Blackstart and Black Sky/Catastrophic Events Webinar

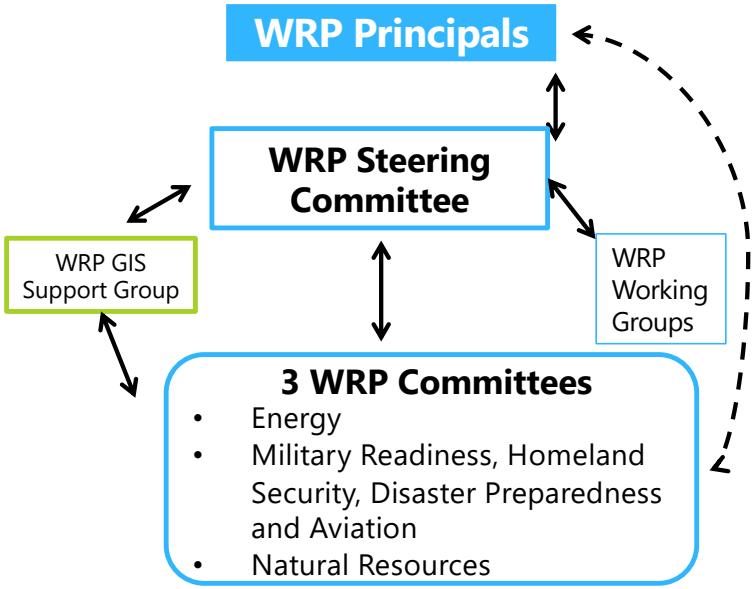
Hosted by the WRP Energy Committee

September 16, 2021

WRP Mission

WRP provides a proactive and collaborative framework for **senior-policy level Federal, State and Tribal leadership** to identify common goals and emerging issues in the states of **Arizona, California, Colorado, Nevada, New Mexico and Utah** and to develop solutions that support WRP Partners and protect natural and cultural resources, while promoting sustainability, homeland security and military readiness.

WRP Structure



WRP ENERGY COMMITTEE CO-CHAIRS

WRP Energy Committee GIS Liaison:

Jim O-Sullivan, Industry Economist, Office of Petroleum, Natural Gas & Biofuels Analysis, U.S. Energy Information Administration

- **Steven Arenson,** Deputy Director, Strategic Plans and Programs, Office of the Deputy Assistant Secretary of the Air Force for Installations
- **Jim Bartridge,** Senior Transmission Program Specialist, Siting, Transmission and Environmental Protection Division, California Energy Commission
- **David Bobzien,** Director, Nevada Governor's Office of Energy
- **Shelly Lynch,** Branch Chief, Lands Recreation and Planning, California State Office, Interior Regions 8 and 10
- **Lucas Lucero**, Southwest Border Coordinator, BLM - Arizona State Office, DOI Region 8
- **Leroy Shingoitewa,** Hopi Tribe

Brief Background on WRP Resilient Energy Infrastructure Deep-Dive

- **Current WRP Priority**:
  - *Building Resilience in the West for America's Defense, Energy, Environment and Infrastructure through Enhanced Collaboration among Federal, State and Tribal Entities.*
    - **Explore** tools and resources needed to build resilience to **support** the diverse missions of Federal, State and Tribal entities in the WRP Region
- Phase one: Survey of WRP Leadership identified four deep-dives
  - Resiliency of Airspace in the WRP Region
  - Water Security
  - Disaster Mitigation
  - **Resilient Energy Infrastructure**

Resilient Energy Infrastructure DRAFT

- **Section 1: Brief Overview of Resilient Energy Infrastructure**
  - Working Definition: “Resilient Energy Infrastructure” means an adequate and stable energy system throughout the WRP Region capable of performing during and rebounding from disruptions (e.g. natural threats, deliberate attacks/cybersecurity, accidents, etc.)
  - Energy security preparedness and response planning
    - Energy assurance and resiliency
    - Security
- **Section 2: Highlight of Resources/Current Efforts** (that align with identified issues)
- **Section 3: Mitigation Strategies**: Gaps, Tactics, Best Practices and Recommendations (identification of what is important to document, “solve” or highlight as a best practice or recommendations for agency further action)

Blackstart and Black Sky/Catastrophic Events Webinar

Disruptions to energy infrastructure pose significant threats to the country. As a basic requirement for national security and economic vitality, this critical infrastructure must be able to avoid disruption in the first instance and rebound quickly and safely from any disruptions that do occur. WRP Partners noted the need for improved resiliency and reliability of energy infrastructure in the west. Subject matter experts from the **U.S. Department of Energy's Office of Cybersecurity, Energy Security, and Emergency Response (CESER) and the Electric Infrastructure Security (EIS) Council** will:

- Define Blackstart capabilities and Black Sky/catastrophic events and explain why WRP Partners should be aware
- Share emerging trends, best practices, resources, and efforts under way to mitigate cascading events/catastrophic threats as well as enhance emergency preparedness and response
- Highlight areas for further collaboration and energy sector resilience

U.S. Department of Energy's Office of Cybersecurity, Energy Security, and Emergency Response (CESER)

Brandi Martin

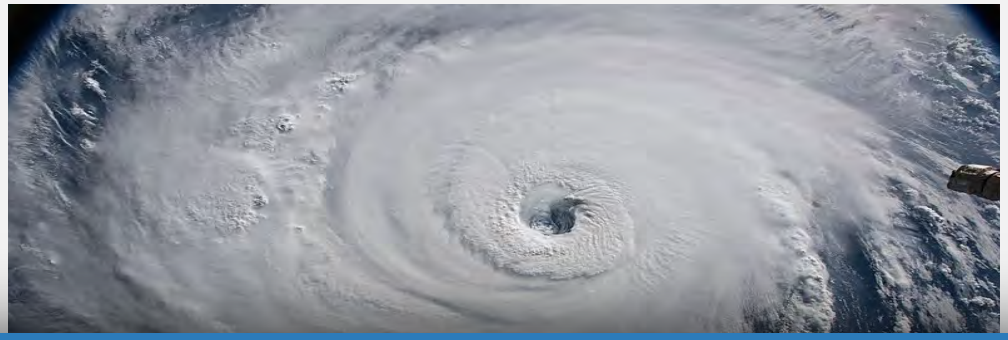
State, Local, Tribal and Territorial (SLTT) Program Manager

- Supports SLTT governments with energy security and resilience planning, and emergency preparedness and response.
- Previously served as the Partner Engagement Director at the Smart Cities Council, managing industry-leading energy and technology partners, and engaging city government leaders; 7 years experience in various roles at Cisco Systems.
- B.S., Information Systems Management, University of California Santa Cruz; M.S., Energy Policy and Climate, Johns Hopkins University.

Jason Pazirandeh

Energy Sector Specialist

- Supports DOE CESER's SLTT and national lab partnerships and activities.
- Previously served as External Affairs Coordinator at the Edison Electric Institute (EEI)
- B.A., American Government | B.A., Spanish Language, University of Virginia.



