

# Highway Resilience Improvement Plan (RIP) and Resiliency Improvement Capital Program

*May 15, 2024*



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# Resiliency Initiatives at MassDOT

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## **ResilientMass: Statewide Hazard Mitigation and Climate Adaptation Plan (SHMCAP)**

- Umbrella initiative for the state's climate resilience initiatives
- Aligns with Massachusetts' Vision: ensuring that the Commonwealth is prepared to withstand, respond to, recover from, and mitigate all types of emergencies and disasters
- Coordinates strategy across state agencies
- Led by the Massachusetts Emergency Management Agency (MEMA) and updated every 5 years

## **MassDOT and MBTA SHMCAP initiatives include:**

- Conducting climate vulnerability assessments
- Climate change adaptation training and guidance
- Enhancing resiliency in screening project development
- Design standards update
- Resilience improvement prioritization
- Tunnel flood mitigation program
- Emergency response plan updates

# Resiliency in Beyond Mobility

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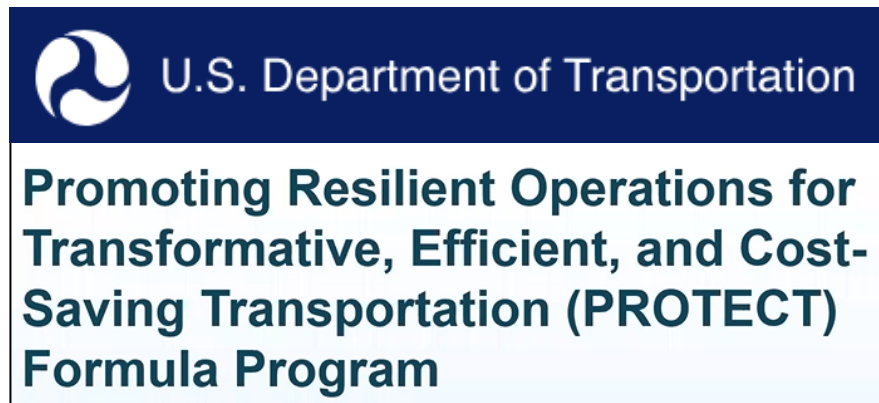
- Resiliency is one of the six Priority Areas of *Beyond Mobility*, MassDOT's Statewide Long Range Transportation Plan.
- There are 17 resiliency action items in Beyond Mobility. Many correspond to MassDOT's and the MBTA's ResilientMass initiatives. One new Beyond Mobility action item calls for the exploration of a grant program to fund municipal vulnerability projects in coordination with the Executive Office of Energy and Environmental Affairs.
- Resiliency performance measures Beyond Mobility calls to be developed are:
  - Number of Capital Investment Plan projects that address locations found (through a statewide flood risk assessment) to be vulnerable or at high risk for flooding and other natural hazards
  - Amount of Federal relief funding Massachusetts has received as a result of natural hazards or declared disaster events



# Resiliency Guiding Plans and Programs

Ability to anticipate, prepare for, withstand, and respond to ongoing impacts of climate change

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# Resilience Improvement Plan

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## Plan

- Prepare for changing conditions and extreme events through vulnerability assessments and identify criteria to evaluate transportation asset vulnerabilities.

## Improve

- Incorporate resilience measures into projects and initiate resiliency-focused projects.

## Maintain

- Reduce disruption from extreme weather and changing conditions to existing assets over their service life through maintenance planning and coordination.

## Respond

- Build and maintain capabilities to respond and quickly recover from disruptions from extreme weather and changing conditions.

## Inform

- Coordinate resilience approach and actions with ResilientMass, municipalities, municipal planning organizations, and the public.

# Resiliency Integration

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## Planning/ Scoping

- MassDOT Highway Division's Project Scoresheet includes resiliency considerations.
- MAPIT automatically screens proposed project locations against environmental, system condition, equity, and safety layers.
- Environmental Review Checklist includes questions related to resiliency and stormwater control measures at scoping.

## Design/ Construction

- Projects going through MEPA review climate exposure and risk information, and recommended design standards from the Statewide Climate Resilience Design Standards Tool.
- Adding a "Climate Change Indicator" subsection as part of the updates to the Bridge Design Manual.
- Regularly utilize resilience reference manuals available through the USDOT Climate Center.

