

Transportation System Resiliency and Disaster Response and Recovery: A Review on U.S. Metropolitan Long-Range Transportation Plans (TRBAM-22-00866)

Authors Jai Daniels, Masters of Urban and Regional Planning Student
Toulon School of Urban Studies and Planning
Portland State University

John MacArthur, Sustainable Transportation Program Manager
Transportation Research and Education Center
Portland State University

Methodology

We selected 20 MPOs based on their history of natural disasters and likelihood for future disasters, and performed a content analysis on the text data focusing on the following terms: ‘resilience’ or ‘resiliency,’ ‘hazard mitigation,’ ‘disaster recovery,’ ‘disaster (or emergency) response,’ ‘emergency management,’ ‘evacuation,’ and ‘extreme weather.’

We focused on two areas of the L RTPs:

1. Guidance statements – overarching statements that guide plan development (e.g., ‘vision,’ ‘goal,’ and ‘objective’)
2. Performance measures – metrics that are used to evaluate how well the proposed projects and programs are performing (e.g., ‘performance,’ ‘measure,’ ‘metric,’ and ‘target’)

We divided the guidance statements and performance measures into ‘Resiliency,’ ‘Recovery,’ and ‘Response’ to capture which themes were present for each.

Conclusion

In conclusion, resilience and disaster response and recovery are becoming increasingly imperative considerations for transportation planning departments, yet this is not reflected in many of the guidance statements or performance measures of long-range transportation plans across the country. It is important to not only recognize the importance of these but to also recognize the need to develop actionable steps that hold transportation agencies accountable for making necessary changes to their practices.

Findings

- System reliability is connected to resiliency in one of the federal planning factors, yet in most plans, ‘reliability’ is referred to as dependable travel times and connections during ‘normal’ times and not during disasters.
- Most plans recognize the need for more resilient transportation systems in their guidance statements yet lack performance measures intended to ensure that the MPOs are actually increasing the resiliency of their systems.
 - Most of the plans focus on maintaining the quality of roadways and bridges rather than strengthening or adapting existing infrastructure to withstand extreme weather conditions or other hazards.
- Disaster recovery and response are largely missing from guidance statements and performance measures.
 - Guidance statements and performance measures related to climate protection focus more on minimizing air pollution or habitat loss than recovery and response activities.
 - Safety and security concerns focus on reducing injuries and deaths from vehicular crashes or bicycle and pedestrian accidents, and not during or after disasters.

Abstract

Transportation systems are susceptible to disasters, both natural and manmade, making it critical for cities and regions to improve the resiliency of their transportation systems and enhance emergency response and recovery operations to better withstand and respond to future threats. This study analyzed the guidance statements and performance measures of 20-long range plans from metropolitan planning organizations across the U.S. to see whether MPOs consider these issues. The article concludes with a case study on the Portland, Oregon metropolitan region.



