



## RESILIENCE AND TRANSPORTATION PLANNING

The nation's transportation system is essential to the economic prosperity and quality of life of communities. In order to play this critical role infrastructure must be secure and resilient to a myriad of hazards. Resilience is the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions. The Fixing America's Surface Transportation (FAST) Act, signed into law in December 2015, requires agencies to take resiliency into consideration during transportation planning processes.

Following passage of the FAST Act, the Federal Highway Administration and the Federal Transit Administration updated the metropolitan and statewide transportation planning regulations to reflect these new requirements. The transportation planning rule includes:

- A new planning factor for states and metropolitan planning organizations (MPOs) to consider and implement: improving the resiliency and reliability of the transportation system (*23 CFR 450.206(a)(9) and 23 CFR 450.306(b)(9)*).
- A recommendation for MPOs to consult with agencies and officials responsible for natural disaster risk reduction when developing a metropolitan transportation plan and the transportation improvement program (*23 CFR 450.316(b)*).
- A requirement that the metropolitan transportation plan assess capital investment and other strategies that reduce the vulnerability of the existing transportation infrastructure to natural disasters (*23 CFR 450.324(f)(7)*).

## CLIMATE AND EXTREME WEATHER RESILIENCE

The impacts of a changing climate and extreme weather events are one of the hazards that threaten our nation's transportation systems. Flooding, extreme heat, and severe storm events endanger the long-term investments that Federal, state, and local governments have made in transportation infrastructure. Changes in climate have intensified the magnitude, duration, and frequency of these events for many regions in the United States, a trend that is projected to continue. As a result, transportation agencies across the country are assessing ways to protect, preserve, and improve their assets in the face of increasing climate change and extreme weather events.

## OPPORTUNITIES TO CONSIDER CLIMATE RESILIENCE IN TRANSPORTATION PLANNING

State Departments of Transportation (DOTs) and MPOs across the country are conducting vulnerability assessments to understand the vulnerability of their transportation systems to the impacts of climate change and extreme weather. The transportation planning process provides a key opportunity for transportation agencies to proactively identify projects and strategies to address the vulnerabilities identified through the assessments and to promote resilience at the systems level, thereby meeting the FAST Act resiliency requirements outlined above.

At each stage of the transportation planning process, agencies have opportunities to integrate resilience:

**Regional Vision & Goals:**

Establish goals and performance measures related to resilience (e.g., system reliability, sustainability, reduced delays).

In Tampa, Florida, the Hillsborough MPO's long range transportation plan includes an objective to increase the security and resiliency of the multimodal transportation system, with an associated performance measure on reducing the recovery time and economic impact of a major storm. The plan also outlines an investment plan needed to achieve the objective of the vulnerability reduction program.



**Long Range Transportation Plan:**

Use information on resilience to identify strategies and investment scenarios during development of statewide and metropolitan long range transportation plans.

The Capital Area Metropolitan Planning Organization (CAMPO) in Austin, Texas integrated the results of its vulnerability assessment into its 2040 Regional Transportation Plan. The plan summarizes the climate-related risks to the region's transportation system and identifies potential measures that the CAMPO region can implement to proactively increase the transportation system's climate resiliency. Priority action items included in the plan are: increasing extreme weather resiliency by evaluating the adequacy of potential wildfire and flood evacuation routes; identifying opportunities to increase system redundancy and alternate routes; and advancing best practices in addressing drought related impacts on the transportation system.



**Project Evaluation and Prioritization:**

Use resilience as a factor for project prioritization.

The Maryland Department of Transportation's State Highway Administration (SHA) is using the results of its vulnerability assessment to delineate coastal locations vulnerable to flooding. This data is intended to help the agency screen new project plans and designs for resilience to future climate impacts. The SHA will use the screening mechanism to inform its Highway Needs Inventory, a planning document that lists major capital construction projects.



**Project Development:**

Consider resilience in project design and engineering.

The Massachusetts Department of Transportation developed the Highway Project Intake app, a web-based GIS application designed to improve agency coordination and expedite project delivery. The app allows users to access over 30 location-based transportation, safety, environmental, and vulnerability data layers, including an inventory of flood prone areas. Project planners can utilize the tool to identify vulnerability issues and adaptation solutions early in the project planning process.

**LEARN MORE**

FHWA is developing resources to assist transportation agencies with integrating resilience into the transportation planning process. For more information, visit the FHWA's Sustainability and Resilience website at <http://www.fhwa.dot.gov/environment/sustainability/resilience/> or contact:

**Heather Holsinger**

Sustainable Transport and Resilience Team

[Heather.Holsinger@dot.gov](mailto:Heather.Holsinger@dot.gov)

202-366-6263

**Jody McCullough**

Planning Oversight and Stewardship Team

[Jody.McCullough@dot.gov](mailto:Jody.McCullough@dot.gov)

202-366-5001

