26-33-300 Transportation Resilience Improvement Plan (TRIP) and Technical Assistance - New Jersey (4 Years)

Responsible Agency: **Delaware Valley Regional Planning Commission**
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Supports LRP Goals:

Goals:

Identify and prioritize transportation assets that are vulnerable to extreme weather events and chronic weather-related impacts. Identify, prioritize and develop investments that reduce these risks, ensuring the efficiency, safety, and reliability of the region's transportation network.

Description:

Extreme weather events such as flooding, heat waves, and severe storms threaten Greater Philadelphia's transportation system. Our streets, highways, bridges, railroads, transit systems and active transportation facilities already experience costly weather-related impacts, leading to travel delays, disruptions to emergency services, economic losses, and public safety concerns. Extreme weather events and chronic stresses also increase the cost to repair and rebuild vulnerable transportation assets. In the future, these impacts are projected to become more frequent and intense across the region.

Preparation of a Transportation Resilience Improvement Plan (TRIP) is the most effective means to comprehensively understand which transportation assets are vulnerable to extreme weather and prioritize investments that address the region's most pressing needs. DVRPC will work with transportation agencies and local governments to develop a TRIP that identifies vulnerable assets, prioritizes needs, and supports the acceleration of resilience-focused infrastructure investments throughout the New Jersey portion of the DVRPC region.

This work will also complement the NJDOT Division of Statewide Planning's recently completed Part 667 Evaluation, which assesses facilities that have required repeated repair and reconstruction following emergency events. This evaluation identifies a list of bridges and highway segments across New Jersey that have been damaged at least twice by extreme weather events, encouraging consideration of "reasonable alternatives" (regarding these facilities) to reduce repeated repair costs. While the Part 667 Evaluation highlights known vulnerabilities, the TRIP process will allow planners to identify additional assets that may experience similar impacts in the future and propose interventions that reduce or mitigate these risks. These same practices can also be applied to help reduce the need for emergency repairs for the assets identified in the Part 667 Evaluation.

Project Approach:

This New Jersey project has two components: 1) Develop a Transportation Resilience Improvement Plan (TRIP) for the New Jersey portion of DVRPC's planning area, which includes Burlington, Camden, Gloucester, and Mercer counties; and 2) Provide technical assistance to local partners in NJ to develop discrete projects that improve the resilience of assets to extreme weather events. A complementary project (26-33-310) will allocate PROTECT Formula funds from PennDOT to make Part 1 regional, and support development of a TRIP for DVRPC's Pennsylvania counties.

Part 1: Develop a Regional TRIP

The TRIP will provide a systematic, risk-based assessment of how extreme weather affects transportation assets and will identify a prioritized list of projects aimed at improving the resilience and reliability of the regional transportation system.

Risk-based Vulnerability Assessment

DVRPC will conduct a risk-based vulnerability assessment to systematically identify and prioritize vulnerable transportation assets across multiple modes that pose the greatest risks to the efficient operation of the transportation system in the southwestern New Jersey region.

The vulnerability of roadways and highways, bridges, stormwater infrastructure (culverts), transit stations and bus stops, fixed rails and catenaries, and dedicated active transportation infrastructure to weather-related hazards will be determined based on a systems- and asset-level evaluation of exposure and sensitivity. The assessment may also include transit facilities (rail yards and bus garages), airports, and port infrastructure. In addition to the physical assets themselves, the assessment will evaluate the vulnerabilities of users, (e.g. the impacts of a high-heat event on transit users, etc.).

Weather-related hazards to be analyzed will include extreme heat; fluvial, pluvial, riverine and coastal flooding; extreme storms (wind, precipitation); and freeze-thaw cycling. A qualitative analysis of winter weather, including extreme cold, ice storms, and snowfall, may also be conducted. To support the vulnerability analysis, DVRPC may develop regional-scale HEC-RAS (U.S. Army Corps of Engineers Hydrologic Engineering Center's River Analysis System) fluvial and pluvial flood models to depict current and future flood risks.

The criticality of vulnerable assets will be assessed to determine the risk their failure poses to the transportation system. Criticality will be based on factors such as vehicle volumes, a roadway's functional class or role in important economic activities, evacuation routes, and system redundancy. Criticality may also include community-level factors, such as transit-dependency for low-income communities and the role key transportation assets play in alleviating patterns of disinvestment in these communities.

Project Identification and Prioritization

Specific resilience projects are needed to increase system resilience to severe weather events. This section of the TRIP will create a clear and transparent process for identifying priority transportation resilience projects based on the results of the vulnerability assessment and input from DVRPC member agencies. Ultimately, TRIP projects that receive federal funding will be added to DVRPC's TIP.

