

PARTNERSHIPS LIGHT THE PATH FORWARD

powering the people



IEE'S recent "Powering the People" conference illustrated the importance of innovation in shaping the future of the electric grid.

BY LISA V. WOOD



BE IT IN THE HOME, on the road, or abroad, the business of producing and using electricity affects commerce, quality of life, and opportunity. Innovation is indeed thriving, and since Thomas Edison's first central power plant lit up lower Manhattan in the late 1800s, electricity has revolutionized the world. Fast forward 100-plus years and America and its people enjoy a technologically advanced, electrified existence.

As technology influences the electric power sector, America's electric utilities, through partnerships with technology companies, work together to lay the foundation for the future electric power industry—a future of innovation and new technologies powered by electricity. Beyond the technology, thoughtful leadership and clear policy direction are needed for a successful transition. To this end, more than 300 electric power industry leaders, technology company partners, and policy makers gathered on March 21 in Washington, DC, for The Edison Foundation's and IEE's 3rd annual "Powering the People—Innovations for a Better World."

Powering the People continued its annual celebration of innovation that is moving the electric power sector forward. This year, Oregon Senator Ron Wyden, chairman of the Senate Committee on Energy and Natural Resources, provided opening remarks on the vital role of energy and electricity to the U.S. economy. Senator Wyden captivated the standing-room-only audience sharing his thoughts on the importance of innovation in shaping the electric grid.

The Right Side of History

Wyden recognized that it is rare to witness a defining moment in history occurring right before your eyes, but that



Jim Rogers



Robert Rowe



Senator Ron Wyden

is exactly what is happening with the U.S. electric grid as it transitions from analog to digital. As Wyden pointed out, “Electricity is the life blood of the modern American society, and the U.S. economy is a digital economy that runs on electricity.” As the industry continues its transition to a digital electric grid, Wyden believes that a game plan is needed to carry the momentum forward. He laid out five guide posts for enhancing the grid:

- Sparking interest among customers to ensure that the vast amounts of information and control options enabled by smart grid investments are used.
- Energy storage—a major facet of the smart grid that trans-

forms variable wind and solar into firm power.

- New business models to make it easier and sustainable for utilities to integrate “prosumers”—those who produce small quantities of distributed power—into the grid.
- The need for the federal government to share the information and lessons learned from the \$4.5 billion spent on smart grid investment and demonstration projects.
- State and federal regulators and agencies to act as connected partners.

Wyden left us with a promise that he will do everything he can to enable the federal government to be a nimble partner with the power sector and technology companies as the 21st-century power grid unfolds.

Electrifying Transportation

There’s no question that electric transportation was a hot topic at Powering the People. Transportation is the last sector of our economy to be electrified, and the range of electric vehicle (EV) choices on the conference’s “Electric Avenue” speaks to how quickly technology can influence markets. Two years ago, there were only two EV options—the Chevy Volt and the Nissan Leaf—to display. This year, we showcased a dozen EVs, literally filling a city block. Almost every major auto manufacturer is offering EVs today, and the options are making the choice to drive an EV far simpler than ever before.

Lisa V. Wood is executive director of IEE and vice president of The Edison Foundation.

For the “Powering Transportation” session, PG&E Corporation chairman, CEO, and president Tony Earley moderated a discussion with CenterPoint Energy’s Debbie Korenek, NRDC’s Dale Bryk, and VIA Motors Alan Perriton on the opportunities of an electrified transportation sector that goes beyond electric passenger vehicles. What was clear from this panel is that electric transportation represents a real answer to the economic, environmental, and energy-security questions facing our country today.

The value of partnerships driving progress is captured in the collaboration between PG&E and VIA to develop an extended-range electric pick-up truck to meet the needs of the electric power sector. This truck enables PG&E crews to power anything from power tools to a house in a neighborhood with the help of on-board electric generation. Earley believes that the “capabilities we’ve seen in the trucks so far will help eventually to meet some of the complex challenges

they fuel their transportation needs, CenterPoint Energy started its Clean Air Technology Program in 2001. Korenek notes that “the electric forklift program managed by ICF International is a real winner.” And when you fly into Houston Hobby Airport you will see baggage carts moving to and from while running on electricity. Electricity as a fuel for goods movement is quickly becoming *the* solution in Houston.

