

# PennDOT Transportation Asset Management Plan Implementation

July 29, 2021

The Pennsylvania Department of Transportation (PennDOT) developed and submitted its 2019 Transportation Asset Management Plan (TAMP) in accordance with [23 U.S.C. 119](#) and Federal Highway Administration (FHWA) rulemaking 2125-AF57.

This companion document verifies that PennDOT is implementing its TAMP, with the overall aim of achieving and sustaining a state of good repair over the life cycle of Pennsylvania's transportation assets and preserving the condition of the National Highway System (NHS).

### Integration of the TAMP into Planning Processes for STIP

The TAMP commits PennDOT to two overarching requirements:

- Meeting FHWA minimum condition thresholds for NHS pavements and bridges.
- Transitioning from “worst-first” programming to lowest life-cycle cost (LLCC) asset management.

Achieving both requirements is challenging, primarily because funding is inadequate to cover the size and age of Pennsylvania's NHS roads and bridges. Additionally, attempting to meet condition targets while managing to LLCC is really two separate and largely conflicting approaches, particularly when funding is insufficient to invest in reducing the percentage of poor pavements and bridges while also investing in preventative maintenance on structures in good and fair condition. Further, overall funding has become unhinged from the actual needs, forcing needed projects further out in time and making little room for any new projects, let alone a change in methodology to select them.

To address these issues and integrate the TAMP into the planning process for the State Transportation Improvement Program (STIP), PennDOT has:

- Revised its General and Procedural Guidance documents, which can be viewed at <https://talkpatransportation.com/transportation-planning/STIP>, that provide detailed direction for Pennsylvania's Metropolitan Planning Organizations and Rural Planning Organizations (MPOs/RPOs) and PennDOT staff for selecting projects in a manner that complies with state and federal requirements and is consistent with statewide priorities. The document is to be used to develop Twelve-Year Plans and Transportation Improvement Programs (TYPs/TIPs), which are rolled up into the STIP. Specifically, the document:

- Incorporates the TAMP in the planning process.
- Allows previously programmed projects to continue to be delivered as scheduled, as they have already been funded for design and/or other pre-construction phases, which is reflected in the TAMP investment strategy.
- Explains LLCC asset management, and why it is an improvement over worst-first prioritization.
- Discusses the new Bridge Risk Score that assists with risk-based project prioritization.
- Advises how to handle TIP carryover projects in the transition to LLCC programming.
- Discusses TAMP requirements in light of substantial needs on the non-NHS portion of the system.
- Explains how the output of the Pavement Asset Management System (PAMS) and Bridge Asset Management System (BAMS) should be used, in combination with professional judgement, to meet condition targets while transitioning to LLCC.
- Revised its Financial Guidance document to introduce PennDOT's new National Highway Performance Program (NHPP) funding distribution formula to be applied beginning in FFY 2023 to allocate highway and bridge funding in accordance with the TAMP and LLCC. The funding formula includes a new Asset Management Factor (AMF) that calculates a county's relative need, considering its inventory of NHS infrastructure, traffic volume, and asset condition. The new funding distribution is outlined in the following table. AMF calculation is discussed in Appendix I of the TAMP.

Allocation of PA NHPP Funds Remaining After Interstate Set-Asides and Statewide Reserves	Sub-Allocation
60% Highways	<ul style="list-style-type: none"> <li>● 25% allocated by Lane-Miles factor</li> <li>● 25% allocated by VMT factor</li> <li>● 25% allocated by Truck VMT factor</li> <li>● 25% allocated by Pavement AMF factor</li> </ul>
40% Bridges > 20 feet	<ul style="list-style-type: none"> <li>● 75% allocated by Bridge Deck Area factor</li> <li>● 25% allocated by Bridge AMF factor</li> </ul>

- Began distribution of guidance to MPOs/RPOs and the PennDOT Districts with additional information on:
  - Transitioning from worst-first to LLCC programming.
  - Applying the new methodology to TIP adjustments.
  - Moving toward “on-cycle” programming with the next TYP.
  - Utilizing PAMS and BAMS tools to assist in TIP/TYP project selection.

