Transportation Asset Management
A Risk-based approach

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Asset Management

- Asset Management combines a focus on metrics and long-term system sustainability
  - By taking a long term view and anticipating future conditions (sustaining for long-term conditions)
  - By having short term targets to accomplish the long term plan and maximize future performance and condition of infrastructure
What is asset management?

- Asset management is a **strategic and systematic** process of operating, maintaining, and improving **physical assets**, with a focus on **engineering and economic analysis** based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that **will achieve and sustain a desired state of good repair** over the lifecycle of the assets at minimum practicable cost. (23 U.S.C. 101(a)(2), MAP-21 § 1103)
What are the scope and content of a risk-based asset management plan?

- Includes strategies that lead to a program of projects that would make progress toward achievement of the State targets for asset condition and performance of the NHS.

- States must address pavements and bridges but are encouraged to include all infrastructure assets within the highway right-of-way in their risk-based asset management plan. (Also can include roads other than on the NHS.)
Highway Asset Management Plan

Plan Contents

- A Strategic and Systematic approach
- Pavement and bridge inventory and conditions on the NHS,
- Objectives and measures,
- Performance gap identification,
- Lifecycle cost and risk management analysis,
- A financial plan, and
- Investment strategies

(preservation)
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- Assessing risk to the system (network)
- Largely limited to managing risk at the project level
  - Identify threats and opportunities to project cost, scope and schedule
- Need to recognize risk at program and organizational levels
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- Enterprise level approach to protect transportation investments
- The effect of uncertainty on objectives
- The chance of something happening that will have an impact on objectives
  - Likelihood and consequence
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- Major external threats create havoc with TAMPs
  - Predictable deterioration curves
  - Erratic and abrupt

- Katrina, Irene and Sandy
  - More damage in one day
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- Effects far greater than 50 years ago
  - More urbanized, more connected
  - Increasing frequency
  - More intense,

- Dual challenge –
  - Refine predictable performance
  - Prepare for unpredictable
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- Impact MUST be minimized
- Cannot be prevented

- Our focus must be on:
  - Redundancy
  - Robustness
  - resiliency
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- Asset Management is not a complete answer
- It serves as an important component
- Need to develop a plan than ably copes with a wide range of predictable and unpredictable events
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- Redundancy: duplicative or excess capacity
- Robustness: Well-maintained assets generally are better to withstand the stress
- Resiliency: ability to prepare and plan to successfully adapt to adverse events
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• Series of Risk-based studies / white papers
  • FHWA website – asset management

• 1) Overview of Risk Management
• 2) Managing Asset Risks at Multiple Levels
• 3) Risk to Asset Management Policies
• 4) Managing Risks to Critical Assets
• 5) Managing External Threats
Asset Management – This is how we do business:

- Preserve our assets and minimize their whole life costs.
- We need to better understand – whole life costs – be better informed
- Operate in a financially sustainable manner.
- Provide a framework to improve performance on a long-term basis.
Resources Are Available

- NHI Transportation Asset Management Training Course
- AASHTO Asset Management Guide – A Focus on Implementation
- FHWA Office of Asset Management
- AASHTO Asset Management Subcommittee
- TRB Asset Management Committee
- Other -