

The Smart Grid and Cybersecurity - Regulatory Policy and Issues



Electricity is vital to the commerce and daily functioning of United States. The modernization of the grid to accommodate today's uses is leading to the incorporation of information processing capabilities for power system controls and operations monitoring. The Smart Grid is the name given to the evolving electric power network as new information technology systems and capabilities are incorporated. While these new components may add to the ability to control power flows and enhance the efficiency of grid operations, they also potentially increase the susceptibility of the grid to cyber (i.e., computer-related) attack since they are built around microprocessor devices whose basic functions are controlled by software programming. The potential for a major disruption or widespread damage to the nation's power system from a large scale cyberattack has increased focus on the cybersecurity of the Smart Grid. Federal efforts to enhance the cybersecurity of the electrical grid were emphasized with the recognition of cybersecurity as a critical issue for electric utilities in developing the Smart Grid. The Federal Energy Regulatory Commission (FERC) received primary responsibility for the reliability of the bulk power system from the Energy Policy Act of 2005. FERC subsequently designated the North American Electric Reliability Corporation (NERC) as the Electric Reliability Organization (ERO) with the responsibility of establishing and enforcing reliability standards. Compliance with reliability standards for electric utilities thus changed from a voluntary, peer-driven undertaking to a mandatory function. The Energy Independence and Security Act of 2007 (EISA) later added requirements for a reliable and secure electricity infrastructure with regard to Smart Grid development. NERC is also responsible for standards for critical infrastructure protection (CIP) which focus

on planning and procedures for the physical security of the grid. Self-determination is a key part of the CIP reliability process. Utilities are allowed to self-identify what they see as critical assets under NERC regulations. Only critical cyber assets (i.e., as essential to the reliable operation of critical assets) are subject to CIP standards. FERC has directed NERC to revise the standards so that some oversight of the identification process for critical cyber assets was provided, but any revision is again subject to stakeholder approval. While reliability standards are mandatory, the ERO process for developing regulations is somewhat unusual in that the regulations are essentially being established by the entities who are being regulated. This may potentially be a conflict of interest, especially when cost of compliance is a concern, and acceptable standards may conceivably result from the option with the lowest costs. Since utility systems are interconnected in many ways, the system with the least protected network potentially provides the weakest point of access. Cybersecurity threats represent a constantly moving and increasing target for mitigation activities and mitigation efforts could likewise spiral upward in costs. Recovery of costs may present a major challenge especially to distribution utilities and state commissions charged with overseeing utility costs. EISA only requires states to consider recovery of costs related to Smart Grid systems. FERC has jurisdiction over the bulk power grid, and cannot compel entities involved in distribution to comply with its regulations. Recoverability from a cyber attack on the scale of something which could take down a significant portion of the grid will likely be very difficult, but maintaining a ready inventory of critical spare parts in close proximity to key installations could quicken recovery efforts from some types of attack. The electricity grid is connected to (and largely dependent on) the natural gas pipeline, water supply, and telecommunications systems.

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[\[PDF\] Metallurgical Achievements: Selection of Papers Presented at the Birmingham Metallurgical Societys Diamond Jubilee Session, 1963-1964](#)

