Pavement and Bridge (PM2)

Thursday, March 29, 2018 2:00 PM to 4:00 PM

Performance Management Target Setting Webinar

Caltrans

Introduction/MPO Roll Call

- Association of Monterey Bay Area Governments (AMBAG)

- Butte County Association of Governments (BCAG)

- Fresno Council of Governments (Fresno COG)

- Kings County Association of Governments (KCAG)

- Kern Council of Governments (KCOG)

- Merced County Association of Governments (MCAG)

- Madera County Transportation Commission (MCTC)

- Metropolitan Transportation Commission (MTC)

- Sacramento Area Council of Governments (SACOG)

- San Diego Association of Governments (SANDAG)

- San Joaquin Council of Governments (SJCOG)

- San Luis Obispo Council of Governments (SLOCOG)

- Santa Barbara County Association of Governments (SBCAG)

- Shasta Regional Transportation Agency (SRTA)

- Southern California Association of Governments (SCAG)

- Stanislaus Council of Governments (StanCOG)

- Tulare County Association of Governments (TCAG)

- Tahoe Metropolitan Planning Organization (TMPO)

Webinar Ground Rules

- When joining the webinar, if you clicked on the new "Join by browser" **you will not have sound**. You will need to re-join the webinar by clicking on "Join Now"

- The webinar will be recorded and posted on the Caltrans Asset Management webpage

- Use the chat feature to submit questions. We will respond to questions during the webinar as well as a Q&A at the end of the presentation.

- If you need technical assistance with the webinar or have questions later, you can submit questions via email to: CT-TAM@dot.ca.gov

Agenda

2:00 P.M.	Introduction, MPO Roll Call, and Webinar Ground Rules
2:10 P.M.	MAP-21 Background and Condition Metrics
2:25 P.M.	10-Year NHS Target Setting Coordination & Methodology for the California TAMP
2:35 P.M.	Caltrans Target Setting Methodology
2:50 P.M.	MPO Target Reporting Form
3:05 P.M.	Next Steps/ Q & A

MAP-21 Background & Condition Metrics

Michael B. Johnson
Statewide Asset Management Engineer
Caltrans Director's Office of Asset Management

MAP-21 / FAST Act

- Federal Regulation (MAP-21/FAST Act) requires the development of a Transportation Asset Management Plan (TAMP) with National Performance Measures for pavement and bridges

- The TAMP Requires the implementation of Performance Management which requires performance targets to be set using the National Measures

- TAMP shall include the entire National Highway System
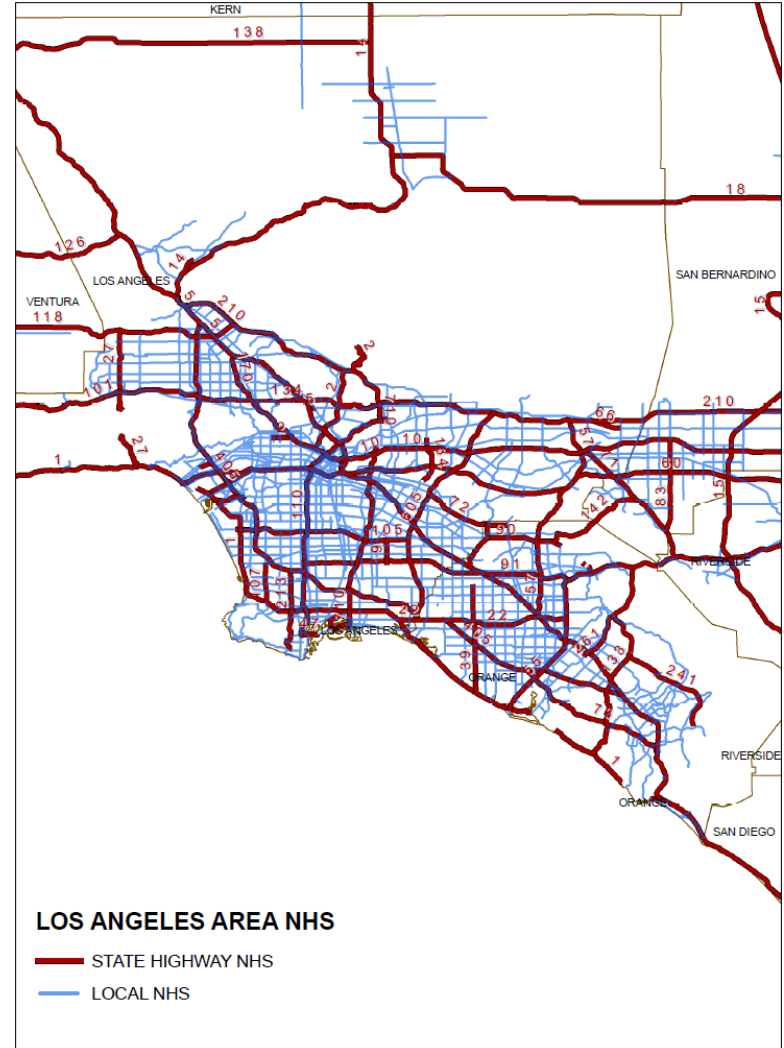
What is the National Highway System (NHS)?

