



Catastrophic Power Outage Study

Quarterly Business Meeting

September 13, 2018

NIAC The President's National
Infrastructure Advisory Council

Agenda

- ▶ Review Tasking to the NIAC, Working Group Approach, and Panel Discussions/Interviews Conducted
- ▶ Discuss Study Group Early Observations
- ▶ Discuss Working Group Early Observations
- ▶ Review Working Group Next Steps
- ▶ Answer Questions

Tasking to the NIAC

- ▶ Build on the information gathered through the scoping effort
- ▶ Develop findings and actionable recommendations on how the ***public and private sectors can work together*** to further enhance and integrate critical infrastructure resilience with response and recovery actions ***to mitigate the risks posed by catastrophic power outages***

Working Group Members

Co-Chair: Connie Lau, President and CEO, Hawaiian Electric Industries, Inc.

Co-Chair: Bill Fehrman, President and CEO, Berkshire Hathaway Energy

Jan Allman, President, CEO, and General Manager, Marinette Marine Corporation

Dr. Georges Benjamin, Executive Director, American Public Health Association

William Terry Boston, Former CEO, PJM Interconnection

Ben Fowke, Chairman, President, and CEO, Xcel Energy

George Hawkins, Former CEO and General Manager, District of Columbia Water and Sewer Authority

Joan McDonald, Director of Operations, Westchester County, NY

Beverly Scott, Ph.D., CEO, Beverly Scott Associates, LLC; former General Manager, Massachusetts Bay Transportation and Rail, and Transit Administrator for the Commonwealth of Massachusetts

Mike Wallace, Former Vice Chairman and COO, Constellation Energy

Working Group Study Approach

- ▶ Formed a Study Group of 13 subject matter experts to vet and validate the 8 key areas of inquiry identified in the scoping effort (see Appendix)
- ▶ Conduct interviews with senior leaders in the federal government and subject matter experts:
 - **Working Group:** 5 interviews with senior government leaders in August
 - **Study Group:** 6 panels with 24 experts between July-August
- ▶ Conduct background research on statutes, regulations, reports, articles, and prior exercises
- ▶ Hold in-person work sessions to discuss key issues and reach consensus:
 - **September 13:** Working Group/Study Group work session to ask and answer questions to identify any gaps that need to be addressed and ensure work streams are aligned
 - **October 15:** Working Group work session to refine and reach consensus on findings and actionable recommendations
- ▶ Engage with key stakeholders throughout the study process, including National Security Council (NSC), Department of Homeland Security (DHS), Department of Energy (DOE)

Study Group Members

Co-Chair: Scott Seu, Senior Vice President, Hawaiian Electric Company

Michele Guido, Business Assurance Principal, Southern Company

Co-Chair: Peter Grandgeorge, National Security and Resiliency Advisor, MidAmerican Energy

Suzanne Lemieux, Manager, Midstream and Industry Operations, American Petroleum Institute

Scott Aaronson, Vice President, Security and Preparedness, Edison Electric Institute

Nathaniel Millsap, Director, Industrial Security and Technology, Marinette Marine

Ted Basta, Chief Executive, TJB Transit Consultant Services

Frank Prager, Vice President, Policy and Federal Affairs, Xcel Energy

Kathryn Condello, Director, National Security and Emergency Preparedness, CenturyLink

Jonathan Reeves, Former Chief, Office of Emergency Management, District of Columbia Water and Sewer Authority

Randy Crissman, Senior Reliability and Resilience Specialist, Utility Operations, New York Power Authority

Saul Rojas, Vice President, Technical Compliance, New York Power Authority

Kimberly Denbow, Senior Director of Security, Operations and Engineering Services, American Gas Association

Study Group Panels to Vet Areas of Inquiry(1/2)

Energy Panel

1. **James Merlo, Ph.D.**, Vice President and Director of Reliability Risk Management, North American Electric Reliability Corporation (NERC)
2. **Jeffrey Pillon**, Director of Energy Assurance, National Association of State Energy Officials (NASEO)
3. **Gil Quiniones**, President and CEO, New York Power Authority (NYPA)
4. **Le Xie, Ph.D.**, Associate Professor, Texas A&M University