U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

Western Regional Partnership – Catastrophic Events Webinar

Brandi Martin and Jason Pazirandeh

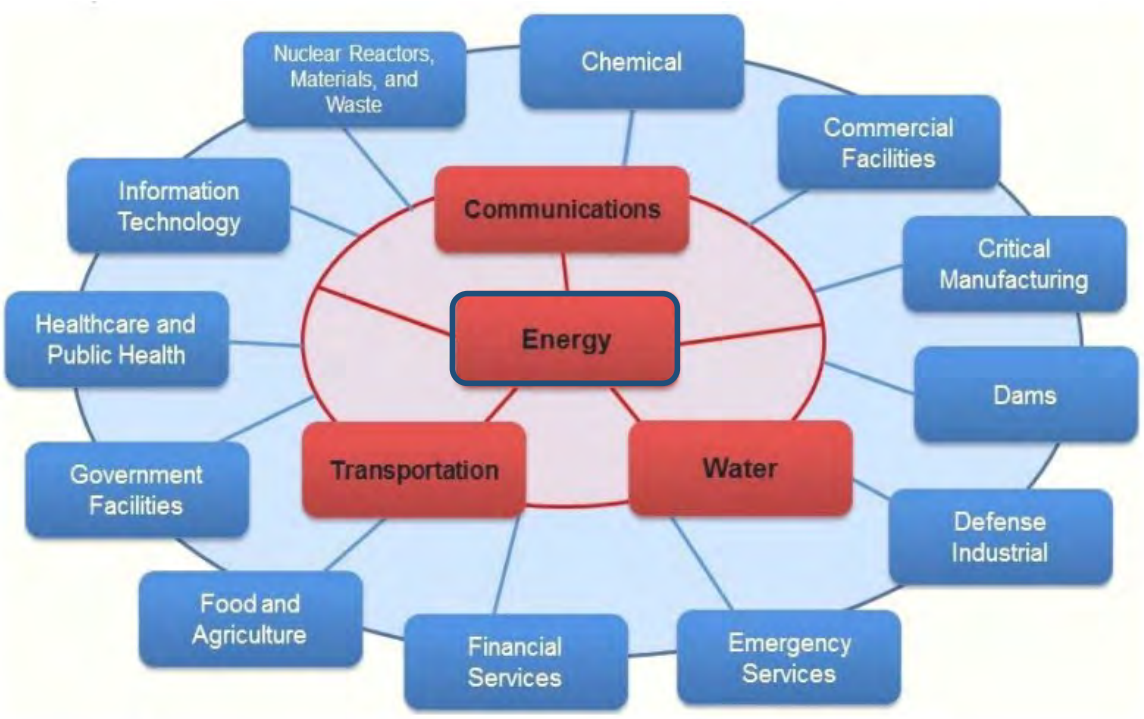
State, Local, Tribal and Territorial (SLTT) Program

September 16, 2021

Energy

It Powers our Lives and the Economy

Critical Infrastructure Interdependencies



Presidential Policy Directive 21 identifies the Energy Sector as uniquely critical because it provides an "enabling function" across all critical infrastructure sectors.

CESER Overview

Mission: To enhance the security of U.S. critical energy infrastructure to all hazards, mitigate the impacts of disruptive events and risk to the sector overall through preparedness and innovation, and respond to and facilitate recovery from energy disruptions in collaboration with other Federal agencies, the private sector, and State, local, tribal, and territory governments.

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

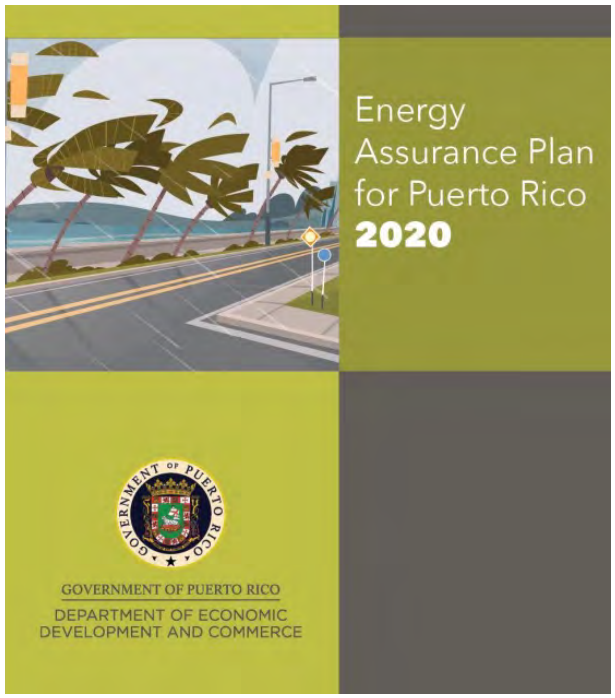
SLTT Energy Stakeholders

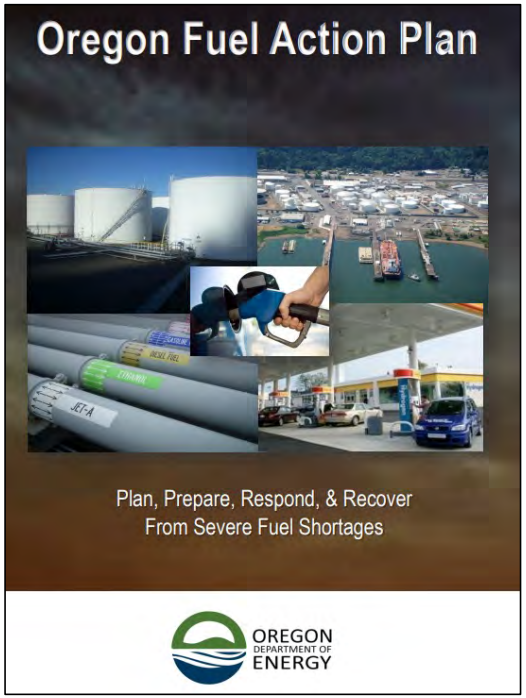
Governors	Legislators	State Energy Officials	Public Utility Commissioners	Emergency Managers
• Set policy / priorities that can impact energy sector (convene cyber task force, set energy /renewable goals) • Declare State of Emergency • Deploy National Guard resources • Sign-off on federal waiver requests	• Enact policies that can affect critical energy infrastructure, energy emergency preparedness and emergency response *(i.e., FOIA exemptions, wildfire mitigation, vegetation mgt., criminalizing damage to critical infrastructure, strategic fuel reserves)*	• State Energy Security & Assurance Plan* • Petroleum Shortage responsibilities • State Energy SMEs • Supports regional and national preparedness and response • *Draft federal waiver requests* • *Advise Governor on Energy matters* • *Emergency Support Function (ESF) 12 role*	• Regulate electric IOUs and natural gas utilities • Make energy security policy and investment decisions (including for cybersecurity) that affect critical infrastructure • State Energy SMEs • Engage with utilities on cyber preparedness, exercises, • *Emergency Support Function (ESF) 12 role*	• Prepare for, respond to, and recover from all emergencies, disasters, and threats. • Coordinate across state agencies • Handle Emergency Management Assistance Compact (EMAC) – the National All Hazards Mutual Aid System • *Emergency Support Function (ESF) 12 role*

