U.S Department of Energy *Clear Path IV* Energy-Focused Disaster Response Exercise

April 19-20, 2016

Exercise Summary Report


Clear Path IV Objectives (1)
ENERGY

HANDLING INSTRUCTIONS

1. The title of this document is *Clear Path IV* Energy-Focused Disaster Response Functional Exercise (*Clear Path IV*) Summary Report. The exercise overview, goals, and objectives in this manual reflect the information that was distributed to participants at *Clear Path IV*.
2. This document is approved for public release.
3. For more information on this exercise, please consult the following point of contact:

Puesh Kumar
Director, Infrastructure Security and Energy Restoration
Office of Electricity Delivery and Energy Reliability
United States Department of Energy
Phone: (202) 586-9600
Email: Puesh.Kumar@hq.doe.gov

Evan Musolino
Z, Inc. Contract Support to
Infrastructure Security and Energy Restoration
Office of Electricity Delivery and Energy Reliability
United States Department of Energy
Phone: (202) 586-5082
Email: Evan.Musolino@hq.doe.gov

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EXERCISE OVERVIEW

Exercise Name	*Clear Path IV* Energy-Focused Disaster Response Exercise (*Clear Path IV*)
Exercise Date	April 19-20, 2016
Exercise Location	World Trade Center (Portland, OR) (Day 1 and 2) Department of Energy Headquarters (Washington, DC) (Day 2)
Purpose	*Clear Path IV* addressed the challenges the energy sector may face during a catastrophic Cascadia Subduction Zone (CSZ) earthquake and tsunami, focusing on the collaboration between government and industry during efforts to organize response, assess impacts to energy systems, communicate information to develop situational awareness and a common operating picture, and facilitate the delivery of capabilities across internal and mutual assistance networks.
Scope	This exercise was divided across two days of play. Day 1 was a discussion-based rehearsal-of-concept tabletop exercise (TTX), which focused on strategic-level response operations and the coordination between government and industry. Day 1 explored specific components of the energy sector's incident response, to include joint operations, fuel system management, power restoration, and state coordination. Day 2 was an operational- and tactical-level functional exercise played from the DOE Emergency Operations Center (EOC) in Washington, DC, coordinated with simulated field operations in the Pacific Northwest, by the DOE headquarters' Unified Command Structure (UCS).
Classification	UNCLASSIFIED
Core Capabilities	• Community Resilience • Critical Transportation • Infrastructure Systems • Logistics and Supply Chain Management • Long-Term Vulnerability Reduction • Planning • Public Information and Warning • Operational Coordination • Risk and Disaster Resilience Assessment • Situational Assessment

Objectives	• Examine energy sector roles and responsibilities within response plans utilized for a Cascadia Subduction Zone 9.0 earthquake and tsunami, such as the DOE Energy Response Plan, FEMA Regional Plans, State Emergency Management Plans, State Energy Assurance Plans, and industry response plans. • Highlight strategies to address fuel disruptions and shortages during a multi-state regional disaster with impacts to oil and natural gas supply chains and methods of transportation. • Identify essential elements of information and determine methods and processes of information sharing between state, federal, and industry partners to best provide situational awareness and to develop a common operating picture to support executive and operational decision making and resource requirements, adjudication, allocation, and disposition. • Determine effective identification of critical resources and capabilities, eliminate duplication of requests or delivery, and determine logistical requirements with commercial and governmental methods within multiple mutual assistance networks and systems. • Prioritize the restoration of energy systems with state, federal, and industry partners with consideration to cascading impacts to interdependent sectors. • Evaluate the DOE Unified Command Structure Concept of Operations with federal, state, and industry partners in responding to the CSZ disaster.
Scenario	A magnitude 9.0 earthquake and subsequent tsunami occurs along the 700-mile-long CSZ, causing considerable damage to Washington, Oregon, and parts of northern California. Effects are felt many miles inland, and impacts include landslides, liquefaction, and damage to critical infrastructure, buildings, and structures. Collateral damage results from fire, release of hazardous materials, failure of essential operating systems, and disrupted lifeline services.
Participating Organizations	Stakeholders from federal, state, and local governments; electricity industry; oil and natural gas industry and key domestic and international partners participated in *Clear Path IV*. Please see **Figure 3** for a complete list of exercise participants.

GENERAL INFORMATION

Introduction

This *Clear Path IV* Summary Report provides observations of exercise conduct and recommendations for the energy sector, both government and industry, to improve policies, plans, and procedures for energy emergencies.

