

National Peer Exchange on Freight Resiliency for Climate-Related Disruptions

A Freight Professional Capacity Building Peer Exchange Event

Executive Summary

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Sponsoring Agency: Federal Highway Administration Office of Planning and Office of Freight Management and Operations



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14. ABSTRACT This report summarizes the key takeaways from the National Peer Exchange on Freight Resiliency for Climate-Related Disruptions Executive Summary Report. The Peer Exchange convened States, MPOs, and local agencies to discuss how to approach freight resiliency and learn about current practices in freight resiliency across the country. This event was sponsored by the Federal Highway Administration (FHWA) Office of Planning and Office of Freight Management and Operations.					
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Background

The U.S. has been experiencing more frequent and severe extreme weather events, leading to disruptions in the movement of goods and services. Due to the impacts of climate change severely affecting freight operations, the Bipartisan Infrastructure Law (BIL) created a requirement for State Freight Plans to address the resiliency of the freight transportation system, including strategies to decrease the severity of impacts of extreme weather and natural disasters on freight mobility (49 USC 70202). State departments of transportation (DOTs) are also directed to consider current and future environmental conditions in their Transportation Asset Management Plans (TAMPs) and integrate it into their transportation planning processes, which includes freight planning (23 CFR § 515.9). In 2022, the Federal Highway Administration (FHWA) published the State of the Practice Scan: Freight Resiliency Planning in the Face of Climate-Related Disruption, which summarized current resiliency methods and practices of State DOTs and Metropolitan Planning Organizations (MPOs) while identifying gaps in freight resiliency planning. The major gaps identified in the State of Practice Scan included:

- Undefined goals for freight network resiliency outcomes;
- Stakeholder collaboration within and beyond planning jurisdictions;
- Lack of data and information documenting planning breakdowns during disaster response; and
- Operationalizing resiliency concepts, including methods for identifying “freight resiliency projects” and forecasting the anticipated benefits to the network.

Purpose and Overview

As a follow up to the findings of the State of Practice Scan and to learn more about the existing gaps in freight resiliency planning, FHWA organized the National Peer Exchange on Freight Resiliency for Climate-Related Disruptions. The main goals of the event were:

- To help States, MPOs, and local agencies gain tools and knowledge of how to incorporate climate resiliency concepts into their long-range transportation plans and freight plans.
- Convene States, MPOs, and local agencies to provide a forum where they could:
 - Discuss different approaches to freight resiliency;
 - Share successful strategies for incorporating climate resiliency concepts into freight transportation plans and decision making; and
 - Learn about federal resources available to support freight resiliency efforts.
- Help FHWA identify research needs to support efforts around freight resiliency planning.

Peer agencies representing the following State DOTs and MPOs shared their experiences for freight resiliency planning:

- **Texas Department of Transportation (TxDOT)** gave an overview of the process and methods for developing TxDOT’s new Freight and Supply Chain Resiliency Plan and the State Freight Plan, including how freight resiliency was assessed across the State and how stakeholders were engaged.

- **Mid-America Regional Council (MARC)** discussed their approach to freight resiliency, strategies for defining roles for resiliency planning, and holding discussions around resiliency priorities across different stakeholders.
- **California Department of Transportation (Caltrans)** shared their current and future efforts around freight resiliency planning and operations, and their approach for integrating freight resiliency into projects.
- **New Orleans Regional Planning Council (NORPC)** provided an overview of their methodology for analyzing climate vulnerability and using the results to inform freight investments and projects.
- **Illinois Department of Transportation (IDOT)** discussed how freight resiliency is incorporated into their investment prioritization processes, using the Competitive Freight Program as an example.

In addition, all participants shared their experiences with freight resiliency planning during group discussions.