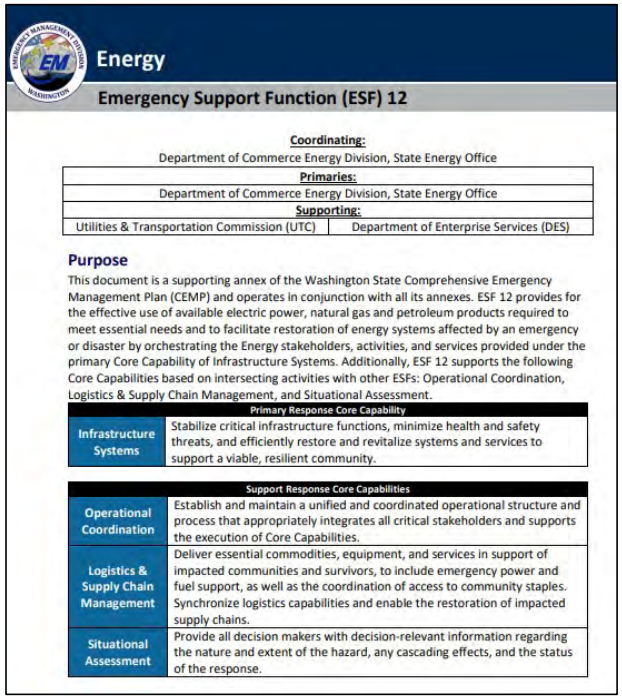
Note: This list is an example and not all inclusive. Authorities/ responsibilities by role may vary by state.

*Statutory requirement for DOE State Energy Program (EERE) funds

State Energy Plans – Prioritize Updates







Energy

Emergency Support Function (ESF) 12

Coordinating:
Department of Commerce Energy Division, State Energy Office

Primaries:	
Department of Commerce Energy Division, State Energy Office	
Supporting:	
Utilities & Transportation Commission (UTC)	Department of Enterprise Services (DES)

Purpose

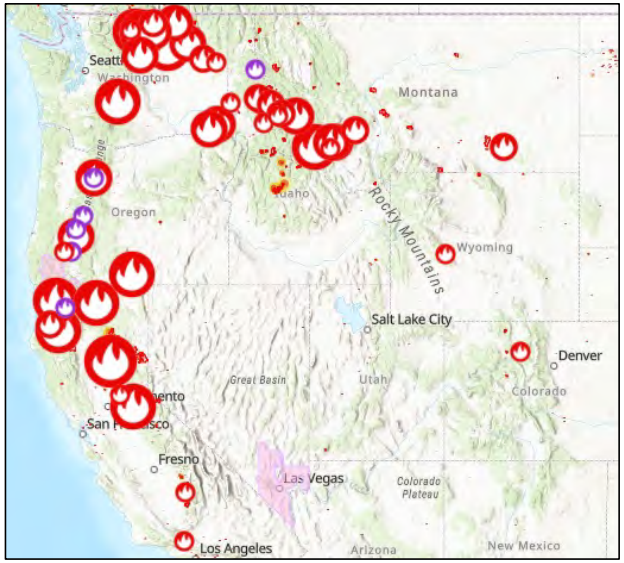
This document is a supporting annex of the Washington State Comprehensive Emergency Management Plan (CEMP) and operates in conjunction with all its annexes. ESF 12 provides for the effective use of available electric power, natural gas and petroleum products required to meet essential needs and to facilitate restoration of energy systems affected by an emergency or disaster by orchestrating the Energy stakeholders, activities, and services provided under the primary Core Capability of Infrastructure Systems. Additionally, ESF 12 supports the following Core Capabilities based on intersecting activities with other ESFs: Operational Coordination, Logistics & Supply Chain Management, and Situational Assessment.

Primary Response Core Capability	
Infrastructure Systems	Stabilize critical infrastructure functions, minimize health and safety threats, and efficiently restore and revitalize systems and services to support a viable, resilient community.

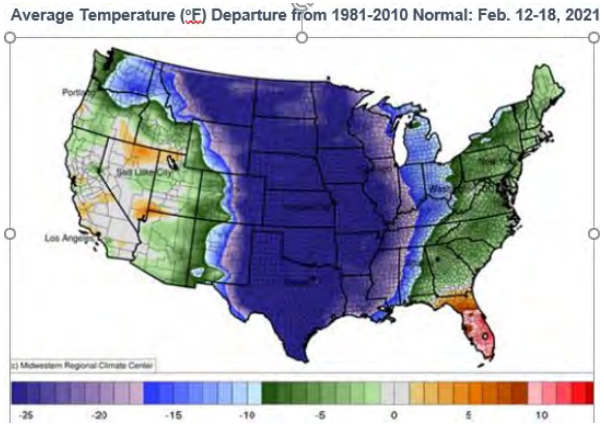
Support Response Core Capabilities	
Operational Coordination	Establish and maintain a unified and coordinated operational structure and process that appropriately integrates all critical stakeholders and supports the execution of Core Capabilities.
Logistics & Supply Chain Management	Deliver essential commodities, equipment, and services in support of impacted communities and survivors, to include emergency power and fuel support, as well as the coordination of access to community staples. Synchronize logistics capabilities and enable the restoration of impacted supply chains.
Situational Assessment	Provide all decision makers with decision-relevant information regarding the nature and extent of the hazard, any cascading effects, and the status of the response.

Hazards and Climate Change Threats

Active wildfires in the western U.S. (as of 9/13)



Energy infrastructure destroyed by Hurricane Ida in Louisiana



Shutdown of hydro plant due to Lake Oroville Drought in CA

Source: Earth Observatory, NASA

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

Cybersecurity Threats

The New York Times

Cyberattack Forces a Shutdown of a Top U.S. Pipeline

The operator, Colonial Pipeline, said it had halted systems for its 5500 miles of pipeline after being hit by a ransomware attack.

1 month ago

The Hill

Officials warn of increasing cyber threats to critical infrastructure during pandemic | TheHill

Senators and other energy sector officials warned Wednesday that ... the Department of Homeland Security's Cybersecurity and Infrastructure ...

Security Boulevard

Kaseya VSA Ransomware Attack: A Bombshell Supply-Chain Hit

During the weekend of July 4th, 2021, Kaseya VSA and multiple managed service providers (MSPs) were brutally hit by a supply-chain ransomware ...

