



DOE Electromagnetic Pulse Resilience Efforts

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Agenda

- **DOE EMP Strategy – Background**
- **Joint (DOE/EPRI) EMP Resilience Strategy**
- **DOE EMP Resilience Action Plan**
- **Goals and Action Items**
- **Other DOE Activities**
- **Next Steps**



EMP Strategy and Action Plan: Background

December 2015: S-1 directed DOE to develop a DOE EMP Strategy and an EMP Action Plan by September 2016

- **DOE worked with EPRI to develop a Joint EMP Resilience Strategy (released in July 2016)**
- **EPRI then developed its own EMP Resilience Action Plan focusing on industry issues**
- **DOE's EMP Resilience Action Plan released January 2017 identifies specific EMP risk management actions DOE could take over the next five years to fulfill the objectives of the EMP Resilience Joint Strategy**



Joint EMP Resilience Strategy

The approved Joint Strategy has five goals

- **Improve and share understanding of EMP: threat, effects, and impacts**
- **Identify priority infrastructure**
- **Test and promote mitigation and protection approaches**
- **Enhance response and recovery capabilities to an EMP attack**
- **Share best practices across government and industry, nationally and internationally**



DOE EMP Resilience Action Plan

DOE's EMP Resilience Action Plan includes 19 action items

- Most require close collaboration with interagency, DOE National Laboratory, industry, and international partners

Activities were identified in the areas thought to be most critical, unconstrained by resource limitations, and able to build on existing or current efforts

Process of developing the plan included:

- Review of past recommendations by the EMP Commission, JINSA's Gemunder Center EMP Task Force, and others
- Facilitated meeting with 50+ government, laboratory, and industry partners to identify additional action items
- Classified follow-up discussion
- Discussions with additional EMP experts
- DOE/OE consolidation, prioritization, and down-selection of action items and drafting of Action Plan



Other DOE and Interagency Activities

Mission Executive Council established Working Group on EMP/GMD

DOE EMP and Related Activities

- Identified mitigation and protection strategies
- Analyzed grid vulnerability
- Analyzing scenarios of concern to utilities
- Enhancing information sharing and collaboration with industry
- Working with labs and other agencies to ensure the complete set of information on threat is captured and shared
- Develop unclassified information on E1/E2/E3 waveforms
- Evaluated options for a Strategic Transformer Reserve
- Transformer Resilience and Advanced Components (TRAC) program



Next Steps

- **Continue to work closely with partners**
- **Hold an annual workshop to discuss progress and issues related to the EMP threat**
- **Develop an EMP program plan for FY 2018 – FY 2021 to implement DOE EMP Resilience Action Plan**
- **Continue with the other DOE and interagency efforts in this area**

