U.S. DEPARTMENT OF ENERGY

CLEAR PATH VII

AFTER ACTION REPORT

May 2020

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SUMMARY

Exercise Name	*U.S. Department of Energy (DOE) Clear Path VII Exercise*
Exercise Date	April 30 – May 1, 2019
Location	Shelby County Schools Teaching and Learning Academy, 2485 Union Ave, Memphis, TN 38112
Purpose	Examine the energy sector's response and restoration roles, responsibilities, plans and procedures following a major earthquake along the New Madrid Seismic Zone (NMSZ), stressing interdependencies between multiple critical infrastructure sectors.
Scope	Discussion-based tabletop exercise, both in plenary and small-table formats, using scenario-based activities to stimulate conversation at the operational and tactical levels. Intended participant level at the operational manager level.
Classification	UNCLASSIFIED
Core Capabilities	• Infrastructure Systems • Logistics and Supply Chain Management • Situational Awareness
Objectives	• Identify essential elements of information and determine methods and processes of sharing information between Federal, state, local, and industry partners, to best provide situational awareness and develop a common operating picture to support decision-making, resource identification, and prioritization following a major earthquake; • Identify interdependencies between energy and other critical infrastructure sectors, emphasizing areas of mutual reliance, resource needs, and mechanisms for effective sharing of information following a major earthquake; • Examine strategies to address fuel disruptions and shortages following a major earthquake with impacts to oil and natural gas supply chains and methods of transportation; • Identify and familiarize participants on the unique implications and cascading national impacts of energy disruptions and shortages following a major earthquake; and • Inform, shape, and prepare the energy sector's participation in the Shaken Fury 2019 operations-based exercise.
Scenario	A 7.7 magnitude earthquake along the Cottonwood Grove Fault, the southwest segment of NMSZ. Earthquake results in landslides, liquefaction, and damage to critical infrastructure, buildings, and structures. Direct impacts felt across Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. Indirect impacts felt nationally and internationally due to the economically important critical infrastructure and geological features of the Mississippi River Valley.
Participating Organizations	Stakeholders from Federal, state, and local governments; electricity, oil and natural gas, communications, water, and transportation sectors. Please see **Appendix A** for a complete list of participating organizations.

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GENERAL INFORMATION

Introduction

This Clear Path VII After Action Report provides observations related to the exercise, as well as recommendations for the energy sector, both government and industry, to improve policies, plans, and procedures for energy disruptions. The U.S. Department of Energy (DOE), Office of Cybersecurity, Energy Security, and Emergency Response (CESER) prepared this report.

Clear Path is the DOE CESER's annual cornerstone all-hazards energy security and resilience exercise series. The exercise series brings together leading energy sector stakeholders to enhance policies and procedures, identify areas for collective improvement, and strengthen relationships and cooperation between industry and government energy sector partners. The series enhances DOE's ability to successfully meet its responsibilities as the Emergency Support Function (ESF) #12 Coordinator and Sector-Specific Agency lead for Energy as required by Presidential Policy Directives (PPD)-8: National Preparedness, PPD-21: Critical Infrastructure Security and Resilience, and codified in the Fixing America's Surface Transportation (FAST) Act (Public Law 114-94).

The DOE and the Federal Emergency Management Agency (FEMA) partnered to link Clear Path VII with the FEMA Office of Response and Recovery's sponsored Shaken Fury 2019 exercise.[1] Clear Path VII leveraged the Shaken Fury scenario as the core planning assumption for exercise activities.

Exercise Overview

Clear Path VII was a discussion-based, tabletop exercise that occurred on April 30 - May 1, 2019, in Memphis, Tennessee. A hot wash meeting followed the exercise during the afternoon of May 1, to discuss areas for improvement along with key recommendations. The purpose of this exercise was to examine the energy sector's response and restoration roles, responsibilities, plans, and procedures following a major earthquake along the New Madrid Seismic Zone (NMSZ), stressing interdependencies between multiple critical infrastructure sectors. The exercise brought together over 160 individuals from 86 organizations representing Federal and state governments, the electricity, oil and natural gas subsectors, the transportation, water, and the communications sectors.