The guidance is offered by both PennDOT's Asset Management Division and Center for Program Development and Management. Further guidance and training will be provided as PAMS and BAMS training continue and evolve.

- Continue the update of PUB 575, Developing Regional Long-Range Plans, which includes information on the TAMP and a discussion of requirements and guidance for MPOs/RPOs. The long-range transportation planning process guides development of the TYP and TIP.

### Availability of the TAMP to the Public

The TAMP is available to the public on PennDOT's website at:

<https://www.penndot.gov/ProjectAndPrograms/Asset-Management/Pages/default.aspx>

### Consistency between Actual and Planned Levels of Investment by Work Type

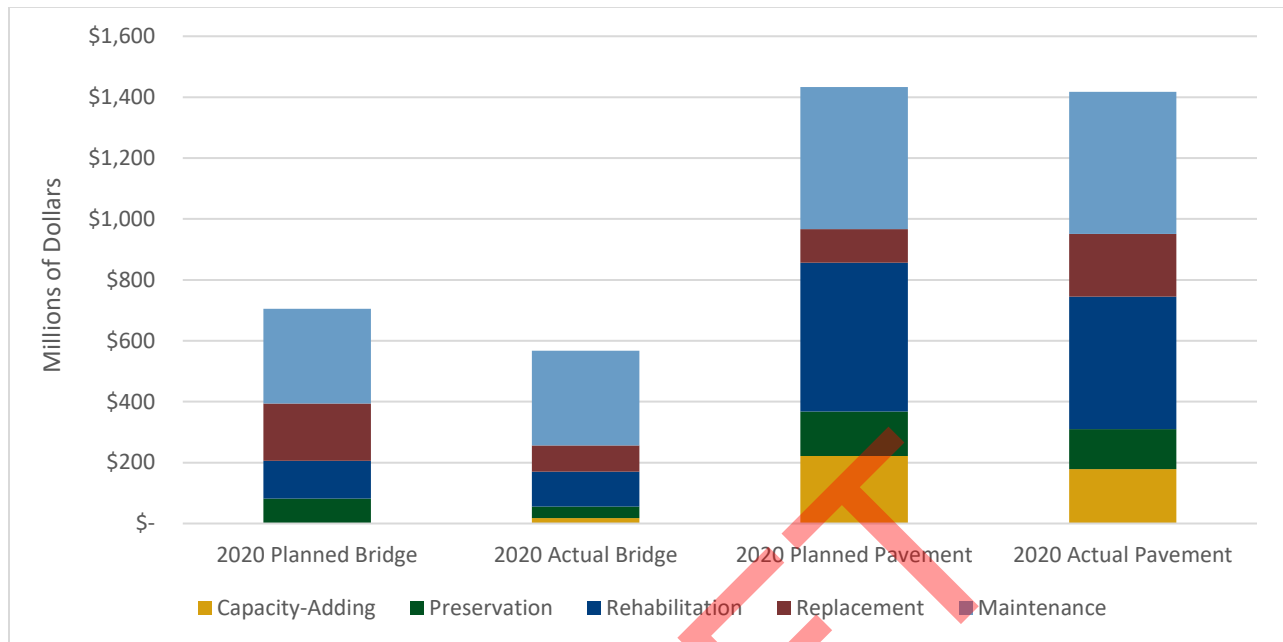
PennDOT's FFY 2020 investments in capacity-adding, reconstruction, rehabilitation, preservation, and maintenance projects were generally consistent with its planned levels of investment during to the COVID-19 pandemic, which temporarily impacted both the ability to perform work and the funding stream that pay for the work.