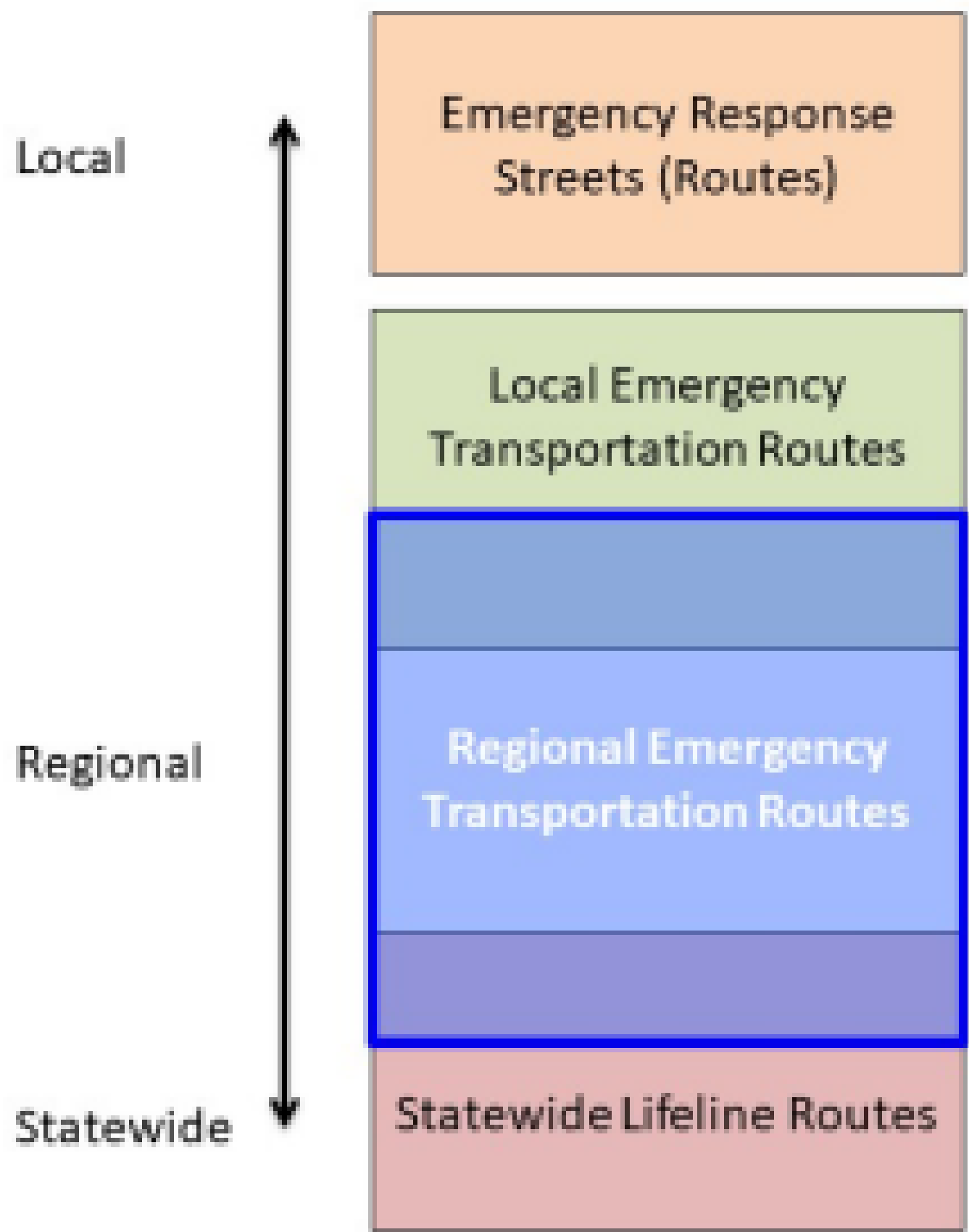
Resiliency, Recovery, and Response in Long-Range Transportation Plans

Region	Regional Organization	Guidance Statements			Performance Measures		
		Resiliency	Recovery	Response	Resiliency	Recovery	Response
Atlanta, GA	Atlanta Regional Commission (ARC)	x	x	x			
Fort Collins, CO	North Front Range MPO (NFRMPO)						
Fort Lauderdale, FL	Broward County MPO (BMPO)	x		x	x		x
Houston, TX	Houston-Galveston Area Council (H-GAC)						x
Kansas City, MO	Mid-America Regional Council (MARC)	x					
Los Angeles, CA	Southern California Association of Governments (SCAG)	x		x			
Nashville, TN	Nashville MPO						
Newark, NJ	North Jersey Transportation Planning Authority (NJTPA)	x					
New Orleans, LA	Regional Planning Commission (RPC)	x					
Phoenix, AZ	Maricopa Association of Governments (MAG)						
Portland, OR	Metro	x					
Rochester, NH	Strafford Regional Planning Commission (SRPC)	x					
San Francisco, CA	Metropolitan Transportation Commission (MTC)						
Sarasota, FL	Sarasota-Manatee MPO	x	x				
Savannah, GA	Coastal Region MPO	x		x	x		x
Seattle, WA	Puget Sound Regional Council (PSRC)	x					
Springvale, ME	Kittery Area Comprehensive Transportation System (KACTS)	x	x		x		
St. Paul, MN	Metropolitan Council	x		x			
Tampa, FL	Hillsborough County MPO	x			x		
Wilmington, NC	Wilmington Urban Area MPO (WMPO)	x					

Case Study

- The 2018 Regional Transportation Plan for the Portland Metropolitan region recognized a need for an update to the region's emergency transportation routes (ETRs)
- Metro (Portland's regional organization) partnered with the Regional Disaster Preparedness Organization (RDPO) to update the region's ETRs through a two-phased project
- The first phase gathered background data and information to identify criteria and generated updated regional ETRs
 - The Transportation Research and Education Center (TREC) distributed a survey to agencies across the Portland metropolitan region to explore the priorities, gaps, and barriers related to transportation resilience and recovery in the region
- The second phase of the project beginning in 2022 will focus on prioritizing and operationalizing the RETR designations in order to inform investments and incident management

Emergency Transportation Route Hierarchy



Updated ETRs in the Portland Metro Region

