



# ADVANCING RESILIENCE

IN THE COASTAL REGION MPO

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Chatham County-Savannah Metropolitan Planning Commission/CORE MPO

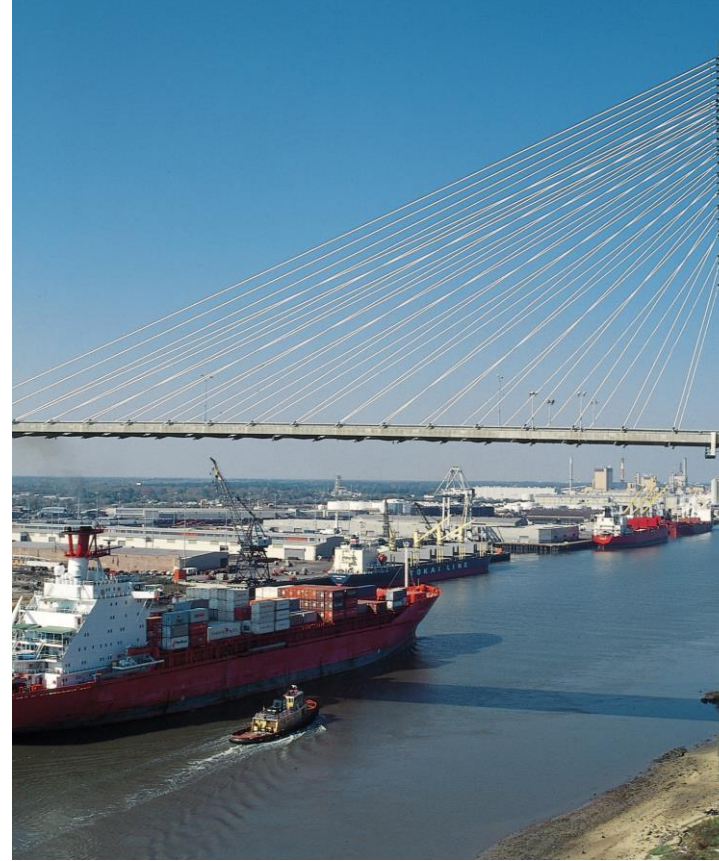






# ABOUT CORE MPO

- **MPO for Savannah Urban Region:** Boundaries include Chatham County, portion of Effingham County, and portion of south Bryan County
- **Areas of focus:** transportation policies, long and short-range Transportation Plans, non-motorized transportation, freight, public transit, resilience, Congestion Management
- **Natural hazards:** flooding, sea level rise, storm surge, hurricanes, and extreme heat





## KEY MESSAGES



Resilience Requirements and 2050 MTP Chapter



Data and Tools to Get Started



CORE MPO Resilience Studies and Assessments



Recruitment and Relationship Building





Photo: WSAV



# RESILIENCE REQUIREMENTS

## § 450.306 Scope of the Metropolitan Transportation Planning Process

- 23 CFR 450.306(b)(9): “Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation;”
- 23 CFR 450.324(f): “Assessment of capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure, provide for multimodal capacity increases based on regional priorities and needs, and **reduce the vulnerability of the existing transportation infrastructure to natural disasters...**”

**FHWA Directive 5520**: Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events

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# INCORPORATING RESILIENCE IN THE MTP

2050 Update  
in Progress

Expected Adoption  
in August 2024



## Dedicating full chapter to resilience

Covers broad range of topics in resilience and sustainability

## Adding resilience as part of the project prioritization method

1. **Need:** Performance, safety, security, accessibility, mobility, connectivity, state of repair
2. **Sustainability/Resiliency:** Environment and quality of life, mobility, intergovernmental coordination, vulnerability
3. **Equity:** Mitigate disproportionate impacts of harm across different persons and population groups in the region and increase overall quality of life for all

## Including in costs

Considering contingency costs for resilience

Project maintenance and operations resilience set aside



# DEFINITIONS

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## Resilience

A capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment.

-FHWA



## Sustainability

To create and maintain the conditions under which humans and nature can exist in productive harmony to support present and future generations.

-EPA





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# FLOODING DYNAMIC MODELING FOR OPTIMIZED PLANNING

## Consultant Team:

University of Georgia and  
Goodwyn Mills Cawood

October 2023

Read more here: <https://www.thempc.org/Core/Ufm>

## Study Objective

Assess the vulnerability of the region's **stormwater infrastructure and surface transportation network to present and future flooding**. This developed a tool for optimal planning and design of resilient and equitable transportation infrastructure systems.