1 week ago

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

Collaboration is Essential

State, Local, Tribal, and Territorial (SLTT) Government Coordination

NASEO
National Association of State Energy Officials

NGA
NATIONAL GOVERNORS ASSOCIATION

NCSL

AMERICAN PUBLIC POWER ASSOCIATION

NEMA™

ESCC
Electricity Subsector Coordinating Council

Who	Utility and trade CEOs and CISOs/CIOs
Purpose	Coordinate efforts to prepare for and respond to national-level disasters or threats to critical infrastructure.
Working Groups	• Vision and Planning • Threat Information Sharing • Industry-Government Coordination • Research & Development • Cross-Sector Liaisons

OIL AND NATURAL GAS SECTOR COORDINATING COUNCIL

Who	Oil & natural gas trade associations and their members
Purpose	Coordinate security strategies, policy, and communications across the sector to support the nation's security mission.
Working Groups	• Cyber • Information Sharing • Emergency Management • Law Enforcement Engagement • Pipelines

Catastrophic Regional Event

A catastrophic incident is any natural or manmade incident, including terrorism, that results in extraordinary levels of mass casualties, damage, or disruption severely affecting the population, infrastructure, environment, economy, national morale, and/or government functions. (FEMA)

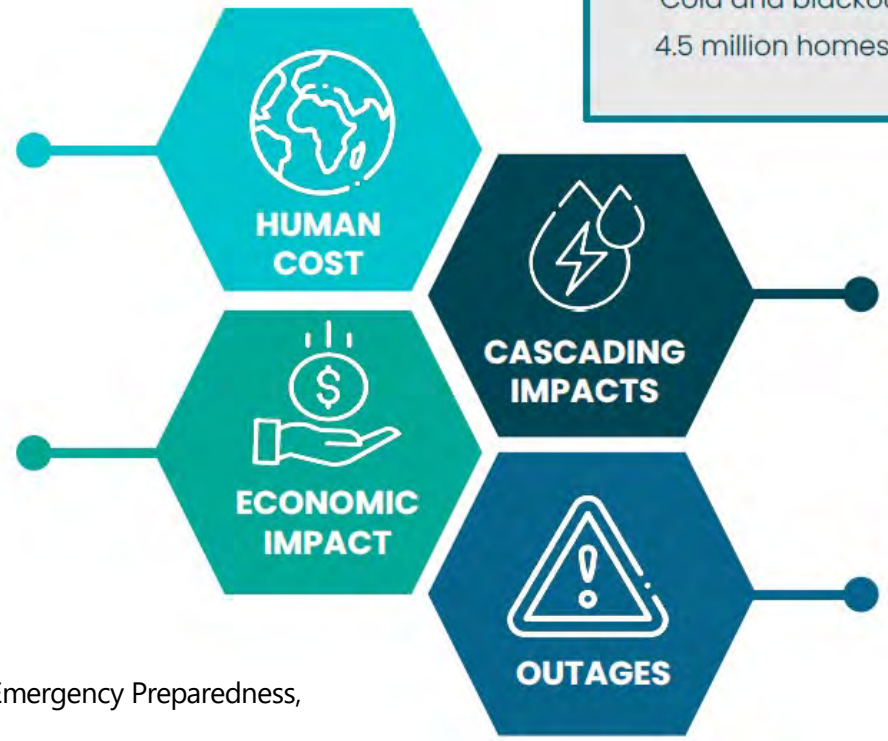
What is a Catastrophic Power Outage?

- An event beyond modern experience that exhausts or exceeds mutual aid capabilities
- Likely to be no-notice or limited-notice and could be complicated by a cyber-physical attack
- Long duration, lasting several weeks to months due to physical infrastructure damage
- Affects multiple states or regions and affects tens of millions of people
- Causes severe cascading impacts that force critical sectors—water and wastewater systems, communications, transportation, healthcare, and financial services—to operate in a degraded state

(National Infrastructure Advisory Council (NIAC)

2021 Winter Storm Uri – Texas Blackout Overview

Record low temperatures force all time winter peaks
Generation and fuel supply impacted by cold
Cold and blackouts impact water infrastructure
4.5 million homes and businesses without power



Fatalities estimated at 151 people. (3rd most in texas in the last 100 years)

12 Million people without water on tap at home or intermittent service

~ $195.6 Billion in direct and indirect cost

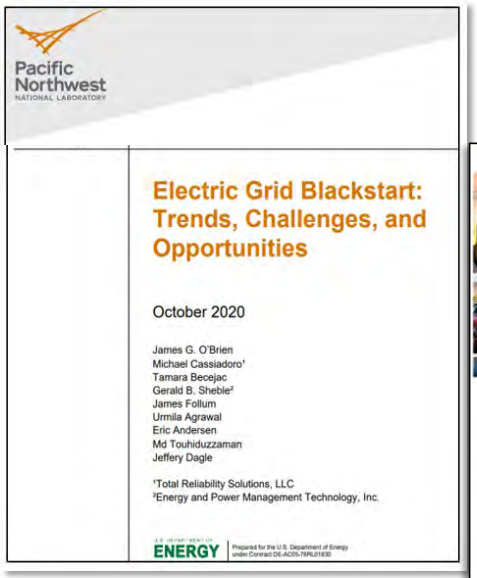
52.3 GW of forced outages (total installed capacity = 107.5 GW)
20 GW of load shed
69% ERCOT customers lost power
70.5 hours of load shedding
17 days until complete restoration

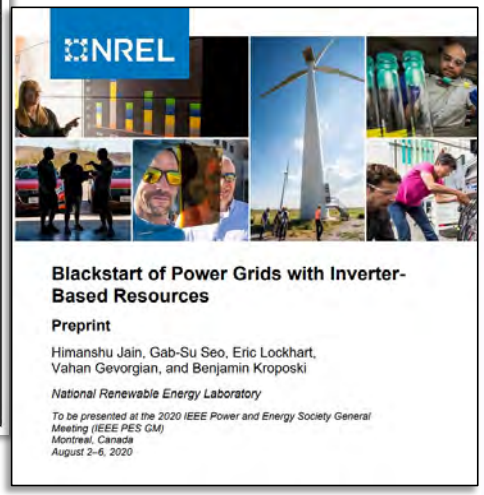
Source: Black Sky Use Cases – NARUC Emergency Preparedness, Recovery and Resiliency Task Force

Blackstart

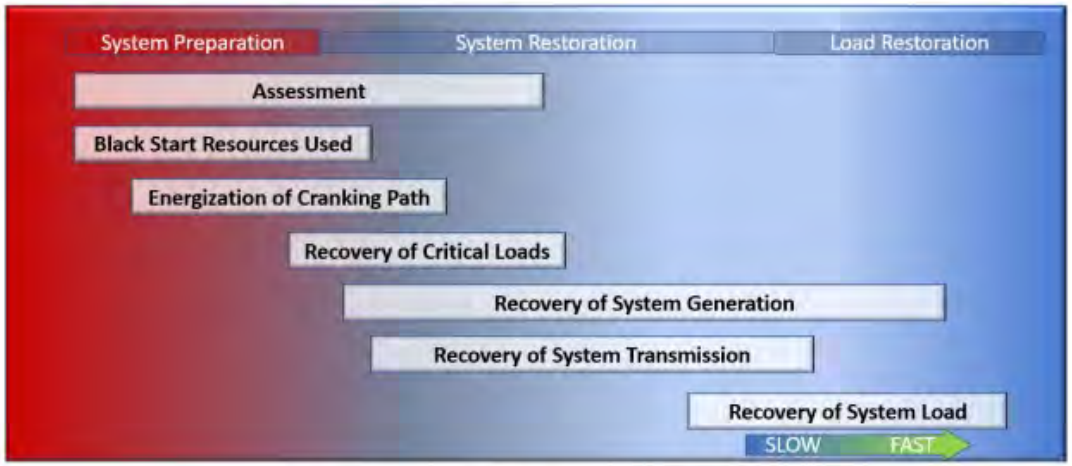
In power systems, **blackstart** refers to restarting generation without the use of offsite power.

