



FHWA Workshop

Life Cycle Planning, Risk Management, and Financial Planning for Transportation Asset Management Plans

September 12, 2017



Asset Management Workshop

- Welcome
- Workshop focuses on the 3 interim guidance documents:
 - Life-cycle planning
 - Risk management
 - Financial plans
- Goal: better understanding of how to address these issues in your Asset Management Plan



Asset Management Infrastructure Condition

- Goal: Maintain the highway infrastructure asset system in a state of good repair
 - Manage your network for the long term at the minimum practicable cost to:
 - Improve or preserve asset condition and system performance
 - Manage risk
 - Short-term performance targets are key indicators



Risk-based Asset Management Plan

Plan Contents

- Pavement and bridge inventory and conditions on the NHS
- Objectives, measures, and targets
- Performance gap identification
- Lifecycle planning
- Risk management analysis.
- Financial plan
- Investment strategies



Management Systems

- Minimum standards for States to use in developing and operating bridge management systems and pavement management systems
- State DOTs to use bridge and pavement management systems to analyze asset conditions to develop and implement Risk-based Asset Management Plans



When are Asset Management Plans due?

- Not later than **April 30, 2018**, the State DOT must submit to FHWA a State-approved **initial** TAMP
- Not later than **June 30, 2019**, the State DOT must submit to FHWA a current State-approved (a “fully compliant”) TAMP that meets all the requirements of 23 U.S.C. 119 and 23 CFR Part 515



TAMP investment strategies should collectively make or support progress toward:

- Achieving and sustaining a desired state of good repair over the life cycle of the assets
- Improving or preserving the condition of the assets and the performance of the system relating to physical assets
- Achieving the State DOT targets for asset condition and performance of the NHS in accordance with 23 USC 150(d)
- Achieving the national goals identified in 23 USC 150(b)



FHWA Resources

- FHWA Office of Asset Management
<http://www.fhwa.dot.gov/asset/index.cfm>
- NHI Transportation Asset Management Training Courses
- Certification and Consistency Review Guidance out for comment in the Federal Register, June 5, 2017
- Asset Management Q&As
- Interim Guidance for Life-cycle Planning, Risk Management, and Financial Plans



Questions?

FHWA Asset Management Team Contacts:

- *Stephen Gaj*, Stephen.Gaj@dot.gov, 202-366-1336
- *Nastaran Saadatmand*,
Nastaran.Saadatmand@dot.gov, 202-366-1337



Our Goal



- Explain

- Life cycle planning (LCP)
- Risk management
- Financial planning

... and how they contribute to the selection and communication of a TAMP investment strategy



Introductions



- Facilitators
- Participants
 - Your name
 - Your agency
 - Your involvement with TAMP's development

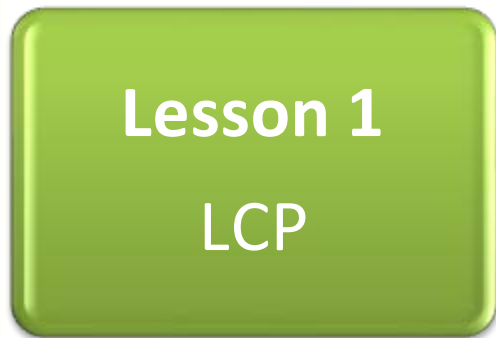


TAMP Best-Practices Documents

- How can the best-practices documents help you develop your agency's TAMP?
 - LCP
 - Risk management
 - Financial planning



What Will You Get Out of Today?