- The National Highway System (NHS) is the Interstate Highway System plus additional roads important to the nation's economy, defense and mobility

- MAP-21 expanded the NHS to include all roadways with functional classes of principal arterial or higher

- In California the NHS is over 15,000 miles of roadway owned by the state and local agencies

- The TAMP is required to include the entire NHS

California NHS

NATIONAL HIGHWAY SYSTEM

STATE HIGHWAY NHS
LOCAL NHS

NHS – Bay Area & Los Angeles Area

BAY AREA NHS
— STATE HIGHWAY NHS
— LOCAL NHS

LOS ANGELES AREA NHS
— STATE HIGHWAY NHS
— LOCAL NHS

Scope of TAMP

Asset Classes					
System	**Pavement**	**Bridge**	**Drainage**	**TMS**	**Supplementary Assets**
NHS Federal Requirements	✓	✓			
SHS State Requirements	✓	✓	✓	✓	✓

TAMP Target Setting

- The TAMP utilizes a 10 year period for all analysis and therefore needs 10 year target condition ending 2027/28

- The FHWA also requires 2 & 4 year targets to measure progress toward the 10 year goal

- The California TAMP targets reflect the varied starting condition levels

- Agencies have varied funding availability that influences accomplishments and resulting conditions

MAP-21/FAST
Pavement Performance Measures

- Good/fair/poor measure determined based on 4 metrics
  - If all are good the combined measure is good
  - If >2 metrics are poor the combined measure is poor
- Need to report conditions and targets for % good and poor for Interstate and non-Interstate NHS
- Rule sets an additional goal of <5% poor for Interstates

23 U.S.C. 119(e)(1), MAP-21 § 1106 - Subpart C (490.300s)

	Good	Fair	Poor
IRI (inches/mile)	<95	95-170 / 95-220*	>170 / >220*
Cracking (%)	<5	5-10	>10
Rutting (inches)	<0.20	0.20-0.40	>0.40
Faulting (inches)	<0.10	0.10-0.15	>0.15

MAP-21/FAST
Bridge Performance Measures

- Good/Fair/Poor measure based on NBI ratings
  - Use minimum of deck, superstructure, and substructure
  - Report conditions and targets for % good and poor for NHS bridges

- Additional goal of $\leq$10% of the NHS bridge deck area structurally deficient

NBI Rating Scale *(from 0 – 9)*	9 8 7 Good	6 5 Fair	4 3 2 1 0 Poor
Deck *(Item 58)*	$\geq$7	5 or 6	$\leq$4
Superstructure *(Item 59)*	$\geq$ 7	5 or 6	$\leq$ 4
Substructure *(Item 60)*	$\geq$ 7	5 or 6	$\leq$ 4
Culvert *(Item 62)*	$\geq$ 7	5 or 6	$\leq$ 4

23 U.S.C. 119(e)(1), MAP-21 § 1106 - Subpart D (490.400s)

10-Year NHS Target Setting Coordination & Methodology for the California TAMP

Dawn Foster
Senior Transportation Engineer
Caltrans Director's Office of Asset Management

Results
NHS Target Setting Coordination for the California TAMP

1. Workshop held in August 2017 with MPOs/RTPAs that introduced preliminary methodologies on setting 10 Year NHS pavement and bridge targets and asked for input

2. A follow-up letter was sent in September 2017 asking MPOs to select a Target Setting Method for use in the TAMP

3. Those agencies that owned a small amount of NHS pavement and bridges elected to adopt a statewide weighted average NHS performance target

4. MPOs/RTPAs that could provide financial information to Caltrans helped inform the statewide investment model for the TAMP

5. Agencies who opted to perform a full financial deterioration and target setting analysis could submit that analysis, but only one MPO chose this option and it was based on PCI condition targets

- Targets were set considering effects of different funding levels and maximum amount of funding that could be reasonably expected for local pavements and bridges

  - ➢ *2017 State Highway System Management Plan (SHSMP) Deterioration Rates were used*

  - ➢ *Unit Costs were based on the 2016 Local Streets and Roads Needs Assessment*

- Targets were set acknowledging that the FHWA measure tends to result in fair classification for urban pavements off the SHS that would otherwise be classified as being in good condition (this is due to the threshold for roughness)

- Assumed locals applied funding in proportion of NHS assets to total non-SHS inventory

Desired State of Repair Performance

NHS Assets					
	Annual Funding ($M)	**Good**	**Fair**	**Poor**	
Pavements					
Interstate	**$852**	**60.0%**	**39.0%**	**1.0%**	
Non-Interstate NHS	**$1,322**	**34.1%**	**60.9%**	**5.0%**	
On the SHS	$1,153	57.6%	40.9%	1.5%	
Off the SHS	$169	7.0%	84.0%	9.0%	
Bridges					
NHS	**$981**	**83.5%**	**15.0%**	**1.5%**	
On the SHS	$566	83.5%	15.0%	1.5%	
Off the SHS	$415	83.5%	15.0%	1.5%	