Highlight of Event Discussions

Most participants shared that they are in the early stages of freight resiliency planning. Some of the major challenges for starting freight resiliency planning included:

- **Defining resiliency:** Each State/region is experiencing a unique set of climate events, challenges, and other supply chain disruptions, leading to varying definitions of resiliency. But even within an agency, there are different definitions for resiliency internally and resiliency efforts are often siloed. Additionally, resiliency priorities differ among both internal and external stakeholders.
- **Integrating resiliency into freight:** Participants mentioned that there are resiliency efforts happening within their agency and/or jurisdiction with existing resiliency plans for some, but there is a need to integrate freight into those efforts.
- **Identifying data and tools:** Participants were aware that there are numerous existing data and tools that could help support freight resiliency planning. However, they were uncertain which to use as each tool offers different benefits and capabilities. For many of these tools/data, agencies must purchase and use them to see if they are suitable for their needs. However, the purchased data/tool may not end up being useful, resulting in an unnecessary financial burden. For MPOs or other local agencies, it was suggested that State DOTs can be a good resource for data. This could also encourage more partnerships and collaboration, while avoiding the need to purchase data.

Stakeholder Engagement

Participants discussed the critical role of both internal and external stakeholder engagement for freight resiliency planning as well as challenges and opportunities:

- **Freight Advisory Committees (FAC):** Most participants shared that they engage regularly with the FAC. However, the level of engagement varied for everyone. Typically, FAC meetings were held on a quarterly basis but can vary depending on need.

- Many participants shared that structuring FAC meetings to be task-driven or focused on a specific need/topic can help increase participation. Continuous engagement can also increase more buy-in and lead to more quality engagement.
- Having a subgroup of the FAC that focuses specifically on resiliency could help support efforts around freight resiliency planning and increase stakeholder participation. Having a resiliency-focused subgroup could be helpful, as resiliency may not always be the topic of focus for all FAC members.
- Some participants have found that designating an external lead for the FAC can help increase participation. Some examples in practice shared by participants included appointing an existing member of the FAC to organize meetings, and getting the local Governor’s office to lead the FAC.
- **Stakeholder-informed process for freight resiliency:** Participants placed emphasis on verifying information and identifying resiliency needs/priorities through stakeholder engagement.
 - TxDOT’s State Freight Plan (Texas Delivers 2050) developed 6 diverse scenarios with significant implications for freight, to gain a better understanding of potential threats to freight resiliency.
 - Through these diverse case studies, TxDOT was able to engage with a wide variety of stakeholders and gain a diverse perspective on the potential threats.
 - This effort involved discussions with different districts within Texas, which provided specific and granular information that TxDOT had not been aware of.
 - The information gathered through the stakeholder engagement process better informed strategy development, particularly on how to improve the recovery process from disruptions.
 - NORPC is currently in the process of developing a Transportation Vulnerability Assessment, to understand resiliency through a data-driven methodology. NORPC engaged with stakeholders to confirm that their methodology and findings were accurate.

Prioritizing Freight Resiliency

With different priorities and opinions on climate resiliency, participants discussed challenges and opportunities around having conversations around prioritizing freight resiliency and implementing funding/projects for freight resiliency:

- It can be difficult defining priorities for freight resiliency as priorities often change depending on the public, leadership, and/or elected officials.
 - Education around freight resiliency issues at all levels can help gain support.
 - Messaging is important. For example, using more political neutral terms to communicate climate issues or leaning in on the experiences of the public to gather more buy-in, as most have experienced some form of extreme climate event.
- There can be contradictions when defining priorities for freight resiliency. For example, a strategy to make freight networks more resilient is to create redundancies which can involve projects that expand capacity. However, climate policies are trying to move away from large projects that can negatively impact communities and lead to increases in vehicle miles traveled (VMT). It can be complicated to strategize around these conflicting priorities.

- There are often not enough resources or capacity to manage the existing infrastructure to ensure state of good repair, while simultaneously addressing resiliency and climate change impacts.

Participants learned about efforts happening around freight resiliency in different regions across the country:

- **TxDOT:** Texas Delivers 2050 Freight Plan development process included an extensive stakeholder engagement process, which helped to inform strategies and recommendations for freight resiliency. TxDOT is also in the process of developing a Freight and Supply Chain Resiliency Plan, which will entail an in-depth analysis of supply chains within the State, to assess the State’s freight resiliency. Through a data-driven, stakeholder-informed process, TxDOT identified the Texas Highway Freight Network (THFN), which represents the freight highway network prioritized by the State for freight movements (see Figure 1). Resiliency needs on the THFN were then evaluated by using a risk index calculated by the Federal Emergency Management Agency’s (FEMA) National Risk Index (NRI), to identify vulnerabilities in the freight network.