Use asset management systems to develop asset LCP scenarios



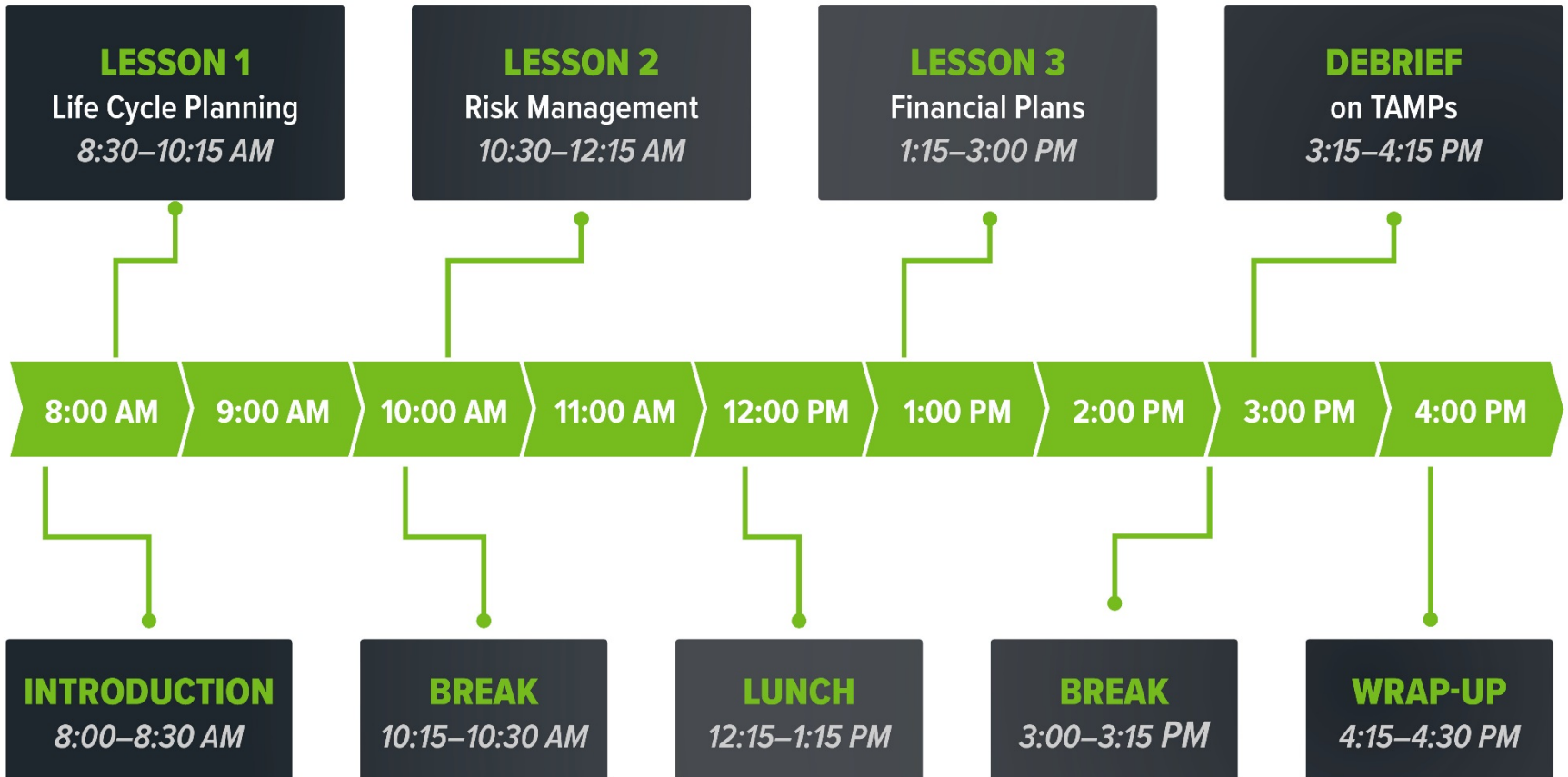
Use agency information to identify risks relevant to meeting the TAMP objectives, along with potential mitigation strategies



Use finance, LCP, risk, and condition data to set and justify investment strategies and targets



Today's Agenda



What We Expect from You

- Be on time
- Put cell phones on mute
- Step out of the class to answer urgent phone calls
- Refrain from texting or answering emails
- Ask questions of the instructor and peers
- Listen to answers before providing feedback
- Be an active group member
- Take notes



LESSON 1 LCP

Lesson Topics

- Network-level LCP v. project-level life cycle cost analysis (LCCA)
- How LCP supports a TAMP
- Process for conducting LCP
- Requirements for conducting LCP
- Using LCP results



What Is LCP?



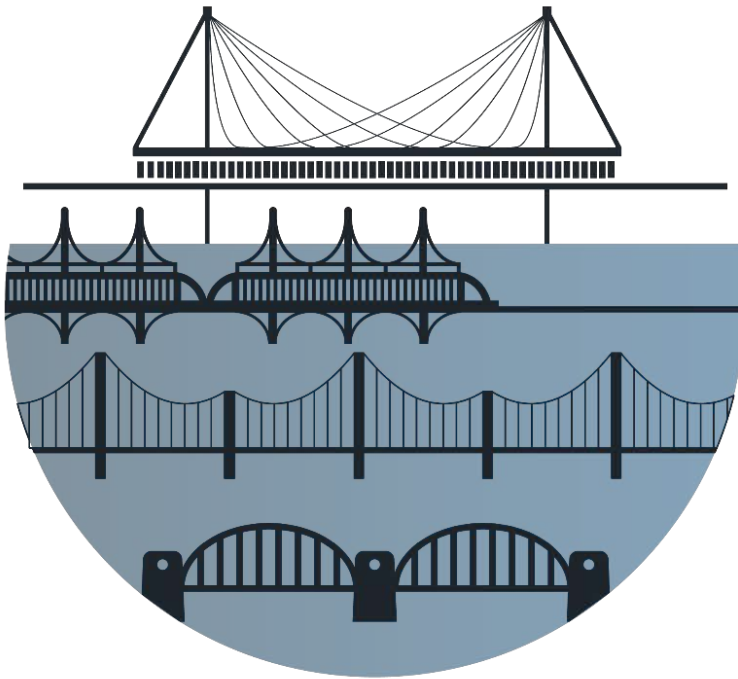
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- LCP considers the:
 - Availability of different treatment options
 - Opportunity cost
 - Funding and other constraints
 - Analysis period
 - Time value of money



