NCHRP Resilience Research Roadmap: Key TRB Products & Activities

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AASHTO Resilient and Sustainable Transportation Systems Steering Committee
13 November 2016
Identification of R&D Gaps & Needs

1. TRB Committee on Critical Transportation Infrastructure Protection shares research results from all sources & identifies research needs

2. AASHTO Special Committee on Transportation Security & Emergency Management (SCOTSEM) identifies and refers research needs

- 70+ other technical meetings
- TRB Annual State Visits to DOTs, Universities, MPOs, Transit Agencies, Ports, Airports & other agency reps

- State/Local Government
- Non-Government Organizations
- Federal Agencies
- Private Sector
A Guide to Planning Resources on Transportation and Hazards (2009)

Chapter 1: Introduction to the Disaster Cycle
Chapter 2: Overview
Chapter 3: The Economy and Hazards
Chapter 4: People and Hazards
Chapter 5: Infrastructure: Lifelines During Disasters
Chapter 6: Land Use, Development, and Natural Systems
Chapter 7: From Theory to Practice: Case Studies
Chapter 8: Conclusion
Continuous Development of Risk Management and
Emergency Response Planning Guidance

2002: Guides to Vulnerability Assessment & Emergency Response Planning

2002-2003: workshops

2004-2005: publications that anticipated NIMS, NRP/NRF, and NIPP.

2012: publications adopted by AASHTO

Published 2009:
NCHRP Report 525, Vol. 14
Security 101: A Physical Security Primer for Transportation Agencies

Published 2010:
NCHRP Report 525, Vol. 16
A Guide to Emergency Response Planning at State Transportation Agencies
Chapter 1: Risk Management and Risk Assessment
Chapter 2: Plans and Strategies
Chapter 3: Physical Security Measures
Chapter 4: Security Personnel and Training
Chapter 5: Infrastructure Protection
Chapter 6: Homeland Security
Guide

– Summary
– Overview for state transportation agencies (authorities, etc.)
– High-level requirements based on national policies and guidelines
– High-level self-assessment with pointers

Section 6: Resource Guide

– Organizational/staffing/position guidance
– Decision-making sequences
– Detailed self-assessment and resource lists
All Hazards Planning Fundamentals

- **Prevention:** Capabilities necessary to avoid, prevent, or stop a threatened or actual act of terrorism.
- **Protection:** Capabilities necessary to secure against acts of terrorism and manmade or natural disasters.
- **Mitigation:** Capabilities necessary to reduce loss of life and property by lessening the impact of disasters.
- **Response:** Capabilities necessary to save lives, protect property and the environment, and meet basic human needs after an incident has occurred.
- **Recovery:** Capabilities necessary to assist communities affected by an incident to recover effectively.

### Transportation Agency Resilience: Fundamental Capabilities

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<tr>
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<td>Intelligence &amp; Information Sharing Screening, Search, &amp; Detection</td>
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Source: AASHTO. *Fundamentals of Effective All Hazards Security and Resilience for State DOTs, 2015*
## Transportation Agency Resilience: CRP Resources for Fundamental Capabilities

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<td><strong>FloodCast</strong></td>
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<td>**Guidelines for Transportation Emergency Training Exercises</td>
<td><strong>ICS Training for Field Level Transportation Supervisors and Staff</strong></td>
<td><strong>Transportation Emergency Response Application</strong></td>
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Objective
to develop a toolkit of communications strategies, policies, and practices for transportation agencies and emergency management agencies that focuses on communicating with vulnerable populations prior to, during, and after all-hazards emergencies.

Graphic: Cover for TCRP Report 150, Communication with Vulnerable Populations: A Transportation and Emergency Management Toolkit
NCHRP 20-59(53) FloodCast: Real Time Flood Forecast & Warning Application Built on National Flood Interoperability Experiment (NFIE) System

Blanco River at Wimberley

Two basins and one forecast point

becomes

Current: 6600 basins and 3600 forecast points

NFIE: 2.7 million stream reaches and catchments

130 Catchments and Flowlines uniquely labelled

A national flow network

NCHRP Project Panel 20-59
Surface Transportation Security & Resilience Research

• NCHRP 20-59(117) Deploying Transportation Resilience Practices in State DOTs (2017-2018)
• Resilience Research Roadmap (Pre and Post Summit versions) (2016-2018)
• Transportation Resilience White Papers (2016-2017)
  – Understanding Transportation Resilience: A Cyber Perspective
  – Understanding Transportation Resilience: An Economic Perspective
  – Understanding Transportation Resilience: An Environmental Perspective
• CEO Primer on Transportation Resilience (2017-2018)
• 2017 CEO Engagement Forums (2017-2018)
The objective of this research is to develop a set of implementation support tools and services to assist transportation organizations in deploying resilience-based innovations and effective practices based on the implementation recommendations contained in completed resiliency research.

The scope of these services shall encompass those activities involving (1) organizational/institutional implementation (e.g., governance, business process/data, performance measures, work plans); (2) employee learning (grounded in modern adult learning theory and centered on facilitating learning in the workplace); and (3) stakeholder outreach and engagement. A significant component of the this project will be to organize a national summit and peer exchange on transportation resiliency to be held in 2018 and co-sponsored by TRB, AASHTO (SCOTSEM, Standing Committee on the Environment, and Resilient and Sustainable Transportation Systems), FHWA, Federal Emergency Management Agency, Department of Homeland Security, and other interested parties.
The ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events.