

Welcome to our Energy Future:

Telecommunications is a Main Artery at the Heart
of the Smart Grid

2013 UTILITIES TELECOM COUNCIL CONFERENCE

WELCOME REMARKS

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Welcome to our energy future

Good morning, and welcome to Houston. I hope that you're enjoying our Texas hospitality and that your conference experience is off to a good start. If this is a return visit, welcome back. If this is your first visit, you may find a city with more surprise twists and turns than a bull ride. We're playing up the rodeo theme this week, but don't let that fool you. You may see a steer and hear some bull this week, but Houston is much more than a cow town.

Houston is a city of opportunity with a history of initiative, resilience and reinvention where CenterPoint Energy is delivering the future of energy through innovation and technology. The digital technology of the wireless communications revolution of yesterday is enabling the smart grid revolution of today, and as utility telecom professionals, you are on the front lines of that revolution. In the twenty-first century, telecom has transitioned from being a support function to playing a critical leading role in tomorrow's utility. So let me introduce to you our city and my company, talk about some great things happening at CenterPoint Energy, and challenge us all to work together to deliver America's energy future.

Founded in 1836 on a swamp, this city embodies a “can-do” spirit. At first, cotton was king, but the discovery of oil at nearby Spindletop in 1901 set us on course to become “the energy capital of the world,” a title we’ve claimed and others have recognized.

But we didn’t stop there. We’re also “Space City,” the home of NASA. Our medical center is the world’s largest, treating over six million patients each year. We are a leader in nanotechnology research. Our economy remains vibrant and growing, even during challenging times. We lead the nation in per capita job growth, having added nearly 120,000 jobs in the last year. Three hundred and fifty people move to Houston every day – from across the nation and around the world.

In fact, Houston is now the most ethnically diverse city in America – more diverse than New York City. You might hear any of 90 languages and can pick from as many cuisines as you visit our world-class museums and music venues or watch one of our major sports franchises.

Houston always has an eye on the future, and we here at CenterPoint Energy are helping deliver the future of energy through technology and innovation. We share our city’s can-do spirit, here in Texas, and in all the states we serve, from the Gulf Coast to the Great Lakes and the Rockies to the Appalachians.

In Houston, CenterPoint Energy is the electric transmission and distribution utility as well as the natural gas local distribution company. We sell and deliver natural gas to more than 3.2 million consumers not just in Houston but in south and east Texas as well as Arkansas, Oklahoma, Louisiana, Mississippi and Minnesota. We invested almost \$360 million last year – a 20 percent increase from the prior year – in our natural gas infrastructure. We are deploying drive-by Automated Metering Reading infrastructure across our six-state territory by 2016 to increase productivity as well as enhance consumer privacy. With this technology, one meter reader can read up to 10,000 meters per day.

We also have a midstream business of natural gas Interstate Pipelines spanning 8,200 miles across Texas, Arkansas, Louisiana, Oklahoma, Missouri and Illinois as well as a unit which gathers and processes natural gas from major producing fields in Arkansas, Louisiana, Oklahoma and Texas. Our midstream business is also leveraging technology with new state-of-the art automation using near-real-time data to manage pipeline flows and capacity. Two weeks ago, we closed on a new 11 billion dollar partnership in which we combined our midstream business with Enogex, a subsidiary of OGE, creating one of the nation's largest midstream players .

We also have a growing competitive natural gas sales and services business serving over 25,000 retail, commercial and industrial customers across 20 states. However, the impact of technology is most evident, and perhaps exciting, in our electric operations here in Houston.

We deliver electricity to over 2.2 million customers across 5,000 square miles of greater Houston. In fact, we began delivering electricity as Houston Electric Light and Power back in 1882 during Thomas Edison's heyday, making us one of the oldest power companies in the world. While we are proud of our past, our eyes are set firmly on the future.

If you joined us either of the last two days for a tour of our Energy InSight technology center, you've seen how the future of energy is taking shape on the strength of advanced telecommunications and how CenterPoint Energy is collaborating with industry peers, regulators, and other key stakeholders to help conceive and deliver the future of energy across America and the world.

We opened the center back in 2005 to evaluate and demonstrate the value of smart grid solutions. There, we test the performance of grid modernization components, evaluate Home Area Network devices and smart appliances, and educate industry peers, vendors, public officials, news media and consumers.

We have now conducted over 800 tours for visitors from six continents. If you didn't make it to the Center, you can take a virtual tour on our YouTube channel.

From 2005 to 2007, we conducted research into a number of smart grid solutions, and in December 2008, the Public Utility Commission of Texas authorized us to deploy an Advanced Metering System across our entire electric customer base. We installed our first smart meter on February 27, 2009, and we completed installation of over 2.2 million smart meters in June of 2012 – 18 months ahead of schedule, accelerated by the receipt of one of only six 200-million-dollar Smart Grid Investment Grants awarded by the U.S. Department of Energy.

