Best Practices for

State Emergency Management Agencies and Energy Offices for Integrated All-Hazards Planning

The Colonial Pipeline ransomware attack, California wildfires, and extreme weather events have shown that state emergency management agencies (EMAs) play a critical role in responding to energy-related crises. Energy reliability in the United States directly impacts public safety, the economy, and national security. This guide provides state EMAs with resources and best practices on energy resiliency and the role of emergency management.

NEMA

U.S. DEPARTMENT OF ENERGY

Office of
Cybersecurity, Energy Security, and Emergency Response

Electricity

Electrical power generated by the conversion of primary sources of energy like fossil, nuclear, wind, and renewables such as wind and solar.

Used for: Commercial, residential, transportation, industrial.

Liquid Fuels

Most liquid fuels are derived from fossil fuels and refined into several products including, gasoline, diesel, jet fuel, propane, ethanol, and biodiesel.

Used for: Electric power, agricultural, transportation, retail stations (gas stations), residential and commercial.

Natural Gas

Fossil fuel extracted from beneath the earth's surface.

Used for: Electric power, industrial, residential and commercial, and transportation.

Becoming More Energy Resilient

During an incident impacting the energy sector, EMAs coordinate the response to the crisis, allocate available energy resources, provide accurate and timely information to the public, and support recovery efforts. As with all disasters, effective response starts with proactive preparedness, including the following:

- Work with your state energy officials to identify energy owners and operators. Maintain a list of primary and backup contact information for energy stakeholders.
- Design, conduct, and/or participate in energy exercises such as the Electricity Information Sharing and Analysis Center's Grid-Ex.
- Incorporate risks to energy infrastructure into your Threat and Hazard Risk Identification (THIRA) process.
- Review your state's Energy Security Plan and support updates in coordination with your state's energy office.
- Understand the energy infrastructure: Know where energy supplies come from and how they are distributed.
- Understand contingencies and resource gaps that will arise from power outages lasting several days to weeks.
- Determine threats to energy infrastructure and collaborate with energy owners and operators to mitigate risk/reduce impacts.
- Establish better situational awareness of physical and cyber threats to energy infrastructure.
- Sign a memorandum of understanding with energy owners and operators to share information and allow for resource coordination.
- Review energy supply contracts: Know the terms and conditions that might impact emergency response.
- Utilize public communication platforms to request the public's support with energy conservation to avoid blackouts or minimize risk.
- Identify and apply for preparedness and mitigation grant programs such as FEMA Building Resilient Infrastructure and Communities (BRIC) Grant.

California Office of Emergency Services (CalOES) has a robust energy-sector program that includes ongoing training and exercise, and an active Emergency Fuels Task Force to address and prevent fuel supply issues and assign fuel resources when needed for disaster response. A critical first step was signing a memorandum of understanding with California Utilities Emergency Association (CUEA) to ensure coordination and communication between Cal OES and utilities for all hazards.

South Carolina Emergency Management Division (SCEMD) built a real-time power outage layer in their situational awareness platform. This allows SCEMD to track power outages by county. Access to this information allows the State to determine the extent of the problem and, during recovery, serves as an indicator that the situation is improving in affected areas. Detailed county and utility information is available in tabular format and displayed in a map format for quick analysis.

Following an energy-related incident, EMAs:

- ✓ Integrate energy sector stakeholders into the Emergency Operations Center.
- ✓ Utilize tools such as U.S. DOE EAGLE-I™ system to maintain situational awareness.
- ✓ Coordinate with energy providers and other ESF #12 partners to allocate available energy resources, such as electricity and fuel, in an equitable and efficient manner, prioritizing critical infrastructure and essential services.
- ✓ Engage the public on what protective actions they should take as it relates to energy as well as continue to inform the public about the status of energy restoration.
- ✓ Provide resources to support life-sustaining activities.
- ✓ Support energy sector owners and operators with repair and restoration of critical infrastructure by coordinating access to infrastructure (such as clearing roads or security for crews).

Nevada Division of Emergency Management (DEM) implemented a robust public communication strategy in response to the Caldor Fire. Nevada and California utilized social media platforms to inform the public about public safety power and natural gas shutoffs as well as vegetation clearing. As the public was preparing to evacuate, Nevada DEM worked with their fuel providers to share information on where to find fuel and where and how electric vehicles could be charged. Throughout the response, Nevada continued to inform the public about response action and positive work done by utilities and fire protection districts to restore power.