Natural Gas Panel

5. **Janice K. Devers**, Director, Tariffs and Regulatory Affairs, Algonquin Gas Transmission, LLC
6. **Dave McCurdy**, President and CEO, American Gas Association (AGA)
7. **Donald Santa Jr.**, President and CEO, Interstate Natural Gas Association of America (INGAA)

8. **Jay Montgomery**, Vice President, Corporate Security and Business Continuity, Kinder Morgan Energy Partners; Chair, Oil and Natural Gas Sector Coordinating Council (SCC)
9. **William Whaley**, Vice President of U.S. Pipelines Gas Control, Enbridge Gas Distribution and Union Gas
10. **Dena Wiggins**, President and CEO, Natural Gas Supply Association (NGSA)

Nongovernmental Organization (NGO) Panel

11. **Keith Adams**, Vice Chair, National Voluntary Organizations Active in Disaster (NVOAD); Chair of the New Jersey VOAD
12. **Antonio L. Fernández**, Director, Latinos for Healthcare Equity
13. **Dr. Eric Goralnick**, Medical Director of Emergency Preparedness, Brigham and Women's Hospital (BWH)
14. **Jesse Levin**, Founder, Tactivate

Study Group Panels to Vet Areas of Inquiry(2/2)

Regional Transmission Organizations (RTOs) and Independent Systems Operators (ISOs) Panel

15. **Michael Bryson**, Vice President, Operations, PJM Interconnection LLC (PJM)
16. **Trevor Hines**, Lead of Operations Information and Communications, Midcontinent Independent System Operator (MISO)
17. **Steve Rourke**, Vice President, System Planning, ISO New England (ISO-NE)
18. **Kris Ruud**, Principal Advisor of Engineering and Real-Time Operations, Midcontinent Independent System Operator (MISO)
19. **Wesley Yeomans**, Vice President of Operations, New York Independent System Operator (NYISO)

Utilities Panel

20. **Brian Harrell**, Managing Director, Enterprise Protective Services, Duke Energy Corporation
21. **David Owens**, Chair, Transformation Advisory Council (TAC), Puerto Rico Electric Power Authority (PREPA)

Communications Panel

22. **Allen Bintz**, Principal Solutions Architect, Strategic Government, CenturyLink
23. **Kathryn Condello**, Senior Director, National Security and Emergency Preparedness, Century Link
24. **Chris Oberg**, Principal Engineer, Verizon Wireless; Chair, Communications Information Sharing and Analysis Center (ISAC)

Study Group Early Observations

- ▶ The increasing interdependencies of critical infrastructure sectors requires improved and proactive cross-sector coordination for preparedness and response.
- ▶ Federal and state emergency plans, frameworks, and exercises should have a greater focus on developing resilience at the individual, neighborhood, and community levels.
- ▶ A common, shared understanding of resilience and standardized guidance should be developed to help communities and key stakeholders identify resilience needs and serve as a benchmark for decisions on resilience investments.
- ▶ There are a number of ongoing efforts focused on secure communications that could potentially serve as a model moving forward.

Working Group Interviews

1. **Bruce Walker**, Assistant Secretary, Office of Electricity (OE), Department of Energy (DOE)
2. **Bob Kolasky**, Director, National Risk Management Center, Department of Homeland Security (DHS)
3. **Paul Stockton, Ph.D.**, Managing Director, Sonecon LLC; former Assistant Secretary of Defense for Homeland Defense and Security Affairs
4. **Stephen Cauffman**, Research Engineer, Community Resilience Program, National Institute of Standards and Technology (NIST)
5. **Major General Donald E. “Ed” Jackson Jr.**, Deputy Inspector General, Office of the Inspector General, U.S. Army; former Deputy Commanding General for Civil and Emergency Operations, U.S. Army Corps of Engineers (USACE)

Working Group Early Observations

- ▶ Preparation for and response to a catastrophic power outage requires a cultural shift and greater priority given to emergency preparedness and infrastructure resilience.
- ▶ Existing frameworks and mechanisms silo activities within sectors, which limits cross-sector coordination and the ability to leverage private sector capabilities.
- ▶ Roles and responsibilities for federal coordination are not well defined for a catastrophic power outage.
 - Activities have started to address coordination, but are still in early stages of development (e.g., National Risk Management Center; rewrite of the National Response Framework; Office of Cybersecurity, Energy Security, and Emergency Response).

