Resilient America Roundtable: Partnering with Communities to Build Resilience

of the National Academies of Sciences, Engineering, and Medicine

Presentation to the Puget Sound Regional Council

Transportation Policy Board

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ResilientAmerica

The National Academies of SCIENCES · ENGINEERING · MEDICINE

Overview

- Overview of the Resilient America program
- The Community Pilot Program
- The National Academies/Seattle partnership
- What we have learned so far

The National Academies of Sciences, Engineering, and medicine

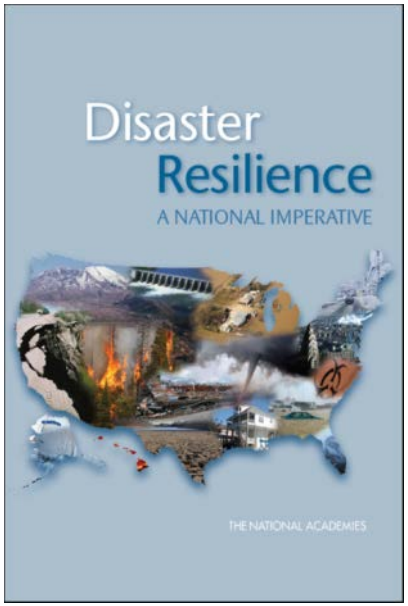
- A private, non-profit organization.

- The nation's pre-eminent source of independent, high-quality, objective advice on science, engineering, and health matters.

What is Resilient America?

- A new program at The Academies
- Based on the 2012 report, *Disaster Resilience: A National Imperative*
- Launched in January 2014
- A way to engage diverse sets of stakeholders in communities to build resilience

What is Resilience?



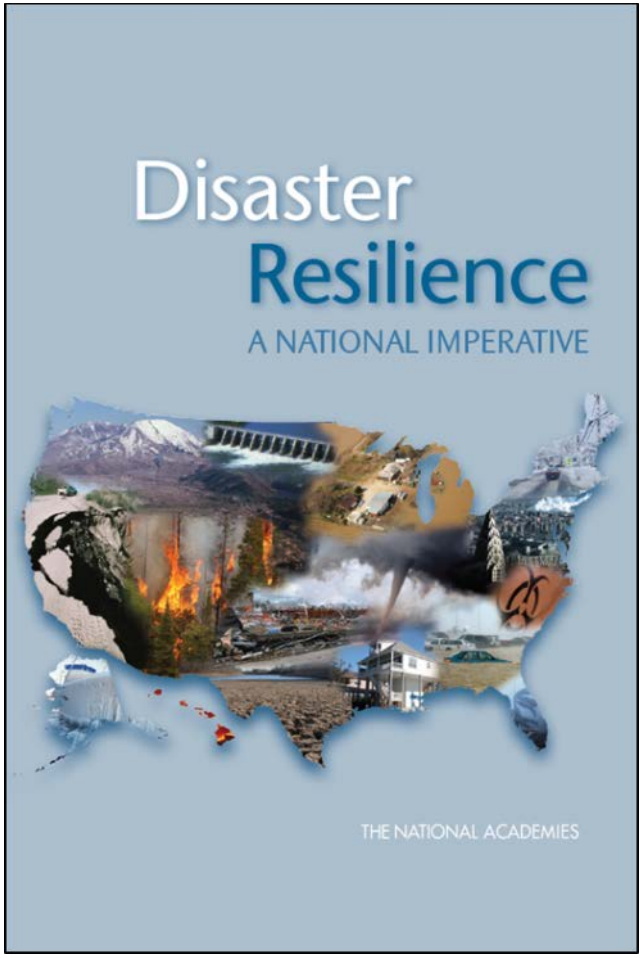
The ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events.[1]

[1]Committee on Increasing National Resilience to Hazards and Disasters, Committee on Science, Engineering, and Public Policy, & The National Academies. (2012). *Disaster Resilience: A National Imperative*. Washington: National Academies Press.

Disaster Resilience: A National Imperative

The Resilient America program is based on four key recommendations for building community resilience:

- Understand and **communicate disaster risk**;
- **Build or strengthen partnerships** with community stakeholders;
- Identify or develop ways to **measure disaster resilience**;
- **Share and get access to information**, tools, data, and experts needed to build disaster resilience.



Why Resilient America?

- Costs of natural disasters and other disruptions are rising.
- Communities want to protect their quality life, property, and people. To do this, they need help with:
  - understanding risks
  - better communicating, managing, and mitigating exposure to disasters
  - develop strategies that build resilience to disasters
- Greater community networks and connections → more opportunities for widespread impacts.

