Senior Leadership’s Role in Embedding Transportation Resilience

May 6, 2021
2:00- 3:30 PM Eastern
PDH Certification Information:

• 1.5 Professional Development Hours (PDH) – see follow-up email for instructions

• You must attend the entire webinar to be eligible to receive PDH credits

• Questions? Contact Reggie Gillum at RGillum@nas.edu

#TRBwebinar
Learning Objectives

1. Apply resilience approaches within their agencies

2. Discuss senior leadership’s role in implementing resilience

#TRBwebinar
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#TRBwebinar
Senior Leadership’s Role in Embedding Transportation Resilience

Deb Matherly, WSP | Patricia Bye, Consultant | May 6, 2021
Implementing Resilience Throughout an Agency

Deborah Matherly
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)
Question the predictable stand for innovation change the landscape

Transportation Resilience

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

Central Severe Weather
July 10–11

Western Wildfires,
California, Oregon,
Washington Firestorms
Fall 2020

Western / Central Drought and Heatwave
Summer-Fall 2020

Central and Eastern Severe Weather
May 3–5

Southern Severe Weather
April 21–23

Central, Southern, and Eastern Severe Weather
April 27–30

South Texas Hail Storms
May 27

Hurricane Hanna
July 25–26

Hurricane Delta
October 9–11

Hurricane Laura
August 27–28

Hurricane Zeta
October 28–29

Hurricane Sally
September 15–17

Tropical Storm Eta
November 8–12

Midwest and Ohio Valley Severe Weather
March 27–28

Southeast Tornadoes and Northern Storms and Flooding
January 10–12

Tennessee Tornadoes and Southeast Severe Weather
March 2–4

South, East and Northeast Severe Weather
February 5–7

Hurricane Isaias
August 3–4

South, Central and Eastern Severe Weather
May 20–23

Southeast and Eastern Tornado Outbreak
April 12–13

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.

https://www.ncdc.noaa.gov/billions/
Project background

— What You Can Do?
— Key Questions to Ask
— Common Challenges

Objective

1) Primer for CEOs and senior executives on implications and dimensions of resilience and the potential impact on agency programs.

2) Obtain CEO and senior leadership buy-in & support
Project Team

CEO Outreach & Primer Team
— Deb Matherly, PI
— Joan McDonald, Co-PI (former NY Commissioner)
— Pat Bye, Co-PI
— William Ankner, Senior Advisor (former Commissioner for RI & LA)
— Jane Mobley

Literature Review and Case Studies Team
— Brian Wolshon, LSU
— John Renne, FAU
— Pam Murray-Tuite, Clemson U
— Anurag Pande, Cal Poly
— Karl Kim, U. Hawaii
— Eric Yamashita, U. Hawaii

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

— “Whatever you call it, customers expect this work to be done. They expect us to keep things working.”

— “A DOT is uniquely positioned to take action, look at design scenarios, and has the opportunity to develop action solutions as an infrastructure agency.”

— A resilient transportation system improves safety and mobility, saves money and improves the agency’s respect and reputation.
No agency is an island

— Act on critical interdependencies
— Find common causes to pool resources with sister agencies
Understand risks and hazards

— Apply best risk practices to design standards, materials procurement, cybersecurity, bridge management, and more
— Develop risk tolerance policy for facilities or assets too important to fail
— Identify critical corridors for commerce, emergency lifelines, at-risk communities
Implement resilience throughout

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

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
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 life line facilities in a response situation

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
Question the predictable stand for innovation change the landscape

Source: NC Flood Inundation Mapping and Alert Network (FiMAN) From NC Moves 2050 White Paper
How to become more resilient

— Consider long-term life cycle in all sectors
— Embrace innovation in technology, operations, materials, information sharing
— Use risk awareness and criticality to prioritize asset management
— Encourage collaboration across regions and divisions/cross-functional teams for planning, programming, design
Senior Leadership’s Critical Role

Pat Bye
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
What Does A Leader Do?

- Make Sense
- Make Decisions
- Find Meaning
- Communicate
- Make Accountable
- Learn
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.”
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

How agency is working to reduce disruptions and improve safety

The agency commitment to resilience
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 have 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
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
How You Can Help

— Become a resilience champion
— Identify opportunities to encourage use of Resilience Primer
— Make resilience part of discussions among ourselves and
  — with transportation colleagues
  — with people who influence and make decisions about transportation in our region and nationally
  — with the public
Thank You

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HI RESILIENCE HIGHLIGHTS

TRB Webinar: Embedding Transportation Resilience into DOTs
AASHTO Resilience Activities

• **Center Website Portal:**
  - Links to available climate tools for state partners.
  - Resilience “portal”: design tools, data, analytics and data best practices.
  - Risk analysis frameworks.

• **Resilience Webinar Series:** Presents material on key issues including:
  - Managed retreat;
  - Workforce development and training needs for emerging engineers.

• **Peer Exchanges:** Organize and hold a series of regional peer exchanges to focus on regional approaches to address resilience.
CTSSR Member Survey

- Survey sent January 2021.
- Looked at member perception of strategies transportation departments are considering to improve resilience of their systems.
Considerations for CEOs

- Balance today’s needs with future
- Make tomorrow’s problems relevant today
- Set plans and processes to default to action
- Be part of the solution
Short Term Resilience

- Emergency Repairs
- Coastal Highway Protection Sites
- Slope Failure Warnings
Slope Failure Warning

- Kuhio Highway at Hanalei Hill. Using GPS to alert responders if there is movement of the slope above the highway.
- Allows for advance warning.
- Looking into using this for areas where surficial failures may impact highways as well.
Mid Term Resilience

• Beach replenishment
• Small realignments
• Policy adjustments for facilities preservation in SLR forecasted areas
Sandsaver Pilot

- Pilot project to evaluate effectiveness of "sandsavers" for reduction of erosion rate and shoreline stabilization
- Pilot will deploy perforated coastal structures at five locations and will include field monitoring to determine effectiveness
- Cost est. $8.5 million
Small Realignments

- Consideration of small realignments in coastal areas (Lanaikea, Mopua)
- Provides additional time to plan and coordinate while moving the threatened segment
- Cost comparison
  - $6-8 million small realignment
  - $65 million major realignment
Policy for Facilities in SLR areas

• Consideration of use of less costly, more immediate fixes for facilities in areas forecasted to be impacted by SLR.

• Example:
  • Top – Makaha Bridge 3A
  • Bottom – Wainiha Bridge
Long Term Resilience

• Climate Adaptation Action Plan – gathering working groups (CZM, planning, land use agencies) to address concerns before planning process starts

• Considerations
  • Plan for 30 years out
  • No blanket policy
  • Adaptation design making process
  • Risk based scenario
Realignment/Managed Retreat
LEVEL 2 CHARGE
1 hour = At least 12 miles of range

FAST CHARGE
15 minutes = About 43 miles of range

Hawaiian Electric
Fast Charge

Hawaiian Electric fast charging locations updated as of July 2020
MAHALO

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• *May 24*: Geotechnical Responses to Extreme Events

https://www.nationalacademies.org/trb/events