



Senior Leadership's Role in Embedding Transportation Resilience

Deb Matherly, WSP | Patricia Bye, Consultant | June 29, 2021



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What is resilience?

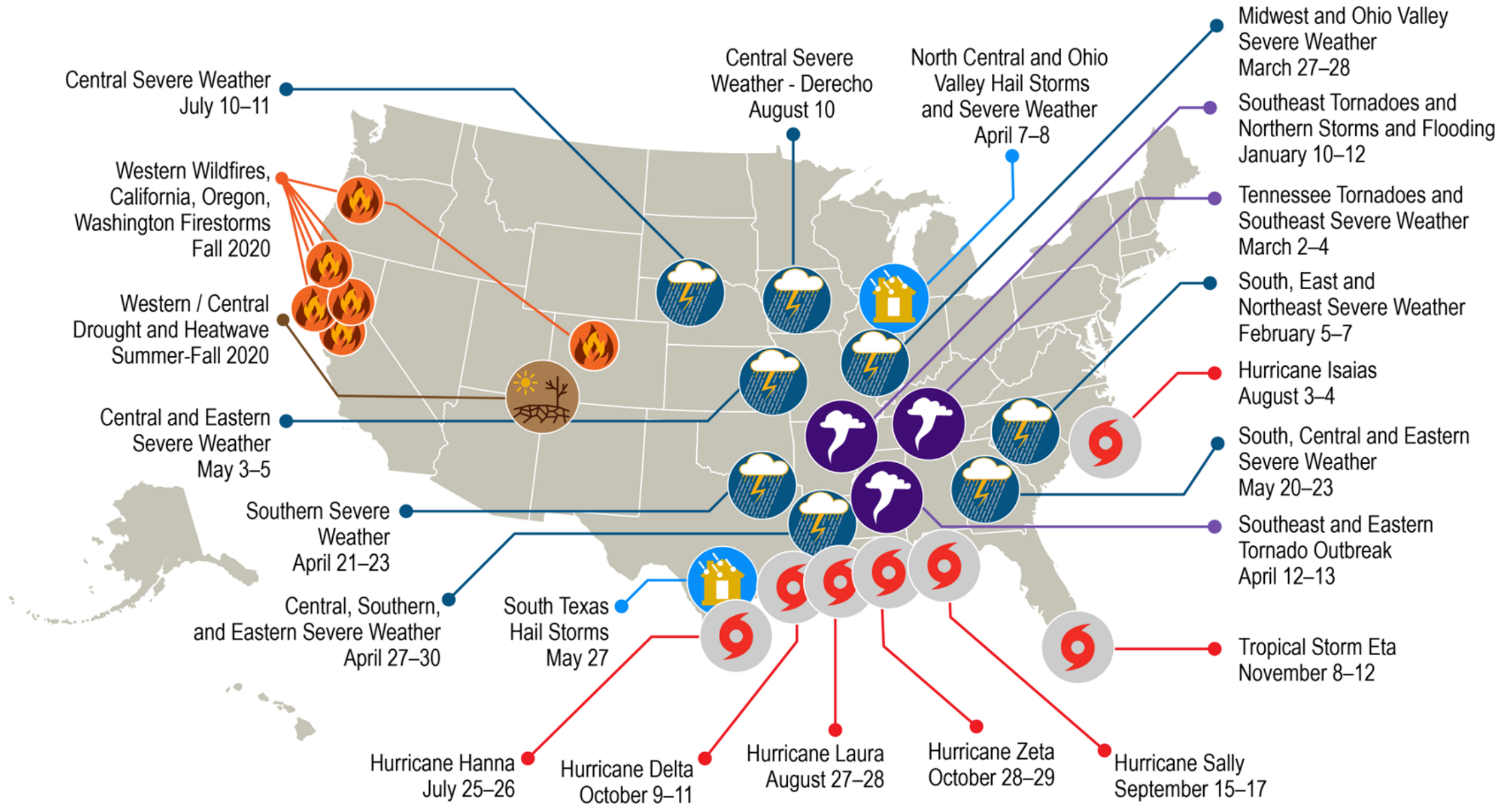
“The ability to prepare and plan for, absorb, recover from, or more successfully adapt to adverse events.”