Overview of Resilience Strategies and Best Practices

The TRIP will provide illustrative examples of resilience improvement strategies, which will serve as a reference to agency partners as they consider resilience projects, solutions, and interventions for the assets they manage. Major categories of resilience techniques will include gray and green stormwater infrastructure improvements; nature-based solutions; roadway elevation and relocation; asset armoring and hardening; materials selection; vegetation maintenance; cool pavements; and interventions to increase shade and comfort for transit users.

Part 2: Provide Technical Assistance for Project Development

Many of the priority resilience projects identified through the TRIP will only include high-level descriptions of the proposed project. To advance these ideas toward implementation, DVRPC will provide targeted technical assistance to partner agencies and member governments to assist them with developing and scoping these projects, as well as identify additional projects and/or enhancements to existing TIP and LRP projects that address vulnerabilities and risks identified in the TRIP. Tasks will include reviewing priority locations for recurring or emerging problems like roadway overtopping, washouts, erosion, etc, and determining/evaluating what kinds of interventions are most effective. Interventions may include new/resized drainage infrastructure; roadway elevation; streambank hardening; changes to stream geomorphology; or green stormwater infrastructure. These will be based on hydrologic modeling, flow data, site investigations, etc. This technical assistance work will serve as the basis for conceptual designs and cost estimates, and ultimately, fundable and implementable projects. Services supplied may include DVRPC staff time, consultant support services, and/or pass-through funding to support project development and scoping, in order to develop a pipeline of specific mitigation projects to advance to final design and construction.

The full period of performance for the vulnerability assessment, TRIP development, and technical support for resilience project development and scoping will be four years. This effort will begin with TRIP development, with technical assistance to follow that will advance priorities established in the TRIP.

Approximate NJ Budget by Task:

- $750,000 - Vulnerability Assessment and TRIP development
- $1,807,741 - Technical assistance for local resilience project development

Total budgets include DVRPC staff time, consultant services, material and supplies, and/or pass-through grants to planning partners.

Tasks:

Part 1 - TRIP Development

1. Convene regional partners and establish a TRIP steering committee
2. Evaluate best practices for transportation vulnerability assessments and TRIP development
3. Identify needed hydrologic modeling and analysis
4. Develop and issue an RFP for consultant support to develop the regional TRIP
5. Collect and gather data from partners and data providers on weather-related hazards and asset information
6. Gather partner and transportation user input on model assumptions and scoring criteria for the vulnerability assessment
7. Conduct a transportation vulnerability assessment in partnership with transportation operating agencies, member governments, and consultant teams.
8. Publish and share the results of the vulnerability assessment
9. Develop criteria and forms for soliciting priority resilience projects for inclusion in the regional TRIP
10. Develop the regional TRIP incorporating analysis, data, and input from all project phases

Part 2 - Technical Assistance Program

1. Create a working group among staff and planning partners to structure and allocate technical assistance services
2. Design a process for identifying and prioritizing technical assistance needs and requests from local governments
3. As appropriate to each technical assistance need, provide planning support that may take the form of site visits, data collection, community and local partner engagement, preparation of cost estimates and conceptual designs, and any other pre-design work necessary to prepare specific resilience projects for design and construction. This may also include preparation of solicitations and execution of consultant agreements, or the provision of pass-through grants to member governments to support efforts to develop and scope targeted resilience projects. With additional funds added to this project via amendment in September 2025, we will have more capacity to undertake additional technical assistance efforts on behalf of local governments over the 4-year duration of this project.

Products:

1. Hydrologic models (HEC-RAS or other) simulating fluvial and pluvial flooding under different rainfall intensity/amount scenarios
2. Historic data on extreme weather events and impacts
3. Data layers detailing the spatial patterns of extreme heat
4. Extreme Weather Transportation Vulnerability Assessment, including maps, analysis, and technical appendices
5. Transportation Resilience Improvement Plan
6. Summary of resilience strategies and best practices
7. Resilience project scopes, cost estimates, and conceptual designs

Beneficiaries:

NJDOT, NJTRANSIT, PATCO, counties, municipalities, and transportation users.

Cost and Funding:

FY	Total	Highway PL Program	Transit PL Program	Comprehensive Planning	Other
2026	$2,557,741				$2,557,741

FY2026 Other Funding Details:

PROTECT Program IIJA Fund- 80% FHWA and 20% NJDOT Toll Credit; The Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program.