B-	\$2,642,802	\$1,970,101	\$16,118,912	\$10,537,761	\$31,269,576

## 1 Year Target

LOS Target	Labor	Equipment	Materials	Other	Total
C-	\$2,968,172	\$2,141,155	\$17,725,403	\$12,131,536	\$34,966,266
<b>C</b>	<b>\$3,593,340</b>	<b>\$2,524,551</b>	<b>\$20,446,888</b>	<b>\$13,875,041</b>	<b>\$40,439,820</b>
C+	\$4,218,509	\$2,907,948	\$23,168,373	\$15,618,545	\$45,913,375
B-	\$4,843,677	\$3,291,345	\$25,889,858	\$17,362,050	\$51,386,930

# Statewide Budget by MPA Group

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET		Annual Budget (For LOS-Rated Assets Only)				
Asset Group	Asset Feature	Current LOS	Target LOS	Labor	Equipment	Materials	Other	Total
	MPA 150 Summary	B+	B+	\$ 15,137,090	\$ 7,570,312	\$ 19,921,390	\$ 627,925	\$ 43,256,716
	MPA 200 Summary	B+	A-	\$ 19,364,486	\$ 8,637,460	\$ 2,278,057	\$ 534,796	\$ 30,814,799
	MPA 250 Summary	B	B	\$ 5,598,461	\$ 2,231,609	\$ 1,121,721	\$ 230,860	\$ 9,182,651
	MPA 300 Summary	C+	C+	\$ 12,617,508	\$ 5,759,320	\$ 26,323,152	\$ 16,667,787	\$ 61,367,766
	MPA 350 Summary	C+	C+	\$ 4,491,829	\$ 1,430,606	\$ 2,299,647	\$ 15,309	\$ 8,237,391
	MPA 450 Summary	B-	B-	\$ 10,605,242	\$ 1,295,404	\$ 5,435,535	\$ 235,080	\$ 17,571,262
				\$67,814,615	\$26,924,709	\$57,379,503	\$18,311,758	\$170,430,585

# Statewide Maintenance Budget

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET		Annual Budget (For LOS-Rated Assets Only)				
Asset Group	Asset Feature	Current LOS	Target LOS	Labor	Equipment	Materials	Other	Total
	MPA 150 Summary	B+	B	\$ 11,105,355	\$ 5,517,295	\$ 14,442,221	\$ 536,254	\$ 31,601,126
	MPA 200 Summary	B+	B+	\$ 15,196,860	\$ 6,437,774	\$ 1,887,022	\$ 529,010	\$ 24,050,667
	MPA 250 Summary	B	B	\$ 5,553,728	\$ 2,206,418	\$ 1,095,896	\$ 229,047	\$ 9,085,089
	MPA 300 Summary	C+	C+	\$ 12,717,299	\$ 5,715,501	\$ 25,532,831	\$ 15,870,390	\$ 59,836,020
	MPA 350 Summary	C+	C+	\$ 3,261,951	\$ 1,082,532	\$ 2,198,082	\$ 16,417	\$ 6,558,983
	MPA 450 Summary	B-	B-	\$ 10,560,590	\$ 1,287,637	\$ 5,446,179	\$ 234,995	\$ 17,529,402
				\$58,395,783	\$22,247,157	\$50,602,231	\$17,416,114	\$ 148,661,286

# Results of LOS Target Setting

<b>Colorado DOT</b>	
<b>Statewide Maintenance Budget - FY2017</b>	
LOS-Based Activities	\$148,661,286
Non-LOS-Based Activities	\$109,793,485
<b>Total</b>	<b>\$258,454,771</b>

- CDOT: **\$148,661,286** of **\$258,454,771** is LOS-based. 58 percent.
- Arizona DOT = 41 percent LOS-based
- Nevada DOT = 52 percent LOS-based