(Disaster Resilience: A National Imperative, National Research Council, 2012)

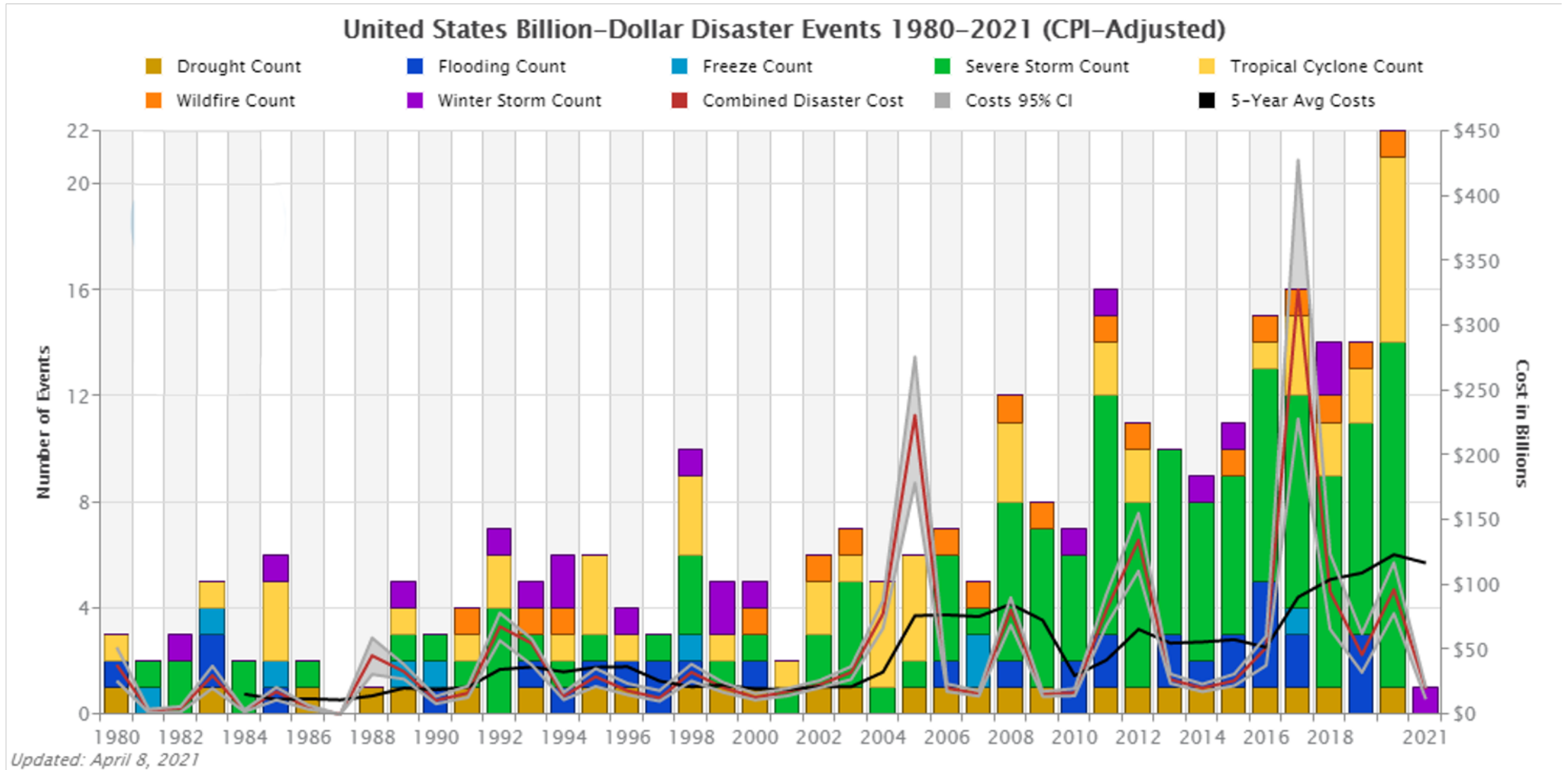
“The capacity of individuals, communities, institutions, businesses and systems within a city to thrive, no matter what kind of chronic stresses and acute shocks they experience.”

(100 Resilient Cities)

U.S. 2020 Billion-Dollar Weather and Climate Disasters



This map denotes the approximate location for each of the 22 separate billion-dollar weather and climate disasters that impacted the United States during 2020.