The exercise objectives were:

1. Identify essential elements of information and determine methods and processes of sharing information between Federal, state, local, and industry partners, to best provide situational awareness and develop a common operating picture to support decision-making, resource identification, and prioritization following a major earthquake.

[1] FEMA-sponsored Shaken Fury 2019 was a functional exercise scheduled from May 29 - June 7, 2019 across multiple Federal, regional, state and local emergency operation centers within the New Madrid Seismic Zone region. Clear Path VII and Shaken Fury 2019 share the same scenario and overall purpose of promoting community earthquake preparedness.

2. Identify interdependencies between energy and other critical infrastructure sectors, emphasizing areas of mutual reliance, resource needs, and mechanisms for effective sharing of information following a major earthquake.
3. Examine strategies to address fuel disruptions and shortages following a major earthquake with impacts to oil and natural gas supply chains and methods of transportation.
4. Identify and familiarize participants on the unique implications and cascading national impacts of energy disruptions and shortages following a major earthquake.
5. Inform, shape, and prepare the energy sector's participation in the Shaken Fury 2019 operations-based exercise.

The exercise scenario was a 7.7 magnitude earthquake striking at 12:00 p.m. on January 29, 2019, along the Cottonwood Grove Fault, the southwest segment of the NMSZ. The Cottonwood Grove Fault is one of the three major fault lines identified in the NMSZ. The nearest major city impacted is Memphis, TN, where roads, bridges, and other infrastructure are expected to experience severe damage.

Scenario impacts cause severe damage throughout the Mississippi River Valley, which have both national and international consequences. Significant damage to critical energy infrastructure results in widespread, long-term power outages; numerous ruptures along petroleum and natural gas pipelines; and impacts to operations at multiple oil refineries and pipeline pumping stations. Power to these facilities is critical to ensure the availability of gasoline and natural gas throughout the United States. The exercise challenged participants to demonstrate how their organization would conduct coordinated responses, demobilization, and recovery functions during this incident. As a result of the earthquake and follow-on aftershocks, the regional transportation network is severely damaged and blocked with debris, causing delays to search and rescue operations, evacuation of victims and hindering restoration of critical infrastructure.

The format of the exercise included a combination of plenary and small table discussions. Each table included a mixture of representatives from Federal, state, local, electricity, oil and natural gas, and cross-sector partners. The tables were grouped together based on the state with which their responsibilities/service territory resided.

Prior to the exercise, DOE facilitated two preparatory activities to inform participants and planners about the NMSZ hazard and the oil and natural gas supply chain within the region. The first was a 15-minute documentary distributed to players in the weeks prior to the exercise. The documentary discussed the following: an overview of the region to include the New Madrid Seismic Zone; a review the 1811-1812 New Madrid earthquakes; the geology of the region and its impacts on buildings and structures following a significant earthquake; comparisons of likely damage to recent incidents to include the 2016 Christchurch Earthquake; and response approaches from both DOE and FEMA, to include likely strategic priorities and needs.

The second activity was a virtual seminar on the oil and natural gas (ONG) supply chain through the Mississippi River Valley. Presenters from American Fuel and Petrochemical Manufacturers (AFPM), American Petroleum Institute (API), and ONE Gas provided an outline of the ONG products, the supply chain, and the infrastructure throughout the region. Presenters provided the national and international context if the ONG supply chain were to be adversely impacted. Emphasis was made on the critical

importance and resiliency of the infrastructure and the need to continue the partnership between public and private sectors to ensure an efficient and deliberate restoration of the ONG supply chain.

Clear Path VII provided a forum to identify areas for improvement in a safe, no fault environment. The exercise scenario comprised three modules. Module One covered the first 24-96 hours of the initial earthquake. Module Two focused on days 4-9 after the earthquake as well as the resource request and allocation. Module Three concentrated on days 10 onward, focusing on recovery and demobilization of initial resources.

Following the exercise, a small subset of the planning team discussed strengths and areas for improvement identified by participants during the exercise.

Organization of the Report

The remainder of this report is structured as follows:

Overview of Exercise Modules - This section provides a summary of the discussion from the modules and provides context to the identified areas of sustainment and improvement.