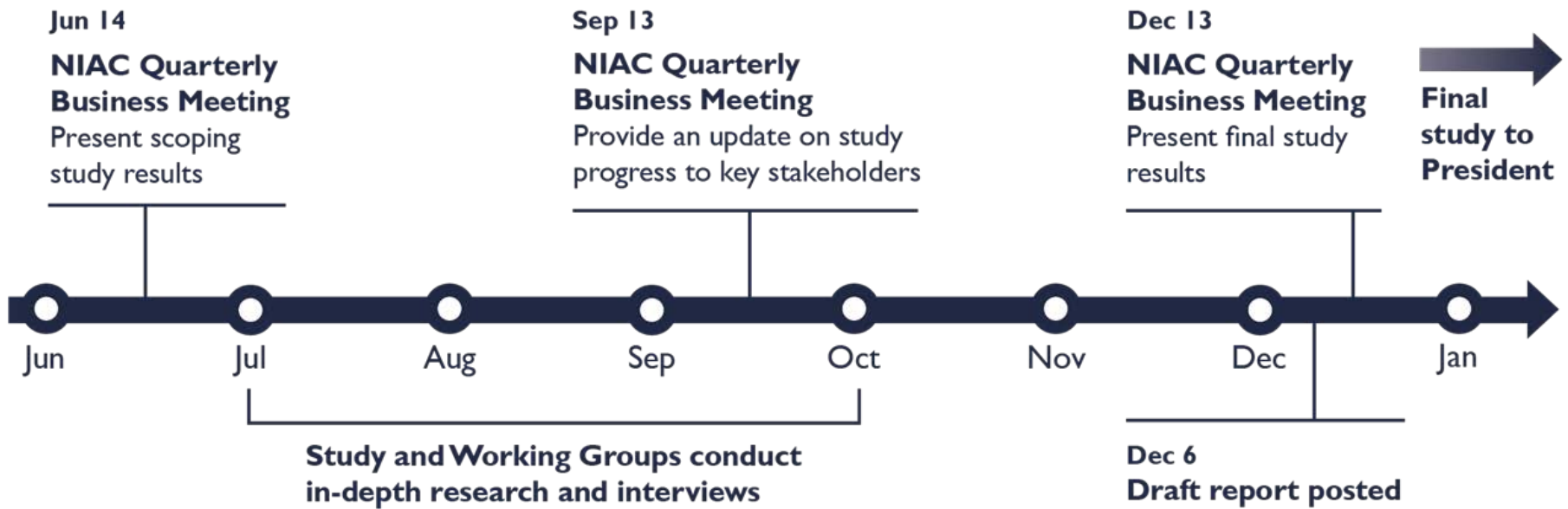
Questions for Discussion

- ▶ How do you imagine this study could inform ongoing efforts to improve cross-sector coordination efforts?
- ▶ What is the most important action the federal government could take that would reduce the impact of a prolonged outage?
- ▶ What is the most important action sectors could take that would reduce the impact of a prolonged outage?
- ▶ Is there anything that hasn't been discussed today that should be considered as part of this study?

Working Group Next Steps

- ▶ Review Study Group results and incorporate relevant information into Working Group efforts
- ▶ Continue to conduct interviews with senior leaders in the federal government and subject matter experts, building on scoping effort and Study Group results
- ▶ Conduct additional research, as needed
- ▶ Hold an in-person work session in October to refine and reach consensus on findings and actionable recommendations
- ▶ Continue to engage with NSC, DHS, DOE, and other key stakeholders

Full Study Schedule



Questions?

Appendix

Scoping Effort Overview

- ▶ Tasked to identify the gaps, challenges, or questions related to a catastrophic power outage
- ▶ Interviewed **21 senior leaders** and subject matter experts from federal/state government and industry
- ▶ Reviewed more than **350 resources**, including statutes, regulations, reports, articles, and prior studies
- ▶ Identified **8 key areas of inquiry** for in-depth examination

Definition of Catastrophic Power Outage

- ▶ Long-duration (weeks to months)
- ▶ Affects a broad region of the nation
- ▶ Causes severe cascading impacts that force critical sectors to operate in degraded state
- ▶ Exceeds the capabilities of existing mutual aid programs

Study Group Approach to Vetting Key Areas of Inquiry

- ▶ Grouped 8 key areas of inquiry into 3 priority groups:
 1. Federal Action
 2. Cross-Sector Planning and Response
 3. Community Resilience
- ▶ Formed three subcommittees around the groups to focus efforts

