



**PROTECT
OUR
POWER**

The Honorable Ernest Moniz, Secretary
U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

7/1/2016

RE: Comments of Protect Our Power Regarding the Department of Energy's Quadrennial Energy Review 1.2, Physical and Cybersecurity

Dear Secretary Moniz,

Protect Our Power respectfully submits these public comments in connection with the Department of Energy's Quadrennial Energy Review 1.2 (QER), and, in particular, to respond to two of the framing questions pertaining to physical and cybersecurity put forth in the Department's February 4, 2016 Stakeholder Briefing Memo. The security and reliability of the electric grid is a matter of vital importance to national security and the health and well-being of every American, and Protect Our Power is pleased to provide comments on these important issues.

Background on Protect Our Power

Protect Our Power is a coalition of concerned stakeholders that recognize the importance of a reliable electric system and whose sole purpose is to facilitate efforts by the government, industry and others to take the steps necessary to improve the security and resiliency of our nation's power grid. In the wake of emerging threats, including natural threats, such as hurricanes and solar storms, and deliberate attacks such as cyber and physical attacks as well as the potential for a nuclear electromagnetic pulse (EMP) attack, we believe this mission must be an urgent national priority.

Protect Our Power advocates for practical, consensus-driven, timely solutions that will meaningfully address the vulnerability of the electric power grid. To that end, Protect Our Power is convening stakeholders and power system experts to develop and support initiatives—whether legislative, regulatory, policy, or industry-driven—that effectively respond to 21st Century threats to the security of the electric grid.

Comments

The Department's stakeholder briefing memo poses several questions concerning physical and cyber security of the electric grid, as well as other important topics concerning the nation's electricity system. Protect Our Power provides these responses to two key questions concerning the security and resiliency of the electric grid.

What are the key threats, vulnerabilities, risks and consequences associated with cyber and physical attacks on electricity systems, especially ICS? How can the United States address the threat of EMPs to the grid?

At a time when the nation's dependency on electricity is undisputed, there is an emerging consensus among the electric industry, power generation and transmission regulators, the defense and national security community, and other energy and national security experts that the electric grid is vulnerable to extended outages caused by intentional attacks as well as natural events. Such extended outages could be caused by a sophisticated attack by a terrorist organization or foreign nation using, for example, an EMP device or advanced cyber warfare.

The recent cyber attack against the Ukrainian power grid and the Department of Justice's recently-unsealed indictment against Iranian hackers alleged to have targeted a dam in New York State highlight this emerging risk. The electric grid is also vulnerable to more traditional risks of physical

attacks. This risk was highlighted by the 2013 attack on PG&E's Metcalf Transmission Substation in which gunmen damaged 17 transformers and a blackout was only narrowly averted, and by a Federal Energy Regulatory Commission (FERC) report leaked to the Wall Street Journal in 2014 finding that coordinated attacks on discrete substations could cause the entire U.S. power grid to collapse for an extended period of time. Natural disasters also remain a threat to the security of the grid, as evidenced, for example, by the extensive outages caused by Superstorm Sandy in 2012 and Hurricane Katrina in 2005, and the 1989 geomagnetic storm which caused a large blackout of Quebec's electric grid.

While the attacks and natural events affecting the U.S. electric grid have not caused extended outages to date, there is a widespread view that extended outages of large portions of the grid are an emerging catastrophic threat, particularly given the known recent increase in attempted attacks against the grid, increased sophistication of terrorist organizations, and advances in cyber warfare, among other things. A widespread, extended outage of the U.S. electric grid, which could be caused by an EMP attack, geomagnetic storm, or a sophisticated physical or cyber attack on grid infrastructure, would inevitably cause extensive loss of life and severe, if not irreparable, harm to the nation as a whole. The economic implications are incalculable.

With respect to the specific threat of an EMP attack, Protect Our Power believes that the nature of this risk and its potentially catastrophic consequences require, at a minimum, expertise and collaboration from a broad range of stakeholders. It is essential that our nation do whatever is necessary to prevent such an attack, while simultaneously ensuring that our electricity systems are sufficiently resilient to allow the grid to withstand or quickly recover from such an attack. This necessarily requires the engagement and expertise of a wide range of stakeholders from the national security and defense communities, regulators, and industry, among others.

As the economy is increasingly electrified (including DER), do cyber and physical vulnerabilities change?

Protect Our Power submits that cyber and physical vulnerabilities do change as the economy becomes increasingly electrified. Grid security and resiliency cannot be decoupled from other issues and advances in energy policy, such as the changing, lower-carbon generation resource mix, increases in the amount of renewable generation and decentralized distributed generation, and increased use of electricity as a transportation fuel. Unfortunately, changes and advances to the nature and sophistication of energy resources and technology have been accompanied by changes and advances in the threats and risks to the grid. Therefore, it is essential that grid resiliency and security keep pace with advances in how electricity is generated, transmitted, and consumed, and be capable of withstanding 21st Century threats with potentially catastrophic consequences.

Protect Our Power thanks the Department for the opportunity to submit these comments.

Sincerely,

James Cunningham
Executive Director, Public Affairs
Protect Our Power