Exercise Overview

The U.S. Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability's (OE) Infrastructure Security and Energy Restoration (ISER) division hosted the *Clear Path IV* Energy-Focused Disaster Response Exercise (*Clear Path IV*) on April 19 and 20, 2016, in Portland, Oregon and Washington, DC. The *Clear Path* series is a critical component of DOE's efforts to strengthen cooperation between government and industry on emergency response in order to better facilitate the restoration of energy services the aftermath of catastrophic incidents. *Clear Path IV* was designed to elicit outcomes aimed at helping inform government and industry response plans as well as shape energy sector participation in the Cascadia Rising 2016 exercise sponsored by the Federal Emergency Management Agency (FEMA), Department of Defense (DOD), and the States of Washington, Oregon, and Idaho. Additionally, in the coming months, stakeholders in the Pacific Northwest will leverage *Clear Path IV* outcomes to shape the development of a FEMA Region X Power Outage Incident Annex, which is a regional plan for government and industry representatives on responding to long duration power outages.

The exercise scenario consisted of a magnitude 9.0 earthquake and subsequent tsunami occurring along the 700-mile long Cascadia Subduction Zone (CSZ), causing catastrophic damage to Washington, Oregon, and northern California. Simulated earthquake and tsunami effects were felt many miles inland, with landslides and liquefaction causing significant damage to critical infrastructure and buildings. Cascading impacts caused by collateral damage from fire, hazardous materials, failure of essential operating systems, and disrupted lifeline services threatened the communities of the Pacific Northwest.

Figure 1 identifies the following National Preparedness Goal Core Capabilities examined in *Clear Path IV*.

Figure 1: *Clear Path IV* Core Capabilities

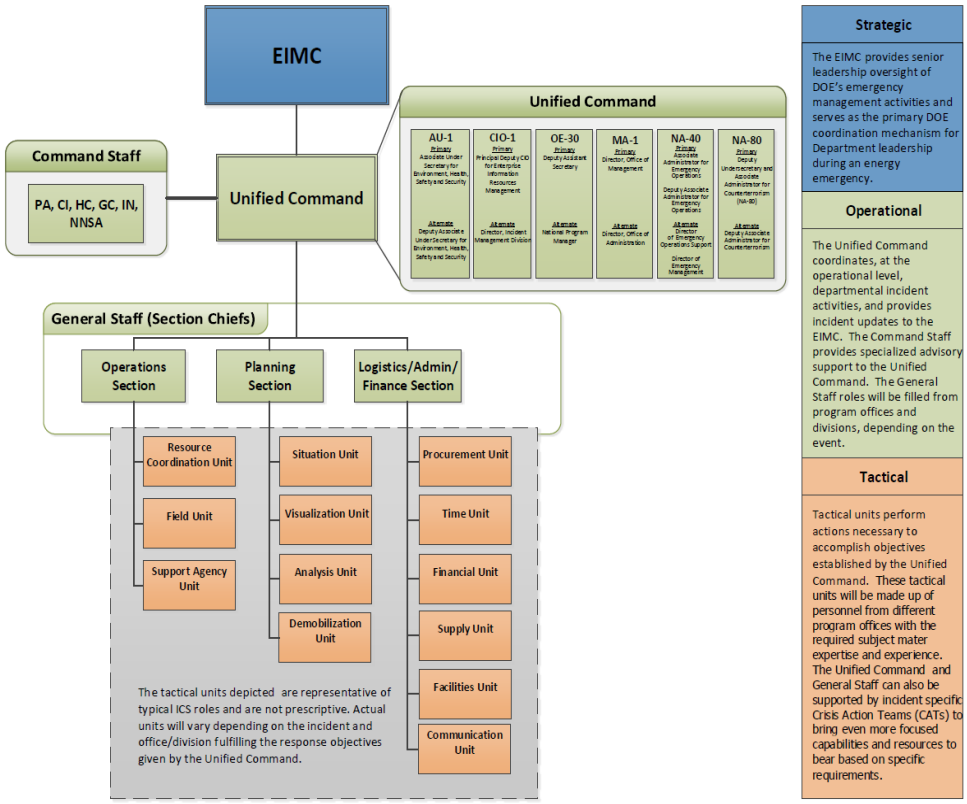
Community Resilience	Planning
Critical Transportation	Public Information and Warning
Infrastructure Systems	Operational Coordination
Logistics and Supply Chain Management	Risk and Disaster Resilience Assessment
Operational Communication	Situational Assessment