Appendices - The appendices to this report contain additional details on the exercise:

- **Appendix A**: Participating Organizations
- **Appendix B**: Acronyms and Key Terms

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OVERVIEW OF EXERCISE MODULES

This section provides a brief overview of the discussions held during the exercise.

MODULE ONE: Initial Earthquake Effects

The lead facilitator provided participants with an initial scene setting update by presenting the general scenario data of the initial earthquake impacts. Group facilitators encouraged participants to discuss their organization's initial priorities, assumptions and concerns within the first 24-96 hours following the earthquake. Module One consisted of three activities that were intended to amplify the need for internally focused plans and procedures following a no-notice incident, where significant external support and resources are limited.

Participants were asked to identify assumptions, priorities, and key actions taken within the first 24 hours of the earthquake impacts. Participants began with several assumptions to include significant damage to communication networks, unreliable cellular, and in some cases landline networks, governor declared emergency declarations, a significantly high number of causalities, and severe damage to structures throughout the region.

During the brief out, participants agreed on the following priorities and key actions taken:

- ensuring safety and security of employees
- conduct damage assessments of facilities
- gathering of situational awareness / contributing and maintaining a common operating picture
- re-establishing reliable communications
- identification and coordination of operational resources for response and mitigation actions
- public messaging

Participants also identified the following concerns to include:

- staffing shortages
- fuel accessibility and reliability
- security of facilities, resources and products
- flight restrictions and use of unmanned aerial systems for surveys

Communications was a significant concern in this first module. Challenges impacting the ability to gather information through normal communication channels would limit the ability for organizations to make critical next-step decisions. Whereas some organizations identified secondary and tertiary capabilities, many inferred the need to not just have a capability, but also be proficient with operating alternate methods of communication. One example is the use of satellite phones. Although they are useful when normal

networks are degraded, a concern raised by participants for satellite phones is the potential saturation on the same satellite.

In addition to redundant capabilities, triggering actions in a degraded communications environment is essential for organizations to advance response, restoration and recovery operations. Participants identified the need for passive triggers, or actions taken based on plans and procedures that do not require incident command or coordination resolution. An example used by participants is the automatic dispatching of a public affairs representative to a pre-determined joint information center for coordination of messaging. Building passive triggers into response and restoration plans would expedite coordination and overall operations.

Finding (1.1): Organizations lack secondary and tertiary communication options and/or procedures to include passive triggers within a degraded communication environment.

Along with the discussion on communications, participants discussed concerns regarding employee safety and security following an incident as presented in Clear Path. Additionally, many employees would likely be unable to communicate with family members resulting in employees leaving places of work to make contact directly. Consequentially organizations will have shortages for operational responsibilities and assessments, resulting in delayed restoration actions. Participants agreed that mitigating this issue is difficult, however encouraging employee and family preparedness planning, specifically a communication plan, may provide a process for reconnecting family members and subsequently providing organizations with valuable operational staff to continue response and restoration operations.

Finding (1.2): Organizations identified the need to encourage employees to develop family preparedness plans, to include communication plans and go-bags.

A common concern reflected by many participants was the certainty of subsequent impacts from aftershocks, flooding, fires and other downstream impacts. All completed inspections would require additional inspections following an aftershocks, resulting in delays of restoration operations. The uncertainty of the period of time aftershocks could occur proves difficult for future planning. Organizations would likely be more hesitant to restore services if a subsequent aftershock or flooding threat, could further damage or have downstream impacts to areas less ravaged by the initial earthquake.

Participants agreed that initial assessments would be ordered as soon as possible to gather situational awareness and identify priorities for action. More and more organizations referenced the use of newer technologies such as unmanned aerial systems (UAS) to assist. This technology has proven itself valuable in recent real-world incidents such as the 2017 hurricane season. However, there is still clarity needed on the parameters an organization is required to follow for using UAS systems and how they are impacted by temporary flight restrictions (TFRs) enacted by the Federal Aviation Administration (FAA). Clarity was provided by planners pertaining to the Certificates of Waiver or Authorization (COA) process. Furthermore, FAA has a process for requesting emergency incident waivers through the Special Governmental Interest (SGI) waiver process. This information can be readily accessible through the FAA's website for further research.