Emergency Authorities

The following authorities are often utilized to manage response efforts during an energy emergency:

Defense Production Act of 1950: The federal government can require preferential performance on government contracts with private companies, provide financial incentives to increase production capabilities for critical security needs, and collect information related to domestic industrial base issues. When a "priority" rating is applied, it requires that the order be fulfilled ahead of others in the marketplace to meet the negotiated performance or delivery date.

Federal Power Act Emergency Authority (202c): Grants the Department of Energy (DOE) the authority to issue emergency orders and coordinate and respond to situations where there is an increase in demand for electric energy or shortages of electric energy.

Grid Security Emergency Order: Authorizes the Secretary of Energy to order emergency measures, following a presidential declaration of a grid security emergency, to protect or restore the reliability of critical electric infrastructure or defense critical electric infrastructure during the emergency. A grid security emergency could result from a physical attack, a cyber-attack, an electromagnetic pulse (EMP), or a geomagnetic storm event, damaging certain electricity infrastructure assets and impairing the reliability of the nation's power grid.

Interstate Commerce Act: Directs companies to provide preference or priority in transportation, embargoes, or movement of traffic. This authority can be used to direct interstate pipeline operators to prioritize shipments of specific fuels to address shortages.

Jones Act: Requires that any cargo traveling by sea between two U.S. ports must sail on an American-owned ship, built in the United States and with a majority crew of U.S. citizens. Jones Act waivers have been used to allow foreign-owned ships to bring in fuel and other energy-related resources. See recent congressional changes to the Act.

Natural Gas Policy Act: Authorizes DOE to purchase natural gas and allocate supplies of natural gas during an imminent shortage.

Regulatory Waivers: Regulatory relief granted by state or federal agencies during energy disruptions. Waivers can be issued in emergency situations in order to enhance response and recovery efforts. For additional detail, examples of past use of waivers, and contact information for each agency, see CESER's Energy Waivers Library.

Robert T. Stafford Disaster Relief and Emergency Assistance Act: Constitutes the statutory authority for most federal disaster response activities, especially as they pertain to FEMA programs. Public power utilities generally receive public assistance for debris removal, emergency protective measures, and utility restoration and reconstruction. Public power utilities also receive assistance in planning and design for hazard mitigation and in making disaster mitigation investments.

State of Emergency or State of Energy Emergency: Declaration which allows state ESF #12 to coordinate with appropriate state agencies to secure fuel, environmental, and worker safety waivers in response to the fuel event if needed. May automatically trigger state Hours-of Service waivers for drivers providing fuel.

The energy sector is a rich target for attack, as it is vulnerable to both physical and digital attacks or accidents. Cascading impacts associated with the failure or collapse of energy utilities, intellectual property (IP) theft from energy organizations, and the large physical and digital footprint of the energy industry make the energy sector an appealing target to threat actors. There are multiple avenues that APT act attack:

Threats

Department of Homeland Security identifies the following risks to the energy infrastructure:

Cyberthreats

Energy infrastructure is highly automated and controlled by utilities and operators that rely on sophisticated energy management systems. Vulnerable assets are identified in industrial control systems connected to the Internet. Increasing the network's vulnerability to direct cyberattacks could potentially disrupt movement and increase risk to the energy sector. These vulnerabilities are addressed to varying degrees through a mix of voluntary and mandatory security standards.

Physical Attacks

Physical Attacks are a risk to continued reliable operations for the energy sector. Coordinated physical attacks in the United States may produce wide-ranging impacts to both infrastructure and the reliability of the system. If successful, strikes against individual Sector assets could lead to cascading regional or nationwide impacts. Worldwide, terrorists have executed 2,523 attacks against energy infrastructure since 2004, leaving 1,852 dead and 4,653 wounded (National Counter-terrorism Center, Worldwide Incident Tracking System, 2011).

Natural Disasters

Natural events, such as severe weather, wildfires, and solar flares can disrupt energy infrastructure. These events occur regularly and have the capacity to cause extensive and widespread damage, impacting an area for weeks. Natural disasters could require preemptive shutdown of facilities in an area, even if the facilities themselves are not directly impacted. For example, Hurricanes Ike and Gustav impacted almost 65 million barrels of crude oil production and 400 billion cubic feet of the natural gas supply.

