Transportation Asset Management Webinar Series

Webinar 44 TAMP and STIP Integration

Sponsored by FHWA and AASHTO





Webinar 44 – June 17, 2020

FHWA-AASHTO Asset Management Webinar Series

- This is the 44th in a webinar series that has been running since 2012
- Webinars are held every two months, on topics such as off-system assets, asset management plans, asset management and risk management, and more
- We welcome ideas for future webinar topics and presentations
- Submit your questions using the webinar's Q&A feature



transportation asset management including financial planning, risk management, tradeoff analysis, data management, integration of MA-21 dpans, and more. Weblamar feature transportation practitioners sharing lessons learned and providing demonstrations of the TAM tools and methods that are helping to expand the impact of asset management at DOTs nationwide. On this page, you can find links to register for upcoming webinars and access slides or recordings from past webinars. You can also download a fiyer for the next set of upcoming webinars here.	FHWA/AASHTO TAM Webinar Series
COTOBER 2016 Tax MEENIAR 23: TRADEOFS AND CROSS ASSET RESOURCE ALLOCATION 101	Since 2012, FHWA and AASHTO have sponsored a webinar series addressing topics in transportation asset management including financial planning, risk management, tradeoff analysis, data management, integration of MAP-21 plans, and more. Webinars feature transportation practitiones sharing lessons learned and providing demonstrations of the TAM tools and methods that are helping to expand the impact of asset management at DDTs nationwide. On this page, you can find links to register for upcoming webinars and access slides or recordings from past webinars. You can also download a flyer for the next set of upcoming webinars here.
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Welcome

FHWA and the AASHTO Sub-Committee on Asset Management are pleased to sponsor this webinar series

Sharing knowledge is a critical component of advancing asset management practice

Learning Objectives

- Building working knowledge of key concepts and definitions relevant to transportation asset management plans and State Transportation Improvement Programs
- Beginning to apply this knowledge in the context of TAMP and STIP integration in order to answer the following questions:
 - What approaches are agencies taking to coordinate the TAMP and the STIP?
 - What benefits can my agency expect by better integrating the TAMP and STIP development processes?
 - What are some key lessons-learned for agencies as they move toward greater TAMP and STIP integration?
- SHARE LESSONS LEARNED, IDEAS, KNOWLEDGE!!!

Webinar Agenda

- 2:00 Welcome and Introduction Steve Gaj, FHWA, Matt Hardy, AASHTO, Hyun-A Park, Spy Pond Partners
- 2:10 Topic Introduction and Overview Harlan Miller, FHWA
- 2:20 Wyoming Presentation Tim McDowell, Wyoming DOT
- 2:30 Texas Presentation Jenny Li, Texas DOT
- 2:40 Colorado Presentation William Johnson, Colorado DOT
- 2:50 Ohio Presentation Dave Gardner, Ohio DOT
- **3:00** Michigan Presentation James Ashman, Michigan DOT
- 3:10 Q&A and Wrap-Up

Topic Introduction

Integrating the TAMP and the STIP



Wyoming's Experiences in Integrating the TAMP and the STIP

Timothy McDowell, PE Wyoming Department of Transportation



It Isn't Instant

• There are a lot of #1 priorities.

- Many people are involved in the STIP.
- Feedback loops are important.
- Strive for incremental improvements.





Tie to Performance, Not Output

- Outcome is preserving with minimum life cycle cost, not dollars spent in overlays.
 - Miles of light, medium, and heavy treatments done at the right time based on PMS for pavement.
 - Square feet of bridges based on repair type done at the right time.
- Think holistic, such as the STIP software storing the treatment type



Track over time

Could be short one year, long the others

	Pavement Summary for 2020 1S & 2020-2025									
	1 S Miles	2 S Miles	3 S Miles							
Interstate Actual	0.00	74.85	29.54							
Interstate Required	24.00	57.00	44.00							
	24.00	17.85	14.46							
NHS (Non-Interstate) Actual	23.41	66.56	7.43							
NHS (Non-Interstate) Required	20.00	89.00	4.40							
	3.41	22.44	3.03							
Non-NHS Actual	6.60	35.76	24.22							
Non-NHS Required	20.00	57.00	6.00							
	13.40	21.24	18.22							