Finding (1.3): Participants identified a need for further clarity regarding UAS restrictions and the waiver process. Others unfamiliar, were interested on the overall use of the platform, and its value to the assessment and situational awareness process.

In addressing the expected heavy fuel shortages in the region, some participants highlighted unique programs that could alleviate some of the impacts. Although Tennessee participants explained their state has a distinct fuel set-aside program, depending on the infrastructure damage, it may take a month for the supply to support the region. Other participating states were unfamiliar if they had such fuel reserve-like programs.

In Module One, participants agreed the first three days of response following a major earthquake would be overwhelming and would primarily focus on immediate life-saving operations, damage assessments on infrastructure, emergency actions to minimize impacts downstream and employee and family welfare. Physical structures may not be available for coordinated operations and mandatory evacuations from heavily impacted areas may further hinder an organization's ability to respond. At the Federal and state response organizational levels, the primary actions will include situational awareness of conditions in the impacted region and rapidly pushing resources regardless of known needs. With the expected significant impacts to the communications infrastructure, responders will rely upon satellite phones and amateur radio. Although within the first three days most will not have a complete understanding of the severity and reach of the incident, much needed resources from mutual aid networks, state compacts, Federal organizations, and non-governmental organizations will begin reaching the impacted area in significant amounts. The coordination of such resources will be yet another unique challenge for this incident.

MODULE TWO: Coordinated Response

Focusing on days 4-9 following the earthquake, Module Two reviewed how external resources and support are coordinated and integrated into the response. Discussion concentrated on information sharing, coordination of resources from mutual aid and assistance networks, public and private support integration, incident command organization and the prioritization and sequencing of resources across eight or more impacted states. Module Two consisted of two activities and included participant interaction across all state groups and tables. Participants eager to explore other organizations' perspectives enriched the experience and furthered the learning opportunities.

Much of the positive reviews from the exercise responded that the mixture of energy sector and Federal and state emergency management representatives was critical to understanding how the public-private coordination would likely occur. Many of these organizations are very familiar with the coordination at a relatively small-scale incident. However, the scenario of a major New Madrid earthquake would impact over eight states directly, which reside within four different FEMA regions, is divided by one of the Nation's longest and widest rivers, and includes millions of residents, not to mention significant supply chain infrastructure for the heavily populated east coast and manufacturing of the upper Mid-West. An incident such as that presented creates a significant incident command and coordination challenge.

By day nine post-earthquake, it can be expected that states will regain semblance of coordination and situational awareness within the directly impacted region. As that is occurring, the number of resources and

aid will be overwhelming if a coordinated structure is not established. Participants identified the likelihood of multiple unified coordination groups (UCGs) established across the Mississippi River. FEMA's challenge will be coordinating how resources are then distributed to the states through the UCGs. With at least eight state governors and four FEMA regional coordinators vying for the same resources, vital determinations on required resources will need to be determined. Exercise participants agreed this process, no matter how streamlined will result in negative feedback and likely frustration. Although many in the room assumed a multiple UCG effort would be the process, it was not fully understood if it was the approved plan, for which states and the response community should plan towards.

Finding (1.4): Participants made assumptions on how FEMA and the Federal government would coordinate and prioritize Federal response resources and aid across the eight states and four regions.

Many participating organizations expect to see conflicting requests for resources or restoration to specific areas. Utilities responsible for this restoration may be caught in the middle between multiple command structures at the Federal, state and joint levels. The coordination with and between the Emergency Support Function #12 Energy, led by DOE at the Federal level and found within each state's structure, will work to alleviate the duplicative tasking and prioritization concern.

Cross-sector coordination will be critical to resource deployment and the decision-making process for the energy sector. Participants agreed that coordination with ESF #1 Transportation, is of primary importance to understand available routing of mutual aid restoration crews. Participants agreed that mutual aid networks would arrive to the impacted region from the appropriate side of Mississippi River, and unlikely to attempt crossing the river because of infrastructure damage or limited access/prioritization. Due to the complicating factor of a winter scenario, some organizations presented the challenge of restoration crews needing to demobilize early to support their home area of service. The electricity trade associations clarified that mutual aid task forces would be established to assist in the overall coordination of resources to include the need to demobilize or re-locate restoration crews.

