AASHTO TAM Guide Book Club

Webinar 4

Improving TAM Financial Planning

For today's polls, visit
menti.com and use the code
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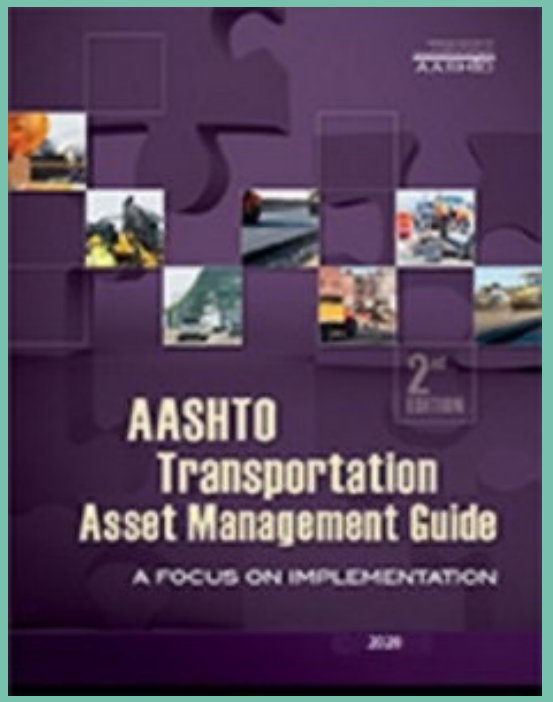
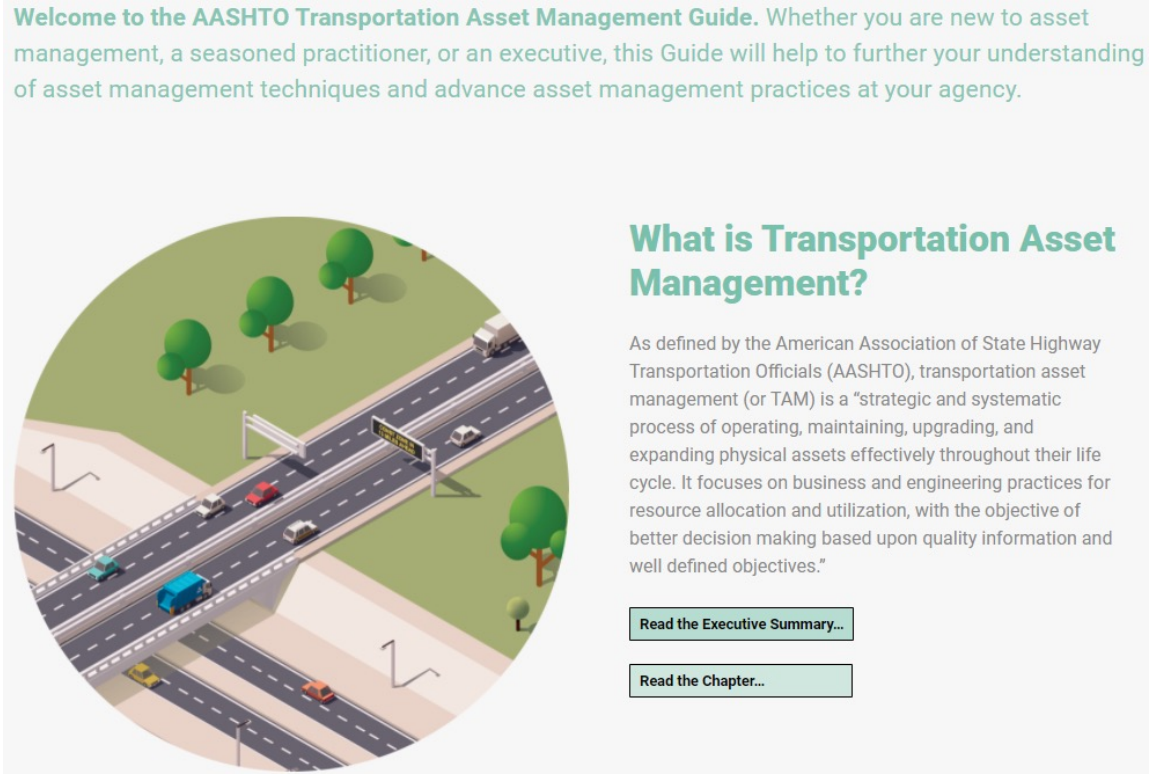


May 13, 2021
Sponsored by FHWA

AASHTO TAM Guide Book Club
Welcome

- Welcome to our fourth installment of the book club
- The TAM Guide Book Club will be meeting again in two weeks on **Thursday 5/27**
  - Topic: Improving Risk Management and Resiliency
- Visit the AASHTO TAM Portal to register and for the complete archive of past webinars



https://www.tam-portal.com/event-directory/tam-webinars/

AASHTO TAM Guide Book Club
Welcome

FHWA is pleased to sponsor this special TAM Guide Book Club Webinar series

- Sharing knowledge is a critical component of advancing asset management practice
- The AASHTO TAM Guide is a valuable resource for agencies starting to develop their next TAMP
- This series is designed to focus on the areas where agencies will derive the greatest benefit:
  - Eight sessions addressing TAMP Implementation, Life Cycle Planning and Management, Financial Planning, Risk and Resiliency, and more

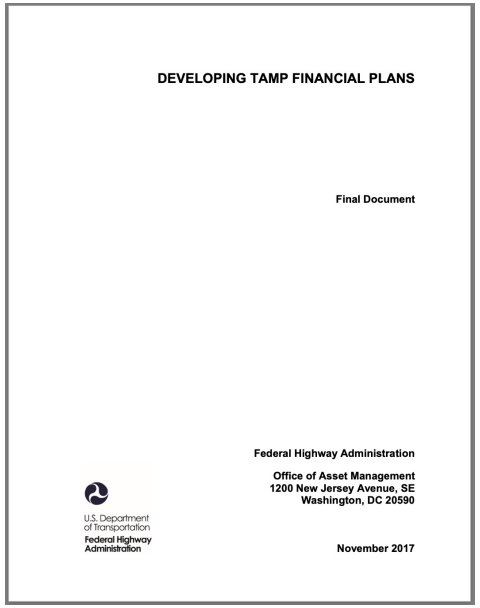
AASHTO TAM Guide Book Club
FHWA Resources

Asset Management Financial Report Series (2015-2017)
https://www.fhwa.dot.gov/asset/plans/financial/hif15018.pdf

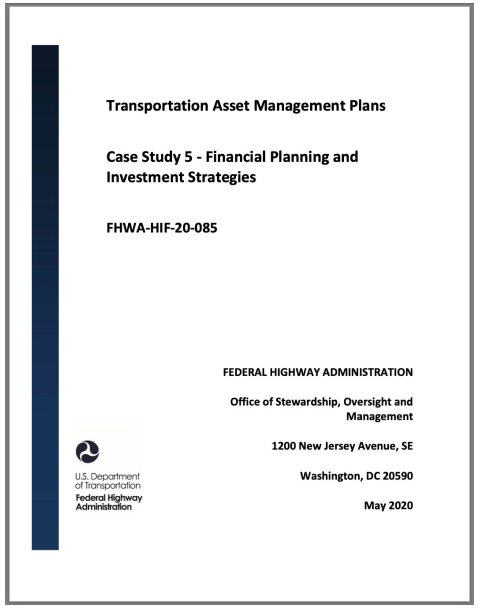
Developing TAMP Financial Plans (2017)
https://www.fhwa.dot.gov/asset/pubs/developing_tamp_fp.pdf

Transportation Asset Management Plans: Case Study 5 – Financial Planning and Investment Strategies (2020)
https://www.fhwa.dot.gov/asset/pubs/hif20085_case5.pdf

2015



2017



2020

AASHTO TAM Guide Book Club
Agenda

2:00 PM	**Introduction** Matt Hardy, AASHTO and Tashia Clemons, FHWA
2:05 PM	**Agenda and Topic Introduction** Bill Robert, Spy Pond Partners
2:15 PM	**Use Case Scenarios** Louis Feagans, Indiana DOT Shannon Foss, Minnesota DOT
2:35 PM	**Guidance Quests – Breakout Sessions**
3:10 PM	**Breakout Session Feedback**
3:20 PM	**Open Discussion and Q&A**

AASHTO TAM Guide Book Club
Menti Polls

For today's polls,
visit **menti.com**
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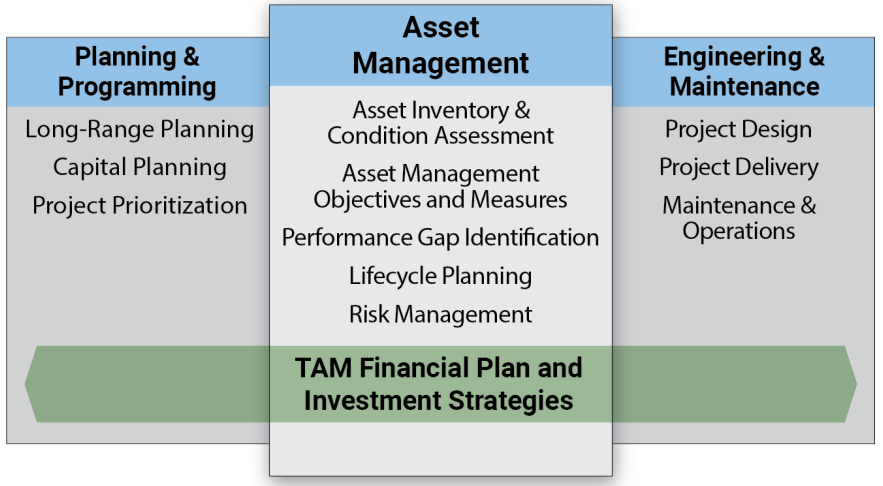
What Is a TAM Financial Plan?

Financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimates of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

23 CFR 515.5

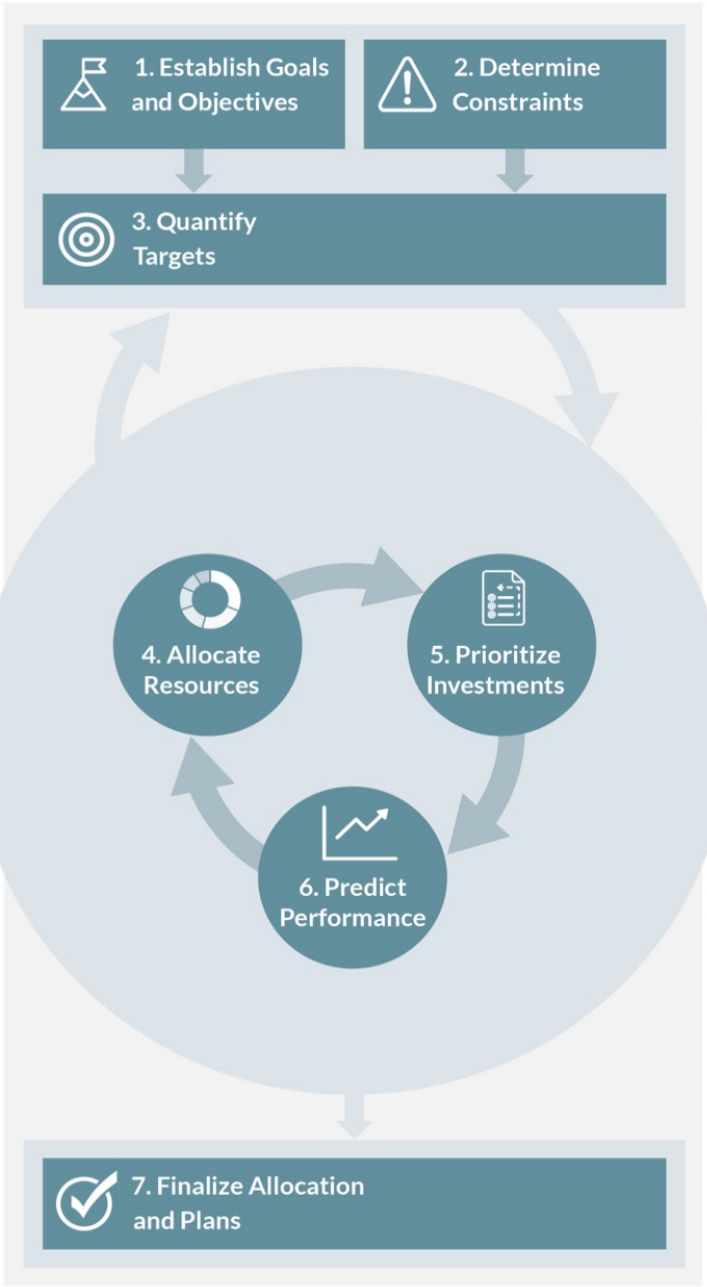


Outputs of the Financial Planning Process

(23 CFR 515.7)

- Estimated cost of expected future work to implement investment strategies contained in the TAMP by year and work type
- Estimated funding levels that are expected to be reasonably available by year
- Identification of anticipated funding sources
- Estimate of the value of the agency's NHS pavement and bridge assets and the needed investment on an annual basis to maintain the value of these assets.

Resource Allocation Process



Process Scope

- Assets included
- Resources allocated
- Investment types considered (maintenance vs. capital)
- Time horizon

Agency Characteristics

- Diversity of assets
- Organizational structure
- Agency size

Stakeholder

- Degree of engagement
- Alignment of mission
- Clarity of goals and objectives

Data and Models

- Asset Data
- Financial Data
- Availability of Predictive Models

Legal Requirements

- Plan development
- Approval process
- Oversight

Relationship of Resource Allocation and the Financial Plan

- Financial plan both informs the resource allocation process and utilizes its results
- Integrated approaches and assumptions needed for
  - Revenue projections
  - Inflation assumptions
  - Treatment of O&M costs
- Asset value calculated through financial planning can serve as a useful measure and help support TAM decisions
- Many linkages between resource allocation and other areas – e.g. life cycle planning and performance management

Checklist

Preparing a TAM Financial Plan

This checklist summarizes the basic steps involved in preparing a TAM financial plan. Note this guidance is based on NCHRP Report 898, and this resource has additional details on each of the steps described here.