NOAA National Centers for Environmental Information (NCEI) U.S. Billion-Dollar Weather and Climate Disasters (2020).
<https://www.ncdc.noaa.gov/billions/>

Why is resilience important?

- *“Whatever you call it, customers expect this work to be done. They expect us to keep things working.”*
- A resilient transportation system improves safety and mobility, saves money and improves the agency’s respect and reputation.

“We’re good at recovery. Figuring out how to prevent in the first place is the challenge.”

Implementing Resilience

- Resilience is most effective when “baked in” to everyone’s job and mindset—like safety
- Resilience applies to every major business function
- Cross-functional collaboration and coordinated decision making is supported

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Resilience graphic from “Improving the Resilience of Transit Systems Threatened by Natural Disasters”, TRB 2017.

Treasure operations and maintenance

- Hands-on understanding is crucial
- Many DOTs include O&M in planning, programming, and design teams
- Oregon DOT uses maintenance dispatch data + weather data to map vulnerable areas
- Alabama DOT purchased equipment that doubles as snow plows



Craven County, NC – Source NCDOT website

Include emergency operations and response

- Train, exercise and learn
- Probe crisis incidents for efficiencies to apply everyday
- Employ everyday practices in emergencies
- Build resilience into recovery plans and use the disaster recovery period to advocate for resilience

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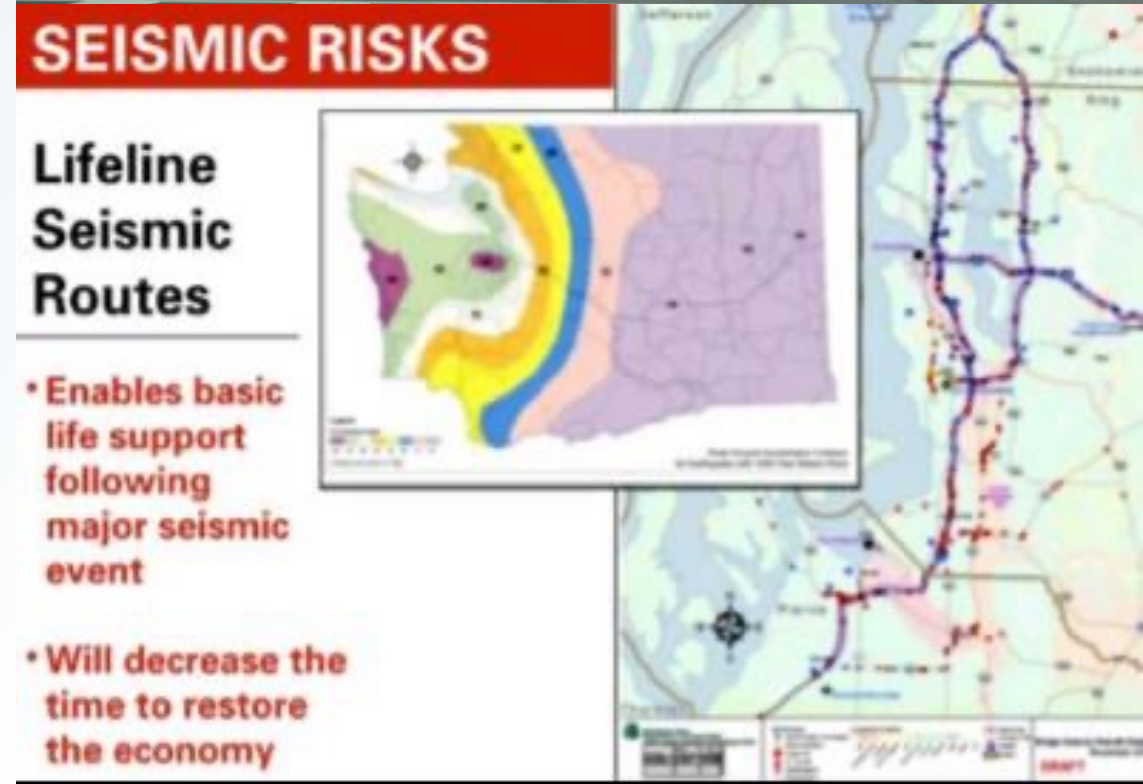


Top: Hurricane Gustav evacuation (with Mayor Nagin). FEMA photo, 2008.
Bottom: Regulatory signage and hurricane evacuation, U.S. Route 290, Texas. Photos by Brian Wolshon.