LCP v. LCCA

NETWORK LEVEL



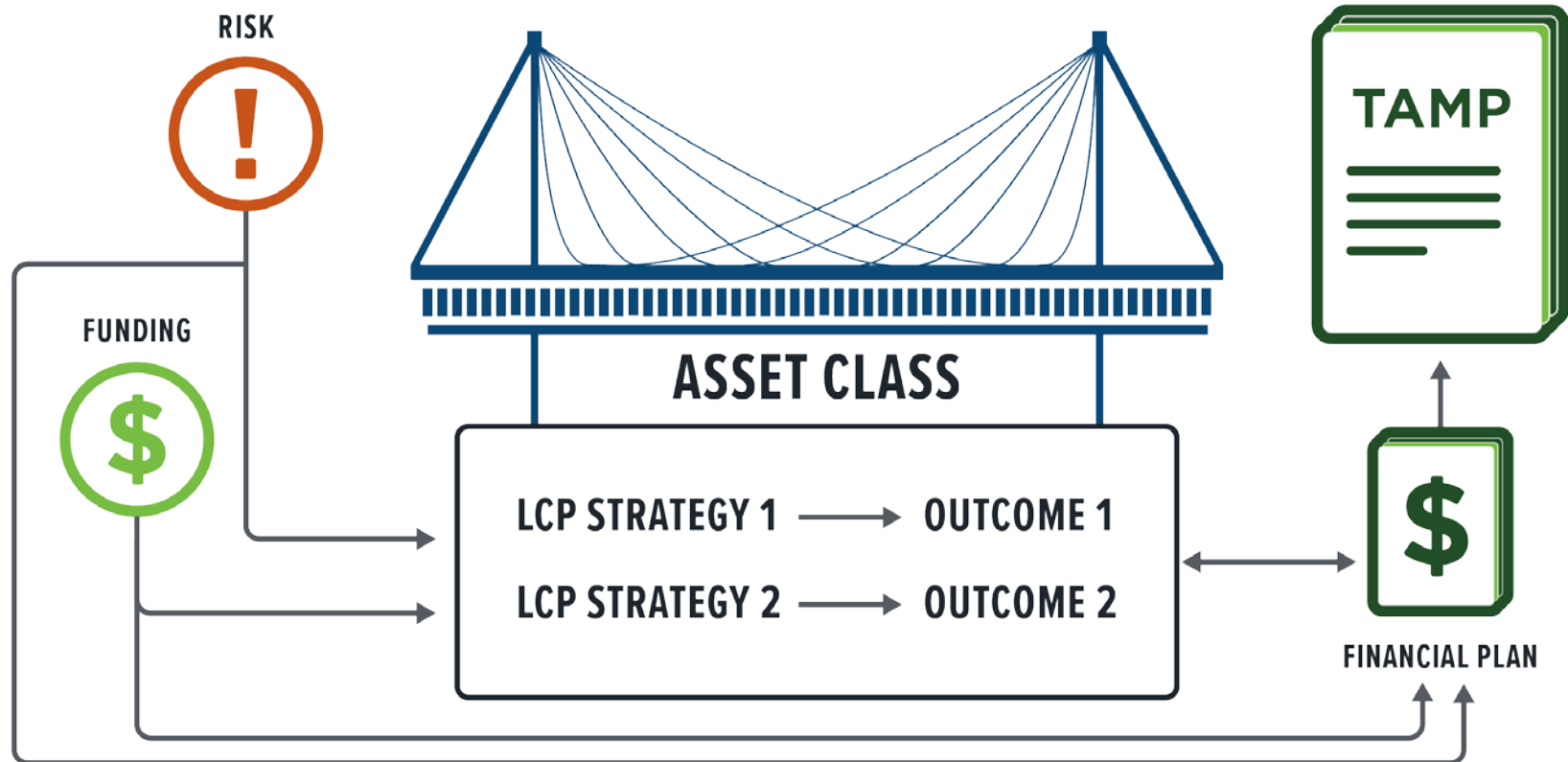
PROJECT LEVEL



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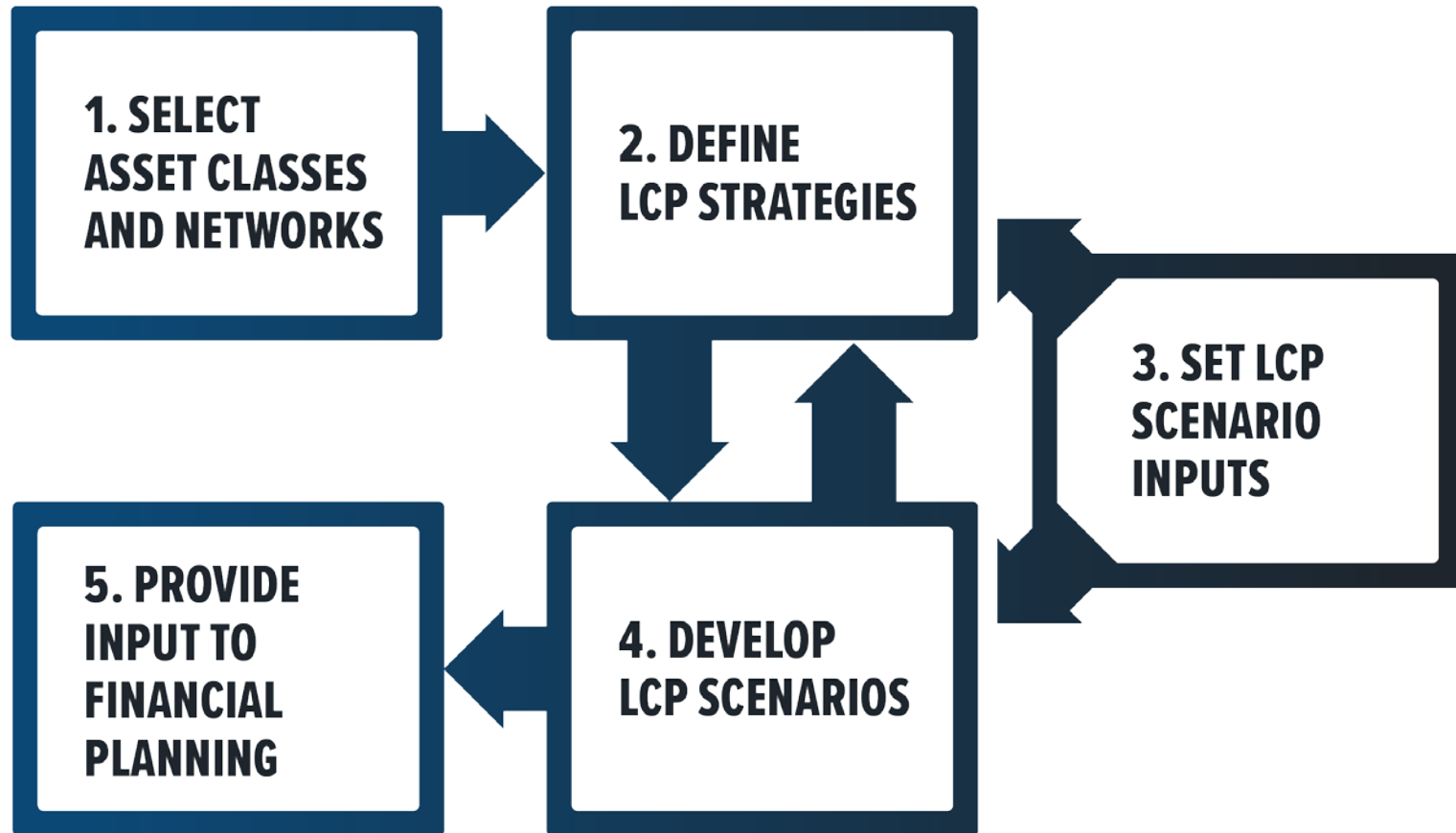
How Does LCP Support a TAMP?