These electronic field devices are useless without a reliable, robust communications system. We are very proud of the ingenuity our telecom team demonstrated when building our smart grid telecommunications network. On numerous occasions, I've been told things like "our advanced IP transport network is architected on Multiprotocol Label Switching utilizing layer-3 virtual private networking technology" with so much excitement that I couldn't help but congratulate the team on their achievement – of course, being a "business" guy, I had no idea what that means or the significance of such an accomplishment. I've since come to learn what these successes mean, and today, my role is to translate these accomplishments into layman's English.

What they've accomplished is building a private, wireless radio frequency communications network from the ground up, consistently staying three months ahead of meter deployment to ensure meters could begin functioning quickly after being installed. The 2.2 million meters form a mesh to securely pass data from meter to meter to over five thousand cell relays, which are meter data collectors mounted on power distribution poles. From there, 140 WiMAX radio tower "take out points," built mostly at our substations, collect data from cell relays within a several mile radius and pass it via our microwave and fiber optic network to our data center for processing. This WiMAX network is backed up by a commercial cellular network to provide redundancy.

Our telecom team employed innovative practices to design and build the network. Graphical mapping and radio frequency surveys facilitated cell relay site selection and signal strength optimization. Often, the associated take-out point was under construction when cell relay sites were surveyed, so we used a crane to position a WiMAX antenna at the right height to test the RF signal to the cell relay site. This helped us keep network construction three months ahead of meter deployment. We also used 1,800 range extenders to connect isolated meters in both rural and urban areas.

If you didn't catch Chuck Hackney's presentation this morning, you can visit our booth on the trade show floor to get more technical details about our smart grid communications network.

It takes a lot of computing to process more than 220 million meter reads per day from over 2.2 million meters as well as conduct over five million remote service connections and disconnections to date. Back office computing systems and a whole team devoted to data analytics comprise the remainder of our 640-million-dollar Advanced Metering System. As we say, "It's more than a meter."

Our Advanced Metering System – also known as AMS – is already enabling benefits for the retail electric market, CenterPoint Energy, and consumers: transforming the purchase, delivery and use of electricity in Houston.

The restructured Texas retail electric market is unique. As a regulated "wires and poles" utility, CenterPoint Energy delivers electricity to end consumers on behalf of dozens of unregulated Retail Electric Providers. AMS has enabled more transparent, efficient market settlement as well as new retail electric products and services such as pre-paid service and time-of-use rates. The remote connect and disconnect function of digital meters has allowed extended service hours for move-ins, move-outs, and switching retail providers as well as the ability to perform reconnects around the clock. Moreover, consumers saved about 24

million dollars in 2012 alone on reduced or eliminated fees associated with services that are now automated.

Furthermore, the reduction of “truck rolls” from over five million remote service orders helps Houston’s traffic and air quality. Since August 2009, we have completed over 97 percent of service orders electronically, saving about 500,000 gallons in vehicle fuel – equivalent to 1,333 average commuters working from home for a year or 7,800 families NOT driving from Houston to the Grand Canyon. Through fewer truck rolls, we have prevented more than 4,500 metric tons of CO₂ emissions, roughly equal to the annual CO₂ emissions associated with powering 375 average homes with electricity from coal-fired power plants.

Another way in which smart meters are changing the purchase of electricity in Texas is through a new service launched by our unregulated energy marketing affiliate, CenterPoint Energy Services. Our True Cost web portal helps consumers compare the expected cost of retail electric rate plans using their own consumption history gathered from smart meters.

This transformation of the purchase of electricity through new smart-meter-enabled products and services wouldn’t be possible without high-performing telecommunications systems.

Our own operations have also benefitted from AMS, not only through O&M savings from remote meter reading and service orders, but also through scores of initiatives and process changes that are truly transforming our business. For example, the diversion detection capabilities of smart meters are helping us identify electricity theft and reduce the time to resolve these cases from months to about a week. Other business transformation initiatives include outage management – about which I’ll have more to say shortly – transformer load management, and work and asset management. Again, these capabilities are all enabled by advanced telecommunications.

Finally, consumers are also benefitting from our Advanced Metering System through more frequent, detailed access to their electricity usage. More than 600,000 Texas homes and businesses now get their electric usage data from a common web portal, either directly themselves, or indirectly, for example in email alerts from their Retail Electric Provider. Over six thousand Houstonians get near-real-time usage data from home energy monitors that show how much they are using and spending without having to wait for a bill. Seventy percent or more of surveyed consumers who are using these tools have made energy-saving changes – some report saving up to \$100 per month. With the help of smart meter technology, the winners of our 2011 and 2012 Biggest Energy Saver contests reduced their electricity use in the heat of summer by 36 and 37 percent

respectively. Potential benefits like these have led 76 percent of surveyed consumers to hold a favorable view of our smart meter program. Once again, the transformation of the use of electricity through smart meters depends on two-way telecommunications.