Indeed, electric utilities already are looking around the bend and are preparing for the “next generation” of EVs—a new wave of electric commercial, industrial, and non-road vehicles. (To learn more about how electric utilities are partnering with seaports, airports, and other goods-movement facilities, see “Lift.Move.Push.” on page 66.)

Innovation Alley

In powering the digital age, electricity has helped us to share information, entertainment, and even ourselves in ways that would have been unimaginable a short time ago. Innovative electric technologies are putting control of our energy use in the hands of consumers, shaping smarter uses in our homes, businesses, and cities.

New technologies from more than 30 technology and utility companies were on display in the conference’s exhibit area, “Innovation Alley,” demonstrating how innovations are transforming the power grid and changing our electric future. Technologies ranging from Itron’s adaptive grid

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the industry faces after events such as Superstorm Sandy, which resulted in millions of outages.” (To learn more about PG&E’s leadership in electrifying transportation and its work with VIA, see “A Transportation Revolution” on page 34.)

Today, the United States imports nearly 60 percent of the oil used in the transportation sector—at a cost of more than \$1 billion every day. Since electricity is a homegrown fuel, there’s a strategic and an economic imperative to use more of it and to use less foreign oil. NRDC’s Bryk also believes, “as the number of EVs increase on the road and the electric power sector transitions to cleaner fuel sources, the emissions benefits will continue to grow.”

Compliance with ozone attainment regulations presents real concerns for companies looking to do business in the Houston, TX, area. Recognizing an opportunity to help new and existing businesses make smart decisions about how

router, which supports multiple communication networks and connectivity to almost any smart grid device, to We Care Solar’s portable solar electric suitcase, which provides light and power to health workers in developing countries, were generating buzz on the showroom floor.

The Second Digital Decade

To provide a look at what’s ahead in the consumer technology world, as well as a recap of how far we have come, Powering the People invited Shawn DuBravac, economist and director of research for the Consumer Electronics Association (CEA). Representing more than 2,000 technology companies, CEA is the world’s premier organization for bringing us products and services that change the way we live.

DuBravac noted that technology innovation has examples of both long and short innovation cycles, but as we move



PG&E's extended-range electric pick-up truck lets crews power anything from tools to a house.

10 or 15 minutes to start a morning commute to avoid traffic while still making it to the office at roughly the same time.

The influence of the second digital decade already is visible in parts of the electric power sector—dynamic pricing programs, smart appliances, rapid response to outages, and the like are enabled by multiple streams of data that are blurring the line between the digital and physical spaces.

from the first digital decade to the second, from acquiring digital products to integrating them into our lives, these innovation cycles likely will shorten and the line between digital and physical will continue to blur.

As consumers, we have both encouraged and witnessed several monumental feats of digitized information in a short time span—today digital music sales exceed physical sales and digital advertising outsells print, as examples. The average U.S. household now has 25 digital products, and half of U.S. households now have a smartphone. This acquisition and use of digital information are supported by the sensorization of consumer technologies.

Similar to how the electric power sector is placing synchrophasers, voltage monitoring and management devices, and smart meters in the distribution system to capture information, technology companies are placing accelerometers, digital compasses, and gyroscopes in phones and other devices to capture and manipulate 3D movement. The digitization of information, as captured by sensors, will continue to influence the analog space in profound ways.

DuBravac says that the “blending of streams of data is the key to the second digital decade.” By sharing GPS information across multiple users and cross-referencing it with a work calendar, one can make an informed decision about the best time to leave a meeting to make the next one on time. Or, when to wait

Powering the World

The second digital decade is an exciting time for those who live in the developed world. Yet, even with all of the advances of the modern age, one-third of the world's population still lacks access to a reliable source of electricity.