☐ Identify and Document Sources and Uses

- Determine the scope of the TAM program
- Establish sources of funding
- Establish funding uses
- Structure the list of sources and uses
- Validate the list
- Document constraints on uses of funding
- Document assumptions concerning the allocation of fixed costs

☐ Forecast Revenues and Expenditures

- Establish roles and responsibilities for revenue forecasting
- Review prior revenue forecasts
- Forecast revenues
- Forecast non-asset management uses
- Determine available funding for asset management
- Document key assumptions

☐ Develop Investment Strategies and Scenarios

- Define investment scenarios
- Identify current and planned projects
- Use management systems to predict future conditions
- Perform initial budget allocation
- Identify candidate projects
- Select projects
- Revise prediction of future conditions
- Finalize funding levels by use
- Perform gap assessment
- Document assumptions and investment strategies

☐ Calculate Asset Value

- Obtain the value calculate for financial statements
- Calculate depreciated replacement cost
- Compare alternative methods for valuation
- Document the calculation using the preferred method
- Incorporate asset value into the financial plan

AASHTO TAM Guide Book Club
Today's Speakers

- **Louis Feagans, PE**
  - Indiana DOT
  - Managing Director of Asset Management
- **Shannon Foss**
  - Minnesota DOT
  - Asset Management Planning Director

Asset Management and Finance at INDOT

Louis E. Feagans, P.E. Managing Director of Asset Management

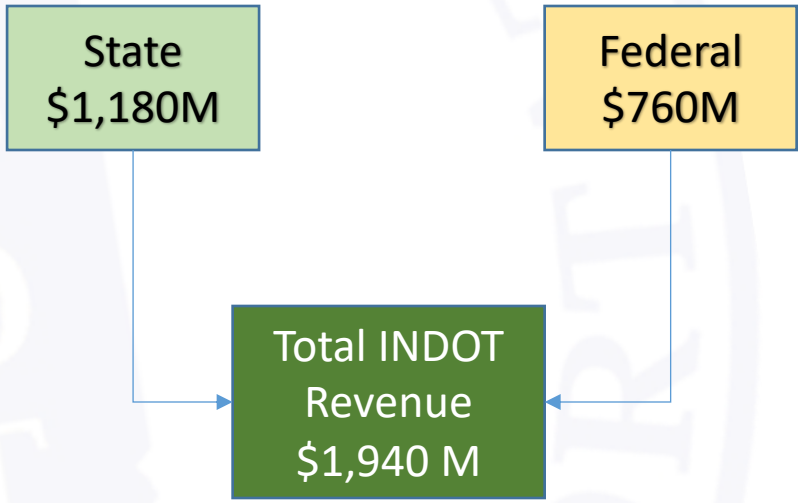
High Level Revenue Sources: Federal / State

New Term: *The "Color" of Money*

"Color" describes how revenue is received and how it can be accessed and used.

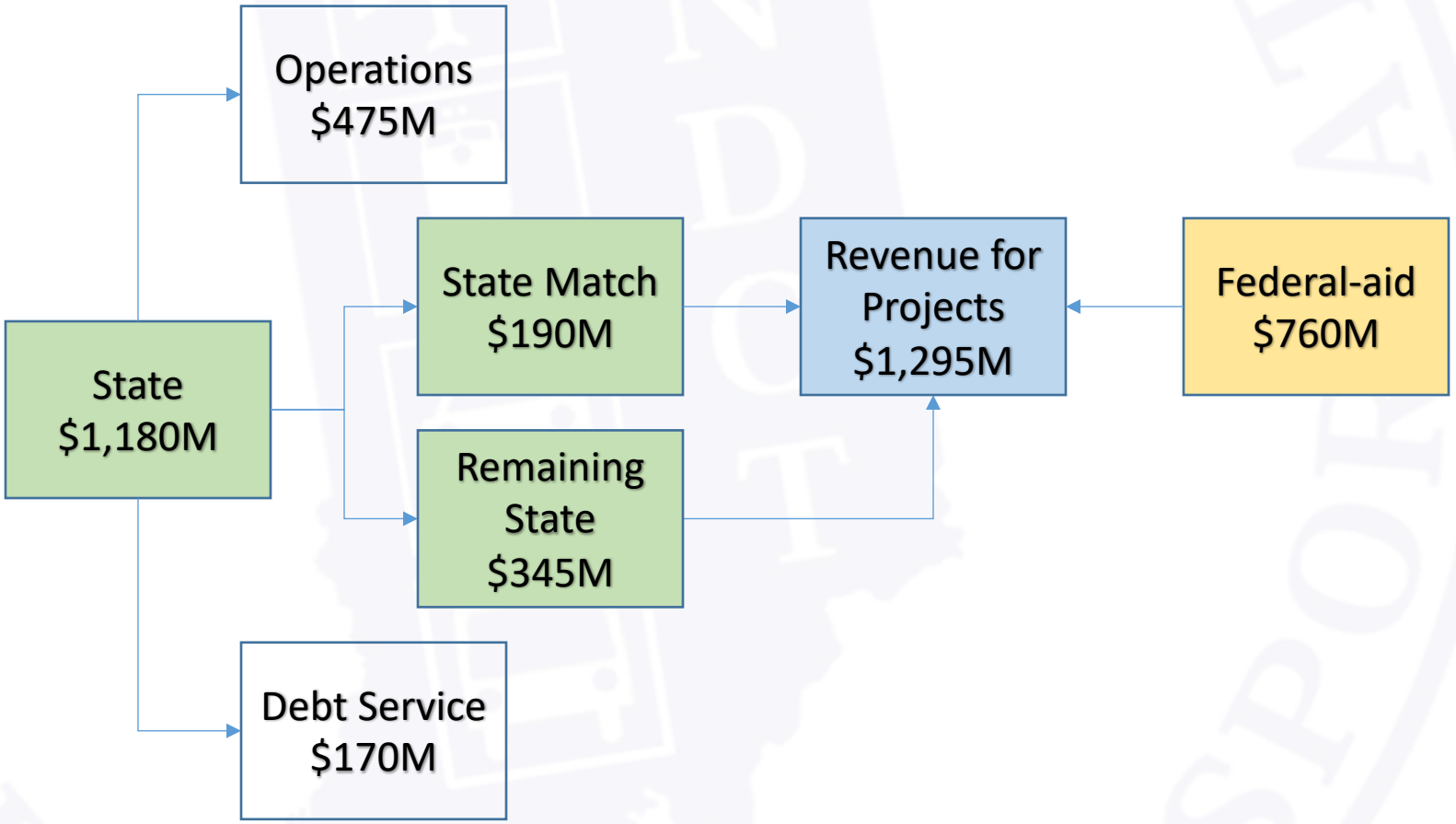
Federal-aid requires State Match

Generally, each $4 of Federal-aid must be matched with $1 of State money

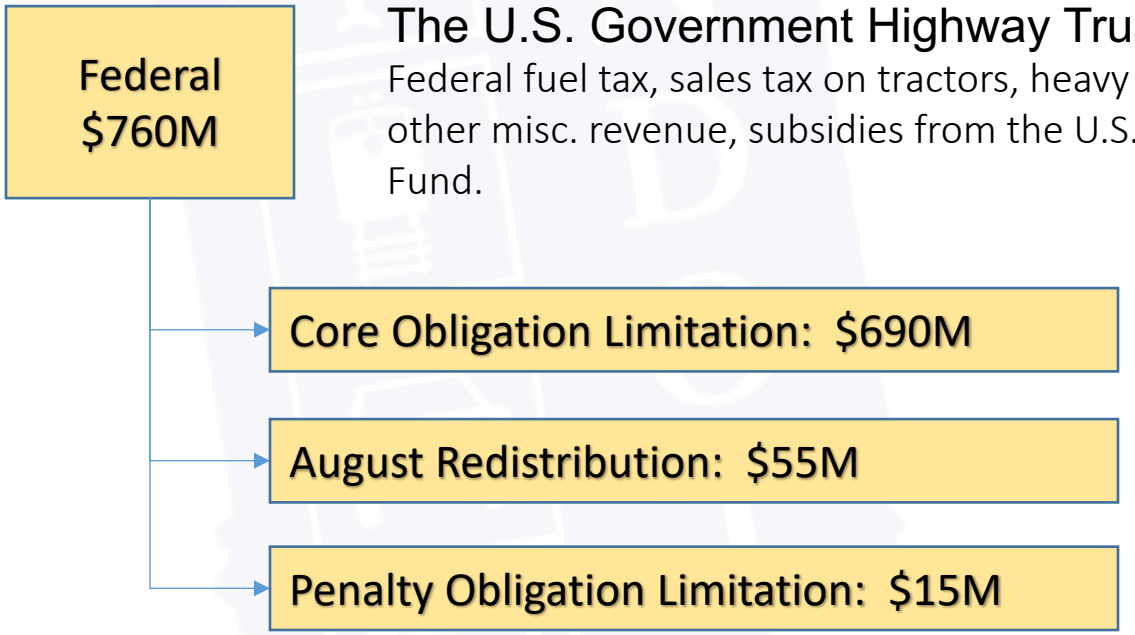


$760M Federal-aid requires $190M State Matching

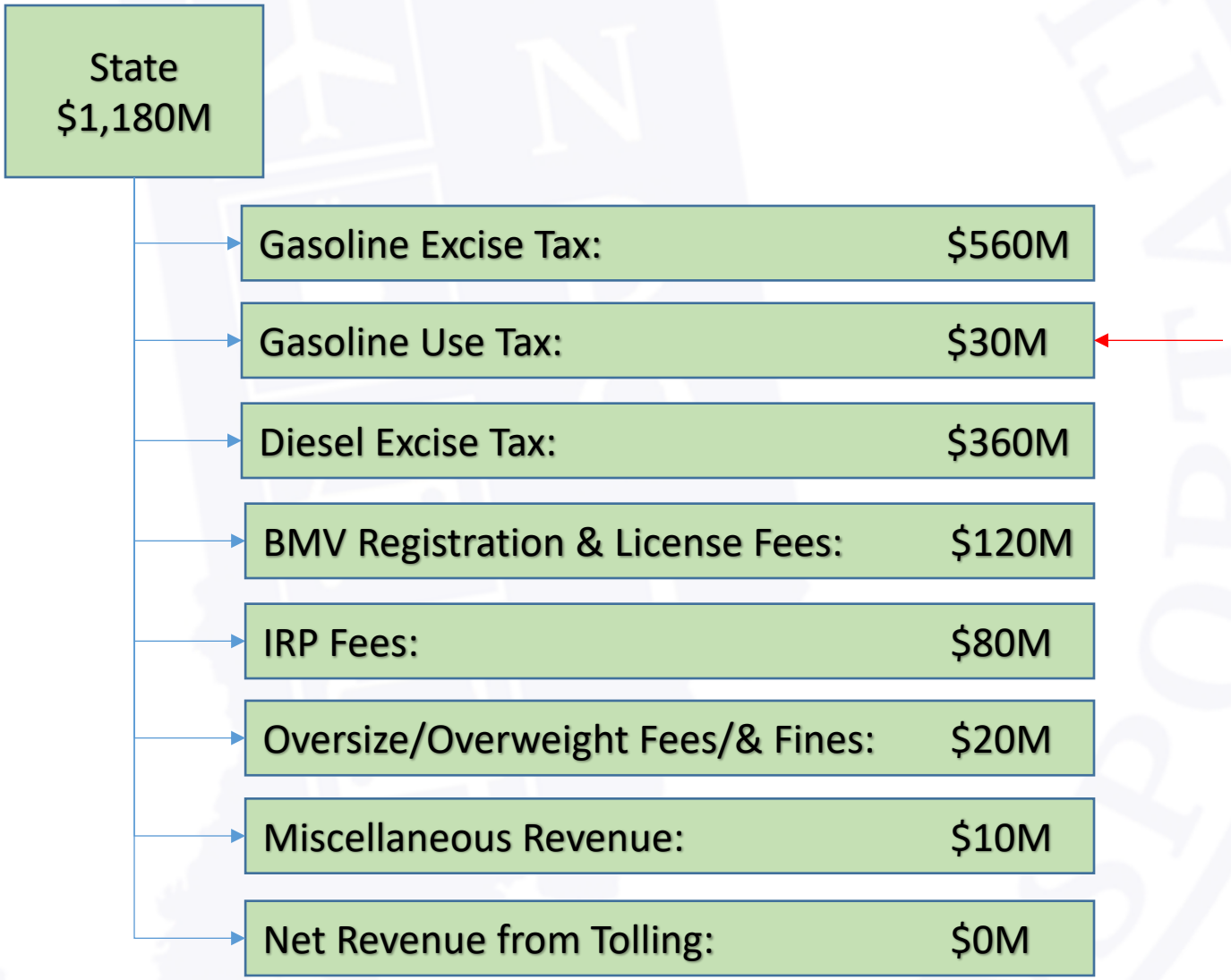
General Flow of FY 2019 Forecasted Revenue