Participating utilities identified continued concerns over credentialing and placarding across state boundaries. As most service areas naturally cross state boundaries, mutual aid crews not from the impacted region, may be unfamiliar with the individual state credentialing and placarding processes. Although one emergency management representative specified the process likely to occur in their state, it was unclear if each state would follow the same process. As no Federal representative was aware of an overruling process because of the nature of a multi-state incident, uncertainty and possible delay could result from restoration crews moving between state lines.

Finding (1.5): Uncertainty of process for credentialing and placarding of mutual aid restoration crews for crossing state borders.

Based on recent hurricane incidents, participants emphasized the need for closer coordination with law enforcement. A major earthquake, similar to a major hurricane, would cause disruption of needed lifelines, shortages of law enforcement officials and potential breakouts of lawlessness. A significant difference with a major hurricane is, an earthquake is no-notice, causing a serious shock to an unprepared population.

Options for security support maybe required for restoration crews entering potentially dangerous areas as well as drivers providing fuel transport and delivery. As restoration resources are supplied to the impacted region, participants considered these valuable materials in large staging areas may require security.

Finding (1.6): Security of fuel delivery, restoration materials and crews may require law enforcement support, which is likely limited.

Participants agreed that in the scenario presented, identifying staging areas for mutual aid restoration crews will require coordination with Federal and state response UCGs. In addition to maximizing security and safety requirements found at Federal and state staging areas, utilities could also benefit from the significant logistical support infrastructure to avoid depleting already low resources to remaining survivors in the region. Although the question of private sector using Federal and state resources at staging areas has not been refuted nor confirmed.

Finding (1.7): Uncertainty of private sector restoration crews are legally permissible to co-locate and use resources at Federal and state staging areas.

Participants cited a recent real-world concern that would likely present itself in an earthquake scenario with a broad impact area and competing organizations for the same resources. In the real-world incident, as mutual aid restoration crews attempted to use contracts with hotels, food vendors, and other logistical support, Federal contracts would supersede and subsequently eliminate the resource for the utility to use. This conflict of superseding contracts could delay restoration and create dangerous conditions for restoration crew safety.

Finding (1.8): As demonstrated in real world incidents, contracts between private sector entities and a logistical resource has been superseded by Federal contracts with the resource, regardless if both are in support of the same response effort.

Many participants identified a concern of not understanding the meaning of certain response and recovery terminology. In the efforts of streamlining public and private response to an incident, terminology is essential to ensure clarity and direction for the joint effort. Federal and state emergency managers also are unfamiliar with industry terminology and meaning to include such terms like a ‘crew,’ pertaining to restoration resources, but unknown to the number of workers which make a crew. This lack of an agreed upon common terminology and meaning could hinder and delay the effort for public-private collaboration for response to significant incidents that require such a relationship.

Finding (1.9): Lack of agreed upon terminology and meaning of response and restoration resources between industry, Federal and state emergency management organizations.

Module Two identified many findings likely to be encountered within the first two weeks of response by a unified coordination effort. Participants overwhelmingly agreed that response to an incident of this size would require significant public-private coordinated response. Cross-sector coordination would also be required and integrated in most critical response and restoration decisions. Some participant observations from this module that did not necessitate a finding included the following:

- Although the GasBuddy application is a useful source for awareness pertaining to whether gas stations are open/closed and in some cases perceived to have gas supply, it does not specify if the gas station has electricity to operate the pumps. Furthermore, if the station is operating, individuals at the station may not be able to update the application due to unreliable wireless in the region. Crowd sourcing applications require updates to ensure accuracy of the data its presenting.

- Department of Defense (DoD) bridging assets may support connecting both sides of the Mississippi River, however DoD representatives stated that some bridging assets may restrict use of shipping up and down the river. Such assets that could be deployed swiftly are required to float upon the river. Debris floating down river could also hinder temporary bridging.

- In addition to significant fuel supply chain impacts across the Eastern seaboard and the upper Mid-West regions, it is conceivable fuel exports to Canada could be reduced to ensure fuel supply shortages are reduced elsewhere nationally.