LIFE CYCLE PLANNING PER ASSET CLASS



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LCP Process

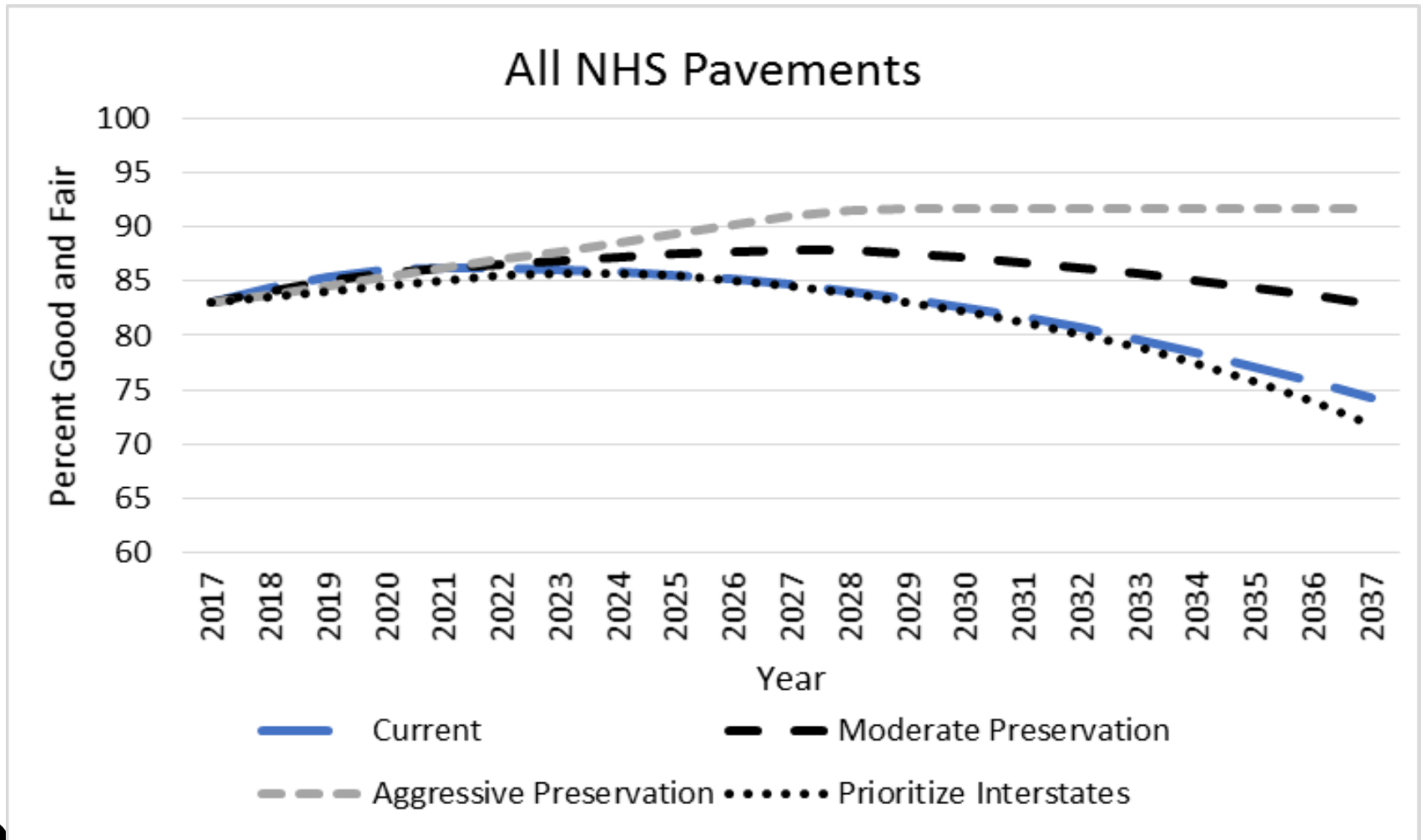


Step 1: Select Asset Classes and Networks

- What asset classes are required to be included in the TAMP?
- What other networks might be included for pavements and bridges?
- What other asset classes can be included?



Step 2: Define LCP Strategies



Step 3: Set LCP Scenario Inputs

- Current conditions
- Performance curves
- Annual funding / budgets
- Analysis timeframe
- Treatments
- Treatment costs
- Strategy details and rules



Step 4: Develop LCP Scenarios

- Has the agency met or exceeded minimum requirements?
- What level of funding is needed to achieve targeted conditions?
- Is there a more cost-effective strategy to preserve system conditions at a lower cost?
- If funding is insufficient to achieve targeted conditions, what condition level can be achieved for the available funding?



LCP Requirements



- What information do you need to do LCP?



Using LCP Results

- What LCP scenario leads to the lowest practical life-cycle cost?
- Does the scenario address risks and constraints?
- What conditions can be achieved at different funding levels for each LCP scenario?
- What LCP scenarios should be advanced to the financial planning process?



LESSON 2 RISK MANAGEMENT

Lesson Topics

- Key concepts of risk management