Key Areas of Inquiry by Study Group Priority (1/3)

Priority Group Key Areas of Inquiry

1. Federal Action

- 3. A federal design basis for long-duration power outages is needed** to provide the design criteria and requirements that can guide critical sectors, states, and agencies to develop plans, invest resources, and devise policies to prepare for a catastrophic power outage that will have cascading consequences across the lifeline sectors.
- 7. Federal agencies need a clear coordinated plan for catastrophic power outages** that provides strong federal direction, oversight, and resource coordination throughout a sustained outage, and allows for state and private sector partners to implement locally. Federal agencies require a greater understanding of how legal authorities (e.g., Stafford Act, FAST Act, Defense Production Act) will be used and a clear delineation of roles and responsibilities across all levels of government and the private sector.
- 8. The federal government should create a framework of incentives** designed to encourage state and local governments and infrastructure owners and operators to make the investments necessary to implement the recommendations of the federal outage design basis and strategy for community enclaves. These incentives may include grants, tax incentives, or cost recovery

Key Areas of Inquiry by Study Group Priority (2/3)

Priority Group	Key Areas of Inquiry
2: Cross-Sector Planning and Response	<p>2. Regional and cross-sector modeling planning, and exercises are needed to reveal the cascading, cross-sector impact and unforeseen interdependency risks of widespread, long-duration outages; and examine where traditional response plans, resources, and mutual aid are exhausted (particularly blackstart processes, water and wastewater operations, and communications requirements).</p> <p>1. Electricity supply chain interdependencies, particularly the growing interdependence of electricity and natural gas production, are not fully understood and could both cause and severely delay restoration from a sustained outage.</p> <p>4. Response plans for complex catastrophes should identify and prioritize the resources needed to re-energize the grid, and address mounting obstacles to restarting electric service as traditional response resources become unavailable (including mutual aid, communication, emergency mobile generators and spare transformers, and economic needs).</p>

Key Areas of Inquiry by Study Group Priority (3/3)

Priority Group	Key Areas of Inquiry
3: Community Resilience	<p>5. A strategy is needed to scope and develop “community enclaves” that co-locate multiple critical backup services at the local level to sustain the local economy and infrastructure, support public health and safety, and prevent mass migrations.</p> <p>6. State and local efforts are needed to build community and individual resilience, including increased outreach and education for businesses and the general public on steps they can take to survive in place, improve personal preparedness, and support and sustain the local workforce, which will be critical to infrastructure restoration. Strategies for pandemic response preparation may provide a model.</p>

NSC Tasking Background

The Nation has made significant advancements in emergency response and recovery planning over the past decade in response to the growing occurrence of complex disasters. Given the interconnected nature of critical systems and networks, new broad-scale approaches are needed to adequately prepare for, respond to, and recover from catastrophic disasters that can create significant power outages with severe cascading impacts to multiple critical sectors.

NSC Tasking (issued May 21, 2018)

- ▶ The desired outcome of this study is a greater understanding of how the public and private sectors can work together to further enhance and integrate critical infrastructure resilience with response and recovery actions to mitigate the risks posed by catastrophic power outages.
- ▶ Using the insights gathered during the current scoping effort, the NIAC should develop findings and actionable, pragmatic recommendations.

NSC Tasking Questions (1/2)

1. What investments, including approaches to increase resilience and reliability, are needed in infrastructure systems and supply chains to minimize the duration, extent, and recovery time for long-duration, large-scale power outages? What are the roles of the private and public sectors in these investments?
2. What critical factors are required to sustain national security; operations within the banking and finance, public health and medical, communications, transportation, and water sectors; and the integrity of the national and regional economies during efforts to restore electric power?

NSC Tasking Questions (2/2)

3. What is the nation's readiness to prioritize and coordinate resource sharing among federal, state, and private entities during catastrophic power outages that will mitigate cascading impacts across the lifeline functions?
4. To what extent are regional and national-level vulnerabilities to catastrophic power outages understood, given the diversity and complexity of North American electric generation, transmission, distribution, and storage configurations and markets?
5. Where does the *Power Outage Incident Annex to the Response and Recovery Federal Interagency Operational Plans* fit within the context of public-private preparedness activities?