- Interdependence with the rail lifeline was emphasized in numerous conversations. Similar to the reliance upon barging on the Mississippi River, railroads are critical to the Mississippi Valley for energy sector generation, transportation and resources. Significant reliance on moving fuels from and through the region may need to be replaced by trucking or rerouted, potentially permanently.

MODULE THREE: Demobilization and Recovery

Module Three addressed demobilization of initial response resources, transition to additional resources and the phasing into long term restoration and recovery actions. This module focused on days 10-12 after the initial earthquake. Progress is being achieved in restoration of services where possible. Serious decisions in rebuilding significantly damaged areas become political hot topics. The restoration rhythm becomes routine and longer-term recovery projects come to the forefront for consideration.

As this module progressed, planners decided to shift discussion away from small groups and opened the forum for a collective room discussion. Most topics in this module yielded to a broader conversation with various subject matter experts in the room. As a result, positive feedback for this ad hoc decision was reflected in participant feedback forms.

Although throughout the exercise public messaging was a reoccurring topic, this module and the player hot wash reflected significant conversation. Public and private communicators would have pushed information as soon as possible to control the progress of the narrative. As soon as connectivity would allow, proactive messaging would be provided through social media, websites, and other accessible forms of communication. By passive trigger, participants agreed utility organizations would send communicators to pre-determined joint information centers to ensure the organization's message is synchronized with state and local emergency managers. Many participants were unfamiliar with Federal communication coordinating mechanisms such as the Private Sector Incident Communications Coordination Line (PICCL).

Participants also recommended exercises specifically reviewing public message coordination at all levels and if different hazards change the approach or process.

Finding (1.10): Participants were unfamiliar with public messaging coordination at the Federal, state, local and industry levels.

Similar to public messaging, reporting of situational awareness was discussed throughout each module. However, the spotlight on reporting was focused on FEMA's relatively new term and concept, 'community lifelines.' Many participants were unaware of the term or its impacts on industry reporting. Some participants provided clarity regarding its purpose as it pertains to categorizing and concentrating data for senior government officials regularly. But as a data provider, industry representatives were interested in what changes they may see in their reporting or coordination efforts with Federal and state response efforts.

Finding (1.11): Participants were unfamiliar with FEMA's new Community Lifelines concept, process, and expectations for private sector integration.

As the exercise neared its scheduled conclusion, longer term recovery issues were discussed in the plenary format. Participants emphasized the resource strain will occur following fuel and chemical spills induced by the earthquake, resulting in longer term environmental responses. Similar to gas fires expected immediately following the earthquake, fuel and chemical spills will also delay a company's ability to restore pipelines early. A company will have significant reprioritization throughout the first week of response.

Another cross-sector item was identified regarding financial impacts industry organizations will incur due to the delay of insurance payments and potential outright bankruptcy of some insurance institutions. However, participants posited the need for the sub-sectors to consider similar trusts to that which has been established within the nuclear sector. A multi-million dollar investment may require 10+ years of contributing, but an earthquake of this size will very likely force the closure of many utilities and Federal aid in support may not alleviate the entire financial strain.

Module Three became a mixed assortment of different long-term response, restoration and recovery topics. Cascading impacts were discussed to include the impact of the scenario taking place during the winter months, where regions of the country rely on propane or natural gas for heating of homes and businesses. Participants also identified the need to be aware of the conditions by which restoration crews were working. Severe weather may adversely impact or delay restoration processes. Also, in winter, the number of daylight hours are less for crews to operate safely.

As discussion concluded, a couple participants stressed the concern that others downplayed the potential significant and widespread damage to the critical infrastructure following a New Madrid earthquake. Although exercises such as this one provide opportunities for energy sector organizations to better understand response and restoration processes, this incident will focus less on restoration, but rather rebuilding where possible. Damage to the region could be financially crippling and physically altering. An incident such as the one presented would stress the energy sector in ways which no other incident in history has before. Exercises such as Clear Path provide the sector an opportunity to prepare itself, identify

areas that can be improved, build relationships across the community and most importantly ask the ‘what if’ question today, so that tomorrow we are closer to the answer.