- How risk management supports performance and asset management
- Risk management process
- Incorporating mitigation strategies into an investment strategy



Risk Management: Key Concepts

- Addresses uncertainty, variability, opportunities, and threats
- Identifies, analyzes, prioritizes, and manages threats and opportunities to asset management performance objectives and condition targets
- Supports applying opportunities
- Summarizes changes in environmental conditions and their impact

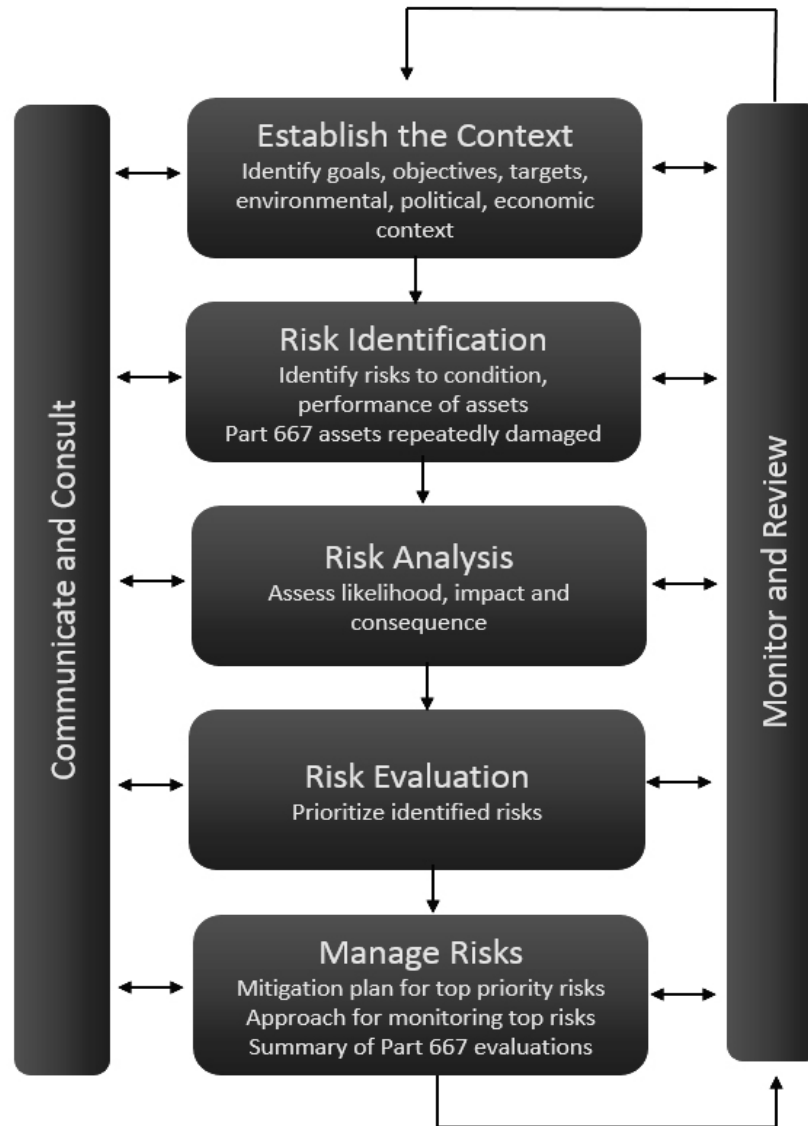


Role of Risk Management

- How does risk management support performance and asset management?
 - Provides a framework for **analyzing, prioritizing, and addressing** uncertainties specific to achieving TAMP performance objectives and condition targets, including the financial and LCP strategies



Risk Management Process



Step 1: Establish the Context

- Identify risks to:
 - Asset management goals, objectives and targets
 - Short- and long-term priorities
 - Asset management tools and procedures



Step 2: Identify Risks

Commonly identified risks fall into the following categories:

- Environmental Conditions
- High-Risk, High-Value Assets
- Legal or Compliance
- Information or Decision
- Hostile Acts, Malfeasance, Accidents
- Financial
- Demand
- Operational



Step 3: Analyze Risks

- What is the likelihood and consequence associated with each risk?