While the federal stimulus temporarily offset the financial impacts from COVID-19, the pandemic has highlighted both the flaws in the mechanisms in which we collect funding and the overall lack of appropriate funding from all partners for transportation. Specifically, while the pandemic has not shown to have lingering impact on VMT or revenue, the pandemic has proven that the gas tax model is no longer a reliable, practical or sustainable way to adequately fund transportation investments. For more information on PennDOT's revenue options, please visit <https://www.penndot.gov/about-us/funding/Pages/default.aspx>.

In terms of specific impact, projects were not eliminated from the FFY 2020 letting program by work type, but some were delayed until past PennDOT's State FY end date of June 30. This fiscal year delay, in conjunction with the \$400M Federal stimulus, did not result in any appreciable decrease to the work done in the FFY.

The following charts details the FFY 2020 MPMS-based planned vs. the ECMS-reported construction costs based on committed project let dates. Please note that this is only for construction costs, and does not include design, ROW or UTL costs, see the Data section for more details.

### FFY 2020 PennDOT investment by asset type:



### FFY 2020 PennDOT investment table:

TAMP Work Types	Bridge		Pavement	
	2020 Planned	2020 Actual	2020 Planned	2020 Actual
Capacity-Adding	\$ 73,121.00	\$ 18,272,591.70	\$ 221,391,015.00	\$ 178,407,511.24
Preservation	\$ 81,470,945.00	\$ 37,197,965.69	\$ 146,895,828.00	\$ 132,114,759.89
Rehabilitation	\$ 123,917,961.00	\$ 114,450,739.05	\$ 487,753,443.00	\$ 434,372,652.13
Replacement	\$ 189,050,701.00	\$ 86,609,205.27	\$ 110,928,094.00	\$ 206,187,981.44
Maintenance	\$ 310,991,530.40	\$ 310,991,530.40	\$ 466,487,295.60	\$ 466,487,295.60
<b>Total</b>	<b>\$ 705,504,258.40</b>	<b>\$ 567,522,032.11</b>	<b>\$ 1,433,455,675.60</b>	<b>\$1,417,570,200.30</b>

TAMP Work Types	Bridge		Pavement	
	2020 Planned	2020 Actual	2020 Planned	2020 Actual
Capacity-Adding	0%	3%	15%	12%
Preservation	12%	5%	10%	9%
Rehabilitation	18%	16%	34%	30%
Replacement	27%	12%	8%	14%
Maintenance	44%	44%	33%	33%
<b>Total</b>	<b>100%</b>	<b>80%</b>	<b>100%</b>	<b>99%</b>

