

Asset Management, Extreme Weather, and Proxy Indicators Pilot Program (2017-2019)

As States build their asset management programs, it is important that they address risks posed by extreme weather events and future environmental conditions, and consider their effects on life cycle planning over the service life of bridges, pavements, and any other asset classes addressed. Ultimately, realistic financial plans will account for funding needs to improve or preserve the condition of the assets and the performance of the system while accounting for these risks.

The goal of this pilot program, announced in May 2017, is to help States incorporate information on resilience into asset management programs and their Transportation Asset Management Plans (including assessment of risks and life cycle planning). Asset management plans must identify risks, including current and future environmental conditions, that can affect NHS pavements and bridges and the performance of the NHS (23 CFR 515.7(c)(1) and 515.9(d)(6)). A related goal is the development of additional proxy indicators¹ that can facilitate assessment of vulnerabilities and streamline development of information needed to identify actions that would eliminate or reduce negative impacts on the life cycle of assets. FHWA plans to develop a guidebook to help States consider innovative ways to identify potential risks and address them in asset management processes and plan development.

For more information on this pilot program, please see the “Call for Pilot Projects: Asset Management, Extreme Weather, and Proxy Indicators (May 11, 2017).”

Many States, including five of the six selected to participate in this pilot program, have assessed the vulnerability of highways to extreme weather events and future environmental conditions. These findings can help inform the States’ asset management work.

The six pilot projects are expected to be completed in late 2018.

Arizona – Arizona DOT will work to integrate consideration of extreme weather risk into its asset management practices, with an emphasis on developing a risk register informed by analysis of extreme weather event risks; assessment of costs that would support life cycle planning; and consideration of proxy indicators for identifying resilience concerns.

Kentucky – The Kentucky Transportation Cabinet will leverage its recent vulnerability assessment to develop a risk register and consider the effect of extreme weather events on asset deterioration rates and life cycle planning.

Massachusetts – MassDOT will assess the resilience of bridges, culverts and roads to inland flooding risks and include that information in its asset management systems. The agency also will use the information in culvert inspection protocols and test out proxies for vulnerability.

Maryland – MDOT will develop methods to integrate information on coastal vulnerabilities and hazards into bridge and pavement management systems used for asset management. The agency also seeks to update life cycle management plans to reflect future environmental risk.

New Jersey – New Jersey DOT will develop methods to reduce system risk by linking management of culverts and drainage systems to extreme weather and climate resilience. Key focus areas include life cycle management and system performance.

Texas – TxDOT will focus on assessing the vulnerability of critical assets to extreme weather events in the Houston district, and using that information to inform various aspects of asset management, including life cycle planning and development of asset deterioration curves.

FHWA Resources

- [Guidance on Incorporating Risk Management into Transportation Asset Management Plans](#) (November 2017)
- [Guidance on Using a Life Cycle Planning Process to Support Asset Management](#) (November 2017)
- [Guidance on Developing TAMP Financial Plans](#) (November 2017)
- [Risk-Based Transportation Asset Management Reports: Building Resilience into Transportation Assets \(2013\)](#)
- [FHWA asset management site](#) – Links to policies, guidance, reports, and projects
- [FHWA resilience webpage](#) – Links to resiliency guidance, reports, research, tools and pilot projects

Other Resources

- National Cooperative Highway Research Project (NCHRP) 08-93, [Managing Risk Across the Enterprise: A Guidebook for State Departments of Transportation](#) (2016)
- NCHRP 25-25 Task 94, [Integrating Extreme Weather and Adaptation into Transportation Asset Management Plans](#) (2015)
- AASHTO, [Integrating Extreme Weather Risk into Transportation Asset Management](#) (2012)

For more information, please contact:

- Stephen Gaj, Asset Management Team Leader, Stephen.Gaj@dot.gov, 202-366-1336
- Nastaran Saadatmand, Asset Management Team, Nastaran.Saadatmand@dot.gov, 202-366-1337
- Rob Kafalenos, Office of Natural Environment, Robert.Kafalenos@dot.gov, 202-366-2079
- Heather Holsinger, Office of Natural Environment, Heather.Holsinger@dot.gov, 202-366-6263

ⁱ Proxy indicators provide an indication of condition, exposure to extreme weather, sensitivity to extreme weather, and capacity to adapt. For example, proxy indicators might include pavement distress, pier or abutment shape (which may suggest bridge sensitivity to precipitation-driven inland flooding), road elevation to adjacent ground (which can be an indicator of the potential impact of storm surge), etc. For more, see the [Vulnerability Assessment Scoring Tool](#).