

TRANSPORTATION RESILIENCY PLANNING

Update on resiliency planning at TPB

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TPB Resiliency Planning - Overview

- Transportation Resiliency – basics
- Federal funding opportunities
- TPB and Transportation Resilience
- Transportation Resilience Improvement Plan Schedule



Vulnerability and Resilience defined

- **Vulnerability** is the degree to which a system **is susceptible to, or unable to cope with adverse effects** of natural hazards
- **Resilience** is the ability **to anticipate, prepare for, and adapt** to changing conditions and **withstand, respond to, and recover** rapidly from disruptions from natural hazards



Figure 1. Damage to Hunter Mill Road in Fairfax County from Tropical Storm Lee (2011). Source: [Flicker/VDOT](#)

Natural Hazards to Transportation

- **Extreme heat:**

- Train rails expand, risking derailments
- Concrete roads crack and asphalt buckles
- Bridge joints expand

- **Extreme winter conditions:**

- Road surfaces crack and potholes form
- Systems operations power loss
- Roads close due to obstructions

- **Extreme precipitation and flooding:**

- Erosion can cause catastrophic collapse of any transportation infrastructure
- Roads close due to flood or obstructions

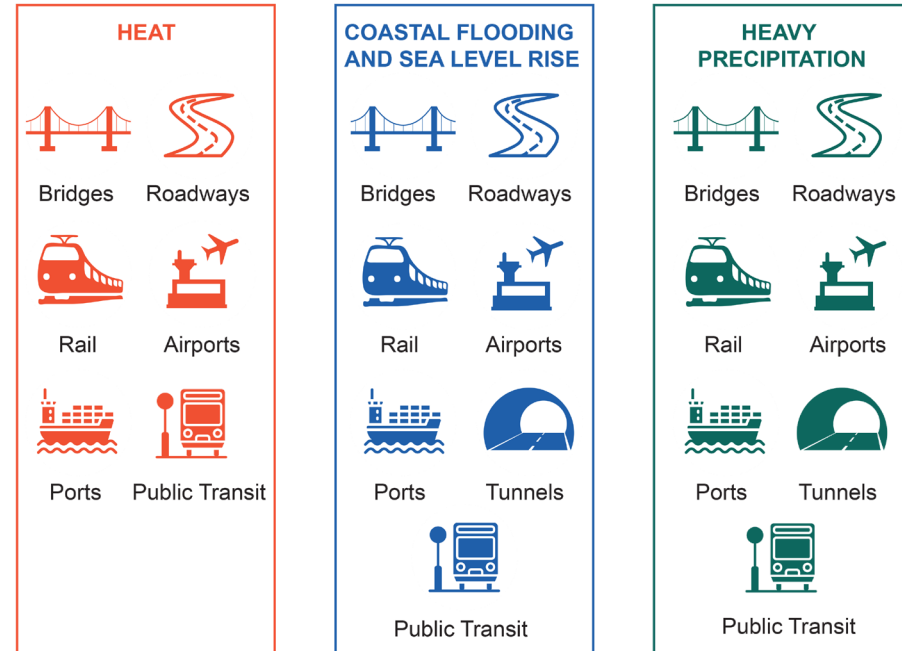


Figure: Fourth National Climate Assessment, Transportation Chapter



Bipartisan Infrastructure Law (BIL/IIJA) PROTECT Program

- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT)
 - \$8.7 billion over five years
 - \$7.3 billion for State DOTs
 - \$1.4 billion across four competitive grant programs:

Planning grants

Resilience
improvements

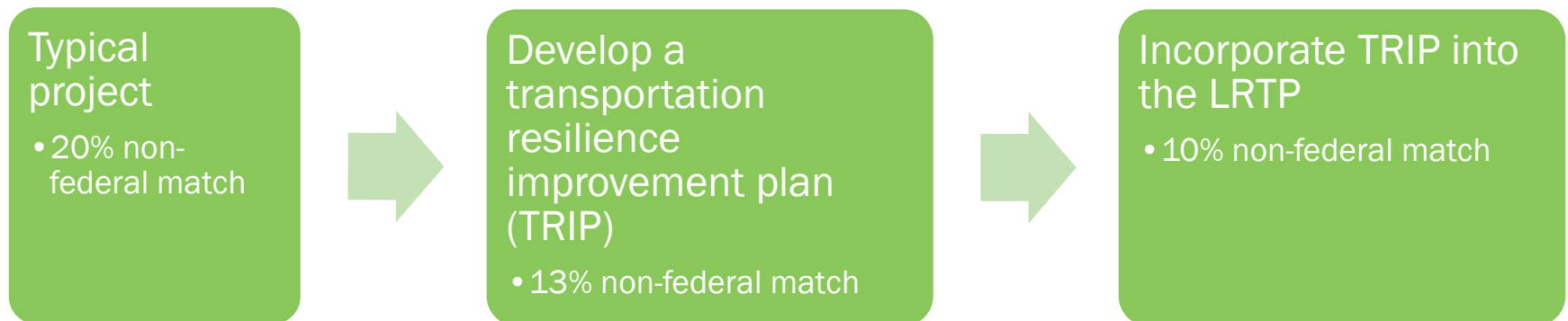
Community
resilience and
evacuation routes