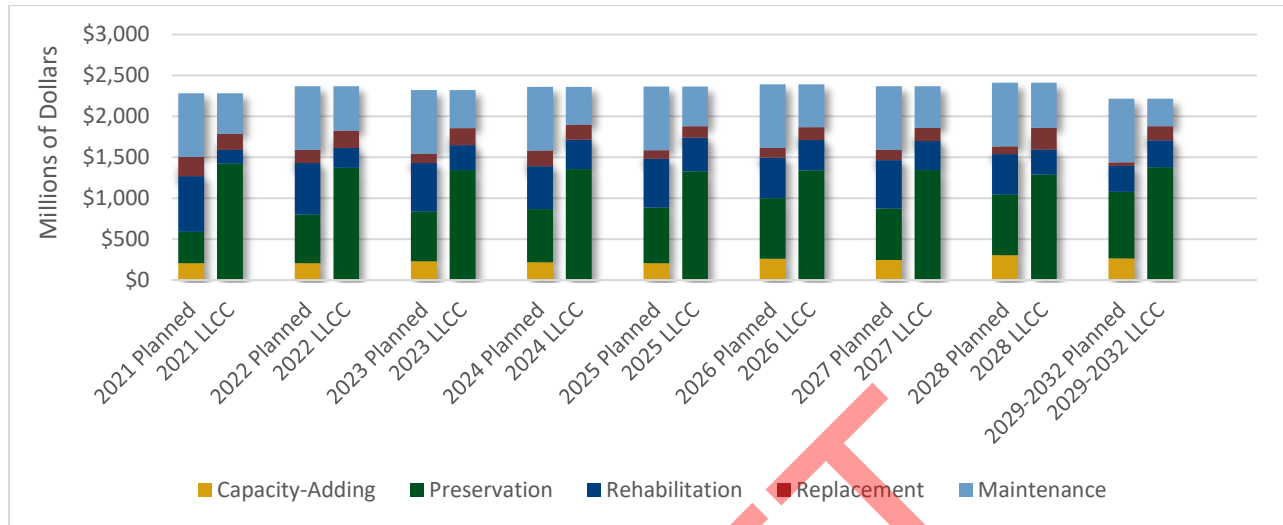
**Data:**

These values are reported utilizing MPMS for planned and ECMS for actual, which are existing and established systems within PennDOT that are designed for efficient planning and execution of projects at a large state DOT. These systems were not designed to provide enterprise level financial reporting, and so there is some approximation in calculations. Data pre-qualifications include:

- Data from ECMS and MPMS are as of 6/4/21
- Graphs 1 and 3 are limited to construction phase due to system limitations, i.e. difficulty matching potentially multiple ECMS contracts for design, ROW, UTL to one construction project and cross referencing that to MPMS.
- ECMS has carry-over spending that is currently difficult to exclude from the analysis
- Future submissions will try to address system limitations through planned system upgrades and calendar based manual pulls.

For future investment forecasting, the following chart labeled “Planned Investment by Work Type and Year” shows the MPMS-based planned investment by work type and BAMS/PAMS based LLCC investment recommendation. As stated in the TAMP, previously programmed projects would remain on the TIP to retain the investment already made in their planning and project development. As projects are added to the TIP, there will be a focus on moving toward LLCC project recommendations, such that we expect over the years that less of the planned projects will be carryover and more will be LLCC based. Therefore, while directly comparing BAMS/PAMS recommendations to previously programmed projects is not prudent, it is valuable to look at the trend over time to verify that the mix of work types for planned projects is becoming more similar to the ideal LLCC recommendations from BAMS/PAMS in each subsequent year. It should be noted that the current forecasts include both the NHS and non-NHS, as PennDOT must not lose focus on maintaining the existing non-NHS network and intends to include them in the next TAMP.

Planned Investment by Work Type and Year:



Note: Years 2029-2032 are the average of the 4 years



U.S. Department  
of Transportation  
**Federal Highway  
Administration**

**Pennsylvania Division**

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In Reply Refer To:  
PPM-PA

Transportation Asset  
Management Plan, Annual  
Consistency Determination

July 29, 2021

Michael Keiser, P.E.  
Acting Deputy Secretary for Highway Administration  
Pennsylvania Department of Transportation  
Harrisburg, Pennsylvania

Dear Mr. Keiser:

This letter serves as the Federal Highway Administration (FHWA) Pennsylvania Division's consistency determination of the Pennsylvania Department of Transportation (DOT) 2021 Transportation Asset Management Plan (TAMP) Implementation, which is an evaluation whether the Pennsylvania DOT has implemented a TAMP that is consistent with the requirements established by 23 U.S.C. 119 and 23 CFR part 515. The Pennsylvania DOT provided implementation documentation dated June 16, 2021 and revised July 29, 2021. Based on the 2019 TAMP, as well as the documentation demonstrating implementation of the TAMP, the FHWA has determined the Pennsylvania DOT is implementing its TAMP as per 23 CFR 515.13(b)(2).

We would like to commend you and your staff for the broad participation in development and implementation of the TAMP in accordance with 23 U.S.C. 119. Your commitment to achieve and sustain a state of good repair over the life cycle of the assets and to improve or preserve the condition of the National Highway System (NHS) is noteworthy.

Thank you for all your efforts. If you have any questions, please contact Clint H. Beck, P.E. at [clint.beck@dot.gov](mailto:clint.beck@dot.gov) or (717) 221-3718.

Sincerely,

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Alicia Nolan  
Division Administrator

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