State Summit on Energy Resilience Planning and Funding

July 28-29 & August 3-4, 2021

Hosted by the National Governors Association (NGA) and National Association of State Energy Officials (NASEO)
Day 1: State Energy Resilience Planning and Governance

Wednesday, July 28
Welcome Remarks and Overview

Speakers:
Dan Lauf, Energy Program Director, NGA Center for Best Practices
David Terry, Executive Director, NASEO
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.

What is Resilience?

The ability to:

- Withstand disasters better;
- Respond and recover more quickly; and
- Excel under new conditions
Resilience Resources at NASEO

NASEO and NGA State Summit on Energy Resilience Planning and Funding

July 28-29, August 3-4, 2021
Readiness for Resilience Roadmaps and Cybersecurity

https://naseo.org/publications
NASEO NARUC State Microgrid Working Group

https://naseo.org/issues/electricity/microgrids
Upcoming NASEO Resilience Events

• **NASEO Virtual Event: Meeting Climate and Resilience Goals with Emerging Technologies**
  • August 12-13, 2021, 1:00 - 3:00 PM ET

• **Virtual Workshop: Enhancing Community Energy Resilience through FEMA BRIC**
  • August 24-26, 12:30pm to 5:30pm ET

• **Resilience and Risk Webinar Series**
NGA Resilience Resources
Addressing Cybersecurity for Critical Energy Infrastructure through State Governing Bodies

Executive Summary
This paper reviews eight states that have made a concerted effort to address vulnerabilities facing the cybersecurity of the critical energy sector through a statewide governance body. These statewide governance bodies are tasked with developing recommendations for policymakers on a host of issues; identifying best practices; providing strategic direction on cybersecurity plans for state agencies; recommending training for state employees; and addressing cybersecurity workforce or professional development issues in the state. This paper addresses practices Governors can follow to establish effective cybersecurity governance bodies that support critical infrastructure cybersecurity, with a focus on the energy sector.

Overview
Governors often use governance bodies – also commonly referred to as councils, task forces, boards, working groups or commissions – to address important and complex subjects such as cybersecurity. These bodies can serve a variety of purposes – from making recommendations, advising the Governor on an issue, and crafting the state’s strategic plan. As the cybersecurity threat landscape continues to evolve and our dependency on technology grows, Governors are sharpening their focus on addressing cybersecurity vulnerabilities in their states. With malicious actors continually attempting to access parts of our nation’s critical infrastructure, some states have expanded the breadth of their statewide homeland security advisory council or cyber governance body to include critical infrastructure protection specifically focusing on the energy sector. Others have created a statewide task force to engage specifically on energy sector cybersecurity.

• Approaches to improve energy cybersecurity through state governance structures
• Profile of eight state governance bodies

Report available at: https://www.nga.org/center/publications/addressing-cybersecurity-for-critical-energy-infrastructure-through-state-governing-bodies/
State Resilience Assessment & Planning Tool (SRAP Tool)

Self-assessment led by Governor's offices, completed with input from other agencies and state officials.

Energy and infrastructure focus, with five sections:
1. Establishing Effective Governance
2. Evaluating and Mitigating Risk
3. Assessing Vulnerabilities to Critical Infrastructure
4. Mitigating Economic Consequences and Financing Resilience
5. Strengthening Community Ties

Download the tool at:
https://www.nga.org/center/publications/state-resilience-assessment-planning-tool/
Upcoming NGA Resources and Opportunities

**Resources in Development**
- Executive Authorities for Energy Emergencies: Public Health Considerations
- Whitepaper on cybersecurity information sharing (with NARUC and NASEO)
- Foreign Influence in Critical Energy Infrastructure
- State Energy Resilience Planning and Funding Resource Guide (with NASEO)

**Upcoming Opportunity: NGA Support for State Participation in GridEx VI**
- Forthcoming RFA for up to four Governor-designated state teams to receive direct technical assistance before, during, and after the GridEx VI exercise in November 2021
- Participating states will participate in a state after-action workshop and inform a state focused after-action report
- With NGA’s support, state teams will develop and implement action plans informed by their GridEx VI participation
Event Overview