# FY17 Projected Budget



100 - Planning, Training & Scheduling	C-	\$15,584,857
150 - Roadway Surface	C+	\$39,207,301
200 - Roadside Facilities	C	\$22,031,593
250 - Roadside Appearance	C	\$8,582,670
300 - Traffic Services	C-	\$66,254,514
350 - Structure Maintenance	C	\$12,206,661
400 - Snow and Ice Control	B	\$76,064,129
450 - Rest Areas, Buildings and Ground	C-	\$15,487,037
500 - Tunnel Maintenance	C+	\$7,181,237
<b>Overall</b>	<b>C+</b>	<b>\$262,600,000</b>



**COLORADO**  
Department of  
Transportation



# Questions?

# LOS Target Setting Results – 150 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
150 - Roadway Surface	Asphalt Surface Defects	B	B-	2018	1	152	Flex Pave Patch / Minor Repairs	3,490,553	1,139,806	987,670	141,624	\$ 5,759,653
								<b>\$ 3,490,553</b>	<b>\$ 1,139,806</b>	<b>\$ 987,670</b>	<b>\$ 141,624</b>	<b>\$ 5,759,653</b>
	Asphalt Ruts > 1.5"	B+	B+	2018	1	154	Machine Patch Overlay & Leveling	3,919,099	2,995,325	14,958,346	4,237	\$ 21,877,007
						158	Rotomilling Flexible Pavement	358,374	237,334	9,405	23,393	\$ 628,506
								<b>\$ 4,277,473</b>	<b>\$ 3,232,659</b>	<b>\$ 14,967,751</b>	<b>\$ 27,630</b>	<b>\$ 22,505,513</b>
	Asphalt Cracks & Joints	B+	B+	2018	1	156	Hand Crack Sealing Flex Pave	3,489,980	1,337,791	1,431,411	271,885	\$ 6,531,067
								<b>\$ 3,489,980</b>	<b>\$ 1,337,791</b>	<b>\$ 1,431,411</b>	<b>\$ 271,885</b>	<b>\$ 6,531,067</b>
	Pavement Surface Raveling	B	B-	2018	1	160	Seal Coating - Chip Seal Squeegee	569,942	265,563	2,316,624	186,225	\$ 3,338,354
								<b>\$ 569,942</b>	<b>\$ 265,563</b>	<b>\$ 2,316,624</b>	<b>\$ 186,225</b>	<b>\$ 3,338,354</b>
	Asphalt Surface Oxidation	B	B-	2018	1	161	Fog Seal	15,582	3,093	25,500	-	\$ 44,175
								<b>\$ 15,582</b>	<b>\$ 3,093</b>	<b>\$ 25,500</b>	<b>\$ -</b>	<b>\$ 44,175</b>
	Severe Alligator Cracking	A+	B-	2018	1	164	Base Stabilization & Repair	-	-	-	-	\$ -
								<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
	Concrete Surface Defects	B	C+	2018	1	153	Rigid Pave Patch / Minor Repairs	16,168	5,857	33,274	-	\$ 55,299
							<b>\$ 16,168</b>	<b>\$ 5,857</b>	<b>\$ 33,274</b>	<b>\$ -</b>	<b>\$ 55,299</b>	
Concrete Ruts > 1.5"	B+	C+	2018	1	154	Machine Patch Overlay & Leveling	28,677	27,413	95,198	55	\$ 151,342	
					159	Rotomilling Rigid Pavement	7,754	2,661	-	-	\$ 10,415	
							<b>\$ 36,431</b>	<b>\$ 30,074</b>	<b>\$ 95,198</b>	<b>\$ 55</b>	<b>\$ 161,757</b>	
Concrete Cracks & Joints	B+	B-	2018	1	157	Hand Crack Sealing Rigid Pave	-	-	-	-	\$ -	
							<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	
Shoulder Drop-Off >1.5"	B	B-	2018	1	162	Blading Unpaved Surface & Shoulder	471,725	304,970	15,754	-	\$ 792,450	
							<b>\$ 471,725</b>	<b>\$ 304,970</b>	<b>\$ 15,754</b>	<b>\$ -</b>	<b>\$ 792,450</b>	
Shoulder Drop-Off >2.5"	A-	B+	2018	1	163	Building Restoring Unpaved Surface & Shldr	2,769,236	1,250,498	48,208	506	\$ 4,068,448	
							<b>\$ 2,769,236</b>	<b>\$ 1,250,498</b>	<b>\$ 48,208</b>	<b>\$ 506</b>	<b>\$ 4,068,448</b>	
<b>MPA 150 Summary</b>	<b>B+</b>	<b>B+</b>						<b>\$ 15,137,090</b>	<b>\$ 7,570,312</b>	<b>\$ 19,921,390</b>	<b>\$ 627,925</b>	<b>\$ 43,256,716</b>

