

Project Title: Port Resilience: Overcoming Threats to Maritime Infrastructure and Operations from Climate Change

Principal Investigator: Dr. Thomas H. Wakeman III, Dr. Jon Miller, and Ms. Grace Python

In the coastal zone, seaports and their intermodal connectors are key types of infrastructure that support the global supply chain, provide regional economic activity, local transportation system services, and community jobs. The protection of coastal communities and their ports has been taken for granted during a prolonged period of climate stability. Recently there are growing concerns that a new period of climate change and severe weather events is emerging. Communities and their waterfront facilities are vulnerable to disruptions. Enhancing coastal resilience has become an important response to these events.

The objective of this research is to move from the aspirational concept of resilience to a standardized framework for creation of resilience in ports and transportation systems by integrating physical infrastructure and social systems. It takes a fully functioning maritime and shore-side distribution system for successful supply chain operations. A combination of stakeholder interviews and workshops provided insights into the resilience processes. It was discovered that every coastal community is unique and typically has its own plans. The same can be said of their coastal ports as well as the individual supply chain service providers associated with those ports. On the physical infrastructure side, it was found that a more resilient coastline can be achieved through the adoption of consistent, coordinated, and forward thinking building codes.

One of the challenges to adopting more stringent design standards was the uncertainty surrounding future conditions. Another recommendation of the study involves the suggestion for port regions to organize along the entire supply chain including transport and distribution activities beyond local marine terminals.

A suggested organizational scheme is proposed with coordinating bodies at the regional and state level that would interact with the local port waterside team (Marine Transportation System – Recovery Unit) and landside logistics team (Land Team) prior to, during, and after a supply chain disruption. Figure 1 presents a potential relationship configuration including communications and training.

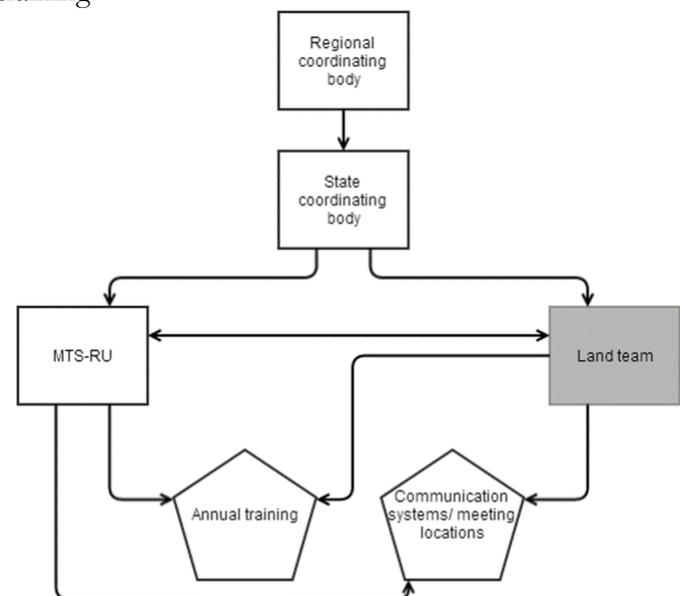


Figure 1: Proposed Coordinating Bodies and Teams

Resiliency processes and approaches used to reduce consequences of sea level rise, coastal flooding or other disruptions at ports and coastal communities cannot be fully treated with a single comprehensive framework or guidelines because of the unique characteristics of each situation and the involved community and their port facilities. However stakeholder organizations can build social capital by working and training together, ultimately improving port and supply chain resilience.

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