Northeast Blackout of 2003





Restoration Process Over Time



Source: "Electric Grid Blackstart: Trends, Challenges, and Opportunities" (PNNL)

Catastrophic Event Needs Assessment and Planning

NARUC Emergency Preparedness, Recovery & Resiliency Task Force Black Sky Subcommittee

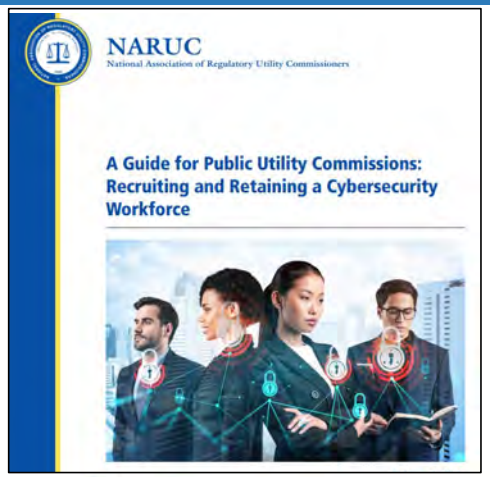
- Goal: Enhance NARUC member preparedness for catastrophic, multi-regional event affecting multiple critical infrastructures
- 15 members including state public utility commissioners, state energy officials, DOE CESER, NASEO, NGA and private industry experts

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

State Considerations

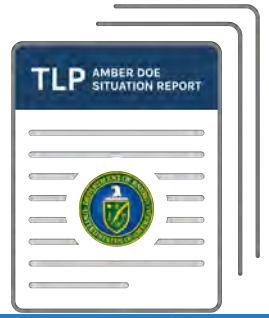
- Funding
- Policy
- Planning
- Interagency Coordination
- Resources
- Expertise

- Regional partnerships to enhance preparedness
- Climate and cyber risk assessments
- Define roles and responsibilities
- Share information with state energy officials and energy industry partners with a "need to know"
- Energy democracy/ environmental justice
- Validate plans through exercises
- Infrastructure investment opportunities
  e.g. FEMA BRIC



MS-ISAC®
Multi-State Information Sharing & Analysis Center®

NFCA
NATIONAL FUSION CENTER ASSOCIATION
Helping Protect America

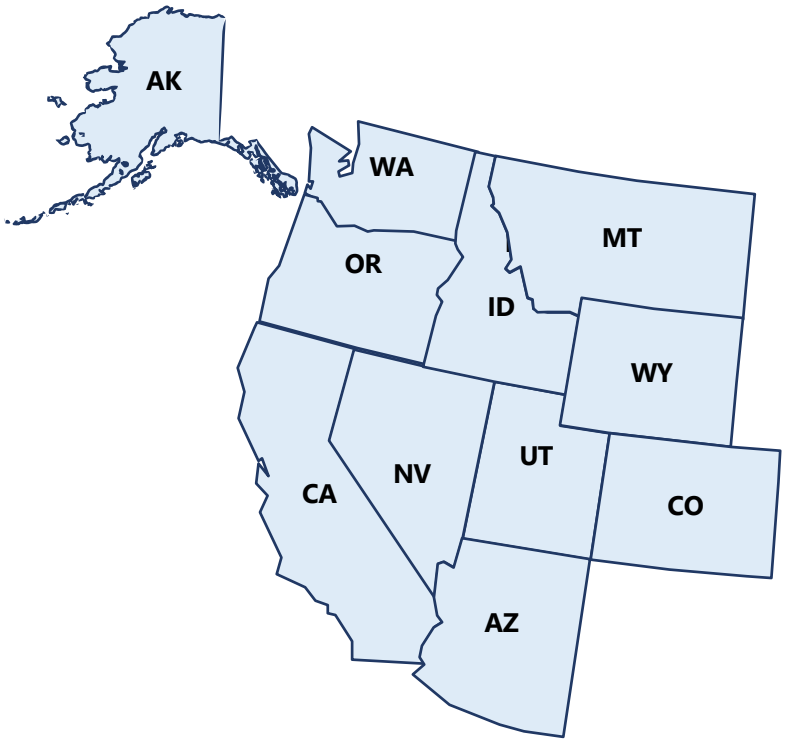


Regional Example: Western Petroleum Shortage Response Collaborative

Project Goals:

- Advance regional planning, coordination, communication, response, and recovery activities
- Clarify roles and responsibilities for petroleum shortages
- Build relationships between state energy officials, state emergency management officials, and the private sector
- Develop a process to identify regional priority guidelines
- Develop a set of petroleum shortage response actions that states can implement in a coordinated fashion
- Set the stage for future large-scale emergency exercises between the states

Collaborative Members



NEMA™

NASEO
National Association of State Energy Officials

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

Upcoming Opportunities

FEMA Building Resilient Infrastructure and Communities (BRIC) Program Grant

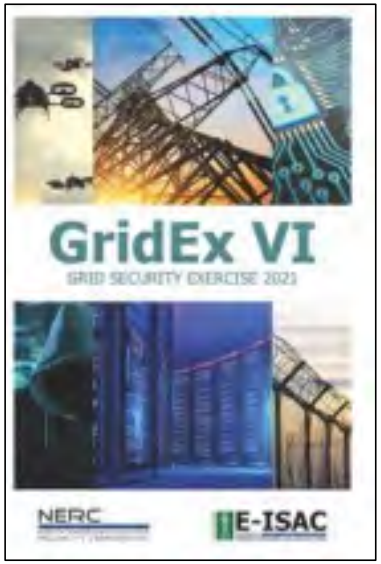
- $1 Billion available for pre-disaster hazard mitigation projects
- Pursue BRIC funding for energy resilience projects
- Application Opening: **Sept. 30, 2021**

U.S. DEPARTMENT OF ENERGY'S CYBERFORCE™ COMPETITION
DEFENDING U.S. ENERGY INFRASTRUCTURE

NASEO National Association of State Energy Officials

NEMA™

Virtual Workshop: Enhancing Community Energy Resilience through FEMA BRIC (recorded)

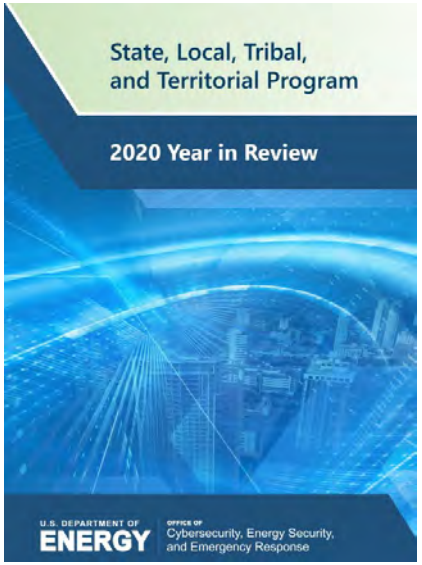


CESER Contact Information

Kate Marks
Deputy Assistant Secretary, ISER
Kate.Marks@hq.doe.gov
202-586-9842

Brandi Martin
SLTT Program Manager
Brandi.Martin@hq.doe.gov
202-586-7983

Jason Pazirandeh
Energy Sector Specialist
Jason.Pazirandeh@hq.doe.gov



SLTT 2020 Year in Review

www.energy.gov/ceser

U.S. DEPARTMENT OF ENERGY | OFFICE OF Cybersecurity, Energy Security, and Emergency Response

CESER's Cybersecurity Efforts

Department of Energy

Biden Administration Takes Bold Action to Protect Electricity ...