# Asphalt Ruts > 1.5" Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Asphalt Ruts > 1.5"	B+	B+	2018	1	154	Machine Patch Overlay & Leveling	3,919,099	2,995,325	14,958,346	4,237	\$ 21,877,007
158						Rotomilling Flexible Pavement	358,374	237,334	9,405	23,393	\$ 628,506	
							<b>\$ 4,277,473</b>	<b>\$ 3,232,659</b>	<b>\$ 14,967,751</b>	<b>\$ 27,630</b>	<b>\$ 22,505,513</b>	

LOS Target	Labor	Equipment	Materials	Other	Total
B+	\$4,277,473	\$3,232,659	\$14,967,751	\$27,630	<b>\$22,505,513</b>
A-	\$10,126,793	\$7,500,953	\$34,649,588	\$44,464	<b>\$52,321,798</b>
A	\$13,697,413	\$10,073,564	\$46,823,796	\$54,332	<b>\$70,649,105</b>

# LOS Target Setting Results – 200 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
200 - Roadside Facilities	Drainage Inlets & Structures	A-	A-	2018	1	202	Drain Structure Clean Repair Replace	2,708,184	914,360	441,275	47,816	\$ 4,111,635
						203	Clean Drain Struct - Dirt Removal	295,337	167,310	7,194	-	\$ 469,841
								<b>\$ 3,003,521</b>	<b>\$ 1,081,669</b>	<b>\$ 448,470</b>	<b>\$ 47,816</b>	<b>\$ 4,581,475</b>
	Drainage Ditches	A-	A-	2018	1	206	Maint Ditches & Streambeds	2,001,475	1,163,265	91,005	189	\$ 3,255,934
								<b>\$ 2,001,475</b>	<b>\$ 1,163,265</b>	<b>\$ 91,005</b>	<b>\$ 189</b>	<b>\$ 3,255,934</b>
	Slope Failures	A-	A-	2018	1	210	Slope Repair	5,669,673	3,129,702	857,862	-	\$ 9,657,237
								<b>\$ 5,669,673</b>	<b>\$ 3,129,702</b>	<b>\$ 857,862</b>	<b>\$ -</b>	<b>\$ 9,657,237</b>
	Fencing	B	B	2018	1	216	Fence Gate Cattleguard Clean & Mtce	1,894,031	459,199	383,165	280	\$ 2,736,676
							<b>\$ 1,894,031</b>	<b>\$ 459,199</b>	<b>\$ 383,165</b>	<b>\$ 280</b>	<b>\$ 2,736,676</b>	
Sound Barriers	B+	B+	2018	1	217	Sound Barrier Maintenance	171,145	16,018	32,040	90,226	\$ 309,429	
							<b>\$ 171,145</b>	<b>\$ 16,018</b>	<b>\$ 32,040</b>	<b>\$ 90,226</b>	<b>\$ 309,429</b>	
Roadside Litter, Debris	B-	B+	2018	1	218	Litter Barrel & Trash Cleanup	4,619,411	1,507,220	353,168	392,292	\$ 6,872,090	
							<b>\$ 4,619,411</b>	<b>\$ 1,507,220</b>	<b>\$ 353,168</b>	<b>\$ 392,292</b>	<b>\$ 6,872,090</b>	
Roadway Debris	A-	A-	2018	1	220	Sweeping - Machine	1,645,898	1,101,925	109,623	3,993	\$ 2,861,439	
					221	Sweeping - Machine Dirt Removal	186,292	162,147	1,668	-	\$ 350,107	
							<b>\$ 1,832,189</b>	<b>\$ 1,264,072</b>	<b>\$ 111,291</b>	<b>\$ 3,993</b>	<b>\$ 3,211,546</b>	
Shoulder with Sand	A-	B+	2018	1	222	Sweeping - Hand	173,042	16,314	1,057	-	\$ 190,413	
							<b>\$ 173,042</b>	<b>\$ 16,314</b>	<b>\$ 1,057</b>	<b>\$ -</b>	<b>\$ 190,413</b>	
<b>MPA 200 Summary</b>		<b>B+</b>	<b>A-</b>					<b>\$ 19,364,486</b>	<b>\$ 8,637,460</b>	<b>\$ 2,278,057</b>	<b>\$ 534,796</b>	<b>\$ 30,814,799</b>