• Day 1 (7/28): State Energy Resilience Planning and Governance

• Day 2 (7/29): Energy as a Cross-Sector Resilience Solution

• Day 3 (8/3): Making Energy Systems Resilient to Climate Change and Severe Hazards

• Day 4 (8/4): Prioritization, Funding, and Financing
Preview of Today’s Agenda

• 1:00 to 1:30 PM – Welcome Remarks and Overview of Day 1
• 1:30 to 2:00 PM – Energy Resilience Keynote
• 2:00 to 2:45 PM – Considerations in Energy Resilience Planning
• 2:45 to 3:00 PM – Break
• 3:00 to 3:30 PM – Resilience: A Perspective from the Utility Sector
• 3:30 to 4:30 PM – Breakout Sessions
• 4:30 PM – Key Takeaways and Closing Remarks
Energy Resilience Keynote

Speakers:
Gaurav Gujral, Managing Director and Global Consulting Lead, Social Services Industry, Accenture
Daniel Stevens, Global Utilities Lead for Emergency Management, Accenture

Moderator:
Kirsten Verclas, Senior Program Director, NASEO
Building Resilience in Critical Public Infrastructure
Role of Government in Disaster Mitigation, Recovery and Response

Gaurav Gujral
Global Sustainability Lead for Public Services
July 28, 2021
Agenda

01
Global View: Recognising vulnerabilities and the impact on our communities around the world

02
Building resilience and sustainability in critical Government infrastructure

03
Understanding the complex pressures facing the U.S. Utility industry

04
Strengths, challenges, and opportunities
Recognising vulnerabilities and the impact on our communities
Around the world, high-impact weather-related events are becoming more frequent and more severe

- Heat waves in Europe led to wildfires in Greece, Sweden and Spain, droughts in central and northern parts and forced nuclear plants to shut down or curtail the amount of power they produce.
- 2018 wildfires in California have burned more than 386 square miles (1,000 square km).
- Hurricane Dorian - the most powerful storm to hit the Bahamas since records began - has left widespread devastation.
- Worst drought in history spreading from São Paulo to Rio de Janeiro and beyond, caused more than 4 million people to be affected by rationing and rolling power cuts.
- In January 2020, a winter storm in Spain left 200,000 people without electricity.
- Venice floods at highest level in 50 years.
- India’s southern state of Kerala suffered in 2018 its worst monsoon flooding in a century, with more than 1 million people displaced, and more than 400 reported deaths.
- In Indonesia, heavy rain led to flooding and landslides in the western part of the country.
- Bush fires that have razed more than 100,000 square km (39,000 square miles) are threatening Australia’s grid.
- Thailand tackles worst drought in 40 years.
- Extreme rainfall, heatwaves and typhoons in Japan in 2018 caused damages equivalent to $35 billion and led to the loss of 0.6% of its GDP.
- Typhoon Mangkhut in the Philippines was the strongest storm recorded in 2018. More than 250,000 people were affected, with casualties mainly caused by landslides following heavy rain.
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FROM RELIABILITY TO RESILIENCE. Accenture
We have entered an epoch of increasing vulnerability

+475,000 people lost their lives worldwide and losses of US$ 2.56 trillion (in PPP) as a direct result of more than 11,000 extreme weather events between 2000 and 2019 – Germanwatch

Global cybercrime costs expected to grow 15% per year, reaching $10.5 trillion USD annually by 2025 - Cybersecurity Ventures

NOAA alerts for an above-normal hurricane season in the Atlantic basin. Also forecasting models anticipate more intense hurricanes

Our economies and sectors are increasingly interconnected and uninterrupted energy supplies are the bedrock of the digital society

WEF - Global Risks Perception Survey 2020 % of respondents - Short-term risks (0 – 2 years)

The figures reported tell a human tale...
Building resilience and sustainability in critical Government infrastructure
Characteristics of a Resilient Government

Resilient Government
Build preparedness, rapid response and recovery capabilities

Citizen and Communities Engagement
Resilient communities. Promote citizen participation, proactive active bidirectional communication, involve third sector actors in response

Climate Action
Prevention and mitigation actions on the climate. Direct policy action to accelerate decarbonization, embed ESG goals in infrastructure projects

Governance and Policy
Prevention and response leadership. Resilience protocols and standards regulation, operational planning and coordination across actors