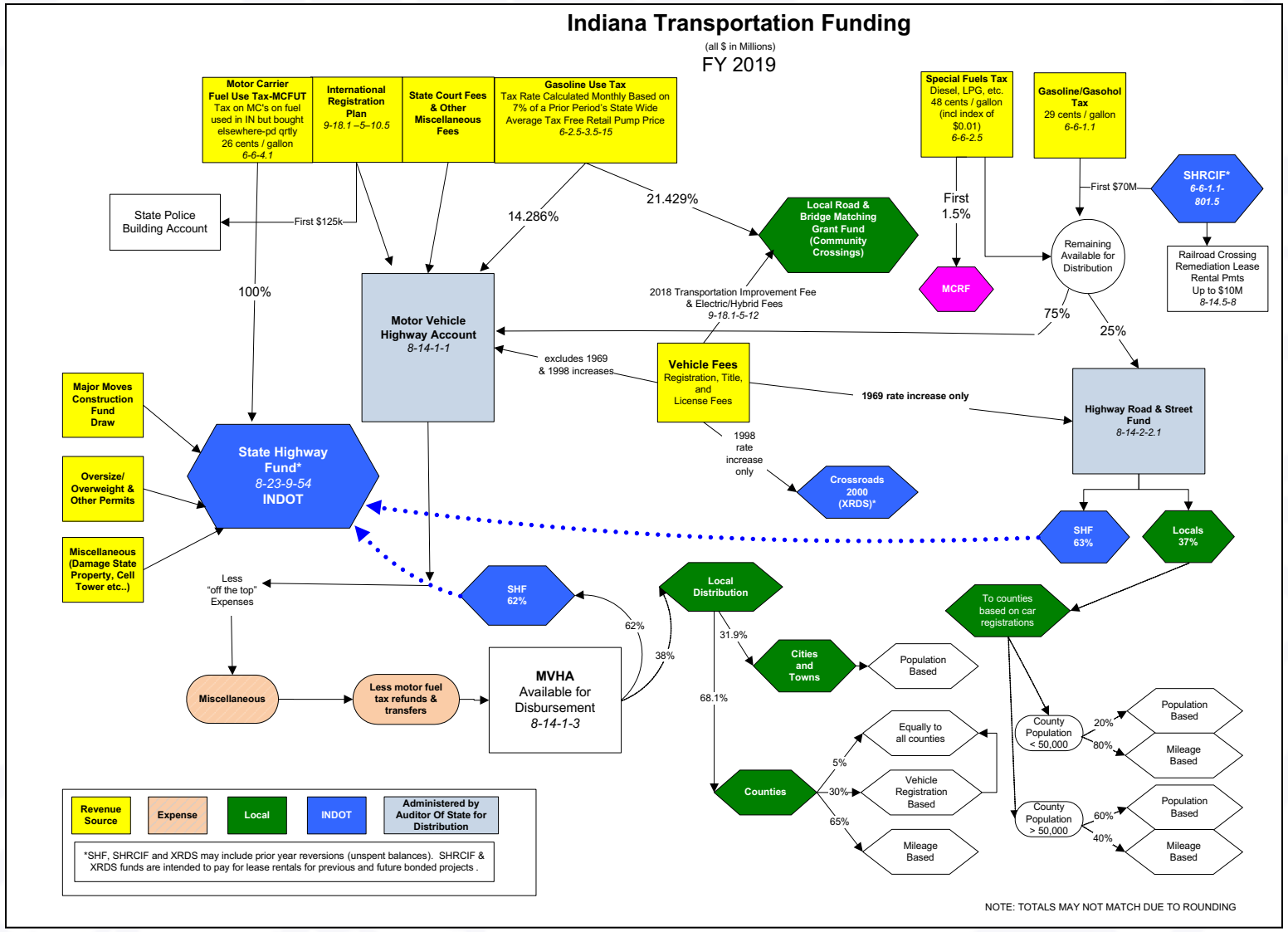
Recurring Revenue Details: Federal



Recurring Revenue Details: State



The “Rat Maze” of INDOT State Funding



http://iga.in.gov/legislative/2018/publications/handbooks/

Agency Goals – Taking INDOT to the Next Level

Deliver Great Service

- Demonstrate accountability by doing what you say you're going to do at all times
- Improve Customer Service responses and issue resolution
  - Be thorough, consistent, and patient, consistently meeting customers' needs
  - Collaborate and communicate effectively with internal and external stakeholders
- Modernize and increase productivity to better improve service offerings
  - Improve construction and maintenance processes and business practices

NextLevel INDIANA

Enhance Indiana's Economic Competitiveness and Quality of Life

- Improve connectivity via multiple modes of transportation
- Increase understanding of Indiana's position as it relates to the autonomous/connected vehicle industry, and undertake initiatives to advance testing and research in the state
- Support and encourage local agencies in their efforts to develop and implement sustainable plans for their futures

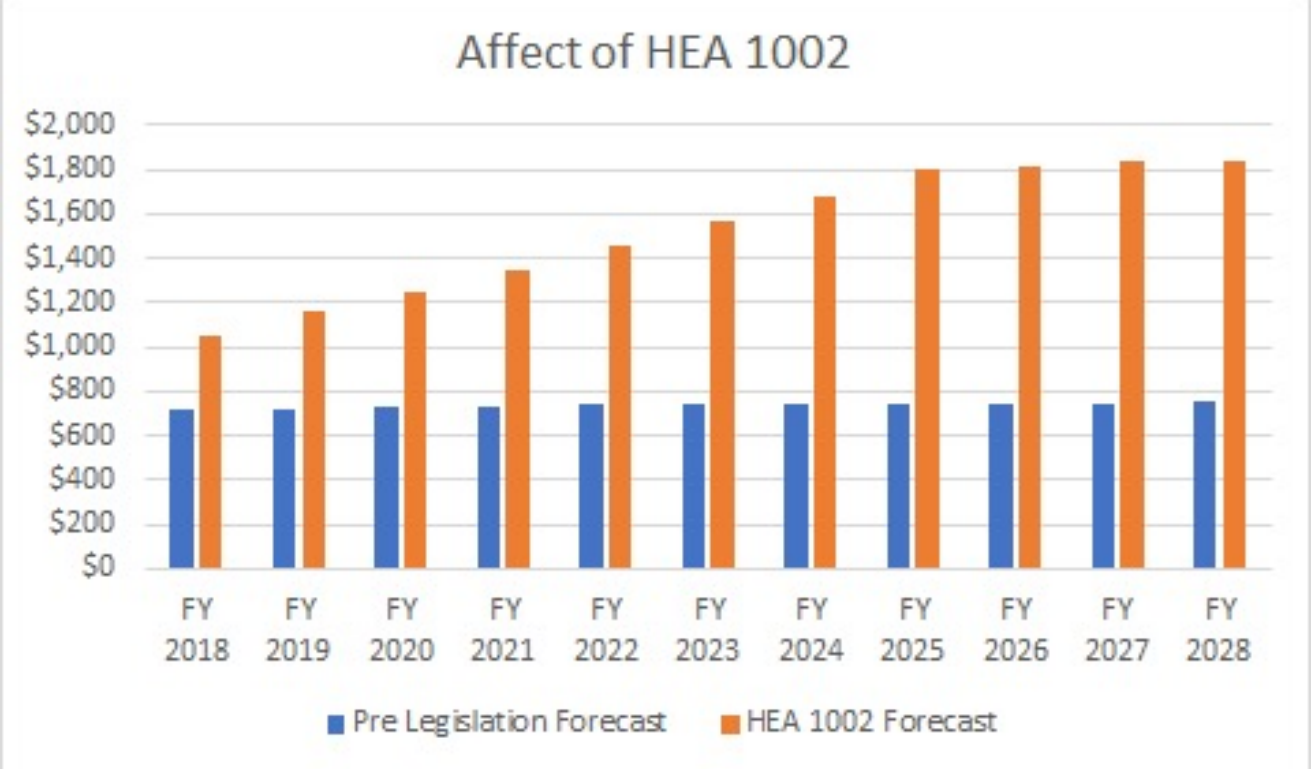
Execute 20-Year Road and Bridge Plan

- Deliver the Next Level Roads plan to improve pavement and bridge quality, safety and mobility
  - Priority given to construction zone safety for workers and motorists
  - Focus on engineering, education, enforcement and emergency response
- Identify continuous improvements of the Asset Management process
  - Strive for improved collaborations with all stakeholders – internal and external
- Convey Next Level construction projects through effective and efficient communication strategies

Develop INDOT's 21st Century Workforce

- Provide more complete job-training capabilities across the agency
- Provide employees with tools and information needed to succeed
- Deliver enhanced leadership training opportunities

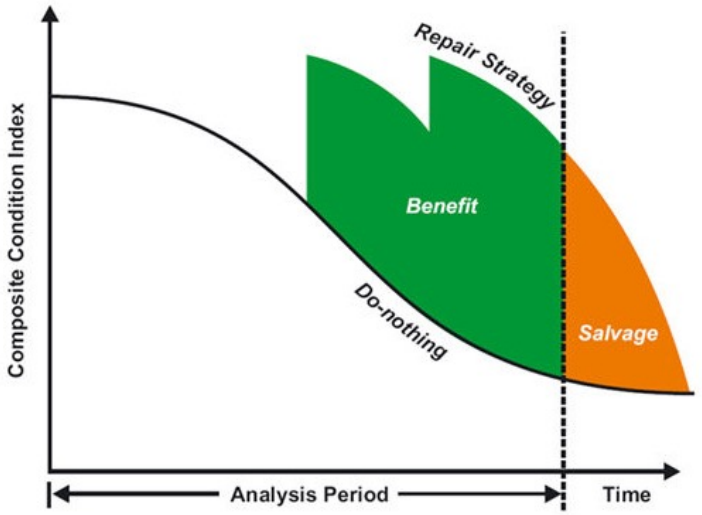
House Enrolled Act 1002 - Transportation Funding



- Passed in 2017
- Fuel tax increase, various other mechanisms to shift funding to transportation

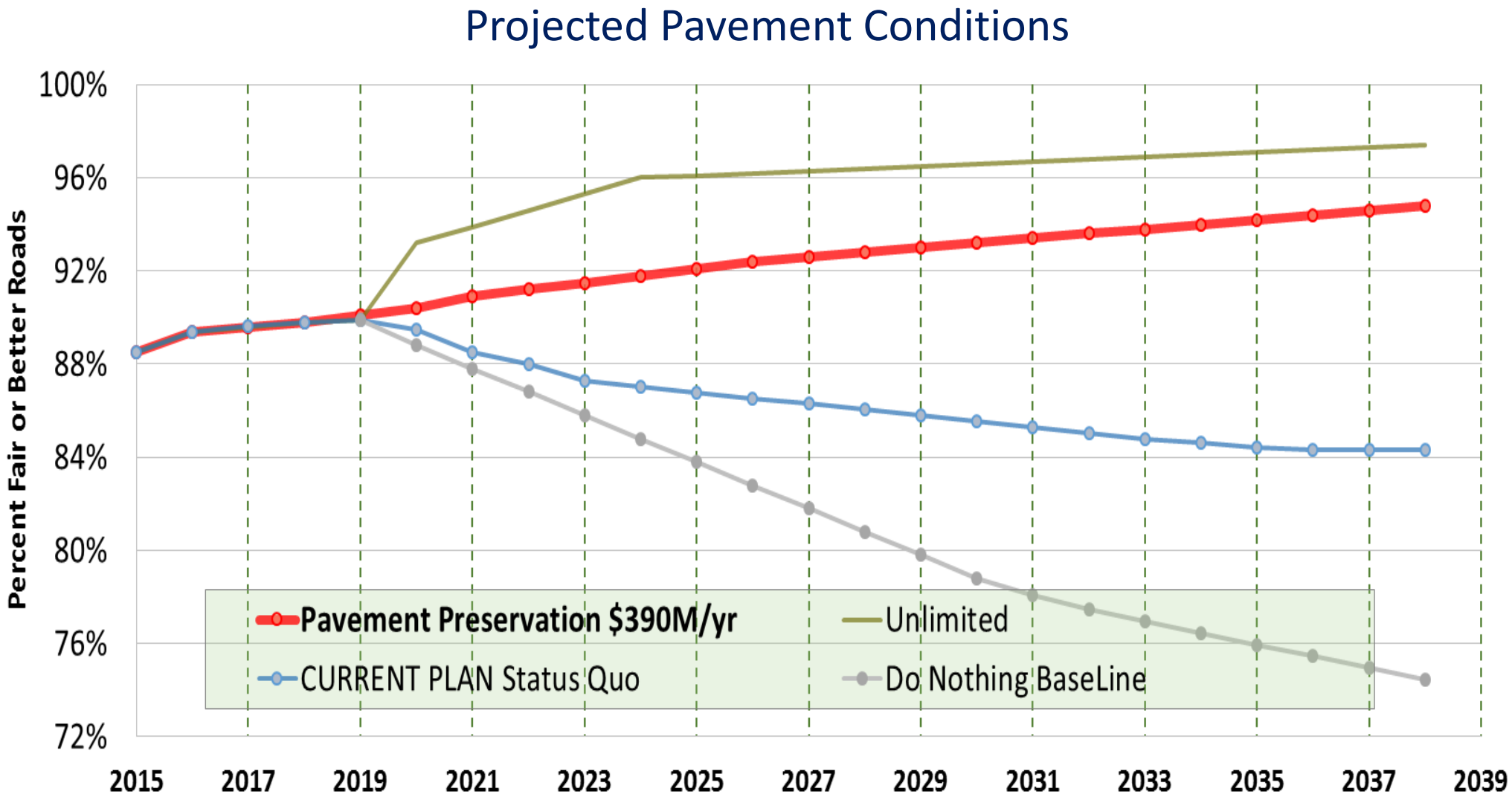
Bridge and Pavement Modeling

- Deighton Total Infrastructure Management System (dTIMS)
- Models pavement and bridge conditions and needs 20 years into the future
  - Deterioration
  - Committed projects
- Optimizes output based on
  - Incremental benefit cost
    - Compared to “do nothing”
  - Pavement quality index and Bridge quality index
  - Analyzes every PK and bridge in the state
    - Generates list of strategies