# Fencing Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Fencing	B	B	2018	1	216	Fence Gate Cattleguard Clean & Mtce	1,894,031	459,199	383,165	280	\$ 2,736,676
								\$ 1,894,031	\$ 459,199	\$ 383,165	\$ 280	\$ 2,736,676

LOS Target	Labor	Equipment	Materials	Other	Total
B-	\$1,277,132	\$312,996	\$241,199	\$103	\$1,831,430
B	\$1,894,031	\$459,199	\$383,165	\$280	\$2,736,676
B+	\$2,510,930	\$605,403	\$525,131	\$456	\$3,641,921
A-	\$2,853,652	\$686,627	\$604,002	\$555	\$4,144,835

# LOS Target Setting Results – 250 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
250 - Roadside Appearance	Grass Mowing	B-	B	2018	1	252	Veg Control - Dry Land	2,348,128	1,378,165	106,715	-	\$ 3,833,008
						253	Veg Control - Bluegrass	86,069	40,568	8,890	-	\$ 135,527
						254	Veg Control - Hand Mow Weed Chem	1,720,135	431,626	291,578	126,719	\$ 2,570,058
								<b>\$ 4,154,331</b>	<b>\$ 1,850,359</b>	<b>\$ 407,184</b>	<b>\$ 126,719</b>	<b>\$ 6,538,593</b>
	Noxious Weeds	A-	A-	2018	1	256	Veg Control - Herbicide Pesticide	776,823	254,393	677,363	103,893	\$ 1,812,472
												<b>\$ 776,823</b>
	Landscaping Appearance	B	C-	2018	1	258	Veg Control - Irrigation	235,024	36,235	21,680	-	\$ 292,939
						260	Tree Planting Removal Trimming	432,283	90,621	15,495	248	\$ 538,647
								<b>\$ 667,307</b>	<b>\$ 126,857</b>	<b>\$ 37,175</b>	<b>\$ 248</b>	<b>\$ 831,586</b>
	MPA 250 Summary	B	B					<b>\$ 5,598,461</b>	<b>\$ 2,231,609</b>	<b>\$ 1,121,721</b>	<b>\$ 230,860</b>	<b>\$ 9,182,651</b>

# Mowing Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Grass Mowing	B-	B	2018	1	253	Veg Control - Bluegrass	86,069	40,568	8,890	-	\$ 135,527
254						Veg Control - Hand Mow Weed Chem	1,720,135	431,626	291,578	126,719	\$ 2,570,058	
							<b>\$ 4,154,331</b>	<b>\$ 1,850,359</b>	<b>\$ 407,184</b>	<b>\$ 126,719</b>	<b>\$ 6,538,593</b>	

LOS Target	Labor	Equipment	Materials	Other	Total
B-	\$4,071,773	\$1,808,337	\$395,675	\$125,400	\$6,401,184
B	\$4,154,331	\$1,850,359	\$407,184	\$126,719	\$6,538,593
B+	\$4,236,889	\$1,892,382	\$418,692	\$128,039	\$6,676,002
A-	\$4,319,447	\$1,934,404	\$430,200	\$129,359	\$6,813,410