Disaster Management: Prevention, Mitigation & Rapid Recovery

Proactive, Adaptive, Data Driven, Convenor
Increasing preparedness to unexpected events

**Establish the foundations of resilience**
- Strengthen institutional and coordination capacity
- Regulatory frameworks and standards for resilience and disaster reduction
- Response protocols and action plans
- Measurement, forecasting, modeling and risk assessment capabilities

**Build resilient operations**
- Increase flexibility and adaptability leveraging data-driven and technology solutions
- Invest in risk reduction measures and develop resilient infrastructure
- De-risk private investment in resilient infrastructure
- Collaborate with ecosystem partners
- Diversify operations and supply of critical resources

**Future-proof and deliver resilience services**
- Providing emissions, weather and risk data, real-time alerts, and relevant insights in a timely and actionable matter
- Raise citizen awareness, participation and engagement building a resilient society/communities

**Denmark**
National Crisis Management System
Sector responsibility and a central Agency providing coordination, with regular risk assessments and contingency plans for known vulnerabilities.

**Australia**
National Disaster Risk Reduction Framework
Outlines a comprehensive approach to proactively reducing disaster risk based on the shared responsibility principle.

**Paris**
Climate Action Plan
Carbon-neutral by 2050 and resilient to crises and extreme weather. Fosters civic action, communication, plans to provide extensive data services and training.
EU countries allocations for reforms and investments supports climate objectives

Government stimulus plans helping build foundations for the future

**France**
- **Renovation of buildings**: financing a large-scale renovation programme to increase the energy efficiency of buildings. **€5.8 billion**
- **Modernisation of the rail network**: improving the rail network increasing the use of railway as an alternative to road transport. **€4.4 billion**
- **Decarbonised hydrogen**: development of value chains for decarbonised hydrogen. **€1.9 billion**
- **Climate and Resilience Law**: national legislation to contribute to the greenhouse gas emissions reduction target for 2050.

**Germany**
- **Hydrogen leap**: investing in green hydrogen at all stages of the value chain to help decarbonise the German economy. **€1.5 billion**
- **Support for electric cars**: helping citizens shift to clean electric vehicles by giving financial support for more than 800,000 decarbonised vehicles. **€2.5 billion**
- **Energy efficiency in residential buildings**: financing a large-scale renovation programme to increase the energy efficiency of residential buildings. **€2.5 billion**

**Italy**
- **Sustainable mobility**: integrate more regions into the high-speed rail network and complete the rail freight corridors; boost sustainable local transport through the extension of cycle lanes, metros, tramways and zero-emission buses, including the construction of electric charging stations across the country and hydrogen refuelling points for road and rail transport. **€32.1 billion**
- **Energy efficiency in residential buildings**: financing large-scale renovation of residential buildings to make them more energy efficient. **€12.1 billion**
- **Renewable energy and circular economy**: developing the production and incentivising the use of renewable energies including green hydrogen as well as increasing recycling, reducing landfill waste and improving water management. **€11.2 billion**

**Spain**
- **Law on climate change and energy transition**: establishing into law the renewable targets for 2030 and the objective of climate neutrality by 2050, including a 100% renewable electricity system.
- **Innovative renewable energy sources**: developing innovative renewable energy sources, integrated into buildings and production processes, including the implementation of the renewable hydrogen roadmap. **€3.9 billion**
- **Energy efficiency residential renovations**: supporting more than half a million energy efficiency renovations in residential buildings to achieve, on average, a primary energy demand reduction of at least 30%. **€3.4 billion**
Resiliency & U.S. Utilities

Daniel Stevens

accenture
Challenges facing the utility industry

CLIMATE UNCERTAINTY
Increased frequency and severity of severe weather

EXPECTATIONS & INTERDEPENDENCY
Demand for accurate and transparent communications to support customer and cross-sector expectations

REGULATORY
Storm-related mandates and fines have increased pressure

ADVANCED TECHNOLOGY
Ambiguity around emerging storm technologies; Gaps across existing foundational tools

SECURITY
Third-party access & supply chain risks, increased vulnerability during storms

ENERGY TRANSITION
Renewables and market competitors create complex grid operations and restoration challenges
Strengths & Challenges