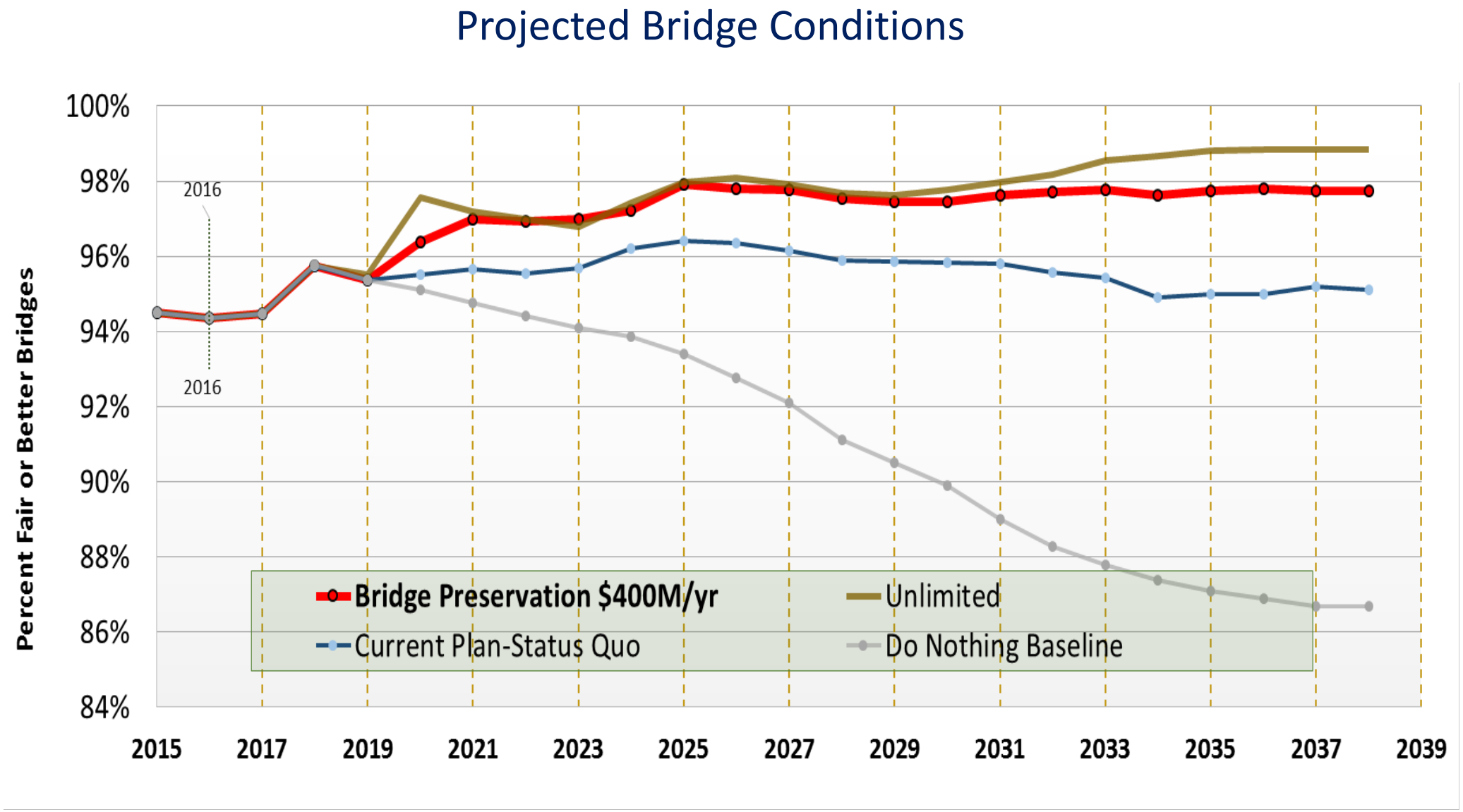


dTIMS does this for every section of pavement (PK) in Indiana

What Conditions Does INDOT Expect to Achieve?



What Conditions Does INDOT Expect to Achieve?



FHWA/TAMP Work Types

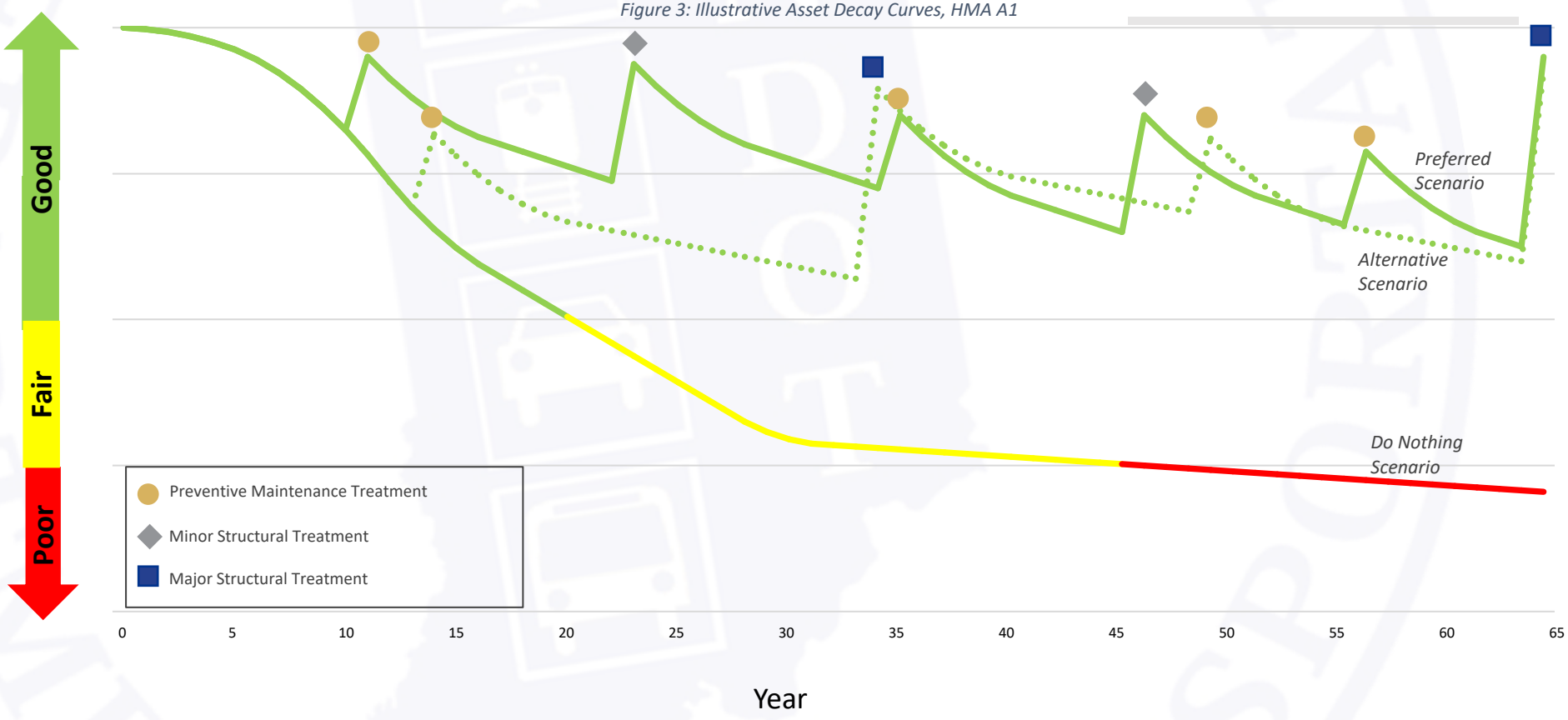
FHWA Work Type	INDOT Pavement Treatment	INDOT Bridge Treatment
Maintenance	Minor, corrective actions, including: • Patching (partial and full depth); and • Spot Paving.	Minor, corrective actions, including: • Bridge Deck Patching; • Replacing Joints; • Straightening Beams; and • Channel Realigning and Reshaping.
Preservation	Minor treatments intended to preserve the life and condition of a road, including: • Crack Sealing; • Chip sealing; and • Resurfacing (single lift).	Minor treatments intended to preserve the life and condition of a bridge, including: • Deck Overlay (thin and rigid); • Deck Sealing and Resealing Activities; • Deck Cleaning; and • Scour Protection.
Rehabilitation	Intermediate level treatments intended to restore functionality and structure, including: • Structural and Minor Structural Overlay; and • Slide Correction.	Intermediate level treatments intended to restore functionality and structure, including: • Bridge Rehabilitation or Repair; • Bridge Deck Reconstruction or Replacement; and • Bridge Widening.
Reconstruction	Replacement or substantial reconstruction of an existing road, including: • Pavement Replacement; • Rubblizing; • Full Depth Reclamation; • Storm Sewer Repair or Replacement; and • Sewer/Curb/Gutter Construction or Reconstruction.	Replacement or substantial reconstruction of an existing bridge, including: • Bridge Replacement; • Small Structures & Drains Construction; and • Small Structure Replacement.
Construction	Any Mobility Project, including: • New Road; • Added Travel Lanes; • Truck/Auxillary Lane Construction; • Sewer/Curb/Gutter Construction; and • Pumping/Lift Stations.	Any Mobility Project, including: • New Bridge; and • New Small Structure.

Every INDOT SPMS work type is mapped to an FHWA work type
- This makes our annual consistency determination easy

Lifecycle Strategy Financial Optimization – HMA A1

The following presents an illustrative asset lifecycle deterioration curve for HMA type pavement within A1 category roads, comparing the preferred, alternative, and do-nothing scenario against the impacts of each treatment scenario on the pavement's condition over the asset's lifecycle.

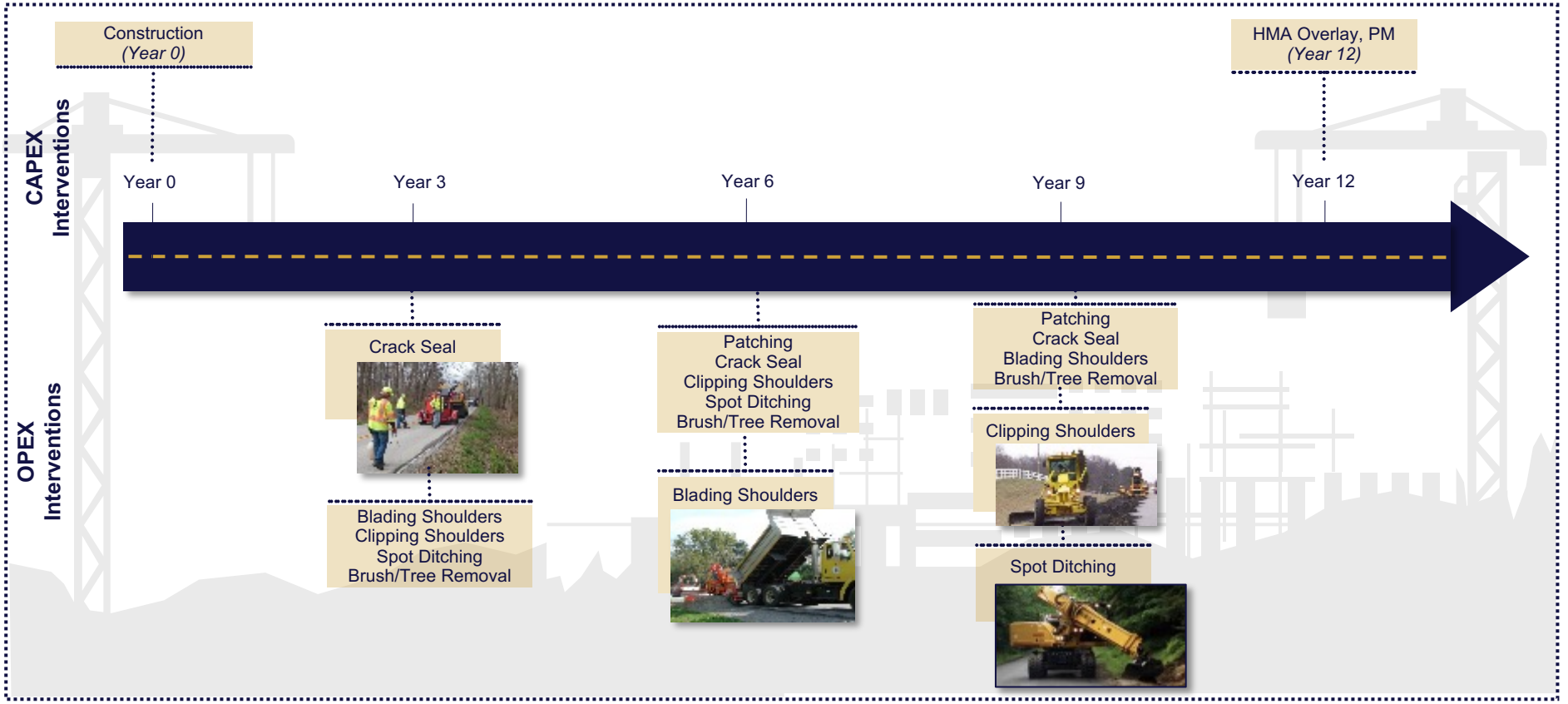
Figure 3: Illustrative Asset Decay Curves, HMA A1



Lifecycle Strategy – Pavement Maintenance Cycles

The following table presents INDOT's planned maintenance activities for A2 roadway category pavement, depicted over a 12-year maintenance cycle, beginning and ending with resurfacing treatments. Operating interventions are depicted below the timeline graphic, and capital interventions are depicted above the timeline graphic. For detailed maintenance cycles, please refer to the Appendix.