As all other Sectors have some degree of dependency upon the energy sector for normal operations, power restoration is a top priority following a natural disaster. Without power, response and recovery operations can be hindered significantly.

Threat Actors

Advanced Persistent Threat Actors (APTs)

APTs commonly work with nation-states to target foreign energy organizations with the aim of stealing IP, gaining leverage, or seizing control of operations.

Cybercriminals

Cybercriminals are typically motivated by financial gain and target the energy sector by holding data ransom or issuing Distributed Denial of Service (DDoS) attacks.

Hacktivists

Hacktivists issue cyber-attacks as a form of civil disobedience to promote a political agenda or social change.

Nation-State Actors

Nation-state actors have a 'license to hack'. They work for a government to disrupt or compromise energy targets, gain access to valuable data or intelligence, and create incidents that have international significance. Nation-state actors possess a high degree of technical expertise. They work without fear of legal retribution and typically have close links to the military, intelligence, or state control apparatus of their country.

Risk Assessment & Planning Opportunities

Understanding the risks to the energy infrastructure and planning to minimize and mitigate these risks is a critical first step. State EMAs should consider conducting or participating in the following assessments or planning opportunities:

Threat and Hazard Identification and Risk Assessment / State Preparedness Report (THIRA/SPR) process is an assessment that state emergency managers use to contextualize the impacts of high-risk threats and hazards on energy infrastructure and estimate the scope and scale of impacts on their communities in a measurable and reproducible manner. As part of the THIRA/SPR process, community stakeholders, including private utility providers, articulate how existing investments in capability (e.g., personnel, resources, plans) enable the effective response, recovery, and mitigation of threat/hazard impacts while highlighting areas for improvement, allowing community leaders to assess and monitor the efficacy of risk-mitigating activities and investments.

Cybersecurity and Infrastructure Security Agency (CISA) conducts specialized security and resilience assessments on the nation's critical infrastructure. These voluntary assessments assist CISA and its governmental and private industry partners to better understand and manage the risk. The assessments examine infrastructure vulnerabilities, interdependencies, capability gaps, and the consequences of their disruption. Vulnerability assessments, combined with infrastructure planning resources developed through the Infrastructure Development and Recovery program, form an integrated planning and assessment capability. Thus, supporting the efficient and effective use of resources to enhance critical infrastructure resilience to all hazards. Assessments are offered at the request of critical infrastructure owners and operators and other government officials. CISA offers four types of assessments: (1) security assessment at first entry; (2) infrastructure survey tool; (3) infrastructure visualization platform; and (4) regional resiliency assessment program.

State Energy Security Plan (SESP) is a document designed to ensure a reliable and resilient energy supply through identifying, mitigating, and planning for risks to energy infrastructure. While the development of this plan is typically led by the state's energy office, SESPs are required to include information on the state's energy emergency planning, preparedness, and response. Consequently, the state EMA should actively participate in the development of the state SESP. State Energy Program funding is tied to this requirement for states to develop SESPs -- including $500 million Infrastructure Investment and Jobs Act (IIJ) that can be spent on energy security, resiliency, and emergency preparedness plans.

> During the 2022 general session, the **Utah** State Legislature passed a bill to create a Grid Resilience Committee. The committee is chaired by the State Director of the Division of Public Utilities and includes representatives from emergency management, energy development, municipal power, large-scale electric utilities, wholesale electric cooperatives, rural electric cooperatives, power plant fuels sector, critical infrastructure protection, and the National Guard. The committee is tasked to enhance greater resilience for the power grid with respect to weather events, wildfires, acts of terrorism, or other potentially damaging events.

Responding to and Recovering from an Energy Incident

The following response and recovery resources can assist a state EMA with response and recovery efforts:

DOE - Energy Emergency Response Playbook for States and Territories provides guidance on preparing for, responding to, and recovering from energy emergencies. The Playbook is intended to complement (but not replace) State Energy Security Plans (SESPs) by providing guidance on how and when to utilize authorities and response actions detailed in SESPs. The Playbook describes the iterative process of gathering information, assessing the actual or potential consequences of the incident, and taking action to share critical information, facilitate system restoration, and mitigate impacts to dependent lifeline sectors and consumers.