At-risk coastal
infrastructure

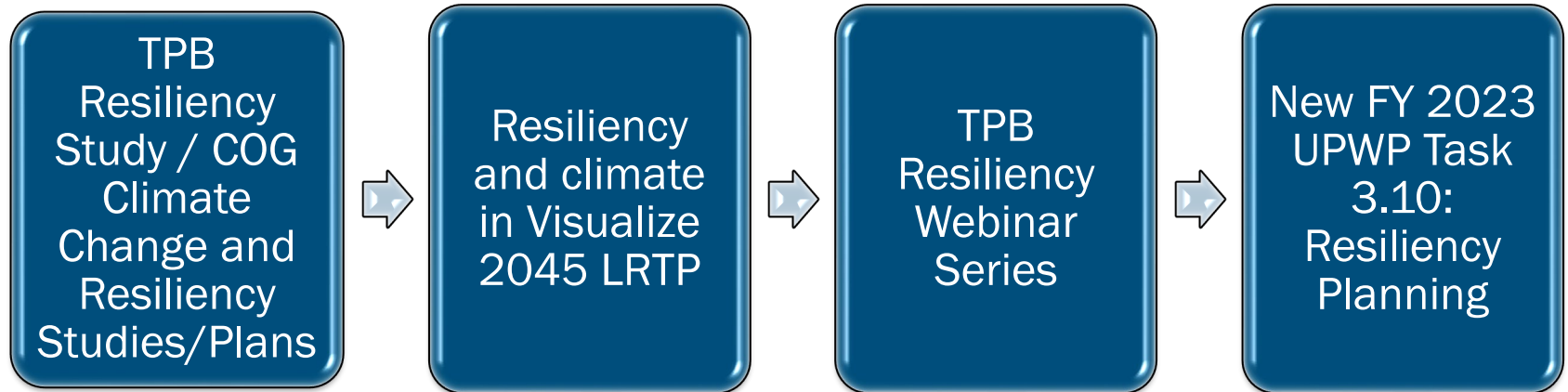


Bipartisan Infrastructure Law (BIL/IIJA) PROTECT Program (cont.)

- Some TRIP requirements include:
 - Demonstrate a **systematic approach** to system resilience
 - Include a **risk-based vulnerability assessment**
 - Include an **investment plan** and list of **priority projects**
- Opportunities to lower local match requirements



Recent TPB Activities



Phase II Resiliency Study


- Transportation Resilience Improvement Plan (TRIP)
- Regional Working Group, eventual subcommittee
- Resilience Forum
- Project list
- Interactive map of major regional resilience hazards



Resilience Study Schedule



May 2023: Finalize Working Group members and schedule meetings



July 2023: Conduct Vulnerability Assessment (system and asset level analyses)

August 2023: Identify criteria to define resilience projects

September 2023: Host resiliency forum

November 2023: Request proposed projects and use criteria to establish Resilience Project List

March 2024: Draft the Transportation Resilience Improvement Plan (TRIP)

June 2024: Finalize TRIP and develop Transportation Resiliency Planning Interactive Map



Upcoming work: May – July 2023

- **Working Group**
 - Invitations sent, members finalized, first quarterly meeting soon to be scheduled
- **Vulnerability Assessment**
 - Phase 1: system-level analysis
 - Phase 2: asset level analysis

Exhibit 1. Example of System-Level Findings

Asset Type	Sensitivity to Extreme Heat	Sensitivity to Precipitation and Flooding
Roadways / highways	Medium Thermal expansion of pavement Risk of heat stress for outdoor maintenance and construction workers	High Heavy precipitation on unpaved roads can cause washout Flooding can cause erosion of embankments



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