For Additional Information

Asset Management Website

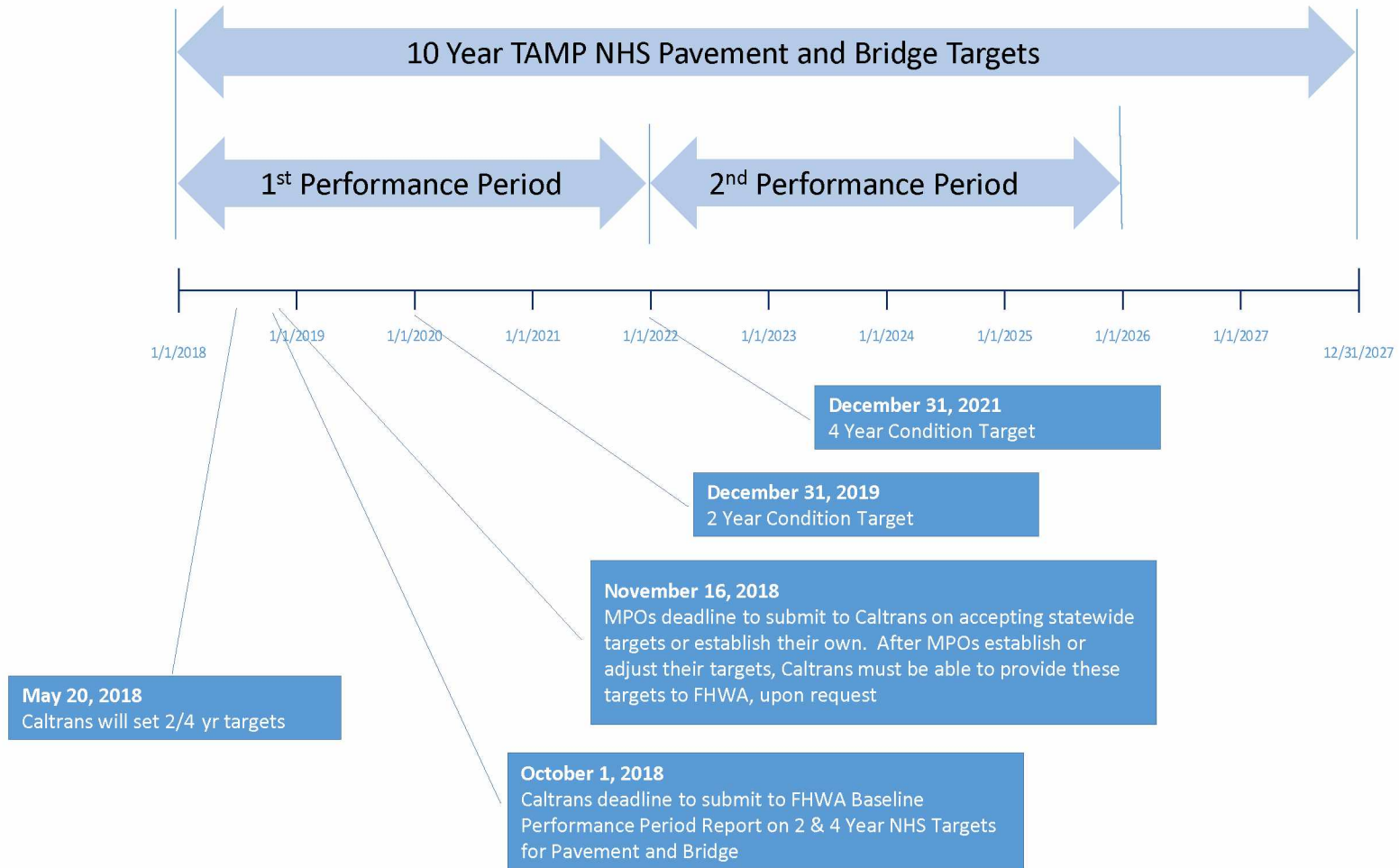http://www.dot.ca.gov/assetmgmt/index.html

Caltrans Target Setting Methodology

Loren Turner
Office Chief
Caltrans Director's Office of Asset Management

Where Do We Go From Here?

10 Year TAMP NHS Pavement and Bridge Targets

1st Performance Period

2nd Performance Period

1/1/2018   1/1/2019   1/1/2020   1/1/2021   1/1/2022   1/1/2023   1/1/2024   1/1/2025   1/1/2026   1/1/2027   12/31/2027

December 31, 2021
4 Year Condition Target

December 31, 2019
2 Year Condition Target

November 16, 2018
MPOs deadline to submit to Caltrans on accepting statewide targets or establish their own. After MPOs establish or adjust their targets, Caltrans must be able to provide these targets to FHWA, upon request

May 20, 2018
Caltrans will set 2/4 yr targets

October 1, 2018
Caltrans deadline to submit to FHWA Baseline Performance Period Report on 2 & 4 Year NHS Targets for Pavement and Bridge

Performance Setting Requirements

- Federal Targets & State Benchmarks
  - A projection of expected asset class performance/condition
  - Condition can be verified in subsequent inspection cycles (e.g., HPMS for pavement, NBI for bridges)

FHWA 2 & 4-Year Targets
- Requirements set forth in 23 CFR 490
- 1st 4-year Performance Period (Jan 2018 – Dec 2021)
- 2-year Mid-Performance Point
- Pavement and bridge only
- NHS inventory
- Targets are fiscally constrained
- Caltrans to set 2 & 4-yr targets by May 2018

