



Electric Energy T&D

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A man with short brown hair, wearing a light blue button-down shirt and jeans, stands with his arms crossed in front of a vast solar farm. The solar panels are arranged in long, straight rows that recede into the distance under a clear blue sky. In the background, there are low, arid hills.

ENERGY STORAGE:
A PERSPECTIVE WITH MARK NOYES
SENIOR VP AND CEO OF CONEDISON
DEVELOPMENT AND CONEDISON ENERGY



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Publisher:

Steven Desrochers:
steven@electricenergyonline.com

Editor in Chief:

Terry Wildman:
terry@electricenergyonline.com

Account Executive:

Eva Nemeth: eva@electricenergyonline.com

Art Designer:

Anick Langlois: alanglois@jaguar-media.com

Internet Programmers:

Johanne Labonte: jlabonte@jaguar-media.com
Sebastien Knap: sknap@jaguar-media.com
Tarah McCormick: tarah@jaguar-media.com

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Five years ago, Rawah Resources secured a square mile of prairie north of Denver, Colorado. At the time, we couldn't fully foresee what it would become, but after a number of twists and turns, we've finally shovel-readied the industrial site called the Niobrara Energy Park (NEP).



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POWERPOINTS

Francis, Naomi, and Me



One would have to be on another planet not to know that Pope Francis has weighed in on climate change. I came across a very good editorial in the Toronto Star recently and for those who may not be clear on what the Pontiff is saying, I will share some of it with you. Without admitting to following one personal religious belief or another, I agree wholeheartedly with him. He is calling for a moral awakening in every section of the letter.

Pope Francis has framed combating climate change as an urgent moral imperative, not merely an economic or technical challenge.¹ In his eyes, it is also a profound theological issue warning that humans are overwhelmingly at fault for the unprecedented destruction of the environment. He also laments the growing gap between rich and poor, stressing that poor countries suffer the most at the devastating hands of climate change. Accordingly, he iterates it will require dramatic changes in energy consumption and lifestyles to avert 'grave consequences' by the end of the century.

More than an environmental critique, his encyclical describes the challenge in terms of religion and faith. It is summoning the 1.2 billion faithful – especially those in Canada and other rich countries – to take 'decisive action here and now' as custodians of the Earth to arrest climate change before it overwhelms the planet. This is more than green guidance to the faithful. It urges a call to arms, so to speak, in the way Christians and others relate to the world. It's a call for a return to a simpler, less wasteful lifestyle.

Never before has a pope issued such a universal call for political, economic, and personal transformation.

When asked in a CBC interview about Francis' letter *Laudato Si' (mi' Signore)* or Praise to you, my Lord, environmental writer and member of the board of directors of 350.org Naomi Klein put it this way:

"There will be big impacts particularly in Europe is my feeling. I think there will be a couple of pieces where for developing countries and governments having the Pope speak out so strongly about the moral crisis of climate change may embolden developing country governments at the negotiating table. But I also think Europe is going to play this really important role because he is bringing together inequality with climate change saying we need to solve those problems at the same time."

The braided historical threads of colonialism, coal, and capitalism shed significant light on why so many of us who are willing to challenge the injustices of the market system remain paralyzed in the face of the climate threat. Fossil fuels, and the deeper extractivist mind-set that they represent, built the modern world. If we are part of industrial or post-industrial societies, we are still living inside the story written in coal.²

Ever since the French Revolution, there have been pitched and ideological battles within the confines of this story: communists, socialists, and trade unions have fought for more equal distribution of the spoils of extraction, winning major victories for the poor and working classes. The human rights and emancipation movements of this period have also fought valiantly against industrial capitalism's treatment of whole categories of our species as human sacrifice zones, no more deserving of rights than raw commodities. These struggles have also won major victories against the dominance-based paradigm – against slavery, for universal suffrage, for equality under the law. There have been voices in all of these movements, moreover, that identified the parallels between the economic model's abuse of the natural world and its abuse of human beings deemed worthy of being sacrificed, or at least uncoun-³

Karl Marx, for instance, recognized capitalism's 'irreparable rift' with 'the natural laws of life itself.' For instance, feminist scholars have long recognized that patriarchy's dual war against women's bodies and against the body of the earth were connected to that essential, corrosive separation between mind and body – and between body and earth – from which both the Scientific Revolution and Industrial Revolution sprang.⁴

Christians of Francis' generation were raised to see themselves as 'masters' over creation, based on the Bible's references to humans having 'dominion... over all the Earth' with a mandate to 'subdue' it. But that era has faded as the Earth has warmed and sea levels have risen. As the encyclical makes clear, careful stewardship not plunder is what the world needs to avoid becoming 'an immense pile of filth.'⁵



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The encyclical goes on to say:

"I urgently appeal... for a new dialogue about how we are shaping the future of our planet. Obstructionist attitudes, even on the part of believers, can range from denial of the problem to indifference, nonchalant resignation or blind confidence in technical solutions. We require a new and universal solidarity."