This 100 day plan—a coordinated effort between DOE, the electricity ... the electri rely on to power our homes and businesses," ...

Apr 20, 2021

100-Day Plan Goal: Enhance cybersecurity in the electricity sector by assisting companies as they take concrete measures like deploying sensors to detect cyber threats and improve response capabilities in near real-time on critical networks.

https://www.energy.gov/ceser/listings/ceser-blog

Partners:

ESCC Electricity Subsector Coordinating Council

CYBERFORCE™ COMPETITION

November 12-13, 2021

https://cyberforcecompetition.com/

Cybersecurity Risk Information Sharing Program (CRISP)

CyTRICS™ Cyber Testing for Resilient Industrial Control Systems

C2M2 Cybersecurity Capability Maturity Model


Key Issues in Electric
Power System Resilience
September 16, 2021
Sponsored by the Electric Infrastructure
Security Council and our Network Partners
EIS
COUNCIL

Speakers

John Heltzel, Director of Resilience Planning, EIS Council – John.Heltzel@Eiscouncil.org

Frank Koza, Electric Sector Coordinator, EIS Council – Frank.Koza@Eiscouncil.org

https://eiscouncil.org/

GRCOM GLOBAL RESILIENCE COMMISSION

EIS COUNCIL


EIS
COUNCIL
AGENDA
Welcome
Who We Are and What We Do
Restoration and Black Start
BSX Communications Initiative
Closing Points
GRCOM
GLOBAL RESILIENCE COMMISSION

Facilitate Cross-Sector Discussions

- Security and Resilience
- International Security Summits
- Congressional Support and Testimony

Develop and Document Solutions

- EMP Testing
- EPRO Handbooks
- BSX Survivable Emergency Communications for Utilities
- GINOM (Situational Awareness and Decision Support Operating System)

Planning, Training and Exercises

- Black Sky Exercises
- Black Sky Planning Workshops
- Energy Assurance Planning and Mitigation Toolkit
- FEMA Power Outage Incident Annex

THE VISION DRIVING GRCOM

The Scope

Avoiding the Trap of **"Fighting the Last War"** – All hazard

Identifying the most serious resilience gaps and finding ways to move beyond "business as usual" to address them.

Extreme **"Black Sky"** Hazards

EMP, cyber, pandemic, large scale terrorism, severe space weather, climate changes driving extreme terrestrial weather, severe regional earthquake zones.

Two Critical Black Sky Resilience Gap Categories

1. Resilience Investments that span both conventional and Black Sky hazards.
2. Coordinated vulnerability and opportunity assessments spanning private and public sectors.

