



February 27, 2015

TO: Members, Subcommittee on Energy & Power

FROM: Committee Majority Staff

RE: Hearing entitled “The 21st Century Electricity Challenge: Ensuring a Secure, Reliable, and Modern Electricity System”

I. INTRODUCTION

On Wednesday, March 4, 2015, at 10:15 a.m. in 2123 Rayburn House Office Building, the Subcommittee on Energy and Power will hold a hearing entitled “The 21st Century Electricity Challenge: Ensuring a Secure, Reliable, and Modern Electricity System.”

II. WITNESSES

- Tom Siebel, Chairman and CEO, C3 Energy;
- Dean Kamen, Founder and President, DEKA Research & Development Corporation;
- Michael Atkinson, P.E., President, Alstom Grid, Inc., *on behalf of GridWise Alliance*;
- Christopher Christiansen, Executive Vice President, Alevo Energy, Inc.;
- Joel Ivy, General Manager, Lakeland Electric, *on behalf of the American Public Power Association*;
- Paul Nahi, CEO, Enphase Energy; and,
- Naimish Patel, CEO, Gridco Systems.

III. BACKGROUND

A reliable and robust electricity system is of utmost importance to U.S. national security, national economic interests, and basic health and welfare. Indeed, electricity is an essential part of modern life,¹ the disruption of which would impact not only homes, but also virtually every sector of the economy. Today’s electric system, albeit aging, remains unrivaled in the world – a vast network of interconnected transmission lines, local distribution systems, generation

¹ In 2000, the National Academy of Engineering [cited](#) electrification, and the vast networks of electricity that power the developed world, as the greatest achievement affecting quality of life in the 20th Century.

facilities, and related communications systems capable of annually delivering over 3,800 terawatt hours of electricity to more than 300 million people.

The electricity system continues to serve the country well. Yet the challenges and opportunities of the 21st century necessitate different thinking in the way the power sector will generate, deliver, and consume power in the future. The challenges are many: aging infrastructure, the premature retirement of existing generation resources, declining reserve margins and reduced fuel diversity, the integration of intermittent resources, siting and permitting red-tape, and physical and cyber threats. These challenges will continue over the next few years in particular as natural gas prices are expected to remain low and recent environmental regulations accelerate the retirement of a significant portion of the nation's coal-fired power plants.

But there are opportunities as well. Utilities plan to invest more than \$60 billion in transmission infrastructure through 2024 to modernize the nation's electric grid, while abundant fuel resources and advanced generation, storage, and distribution management technologies can help modernize and diversify the Nation's power portfolio.² Further, "Big Data" energy analytics and new information technologies offer a diverse suite of novel products and services that can identify and mitigate inefficiencies in the electricity supply chain while helping utilities meet changing consumer expectations.

The availability of advanced, user-friendly communications technologies has disrupted the traditional business models for nearly every consumer sector from television to taxis. The electricity sector is witnessing a similar shift. New innovative products and technologies in the electricity space hold the potential to empower consumers to make smarter decisions in energy usage, while providing utilities new, more efficient ways to generate and distribute power. As consumer expectations and technology evolve, new business and regulatory models within the electricity sector also may be necessary to better reflect changing market conditions. In addition, identifying and addressing regulatory barriers to entry, market-distorting incentives, and artificial constraints on competition will be critical to further innovation.

A more modern and resilient grid will be better positioned to withstand and minimize any impacts resulting from severe weather, cyber-attacks, or any other threats to the grid. However, as the grid becomes increasingly reliant on information technology and digital communications devices, thousands of potential new grid access points are being created. While encouraging technology and innovation in the electricity sector should be a priority, policies must ensure that new grid-related products do not leave the grid more exposed or compromise customer information and privacy.

Given the shift taking place in the electricity sector, it is paramount that policymakers and regulators at the Federal, State and local level carefully weigh policies that can adapt to these new challenges and opportunities to build a market-driven, modern, and flexible system while ensuring the continued safe, reliable, and affordable delivery of electricity to consumers.

² Edison Electric Institute, "Transmission Projects: At a Glance: (updated March 2014), available at http://www.eei.org/issuesandpolicy/transmission/Documents/Trans_Project_lowres_bookmarked.pdf.

IV. ISSUES

The following issues may be examined at the hearing:

- The types of advanced grid technologies that are currently available in the electricity sector;
- The use of energy information technology and energy analytics to improve electricity supply and delivery;
- The changing expectations of consumers and the potential benefits available to consumers as a result of advanced grid technologies;
- The challenges, including cost and regulatory barriers, to greater deployment and integration of advanced grid technologies;
- The new business and regulatory models that may be necessary to value and integrate advanced grid technologies; and,
- The reliability and security challenges and benefits related to the deployment and integration of advanced grid technologies.

V. STAFF CONTACTS

If you have any questions regarding this hearing, please contact Tom Hassenboehler or Patrick Currier of the Committee staff at (202) 225-2927.