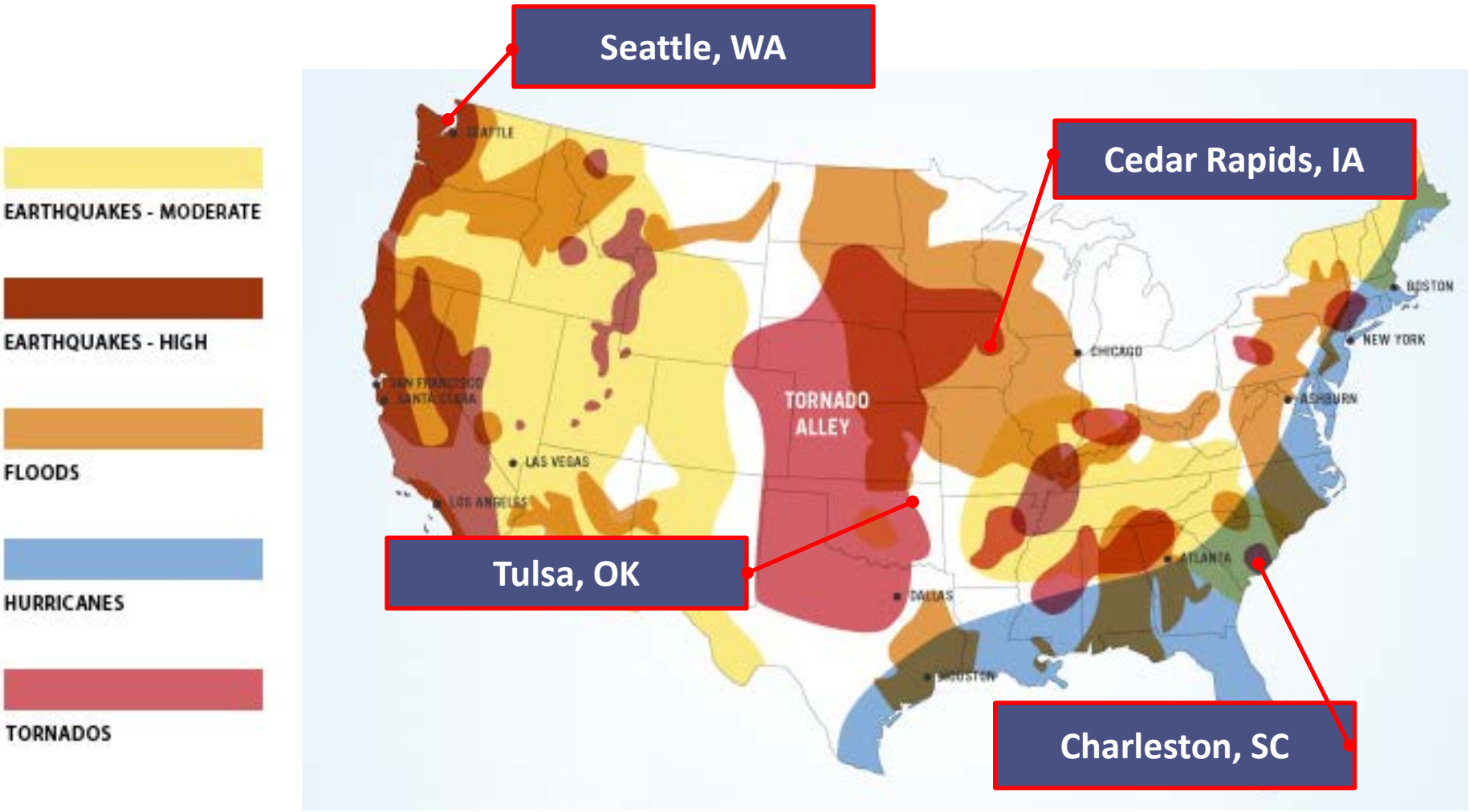
What Are We Doing? Four Workstreams

- **Community Pilot Program**
- **Measures of Resilience**
  - Developing a Framework for Measuring Community Resilience
  - Developing Community Resilience Measures
- **Supply Chain Resilience**
  - Supply Chain Resilience Expert Meeting
- **Expert Meetings, Workshops and Activities**
  - Improving Power System Resilience in the 21st Century
  - The Role of Disaster Insurance in Improving Resilience
  - Koshland Science Museum Extreme Event Game

Who is Involved?

- **Experts**: social scientists, engineers, business professionals, academic researchers, public sector decision makers, federal agencies, nonprofits, NGOs
- **Community members**: county, state and local government leaders and managers, faith-based organizations, nonprofits, academia, arts community, business leaders
- Diverse **stakeholders across the nation**: private sector, public sector, associations, NGOs, nonprofits, academia, industry, individuals

Where Are We Working?