STRENGTHS

- Blue and gray sky reliability
- Mutual assistance
- Operations

CHALLENGES

Response
- Crisis communication & stakeholder engagement
- Integrated technology and field mobility
- Forensics analysis

Resiliency
- Making risk-based decisions to invest in mitigation
Opportunities

Response
- Leverage ESF12 (Energy)
- Help deconflict priorities
- Support response messaging

Mitigation
- Include utilities in the conversation – beyond just energy topics
- Understand the costs and benefits of enhanced vegetation mgmt. vs. undergrounding vs. asset hardening

Resiliency
- Develop a recovery plan with a resiliency mind-set
- How will you use federal aid?
- What will the grid look like?
- Repair vs. replace
APPENDIX
Select Slides from Digitally Enabled Grid Report 6.0 – 2020 report on grid resiliency

Hyper Link to Full Report

Source: https://www.accenture.com/_acnmedia/PDF-124/Accenture-Resilience-Extreme-Weather-POV.pdf#zoom=40
# Digitally Enabled Grid (DEG) 6.0

## Accenture’s Annual Research Program—2020 Topic was Resiliency

<table>
<thead>
<tr>
<th>Respondent Function</th>
<th>%</th>
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<tbody>
<tr>
<td>COO</td>
<td>27%</td>
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<tr>
<td>CFO</td>
<td>17%</td>
</tr>
<tr>
<td>CIO</td>
<td>17%</td>
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<tr>
<td>SVP/Director Networks</td>
<td>9%</td>
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<tr>
<td>CDO (or equivalent)</td>
<td>5%</td>
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<tr>
<td>SVP/VP/Director smart grid</td>
<td>5%</td>
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<tr>
<td>SVP/VP/Director customer ops</td>
<td>5%</td>
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<tr>
<td>SVP/VP/Director of strategy</td>
<td>4%</td>
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<tr>
<td>SVP/VP/Director grid ops</td>
<td>3%</td>
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<td>SVP/VP/Director system planning</td>
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<td>SVP/VP/Director regulation</td>
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<td>SVP/VP/Director power delivery</td>
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### NORTH AMERICA
- **83 respondents**
- **Canada 20**
- **USA 63 + 6 interviews with executives**

### EUROPE
- **67 respondents**
- **Belgium 6**
- **Denmark 2**
- **France 5**
- **Germany 6**
- **Ireland 4**
- **Italy 3**
- **Netherlands 3**
- **Norway 6**
- **Poland 5**
- **Portugal 3**
- **Spain 8**
- **Sweden 4**
- **Switzerland 5**
- **United Kingdom 6**

### AAPAC
- **48 respondents**
- **Australia 10**
- **China 7**
- **Hong Kong 3**
- **India 6**
- **Indonesia 4**
- **Japan 5**
- **Malaysia 3**
- **Philippines 4**
- **Singapore 4**
- **Thailand 2**

### NORTH AMERICA
- **Canada 20**
- **USA 63 + 6 interviews with executives**
Less Than a Quarter Feel Well Prepared to Manage Extreme Weather

How challenging is it to maintain your network operations and safety during extreme weather events?

- Not a challenge: 4%
- A minor challenge: 22%
- A significant challenge: 54%
- A very significant challenge: 19%

How prepared is your business to manage your expected changes to extreme weather events over the next 10 years?

Global results:
- Very well-prepared: 24%

- North America: 24%
- Europe: 18%
- Asia Pacific: 27%
And Core Resilience Investments Are Being Made

Which of the following resilience improvement areas do you expect to be your greatest priority over the next 10 years?

<table>
<thead>
<tr>
<th>Priority resilience improvement areas</th>
<th>Global</th>
<th>North America</th>
<th>Europe</th>
<th>APAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased system flexibility</td>
<td>35%</td>
<td>30%</td>
<td>43%</td>
<td>33%</td>
</tr>
<tr>
<td>Restoration effectiveness</td>
<td>24%</td>
<td>27%</td>
<td>25%</td>
<td>21%</td>
</tr>
<tr>
<td>Network hardening</td>
<td>19%</td>
<td>20%</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>Effective communication with customers and other stakeholders</td>
<td>11%</td>
<td>13%</td>
<td>6%</td>
<td>8%</td>
</tr>
<tr>
<td>Accurate forecasting of weather and its impacts on your network</td>
<td>11%</td>
<td>10%</td>
<td>10%</td>
<td>15%</td>
</tr>
</tbody>
</table>