Awarded Discretionary Planning (PL) funds in the amount of \$120,000 (PI# 0018338) with 20% local match from CORE MPO dues, making the total amount for the study \$150,000.





# DELIVERABLES

## 1. Roadway Vulnerability Assessment Project Prioritization Tool

Developed an online ESRI Dashboard that integrates flood modeling, roadway vulnerability, and other GIS layers.

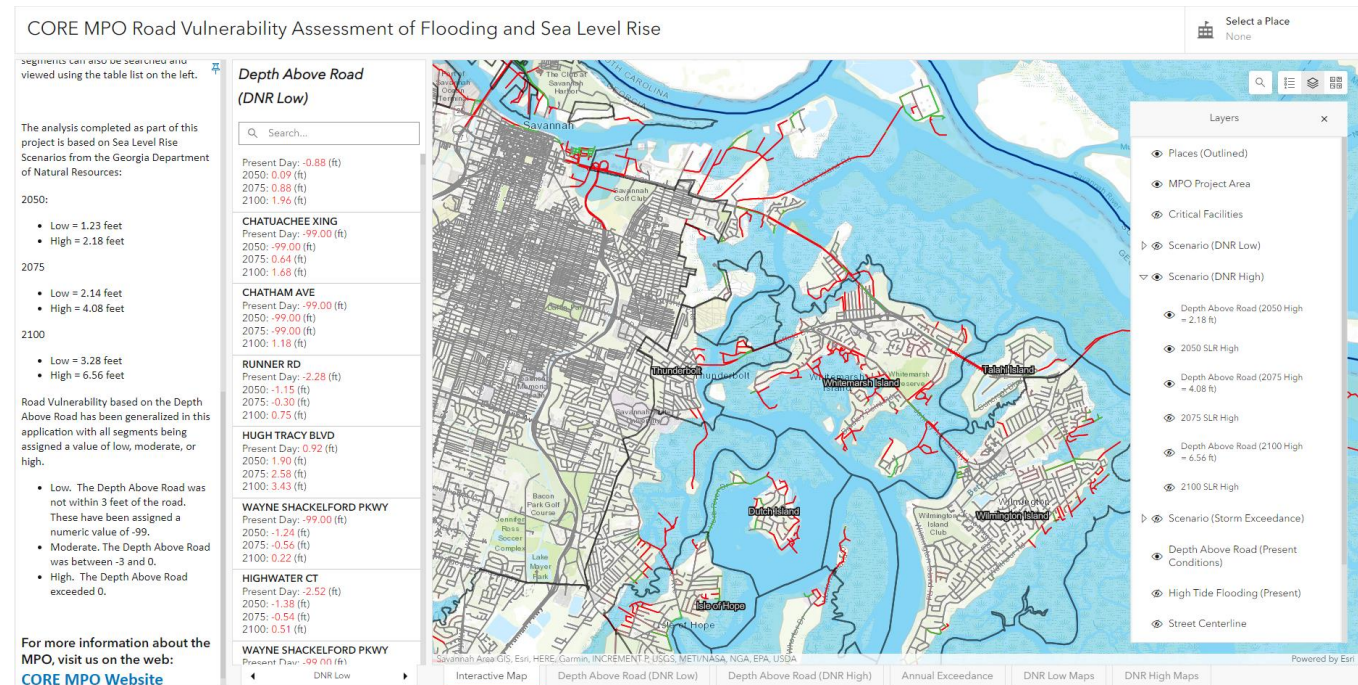
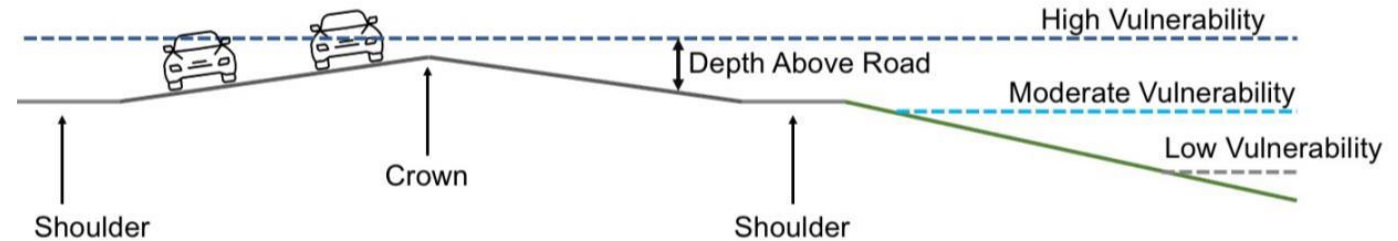
<http://www.gmcgis.com/mpo>