For Canadians, the words of the Pope carry an implicit but forceful repudiation of the recklessly exploitive stance for which the federal government has become notorious. Rather than be part of the 'global consensus' that Francis envisages to 'tackle' climate change, the ruling party is intent on pumping out the oilsands while paying only lip service to curbing our dependency on fossil fuels all the while enormous amounts of greenhouse gas emissions are being pumped into the atmosphere. Canada's environmental change targets are unambitious and we are nowhere close to meeting them. And to add insult, the best Canada's prime minister can do is to sign on to ending fossil fuel use by the end of this century – long after he will have left this earth. I guess you have to start somewhere. I am heartened, however, that the government leaders of the opposition parties have more credible approaches, such as carbon taxes, as Canadians head into a federal election cycle.

But Francis' demands that short-sighted politicians do more to curb fossil fuel use is just one aspect of a wider call for reform.

While the encyclical wisely steers clear of the complex details of carbon pricing, which experts agree is needed to deter use, it does rightly strike a note of concern over the 'speculative' buying and selling of 'carbon credits,' saying that shouldn't be a cover for letting rich countries and industries buy credits to keep on polluting. On this very subject and during the same CBC interview Naomi Klein goes on to say:

"Capitalism uses us. We don't steer capitalism. The point is we have delayed and delayed for two and a half decades and we now need to cut our emissions so deeply that it's clear we can't get off fossil fuels entirely by employing market mechanism within the time-frame. We are down to the wire. Governments and markets do have a strong role to play in policy – telling us where we need to go. The encyclical is very clear, however, that government does not believe market mechanisms will get us there. It's very critical of cap-and-trade and carbon trading as it will spur speculation and will encourage hyper consumption in some parts of the world using the argument that you are offsetting it in another part of the world."

Ambitiously, Pope Francis calls on the richer nations to begin paying down a 'grave social debt' to poorer ones they have exploited. The rich can help by 'significantly

limiting their consumption of non-renewable energy and by assisting poorer countries to support policies and programs of sustainable development.'

The pope's words are politically very hot. Especially as it comes some six months before nearly 200 nations prepare to meet in Paris to try and hammer out a 'new' global deal to curb and/or cut fossil fuel use. Predictably, Francis already faces stiff pushback from conservative politicians and the resource industries. "Who is the Pope to set climate policy," some ask. "To question the economic system, or lecture consumers?"

Well, if the polls and surveys are to be believed Francis has more than enough credibility to stare them down. He is one of the world's most trusted figures, with a popularity that stretches beyond his own world congregations. He is not a voice crying in the wilderness. His call for more political action on global warming is endorsed by a majority of Canadians, the United Nations, and climate scientists.

Of course, nothing the Pope says will sway climate change skeptics or those content with a status quo that imperils the planet. But with this encyclical he has framed combating climate change as an urgent moral imperative, not just an economic and technical challenge. Millions will take that to heart. Enough, perhaps, to bend the curve in a better direction.⁶

In closing, I give you some words written by author Harry M. Caudill about the hills of Eastern Kentucky – a cautionary tale more than a century in the making.

Then, in the gigantic industrial growth which occurred throughout the Western World in the last half of the nineteenth century, coal came to its throne and reigned with a despotism as black as its own dusty lumps. Ships, locomotives, factories and newly built electric power plants were driven by coal and millions of people warmed by its sooty flame. Steel and coal production were the yardsticks by which the Victorian world measured its increasing power, and it was inevitable that the confident overlords of the nation's industrial empires should turn covetous eyes upon the mineral-rich highlands.

But other profiteers entered the mountains for the purpose of acquiring title to only the minerals underlying the land and the appurtenant right to mine and remove them.⁷

In the words of Pope Francis, "Yet all is not lost. Human beings, while capable of the worst, are also capable of rising above themselves, choosing again what is good, and making a new start."

¹ OpEd. "The Pope's stirring call" *Toronto Star* (Saturday, June 30, 2015): IN6

² Klein, Naomi. *This Changes Everything-Capitalism vs the Climate*. Toronto: Knopf Canada, 2014

³ Ibid

⁴ Ibid

⁵ OpEd, op.cit.

⁶ OpEd, op.cit.