Figure 12: Pavement Maintenance Cycles, A2

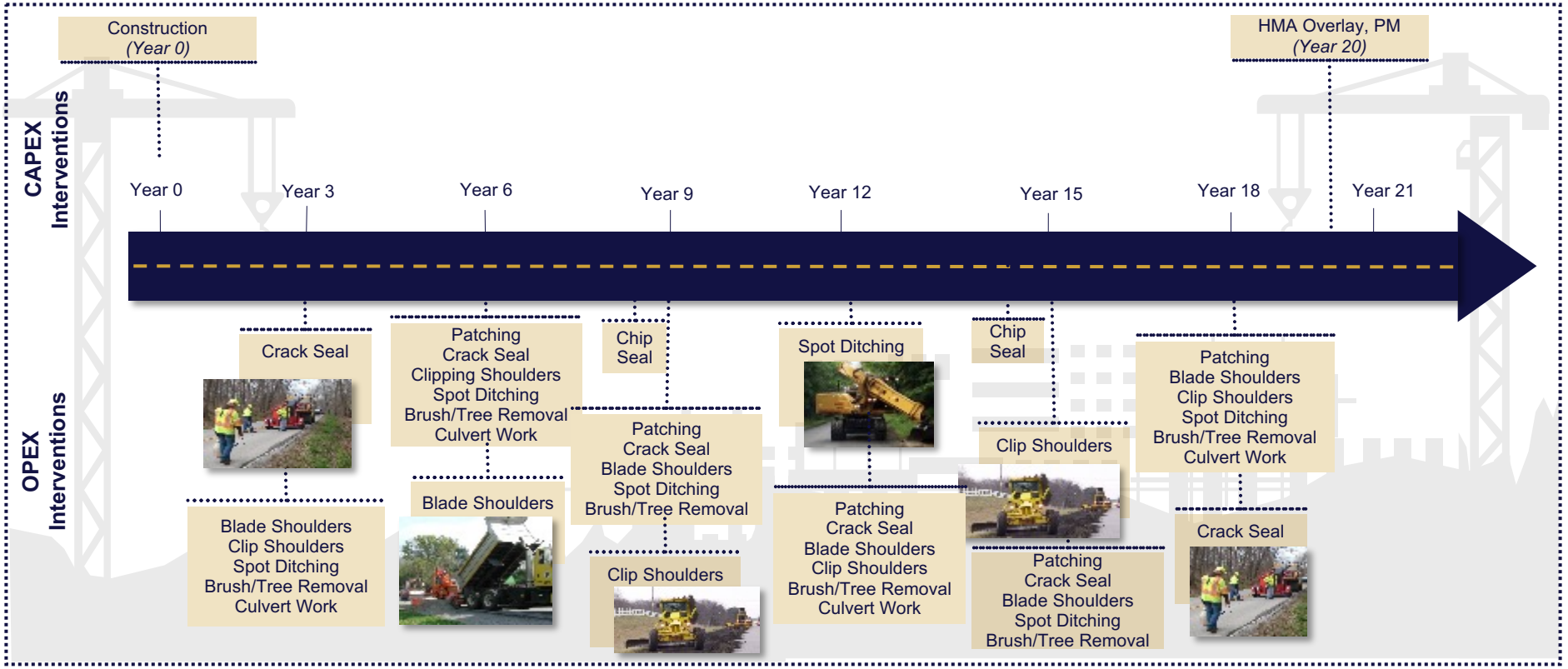


The purpose of the graphic is to depict maintenance strategies over a 12-year maintenance cycle. The graphic above is not intended to show all CAPEX and OPEX interventions over the course of the asset lifecycle. Note that beyond the first 12 years, the OPEX intervals may become more frequent than approximately every three years.

Lifecycle Strategy – Pavement Maintenance Cycles

Operating and capital investments are derived from the application of the preferred lifecycle strategy for bridge and pavement assets. The following table presents INDOT's planned maintenance activities for C2 roadway category pavement, depicted over a 20-year maintenance cycle, beginning and ending with resurfacing. Operating interventions are depicted below the timeline graphic, and capital interventions are depicted above the timeline graphic. For detailed maintenance cycles, please refer to the Appendix.

Figure 16: Pavement Maintenance Cycles, C2

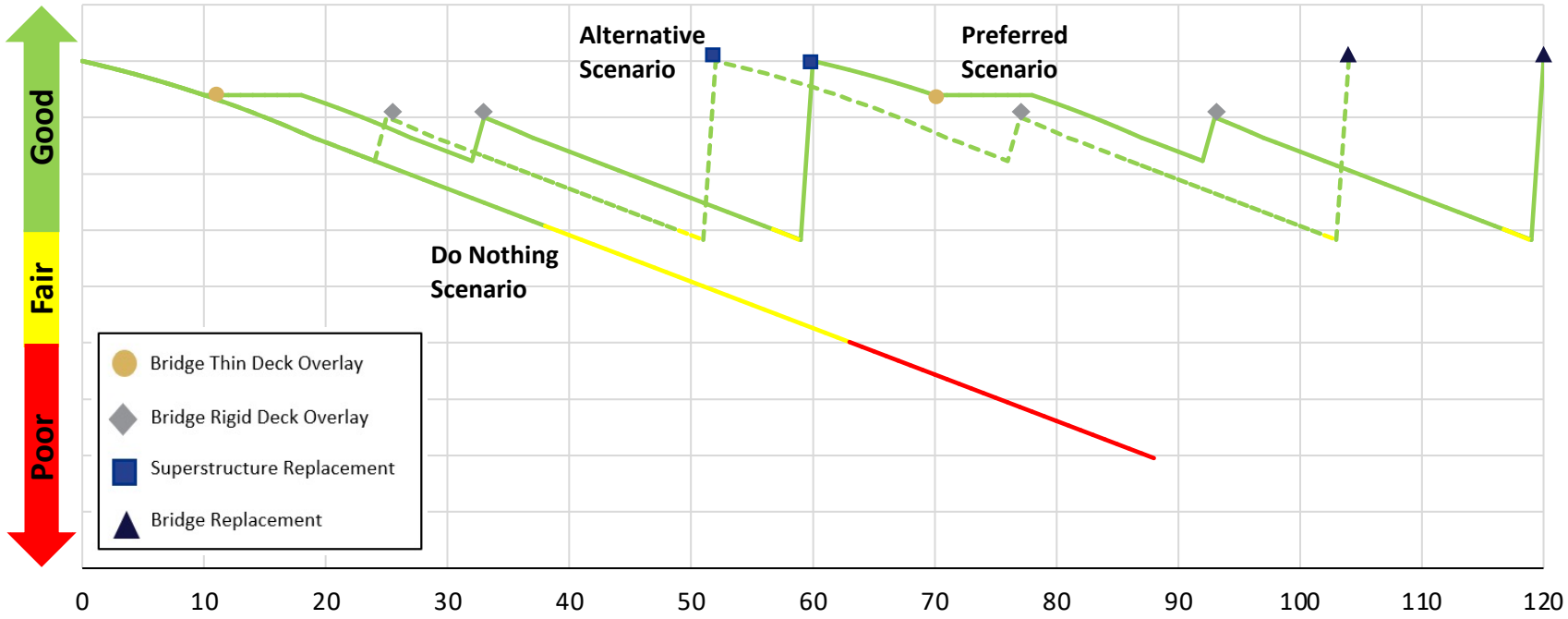


The purpose of the graphic is to depict maintenance strategies over a 20-year maintenance cycle. The graphic above is not intended to show all CAPEX and OPEX interventions over the course of the asset lifecycle. Note that beyond the first 20 years, the OPEX intervals may become more frequent than approximately every three years.

Asset Lifecycle Investment Strategy – Non-Interstate, Deck Condition

The following presents an illustrative deck condition decay curve for a 9,000 ft² Non-Interstate bridge, comparing the preferred, alternative, and do-nothing scenario against the impacts of each treatment scenario on the deck condition over the bridge's lifecycle. It is assumed that the bridge is the southern portion of the State, in area with lower traffic volumes, and is subject to relatively-moderate environmental conditions (e.g., free-thaw cycles, salt water intrusion, snow, etc.); thus, treatments are expected to last longer.

Figure 7: Illustrative Bridge Decay Curve, Deck Condition (9,000 ft²) (southern Non-Interstate)[1]



[1]*The FHWA standard design life is 75 years. The above graph assumes a longer lifespan (120 years for the preferred scenario) but assumes the lifespan would not extend any further.*

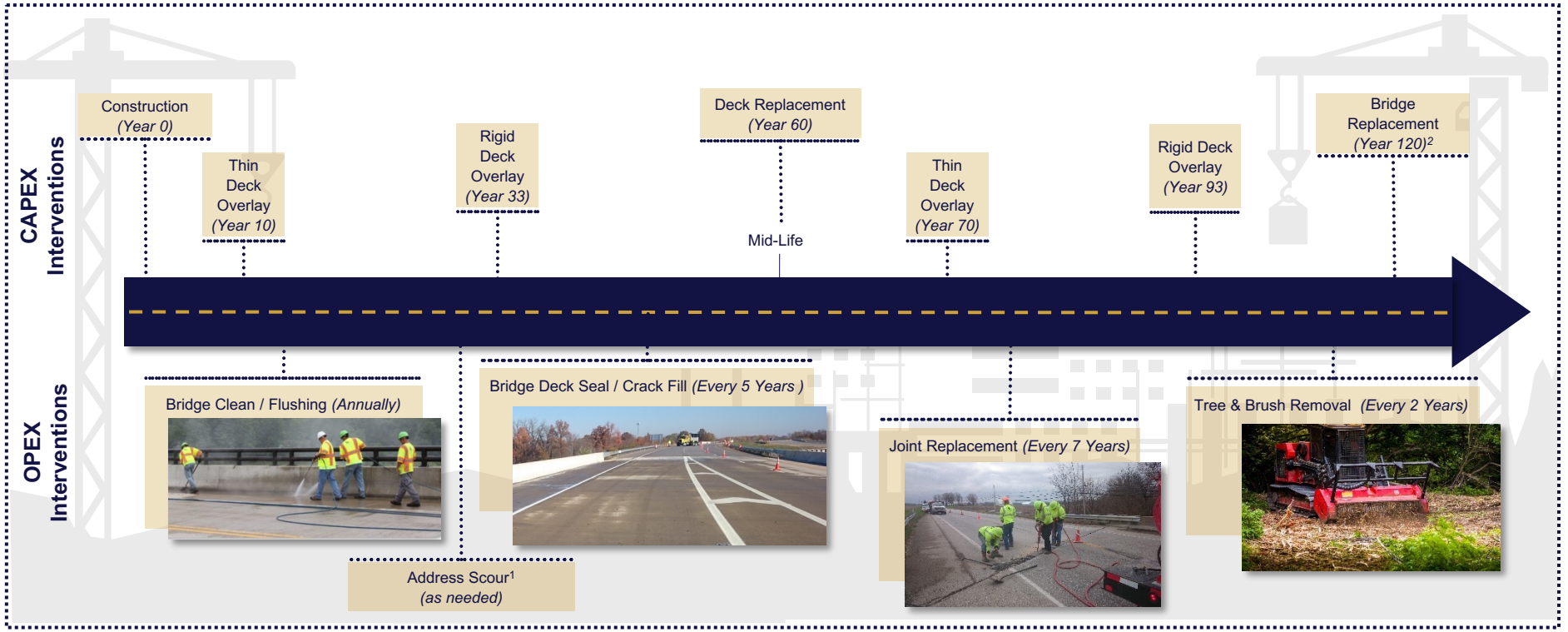
[2]*Superstructure replacement assumes ancillary rehabilitation work will be conducted on the substructure.*

NextLevel INDIANA

Lifecycle Strategy – Investment Diagram *(Non-Interstate)*

Operating and capital investments are derived from the application of the preferred lifecycle strategy for bridge assets. The following table presents INDOT's planned capital and operating interventions for an illustrative example Non-Interstate bridge in the southern portion of the State and should not be taken as indicative of all southern Non-Interstate bridges. Capital interventions are depicted above the timeline graphic. The intervals for operating interventions are provided below the timeline graphic.