	Bridge Deck SF Summary 2022										
	8 & 7 6 5 4 3 2 & 1										
NHS Programmed	3,844	0	0	14,727	0	0					
NHS Required	0	0	0	14,000	1,000	0					
Programmed Minus Required	3,844	0	0	727	1,000	0					

6/16/20





Understand the STIP Requirements

 Projects may be grouped by function, work type and/or geographic area

 STIP shall include, to the maximum extent practicable, a discussion of the anticipated effect of the STIP toward the performance targets identified.



Feedback Loop

- Data must be aligned to allow for proper analysis
 - By District
 - By road type
 - By treatment type
- Continuous refinement to ensure forecasts are accurate
 - Improvements are achieving the desired results
- Timely reporting is critical



Timothy McDowell, PE State Programming Engineer WYDOT (307) 777-4177 tim.mcdowell@wyo.gov

QUESTIONS?



Integration of TAMP and STIP

TxDOT – Maintenance Division



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Texas DOT Overview



- Population: 29 Million
- District: 25
- County: 254
- Lane Miles: 196,000
- Daily Vehicle Miles Traveled:332 Million
- Bridge: 54,000
- MPO: 25





Asset Management Plan

June 30, 2019

- Developed a risk based asset management plan to improve or preserve the condition and performance of the system.
- Objectives and performance measure
- Set up performance targets
- Life cycle planning process
- Consistency check document

Planning, Development and Construction Process





Integration of TAMP and STIP

- Specific projects for pavement work are identified at the local TxDOT district level using Pavement Management System and Boots on the Ground approaches
- Prioritized projects are submitted for funding consideration through TPP
- Identifying project-specific data that align a project's performance benefit with the statewide objectives is critical to this process



4-Year Pavement Management Plan

- Every district is required to develop a comprehensive pavement management plan for all pavement related activities that is fiscally constrained.
- The plan covers all the routine maintenance, PM, LR, MR, and HR
- The plans are reviewed annually by a committee established by TxDOT administration to ensure that the maximum maintenance resources are directed towards pavement operations and roadway related work.

Timeline





MONTHS	ост	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP
Identify connectivity and mobility projects												
 Maintenance Supervisors and Area Engineers begin to discuss CAT 1 candidate projects 												
Project Identification Brain Storming Workshops												
Meet to discuss district priorities for CAT 1 projects												
District Staff agrees on CAT 1 priorities for entire 4 YR period FY 21 thru FY 24												
TPD staff update TxDOTCONNECT for CAT 1 Candidates												
Certify 24 Month Letting Schedule												
 TxDOT Transportation Commission approve UTP and STIP 												
 Maintenance Supervisors and Area Engineers begin to discuss seal coat candidate projects 	E											
 Begin Driving roads with Maintenance Supervisor and Area Engineer ranking seal coat candidates 												
 Select seal coat projects for next FY 21 and 22, all remaining candidates get moved to FY 23 and 24 												
 Coding seal coat projects for CAT 1 funding and MMS for 13045 funding 												
Begin final review and make updates/corrections												
Discuss 4 YR pavement plan with Maintenance Division												
Provide info and maps to Maintenance Supervisors and Area Engineers to plan workload												

- Integrated Data Sources:
 - PMIS Condition Maps
 - 4-yr PMP Map
 - Surface Age Map
 - Skid Condition Map
 - PA Condition Forecasts
 - PA Scenarios
 - CRIS Heat Maps
 - Wet Surface Crash Report
 - Rumble Strip/Profile Map
 - Cable Barrier Map
 - AADT and % Truck
 - Rural vs Urban
 - Funding Constraints

- Boots on the Ground Team:
 - Director of Maintenance
 - Director of Operation
 - Director of Planning and Development
 - Area Engineer
 - Maintenance Supervisor
 - Pavement Engineer
 - Design Engineer
 - Maintenance Administrator
 - Engineer in Training