⁷ Caudill, Harry M. *Night Comes to the Cumberlands-A Biography of a Depressed Area*. Boston: Little Brown and Company, 1962, 1963

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Pickett Granted FAA Exemption Allowing Unmanned Aerial System Surveys

UAS surveying and mapping solutions can be more efficient and cost effective than manned alternatives

Pickett and Associates, Inc. (Pickett), a full-service surveying and mapping firm based in Central Florida, has obtained an FAA Modernization and Reform Act (FMRA) Section 333 exemption from the Federal Aviation Administration authorizing commercial aerial data collection from small Unmanned Aerial Systems (UAS). Data acquired from sensors aboard the UAS will be used for mapping, surveying, and inspection purposes.

To better provide for its clients, Pickett worked for more than a year to incorporate advanced UAS technologies into its business model and petition for the FAA exemption. The exemption granted on June 5, 2015, marks the successful culmination of those efforts.

"This is a huge boon for our clients as the FAA authorization enables the UAS to place actionable information in our hands within minutes, whereas our manned methods required days and extensive man hours. UAS can also provide higher quality still imagery and video than traditional aircraft," says Mike Leahy, Pickett's Chief Operating Officer. "The authorization opens the door for new business opportunities as we harness the advantages of this advanced technology."

Pickett is required to closely follow operational restrictions imposed by the FAA when operating the UAS to ensure the protection of persons and property on the ground or in the air. Pickett is in the process of establishing procedures and practices to ensure full compliance with the FAA authorization and will begin providing commercial UAS services in July 2015.

Ameren Illinois Grid Modernization Delivering Results

Fewer and shorter outages saving customers \$48 million annually; new tools giving customers greater control over their energy usage and costs

Ameren Illinois customers are experiencing fewer and shorter power outages as a result of electric grid upgrades the company has implemented under the state's Energy Infrastructure Modernization Act (EIMA). These reliability improvements are saving its customers an estimated \$48 million each year.

Since the modernization program began in 2012, the installation of storm-resilient utility poles, automated switches, and an upgraded distribution grid have resulted in 238,000 fewer annual electricity service interruptions on average. And when customers do experience an outage, Ameren Illinois is restoring power 19 percent faster on average than in previous years.

"By all measures, the modernization plan is working for our customers and for Illinois," said Richard Mark, President of Ameren Illinois. "Reliability has improved 17 percent, outages are down and good paying jobs are being created at a time when our state sorely needs them."

More than 330 employees and an additional 1,000 contract workers have been hired to support investments in Ameren Illinois' electric system and operations. In addition, Ameren Illinois is on track to exceed its EIMA full-time equivalent job creation commitment of 450 direct, contractor, or induced jobs during its peak program year. Under EIMA, Ameren Illinois expects to invest an additional \$122.2 million on system improvements in 2015 towards a total expected investment of \$643 million over the 10 year life of the program.