Risk Matrix with Impact and Likelihood Definitions			Likelihood				
			Rare	Unlikely	Likely	Very Likely	Almost Certain
			Less than once every 10 years	Once in more than 3 but less than 10 years	Once between 1-3 years	Once a year	Several times a year
Impact	Catastrophic	Potential for multiple deaths & injuries, substantial public & private cost.	Medium	Medium	High	Very High	Catastrophic
	Major	Potential for multiple injuries, substantial public or private cost and/or foils agency objectives.	Low	Medium	Medium	High	Very High
	Moderate	Potential for injury, property damage, increased agency cost and/or impedes agency objectives.	Low	Medium	Medium	Medium	High
	Minor	Potential for moderate agency cost and impact to agency objectives.	Low	Low	Low	Medium	Medium
	Insignificant	Potential impact low and manageable with normal agency practices.	Low	Low	Low	Low	Medium



Step 4: Evaluate Risk



- What is the agency's risk tolerance?



Step 5: Manage Risk

- Mitigation strategies include:
 - Treat
 - Transfer
 - Tolerate
 - Terminate
 - Take advantage



Using Mitigation Strategies

- Mitigation strategies can be incorporated into TAMP investment strategies



LESSON 3 FINANCIAL PLANNING

Lesson Topics

- Purpose of TAMP financial plan
- Information used to develop a TAMP financial plan
- Financial plan development process



Purpose of a Financial Plan

- Communicates the financial environment
- Provides 10-year revenue forecast
- Identifies funding needed to achieve desired state of good repair
- Demonstrates level of conditions achievable with available funds
- Basis for comparison of investment strategies