System Safety Incorporated

- System Safety is incorporated into all projects
- Rumble strips are installed on all projects with a hotmix asphalt surface
- Profile markings are installed on all projects with a seal coat surface
- Safety end treatments are upgraded or installed on all rehab projects
- All guardrail is upgraded to current standards on all rehab projects
- Items for backfilling edges are included to address drop offs



- Performance and data driven
- System safety incorporated
- Perform drive along with Directors for prioritizing projects
- Identify the best practice and provide feedbacks to district planning and project selection process annually
- Good QA/QC project information for the TAMP consistency check









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TAM and STIP

...and 10-Year Plan

June 2020

William Johnson Performance and Asset Management Branch Manager

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COLORADO

Performance Management Structure

Department of Transportation





CDOT Annual

Report

Environment &

Renewables

National

Performance

Measures

Economy

Executive

Director's Goals

Strategic

Pipeline of

Projects

YourCDOTDollar

Website



What are "needs" in the 10-year Plan?

Each of CDOT's 12 asset classes has a performance measure and a 10-year performance target. "Needs" in the 10-year Plan represent projects that should be prioritized to enable CDOT to reach the 10-year target.

Needs are based on:

- Current condition
- Forecasted condition
- Life-cycle treatment options
- Major TAM projects that would not normally be funded due to cost constraints
- MLOS based on historical funding by MTC Section

Needs are a game plan if funding is available.

NOT A PROMISE LIST



Relationship to Budget

Construction

Maintenance & Operations

Multi-Modal Services

• Sub-allocated (Pass-Through) Programs Asset Management

Safety

Mobility



Planning Process



The GOAL

• A 10-year strategic pipeline of projects, inclusive of all modes, informed both by a data-driven needs assessment and public and stakeholder input.



Capital Projects

Stakeholder heavy process (hundred + meetings) Fiscal constraint = expected revenue Corridor-based within STIP and RTPs

Asset Management

Informed by outreach process but built internally Fiscal constraint = doubling of current budget Corridor-based within STIP



COLORADO Department of Transportation

Asset Management System



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10-Year List of Needs

Program of Projects

STIP Development Process - TAM



Generalized Project Selection and Prioritization Process



COLORADO Department of Transportation

Project ID 1234		SH 135 (P	GV7011)									
Description							Location					
Minor Rehabilitation Medium Volume Category					MP 0 to A	AP 27.48						
6 Inch Striping												
BRT Lane												
Multi Use Path Im	nprovemer	nts										
Bridge Repairs							$\mathbf{\nabla}$.					
Wildlife Mitigatio							\sim					
Shoulder Widenin												
Hot Spots Improv	ement					\mathbf{O}						
ADA	FASTER	NHS	MASH				Jurisdict	ion				
0	0	•	•				Gunnison					
Funding Source	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	(\$M) TOTAL
FASTER	\$1.20	\$1.20										\$2.40
NHPP												
HUTF			\$0.30									\$0.30
SB1												
SB267												
SUR												
MMOF												
HSIP												
ITM	\$0.30			\$0.10								\$0.40
WSWS		\$1.00				45.00		A 1 A A A		4- 00		\$1.00
UNFUNDED					\$1.10	\$5.80	\$0.10	\$10.00		\$7.00	\$0.10	\$24.10
Total												\$28.20

Challenge

How can the new 10-Year
 Plan be used to optimize
 bundling of treatments and
 delivery of the program?

EXAMPLE STIP/Plan

Project Based Strategies

Asset Management

- Add surface treatment overlays from MP X to Z
- Bridge replacement at MP X
- Construct intersection/interchange
 improvements at MP X

Mobility

- Provide and expand transit bus services from Gunnison to Crested Butte
- Promote carpooling and vanpooling from Gunnison to Crested Butte
- Promote use and maintenance of variable message signs
- Provide bicycle/pedestrian facilities from MP X to Z

Safety

- Improve hot spots from MP X to Z
- Deploy 6 inch striping from MP X to Z
- Improve wildlife crossings from MP X to Z
- Expand shoulders from MP X to Z
- Add turn lanes at MP X