Natural Disaster Risk Map from http://www.crisisHQ.com/why-prepare/us-natural-disaster-map/

How Are We Doing It? – Community Pilot Program

- **Partner** with community stakeholders to support their efforts to build and increase resilience
- **Convene and facilitate** meetings, workshops, focus groups, and other interactive events in the communities
- **Provide** resources, experts and information to communities to help them better understand, communicate and manage risk

Building Resilience in the Community

- The RAR works with its pilot communities to identify their:
  - **Vision:** *What is out community's resilience vision?*
  - **Baseline conditions:** *Where are we now?*
  - **Goals and Objectives:** *How do we get there?*
  - **Challenges and Priorities:** *What do we focus on first?*
  - **Measures:** *How do we know we are making progress?*

Examining Communities through 6 environments

Communities examine their challenges, goals, and priorities across multiple environments:

1. **Physical/Built**
2. **Natural**
3. **Economic**
4. **Social/Wellness**
5. **Human**
6. **Governance**

Community Pilot Partnerships

- **Cedar Rapids, IA**
  - Flood resilience
  - Integrated resilience planning
  - Risk communication
- **Charleston, SC**
  - Flood resilience
  - Community engagement through art/science
  - Supply chain resilience
- **Seattle, WA**
  - Transportation
  - Social Equity
  - Climate adaptation

Summary of Key Lessons Learned

- Becoming resilient requires a ***culture shift***.
- Communities struggle with ***how to effectively community risk***.
- Local government is a critical partner, but we need to work with ***stakeholders across the diverse community sectors***.
- ***Communities want to learn from each other*** about their successes and how they are making strides towards resilience through measures.
- ***Involving the entire community*** in the process of developing and implementing measures can itself be an act of strengthening resilience.
- In order to mainstream the concept of ***resilience***, it is important to ***build it into existing efforts***.
- Being able to make the ***business case for resilience*** may be the most effective way to advance the resilience conversation within a community and its leadership.

Transportation Research Board Resilience Efforts

Transportation Research Board: New Focus on Resilience

- TRB Executive Committee asked all of TRB to focus on **three priority strategic issues**:
  1. Transformative Technologies
  2. Resilience
  3. Public Health
- **Why transportation resilience**?
  - Global transportation systems more vulnerable to disruptions and cascading failures of other interdependent sectors (e.g., social, physical)
  - More resilient systems needed in the face of climate change and more frequent extreme weather events
- **Transportation System Resilience Section** formed in 2015 to:
  - Advance resilience research to better understand these interdependencies
  - Identify policy, protocols, and practices that promote greater transportation system resilience
  - Communicate best practices to meet the needs of society

Transportation System Resilience Section

Transportation System Resilience Section goals:

- **Promote communication** among the lifeline sectors and transportation stakeholders to enhance knowledge of interdependencies and common vulnerabilities
- **Build understanding** of the sources of risk and mitigation options at the community, regional and national levels
- **Identify transportation requirements** during emergencies from the community and business perspective
- **Support end user needs** by providing guidance that encourages the incorporation of system resilience and sustainability into planning
- **Develop a *Transportation Resilience Guide***

TRB Resilience Focus Areas

- Security (airports, ports, public transportation, state DOTs)
- Emergency management
- Infrastructure protection from all hazards
- Preparation for extreme/disruptive events (e.g., climate change, geological events, extreme weather, terrorism)

Examples of recently funded projects:

- Improving Freight Transportation Resilience in Response to Supply Chain Disruptions
- Integrating Climate Resiliency into Airport Management Systems
- Improving the Resiliency of Transit Systems Threatened by Natural Disasters
- Guidelines to Incorporate the Costs and Benefits of Adaptation Measures in Preparation for Extreme Weather Events and Climate Change

Current/Recent Resilience-related activities

- First International Conference on Surface Transportation System Resilience to Climate Change and Extreme Weather Events Sept. 2015
- 4th EU-US Transportation Research Symposium, June 2016 in Brussels, Belgium (focus on adaptation to climate change and extreme events)

The Hazards and Disaster Management System

Pre-Impact Interventions
Mitigation Practices
Emergency Preparedness Practices
Recovery Preparedness Practices

Post-Impact Responses
Emergency Activities
(planned and improvised)
Recovery Activities
(planned and improvised)

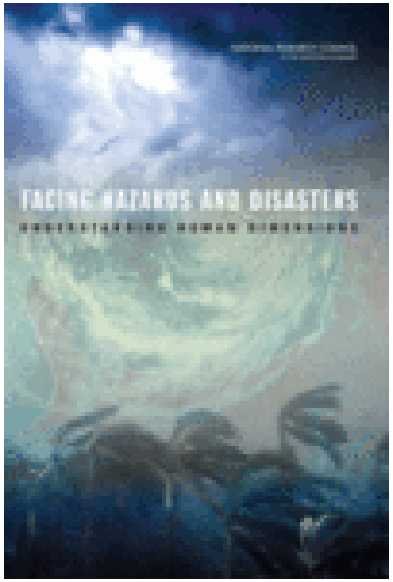
Hazard Vulnerability
Hazard Exposure
Physical Vulnerability
Social Vulnerability

EVENTS

Disaster Impacts
Physical
Social

Disaster Event Characteristics

Frequency	Magnitude of Impact
Predictability	Scope of Impact (spatial and social)
Controllability	Duration of Impact
Length of Forewarning	



CHRONOLOGICAL TIME

Pre-Impact → Trans-Impact → Post-Impact

SOCIAL TIME

Source: Facing Hazards and Disasters (NAS, 2006), adapted from Kreps (1985), Cutter (1996), Lindell and Prater (2003)

Thank you!

Visit us: http://ResilientAmerica.nas.edu
Contact us: Resilience@nas.edu