California Transportation Commission Benchmarks
- Each year over the 10-year TAMP period
- Required for primary asset classes – pavement, bridge, drainage, TMS
- SHS inventory
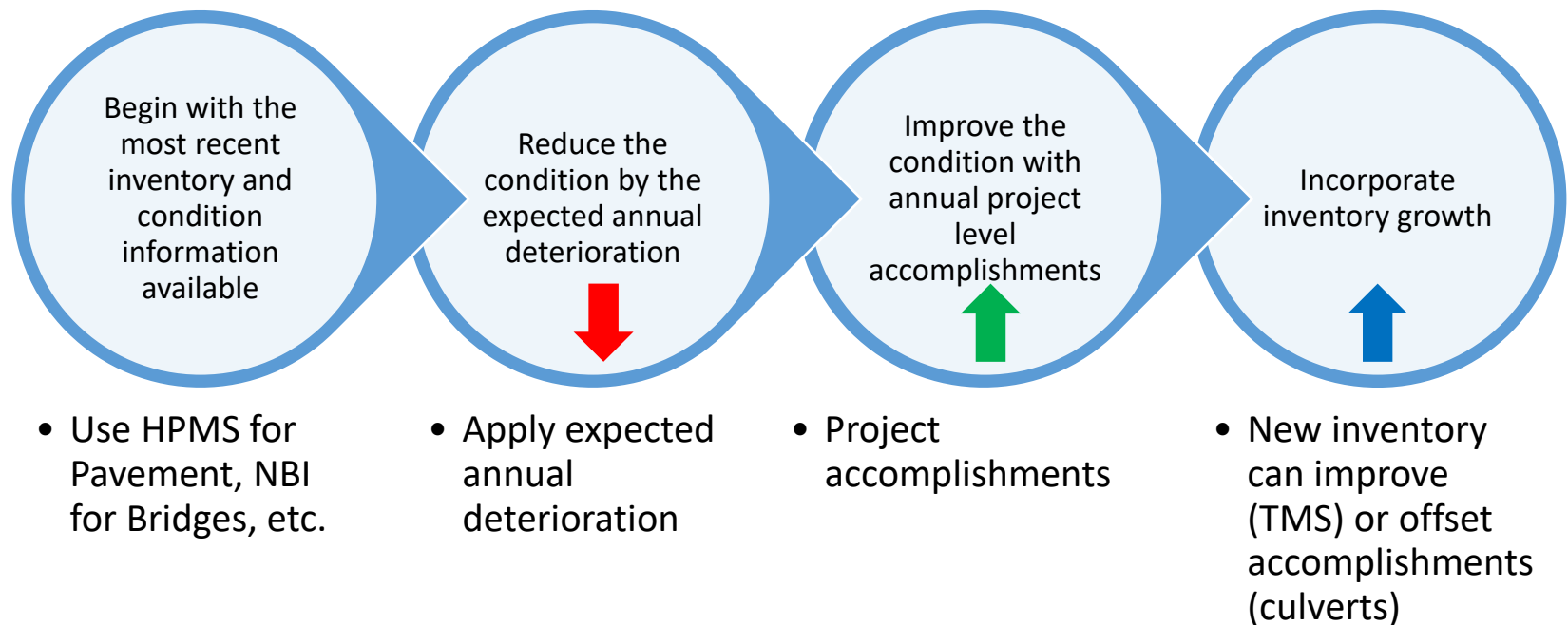- Updated every 2 years
- Approved March 2018

When to Realize Performance Gains
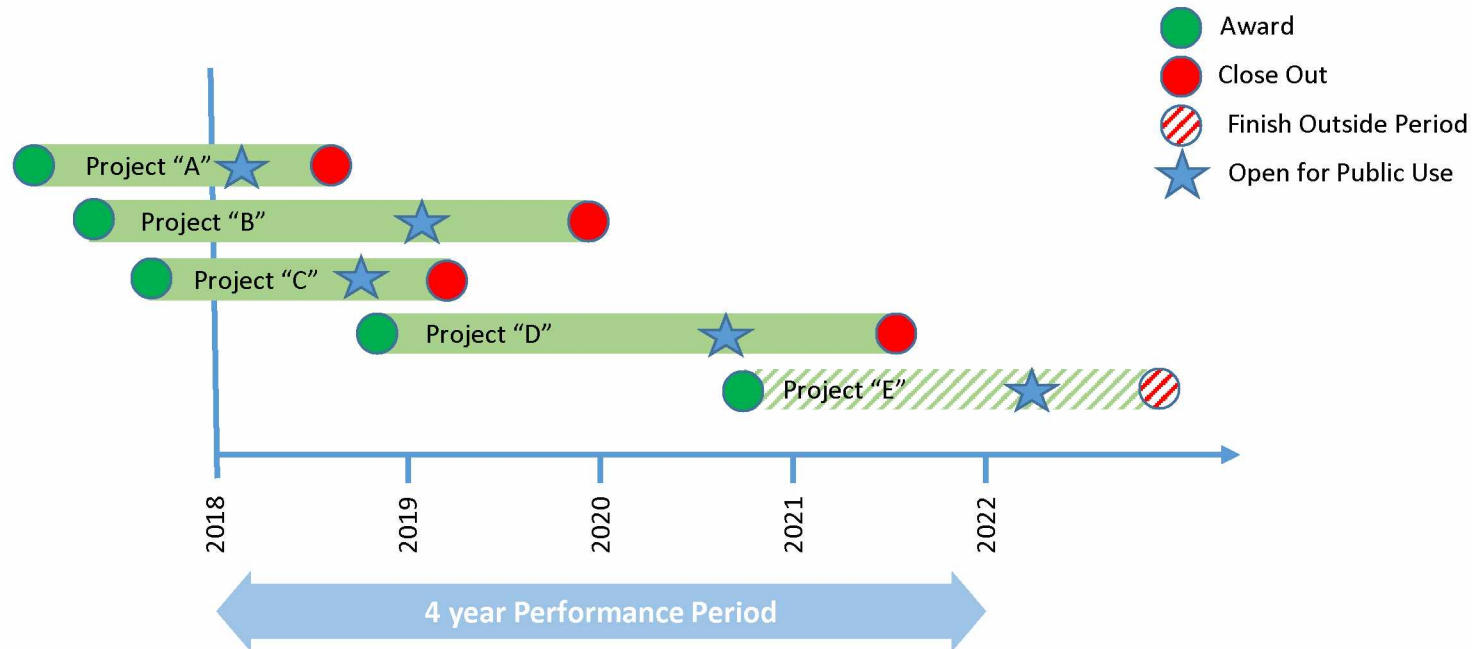
Project **accomplishments** require the review of many individual projects, including projects initiated in the years prior to the performance period.