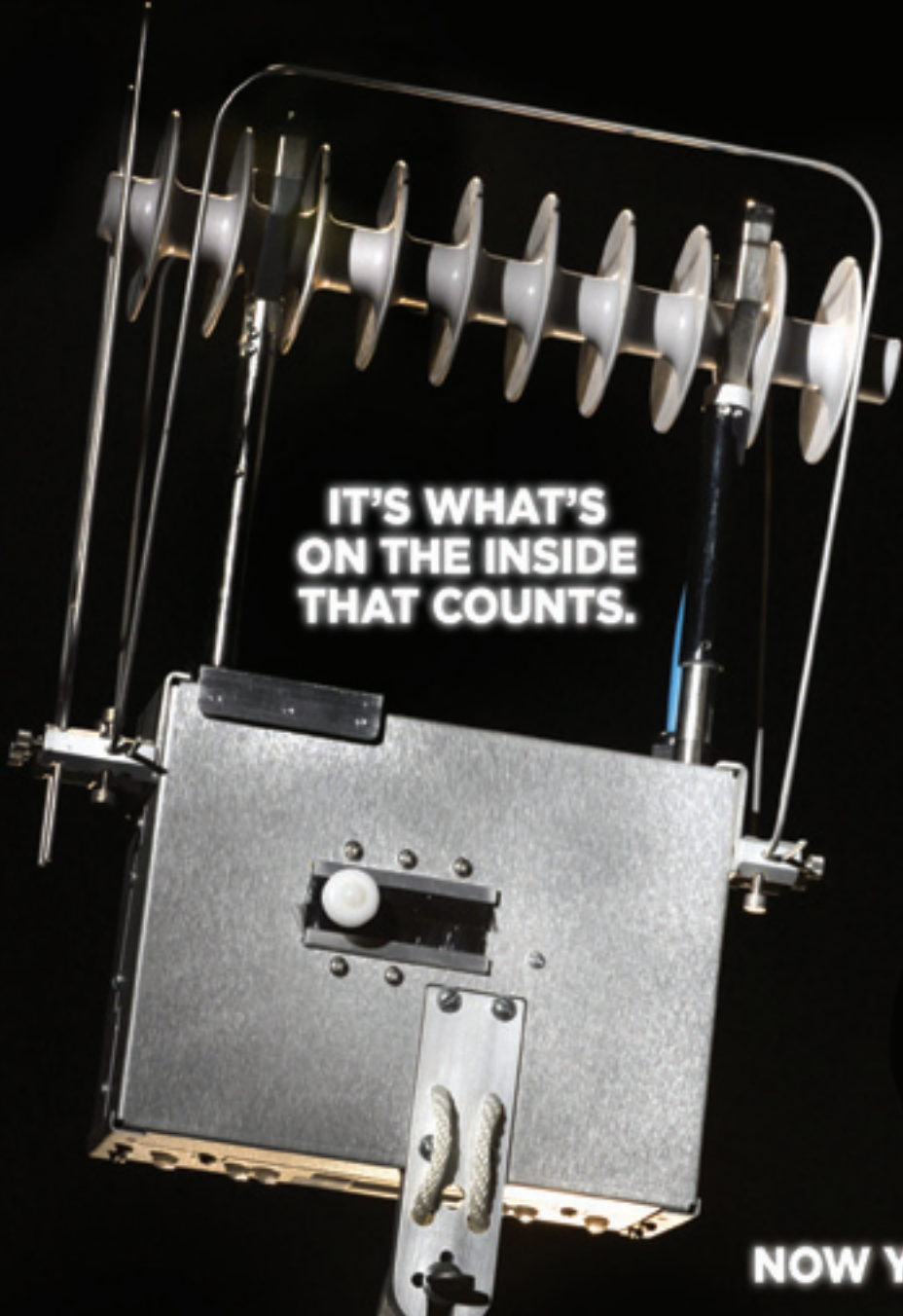
The company also reports that it is ahead of schedule in installing advanced meters, two-way devices that will provide customers with enhanced energy usage data and access to tools and programs to help them use less energy. In 2015, Ameren Illinois plans to deploy 142,000 electric meters at customer locations in central and southern Illinois. This month, Ameren Illinois launched a suite of on-line tools to help its customers develop personalized energy savings plans.

"Today our customers have access to information that puts them firmly in control of their energy bills," said Mark. "Over time the upgrades will help us detect and isolate outages faster while giving our customers even more ways to manage their usage and contain costs."

The 2014 National Grid Modernization Index, developed by the GridWise alliance and the Smart Grid Policy Center, ranks Illinois 3rd in the nation for its grid modernization policies, investments, and activities, trailing only Texas and California. Illinois moved up from 10th place in 2013.

To learn more about Ameren Illinois' modernization program, visit AmerenIllinois.com/focus or follow the company at [Facebook.com/AmerenIllinois](https://www.facebook.com/AmerenIllinois) and on Twitter @AmerenIllinois.

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Sensus and BAI Partner to Bring Digital Infrastructure to Australian Utilities

Innovative, real-time technology changes the utility-customer relationship

The relationship between water and energy utilities and the customers they serve is changing. The exercise of sending a bill in the mail and receiving a payment in return is giving way to a very different style of interaction. It can now be a relationship defined by real-time, two-way communications, powered by innovative technology and measured by an increase in customer satisfaction. What was once transactional is becoming personal.

Sensus and BAI have partnered to transform the utility-customer ecosystem. The two companies will design, supply and install a digital infrastructure that will enable utilities to remotely and continuously monitor and diagnose problems and pre-emptively prioritize and manage maintenance issues. Data from smart sensors, including meters, will ensure the reliable, safe and cost-effective delivery of water and energy through improved operational efficiency and customer engagement.

“Australian utilities now have access to proven industry leaders to help meet the increasing demands of a digital world,” said Mary Wilson, director of smart metering, Sensus Australia. “In the same way that data analytics give utilities insight into system performance, customers can use real-time usage data that helps them conserve water and energy.”

BAI is the owner and operator of extensive digital transmission infrastructure in Australia. “Australia is a highly complex digital nation and it is BAI’s goal to ensure our customers’ communications networks are able to take advantage of this. Our partnership with Sensus made perfect sense as both organizations are clear leaders in delivering networks that are built for the future,” said Mr. Jim Hassell, Group CEO of BAI.

The Sensus FlexNet® communications system uses dedicated, licensed spectrum in a private, secure network that supports multiple applications and is flexible for future growth. A trusted and proven communications technology, FlexNet is based on open standards and can support capacity and reach requirements. It is interoperable with multiple systems and endpoints for delivering data that helps utilities respond quickly to changing market and customer requirements.