TAMP AND STIP INTEGRATION FHWA/AASHTO TAM WEBINAR 44 JUNE 17, 2020




VALUE OF OHIO'S TRANSPORTATION ASSETS





TAKING CARE OF WHAT WE HAVE





OHIO STIP PROCESS

- ODOT updates the STIP biennially
- Starts with rural consultation meetings
- Coordination continues between
 ODOT and our local agencies
- Performance based planning process utilizing measures collected and implemented in ODOT's Asset Management program





ODOT'S STRATEGIC PLAN

- S Improve Safety
- **○** Take Care of What We Have
- So Make Our System Work Better
- Signature Capacity







ODOT'S STRATEGIC PLAN - CSF





ODOT'S STRATEGIC PLAN - CSF





DISTRICT WORK PLAN PROCESS

- **Solution** Sectors Control Success Factors (CSF)
- Asset Inventory and Inspection (March-November)
- Pavement Mgmt Optimization (December)
- District Allocations (January)
- Districts Draft Project Selections (January March)
- Finalize District Projects (April)
- Project Delivery (Continual)
- On-going District Monitoring (Quarterly)



DISTRICT WORK PLAN PROCESS

Pavements

- 81.99 percent (%) compliance over 6 years
- Percentage of System with Pavement Treatment
 - Priority 39.94%
 - © General 51.27%
 - © Urban 53.51%

Weighted Average PCR by Fiscal Year

System Condition	2019	2020	2021	2022	2023	2024	2025	2026
District 5 Priority	85.76	84.31	84.99	86.57	87.52	85.61	86.07	83.65
District 5 General	84.47	83.13	82.87	81.36	80.59	81.29	81.82	82.16



District Multi-Year Work Plan - April 27, 2020

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PAVEMENT MANAGEMENT SYSTEM





INFRASTRUCTURE PROGRAM PLANNING PROCESS

DRAFT DISTRICT PRESERVATION PROGRAM BUSINESS PROCESS FLOWCHART





INFRASTRUCTURE PROGRAM PLANNING PROCESS





CRADLE TO GRAVE ASSET MANAGEMENT PROCESS





MONITOR FOR CONTINUOUS IMPROVEMENT

- **○** Critical Success Factors (CSF)
- **Solution Establish Goals (Performance Targets)**
- ☑ Identify gaps in performance
- Make adjustments to capital/maintenance programs







CMDOT



TRANSPORTATION ASSET MANAGEMENT PLAN AND THE STATE TRANSPORTATION IMPROVEMENT PROGRAM

Jim Ashman

Unit Supervisor Statewide Transportation Planning Division Bureau of Transportation Planning Michigan Department of Transportation



PLANNING AND PROGRAM DEVELOPMENT PROCESS

TRANSPORTATION ASSET MANAGEMENT PLAN



- Required by federal law
- Created and certified every four years
- Consistency documentation submitted annually
- Details management process for NHS pavement and bridge assets

PERFORMANCE MEASURE TARGETS

- MDOT and the MPO's develop NHS condition targets for both pavement and bridge assets
- MDOT coordinates with the MPO's through the target development process to share data and asset management strategies

2015-2016 Interstate Pavement Condition Measure by MPO

		Through I	ane Miles				
Metropolitan Planning Organization Name	Good	Fair	Poor	Total	Good %	Fair %	Poor %
Battle Creek Area Transportation Study	11	42	12	65	17%	65%	18%
Bay County Transportation Plannnig Division	60	31	20	111	54%	28%	18%
Genesee County Metropolitan Alliance	223	101	52	376	59%	27%	14%
Grand Valley Metropolitan Council	123	113	6	242	51%	47%	3%
Kalamazoo Area Transportation Study	77	68	8	153	50%	45%	5%
Macatawa Area Coordinating Council	51	25	0	76	67%	33%	0%
Region 2 Planning Commission	43	76	4	124	35%	62%	3%
Saginaw County Metropolitan Planning Commission	100	76	19	195	51%	39%	10%
Southeast Michigan Council of Governments	887	1054	221	2162	41%	49%	10%
Southwest Michigan Planning Commission	28	117	21	166	17%	70%	13%
Tri-County Regional Planning Commission	116	231	75	422	28%	55%	18%
West Michigan Metropolitan Transportation Planning Program	43	5	0	48	89%	11%	0%
Metropolitan Planning Organization Total	1761	1940	438	4139	43%	47%	11%
Statewide Interstate Pavement Condition Measure	2702	2652	517	5872	46%	45%	9%

STATE OF GOOD REPAIR CONDITION GOALS

- Michigan State Transportation Commission (STC) adopted long-term goals for trunkline condition based on the RSL performance measure
- MDOT project selection attempts to meet these goals through the constrained investment strategy.



