



U.S. DEPARTMENT OF  
**ENERGY**

Cybersecurity, Energy Security,  
and Emergency Response



U.S. DEPARTMENT OF ENERGY

**CLEAR**

PATH VII



# Quick Look Report

June 2019



# HANDLING INSTRUCTIONS

1. The title of this document is *Clear Path VII Quick Look Report*.
2. This document is approved for public release.
3. For more information on this exercise, please consult the following points of contact:

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# Exercise Overview

<b>Exercise Name</b>	<i>U.S. Department of Energy (DOE) Clear Path VII Exercise</i>
<b>Date</b>	April 30 – May 1, 2019
<b>Location</b>	Shelby County Schools Teaching and Learning Academy, 2485 Union Ave, Memphis, Tennessee 38112
<b>Purpose</b>	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.
<b>Scope</b>	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.
<b>Classification</b>	UNCLASSIFIED
<b>Core Capabilities</b>	<ul style="list-style-type: none"> <li>• Infrastructure Systems</li> <li>• Logistics and Supply Chain Management</li> <li>• Situational Awareness</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• 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;</li> <li>• 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;</li> <li>• 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;</li> <li>• Identify and familiarize participants on the unique implications and cascading national impacts of energy disruptions and shortages following a major earthquake; and</li> <li>• Inform, shape, and prepare the energy sector’s participation in the Shaken Fury 2019 operations-based exercise.</li> </ul>

**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 **Figure 3** for a complete list of participating organizations.

# Summary

Clear Path is the U.S. Department of Energy (DOE), Office of Cybersecurity, Energy Security and Emergency Response's (CESER) 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.

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.<sup>1</sup> *Clear Path VII* leveraged the Shaken Fury scenario as the core planning assumption for exercise activities.

*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 and occurred 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 150 individuals from 83 organizations representing Federal and state governments, the electricity, oil and natural gas subsectors, the transportation, water, and the communications sectors.

The *Clear Path VII* exercise scenario was a 7.7 magnitude earthquake at 12:00 p.m. on January 29, 2019, along the Cottonwood Grove Fault, the southwest segment of 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.

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<sup>1</sup> FEMA's sponsored *Shaken Fury 2019* is a functional exercise scheduled from June 3-7, 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.

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 which was 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.

During the *Clear Path VII* tabletop exercise, there were several strengths identified by participants, some of which are listed in **Figure 1**.

<b>FIGURE 1: STRENGTHS</b>
<p><b>Enhancing Preparedness</b> - Preparatory activities and exercise conduct enhanced awareness of the NMSZ hazard; identified opportunities to mitigate the impact to critical infrastructure and gaps in energy resilience; and enabled Federal, regional and state response organizations to improve recovery planning.</p>
<p><b>Developing Relationships</b> - The exercise format provided participants an opportunity to build and foster relationships, and share knowledge and expertise while simulating scenario-specific activities and reinforcing the cross-sector interdependencies during simulated response, restoration, and recovery activities. Participants shared organizational planning best practices and networking opportunities, to include established community-wide working groups for state and private sector emergency planners.</p>
<p><b>Incorporating Lessons Learned</b> - The exercise format provided participants with a cross-sector forum to identify and discuss implementation of newly revised procedures and processes as a result of previous exercise and real world incident responses. This included reinforcing the importance of coordination mechanisms during incident response, such as the close synchronization between the DOE response organization and the Electricity and the ONG subsector coordinating councils' and their secretariat representatives.</p>

**Identifying Change** - Participants identified areas for improvement and transformation for energy and cross-sector stakeholder considerations and corrective actions for emergency planning and response.

Throughout the exercise, participants demonstrated knowledge of their organizations’ roles and responsibilities and their ability to convey their priorities and needs to other participating organizations while agreeing on the need to develop a common operating picture across sectors to address incidents. Participants reflected the scenario presented would require a significant national-level response unseen to date. The challenge of consolidating and processing the numerous public and private sector response actions could prove difficult for the response, recovery, and restoration community.