“The Sensus-BAI partnership, in particular, can help water utilities combat the growing demand by supporting data that helps conserve resources,” said Wilson. “By offering a bird’s-eye view of the system, water utilities can manage their assets through timely maintenance that prevents service disruption and enhances reliability.”

Water conservation in Australia is critical. A global water utility report discovered the country currently loses 18 percent of its potable water through leaks. A smart water network, featuring the Sensus FlexNet system, detects leaks and allows utilities to predict and address future issues throughout the water distribution system. With its growing population, the demand for water in Australia is rising, which makes it more important than ever to deploy digital technologies that enable automation, control and insight into system performance and consumption.

Background on BAI: Australian headquartered, BAI has a strong track record constructing and managing statewide mission critical communications networks for the public and private sector. Most recently, it successfully coordinated and managed the spectrum clearance works for all national and commercial television services to clear the 700 MHz band spectrum for the Australian Government’s Digital Dividend auction.

Background on Sensus: Sensus has a long history of strong partnerships that benefit global utilities. In 2013, Sensus and its British partner Arqiva, a sister business to BAI through common ownership, were awarded a 15-year contract by The British Government. Together, they will provide automated meter communications services based on Sensus FlexNet Technology to more than 10 million homes in the North of England and Scotland.

Advanced Control Systems and DELSUR Celebrate State-of-the-Art Success

\$1.6 Million Investment in Central America for PRISM SCADA/DMS/OMS System

Advanced Control Systems (ACS), a global provider of smart grid automation technology, delivered a state-of-the-art smart grid ACS PRISM SCADA system to one of the largest electric distribution companies in El Salvador, the Distribuidora de Electricidad del Sur, SA de CV (DELSUR). DELSUR General Manager Roberto Gonzalez said that after a process of nearly three years, the company took a technological leap and invested \$1.6 million to achieve a more efficient service for 360,000 users and now has the reliability to distribute power over 10,000 kilometers.

Roberto González reported, “Our main commitment is ensuring that our users have a reliable and safe electrical network that meets the highest standards of quality, stability and continuity in the supply of energy. With this significant investment in ACS proven technology with mobile capabilities we took a major step toward levels of modernization that position us as a leader in innovation.”

Victor Zaldaña, DELSUR distribution manager, said the new PRISM Outage Management System (OMS) easily integrated with the DELSUR current SCADA system, so much that the company made the migration without affecting electric service to their customers. Mr. Zaldaña said, “DELSUR is improving its quality of service standards, quick fault detection and certainty in identifying causes, speed in care of interruptions, efficient identification with alternative solutions, and real-time feedback to customer capabilities, among others.

According to DELSUR IT manager, Alicia Breucop, “DELSUR has the technology to create a circle of continuous improvement services for our customers. A big advantage is that these products are within a family of applications provided by ACS to manage long term growth and our vision for an optimal smart grid.”

ACS CEO Kevin Sullivan said, “We are proud to know that DELSUR with its history of first class excellence, is the first company in Central America, integrating the PRISM SCADA/DMS/OMS platform to make decisions in real-time emergency conditions allowing the deployment of the best fault detection, isolation and restoration (FDIR) technology possible.”

“ACS and DELSUR have had a positive relationship since 2004 earning our trust for customer satisfaction,” said Jorge Herrera, ACS Regional Director, Latin America, Mexico & Caribbean. “Our SCADA, DMS and OMS supports their demands for customer service as our flagship in Latin America. Having deployed a full-suite of technology associated with ongoing future benefits, we are pleased to continue our collaboration through our new ACS Center of Excellence in El Salvador.



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ENERGY STORAGE: A PERSPECTIVE

We are in discussion with Mark Noyes, Senior Vice President and Chief Operating Officer for ConEdison Development and ConEdison Energy.

EET&D: Why has energy storage emerged as a lynchpin to America's long-term energy future?

Noyes: A power grid operator attempts to balance energy supply with energy consumption. When consumption is not aligned with the availability of supply, such as during periods of significant momentary consumption, energy stored in batteries can be deployed to meet a property's energy consumption needs. In addition, unlike wheat and cattle, energy is one of the few commodities that cannot be stored. Storage technology is beginning to change that.

EET&D: How does energy storage fit into the energy 'big picture'?

Noyes: The need to decrease the difference between the generation of energy and the demand for energy is a consumer consideration as much as a financial one. When matched with demand response programs, along with the aggressive deployment of energy-efficient equipment, the benefits to every component of the energy market can be significant. Advances in technology have made all of these easy to install and even easier to justify.

EET&D: How do renewables and energy storage work together?