TAMP INVESTMENT STRATEGIES

Achieve the national goals

Preserve condition of pavement and bridge assets

Achieve and sustain a desired State of Good Repair

Constrained Investment



- Constrained to available funding
- Minimizes Risk
- No financial gap
- Manages assets for their wholelife

It is the best achievable strategy consistent with the overall goals & objectives established by the STC.

MDOT PROGRAM BASED ON THE CONSTRAINED INVESTMENT STRATEGY

	FY 2020-2024 Annual Average (millions)	Five-Year Tota (millions)	
EPAIR AND REBUILD ROADS AND BRIDGES			
REPAIR AND REBUILD ROADS			
Rehabilitation and Reconstruction	\$611	\$3,056	
Capital Preventive Maintenance	\$106	\$528	
Freeway Lighting	\$0.36	\$1.8	
Freeway Resurfacing Program	\$20	\$100	
Non-Freeway Resurfacing Program	\$47	\$235	
Trunkline Modernization	\$203	\$1,015*	
TOTAL - Repair and Rebuild Roads	\$987	\$4,936	
REPAIR AND REBUILD BRIDGES	1		
Bridge Replacement	\$59	\$297	
Bridge Preservation	\$79	\$395	
Big Bridges	\$31	\$157	
Special Needs	\$21	\$106	
Culverts-Capital	\$2	\$10	
Blue Water Bridge-Appropriated Capital Outlay Projects	\$3	\$15	
TOTAL - Bridges	\$196	\$980	
ROUTINE MAINTENANCE	\$420	\$2,099	
TOTAL - REPAIR AND REBUILD ROADS AND BRIDGES	\$1,603	\$8,014	
SAFETY AND SYSTEM OPERATIONS	\$191	\$953	
OTHER			
Transportation Alternatives	\$7	\$35	
Roadside Facilities	\$9.5	\$47	
Workforce Development	\$9	\$45	
Non-Federally Funded Programs	\$51	\$253	
US-31 BUILD Grant	\$7.8	\$39	
TOTAL - FIVE-YEAR TRUNKLINE PROGRAM	\$1,877	\$9,385*	

*Includes \$566 million for FY 2020-2024 for 1-75 Oakland County Segment 3 DBFM

HIGHWAY PROGRAM INVESTMENT

ASSET CONDITION GAP



Investment constrained to available funding results in asset condition shortfall or "gap"