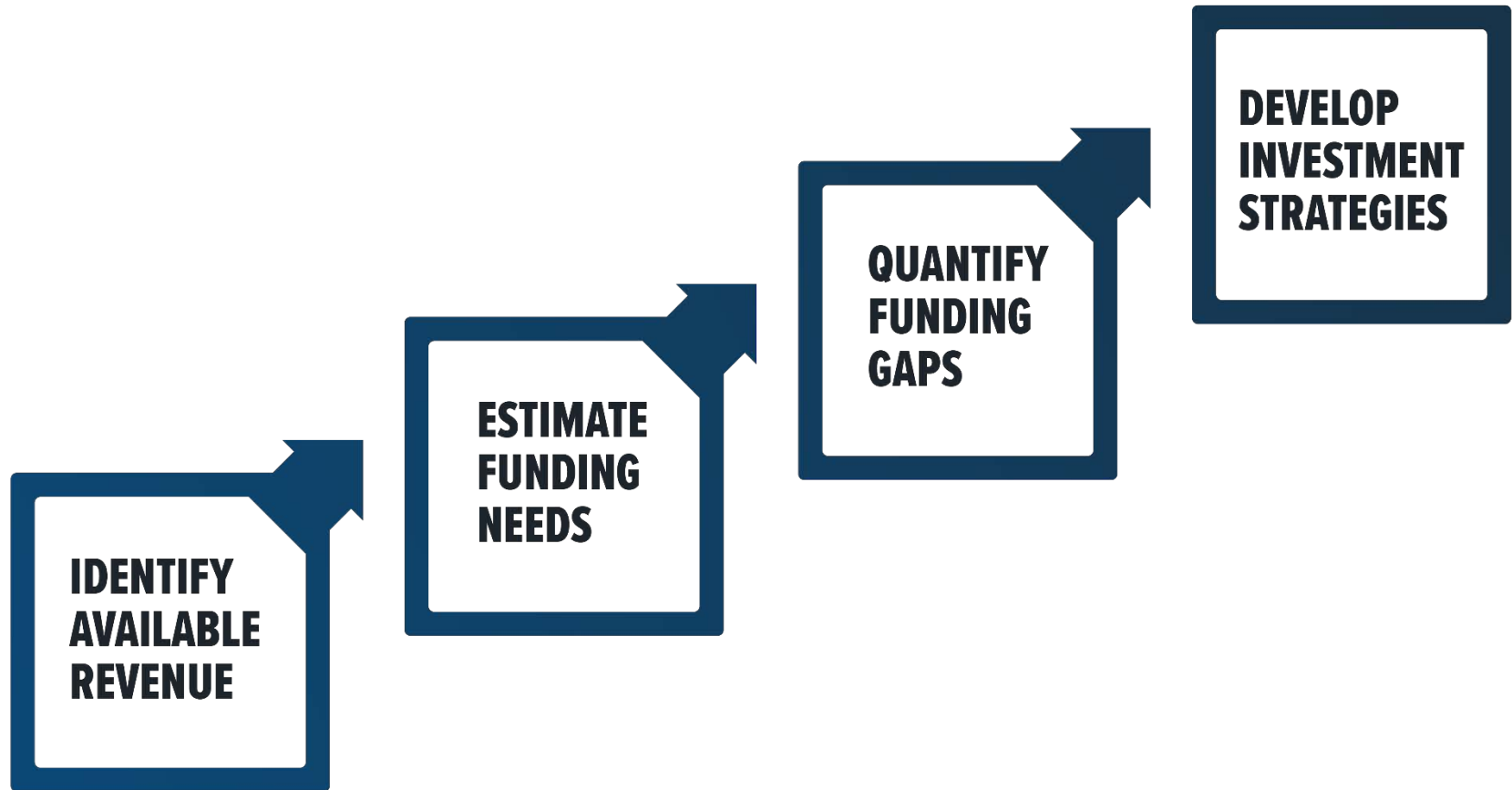


Information Used to Develop a Plan

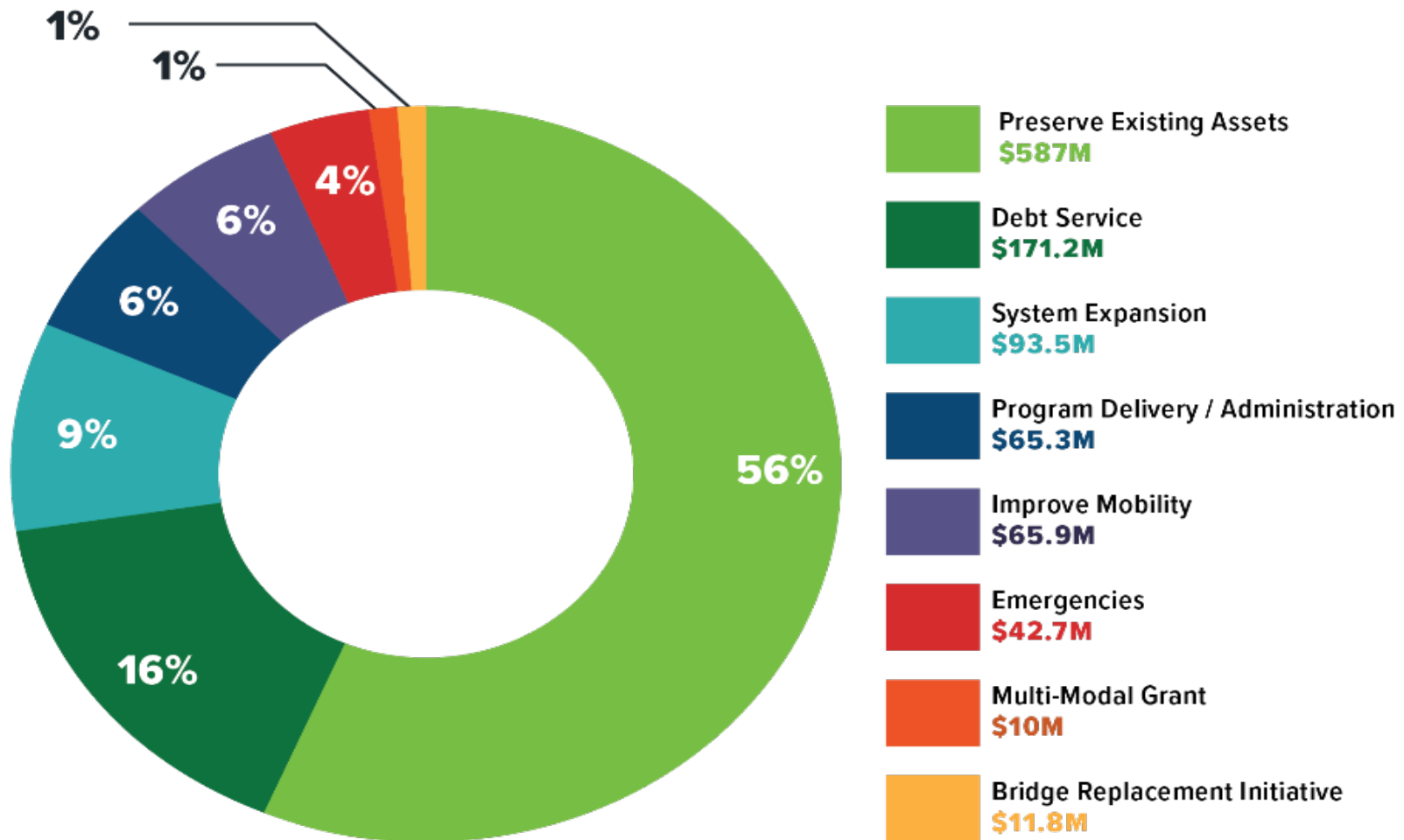
- Financial information
- LCP
- Condition predictions
- Initial targets
- Risk analysis results
- Recommendations from other plans
- Performance gap analysis