Figure 12: Non-Interstate Bridge Maintenance Cycles (southern)



[1]*Address Scour treatment can be classified as either OPEX or CAPEX. Scour protection work is performed as-needed based on the results of inspections. For the purpose of the modeling the deterioration curves, this treatment was not included as an CAPEX treatment.*
[2]*The FHWA standard design life is 75 years. The example assumes approximately 120 years for Non-Interstate bridges; however, the actual lifespan is dependent on such factors as the material, results of inspections, and condition of the bridge, noting that the substructure must be in good condition to achieve a longer lifespan.*

Transportation Asset Management Plan

A Minnesota GO Supporting Plan

MINNESOTA GO

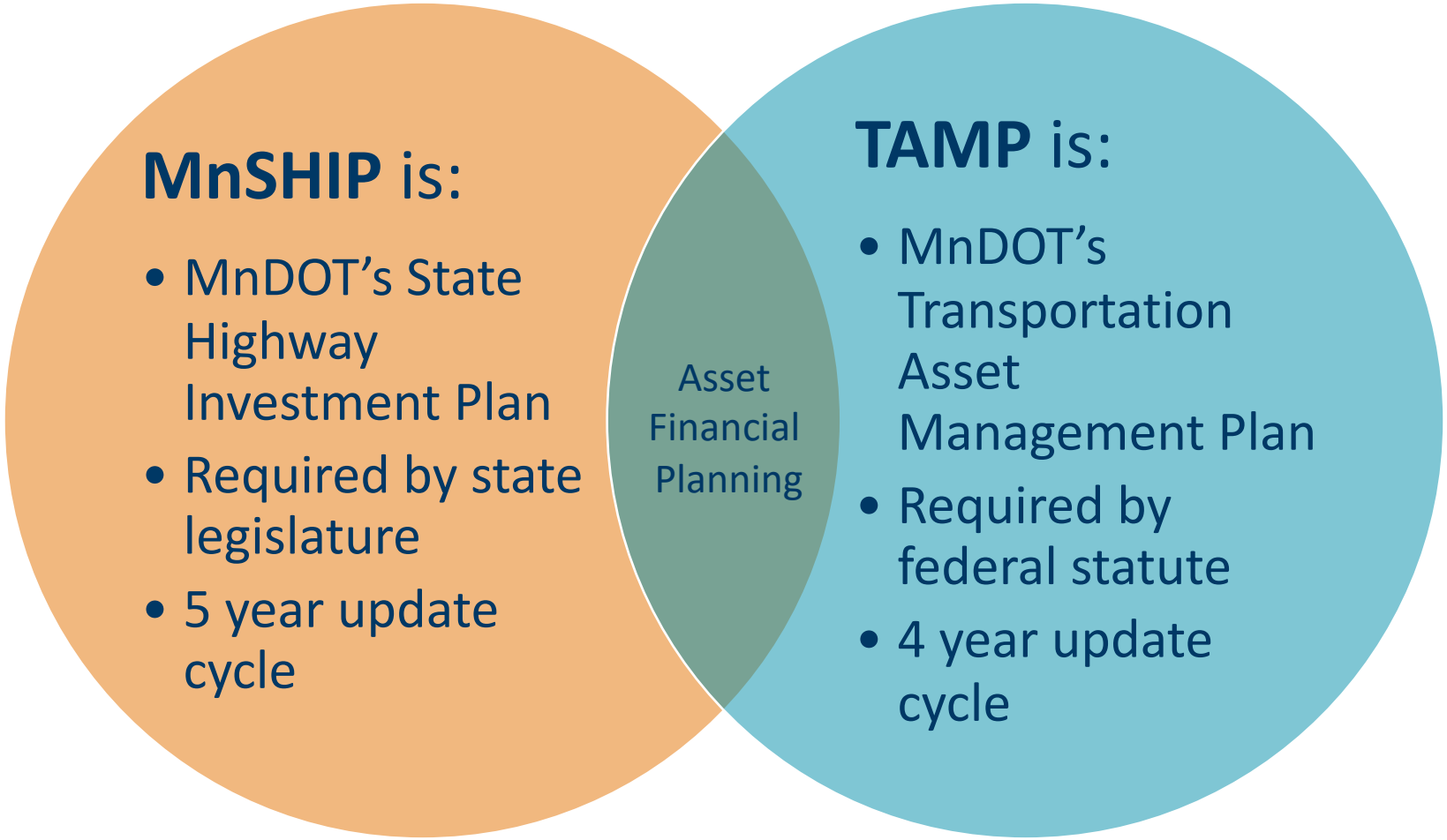
TAM Book Club: Financial Planning

Shannon Foss, Asset Management Planning Director

May 13th, 2021

DEPARTMENT OF TRANSPORTATION

MnSHIP - TAMP



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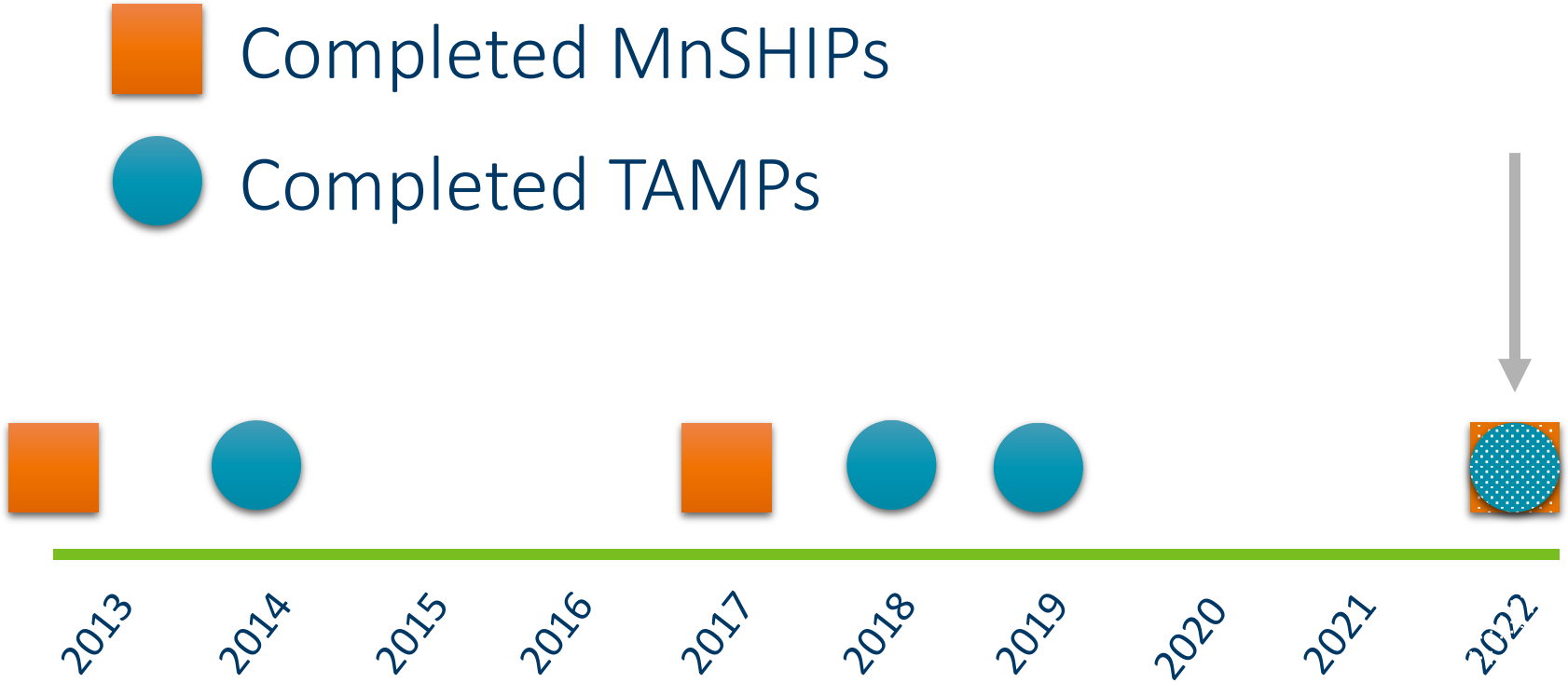
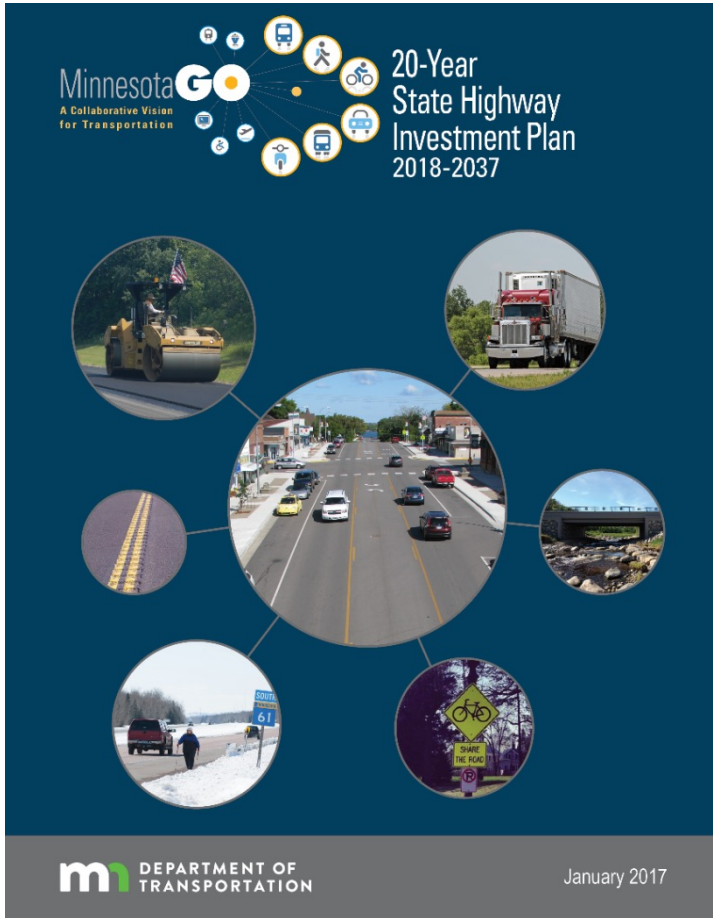
Timeline


Completed MnSHIPs
Completed TAMPs
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022

2023-2042 MnSHIP



- Directs capital investment on state highway network
- 20-year plan
- Fiscally constrained and performance-based
- Categorical, not project specific

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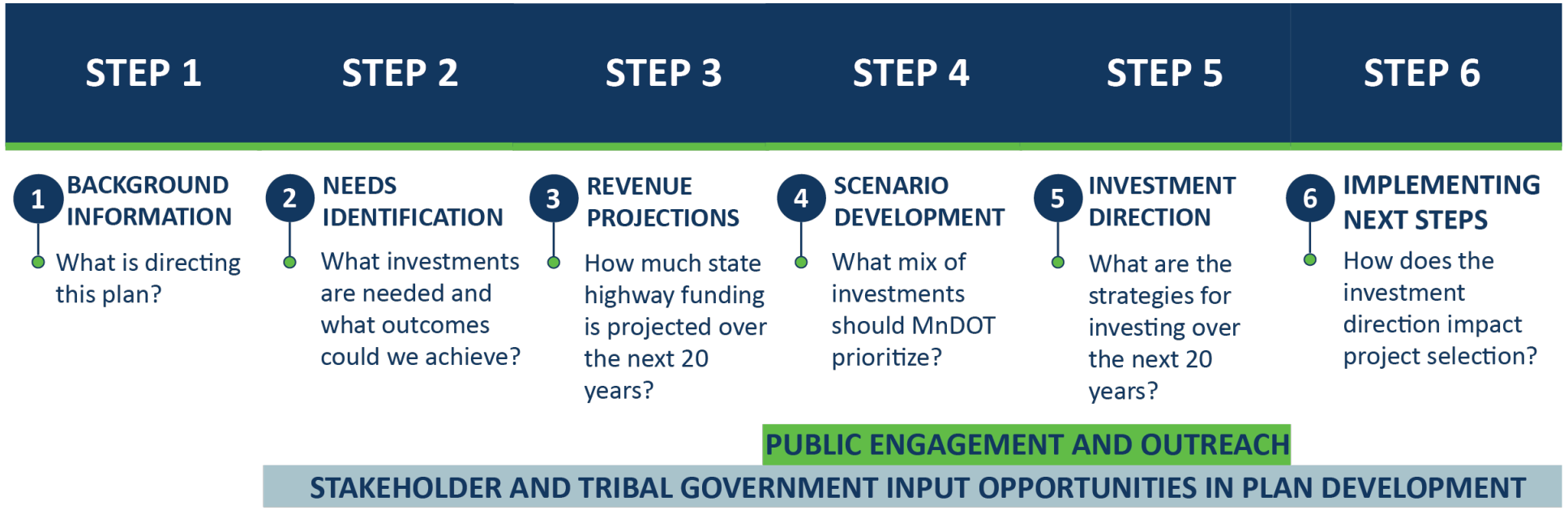
MnSHIP Update Process



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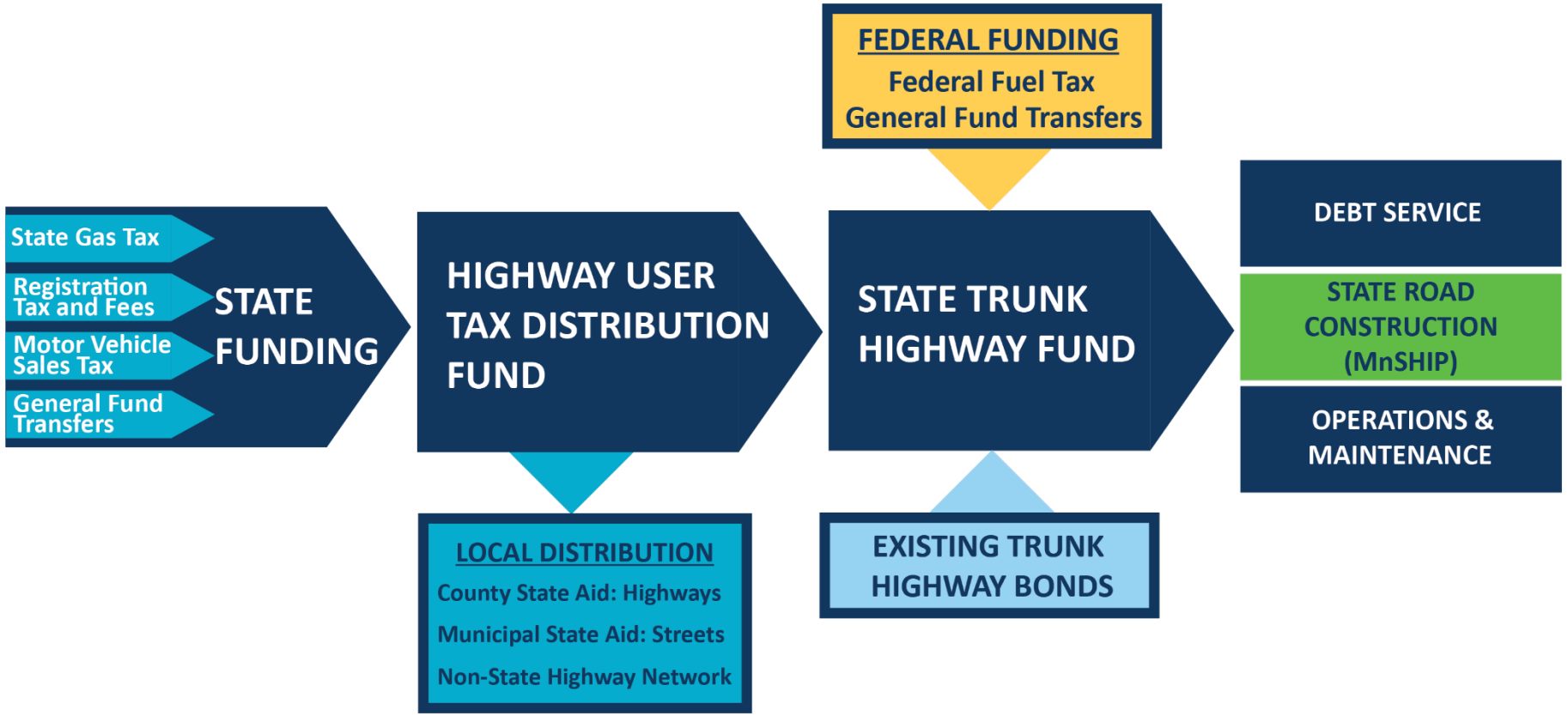
MnSHIP Revenue Sources



