

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

EMP Task Force Status Update

Industry Webinar

Aaron Shaw (Chair), American Electric Power
Rey Ramos (Vice Chair), Southern Company
Electromagnetic Pulse Task Force
September 13, 2019

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- **October 9, 2018** | The U.S. Department of Homeland Security (DHS) issued an [electromagnetic pulse \(EMP\) strategy](#)
- **March 26, 2019** | U.S. Executive Branch issued an [executive order](#) addressing EMP
- **April 30, 2019** | Electric Power Research Institute (EPRI) released a [final report](#) on the impacts of High-Altitude Electromagnetic Pulse (HEMP) to the bulk power system (BPS) after completing a three year research project

- **May 2019** | NERC launched the Electromagnetic Pulse Task Force (Task Force) to identify reliability concerns associated with EMPs and potential methods for promoting resilience
- The Task Force advises NERC, regulators, Regional Entities, and industry stakeholders to establish a common understanding of the scope, priority, and goals for the **development of next-steps to address resilience to HEMP events**

- The Task Force is an advisory team that collaborates with governmental authorities and industry members to provide leadership and guidance
- Associated with the Task Force to-date are the following U.S. government agencies:
 - Department of Energy (DOE)
 - Defense Threat Reduction Agency (DTRA)
 - DHS – Cyber Infrastructure Security Agency (CISA)
 - Federal Energy Regulatory Commission (FERC)

- National Aeronautics and Space Administration (NASA)
- Federal Emergency Management Agency (FEMA)
- U.S. National Labs
 - Los Alamos
 - Sandia
 - Lawrence Livermore

Chair	Aaron Shaw	AEP
Vice-Chair	Rey Ramos	Southern Company
Members	John Babik	JEA
	Kenneth Braerman	Exelon Corporation
	Brian Evans-Mongeon	Utility Services
	Barry Gustafson	Xcel Energy
	Jason Marshall	Wabash Valley Power Association
	Arun Narang	Hydro One
	Thomas Popik	Resilient Societies
	Joe Sowell	GTC
	John Stephens	City Utilities
	Micah Till	Dominion Energy
	Randy Crissman	NYPA

- The Task Force has broken up the topic of EMP as it relates to the utility industry in the following categories:
 - **Policy** – What needs to be clearly defined by industry and federal government
 - **Research** – What research is needed to prudently inform utilities that need to make decisions
 - **Vulnerability Assessments** – How does the utility industry take the policy and research to understand its vulnerability
 - **Mitigation Guidelines** – Fundamental suggestions and guidelines on prudent mitigation strategies
 - **Response and Recovery** – Based on the vulnerability assessments and any mitigation guidelines, for any impacted facilities, how does a utility respond and recover



Key Task Force Milestones – Phase 1



Draft Strategic Recommendations

Policy

Research

Vulnerability Assessments

Mitigation Guidelines

Response and Recovery

Policy Recommendation #1: Establish BPS Performance Expectations for an EMP Event

The ERO Enterprise, through its authority under the Federal Power Act, should work closely with other agencies to establish performance expectations for all sectors of the BPS regarding an EMP event.

Suggested Lead Organization: NERC

Potential Support Organization(s): Department of Energy (DOE), Federal Energy Regulatory Commission (FERC), Department of Homeland Security (DHS), Electricity Subsector Coordinating Council (ESCC)

Policy Recommendation #2: Industry and Public Education

Provide consistent/endorsed educational materials about EMP and its impact to electronic devices and BPS stability to industry and general public.

Suggested Lead Organization: NERC

Potential Support Organization(s): DOE, EPRI, Defense Threat Reduction Agency (DTRA), DHS, DOE Office of Science National Laboratories (National Labs), Nuclear Regulatory Commission (NRC)

Policy Recommendation #3: Coordination with Other Sectors

Provide guidance to the electricity industry on how to coordinate with inter-dependent utility sectors (telecommunications, fuel supply, water) as it relates to EMP event.

Suggested Lead Organization | NERC

Potential Support Organization(s) | DHS, Asset Owners, Trade and Forum Organizations, ESCC, ISO/RTO Council

Policy Matters #1: Cost Recovery Mechanisms

Provide industry with clear consistent cost recovery mechanisms (federal financial support) for planning, mitigation, and recovery plans to ensure the performance expectations, as it relates to Policy Recommendation #1, are met.

Suggested Lead Organization | DHS

Potential Support Organization(s) | NERC, FERC, Asset Owners, ISO and RTO Council, DOE

Policy Matters #2: Industry Access to Classified Information

Provide industry with access to relevant currently classified research already conducted by the National Labs, Defense Threat Reduction Agency, and any additional third-party research conducted on electric utility equipment by the Department of Energy.