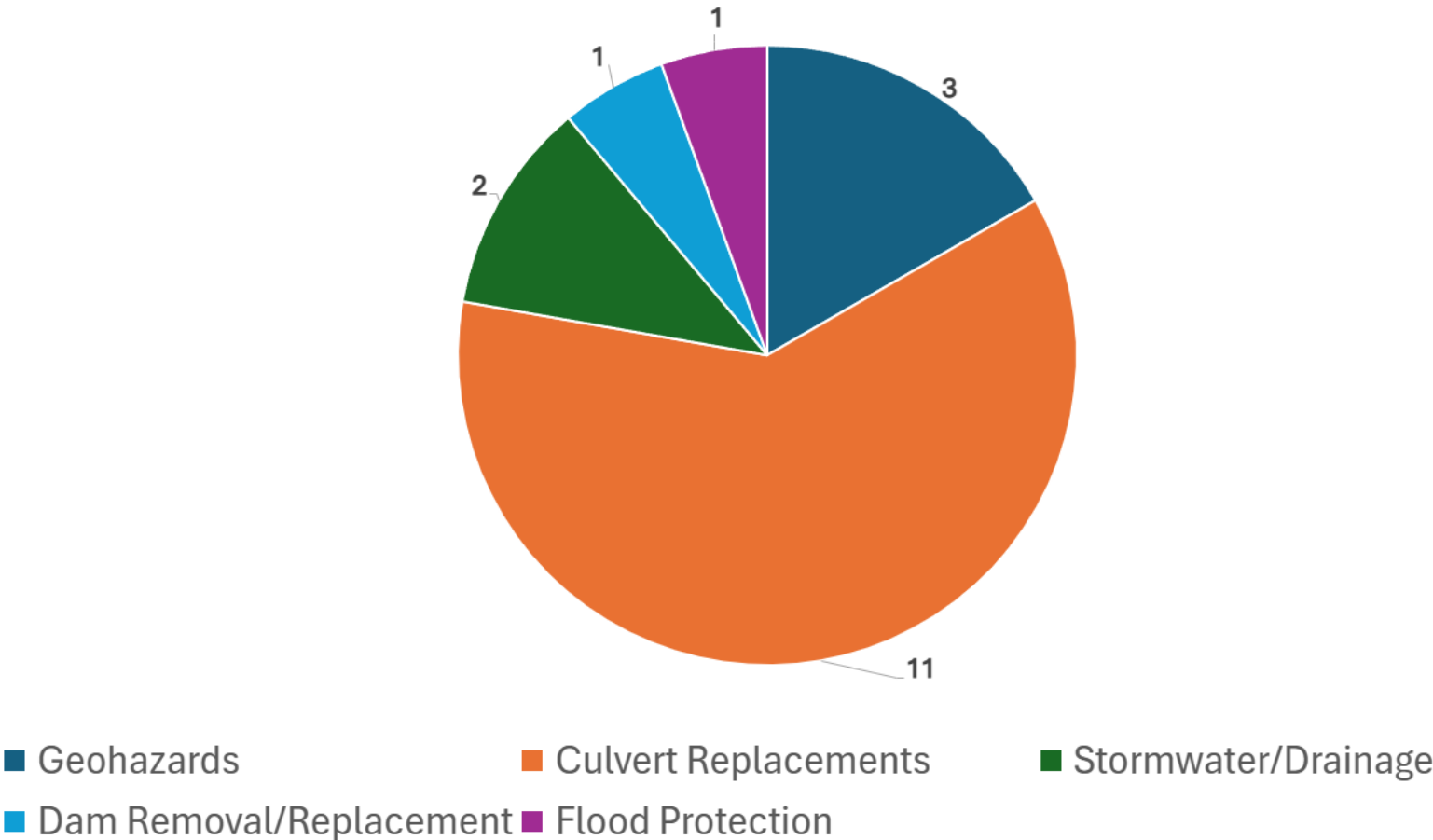
## Operations/ Maintenance

- Developing a Programmatic Operations and Maintenance Plan for drainage system maintenance given more frequent and severe storm events.
- Updated MassDOT standards to align with resiliency best practices relating to pavement mixture, preservation projects, and existing and new bridges.