*Clear Path VII* identified multiple areas for improvement (see **Figure 2**). Collaborating to address these areas will demonstrate the value of the Department’s exercise series, and will improve the energy sector’s emergency response and recovery capabilities.

<b>FIGURE 2: AREAS FOR IMPROVEMENT</b>
<p><b>Use of Common Terminology</b> - Confusion across public and private sector participants regarding incident response and organizational terminology.</p>
<p><b>Public-Private Planning Collaboration</b> - Concerns regarding competing support contracts between public and private sector responders. Questions regarding private sector’s use of public sector’s staging areas and support facilities.</p>
<p><b>Redundant Communications</b> - Organizations lack secondary and tertiary communication options and/or procedures to include passive triggers within a degraded communication environment.</p>
<p><b>Community Lifelines<sup>2</sup></b> - Gap identified regarding the lack of familiarization of the new Community Lifelines concept, process, and expectations for private sector integration.</p>
<p><b>Prioritization and Sequencing of Restoration</b> - Concerns regarding adjudication of resource prioritization and sequencing process were not fully addressed or understood. Potential conflicting priorities due to the breadth of territorial impact, to include eight states, and four FEMA regions.</p>
<p><b>Credentialing and Placarding</b> - Inconsistent procedures for credentialing and placarding of energy sector restoration resources.</p>
<p><b>Public Affairs Engagement</b> - Participants identified the need to address public affairs’ coordination and messaging across public and private sector organizations, during major disasters.</p>

*Clear Path VII* provided a forum to identify areas for improvement in a safe, no fault environment. The exercise highlighted: the importance of public-private sector collaboration and resiliency planning prior to an incident; importance of redundant communication technologies and

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<sup>2</sup> The Community Lifelines are FEMA’s framing of incident information to provide decision-makers with impact statements and root causes. This construct maximizes the effectiveness of Federal supported, state managed, and locally executed response.

procedures; and the need to review a standardized credentialing process across states and territories in order for effective movement of restoration resources.

At the conclusion of the exercise, participants were given a platform to acknowledge the lessons learned and infer action items to be addressed. The areas for improvement highlighted through exercise play represent an opportunity to further strengthen the ability of government, energy, transportation, water, and the communications sectors to prepare and plan for, respond to, and recover from, energy emergencies and disasters.

Action items and a more thorough detailed summary of the exercise discussions will be developed in the form of a formal after action report to be released following an after action meeting.

**FIGURE 3: PARTICIPATING ORGANIZATIONS**

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

<b>FIGURE 3: PARTICIPATING ORGANIZATIONS</b>	
Energy Transfer Partners	State of Missouri - State Emergency Management Agency
Entergy	State of Tennessee - Air National Guard
Federal Energy Regulatory Commission	State of Tennessee - Army National Guard

<b>FIGURE 3: PARTICIPATING ORGANIZATIONS</b>	
State of Tennessee - Department of Environment and Conservation	US DHS - FEMA - Regions IV, V, VI, VII Offices
State of Tennessee - Emergency Management Agency	US DHS - US Coast Guard
State of Wisconsin - Office of Energy Innovation	US Department of Defense (DoD) - Defense Logistics Agency - Energy Americas
Tennessee Electric Cooperative Association	US DoD - US Army Corps of Engineers
Tennessee Gas and Convenience Store Association	US DoD - US Northern Command
Tennessee Petroleum Council	US Department of Energy (DOE) - Office of Cybersecurity, Energy Security and Emergency Response
Tennessee Valley Authority	US DOE – Volpentest Hazardous Materials Management and Emergency Response (HAMMER) Federal Training Center
Tennessee Valley Public Power Association	US Department of Transportation (DOT) - Federal Highway Administration
US Department of Homeland Security (DHS) - Cybersecurity and Infrastructure Security Agency (CISA) - Regions IV, VI, VII Offices	US DOT - Pipeline and Hazardous Materials Safety Administration
US DHS - Federal Emergency Management Agency (FEMA) - Office of Response and Recovery	US Nuclear Regulatory Commission
US DHS - FEMA – Private Sector Coordination	Valero Energy