At Powering the People, AES Corporation executive vice president and COO Andrew Vesey announced the Edison Foundation's new “Universal Access Initiative” to expand electricity's reach to some of the 1.3 billion people on our planet who don't have access to electricity today. This initiative will provide electricity in ways that are financially and environmentally sustainable in the long run, and replicable. Universal access to electricity is also a priority of the UN Sustainable Energy for All initiative, as well

as a priority of the Department of State.

As a starting point, a group of eight companies—electric utilities, technology companies, and other partners—has committed to this initiative and is now defining a portfolio of universal access projects to be spearheaded by the Edison Foundation.

The U.S. electric power sector has the know-how, technology, and experience to execute these projects. Providing safe and reliable electricity has been its core mission for more than 100 years! This initiative will reach across borders to collaborate with other organizations, engage partners, and leverage existing expertise to bring electricity to those without access.



Shawn DuBravac



Reality Check

Powering the People celebrates the new technologies that are driving change and innovation in the power sector. But, the power sector is a regulated industry, and regulation will affect the rate of innovation in important ways.

To address future trends in electricity and the importance of regulatory foresight, Powering the People's final panel, "Technology Is a

Game Changer," featured Duke Energy CEO Jim Rogers, Balhoff & Williams managing partner Mike Balhoff, and former Colorado commissioner and current principal at Public Policy Consulting Ron Binz.

Rogers teed up the conversation by describing the electric power sector's long history of being adaptive to new technologies and approaches to position the grid in ways that drive the economy, respect the environment, and provide a platform for innovations. According to Rogers, carbon emissions today are at 1992 levels, and at a 1960 level on a per capita basis. This advancement serves as a lesson to both the industry and its regulators, Rogers said, as "it has been technology, not necessarily policy, driving the clean energy transition in the power sector."

Coming from a background in telecommunications and finance, Mike Balhoff knows firsthand how disruptive technologies can change the game. In telecom, wireless was the game changer. The regulators did not regulate the new technology—wireless—and many of the incumbents did not anticipate its opportunities or develop unregulated subsidiaries and, as a result, fell on the wrong side of history.

Having seen technology change the business operations and identity of blue chip companies in the telecom industry, Balhoff asked: "Is the power sector receiving proper regulation on the new technologies that are changing the sector?"

With great changes already occurring in the production and exchange of electricity, as demonstrated by distributed solar, are the industry and its regulators moving quickly enough to manage the technological changes on both the supply and demand side? In the meantime, what are the workable solutions for companies looking to manage the transition?

As Ron Binz said, "It is time for a new grand bargain with regulators—one that looks forward to the immense challenges and value to customers stemming from technologies." While the exact details of this arrangement are still a work in progress, Binz feels strongly that a transition is needed from

today's cost-of-service regulation to performance-based regulation that properly treats electricity as a value-added service.

Balhoff disagrees, however. He sees technology as the driver of change, with regulation running to catch up.

Challenges and Opportunities

Change is afoot in the electric power sector and many questions remain unanswered. Yet even with uncertainty over how exactly technology will change the sector, what is known is that it's impossible to resist an idea whose time has come.

For an industry that proudly measures itself in metrics of certainty, this unrest is disconcerting. But IEE's co-chair, Bob Rowe, president and CEO of NorthWestern Energy, emphasized that there is opportunity to be found in the turmoil.

"On all fronts, the electric grid is transforming, and understanding what grid transformation means today and sensibly engaging with a world that is changing around us are daunting," said Rowe. "Rest assured though that the electric industry's basic infrastructure—poles, substations, transformers, underground and overhead cable, back office systems, and



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especially the people who run them—remains the essential foundation of innovation."

Rowe believes firmly that a key to success is to work in partnership with regulators and to help them earn the confidence necessary to support our projects and technology.

"We can share the successes from around the country, discuss the challenges, and level about the failures," Rowe continues. "Ultimately, we need to demonstrate value to our customers."

Similarly, sharing information *among* utilities, discussing innovations, and identifying both successes and failures hold huge value for the industry. It is in this spirit that IEE and The Edison Foundation convene Powering the People each year. For the past 100 years, our industry has powered the people and the economy. And through innovation, imagination, and collaboration, we are committed to providing power for the next 100 years. ♦