



Transportation Resilience Discussion

Regional Transportation Advisory Council

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Judy Taylor

Boston Region Metropolitan Planning Organization

Agenda

- Background
 - Resilience terms
 - Climate change impacts in the Boston Region
 - Resilience and transportation
- Resilience at the MPO
 - How is resilience incorporated into MPO work?
 - Future resilience work at the MPO
 - Resources
- Discussion

What is Resilience?

Resilience refers to the ability of a system, community, project, or other entity to **anticipate** extreme events, **absorb** their impacts, **recover** in a timely and efficient manner, and **adapt** to better withstand future disturbances.

Climate resilience specifies the **types of extreme events** (heavy precipitation, winter weather, extreme heat/cold, etc.)

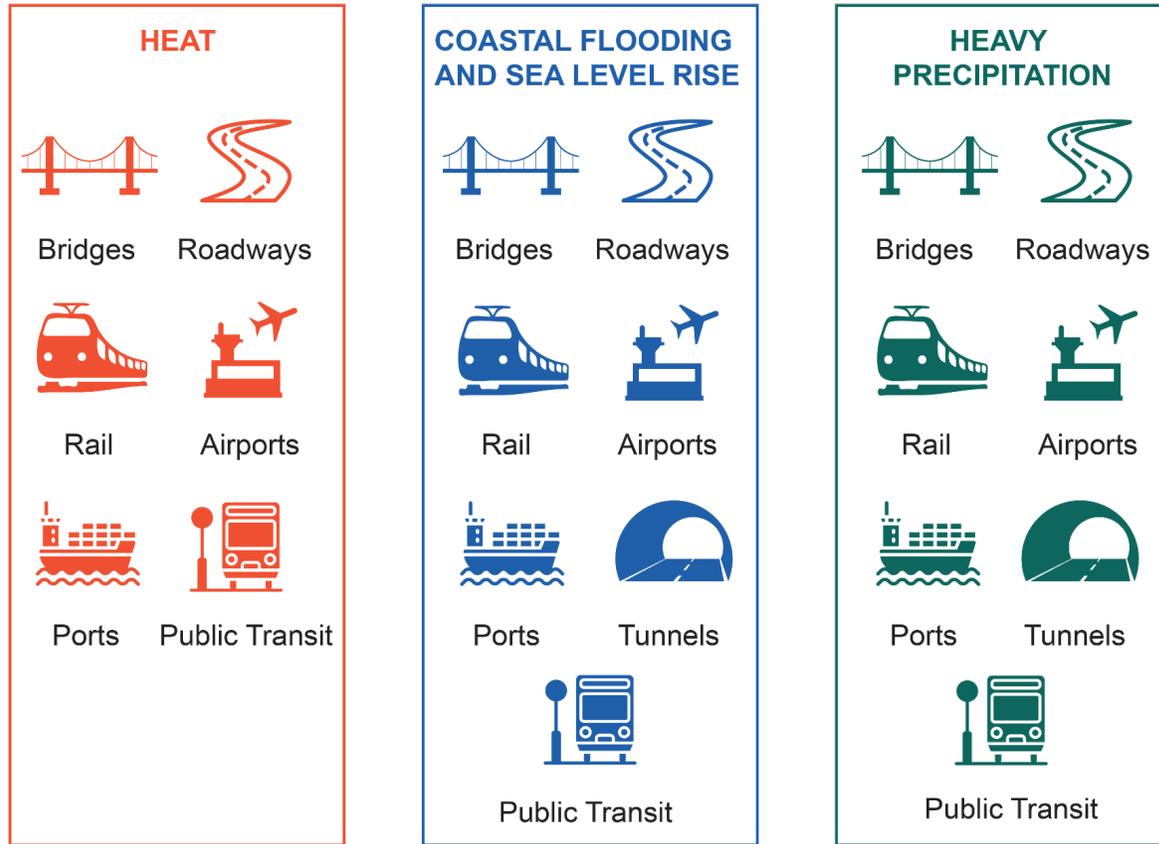


Climate Change in the Boston Region

- Rising Temperatures
- Sea Level Rise
- Changes in Precipitation



Climate Change and Notable Vulnerabilities of Transportation Assets



National Performance Goals at Risk



Reduced Project Delivery Delays

Safety

Environmental Sustainability

Freight Movement & Economic Vitality

Infrastructure Condition

Congestion Reduction

System Reliability

Fourth National Climate Assessment (U.S. Global Change Research Program)



Vulnerability

The likelihood of something (a building, roadway, community, etc.) to be adversely impacted by an extreme event, based on its exposure, sensitivity, and adaptive capacity.

Exposure

The location of something relative to a potential hazard

+

Sensitivity

The characteristics of something that determine its response to an extreme event

+

Adaptive Capacity

The ability to adjust to or cope with the impacts of extreme events

Other related terms

Adaptation

Adjusting to current and future effects of climate change (ie., resilience-building)



Mitigation

Preventing the effects of climate change by reducing greenhouse gas emissions



How is resilience incorporated into MPO work?

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- Part of LRTP's Vision, Goals, and Objectives

From Destination 2040:

● **SYSTEM PRESERVATION AND MODERNIZATION**

Maintain and modernize the transportation system and plan for its resiliency

- Maintain the transportation system, including roadway, transit, and active transportation infrastructure, in a state of good repair
- Modernize transportation infrastructure across all modes
- Prioritize projects that support planned response capability to existing or future extreme conditions (sea level rise, flooding, and other natural and security-related man-made impacts)

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Will be in Destination 2050:

● RESILIENCY

Provide transportation that supports sustainable environments and enables people to respond and adapt to climate change and other changing conditions.