Benchmark Development Procedure

Begin with the most recent inventory and condition information available

Reduce the condition by the expected annual deterioration

Improve the condition with annual project level accomplishments

Incorporate inventory growth

- Use HPMS for Pavement, NBI for Bridges, etc.

- Apply expected annual deterioration

- Project accomplishments

- New inventory can improve (TMS) or offset accomplishments (culverts)

Benchmark Development Procedure

Example Annual Condition Change Calculation

	Good	Fair	Poor
Condition at beginning of year	1500	400	100
	75%	20%	5%
Changes to inventory condition:			
(1) Project Accomplishments	450	-200	-250
(2) Deterioration			
Good to Fair	-150	150	0
Fair to Poor	0	-200	200
(3) New Inventory	100	0	0
Net change in condition	400	-250	-50
Condition at end of year	1900	150	50
	90%	7%	2%

Caltrans Example: Annual Benchmarks
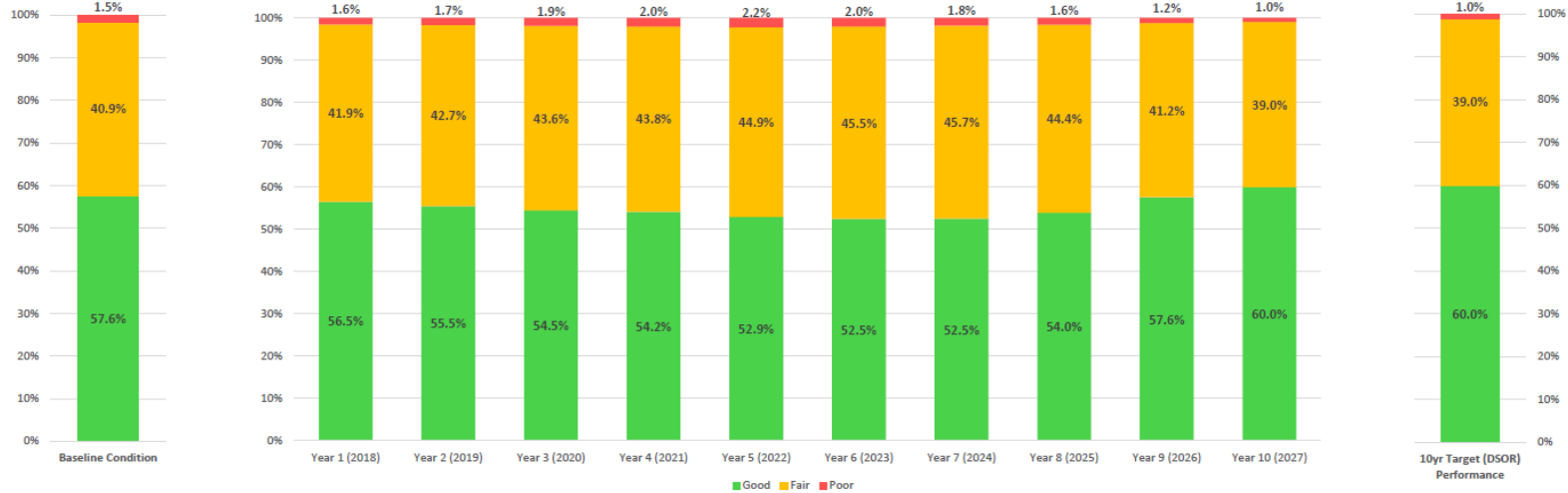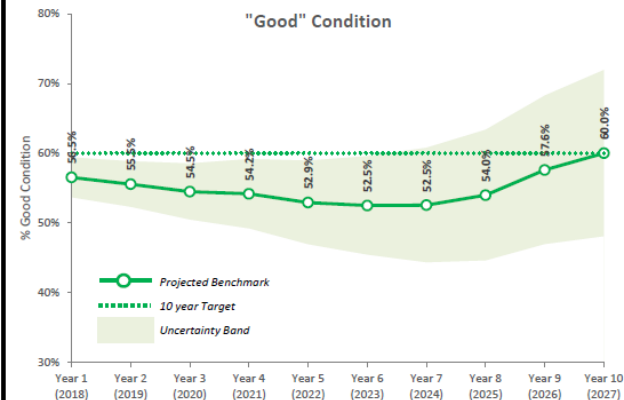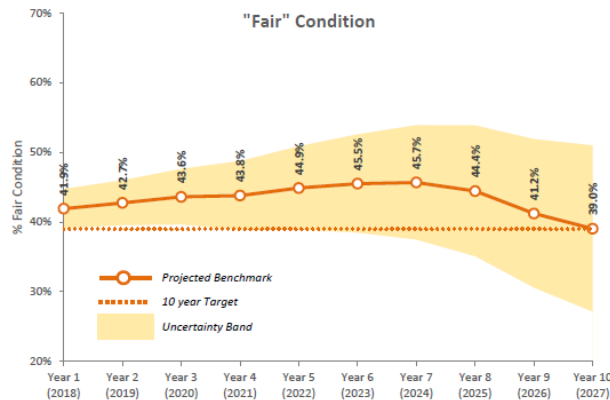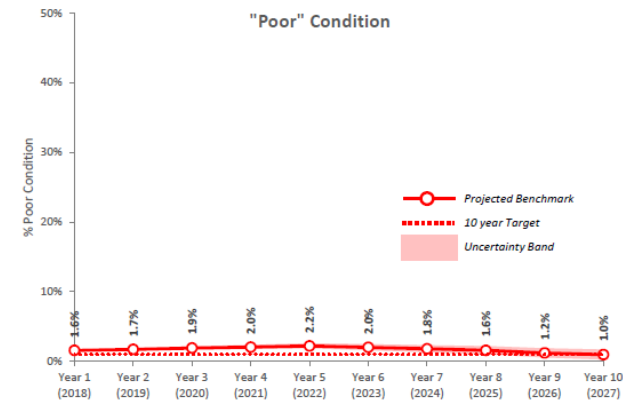
Questions