APPENDIX A: PARTICIPATING ORGANIZATIONS

Ameren
American Fuel and Petrochemical Manufacturers
American Gas Association
American Petroleum Institute
American Public Power Association
Association of American Railroads
Association of Metropolitan Water Agencies
Atmos Energy
Big Rivers Electric Cooperative
Black Hills Corporation
Buckeye Partners
CenterPoint Energy
Central United States Earthquake Consortium
CenturyLink
Charter Communications
City of Memphis (TN) Emergency Management
Commonwealth of Kentucky - Emergency Management
Commonwealth of Kentucky - Energy & Environmental Cabinet
CPS Energy
Devon Energy
Downstream Natural Gas Information Sharing and Analysis Center
Duke Energy
East Kentucky Power Cooperative
Edison Electric Institute
EIS Council
Electricity-Information Sharing and Analysis Center
Energy Transfer Partners
Entergy
Federal Energy Regulatory Commission
FedEx
Ingram Barge
Jackson Purchase Energy Corporation
Kinder Morgan
Liberty Utilities
Magellan Midstream Partners
Marathon Petroleum
Meade County Rural Electric Cooperative
Memphis Light Gas and Water
Midcontinent Independent System Operator
Murphy Oil USA
National Association of Regulatory Utility Commissioners
National Association of State Energy Officials
National Energy Technology Laboratory
National Governors Association
ONE Gas
Petroleum Marketers Association of America
Phillips 66
Shelby County (TN) Emergency Management & Homeland Security Office
Society of American Military Engineers
Spire Energy
State of Arkansas - Army National Guard
State of Arkansas - Department of Environmental Quality
State of Mississippi - Emergency Management Agency
State of Missouri - State Emergency Management Agency
State of Tennessee - Air National Guard
State of Tennessee - Army National Guard

State of Tennessee - Department of Environment and Conservation
State of Tennessee - Emergency Management Agency
State of Wisconsin - Office of Energy Innovation
Tennessee Electric Cooperative Association
Tennessee Gas and Convenience Store Association
Tennessee Petroleum Council
Tennessee Valley Authority
Tennessee Valley Public Power Association
US Department of Homeland Security (DHS) - Cybersecurity and Infrastructure Security Agency - Regions IV, VI, VII Offices
US DHS - Federal Emergency Management Agency (FEMA) - National Exercise Division
US DHS - FEMA - Office of Response and Recovery
US DHS - FEMA - Regions IV, V, VI, VII Offices
US DHS - US Coast Guard
US Department of Defense (DoD) - Defense Logistics Agency - Energy Americas
US DoD - US Air Force
US DoD - US Army Corps of Engineers
US DoD - US Northern Command
US Department of Energy (DOE) - Office of Cybersecurity, Energy Security and Emergency Response
US DOE - Volpentest Hazardous Materials Management and Emergency Response Federal Training Center
US Department of Transportation (DOT) - Federal Highway Administration
US DOT - Pipeline and Hazardous Materials Safety Administration
US Nuclear Regulatory Commission
Valero Energy

APPENDIX B: ACRONYMS

AAR	After Action Report
CESER	Office of Cybersecurity, Energy Security and Emergency Response
COP	Common Operating Picture
CPVII	Clear Path VII
DHS	Department of Homeland Security
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of Interior
DOJ	Department of Justice
DOS	Department of State
DOT	Department of Transportation
E-ISAC	Energy-Information Sharing and Analysis Center
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ESCC	Electricity Subsector Coordinating Council
ESF	Emergency Support Function
FEMA	Federal Emergency Management Agency
ICS	Incident Command System
ISER	Infrastructure Security & Energy Restoration
MMI	Modified Mercalli Intensity Scale
NMSZ	New Madrid Seismic Zone
NRCC	National Response Coordination Center
NRF	National Response Framework
ONG	Oil & Natural Gas
PUC	Public Utilities Commission
RRCC	Regional Response Coordination Center
RSF	Recovery Support Function
SitMan	Situation Manual
SME	Subject Matter Expert
TTX	Tabletop Exercise
USCG	U.S. Coast Guard

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