- Prioritize investments to make the region's roadway and transit infrastructure more **resilient and responsive to current and future climate hazards**, particularly within areas vulnerable to increased heat and precipitation, extreme storms, winter weather, and sea level rise.
- Prioritize resiliency investments in **disadvantaged communities** and in areas that bear disproportionate climate and environmental burdens.
- Prioritize investments in transportation resiliency that improve **emergency access** and protect **evacuation routes**.
- Prioritize investments that include **nature-based strategies** such as low-impact design, pavement reduction, and landscape buffers to reduce runoff and negative impacts to water resources, open space, and environmentally sensitive areas.

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- Analyses to support Needs Assessment findings

COMING SOON

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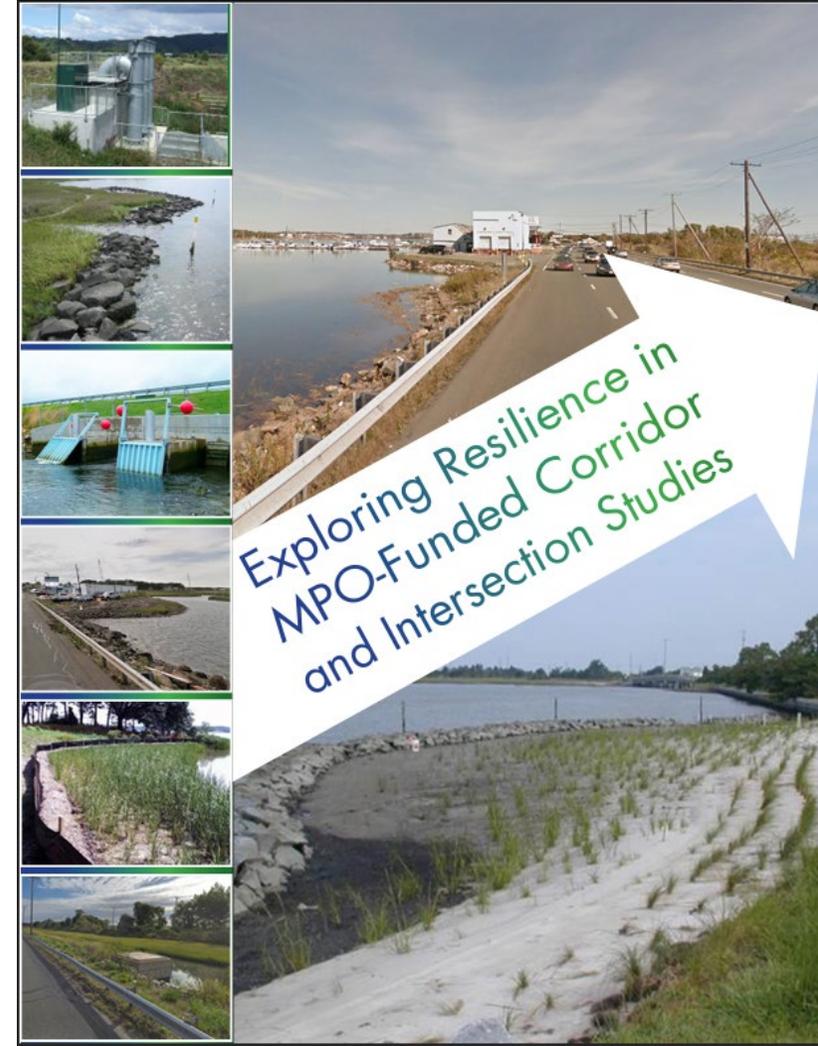
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- Discrete program to promote resiliency work, coordinate among groups, explore data sources, expand coordination with external agencies, etc.

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- Resilience themes explored in corridor and intersection studies
- Study on freight decarbonization in North Suffolk County

Future Resilience Work

- Expand on vulnerability assessment work started for the Needs Assessment
- Consider drafting a Resilience Improvement Plan
- Expand outreach and engagement with environmental stakeholders
- Incorporate hazard data into the Travel Demand Model
- Explore metrics to reflect equity and resilience concerns
- Develop more public-facing material and interactive applications
- Evaluate resilience and environmental TIP criteria
- Explore federal funding sources for resilience improvements

Resources

- [Exploring Resilience in MPO-Funded Corridor and Intersection Studies](#)

- [All-Hazards Planning Application](#)

CTPS Work!

- [2022 MA Climate Change Assessment](#)

- [MBTA's climate change assessments](#)

- [MIT and MBTA study on cost of flooding to transit](#)

- [MAPC's climate vulnerability page](#)

- [MA DEP's stormwater handbook and standards](#)

- [MA EOEEA's Municipal Vulnerability Preparedness \(MVP\) Program](#)



Discussion

- What do you see as the greatest climate threat to transportation in the Boston Region?
- What do you see as the MPO's role in resilience-building?
- What kinds of support/data/information/etc. related to climate change and transportation resilience could the MPO provide to support your understanding of vulnerability in the Boston Region?
- What topics do you suggest the MPO Resilience Program focus on?