STRATEGY TO IMPROVE NETWORK IMPLEMENTED THROUGH CALL FOR PROJECTS PROCESS

FUNDING IS ALLOCATED BASED ON NETWORK IMPROVEMENT NEEDS

	weight		Bay	Grand	Metro	North	Southwest	Superior	University	Statewide
		Cost								
	10.0%	% Lanemiles - Urban over 50K Pop.	6.9%	6.2%	72.5%	0.0%	6.1%	0.0%	8.3%	100.0%
25%	10.0%	TAMP (I & II) Cost	15.9%	11.4%	14.6%	14.5%	16.1%	12.6%	14.9%	100.0%
	5.0%	TAMP (III & IV) Cost	17.0%	9.6%	13.2%	17.1%	17.5%	12.3%	13.3%	100.0%
		Condition								
	6.0%	% PCM=Fair or Poor TAMP I	16.8%	9.4%	29.5%	4.8%	12.7%	0.3%	26.4%	100.0%
	3.5%	% PCM=Fair or Poor TAMP II	21.7%	22.7%	17.7%	4.2%	8.5%	0.0%	25.2%	100.0%
	3.5%	% PCM=Fair or Poor TAMP III	15.2%	9.4%	26.6%	13.1%	8.1%	15.4%	12.2%	100.0%
50%	2.0%	% PCM = Fair or Poor TAMP IV	21.6%	16.2%	1.7%	16.7%	14.0%	14.2%	15.5%	100.0%
20	14.0%	% RSL <=7 - TAMP I	15.5%	7.2%	31.9%	6.6%	12.9%	0.9%	24.9%	100.0%
	8.0%	% RSL <=7 - TAMP II	23.6%	20.9%	18.5%	3.6%	6.1%	0.0%	27.4%	100.0%
	8.0%	% RSL <=7 - TAMP III	15.5%	8.4%	25.9%	13.4%	7.6%	16.6%	12.5%	100.0%
	5.0%	% RSL <=7 - TAMP IV	23.7%	15.1%	2.0%	17.4%	13.2%	13.5%	15.0%	100.0%
	_	Usage								
	5.0%	% VMT RSL<=7	13.3%	10.5%	37.9%	5.5%	9.0%	2.7%	21.1%	100.0%
25%	7.0%	% Commercial VMT RSL <=7	11.5%	10.2%	33.0%	4.4%	13.4%	2.7%	25.0%	100.0%
5	7.0%	% Lanemiles RSL <=7 Comm AADT 5,000+	2.8%	7.8%	45.7%	0.0%	13.8%	0.0%	29.9%	100.0%
	6.0%	% Lanemiles RSL <=7 AADT 50,000+	7.1%	4.7%	59.3%	0.0%	6.6%	0.0%	22.4%	100.0%
			Bay	Grand	Metro	North	Southwest	Superior	University	Statewide
	100.0%	Resulting 2025 New Target with updated data	\$ 93.39	\$ 67.45	\$ 205.62	\$ 47.00	\$ 71.20	\$ 33.45	\$ 128.39	\$ 646.50
			14.4%	10.4%	31.8%	7.3%	11.0%	5.2%	19.9%	100.0%
	_	2024 Target approved with RPI	\$89.53	\$63.98	\$204.89	\$42.63	\$70.31	\$31.78	\$143.38	\$646.5
	_	2024 Fulger approved warran	\$00.00	000.00	\$204.00	012.00	¢10.01	001.10	• 140.00	0.0%
	_		4.3%	5.4%	0.4%	10.2%	1.3%	5.2%	-10.5%	
	Difference (2024 to 2025)		\$3.9	\$3.5	\$0.7	\$4.4	\$0.9	\$1.7	(\$15.0)	
	-				40.1			-		
			21%			11%				100%
		Final FY 2025 After Metro re-distribution	\$ 104.27	\$ 75.32	\$ 154.22	\$ 52.48				\$ 646.50
			11.7%	11.7%	-25.0%	11.7%	11.7%	11.7%	11.7%	



STRATEGIC DIRECTION

Templates feature fix requirements that restrict project selection to prioritize network improvement and cost efficiency.



PROJECT SELECTION

The program is approved through a centralized approval committee.

Projects within MPO boundaries approved and included in TIPS

TIPS and non-MPO projects included in STIP

STIP PROJECT INCLUSION

IMPLEMENTATION DOCUMENTATION

 Consistency Determination confirms integration of the TAMP and project selection and planning processes.

2018 TAMP Constrained Pavement Investment Strategy Implementation

W ork Type	Initial TAMP 2018 Allocation (Millions)	2018 Obligated Funds (Millions)
Reconstruction	\$195	\$169
Rehabilitation	\$218	\$240
Preservation	\$170	\$181
Initial Construction	\$0	\$0
Total	\$583	\$590

FUTURE PROCESS IMPROVEMENT

- Included additional asset classifications into the TAMP
- Update online maps for pavement and bridge condition
- Local agency investment strategy development and monitoring

QUESTIONS?

James Ashman

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Questions?

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Re-Evaluating TAM Targets Wednesday, October 21, 2020– 2:00 PM EST

TAM & System Resilience Wednesday, December 16, 2020– 2:00 PM EST

Adding New Assets to the TAM Program Wednesday, February 17, 2021–2:00 PM EST More to follow!







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