## 2. Storm Water Management Model

Examined flood depths at stormwater drainage points for various combinations of rainfall, tides, and SLR

## 3. Funding Opportunity Spreadsheet

Identified nature-based funding opportunities to enhance infrastructure resilience in four categories:  
Transportation, Environmental, Department of Defense, and State and Local Funding



## Roadway Vulnerability Assessment Project Prioritization Tool





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# FREIGHT PLAN UPDATE RESILIENCY TECHNICAL MEMO

## Consultant Team:

Cambridge Systematics, AECOM  
and Symbioscity

October 2023

Read more here: <https://www.thempc.org/Core/Fp>

## Freight Resiliency

The ability of the multimodal freight network to withstand disruptions with minimal impacts to safety and the economy.

As **large-scale disruptions** to the **freight network** and associated **supply chains** have become more common, resiliency has become a much more important component of freight transportation planning.



# RISK ASSESSMENT

## Primary risks/hazards

Sea level rise/coastal flooding, riverine flooding, hurricanes

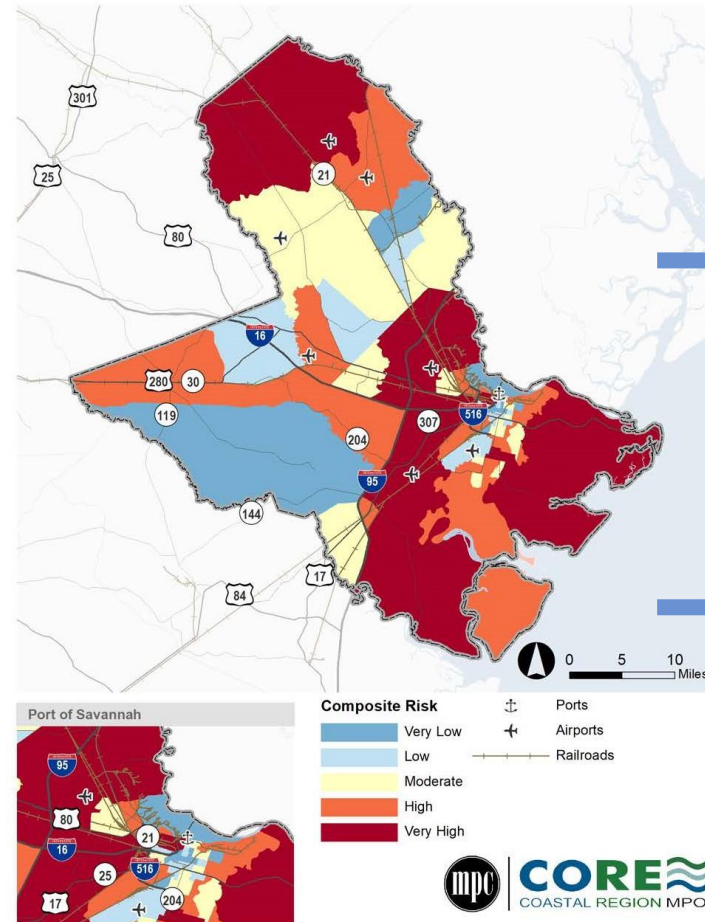
Supply chain disruptions and terminals

## Quantified Risk Assessment

Vulnerability of critical freight assets to those risks using 4 Steps:

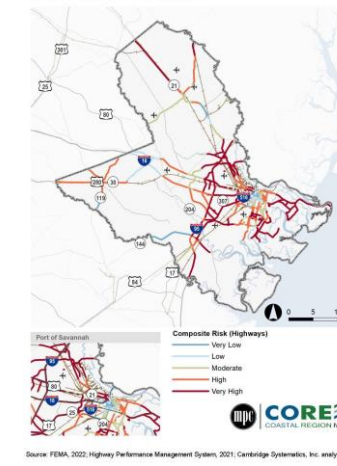
1. Obtained FEMA National Risk Data
2. Defined Georgia Specific Risk Thresholds (Expected annual loss)
3. Calculated Composite Risk for CORE MPO
4. Identified Vulnerable Freight Assets

FIGURE 2.10 COMPOSITE RISK



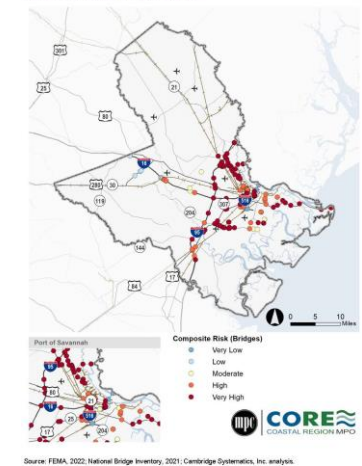
Source: Federal Emergency Management Agency, 2022; Analysis by Cambridge Systematics.