Clear Path IV was designed to serve as an important milestone in DOE's process to reorganize its emergency response enterprise to align with National Incident Management System (NIMS) guidelines and better leverage the tremendous expertise found throughout the Department during incident response operations. A Unified

Command Structure (UCS)[1] was activated such that individuals from the OE, the U.S. Energy Information Administration (EIA), and the National Nuclear Security Administration's (NNSA) were co-located in the NNSA's Emergency Operations Center (EOC) to jointly coordinate response efforts. Also, *Clear Path IV* was designed to prompt DOE leadership organized under the Emergency & Incident Management Council (EIMC) to provide strategic direction and facilitate DOE resources for response efforts. Due to the nature of the incident, operations in the EOC were led by OE/ISER with ISER staff taking leadership roles in the Unified Command Group, the General Staff (Section Chiefs) and Command Staff levels, augmented with support from NNSA and other members of the UCS.

Figure 2 depicts DOE's UCS as it was staffed and its operations evaluated during the functional component of *Clear Path IV* on April 20th. See footnote 2 for description of DOE offices abbreviated below.[2]

Figure 2: DOE Unified Command Structure



[1] The DOE Unified Command Structure (UCS) is designed to increase cooperation and coordination across the DOE Emergency Management Enterprise, encapsulating functions from OE's Energy Response Organization, the NNSA's Emergency Management Teams and Programs, AU's Physical Security Operations, the OCIO's Cyber Security and Response Function, IN's intelligence support Activities, and MA's Occupant Emergency Programs. DOE's proposed UCS was used for this exercise. The Department plans for UCS Initial Operating Capability by December 2016.

[2] *EIMC:* Emergency & Incident Management Council (EIMC)
Command Staff: Public Affairs (PA), Congressional and Intergovernmental Affairs (CI), Chief Human Capital Officer (HC), General Counsel (GC), Intelligence and Counterintelligence (IN), National Nuclear Security Administration (NNSA)
Unified Command: Associate Under Secretary for the Office of Environment, Health, Safety and Security (AU-1), Office of the Chief Information Security Officer (CIO-1) Office of Electricity Delivery and Energy Reliability Infrastructure Security and Energy Restoration division (OE-30), Office of Management (MA-1), NNSA Associate Administrator for Emergency Operations (NA-40), NNSA Associate Administrator for Counterterrorism and Counterproliferation (NA-80)

Participation

Approximately 200 participants from Federal, state, and local government as well as the electric sector and oil and natural gas industries participated in Clear Path IV over the 2-day event from Portland, OR and Washington, DC.

Figure 3. Exercise Participants

Federal Government		
Bonneville Power Administration	Department of Homeland Security	United States Army Corps of Engineers
Department of Commerce	Environmental Protection Agency	United States Bureau of Reclamation
Department of Defense	Federal Emergency Management Agency	United States Coast Guard
Department of Energy		Western Area Power Administration
State Government		
State of Arizona	State of Montana	State of Utah
State of California	State of Oregon	State of Washington
State of Idaho	Oregon Army National Guard	Washington Army National Guard
Local Government		
Clackamas County (OR)	Multnomah County (OR)	City of Portland (OR)
Marion County (OR)	Washington County (OR)	City of Salem (OR)
Oil and Natural Gas Industry		
BP	Kinder Morgan	Shell
Chevron	Marathon Petroleum	Tesoro
Devon Energy	NW Natural	TransCanada
ExxonMobil	Phillips 66	U.S. Oil and Refining Co.
		Williams
Electric Industry		
APR Energy	Exelon Corporation	Seattle City Light
Clark Public Utilities	NV Energy	Snohomish County Public Utility
Consolidated Edison	PacifiCorp/Pacific Power	Southern California Edison
Coos-Curry Electric Cooperative	Pacific Gas and Electric	Springfield Utility Board
Eugene Water and Electric Board	Portland General Electric	Tacoma Public Utilities
	Puget Sound Energy	
Key Partners		
American Fuel and Petrochemical Manufacturers	HAMMER Federal Training Center	NJ Resources
American Petroleum Institute	National Association of Regulatory Utility Commissioners	Oregon Municipal Electric Utilities Association
American Public Power Association	National Association of State Energy Officials	Oregon Rural Electric Cooperative Association
ARCOS	National Energy Technology Laboratory	Pacific Northwest National Laboratory
Civil Air Patrol	National Governors Association	Peak Reliability
Edison Electric Institute	National Petroleum Council	Western Electricity Coordinating Council
Electric Infrastructure Security Council	National Rural Electric Cooperative	
Electricity Sector Information		