# LOS Target Setting Results – 300 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
300 - Traffic Services	Traffic Signs	B+	B+	2018	1	302	Single Post Signs - Install Mtce Replace	2,473,308	853,564	1,300,914	5,965	\$ 4,633,751
						303	Multi Post Signs - Install Mtce Replace	526,925	232,434	389,083	1,284,050	\$ 2,432,493
								<b>\$ 3,000,233</b>	<b>\$ 1,085,998</b>	<b>\$ 1,689,997</b>	<b>\$ 1,290,015</b>	<b>\$ 7,066,244</b>
	Delineators, Mile Markers	A	B+	2018	1	304	Delineator Post Install Mtce & Replace	2,330,534	747,779	710,425	836	\$ 3,789,574
								<b>\$ 2,330,534</b>	<b>\$ 747,779</b>	<b>\$ 710,425</b>	<b>\$ 836</b>	<b>\$ 3,789,574</b>
	Metal Guardrail	A-	B+	2018	1	306	Metal Guard Rail Mtce Install Straighten	1,421,167	469,439	951,999	96,658	\$ 2,939,263
								<b>\$ 1,421,167</b>	<b>\$ 469,439</b>	<b>\$ 951,999</b>	<b>\$ 96,658</b>	<b>\$ 2,939,263</b>
	Concrete Guardrail	A-	B+	2018	1	307	Concrete Rail Mtce & Installation	56,109	32,317	40,883	65	\$ 129,374
								<b>\$ 56,109</b>	<b>\$ 32,317</b>	<b>\$ 40,883</b>	<b>\$ 65</b>	<b>\$ 129,374</b>
	Cable Guardrail	A-	B+	2018	1	305	Cable Rail Mtce Install & Repair	424,824	110,808	678,899	-	\$ 1,214,531
								<b>\$ 424,824</b>	<b>\$ 110,808</b>	<b>\$ 678,899</b>	<b>\$ -</b>	<b>\$ 1,214,531</b>
	Striping	D	C	2020	3	308	Pavement Striping - Machine	2,226,023	1,714,503	14,304,588	9,375,425	\$ 27,620,540
								<b>\$ 2,226,023</b>	<b>\$ 1,714,503</b>	<b>\$ 14,304,588</b>	<b>\$ 9,375,425</b>	<b>\$ 27,620,540</b>
	Markings	D-	C	2018	1	310	Pavement Marking/Removal - Hand Machine	598,120	309,815	1,402,237	4,975,982	\$ 7,286,153
								<b>\$ 598,120</b>	<b>\$ 309,815</b>	<b>\$ 1,402,237</b>	<b>\$ 4,975,982</b>	<b>\$ 7,286,153</b>
	Lighting	A+	C	2018	1	312	Roadway & Sign Lighting	636,581	359,569	1,360,141	10,035	\$ 2,366,326
							<b>\$ 636,581</b>	<b>\$ 359,569</b>	<b>\$ 1,360,141</b>	<b>\$ 10,035</b>	<b>\$ 2,366,326</b>	
Traffic Signals	A-	C+	2018	1	314	Traffic Signal Mtce & Repair	881,836	626,974	2,659,984	918,773	\$ 5,087,567	
					326	Traffic Signal Interconnect Systems	167,708	73,568	1,451,364	-	\$ 1,692,640	
							<b>\$ 1,049,544</b>	<b>\$ 700,542</b>	<b>\$ 4,111,348</b>	<b>\$ 918,773</b>	<b>\$ 6,780,207</b>	
Energy Attenuators	A	A	2018	1	316	Energy Attenuator Mtce	198,384	66,360	906,946	-	\$ 1,171,690	
							<b>\$ 198,384</b>	<b>\$ 66,360</b>	<b>\$ 906,946</b>	<b>\$ -</b>	<b>\$ 1,171,690</b>	
Electrical Systems, Wires	A	B	2018	1	320	Electrical Wiring - Refurb & Mtce	600,165	153,424	143,037	-	\$ 896,625	
							<b>\$ 600,165</b>	<b>\$ 153,424</b>	<b>\$ 143,037</b>	<b>\$ -</b>	<b>\$ 896,625</b>	
ITS Equipment	A	B	2018	1	321	Intelligent Transport Systems	75,823	8,765	22,652	-	\$ 107,239	
							<b>\$ 75,823</b>	<b>\$ 8,765</b>	<b>\$ 22,652</b>	<b>\$ -</b>	<b>\$ 107,239</b>	
MPA 300 Summary		C+	C+				<b>\$ 12,617,508</b>	<b>\$ 5,759,320</b>	<b>\$ 26,323,152</b>	<b>\$ 16,667,787</b>	<b>\$ 61,367,766</b>	