FIGURE 2.11 VULNERABLE HIGHWAY ASSETS



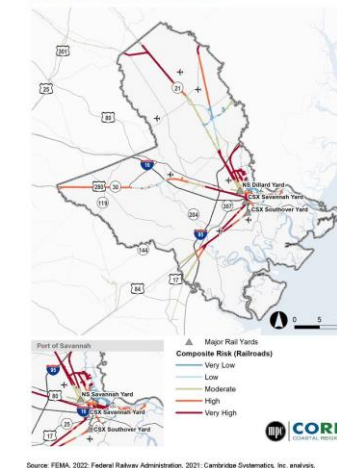
## Highway Assets

FIGURE 2.12 VULNERABLE BRIDGE ASSETS



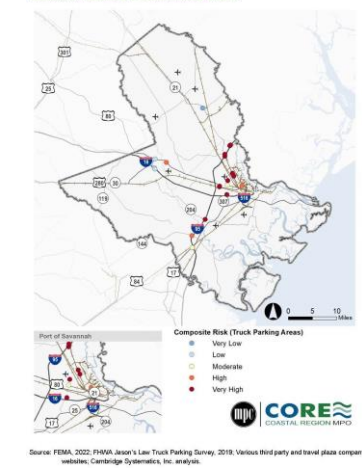
## Bridge Assets

FIGURE 2.13 VULNERABLE RAILROAD ASSETS



## Railroad Assets

FIGURE 2.14 VULNERABLE TRUCK PARKING ASSETS



## Truck Parking

## Composite Risk of Freight Transportation Assets



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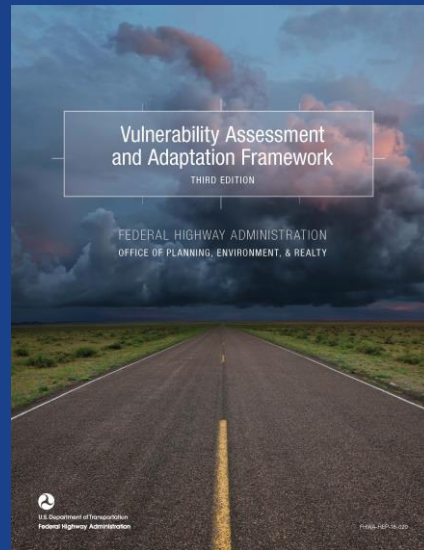
# VULNERABILITY ASSESSMENT

## FHWA Vulnerability Assessment and Adaptation Framework

Ongoing

Download it here:

[https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation\\_framework/](https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/)