Noyes: Inherent in the production of renewable power is the fact that the availability of the power is variable. Renewable energy sources, such as solar and wind power, produce energy when the sun is shining or when the wind is blowing. That means the value of batteries to store the power when it is produced – and then deliver it when it is needed – is especially important to the operation of the electricity grid in terms of both ensuring grid reliability and reducing peak demand. Most batteries used in this type of set-up are designed for 'deep cycling.' That means they can store anywhere from ten times up to hundreds of times more energy than a car battery can.

EET&D: Does storage help reduce the cost of power?

Noyes: Energy storage can reduce overall costs by lowering peak demand, avoiding costly T&D infrastructure updates, and boosting reliability. Energy storage also helps consumers gain greater control over their usage of energy, which could potentially lower their costs once they find themselves able to consume less energy from the grid during peak hours. Moreover, energy storage provides an emission-free and noise-free means of reducing overall costs to both consumers and utilities.

EET&D: What is required for energy storage to become mainstream?

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Noyes: The primary barriers to the expansion of energy storage right now are the cost of installation and the reliability of the technology. Costs are already on the decline, but they need to go down further – and also be combined with technology improvements in efficiency and reliability.

A big driver, as we've seen in the renewable energy space, is the availability of federal and state incentives in the form of tax breaks or additional revenue

sources. The DOE has provided support through loans and grants. Several states have established mandates to encourage investment in energy storage. In 2013, the California Public Utilities Commission (CPUC) announced targets that call upon California's investor-owned utilities to procure 1.325 gigawatts (GW) of cost-effective energy storage by 2020. Similarly, Texas, New York and PJM power grid operators have put mechanisms and regulatory processes in place to help facilitate the commercialization of energy storage technologies.

EET&D: Is there a technology that will prevail?

Noyes: There is not one technology that will meet every application. Energy storage has a variety of applications: frequency regulation, reactive support and voltage control, etc. As these applications expand, storage technologies are sure to develop to match demand.

EET&D: How does energy storage factor into CED's growth plan?

Noyes: ConEdison Development (CED) is planning to deploy a 2 MW/8 MWh battery energy storage system in California. This installation is CED's first step in our overall plan for optimizing and operating energy storage projects.

EET&D: We can't thank you enough Mark for taking time out of your crazy schedule to speak with us. It appears that energy storage is definitely one of the ways forward and it's encouraging to see a companies like ConEdison Development and ConEdison Energy driving the technology.

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GREEN OVATIONS

Innovations in Green Technologies

Engaging Consumers in Smart Meter Adoption

By: Marcus Scheiber



As cities across the United States continue to introduce smart meters, consumer adoption and satisfaction are keys to making a successful transition to the smart grid. Utilities can help with adoption by implementing time-variant pricing. However, a major barrier to a successful implementation is getting consumers to opt-in.

According to Parks Associates, nearly two-thirds of broadband customers in the United States are willing to pay for a smart energy management service, but a lack of information and knowledge is hindering progress. The value of the smart grid is clear to utilities. However, despite the numerous benefits, smart meters still raise concerns for many mainstream consumers. Many don't fully understand how they work, why they are needed and how it will benefit them.

Consumer-first Mindset

In order to provide proper education, utilities must first gain a better understanding of levels of consumer awareness, interests and needs about smart meters. To resonate with consumers, utilities should focus on creating an experience that is customized to fit their lifestyle without unnecessary complexities. This can be achieved by taking the time to build customer relationships and learn about their behaviors. By doing so, providers can offer the types of services that appeal to customers and add value to their lives.

Actionable Information

The extent to which consumers adopt these new technologies is also dependent on whether or not they see the added value and how they will personally benefit. Rather than explaining the general benefits of home automation (i.e. energy savings), utilities must appeal to the personal motivation of their customers in a way that yields action. A good place to start is by educating clients on their home energy behaviors and how they play a role in driving up their electric bill. Not only will this allow utilities to start forming a personal connection with their clients, it will also show the client first-hand how home automation can add value to their lives.

It's helpful to provide customers with smart meters and access to information in real-time, but if they don't understand how their usage translates into cost savings, it may not make immediate sense to them. While terms like 'smart grid' and 'demand response' may not resonate

with consumers, the ability to be in control of their home's energy usage is a message that does. This can be achieved by developing messaging that is relevant and easily understood by consumers. By doing so, utilities can better demonstrate how the information smart meters provide can make homeowners lives more comfortable and convenient.

Open Communication

Consumers want easy access to energy usage data in a timely and consistent manner. By providing access to this information through platforms they are already familiar with, such as mobile apps, consumers are more likely to be engaged and motivated to modify behaviors. This added convenience of being able to access and manage energy usage through a mobile app is also another way to achieve customer satisfaction.