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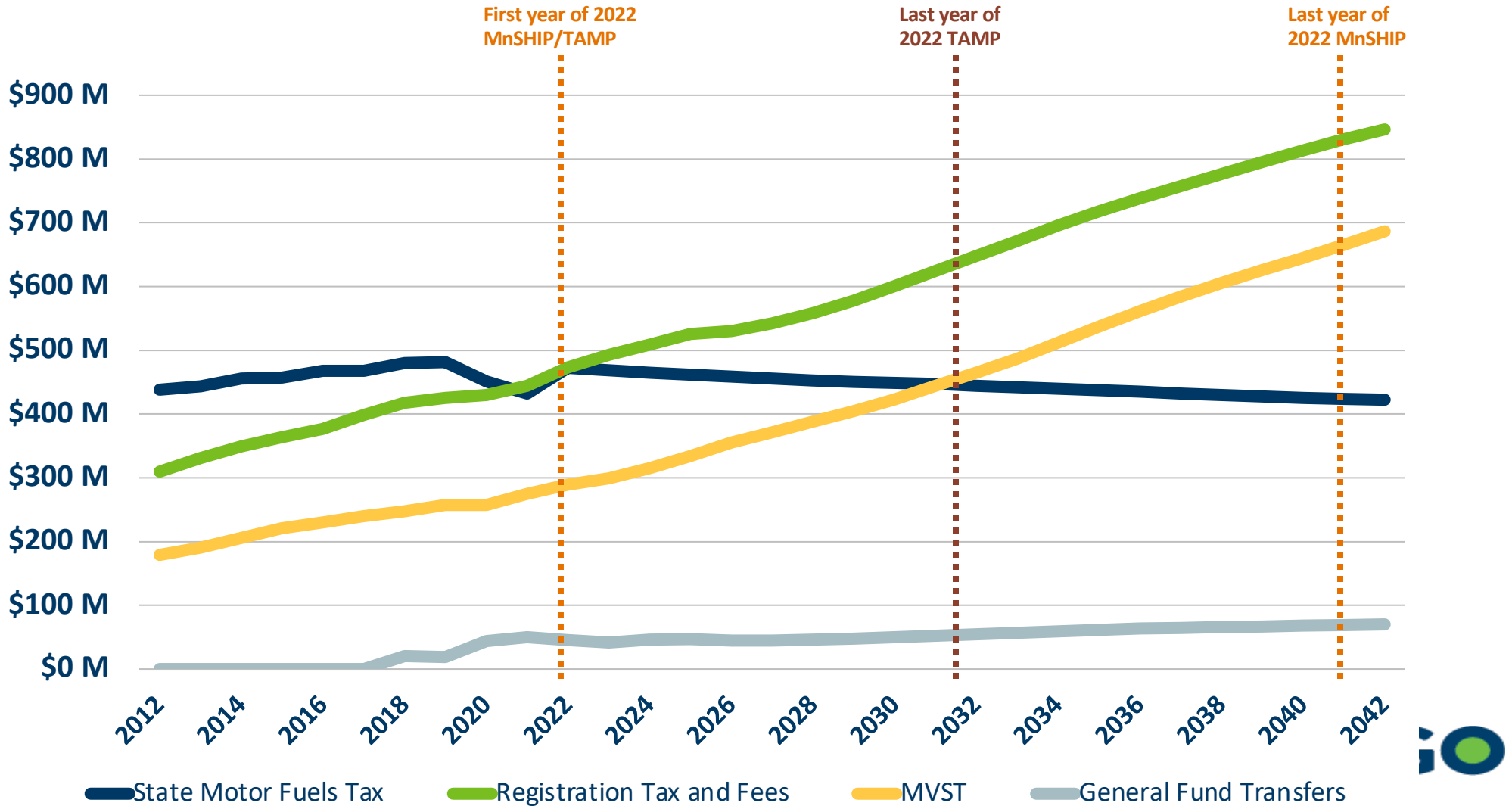
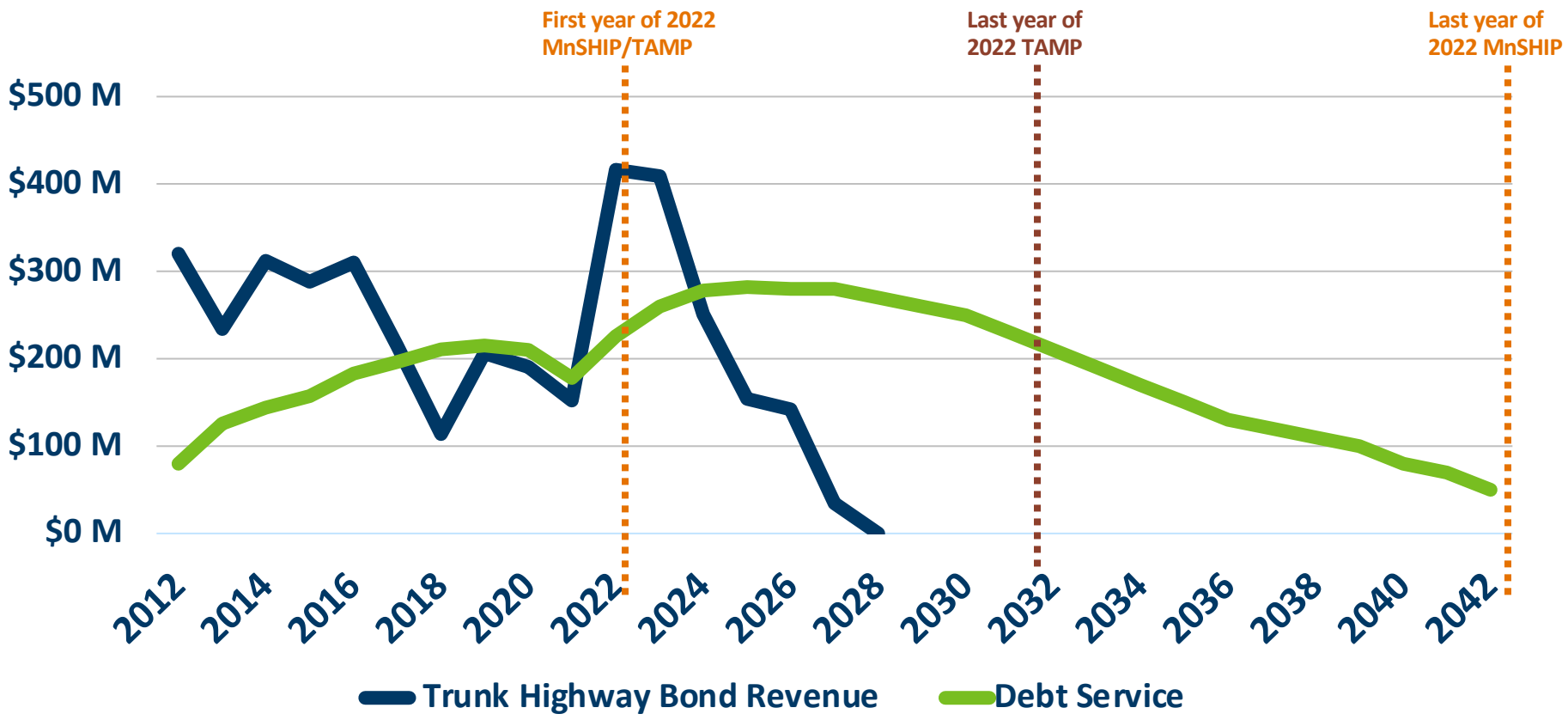
State Revenue Trends (trunk highway share)



Bonding & Debt Service (currently authorized)



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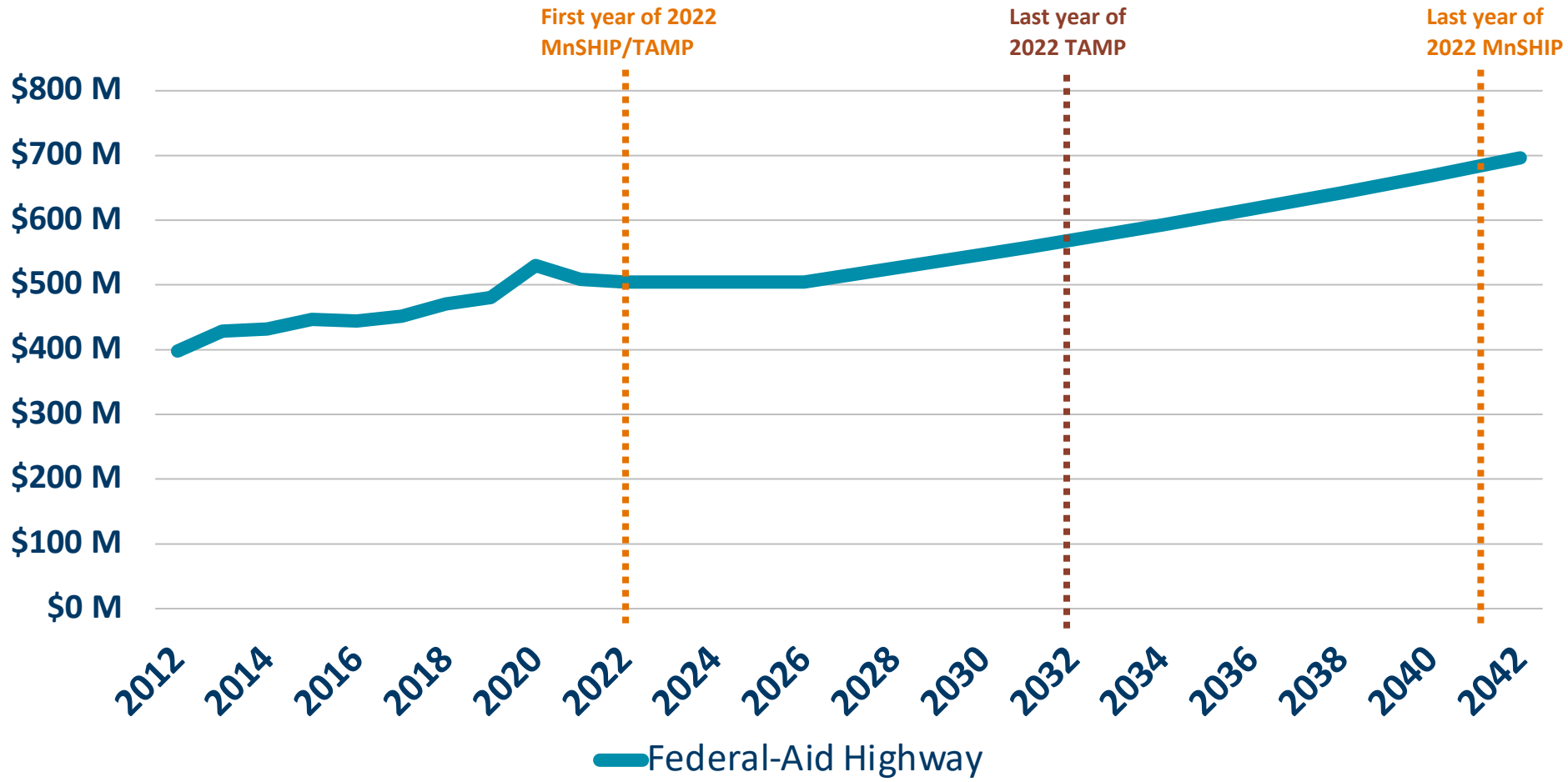
Federal Revenue Trends (trunk highway share)