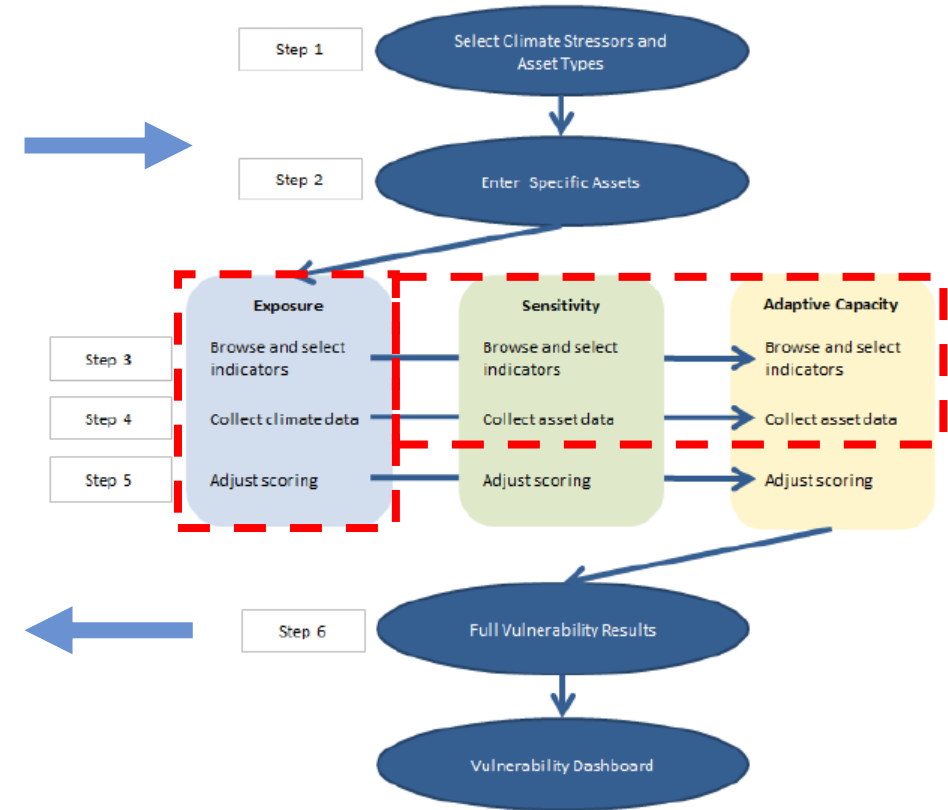
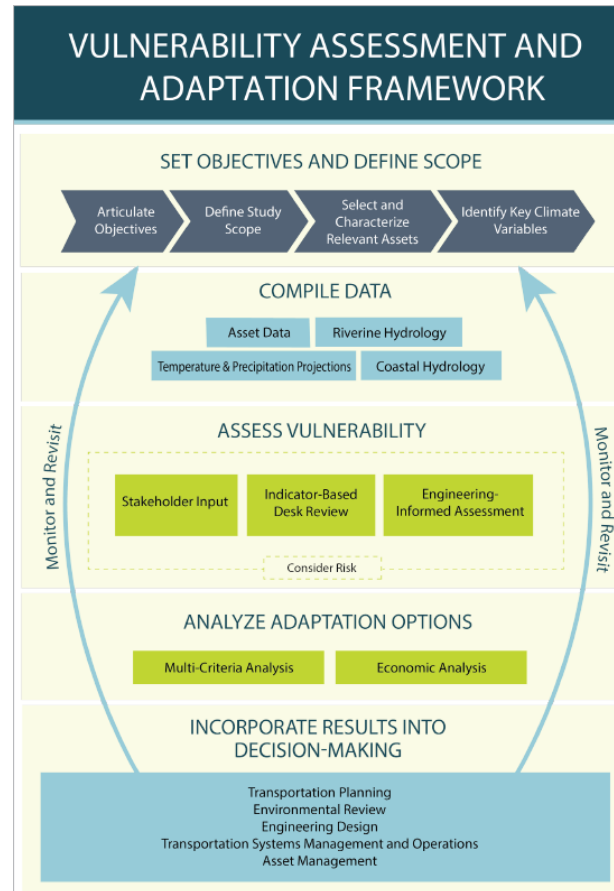
- Need to understand what is vulnerable to prepare for changes in climate & extreme weather
- Quantifiable way to prioritize transportation projects based on resilience
- The vulnerability assessment may be a potential precursor to or part of a Resilience Improvement Plan



# FHWA TOOLS

- Developed to help State DOTs, MPOs, and other organizations implement an indicator-based vulnerability screen.
- Step-by-step instructions & FHWA staff to help with questions
- Formed an assessment team with MPO staff, Planners, Engineers, Emergency Management Professionals, GIS Analysts, Resilience Managers, and Community Representatives who are guiding the assessment.

Learn more and download tools:  
<https://www.fhwa.dot.gov/environment/sustainability/resilience/tools/>



## FHWA Vulnerability Assessment Scoring Tool (VAST)





# HELPFUL DATA AND TOOLS

- [Climate Mapping for Resilience & Adaptation \(CMRA\)](#)
  - [Example Methodology StoryMap](#)
- [Multi-Hazards Exposure, Vulnerability and Risk Assessment \(MHEVRA\) tool](#)
  - [YouTube How To Video](#)
- [NOAA Digital Coast](#)
- [National Hurricane Center Storm Surge Risk Maps](#)
- [The Climate Explorer](#)

## Social & Equity Data Tools

- [US DOT Equity and Justice40 Analysis Tools](#)
- [CDC/ATSDR Social Vulnerability Index](#)
- [Justice40 Climate and Economic Justice Screening Tool](#)
- [EPA IRA Disadvantaged Communities](#)





# RECRUITMENT AND RELATIONSHIP BUILDING



Resilience and climate justice requires bringing everyone to the table and tapping into non-traditional resources and talent. It takes organizational leadership to reach across departments, organizations, and institutions across all levels of government to build a more resilient transportation system.

Venn Diagram: <https://www.ayanaelizabeth.com/climatevenn>





# THANK YOU

CONTACT US WITH QUESTIONS

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