Developing a Financial Plan



Step 1: Identify Available Revenue

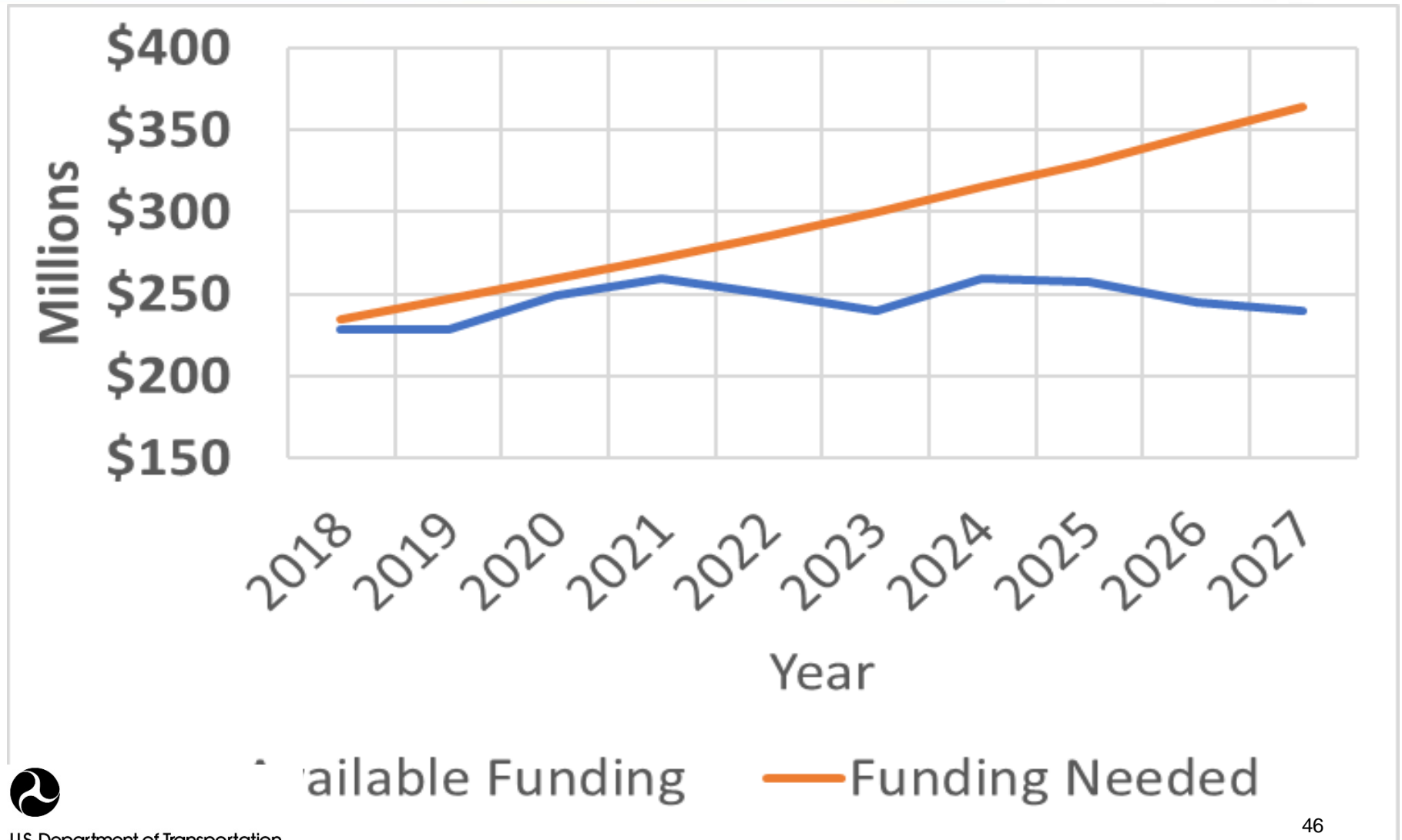


Step 2: Estimate Funding Needs

- Funding is needed to:
 - Meet condition targets
 - Achieve and sustain the desired SOGR
 - Address system performance through improvements to physical assets



Step 3: Quantify Funding Gaps



Step 4: Develop Investment Strategy

- Review risk mitigation strategies, LCP scenarios, and funding distribution
- If there are funding gaps, conduct some level of cross-asset analysis
- Document ways to close funding gaps and consequences of failure



Tradeoff Analyses Examples

Multi-Criteria Analysis Matrix					
	Weight	Strategy 1	Strategy 2	Strategy 3	Strategy 4
Safety Criteria 1	4	2	1	1	3
Safety Criteria 2		4	3	4	5
Total Safety Value		6	4	5	8
Wtd. Safety Score		24	16	20	32
Pavement Criteria 1	2	6	5	7	5
Pavement Criteria 2		8	7	10	3
Total Pavement Value		14	12	17	8
Wtd. Safety Score		28	24	34	16
Bridge Criteria 1	3	10	9	1	1
Bridge Criteria 2		2	3	4	5
Total Bridge Value		12	12	5	6
Wtd. Safety Score		36	36	15	18
Total Weighted Score		88	76	69	66
Rank		1	2	3	4



Collaborating and Communicating

- Work with leadership and external stakeholders to determine what funding scenario and investment strategy will be recommended in the TAMP
- Provide an assessment of the agency's ability to implement the investment strategy and any risks to that implementation



DEBRIEF AND WRAP-UP

Summarize the Investment Strategy

- What were your major findings?



Contact Information

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