Energy Emergency Assurance Coordinators (EEAC) Program enables bi-directional communication and information sharing prior to and during energy disruptions and emergencies. EEAC members serve as points of contact for DOE in the event of an emergency and receive situation reports, outage estimate reports, etc. by region.

Public Power Mutual Aid is a national mutual aid agreement linking more than 1,100 utilities that want to give and get help for power restoration after a disaster. The utility requesting support provides its best estimate of how many people it needs and what type of skills they should have and specifies equipment and material needs. Other utilities in the network respond with what they can offer. As units of state and local government, public power utilities are generally eligible for partial reimbursement of restoration expenses by FEMA.

Investor-owned utilities and electrical cooperatives also have mutual aid assistance programs.

Emergency Management Assistance Compact (EMAC) is a national interstate mutual aid agreement that allows states to legally share resources across state lines. NEMA administers EMAC and has been working with state energy offices to develop pre-scripted mission ready packages (MRPs) for energy-related assets, specifically ESF #12 and energy subject matter expertise. Utilizing these MRP templates can help resource providers craft a resource request and offer faster. The templates can be found on the EMAC website.

Response

- Information Sharing
- Facilitating Restoration
- Mitigating Impacts
- Deploying Resources

Information-Gathering

- Threat Forecast
- Service/Supply Metrics
- Critical Infrastructure Status
- Restoration Timelines
- Constraints/Roadblocks

Consequence Assessment

- Categorizing Events
- Classifying Severity of Impacts/Potential Impacts
- Assessing Impact to Vulnerable Populations

Resources

The following organizations are actively involved in energy resiliency:

U.S. Department of Energy Office of Cybersecurity, Energy Security, and Emergency Response

CESER enhances the security and resilience of U.S. critical energy infrastructure to all hazards, helps mitigate the impacts of disruptive events and risk to the sector through preparedness, innovation, and technical tools. DOE is the lead agency for the Emergency Support Function 12 (ESF-12) under the National Response Framework and is the Sector Risk Management Agency for Energy, CESER oversees those responsibilities and supports preparedness and response efforts in the energy sector, across federal, state, local, territorial, and tribal governments, private industry, trade associations, and non-governmental organizations. CESER works with partners like NEMA to support state energy and emergency officials.

U.S. Department of Homeland Security Cybersecurity and Infrastructure Security Agency (CISA)

Leads the national effort to understand, manage, and reduce risk to our cyber and physical infrastructure. CISA connects stakeholders in industry and government to each other and to resources, analyses, and tools to help them build their own cyber, communications, and physical security and resilience, in turn helping to ensure a secure and resilient infrastructure for the American people.

State Public Utilities Commission

State Public Utilities Commission regulates and oversees the electric, gas, water, and telecommunications industries within the state. This includes setting rates, ensuring safe and reliable service, and resolving disputes between customers and utilities. The commission also promotes energy efficiency and renewable energy policies to protect the interests of the public.

Energy Resilient Project Ideas

State EMAs can collaborate with utility, local, private-sector, and academic partners to identify solutions to increase energy resilience. Given that the state does not typically own the assets, state EMAs can offer technical assistance, provide grant funding, help navigate legal and regulatory requirements or waivers, and ensure that investments are equitable. Energy resilient projects include system modernization, hardening infrastructure, decentralization, and employment of off-grid or "distributed-grid" networks; phased voltage stabilization systems and resistors for redirecting and balancing energy; implementing security standards, training and contingency planning; and establishing mechanisms for sharing information on vulnerabilities and threats.

For example, Kansas and Nevada utilized FEMA Hazard Mitigation Grant Program (HMGP) and BRIC funds to replace conductors, poles and transformers with ones that are more resilient to ice and wind. New Jersey utilized Housing and Urban Development Community Development Block Grant (HUD-CDBG) funding to install distributed energy resources to improve the resiliency of critical infrastructure facilities throughout the state. Thirty-seven states have passed legislation enabling the Commercial Property Assessed Clean Energy (C-PACE) program, a funding mechanism where a customer repays loans for water and energy efficiency and resilience projects through an assessment on their property taxes. Energy resilience projects are generally cost beneficial – a FEMA Study on electric transmission and distribution mitigation found that return on investment was 115%.

Click on this link for more information on energy resilient projects and potential funding sources.

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