# Striping Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Striping	D	C	2020	3	308	Pavement Striping - Machine	2,226,023	1,714,503	14,304,588	9,375,425	\$ 27,620,540
								\$ 2,226,023	\$ 1,714,503	\$ 14,304,588	\$ 9,375,425	\$ 27,620,540

## 3 Year Target

LOS Target	Labor	Equipment	Materials	Other	Total
C-	\$2,017,634	\$1,586,704	\$13,397,427	\$8,794,257	\$25,796,022
<b>C</b>	<b>\$2,226,023</b>	<b>\$1,714,503</b>	<b>\$14,304,588</b>	<b>\$9,375,425</b>	<b>\$27,620,540</b>
C+	\$2,434,413	\$1,842,302	\$15,211,750	\$9,956,593	\$29,445,058
B-	\$2,642,802	\$1,970,101	\$16,118,912	\$10,537,761	\$31,269,576

## 1 Year Target

LOS Target	Labor	Equipment	Materials	Other	Total
C-	\$2,968,172	\$2,141,155	\$17,725,403	\$12,131,536	\$34,966,266
<b>C</b>	<b>\$3,593,340</b>	<b>\$2,524,551</b>	<b>\$20,446,888</b>	<b>\$13,875,041</b>	<b>\$40,439,820</b>
C+	\$4,218,509	\$2,907,948	\$23,168,373	\$15,618,545	\$45,913,375
B-	\$4,843,677	\$3,291,345	\$25,889,858	\$17,362,050	\$51,386,930