# Highway Resiliency Capital Investment Program

Federal aid funded with PROTECT formula

Distribution of 18 Programmed Resiliency Projects in Draft CIP  
\$105M in Federal Fiscal Year 2025 - 2029





# Project Examples – Visuals

Programmed in Draft CIP FY25–29

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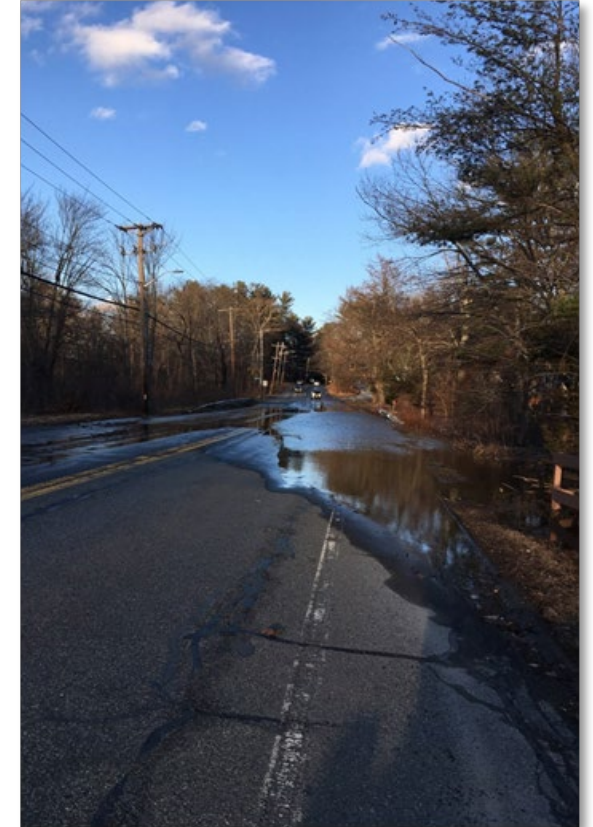
Geohazard Concerns: Erosion above  
Route 8 – Becket



Culvert Replacement – Petersham



Dam Replacement Route 28 –  
Wareham



Undersized Culvert:  
Overtopping and Flooding of  
Route 110 – Haverhill



# Federal PROTECT Grant – \$3.7M Award

Awarded Federal Discretionary PROTECT grant for Worcester Route 20 project

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Flooding of Route 20, Worcester underpass in August of 2021  
(Michael Bonner – MassLive.com)



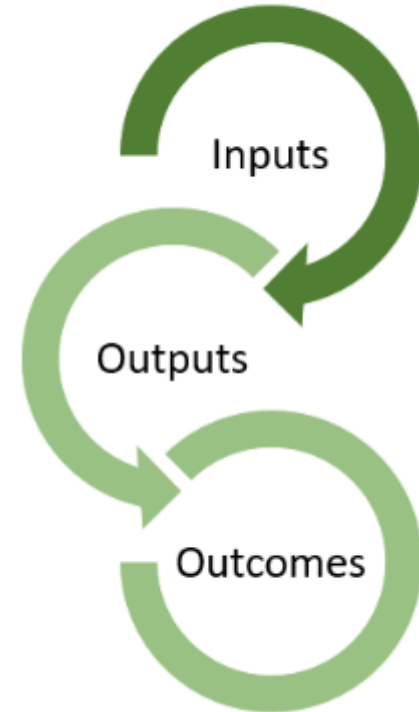
Project Area Interstate State Route  
Town Boundary U.S. Route

# Future Desired Actions

Defined in Beyond Mobility and Resiliency Improvement Plan

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- ❑ Further enhance vulnerability screening and resiliency considerations in project development
- ❑ Fund and implement the Programmatic Operations and Maintenance Plan (POMP)
- ❑ Invest in resiliency-related training and guidance
- ❑ Create a comprehensive culvert and drainage inventory, inspection program, improvement program
- ❑ Develop resiliency framework for Metropolitan Highway System (MHS)
- ❑ Define and publish performance measures



# Thank You