THE RESILIENCE FORUM

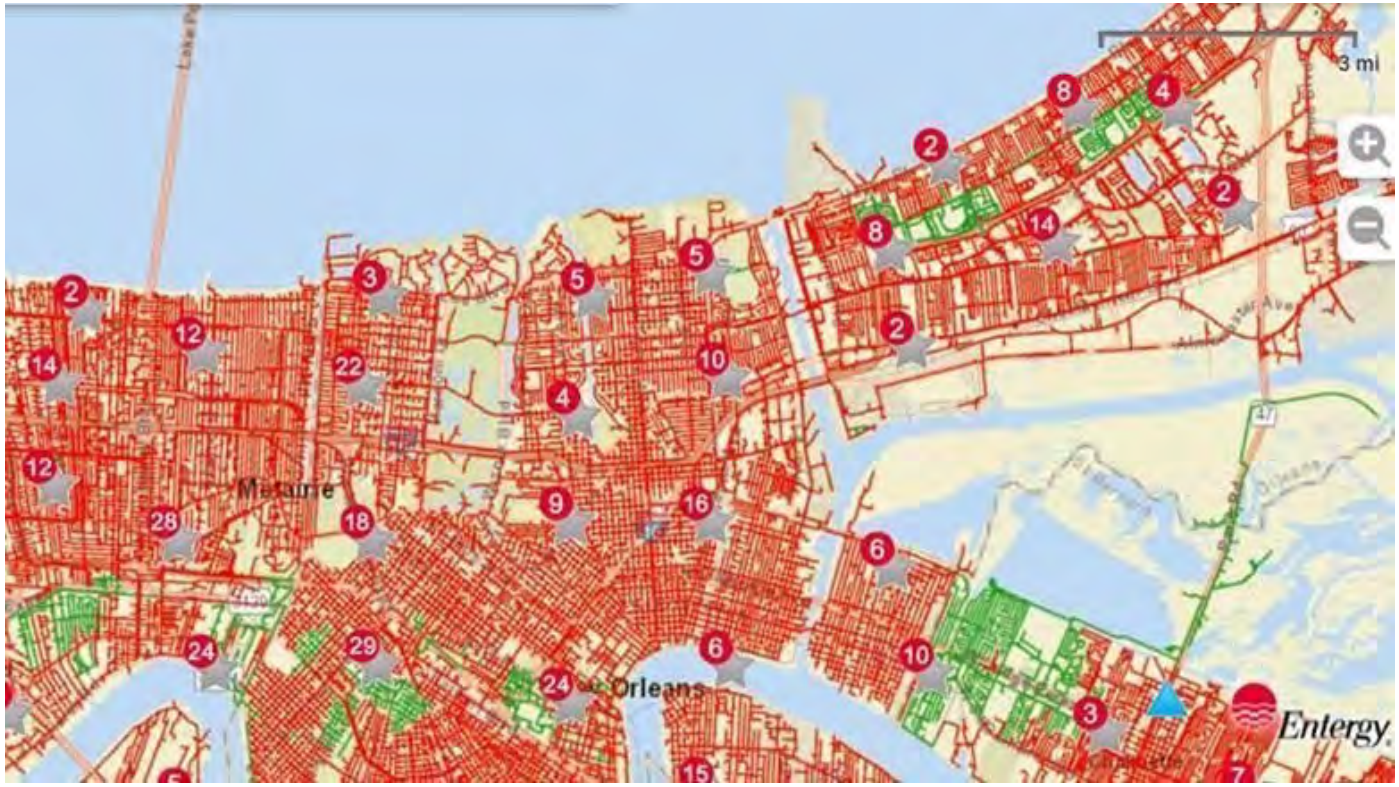
GRCOM WEBINAR SERIES

Wednesday | 29 September| 11 EDT

GRCOM GLOBAL RESILIENCE COMMISSION

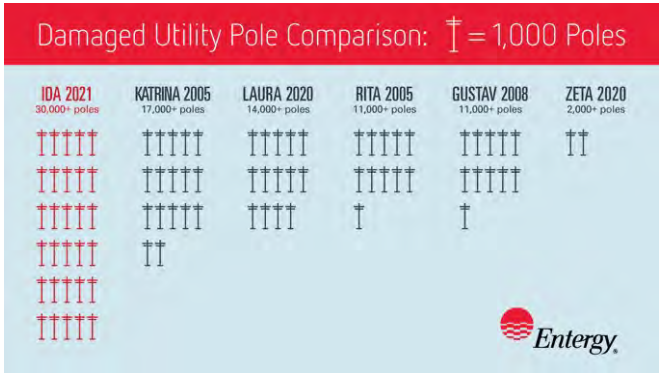
EIS COUNCIL

New Orleans—Sept 2, 2021 at 8:00am



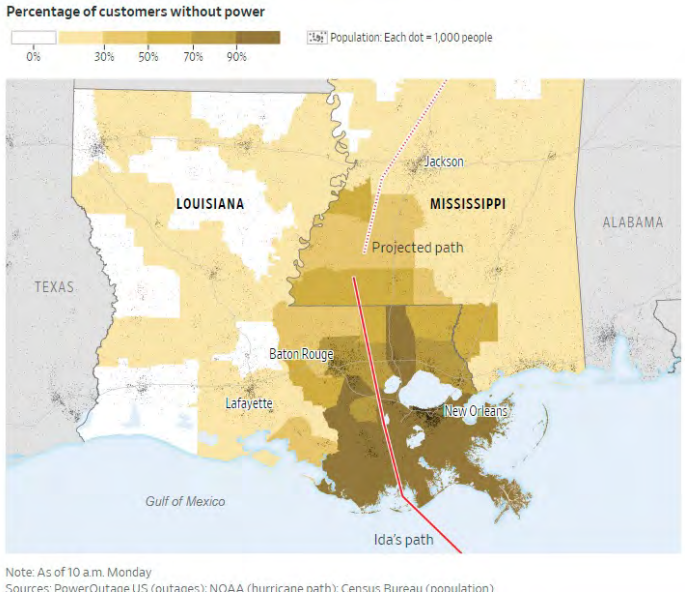
Traditional Distribution Restoration Takes Time

- 25,000 line workers brought in from surrounding utilities and contractors
- Entergy has had experience in dealing with these situations before



EIS COUNCIL

The Larger Issue –Transmission Out of Service



All 8 transmission lines serving the New Orleans area went out of service

Like most large cities, New Orleans relies on the importing of electricity from remote generation sites

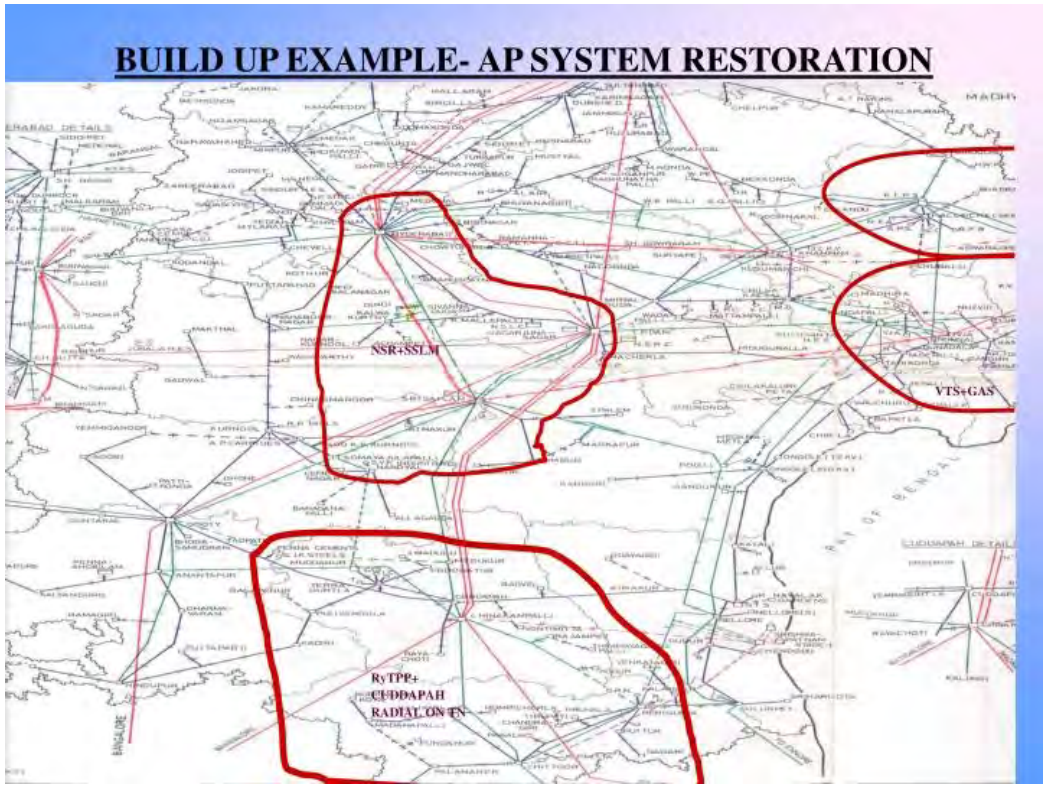
New Orleans Power Station

Placed in service on May 31,2020

128 MW total

- 7 Reciprocating gas engines –can start without external power
- Each Transmission Owner is required to have a Black Start restoration plan, in accordance with NERC Standards
  - Tested at least annually
  - Operators trained in executing the plan

System Restoration



Restoration Steps

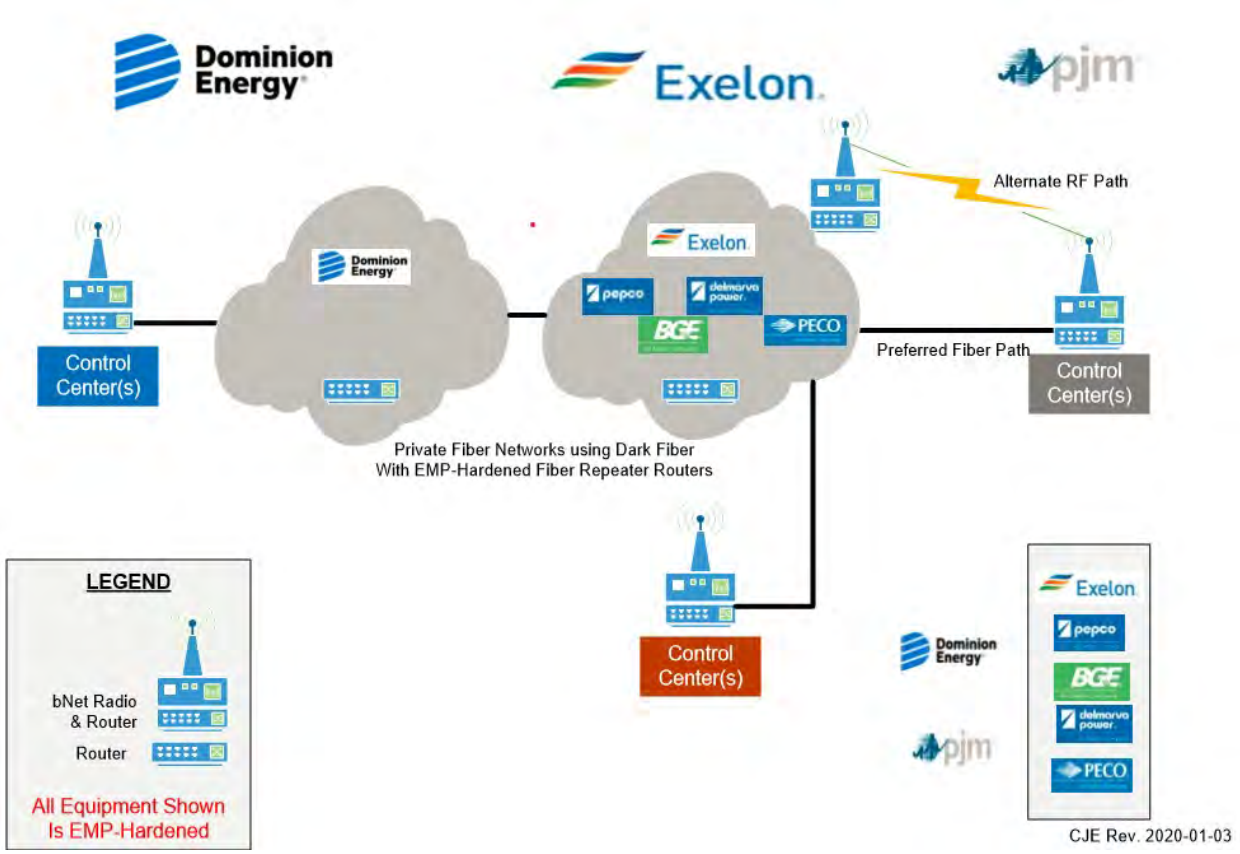
1. System Assessment
2. Isolate equipment
3. Start black start units
4. Create balanced (generation=load) islands
5. Connect stable islands, maintain voltage and frequency
6. Start "next" units
7. Keep system balanced and bring larger generators on line with increasing load

