



MTS GUIDE

THE MARINE TRANSPORTATION SYSTEM RESILIENCE ASSESSMENT GUIDE



MTS GUIDE PURPOSE

The Cybersecurity and Infrastructure Security Agency (CISA) and the U.S. Army Corps of Engineers, Engineer Research and Development Center (USACE-ERDC) co-developed the [Marine Transportation System Resilience Assessment Guide](#) (MTS Guide) for use by federal agencies, local governments, and industry decision makers. The purpose of the MTS Guide is:

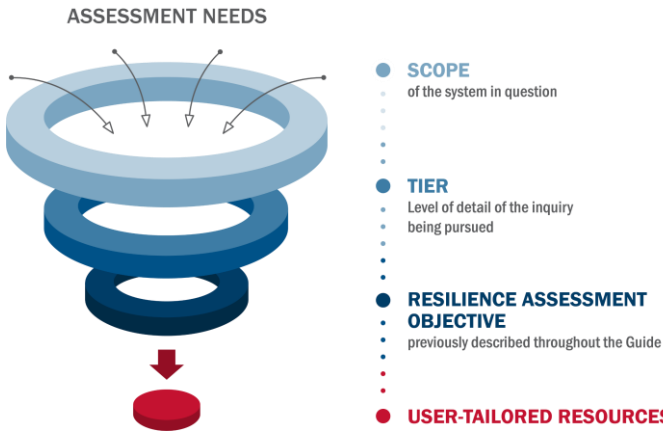
1. To provide guide users with a shared understanding of how to design and conduct a resilience assessment of MTS components;
2. To close the gap between available resources and needs by organizing and identifying planning tools, academic studies, datasets, and methodologies used to assess MTS resilience; and
3. To illustrate the assessment process through examples and case studies across three scopes that have been developed to represent a wide variety of existing systems and potential applications.

MTS GUIDE APPROACH

- Integrates existing findings, methods, and data from partners including CISA, USACE, federal partners from the U.S. Committee on the Marine Transportation System (CMTS), and academic partners from the DHS Coastal Resilience Center of Excellence.
- Provides an overview of intended MTS Guide users, use cases, and uniformed guidance on assessing the resilience of ports, including advanced analysis methods.
- Identifies four key objectives for resilience assessments, a framework for designing a resilience assessment, and a suite of resources and methodologies for executing an assessment.



MTS GUIDE RESOURCES



One of the key features of the MTS Guide is its emphasis on leading users to relevant data sets. The MTS Guide provides a curated list of data sources that can be utilized during the assessment process. By leveraging these data sets, users can gain valuable insights into the various factors that contribute to a resilience assessment. These resources are tailored to accommodate different objectives, based on available time and available resources. By utilizing the Resilience Assessment Resource Matrix, users can efficiently identify the appropriate tools and methods that align with their goals, developing a strong understanding of resilience and implement strategies to enhance their overall resilience capabilities.



The MTS Guide includes resources for individual ports as well as port networks and inland waterways. These three scopes are characterized to include land transportation, surrounding communities, communications, electricity, and other critical supporting systems to represent a wide extent of possible resilience assessments. The MTS Guide case studies demonstrate the application of the technique to analyze the problem based on the resilience assessment.

SINGLE PORT

Probabilistic Seismic Resilience Assessment at a Navigation Terminal Analysis demonstrates the application of the Bayesian Network Analysis approach to the Port of Portland Terminal 6 following a CSZ Earthquake.



INLAND WATERWAY

Cumberland/Tennessee River Inland Waterway Resilience Analysis involved developing of maps of assets within the region, gathering on the 31 public ports along the Cumberland/Tennessee River and performing spatial analysis using ESRI's ArcGIS Pro to identify connectivity to rail and highway networks.



MTS NETWORK

U.S. Port Network Connectivity and Ramifications for Port Resilience Analysis is modeled by identifying port-to-port movements of vessels across a network of 62 U.S. Ports using an open source nationwide Automatic Identification System (AIS) data product called Marine Cadastre demonstrating how understanding the network structure can impact robustness (for unseen demands) and redundancy (to tolerate the loss or damage to a component).