MPO Target Reporting Form

Dawn Foster
Senior Transportation Engineer
Caltrans Director's Office of Asset Management

Performance Management 2 (PM2)

Assessing Pavement and Bridge Condition on the National Highway System (NHS)

The code of federal regulations (23 CFR Part 515) (MAP-21) requires each state to develop a Transportation Asset Management Plan (TAMP) and implement Performance Management. These regulations require all states to utilize nationally defined performance measures for pavements and bridges on the National Highway System (NHS). The Bridge and Pavement Performance Management (PM2) Final Federal Rule established performance measures related to the performance of non-Interstate NHS for the purpose of carrying out the National Highway Performance Program (NHPP); to assess pavement and bridge condition. The specific performance measures are:

Pavement Performance of the NHS

- Percentage of non-Interstate NHS pavements in Good condition
- Percentage of non-Interstate NHS pavements in Poor condition

Bridge Performance of the NHS

- Percentage of NHS bridges in Good condition
- Percentage of NHS bridges in Poor condition

Federal regulations require each state Department of Transportation to establish 2 and 4 year pavement and bridge targets by May 20, 2018. Federal regulations allow Metropolitan Planning Organizations (MPO's) to adopt the states target or adopt their own within 180 days after the establishment of the statewide target.

To assist our local partners with the target setting process, your regions NHS pavement and bridge inventory and condition is attached. NHS routes and maps, the definition of good and poor, as well as the California Transportation Asset Management Plan (TAMP) can be found at the following link: http://www.dot.ca.gov/assetmgmt/

Please review your regions data, and identify what condition you expect your NHS pavement and bridges to be in 2 and 4 years, given your available funding and planned projects. Given the federal deadlines, Caltrans will accept responses until Friday, April 20, 2018.

Please provide MPO contact information, 2 and 4 year expected condition data, and the signature of the MPO official certifying the information.

Agency Information	
MPO/RTPA	
Contact Name	
Title	
Phone	
Email	

Expected 2-Year NHS Pavement and Bridge Map-21 Based Condition
(Quantity weighted average)

2-Year Performance Targets	Inventory	Good	Fair	Poor
Pavement Lane Miles (Miles)				
Bridge Deck Area (Square Feet)				

Expected 4-Year NHS Pavement and Bridge Map-21 Based Condition
(Quantity weighted average)

4-Year Performance Targets	Inventory	Good	Fair	Poor
Pavement Lane Miles(Miles)				
Bridge Deck Area (Square Feet)				

Please send your response by **Friday, April 20, 2018**, via email to: CT-TAM@dot.ca.gov.

For questions concerning the performance target reporting process, please contact Dawn Foster at (916) 323-7747 or via email at dawn.foster@dot.ca.gov.

Name: _____

Signature: _____ Date: _____

Form Requirements

Please provide MPO contact information, 2 and 4 year expected condition data, and the signature of the MPO official certifying the information.