Suggested Lead Organization | DOE and Department of Defense (DOD)

Potential Support Organization(s) | DHS, DTRA, FERC, National Labs

Policy Matters #3: Declassification of Information

Provide industry with access to additional unclassified data on E1, E2, and E3 EMP environments.

Suggested Lead Organization | DOE and DOD

Potential Support Organization(s) | DHS, DTRA, FERC, National Labs

Research Recommendation #1: Monitor Current Research and Report on National Initiatives

Monitor and communicate to the industry research pertaining to EMP and other affiliated National Security activities that impact the BPS.

Suggested Lead Organization | NERC, DOE, and DHS
Support Organization(s) | DHS, DTRA, FERC, National Labs

Research Recommendation #2: Identify Gaps in Research

Additional research is needed to close existing knowledge gaps into the complete impact of an EMP event. This is needed to understand vulnerabilities, develop mitigation strategies, and how to plan Response and Recovery efforts.

Suggested Lead Organization | NERC
Support Organization(s) | DHS, DOE, EPRI, DTRA

Research Recommendation #3: Research and Develop Industry Specifications for Equipment

Undertake research to design equipment specifications for the electric sector utility industry around EMP hardening and mitigation strategies.

Suggested Lead Organization | IEEE and NERC Technical Committees
Support Organization(s) | DHS, DTRA, EPRI, National Labs

Vulnerability Assessments Recommendation #1: Collaboration and Coordination with Federal Government

Consider maintaining an EMP Task Force within the ERO Enterprise Technical Committees to regularly coordinate and collaborate with governmental authorities to procure and effectively disseminate information needed by industry.

Suggested Lead Organization | NERC and DHS

Support Organization(s) | DTRA, Electricity Information Sharing and Analysis Center (E-ISAC), National Labs, DOE, Asset Owners

Vulnerability Assessments Recommendation #2: EMP Vulnerability Assessment Methodology

The ERO Enterprise should develop guidelines for industry planners and equipment owners to use in assessing EMP impacts on the Bulk Power System.

Suggested Lead Organization | NERC Technical Committees

Support Organization(s) | EPRI, DTRA, DHS, National Labs

Vulnerability Assessments Recommendation #3: Critical Assets Identification

Provide guidance to the industry on how to identify and prioritize hardening of assets that are needed to maintain and restore critical BPS operations.

Suggested Lead Organization | NERC, Asset Owners

Potential Support Organization(s) | EPRI, DTRA, DHS, National Labs

Mitigation Recommendation #1: Develop Guidance on EMP Mitigation

The ERO Enterprise should develop guidelines for industry to use in developing strategies for mitigating the effects of EMP on the BPS (Control Centers/Plant Control, Substation, and Power Plant).

Suggested Lead Organization | NERC

Support Organization(s) | Asset Owners, EPRI, DTRA, DHS, National Labs

Response and Recovery Recommendation # 1: Establish National EMP Notification System

The ERO Enterprise should consider partnering with the appropriate agencies to develop a real-time national notification system for the electric sector to System Operators and Plant Operators pertaining to an EMP event and its parameters.

Suggested Lead Organization | NERC, DHS, FEMA
Potential Support Organization(s) | DOE and USGS

Response and Recovery Recommendation # 2: Coordinated Response Planning

Develop response planning guidelines for electric utility industry members for pre and post-contingency of an EMP event that aligns with DHS and FEMA.

Suggested Lead Organization | NERC
Potential Support Organization(s) | DHS, FEMA, DOE

Response and Recovery Recommendation # 3: Enhance Operating Procedures

Provide guidance to industry on criteria to incorporate into operating plans and procedures and system restoration plans pertaining to EMP event.

Suggested Lead Organization | NERC

Potential Support Organization(s) | EPRI, DHS, DTRA, National Labs, DOE

Response and Recovery Recommendation #4: Incorporate EMP Events into Industry Exercises and Training

Develop training for system and plant operators about EMP events and what to anticipate and incorporate EMP events in industry exercises to test response planning and system restoration recovery efforts.

Suggested Lead Organization | NERC/E-ISAC

Potential Support Organization(s) | Asset Owners, ISO and RTSs, FEMA, DHS

Response and Recovery Recommendation #5: Guidance on Supporting Systems

The ERO Enterprise should provide guidance to industry for supporting systems and equipment (including spare equipment strategy) needed for BPS recovery post-EMP event.

Lead Organization | NERC

Potential Support Organization(s) | Asset Owners, ISO/RTOs, FEMA, DHS



Webinar Announcement

Electromagnetic Pulse Task Force

September 13, 2019 | 1:00–2:00 p.m. Eastern

Teleconference: Dial-in: 1-415-655-0002 (US Toll); 1-416-915-8942 (Canada Toll))

Click here to: [Register for the WebEx Meeting](#) | **Access Code:** 737 157 932

This webinar will provide an overview of the Electromagnetic Pulses (EMP) Task Force – Draft Strategic Recommendations, which is currently posted for a 30-day comment period through Thursday, September 30, 2019. The posting documents can be found on the [Initiative page](#).