# LOS Target Setting Results – 350 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
350 - Structure Maintenance	Bridge Cleaning	C+	B	2018	1	352	Bridge / Structure Cleaning	781,691	302,081	17,739	-	\$ 1,101,511
								<b>\$ 781,691</b>	<b>\$ 302,081</b>	<b>\$ 17,739</b>	<b>\$ -</b>	<b>\$ 1,101,511</b>
	Bridge Decks	C-	C	2018	1	353	Bridge Deck Repair	830,921	276,423	545,241	-	\$ 1,652,585
						360	Rotomilling Flex Bridge Deck	166,505	98,796	7,530	-	\$ 272,831
						361	Rotomilling Rigid Bridge Deck	-	-	-	-	\$ -
						362	Crack & Joint Sealing Rigid Bridge Deck	8,195	2,261	1,136	-	\$ 11,593
						363	Crack Sealing Flex Bridge Deck	24,748	9,347	7,591	-	\$ 41,685
								<b>\$ 1,030,369</b>	<b>\$ 386,828</b>	<b>\$ 561,498</b>	<b>\$ -</b>	<b>\$ 1,978,695</b>
	Bridge Superstructure	B	C	2018	1	354	Bridge Superstructure Mtce	123,743	52,776	184,675	-	\$ 361,194
								<b>\$ 123,743</b>	<b>\$ 52,776</b>	<b>\$ 184,675</b>	<b>\$ -</b>	<b>\$ 361,194</b>
	Bridge Painting	C-	B	2018	1	355	Bridge / Structure Painting	40,740	5,820	15,527	-	\$ 62,087
								<b>\$ 40,740</b>	<b>\$ 5,820</b>	<b>\$ 15,527</b>	<b>\$ -</b>	<b>\$ 62,087</b>
	Bridge Curbs, Railings	B+	B+	2018	1	356	Bridge Curb Wheel Guard Railing Repair	596,794	131,298	262,964	7,462	\$ 998,518
							<b>\$ 596,794</b>	<b>\$ 131,298</b>	<b>\$ 262,964</b>	<b>\$ 7,462</b>	<b>\$ 998,518</b>	
Bridge Bearings	F	C-	2018	1	357	Bridge Structure Bearing Mtce & Repair	720,345	74,718	37,861	-	\$ 832,924	
							<b>\$ 720,345</b>	<b>\$ 74,718</b>	<b>\$ 37,861</b>	<b>\$ -</b>	<b>\$ 832,924</b>	
Bridge Substructure	B	C	2018	1	358	Bridge Substructure Mtce & Repair	3,251	536	13,382	103	\$ 17,272	
							<b>\$ 3,251</b>	<b>\$ 536</b>	<b>\$ 13,382</b>	<b>\$ 103</b>	<b>\$ 17,272</b>	
Bridge Approaches, Slopes	B-	B-	2018	1	359	Approach Slab & Slope Protect Mtce & Repair	897,495	385,134	1,062,020	7,745	\$ 2,352,394	
							<b>\$ 897,495</b>	<b>\$ 385,134</b>	<b>\$ 1,062,020</b>	<b>\$ 7,745</b>	<b>\$ 2,352,394</b>	
Bridge Deck Expansion Joints	C+	C+	2018	1	364	Deck Expansion Device Mtce & Repair	297,402	91,414	143,981	-	\$ 532,797	
							<b>\$ 297,402</b>	<b>\$ 91,414</b>	<b>\$ 143,981</b>	<b>\$ -</b>	<b>\$ 532,797</b>	
	MPA 350 Summary	C+	C+					<b>\$ 4,491,829</b>	<b>\$ 1,430,606</b>	<b>\$ 2,299,647</b>	<b>\$ 15,309</b>	<b>\$ 8,237,391</b>

# Bridge Cleaning Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Bridge Cleaning	C+	B	2018	1	352	Bridge / Structure Cleaning	781,691	302,081	17,739	-	\$ 1,101,511
								\$ 781,691	\$ 302,081	\$ 17,739	\$ -	\$ 1,101,511

LOS Target	Labor	Equipment	Materials	Other	Total
B-	\$716,673	\$282,081	\$17,109		\$1,015,862
B	\$781,691	\$302,081	\$17,739		\$1,101,511
B+	\$846,710	\$322,081	\$18,369		\$1,187,160
A-	\$911,728	\$342,082	\$18,999		\$1,272,809

# LOS Target Setting Results – 450 MPA



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
450 - Equip, Buildings & Grounds	Minor Equip. Maintenance	C+	C+	2018	1	458	Equipment Mtce by Field Personnel	3,126,302	275,187	2,384,020	5,521	\$ 5,791,029
								<b>\$ 3,126,302</b>	<b>\$ 275,187</b>	<b>\$ 2,384,020</b>	<b>\$ 5,521</b>	<b>\$ 5,791,029</b>
	Buildings & Grounds	B-	B-	2018	1	460	Building & Grounds	6,194,891	634,120	2,008,143	6,714	\$ 8,843,868
								<b>\$ 6,194,891</b>	<b>\$ 634,120</b>	<b>\$ 2,008,143</b>	<b>\$ 6,714</b>	<b>\$ 8,843,868</b>
	Rest Areas	B	B	2018	1	461	Rest Area Buildings & Misc Structures	1,284,050	386,097	1,043,373	222,845	\$ 2,936,364
								<b>\$ 1,284,050</b>	<b>\$ 386,097</b>	<b>\$ 1,043,373</b>	<b>\$ 222,845</b>	<b>\$ 2,936,364</b>
	MPA 450 Summary	B-	B-					<b>\$ 10,605,242</b>	<b>\$ 1,295,404</b>	<b>\$ 5,435,535</b>	<b>\$ 235,080</b>	<b>\$ 17,571,262</b>