**Examples** – network islanding
- Network sensors and control
- Network analysis (power flow, contingency analysis, etc.)
- Network automation
- Distributed energy resource (DER) control systems
- Incentive model/grid code modifications

**Examples** – supply chain logistics
- Supply chain sourcing diversity
- Strategic spares strategy
- Spares sharing agreements with other utilities
- Pre-staging parts prior to the event

**Examples** – substation flooding
- Re-siting
- Raise assets
- Flood barriers
- Sump pumps
- Local land drainage
- Local vegetation management

**Examples** – network hardening
- Undergrounding, flood protection, overhead line strength, etc.

**Examples** – restoration effectiveness
- Emergency processes, restoration, optimization, training, strategic spares, etc.
Disaster risk management & resiliency

Prepare & Mitigate
- Event forecasted. Prepare operation for disaster mitigation (activate protocols, emergency systems, take networks into safe mode, etc)
- Local, State and National coordination
- Forecast events and develop early warning capabilities
- Minimize impact
  - Citizen and businesses notification
  - Emergency operation planning

Respond & Restore
- Manage degradation and impact rate when possible
- Adapt to event impacts
  - Reconfigure services as required
  - Manage communications
  - Maintain safety
- Damage assessment
- Recovery & response coordination

Recover & Rebuild
- Government operation restored
- Restore Government operation
- Optimize restoration tactics
- Recovery stimulus packages
- Restore degraded resilience

Objectives
- Forecast, prepare and prevent to minimize impacts
- Build the resilient infrastructure

Mitigate: the ongoing event to maintain safety and limit further impact on businesses, citizens and Government operation

Adapt: to restore systems, services or supply, minimizing value loss

Intervene in emergencies

Build & Recover: Stronger, leveraging recovery dollars to invest in greater resiliency capabilities
Considerations in Energy Resilience Planning

Speakers:

Dr. Mary Beth Tung, Director, Maryland Energy Administration
Mike Harryman, State Resilience Officer, Office of Oregon Governor Kate Brown
Dr. Amanda Martin, Chief Resilience Officer, North Carolina Office of Recovery and Resiliency

Moderator:
Dan Lauf, Energy Program Director, NGA Center
Resilience Governance in North Carolina

State Summit on Energy Resilience Planning and Funding

Dr. Amanda Martin
Chief Resilience Officer
N.C. Office of Recovery & Resiliency
Components of resilience governance in North Carolina*

- EO 80: NC’s Commitment to Climate Change
- North Carolina Climate Risk Assessment and Resilience Plan
- North Carolina Office of Recovery and Resiliency
- State Disaster Recovery Task Force
- Resilient Communities Program
- Leadership in individual state agencies

*Not an exhaustive list!
Break

2:45-3:00 PM ET
Resilience: A Perspective from the Utility Sector

Speaker: 
Brian Harrell, Vice President and Chief Security Officer, Avangrid

Moderator: 
Campbell Delahoyde, Senior Program Manager, NASEO
Breakout Sessions

To round out the first day discussions, participants will split into breakout rooms to be facilitated by moderators from NGA and NASEO on the following topics:

- Climate change and resilience
- Equity and resilience
- Energy jobs and resilience

Participants will have 30 minutes to discuss lessons learned, additional barriers, and share best practices for state energy resilience planning and coordination.

Participants will be split into three groups for 30 minutes before group report outs.
Preview of Tomorrow’s Agenda

• 1:00 to 1:15 PM – Welcome, Introductions, and Overview of Day 2
• 1:15 to 1:45 PM – Energy Resilience for a Reliable Transportation System
• 1:45 to 2:15 PM – Safe and Plentiful Water through Energy Resilience
• 2:15 to 2:45 PM – Improving Community Health through Resilient Energy
• 2:45 to 3:00 PM – Break
• 3:00 to 3:30 PM – Breakout Discussions: Energy Resilience for Critical Interdependencies
• 3:30 PM – Key Takeaways and Closing Remarks
End of Day 1

Thank you!