Incorporate resilience into design and engineering

- Build and prevent scour issues upfront in bridge design
- Design facilities [to seismic standards] to provide transport to key lifeline facilities in a response situation

Top: Example Florida hurricane-resistant mast arms installed along coastal areas. Bottom: Lifeline Seismic Routes (WSDOT)
www.fhwa.dot.gov/asset/pubs/hif13017.pdf



Examine technology and materials through a resilience lens

- Explore innovative techniques and materials
- Use materials that better address current & future conditions
- Automated monitoring systems improve responses, public safety

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Cutler Bridge drone inspection image. Courtesy UDOT.



Photo by Courtney Perry, Minnesota Post

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What is Leadership?

An exercise of power?

The possession of extraordinary analytical skill?

Having followers?

The accomplishment of a goal through the direction of human assistants.

W.C.H. Prentice, HBR 1961

Making visions a shared vision

Helping each player understand own part and its relation to the group effort

Giving employees opportunities to learn and grow

Developing team leaders and players



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Leadership's critical role in resilience

- Only ones that can provide leadership for resilience

“Resilience needs flexibility in both policy and practice.”

- Only ones that can address full scope

“It's important to look at the full scope, not piece by piece.”



Make Sense

Understand what
resilience means to
transportation

Understand what
resilience means to an
agency



Make Decisions

Push for resilience focus in existing operations and management structures, processes and activities

Engage actively in resilience work

Assess risks and vulnerabilities

Determine alternate strategies

Prepare build-back strategies and retreat, if necessary, strategies



Find Meaning

Promote the importance of resilience

Have a clear story of what resilience means to state and to agency



Communicate

Capitalize on resilience theme in agency communications

Tell "how this affects me/us" to agency employees and to those outside agency – state government, public and press

3 Basic Messages to Communicate

What transportation system provides, how it functions and what is being done to maintain it

The work being done to reduce disruptions and improve safety

The commitment to resilience

A man in a dark suit and tie is standing in front of a chalkboard, holding a piece of chalk in his right hand. He is in the process of writing the word 'Assessment' in large, bold, red letters. The word is the central focus of the image. Surrounding this central word are various other terms related to assessment and resilience, written in white chalk in a cursive, handwritten style. These terms include 'identification', 'audit', 'report', 'analysis', 'examine', 'survey', 'method', 'goal', 'system', 'process', 'plan', 'fact', 'evaluation', 'quality', 'procedure', 'result', 'monitor', 'measure', 'performance', 'quantity', 'review', 'control', and 'investigate'. The background is a dark, slightly blurred image of the man and the chalkboard, emphasizing the text.

identification audit report
analysis examine survey
method goal
Assessment
system process plan
fact evaluation quality
procedure result
monitor measure
performance quantity
review control investigate

Make Accountable

Integrate performance measures tied to resilience into strategic, capital and operations planning

Make resilience part of funding criteria

Learn

- Examine efficiencies that made agency nimble during emergencies and explore what can be done to integrate that into day-to-day operations
- Use continuous learning and improvement processes

“If a DOT can move quickly and nimbly after an event, we must figure out how to do the same on a daily basis.”

“If you had asked, how long it would take prior to the pandemic, most would say a year maybe. Now it was done in a week.”



You are not alone

Seek partners

- Within your agency
- In other states
- In local governments
- In private and non-profit organizations



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To be a resilient CEO/Senior Manager

- **Know** risks, hazards and time horizons
 - **Plan** proactively for “what if” scenarios
 - **Balance** risk and costs in capital decisions
 - **Maintain** an owner mentality
- Recognize that small changes have big results over time

Key Questions to Ask

- What are the most likely things that could happen and what impacts will there be?
- Is our planning proactive including using “what if” scenarios for new threats and realities?
- What are alternative approaches for adapting infrastructure and operations?
- Do we have resilience measures in our strategic, operations and capital planning?



Key Take-Aways

- Many resilience practices represent minor adaptations to existing processes, not big changes (though some will require significant investments)
- Resilience is most effective when woven into the fabric of the organization—internal and external
- CEOs that make resilience a priority may be saving their own jobs, as well as helping their agency, their state and their communities

Thank You

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