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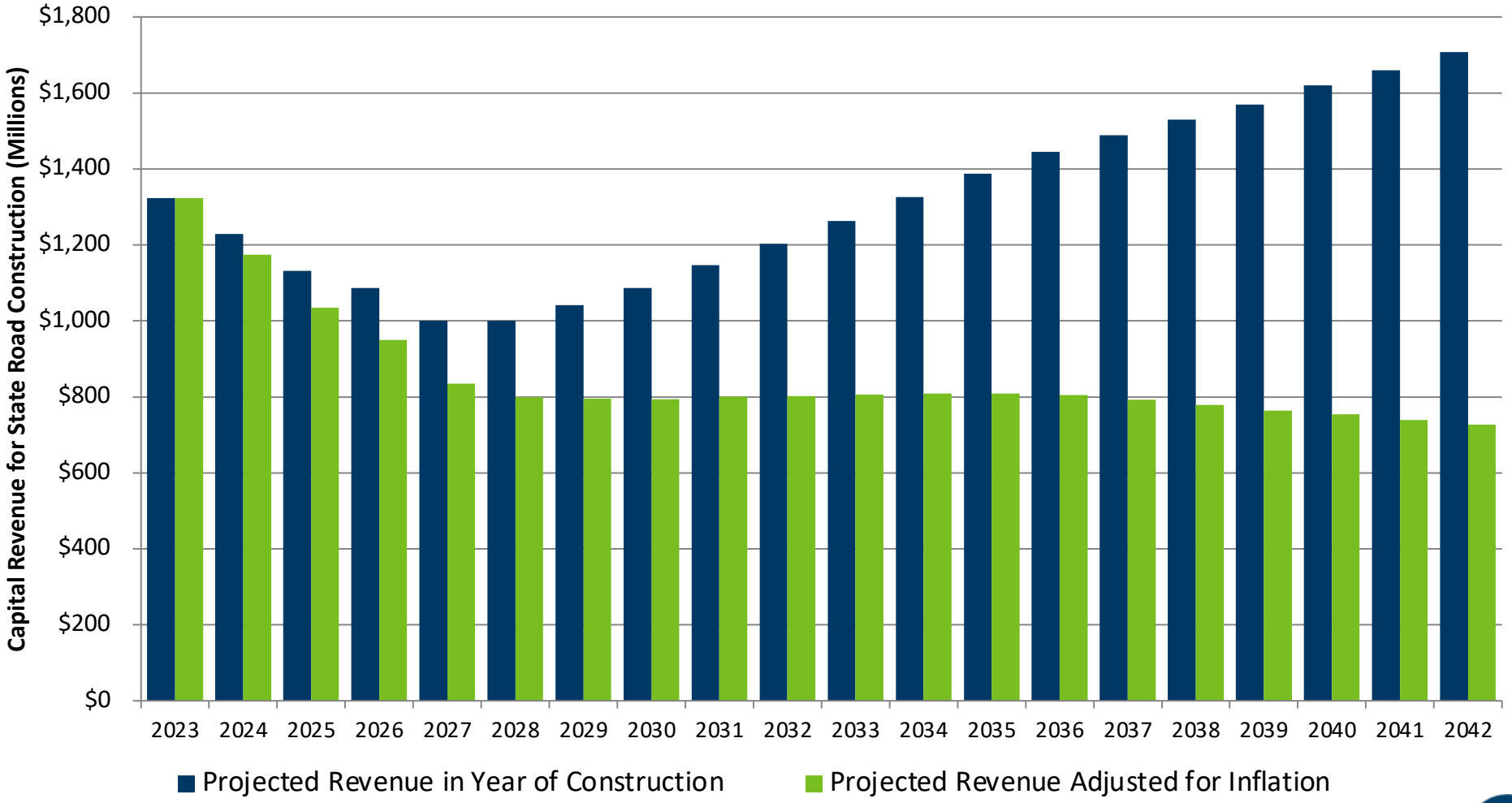
Impact of Inflation on Revenue



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Investment Workgroups for MnSHIP Update

- Advancing Technology
- Bridge Condition
- Climate Resilience
- Freight
- Greater MN Highway Mobility
- Local Partnerships
- Main Streets-Urban Pavements
- Non-Motorized
- Pavement Condition
- Project Delivery
- Rest Areas
- Roadside Infrastructure
- Small Programs
- Sustainability and Livability
- Transportation Safety
- Twin Cities Highway Mobility

Included in TAMP

MINNESOTA GO

MnSHIP Investment Workgroups

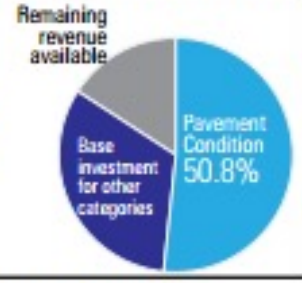
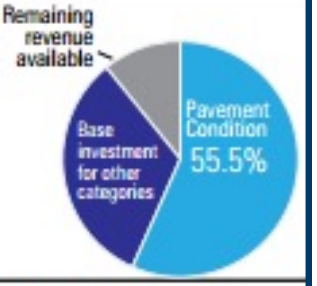
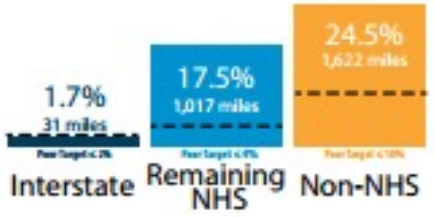
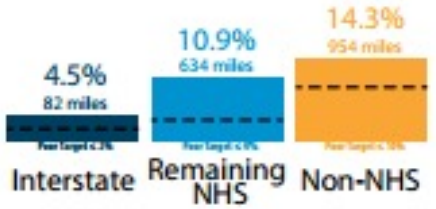
- Primary task is to develop performance levels within investment categories
- Each performance level includes:
  - An investment strategy
  - Funding estimated to implement strategy
  - Outcomes
  - Risks of underinvesting
- Performance levels are the building blocks to developing different investment approaches over the next 20-years

MINNESOTA GO

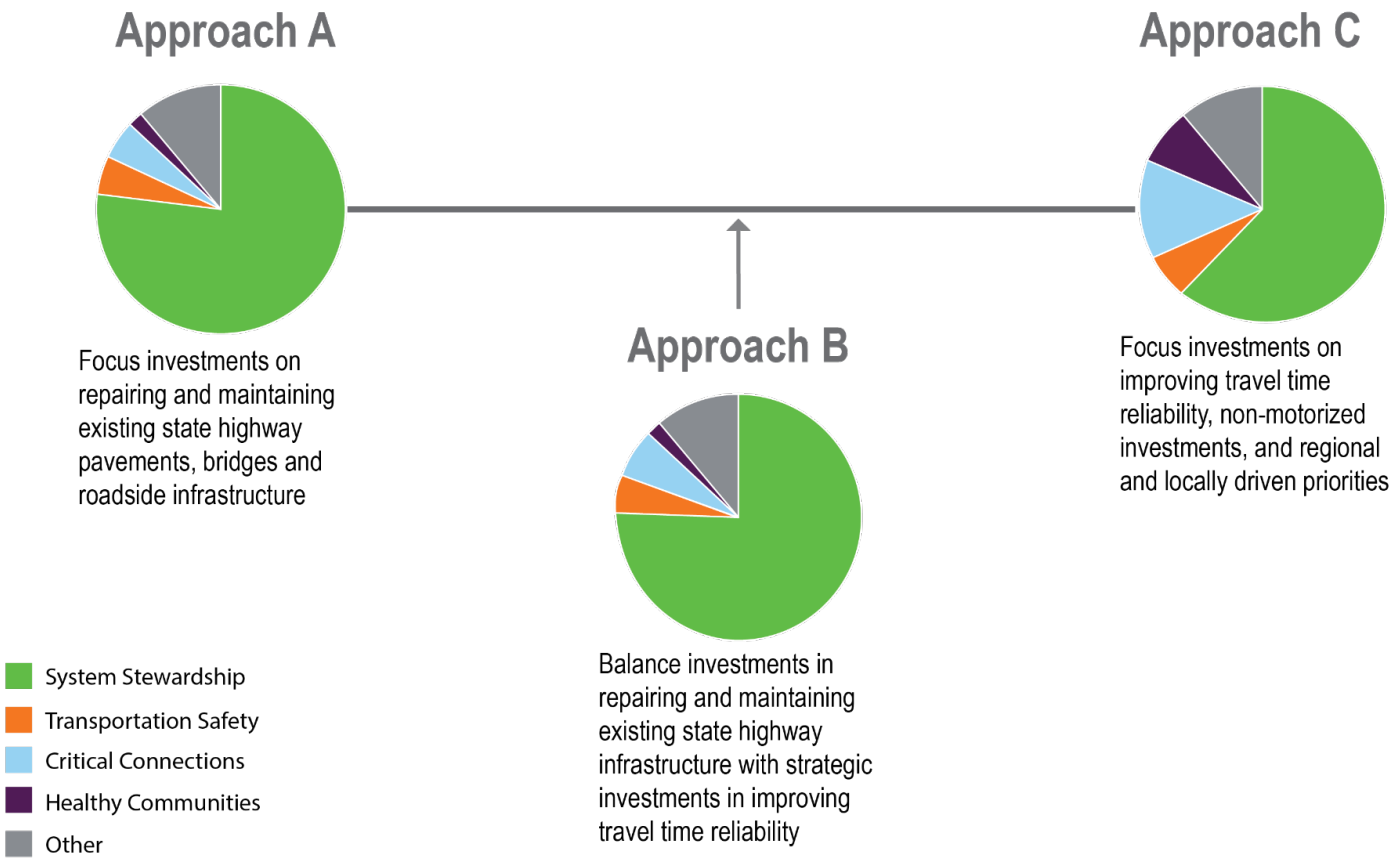
Example Folio from 2017 MnSHIP

Pavement Condition

Overarching Goal: Preserve the structural integrity of MnDOT's pavements to provide a safe and reliable surface for passenger vehicles, freight, transit and non-motorized users.

	Performance Level 0 *Lowest cost, greatest risk*	Performance Level 1 *Lower cost, higher risk*
Investment Approach *(See Approach Folio)*	**Approach C** Corresponds with current investment	**Approach A, B**
Investment Level *Total* *Years 5-10 (2022-2027)* *Years 11-20 (2028-2037)*	**$8,447 M** $527.9 M/yr $527.9 M/yr 	**$9,242 M** $577.6 M/yr $577.6 M/yr 
Investment Description	Maintain current investment direction based on 2013 MnSHIP investment direction	Maintain our Interstate at a level compliant with MAP-21. Maintain GASB 34 threshold on the NHS and Non-NHS system.
Outcomes *To what extent would MnDOT meet performance targets for Pavement Condition?*		

Investment Approaches



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Revenue Scenarios

- Revenue projections are a snapshot in time
- If revenues/trends were to change, how would MnDOT adjust the investment direction?
- The financial planning process in MnSHIP will seek input on investment priorities at lower and higher revenue assumptions

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Priorities for Additional Revenue

Stakeholder Priorities	MnDOT Priorities
#1 - Bridge Condition	#1 - Pavement Condition
#2 - Pavement Condition	#2 - Bridge Condition
#3 - Roadside Infrastructure Condition	#3 - Roadside Infrastructure Condition
#4 - Traveler Safety	#4 - Twin Cities Mobility
#5 - RCIP - Main Street Improvements	#5 - Traveler Safety
#6 - RCIP - Capacity Expansion	#6 - RCIP - Main Street Improvements

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TAMP Asset Investment Needs

Pavement & Bridge projects are planned and programmed over the next 10 years. Their individual asset management systems can project future needs using asset condition, deterioration modeling, performance targets and costs by work type.

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TAMP Asset Investment Needs

For assets beyond pavement and bridge, they are stored in MnDOT's Transportation Asset Management System. This reports current asset conditions and tracks work orders with detailed information, such as cost, to help estimate future funding needs.

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Thank you!

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AASHTO TAM Guide Book Club
Quest

Quest A

Similar to the case of INDOT, your state is considering whether to increase funding for transportation asset management through increasing its gas tax. You have been asked to perform analyses to help determine how much additional funding may be needed and what the impact of that funding would be on the transportation system - and to prepare a financial plan for the use of the new funds. Also, the Governor has sent over some additional, hand-picked staff members to help you with the analysis. Unfortunately they don't have too much prior experience in TAM, and will need some training.

Quest B

The Governor called to congratulate your director on the fantastic job the agency is doing in maintaining asset conditions. In fact, the agency is doing so well the Governor is recommending that funds be shifted from the agency to help stimulate other parts of the economy impacted by the pandemic. Your director has asked you to analyze the impact of reducing funds for asset management and sent some crack new staff members to help with the analysis. Unfortunately, they don't have too much prior experience in TAM, and will need some training.

AASHTO TAM Guide Book Club
Quest (continued)

Quest C

Your agency made it through the development of its initial TAMP but since it was finalized all of the staff involved with it have been promoted or retired. Your agency's director has asked that you help improve the TAMP for the 2022 update and has identified some new staff members to help with this effort. Unfortunately, they don't have too much prior experience in TAM, and will need some training.

Quest-ions

1) What materials from the TAM Guide might help orient the new staff members as the get up to speed on TAM? What additional information will they need to help prepare for this task besides what is in the TAM Guide?
2) What sort of analysis would you perform to show the impacts of different levels of funding? What measures or other information would you expect to be most valuable for convey the impacts of changes in funding?
3) How well does the checklist for a TAM financial plan match the information you would want to present in the resulting financial plan. Are there any steps that seem superfluous or missing?

AASHTO TAM Guide Book Club
Quest

To **select a breakout room** to join,
1.Click the ***Breakout Rooms*** menu
2.Click the ***Join*** link next to a room.

Your breakout room will be assigned one of the three quests.

Quest Breakout Session
Feedback

- How did you answer each of the questions:
  - Materials from the TAM Guide related to financial planning
  - Analysis you would perform to illustrate impacts of different funding levels
  - Match between the TAM financial planning checklist and the information you would want to present in a financial plan
- What are your thoughts on how we can improve the value of the Guide based on the quest?
  - Updated resources?
  - Sharing new practices?
  - Linking to new guidance?
  - More resources to support the 2022 TAMP development?

Open Discussion

Q & A

Full Schedule and Registration Information

https://www.tam-portal.com/event-directory/tam-webinars/

5. Improving Risk Management and Resiliency
Thursday 5/27/21 - 2:00 – 3:30 PM eastern time

6. Increasing Your Workforce Capacity
Wednesday 6/2/21 - 2:00 – 3:30 PM eastern time

7. Investment Strategies and Multi-Objective Decision Analysis
Wednesday 6/9/21 - 2:00 – 3:30 PM eastern time

8. Strengthening How Data Supports Your TAM Program
Wednesday 6/16/21 - 2:00 – 3:30 PM eastern time

To register:
https://www.tam-portal.com/event-directory/tam-webinars/

To access the Guide:
TAMGuide.com

Questions?
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