# Buildings & Grounds Example

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET					Annual Budget (For LOS-Rated Assets Only)					
Asset Group	Asset Feature	Current LOS	Target LOS	Target FY	Yrs to Target	Activity	Description	Labor	Equipment	Materials	Other	Total
	Buildings & Grounds	B-	B-	2018	1	460	Building & Grounds	6,194,891	634,120	2,008,143	6,714	\$ 8,843,868
								\$ 6,194,891	\$ 634,120	\$ 2,008,143	\$ 6,714	\$ 8,843,868

LOS Target	Labor	Equipment	Materials	Other	Total
C+	\$5,990,122	\$613,253	\$1,940,647	\$6,494	\$8,550,516
B-	\$6,194,891	\$634,120	\$2,008,143	\$6,714	\$8,843,868
B	\$6,399,659	\$654,988	\$2,075,639	\$6,935	\$9,137,221
B+	\$6,604,428	\$675,855	\$2,143,135	\$7,155	\$9,430,573

# Statewide Budget by MPA Group



2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET		Annual Budget (For LOS-Rated Assets Only)				
Asset Group	Asset Feature	Current LOS	Target LOS	Labor	Equipment	Materials	Other	Total
	MPA 150 Summary	B+	B+	\$ 15,137,090	\$ 7,570,312	\$ 19,921,390	\$ 627,925	\$ 43,256,716
	MPA 200 Summary	B+	A-	\$ 19,364,486	\$ 8,637,460	\$ 2,278,057	\$ 534,796	\$ 30,814,799
	MPA 250 Summary	B	B	\$ 5,598,461	\$ 2,231,609	\$ 1,121,721	\$ 230,860	\$ 9,182,651
	MPA 300 Summary	C+	C+	\$ 12,617,508	\$ 5,759,320	\$ 26,323,152	\$ 16,667,787	\$ 61,367,766
	MPA 350 Summary	C+	C+	\$ 4,491,829	\$ 1,430,606	\$ 2,299,647	\$ 15,309	\$ 8,237,391
	MPA 450 Summary	B-	B-	\$ 10,605,242	\$ 1,295,404	\$ 5,435,535	\$ 235,080	\$ 17,571,262
				\$67,814,615	\$26,924,709	\$57,379,503	\$18,311,758	\$170,430,585

# Statewide Maintenance Budget

2017	Statewide	MAINTENANCE WORK PROGRAM AND BUDGET		Annual Budget (For LOS-Rated Assets Only)				
Asset Group	Asset Feature	Current LOS	Target LOS	Labor	Equipment	Materials	Other	Total
	MPA 150 Summary	B+	B	\$ 11,105,355	\$ 5,517,295	\$ 14,442,221	\$ 536,254	\$ 31,601,126
	MPA 200 Summary	B+	B+	\$ 15,196,860	\$ 6,437,774	\$ 1,887,022	\$ 529,010	\$ 24,050,667
	MPA 250 Summary	B	B	\$ 5,553,728	\$ 2,206,418	\$ 1,095,896	\$ 229,047	\$ 9,085,089
	MPA 300 Summary	C+	C+	\$ 12,717,299	\$ 5,715,501	\$ 25,532,831	\$ 15,870,390	\$ 59,836,020
	MPA 350 Summary	C+	C+	\$ 3,261,951	\$ 1,082,532	\$ 2,198,082	\$ 16,417	\$ 6,558,983
	MPA 450 Summary	B-	B-	\$ 10,560,590	\$ 1,287,637	\$ 5,446,179	\$ 234,995	\$ 17,529,402
				\$58,395,783	\$22,247,157	\$50,602,231	\$17,416,114	\$ 148,661,286