The Energy Trilemma and the Smart Grid: Implications Beyond the The Smart Grid and CybersecurityRegulatory Policy and Issues. Congressional Research Service. Summary. Electricity is vital to the **Smart Meter Data: Privacy and Cybersecurity - Federation of** Electrical power for information technologies is obtained from a smart grid. The smart grid has a high risk of cyber attack, which could cause major and **The Smart Grid and Cybersecurity - Regulatory Policy and Issues** Securing the U.S. Electrical Grid, Center for the Study of the Presidency and Congress, The Smart Grid and Cybersecurity Regulatory Policy and Issues, **Energy Company Cybersecurity References - SCADAhacker** CRS Report R42409, Cybersecurity: Selected Legal Issues, by Edward C. Liu et al R41886, The Smart Grid and CybersecurityRegulatory Policy and Issues, **The Cyber Threat - Google Books Result** Electricity is vital to the commerce and daily functioning of United States. The modernization of the grid to accommodate todays uses is leading to the **Intrusion Detection in Wireless Ad-Hoc Networks - Google Books Result** ELECTRICITY GRID MODERNIZATION: Progress Being Made on Cybersecurity Guidelines, but Key Challenges Remain to be Addressed. **Cybersecurity and Smart Infrastructure: Ensuring Resilience and** Richard J. Campbell, The Smart Grid and Cyber SecurityRegulatory Policy and Issues, CRS Report for Congress, R41886, June 15, 2011. National Institute of **Smart Grid Handbook, 3 Volume Set - Google Books Result** The Smart Grid and CybersecurityRegulatory Policy and Issues. Congressional Research Service. Summary. Electricity is vital to the **Regulatory Policies and Case Studies Smart Grid Legislative and - EIA** Cyber Security Context: Todays Grid, Tomorrows Smart . requirements to mitigate risks and privacy issues .. regulatory and legal policies, and cost criteria. **The Smart Grid and Cybersecurity -- Regulatory Policy and Issues** Overlaying these views of the scope of smart grid is an enabling set of methodology, tools, and cybersecurity, system architecture, and economic and regulatory policy. Cybersecurity concerns can also lead to interoperability problems. **The Smart Grid and Cybersecurity: Regulatory Policy and Issues** The Smart Grid and Cybersecurity - Regulatory Policy and Issues (English Edition) eBook: Richard J. Campbell: : Tienda Kindle. **The Smart Grid and Cybersecurity Regulatory Policy and Issues** She is the Chair of the Smart Grid Interoperability Panel - Cyber Security Work The Smart Grid and Cybersecurity Regulatory Policy and Issues (June 15, **NISTIR 7628 Guidelines for Smart Grid Cyber Security** The Smart Grid and Cybersecurity Regulatory Policy and Issues. Brief Record Full Record Statistics The Smart Grid and Cybersecurity **Homeland Security: The Essentials - Google Books Result** It defines what smart energy technologies, grids and policies mean, and and new technologies, and adapt policy and regulatory structures to .. Cyber security issues need to be addressed by policy at the national and **The Smart Grid and Cybersecurity Regulatory Policy and Issues** **Cybersecurity for Critical Energy Infrastructure** Department of Energy government designated \$4.5 billion for Smart Grid development in the .. The Smart Grid and Cybersecurity - Regulatory Policy and Issues. **The Smart Grid and Cybersecurity Regulatory Policy and Issues** Consequently, it has been argued that a regulatory framework governing selected R41886, The Smart Grid and CybersecurityRegulatory Policy and Issues **Cyber Security of Smart Grids in India** **The Centre for Internet and** Electricity is vital to the commerce and daily functioning of United States. The modernization of the grid to accommodate todays uses is leading **US National Cyber Security Strategy and Programs Handbook Volume 1 - Google Books Result** meters that communicate with the smart grid infrastructure. 2. . CRS Report R4 1886, The Smart Grid and Cybersecurity-Regulatory Policy and Issues, by. **Analysis of Design of Technologies, Tariff Structures, and** 909505 Guide to Cloud Computing for Policy Makers CRS Report R41886, The Smart Grid and CybersecurityRegulatory Policy and Issues, by Richard J. **Electrical Power: Overview of Congressional Issues - Federation of** Deployment of the smart grid technologies, regulatory policies, and tariff designs in an efficient, The smart grid is a strong solution to all these issues. cybersecurity, electric vehicles, and electric energy storage (EES). **The Smart Grid and Cybersecurity: Regulatory Policy and Issues** Bipartisan

Policy Center - Electric Grid Cybersecurity Initiative The Smart Grid and Cybersecurity = Regulatory Policy and Issues. **The Smart Grid and Cybersecurity -- Regulatory Policy and Issues** faced with policy issues regarding how the modernization of this vital .. The Smart Grid and CybersecurityRegulatory Policy and Issues, **Introduction to Homeland Security: Principles of All-Hazards Risk - Google Books Result** Smart grid technologies are key for both these schemes. With sufficient cyber security measures, policies and framework in place, of consumers data, making cyber security the key issue to be Considering importance of secure smart grid networks for flagship projects in India, the existing regulatory **Issues for Debate in American Public Policy: Selections from CQ - Google Books Result** Electricity is vital to the commerce and daily functioning of United States. The modernization of the grid to accommodate todays uses is leading to the **l~lulYlululilulu~l - eDocket - Arizona Corporation Commission** Citation Edit. Richard J. Campbell, The Smart Grid and Cybersecurity: Regulatory Policy and Issues (CRS Report R41886) (June 15, 2011) (full-text). **US Smart Grid Security: How Are We Doing? - National Security** Figliola, P.M., Fischer, E.A. Overview and issues for implementation of the Campbell, R.J. The smart grid and cybersecurityregulatory policy and issues.