Sharing & Analysis Center **Electricity Subsector Coordinating Council**	**Association**	
International Partners		
Israel National Emergency Management Authority	**Natural Resources Canada**	**Pontificia Universidad Católica de Chile**

CONCLUSION AND RECOMMENDATIONS

As the first functional test of DOE's unified response concept, *Clear Path IV* was a major step forward in the development of an enterprise-wide emergency response concept of operations capability in DOE and across the energy sector. DOE validated the concept of operations governing its emergency management operations as DOE personnel successfully demonstrated the capacity to manage a complex natural hazard incident while simultaneously managing a nuclear weapon accident/incident exercise. At the same time, DOE personnel were able to identify important lessons to improve implementation of that concept.

Perhaps equally important, *Clear Path IV,* in its design and conduct, represented a qualitative and quantitative improvement over previous editions of the *Clear Path* series. Prior to this most recent iteration of the *Clear Path* series, the annual DOE event was a Washington, D.C.-based hurricane response tabletop exercise. Moving to a functional exercise with response elements located both in the field (in Washington and Oregon) and DOE headquarters, *Clear Path IV* provided a number of opportunities to enhance mutual learning within the energy sector. The increased complexity of this exercise presented participants with a more demanding environment, driven by the catastrophic conditions of the earthquake scenario.

Clear Path IV also succeeded in involving different participants than had been seen at previous *Clear Path* exercises. In prior *Clear Paths*, participants were primarily D.C.-based representatives from industry, state government trade associations, and federal government agencies. By hosting *Clear Path IV* on the west coast, DOE was able to involve individuals at the regional, state and local levels in addition to the aforementioned representatives from previous exercises. DOE also expanded its outreach to industry for *Clear Path IV,* incorporating both electricity and oil and natural gas sector representatives in the planning and design of the exercise from the outset, to the great benefit of the exercise.

The exercise provided a comprehensive test of the ability of energy sector representatives from both government and industry to respond to a catastrophic incident. DOE is continuing to work in collaboration with government and industry partners to ensure the lessons learned in *Clear Path IV* are considered or implemented. DOE will conduct a series of follow-on meetings with federal interagency partners, states, electric sub-sector, and the oil and natural gas sub-sector to develop roadmaps for implementation to create positive change within the energy sector response community. The benefit of continuous engagement is to foster and enhance critical partnerships across the emergency management enterprise, both government and industry, while improving collaborative planning efforts. Continued efforts of both government and industry officials to improve the ability of the energy sector to prepare for, respond to, and recover from catastrophic incidents should be guided by the following Recommendations:

1. The whole community – to include the U.S. Department of Energy (DOE) and other federal agencies, state, local, and tribal governments, and industry partners - should build on the successful collaboration witnessed at Clear Path IV by establishing and communicating consistent incident coordination mechanisms, protocols, and procedures to facilitate energy restoration.

2. DOE should enhance its ability to advocate with other federal agencies on behalf of the energy industry for federal assistance to facilitate information gathering and energy restoration in the aftermath of an event. The Department should also work in partnership with industry to inform response partners and the general public of the status of energy restoration to set realistic expectations.

3. The energy sector should work with the response community to clearly articulate the physical and operational constraints faced by the electricity and oil and natural gas industries (e.g., predetermined

restoration pathways or antitrust concerns) which will impact energy restoration. The whole community should use this enhanced knowledge to ensure these constraints do not impede the Nation's ability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

4. DOE and the energy industry should improve their coordination by ensuring that agencies and organizations providing critical services in support of energy restoration are better integrated into each other's planning activities and exercise events. This will allow the community to further enhance the cross-sector and multi-jurisdictional collaboration that was demonstrated during Clear Path IV by developing and testing coordinated procedures prior to real world events.

5. DOE should augment the human, physical, and technical resources of its Unified Command Structure and its Emergency Operations Center in order to enhance its effectiveness.

DOE has already begun to take action on the *Clear Path IV* recommendations, enabling the Department to further refine and implement the concept of operations governing its integrated emergency response enterprise. DOE will also continue to take a leading role in engaging with external stakeholders on important initiatives designed to enhance the preparedness and resiliency of the energy sector, such as the FEMA Region X Power Outage Incident Annex. While *Clear Path IV* has been recognized as a success by many within the sector, the real successes from the exercise will result from the implementation of the recommendations captured in this report.