BSX Communications Initiative

- Utility fiber optic backbone
- Utility owned and controlled
- Firewalling and security
- EMP-protected radios, network devices, and power supply

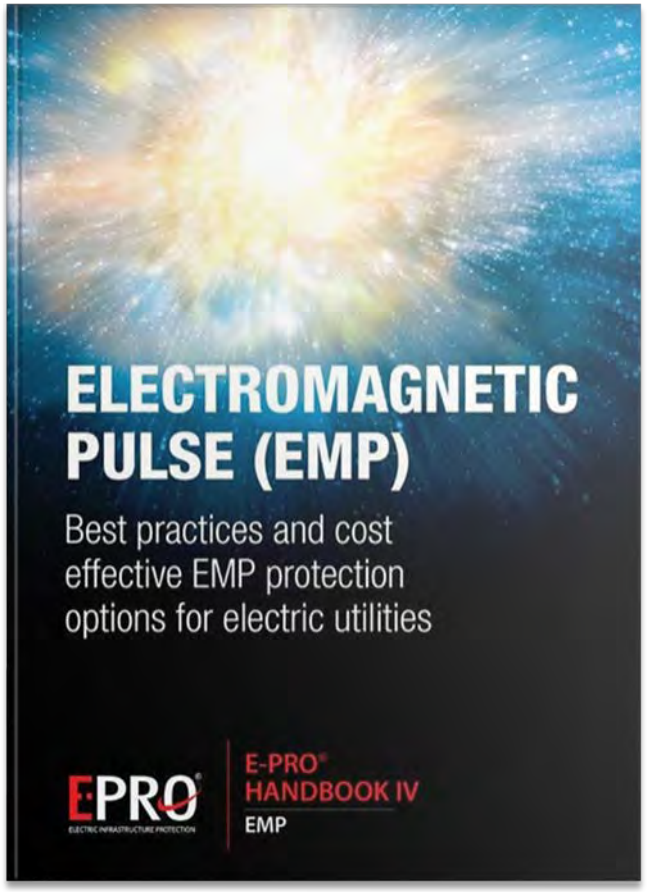
EIS COUNCIL

BSX Pilot Project



- Demonstrate the ability to implement a multi node fiber network and the level of effort (cost and schedule) necessary to build out a larger network
- A range of existing utility communications systems will be tested for interconnectivity to the proposed BSX™ network

Available: 1 September - 31 October



E-PRO HANDBOOK IV, EMP

Best practices and cost effective EMP protection options for electric utilities and other process industries. (Available on Amazon).

Made possible by:

The Newton and Rochelle Becker Charitable Trust

The Goodman Family Foundation

Anonymous

Next GRCom

THE GREENGRID SECURITY SERIES IV: CAN WE BUILD A LOW CARBON, BUT ROCK SOLID GRID?

Date & Time: September 29, 11- 12:30 EDT

September 29, 11 EDT

https://grcom.eiscouncil.org/the-greengrid-security-series-iv/

THANK YOU!

GRCOM
GLOBAL RESILIENCE COMMISSION

EIS COUNCIL

Brigadier General (Retired) John W. Heltzel

Director of Resilience Planning
Electric Infrastructure Security (EIS) Council

- Received his military commission in the Kentucky National Guard from Eastern Kentucky University. 33 year military career, has commanded at the battery, battalion and regimental levels. Selected to serve as the Deputy Commander/Assistant Adjutant General of Kentucky's Joint Force Headquarters, directing the training of the Kentucky National Guard in direct support of the Homeland and Global Security Mission.
- Previously, President and Chief Operations Officer for Cyber Defenses Incorporated (CDI), an Information Assurance company; head of the Kentucky Division of Emergency Management; Chairman of the Central United States Earthquake Consortium; regional vice president of the National Emergency Management Association and chair of the Emergency Management Assistance Compact (EMAC) committee.

Dr. Chris Beck

Chief Scientist and Vice President for Policy
Electric Infrastructure Security (EIS) Council

- Responsible for the analysis, design, and promotion of critical infrastructure resilience for widespread, long-duration power outages initiated by Black Sky threats.
- Technical and policy expert in several homeland security and national defense related areas including critical infrastructure protection, cybersecurity, science and technology development, WMD prevention and protection, and emerging threat identification and mitigation
- Served as the Subcommittee Staff Director for Cybersecurity, Infrastructure Protection, and Science and Technology and was the Senior Advisor for Science and Technology for the House Committee on Homeland Security (CHS), US House of Representatives.
- Worked in the office of Congresswoman Loretta Sanchez as a Congressional Science Fellow and legislative assistant.
- Postdoctoral fellow and adjunct professor, Northeastern University.
- B.S., Physics, Montana State University; PhD, Physics, Tufts University
- Served in the Marine Corps Reserve.

Mr. Frank Koza

Electric Sector Coordinator
Electric Infrastructure Security (EIS) Council

- Works with leading power companies and their partners to help coordinate resilience planning for a wide range of hazard scenarios.
- Previously, Executive Director of Infrastructure Planning at PJM, responsible for system operations and system planning and for the technical staff associated with generator interconnection and implementation of transmission enhancement.
- Served as Vice Chair of the NERC Geomagnetic Disturbance Task Force, and as Chair of the NERC Operating Reliability Subcommittee.
- Worked at Exelon/PECO Energy in a variety of assignments including construction of fossil and nuclear generation facilities, construction and maintenance of transmission, system planning, and system operations.
- BSME, University of Pennsylvania; Master of Engineering, Widener University.
- Registered Professional Engineer, PA.

Western Regional Partnership

Reliable Outcomes for America's Defense, Energy, Environment and Infrastructure in the West

wrpinfo.org