And smart meters are only the beginning. We have also begun to deploy grid automation technologies to improve power reliability and restoration in Houston. Following Hurricane Ike in 2008, which knocked out power to 95 percent of our customers for up to 18 days, the mayor's task force made facilitating CenterPoint Energy's construction of a "self-healing" Grid one of its strongest recommendations. Our Intelligent Grid is being built on the same telecommunications network foundation as our Advanced Metering System.

A self-healing grid won't happen overnight, but our initial construction footprint is well underway, and we're already reaping improvements in outage restoration. By the end of this year, we will have completed installation of transformer monitors and other automation equipment at 31 substations and nearly 600 power line monitors and automated switching devices.

In the near-term, this "Intelligent Grid" will help us more precisely identify and locate outages, which will reduce the time to isolate the fault, restoring power quickly to as many customers as possible. We have already seen significant

improvement in power restoration in areas where we've been able to use the Intelligent Grid to identify and localize faults and reroute power around them. Last year, we improved power restoration by 21 percent in 20 outage events, avoiding over 600,000 customer outage minutes.

As we extend our Intelligent Grid footprint into heavily wooded areas north of town where drought-stricken trees pose a threat to power reliability, we continue to see the benefits. So far this year, we have seen restoration improvement of 34 percent over 11 outage events. Next year, our new Advanced Distribution Management System – the Intelligent Grid's brain – will go live, allowing us to automate power restoration wherever these devices have been installed. Our current plans are to complete distribution automation across our entire electric footprint over the next five to ten years.

The telecommunications network is so vital in the smart grid era that telecom crews have become emergency first-responders. Following a major storm, the telecommunications network must be operational quickly, which requires a robust design, with redundant backup and an emergency operations plan specifically for telecom first responders.

As consumer demand for reliable electricity continues to grow, customer expectations for utilities are growing as well. AMS and IG will also help us enhance our communication with customers regarding outages. Until now, we have relied on customers to tell us when their power is out. In our legacy system, often we didn't know the extent of an outage until several or even many customers called to report the outage. Now, every smart meter sends us a power off and power on signal such that, instead of waiting for customer outage calls, we can proactively tell customers – when they are at work or away from home for example – when their power goes out and when it has been restored. We are now piloting a service for customers to sign up to receive power alerts by phone, text or email.

Automated meter and grid management systems, along with use of GPS and an upgrade of our mobile data system, will allow us to send the right crew to the right place. For example, with new line sensors, we will be able to localize an outage to within 250 feet so that crews don't have to walk mile after mile of lines looking for the cause. Outage “signatures” could help us remotely discern the difference between a tree-on-line outage and a blown transformer so the right crew can be dispatched the first time.

Eventually, IG will help us not only respond to outages more quickly but to proactively identify and resolve equipment issues. For example, advanced analytics are driving a Transformer Load Management initiative to predict which transformers are most at risk during peak load events so that a given transformer may be replaced before it blows. Again, this technology is transforming our organization and our business. Information technology and operations technology are two sides of a single coin, forged in the mint of advanced telecommunications.

Technology's true value, of course, is realized by skilled people developing and following proven processes. Our Advanced Metering System and Intelligent Grid are complex systems, designed, built and nurtured by dedicated, high-performing employees and a strategic alliance of technology vendors including IBM, Itron, GE, eMeter, Siemens, National Instruments, G&W Electric, ABB and Ventyx. Together we are building and sharing knowledge in a new and rapidly evolving smart grid space.

We are founding members of the Intelligent Utility Network Council, the Internet Innovation Alliance, Smart Grid Interoperability Panel, Smart Grid Consumer Collaborative and UTC's Smart Networks Council. On the crucial issue of cyber security, we are collaborating and consulting with the Department of Energy, National Institute of Standards and Technology, National Electric Sector Cyber Security Organization Resource, Utilities Telecom Council, Edison Electric

Institute and Electric Power Research Institute. With a grant from the Texas Workforce Commission, we are working as a member of the Smart Grid Energy Training Coalition with area colleges and universities to design a curriculum for the smart energy workforce of the future.

We are sharing our knowledge and experience through hundreds of presentations, speeches, panels, webinars, case studies, white papers, and articles from the UTC Journal to our Smart Grid symposium at this conference. The Utilities Telecom Council and other organizations like those I've just cited offer abundant opportunities to share knowledge and help shape business, technology and regulatory environments to deliver a smart, healthy energy future.

Utilities across the globe are embracing grid modernization and energy innovation. Telecommunications is a major artery at the very heart of the smart grid. Today, telecom has evolved from the support function of days past to become a frontline force in creating the smart utility of the future. Utilities everywhere are poised to leverage communications technology to transform their business and our industry.

Your presence at this conference means that you are part of this transformation. On behalf of CenterPoint Energy, I thank you for being here and for performing your role in delivering the energy future. I applaud you for

embracing the spirit of innovation and collaboration. I invite you to join us for our remaining sessions as well as those of other pioneers who have their own stories to share. Explore the trade show floor, learn from each other, challenge each other, expand your network, broaden your vision. Then return to your company and share your experience, promote your ideas, and be the change that is needed to deliver the energy future.

Thank you.