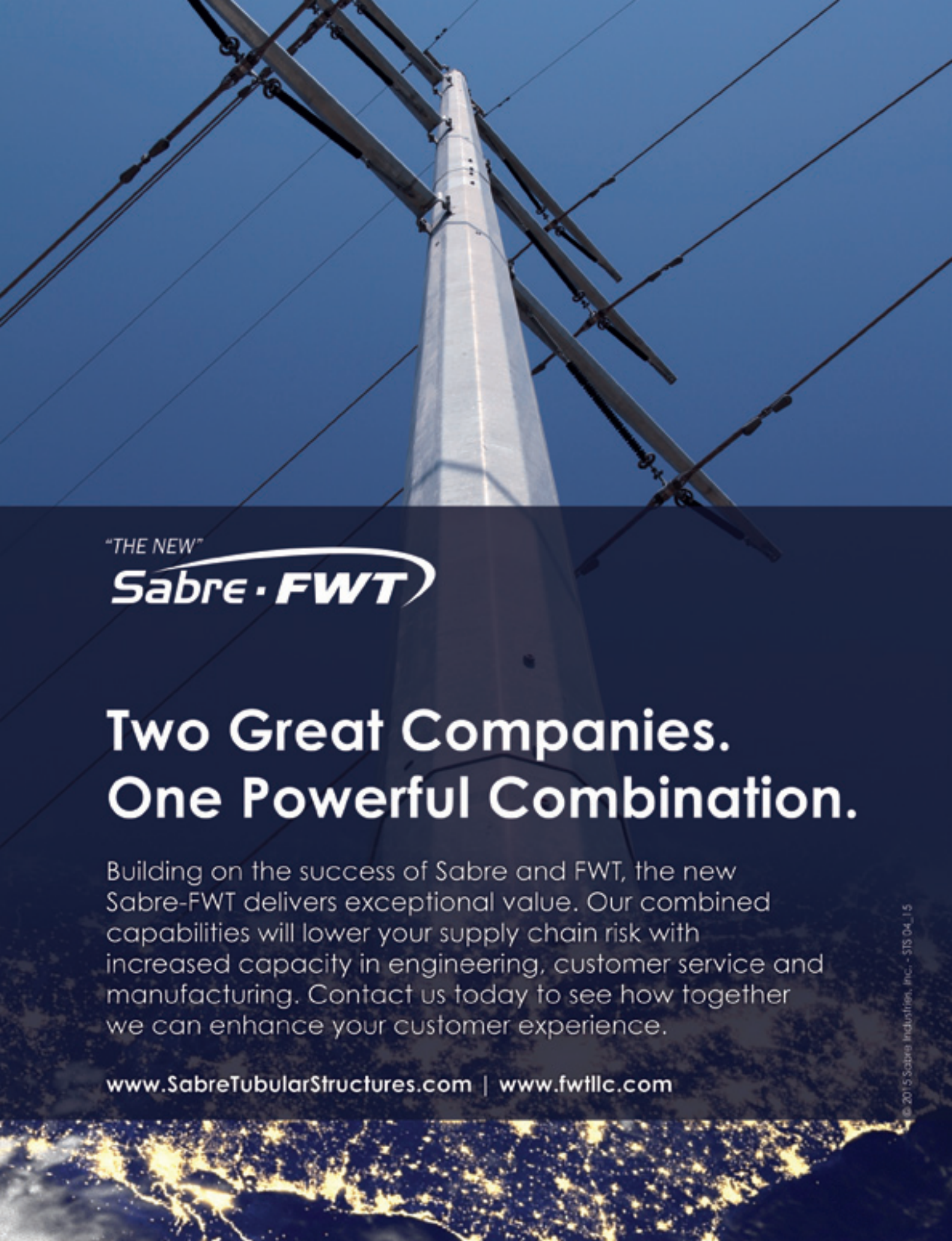
By taking a proactive approach to outreach and education, utilities can better engage customers in smart grid adoption. Utilities that take the time to connect with their customers from the start will be rewarded with increased satisfaction with their services as well as build a loyal, involved customer base.

Transparency

In order to achieve customer satisfaction, utilities must be as transparent as possible when it comes to explaining how customer data is collected and stored, and what safety procedures are in place to protect the data. Setting appropriate expectations is essential to boosting understanding and acceptance, as well as building trust. One way to start is by educating customers on how to properly use in-home devices and the amount of savings they can expect to see month-to-month. It is equally important to make sure customers understand that pricing can vary even by the time of day based on supply and demand as well as by the grid's status and to explain which situations are out of their control.

Ongoing Evaluation

Once a plan is successfully implemented, utilities must evaluate their program to determine the level of customer satisfaction and acceptance. This can be done by implementing customer surveys, tracking energy usage behaviors and determining cost effectiveness.



