

Testimony of Office of Energy Infrastructure Security Director Joseph McClelland  
Homeland Security Subcommittee on Oversight and Management Efficiency  
May 17, 2016

Chairman Perry, Ranking Member Watson Coleman and Members of the Subcommittee:

Thank you for the privilege to appear before you today to discuss electromagnetic threats to the electric grid in the United States. My name is Joe McClelland and I am the Director of the Office of Energy Infrastructure Security (OEIS) at the Federal Energy Regulatory Commission. I am here today as a FERC staff witness, and my remarks do not necessarily represent the views of the Commission or any individual Commissioner.

Under section 215 of the Federal Power Act, FERC is entrusted with the responsibility to approve and enforce mandatory reliability standards for the nation's bulk power system. These standards are developed and proposed the North American Electric Reliability Corporation or NERC.

Section 215 of the Federal Power Act provides a statutory foundation to develop reliability standards for the bulk power system. However, the nature of a national security threat by entities intent on attacking the United States by exploiting vulnerabilities in the electric grid using physical or cyber means stands in stark contrast to the other major reliability events that have caused regional blackouts and reliability failures in the past.

Widespread disruption of electric service can quickly undermine the United States government, its military, and the economy, as well as endanger the health and safety of its citizens.

Congress took steps to address such a situation late last year. In the Fixing America's Surface Transportation Act (FAST Act) Congress assigned notable new authority to the Department of Energy (DOE) and FERC, among other Federal agencies.

Consistent with these requirements, FERC established our office, the Office of Energy Infrastructure Security in late 2012, to provide a more agile and focused approach to growing cyber and physical security threats. Our office works collaboratively with industry to share information, including best practices to help address threats from geomagnetic disturbances (GMDs) or electromagnetic pulses (EMPs).

Just briefly, in 2001 Congress established a commission to assess and report on the threat from EMP. In 2004, and again in 2008, the commission issued reports on these threats. One of the key findings in the reports was that a single EMP attack could seriously degrade or shut down a large part of the electric power grid.

Depending upon the attack, significant parts of the electric infrastructure could be "out of service for periods measured in months to a year or more."

In order to better understand and quantify the effect of EMP and GMD on the power grid, FERC, DOE and the Department of Homeland Security sponsored a study conducted by the Oak Ridge National Laboratory in 2010. The results of the study support the general conclusion of prior studies that EMP and GMD events pose substantial risk to equipment and operation of the nation's electric grid and under extreme conditions

could result in major long-term electrical outages.

Unlike EMP attacks that are dependent upon the capability and intent of an attacker, GMD disturbances are inevitable with only the timing and magnitude subject to variability. The Oak Ridge study assessed a solar storm that occurred in May 1921, which has been termed a 1-in-100 year event, and applied it to today's electric grid. The study concluded that such a storm could damage or destroy over 300 bulk power system transformers interrupting service to 130 million people with some outages lasting for a period of years.

To help address the GMD and EMP threats, FERC has applied both regulatory and collaborative actions.

With respect to regulatory actions, FERC has taken steps such as directing NERC to propose two reliability standards on GMD requiring new operational procedures and vulnerability assessments.

With respect to collaborative actions, FERC works closely with Federal agencies, state agencies, and industry members in many ways. In general, such collaboration has included efforts to identify key energy facilities; to conduct physical and cyber threat briefings and reviews to industry, including sessions on GMD and EMP, to assist with best practices for mitigation.

Examples of such collaborative action include FERC participation on the SWORM - Space Weather Operations, Research, and Mitigation - Task Force created in late 2014 by the National Science and Technology Council. In addition, as required by the FAST Act, DOE, in consultation with FERC and others, is developing a plan to establish a Strategic Transformer Reserve. Specific to the subject of today's hearing, the Strategic Transformer Reserve Plan will identify ways to decrease vulnerabilities from physical and cyber threats, including both EMP and GMD.

Thank you again for the opportunity to testify today. I would be happy to answer any questions you may have.