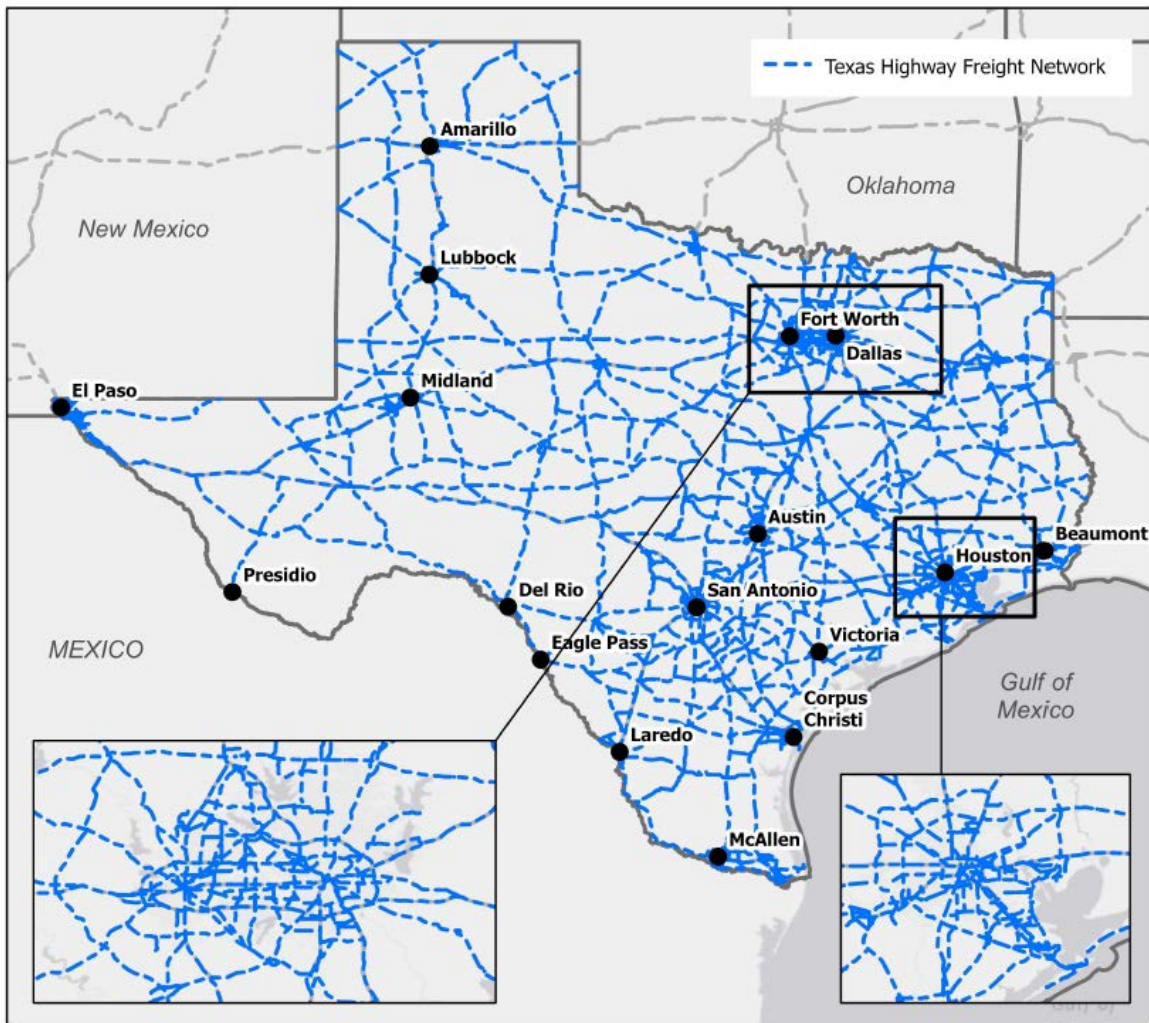


Figure 1: Texas Highway Freight Network (THFN)
Source: TxDOT, 2023

- **Caltrans:** Caltrans is in the process of developing a specific freight resiliency report that will propose policy, communication, funding, projects, and strategies for freight resiliency. Caltrans also discussed the Port and Freight Infrastructure Program, aimed at improving capacity, safety, efficiency, and resilience of freight movement through California’s ports. In addition, resiliency is one of the criteria used to evaluate projects for Caltrans’ Trade Corridor Enhancement Program, aimed at infrastructure improvements on significant freight routes in the State.
- **Illinois DOT:** The Competitive Freight Program is a competitive grant program to provide funding for projects aimed at improving freight mobility in Illinois. Illinois DOT is currently strategizing around ways to incorporate resiliency into the Competitive Freight Program.