The webinar will include a question and answer session following the presentation.

For more information or assistance, contact Senior Manager, [Soo Jin Kim](#) (via email) or at (404) 446-9742.

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<https://www.nerc.com/pa/Stand/Lists/stand/DispForm.aspx?ID=1047>

- 1. Work Plan Schedule:** The Task Force shall develop a schedule for Phase 1 that will be reviewed and updated periodically.
- 2. Meetings:** The Task Force shall convene in-person and/or conference calls to facilitate the discussion required to accomplish its mission and objectives.
- 3. EMP Bibliography/Reference Document:** Publish an EMP bibliography/reference document for the electricity sector.
- 4. Strategic Recommendations:** Develop and agree on a set of strategic recommendations that can be shared with the industry for review and comment.

- 5. Post Strategic Recommendations for Industry Comments:**
Post the strategic recommendations for industry review and comment.
- 6. Review Industry Comments on Strategic Recommendations:**
Consider industry comments on the strategic recommendations for inclusion in a Phase 1 report.
- 7. Develop a report with Recommendations:** Develop a report summarizing the findings of the Task Force that should include a prioritized list of recommended actions and/or next steps. The Task Force shall develop a resolution requesting endorsement of the report and its recommendations from NERC.

- May 20 | Introductory call for Task Force
- June 12 | Initial face-to-face meeting in Washington, D.C.
- July 25 | NERC EMP Technical Workshop in Atlanta, GA
- August 27 | NERC Task Force Meeting (finalize strategic recommendations) in Atlanta, GA
- August 30 | NERC issues EMP Strategic Recommendations for industry comment
- September 30 | NERC comment period ends
- November 5 | NERC Board of Trustees approval and endorsement of EMP Strategic Recommendations

- July 2 | North American Transmission Forum
- July 18 | Electricity Subsector Coordinating Council
- August 7 | Northwest Power Pool
- August 14 | NERC Geomagnetic Disturbance Task Force
- August 20 | North American Generator Forum
- August 22 | North American Transmission Forum
- September 12 | Edison Electric Institute – Reliability Committee
- September 13 | NERC Webinar

- **Engage:** <https://www.nerc.com/pa/Stand/Pages/EMPTaskForce.aspx>

Home > Program Areas & Departments > Standards > Electromagnetic Pulse Task Force

Electromagnetic Pulse Task Force

Related Files

Status

An informal comment period for the **Electromagnetic Pulses (EMP) Task Force Strategic Recommendations Report** is open through **8 p.m. Eastern, Monday, September 30, 2019.**

Background

Protecting the bulk power system and assuring the effective reduction of risks to reliability are integral pieces of the Electric Reliability Organization's mission. In April 2019, NERC launched efforts to identify reliability concerns associated with electromagnetic pulses (EMPs) and potential methods for promoting resilience by creating a task force to identify key issues and scope areas of improvement for the industry. The task force will submit best practices and reliability guidelines to the NERC technical committees for review and endorsement. If necessary, the task force will submit a Standard Authorization Request to the Standards Committee by the end of 2019.

In late April 2019, the Electric Power Research Institute (EPRI) released a report that defined the EMP threat, assessed vulnerabilities/risks, and made mitigation recommendations in addition to laying the groundwork for the technical basis to develop a potential standard. The report complements a Department of Energy (DOE) action plan released in January 2017 on EMP Resilience. The action plan identified five goals: improve and share understanding of EMP threats, effects, and impacts; identify priority infrastructure; test and promote mitigation and protection approaches; enhance response and recovery capabilities; and share best practices across government and industry.

On March 26, 2019, the President of the United States issued an Executive Order on Coordinating National Resilience to Electromagnetic Pulse. The Executive Order calls for collaboration and information sharing among government agencies and private industry as appropriate to promote resilience to EMPs, particularly with regard to threat and vulnerability assessments. The Executive Order also directed the federal government to provide incentives as appropriate to "encourage innovation that strengthens critical infrastructure against the effects of EMPs through the development and implementation of best practices, regulations, and appropriate guidance." Of particular relevance, the Executive Order tasks the Secretary of Energy to perform initial research and development and develop pilot programs that would identify potential failures modes, contingency preparedness, and mitigations with regard to the risk to the electric power grid. NERC will continue to work with DOE and EPRI to clearly understand EMPs, their effective mitigations, and the proper ways to engage industry.

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Draft	Actions	Dates		
EMP Task Force - Draft Strategic Recommendations	Comment Period			
Supporting Materials	Info	08/30/19 - 09/30/19		
Unofficial Comment Form (Word)	Submit Comments			



Questions and Answers