Agency Information	
MPO/RTPA	Transportation Agency
Contact Name	Johnny Transportation
Title	Transportation Planner
Phone	123-456-789
Email	JohnnyT@transportationagency.org

Form Requirements

Expected 2-Year NHS Pavement and Bridge Map-21 Based Condition
(Quantity weighted average)

2-Year Performance Targets	Inventory	Good	Fair	Poor
Pavement Lane Miles (Miles)	Use Inventory from Caltrans Provided Worksheet	Provide one Good/Fair/Poor Condition Target per MPO in Total Lane Miles.		
Bridge Deck Area (Square Feet)		Provide one Good/Fair/Poor Condition Target per MPO in Total Square Feet.		

Expected 4-Year NHS Pavement and Bridge Map-21 Based Condition
(Quantity weighted average)

4-Year Performance Targets	Inventory	Good	Fair	Poor
Pavement Lane Miles(Miles)	Use Inventory from Caltrans Provided Worksheet	Provide one Good/Fair/Poor Condition Target per MPO in Total Lane Miles.		
Bridge Deck Area (Square Feet)		Provide one Good/Fair/Poor Condition Target per MPO in Total Square Feet.		

Form Requirements

Please send your response by **Friday, April 20, 2018**, via email to: CT-TAM@dot.ca.gov.

For questions concerning the performance target reporting process, please contact Dawn Foster at (916) 323-7747 or via email at dawn.foster@dot.ca.gov.

Name: Jane Doe
_____

Signature: *Jane Doe*
_____
Date: April 15, 2018
_____

Statewide Roll-up Example for NHS Pavement 2 & 4 Year Targets

CA 2016 Pavement Conditions (NHS)
Target Calculator Tool

Jurisdiction	2016 Lane Miles (LM)	2016 Current Pavement Condition (%) Good(G)	Poor(P)	2 Year Pavement Condition Targets Good (LM)	% Target (G)	Poor (LM)	% Target (P)	4 Year Pavement Condition Targets Good (LM)	% Target (G)	Poor (LM)	% Target (P)	% Impact to Statewide Lane Miles
State Interstate - NHS	14,159	47.9%	3.1%	6,353	44.9%	240	1.7%	6,353	44.9%	283	2.0%	25.2%
Non Interstate - NHS	22,544	45.9%	2.5%	9,796	43.5%	653	2.9%	9,796	43.5%	518	2.3%	40.2%
Butte (BCAG)	69	20.3%	12.6%	5	7.3%	9	12.6%	5	7.3%	9	12.6%	0.1%
Fresno (FCOG)	479	17.5%	4.2%	64	13.4%	20	4.2%	64	13.4%	20	4.2%	0.9%
Glenn CTC	6	10.1%	0.0%	1	9.7%		0.0%	1	9.7%	-	0.0%	0.0%
Humbolt CAG	35	100.0%	0.0%	35	98.8%		0.0%	35	98.8%	-	0.0%	0.1%
Kern (KCOG)	586	23.3%	4.1%	113	19.3%	24	4.1%	113	19.3%	24	4.1%	1.0%
Kings (KCAG)	35	16.2%	0.0%	6	16.2%		0.0%	6	16.2%	-	0.0%	0.1%
Lassen CTC	8	100.0%	0.0%	6	79.6%		0.0%	6	79.6%	-	0.0%	0.0%
Madera (MCTC)	3	0.0%	0.0%		0.0%		0.0%		0.0%	-	0.0%	0.0%
Merced (MCAG)	87	17.7%	15.2%	2	2.1%	13	15.2%	2	2.1%	13	15.2%	0.2%
Metropolitan (MTC)	2,995	12.7%	11.1%	50	1.7%	333	11.1%	50	1.7%	333	11.1%	5.3%
Monterey (AMBAG)	218	16.0%	8.1%	17	7.6%	18	8.1%	17	7.6%	18	8.1%	0.4%
Sacramento (SACOG)	1,149	17.5%	14.4%	37	3.2%	166	14.4%	37	3.2%	166	14.4%	2.0%
San Diego (SANDAG)	991	10.8%	8.8%	21	2.1%	87	8.8%	21	2.1%	87	8.8%	1.8%
San Joaquin (SJCOG)	545	13.9%	6.8%	39	7.1%	37	6.8%	39	7.1%	37	6.8%	1.0%
San Luis Obispo (SLOCOG)	43	22.0%	11.5%	4	10.4%	5	11.5%	4	10.4%	5	11.5%	0.1%
Santa Barbara (SBCAG)	131	11.8%	7.9%	5	3.8%	10	7.9%	5	3.8%	10	7.9%	0.2%
Southern California (SCAG)	11,658	17.9%	14.4%	427	3.7%	1,676	14.4%	427	3.7%	1,399	12.0%	20.8%
Shasta (SRTA)	9	28.3%	15.5%	1	13.3%	1	15.5%	1	13.3%	1	15.5%	0.0%
Stanislaus (StanCOG)	219	26.4%	13.2%	29	13.2%	29	13.2%	29	13.2%	29	13.2%	0.4%
Tahoe (TMPO)	5	100.0%	0.0%	5	97.1%		0.0%	5	97.1%	-	0.0%	0.0%
Tulare (TCAG)	102	16.9%	2.0%	15	14.2%	2	2.0%	15	14.2%	2	2.0%	0.2%
Grand Total	**56,076**	**30.4%**	**6.1%**	**19,571**	**34.9%**	**20,393**	**32.6%**	**18,302**	**34.9%**	**5,107**	**9.1%**	**100%**