- **MARC:** Presented their efforts around stakeholder engagement and communication around freight resiliency. As MARC serves a bi-State region, MARC has become skilled facilitators for coordinating amongst differing priorities as best as possible towards a common goal. MARC actively educates and communicates with stakeholders about the need to integrate resiliency into freight planning.
- **NORPC:** To assess vulnerabilities in their transportation network, NORPC used the USDOT Vulnerability Assessment Scoring Tool (VAST) to assign a climate vulnerability score to transportation assets based on specifically selected datasets tailored to their needs. Using this approach allowed for a better understanding of resiliency needs and NORPC plans to use the VAST tool to identify potential freight resiliency projects to include in long-range planning efforts.

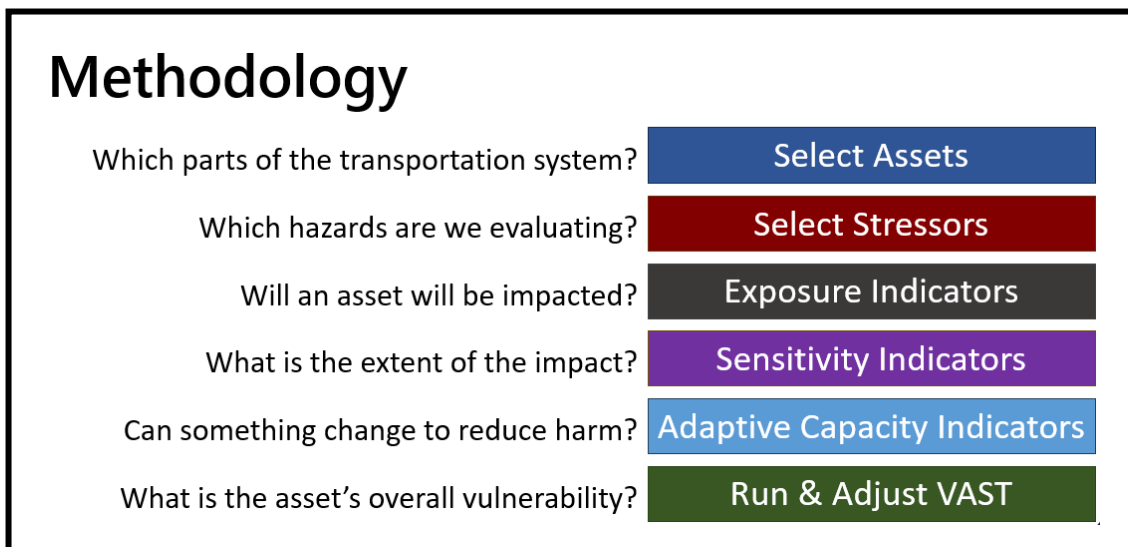


Figure 2: Methodology used by NORPC for their Transportation Vulnerability Assessment
Source: NORPC

Gaps/Challenges and Opportunities

Participants identified major gaps/challenges as well as potential opportunities that could better support freight resiliency planning:

- **Data and tools:** Since there are many data and tools that are available, it would be helpful to have a guidance resource that provides an overview of third-party datasets and tools, so that agencies can better understand the capabilities of each data/tool to determine if it suits their needs prior to purchasing.
 - Not all agencies have internal capacity to process the data. It is a key consideration to ensure that resources and training are provided to help support efforts for data processing.
- **Inflexibility of funding and programs:** Due to regulations, federal transportation funding must be used for types of projects that are eligible under the specifics of the program and can often be inflexible. This leaves agencies to seek projects that are aligned with the funding programs, instead of being aligned with agency needs. In addition, some resilience-focused grants can have extra requirements to demonstrate need. This can be a costly process and agencies may not have the capacity to do the work to meet the requirements.
 - Community resilience and equity are critical considerations during extreme climate events and should also be integrated in freight resiliency planning. However, transportation funding is often inflexible to meet these needs. As FHWA emphasizes the importance of community resilience and equity, there could be more efforts towards connecting community resiliency and equity to freight resiliency particularly for funding.
- **Freight Investment Plan Amendments:** States are able to create a line item in their freight investment plans to provide a competitive grant program for freight projects in local jurisdictions. Once projects are identified, an amendment can be submitted to FHWA to update the investment plan to incorporate the selected local freight projects. Providing a template for freight investment plan amendments and examples would be a helpful resource, to encourage more freight resiliency projects at the local level.
- **Other freight modes:** When approaching freight resiliency, there is a lot of focus on highways. However, other critical modes of freight and infrastructure should be considered such as locks, dams, and barge traffic. For some regions, barges are a significant part of the freight network.
- **Economic factors:** Economic development can often supersede other priorities. There is a need to better understand how economic factors impact freight. For example, understanding how commodity flows and freight are connected, as well as freight operations of industries/companies. Understanding these economic factors and its impact on freight can help better inform freight resiliency planning.
- **Emergency response:** When the I-95 bridge collapsed in Philadelphia, the Governor allowed exemption of some rules to ensure the bridge was repaired as soon as possible. The recovery efforts also used unconventional strategies to expedite repairs. This can be used as an example to develop rapid emergency response procedures in case of extreme climate events, for a fast and efficient recovery. Scenario planning can be a useful tool to support efforts around emergency response planning.

The peer exchange convened agencies and organizations from different regions of the country to share their current practices for integrating climate resiliency into freight planning. Participants recognized the need to integrate climate resiliency into freight planning efforts. However, freight resiliency planning efforts are still in development for many participants, highlighting the need for more resources and guidance to support these efforts. The participants identified existing gaps and challenges for current and future freight resiliency planning, which can better inform FHWA's efforts to support State, regional, and local efforts around freight resiliency going forward.

Appendix I: Tools and Resources

Data and Tools:

- [USDOT Vulnerability Assessment Scoring Tool \(VAST\)](#)
- [Bureau of Transportation Statistics Freight Analysis Framework \(FAF\)](#)
- [BTS Freight Logistics Optimization Works](#)
- [AASHTO Freight Demand Modeling and Data Improvement \(C20\)](#)
- [FHWA PlanWorks](#)
- [Transearch](#)
- [StreetLight](#)
- [INRIX](#)

Technical Assistance:

- [FHWA Transportation Planning Capacity Building \(TPCB\) Program](#)
- [FHWA Freight Management and Operations: Emergency Routing resources](#)
- [FHWA Planning and Environmental Linkages \(PEL\) Website](#)
 - [PEL Hypothetical Case Studies](#)
 - [Virtual Public Involvement and PEL Webinar Recording](#)

National Highway Institute (NHI) Freight & Resiliency Related Courses:

- [FHWA-NHI-142081 Understanding Past, Current and Future Climate Conditions](#)
- [FHWA-NHI-142082 Introduction to Temperature and Precipitation Projections](#)
- [FHWA-NHI-142083 Systems Level Vulnerability Assessments](#)
- [FHWA-NHI-142084 Adaptation Analysis for Project Decision Making](#)
- [FHWA-NHI-135096 Roadway Interactions with Rivers and Floodplains: Basic Concepts](#)
- [FHWA-NHI-139013 Freight and Land Use](#)
- [FHWA-NHI-142078, 142078A, and 142078V Planning and Environment Linkages \(PEL\)](#)

Other Federal Resources:

- [FHWA Office of Planning, Environment, & Realty - Resilience Page](#)
- [FHWA Asset Management Resources](#)
 - Publication: [Addressing Resilience To Climate Change & Extreme Weather In Transportation Asset Management](#)
- [State of the Practice Scan: Freight Resilience Planning in the Face of Climate-Related Disruption](#)

Federal Grants and Assistance:

- Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) Grant Program
- Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program
- Changes to National Highway Freight Program
- Local and Regional Project Assistance Program
- Changes to Nationally Significant Multimodal Freight & Highway Projects (INFRA) Program
- National Infrastructure Project Assistance Program (Mega Grant Program)
- Rural Surface Transportation Grants