Statewide Roll-up Example for NHS Bridge 2 & 4 Year Targets

CA 2017 NBI Bridge Conditions (NHS) as of 8-15-2017
Target Calculator Tool

Jurisdiction	Number of Bridges	Deck Area (SF)	2017 Current Bridge Health (%)		2 Year Bridge Condition Targets				4 Year Bridge Condition Targets				% Impact to Statewide Deck Area
			Good(G)	Poor(P)	Good (SF)	% Target (G)	Poor (SF)	% Target (P)	Good (SF)	% Target (G)	Poor (SF)	% Target (P)	
State	9,196	210,774,774	69.4%	3.7%	146,271,637	69.4%	7,743,040	69.4%	146,271,637	3.7%	7,743,040	3.7%	90.0%
Butte (BCAG)	7	40,085	23.3%	0.0%	9,322	23.3%	-	23.3%	9,322	0.0%	-	0.0%	0.0%
Fresno (FCOG)	33	389,427	31.2%	0.8%	121,320	31.2%	3,272	31.2%	121,320	0.8%	3,272	0.8%	0.2%
Humbolt CAG	2	5,113	0.0%	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%	0.0%
Kern (KCOG)	70	859,612	63.2%	4.9%	543,455	63.2%	42,130	63.2%	543,455	4.9%	42,130	4.9%	0.4%
Merced (MCAG)	10	52,958	33.3%	1.7%	17,653	33.3%	893	33.3%	17,653	1.7%	893	1.7%	0.0%
Metropolitan (MTC)	288	4,641,759	45.6%	20.9%	2,117,924	45.6%	971,639	45.6%	2,117,924	20.9%	971,639	20.9%	2.0%
Monterey (AMBAG)	11	121,969	11.1%	0.0%	13,577	11.1%	-	11.1%	13,577	0.0%	-	0.0%	0.1%
Sacramento (SACOG)	97	1,272,986	51.9%	3.5%	660,340	51.9%	44,767	51.9%	660,340	3.5%	44,767	3.5%	0.5%
San Diego (SANDAG)	68	1,265,363	33.7%	20.6%	425,940	33.7%	260,766	33.7%	425,940	20.6%	260,766	20.6%	0.5%
San Joaquin (SJCOG)	33	539,939	77.8%	9.8%	420,169	77.8%	53,044	77.8%	420,169	9.8%	53,044	9.8%	0.2%
San Luis Obispo (SLOCOG)	5	33,497	0.0%	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%	0.0%
Santa Barbara (SBCAG)	27	167,659	48.1%	18.2%	80,680	48.1%	30,537	48.1%	80,680	18.2%	30,537	18.2%	0.1%
Southern California (SCAG)	928	13,229,785	36.4%	14.4%	4,810,698	36.4%	1,900,818	36.4%	4,810,698	14.4%	1,900,818	14.4%	5.6%
Shasta (SRTA)	3	133,860	94.1%	0.0%	125,970	94.1%	-	94.1%	125,970	0.0%	-	0.0%	0.1%
Stanislaus (StanCOG)	9	188,185	24.6%	14.7%	46,263	24.6%	27,631	24.6%	46,263	14.7%	27,631	14.7%	0.1%
Tulare (TCAG)	3	32,518	100.0%	0.0%	32,518	100.0%	-	100.0%	32,518	0.0%	-	0.0%	0.0%
Grand Total	**10,825**	**234,285,883**	**66.5%**	**4.8%**	**155,858,370**	**66.5%**	**11,218,339**	**4.8%**	**155,858,370**	**66.5%**	**11,218,339**	**4.8%**	**100.0%**

Next Steps

Michael B. Johnson
Statewide Asset Management Engineer
Caltrans Director's Office of Asset Management

NHS 2 & 4 Year Target Setting Next Steps

- ✓ **March 15, 2018** – Initial California TAMP received FHWA Certification Letter

- ✓ **March CTC Meeting** – TAMP approved including NHS Targets and On-System Annual Benchmarks

- ✓ **March 29, 2018** – Webinar with MPO/RTPAs to explain target setting request

April 20, 2018 – MPO provides 2 & 4 Year Condition Targets to the State to influence Statewide NHS Pavement & Bridge Targets

May 6, 2018 – Caltrans to send preliminary targets to MPO's

May 20, 2018 – Caltrans to establish final 2 & 4 year NHS targets

October 1, 2018 – 2 & 4 Year NHS Statewide Targets due to FHWA

November 16, 2018 – MPOs must document with Caltrans whether they:

1) agree to plan and program projects so that they contribute toward the accomplishment of the established statewide target; *or*

2) commit to a quantifiable target for their metropolitan planning area

Questions

Acknowledgements

Michael Johnson

Loren Turner

Dawn Foster

Mara Chaudhari

Jennifer Duran

For additional questions:

CT-TAM@dot.ca.gov

Caltrans Asset Management webpage

http://www.dot.ca.gov/assetmgmt/