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By collecting feedback and data on a regular basis, utilities are better able to track the success of their program and give their consumers the tools and support to help them improve the efficiency of their home. This also enables utilities to better educate their target audiences and properly identify and address their concerns.

Strategic Partnerships

Smart home solutions can be an excellent way to convey information about individual energy consumption, as well as status information about the smart-grid to consumers. Energy efficiency technologies like smart thermostats and meters give utilities an entry point by enabling two-way communication between the utility and their customer.

This data can provide utilities with insights into customers' behavior almost immediately allowing providers to shift resources based on the data and develop strategies to address customers' behaviors and experiences. It also allows customers to see how much power they are using in their homes in real-time, therefore motivating them to change their behaviors and cut their bills. To make this information accessible and useful, utilities should embrace the opportunity to collaborate with smart home brands and suppliers in establishing the channel to inform and educate consumers.

Smart home devices and applications will play a major role of being the preferred channel to inform consumers about the smart grids status. Including consumers through this channel will create value through education and by nudging the consumers to a more grid-aware consumption pattern. Additionally, with the growing number of smart home solutions available, utilities are able to recommend cost-effective solutions that make it easier for consumers to reduce and manage energy consumption while enhancing their lives in other ways.

About the Author



Marcus Scheiber is CEO of ROC-Connect, an end-to-end solutions provider for companies interested in entering the connected home space. Based on state-of-the-art IOT-platform and application framework, the company rapidly creates comprehensive and consistent smart home brands with excellent user experiences and high technical standards, and operates them on reliable services. ROC-Connect helps its clients to design and execute their business model, select and design their products and services, and support them in all phases of their market entry and operations.

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From Research to Action

Imagine a World Where Master Data is Created Once and Used Many Times

EPRI Network Model Manager Approach Enables New Reality for Managing T&D Network Models

By Pat Brown

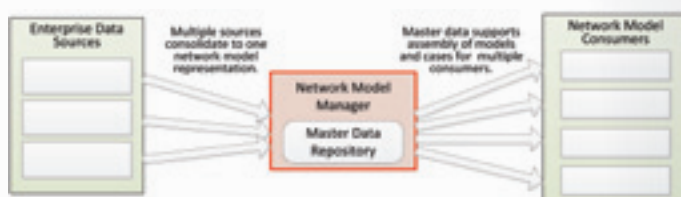
Introduction

As utilities have deployed more and more network analysis applications such as the state estimation and contingency analysis functions of energy management systems, the steady state and transient stability functions of planning application suites, the short circuit calculations of protection software and the congestion analysis functions of market systems, silos have developed; each application frequently has its independent users, its independent model maintenance group, and its individual modeling processes and assumptions. The silos are both technical and organizational, with the resulting lack of coordination reflected in a typical network model data management picture where information comes from a variety of sources in a variety of forms, goes to a number of target systems, and whose exchange is inconsistently triggered by a variety of events. Lacking an overarching or unifying data management architecture, the creation of accurate network models relies on the experience, thoroughness and energy of utility engineers who spend significant amounts of time performing data maintenance in multiple software applications instead of system engineering.

Enter the vision of the Network Model Manager (NMM) - product ID 3002003053 - developed with EPRI and utility insight, where master data is created once and used many times – taking advantage of the International Energy Commission's (IEC) Common Information Model (CIM) interoperability standards – resulting in efficient processes throughout the utility.

The NMM provides a realistic approach to effectively handle network model data, providing a place for managing data from multiple sources going to multiple applications. Using the NMM approach reduces the level of effort to maintain models, improves the quality of analysis, and provides a seamless infrastructure on which new apps can be built; and it can be done today, as exemplified by work in progress at two utilities, American Electric Power and FirstEnergy.

The NMM Vision – Seeing Beyond the Silos



The NMM approach inserts a Network Model Manager between network model data sources and consuming applications, providing a place where data being provided to network analysis functions can be organized – a place for managing what is understood to be the ‘one source of truth’ for network model information. As shown in the figure above, data is received from substation, line and protection engineers, as well as other enterprise data sources, and is stored and managed by the Network Model Manager. The NMM then facilitates the assembly of consistent network models and cases, and their provision to the variety of network analysis applications used by planning, operations and protection engineers.

Support from a ‘CIM’ple and Effective Data Model

The Common Information model (CIM) - product ID 3002002587 provides a basis on which a coordinated network model maintenance strategy can be built. It defines an organizational approach to network model information that reflects the fundamental nature of complex network analysis data, including:

- The distinction between physical network model data (which changes only with field activity) and case assumption data (which changes with each network analysis study);
- The common need to build network models and cases from ‘building block’ data maintained by different entities;
- The need to define ‘prospective’ changes reflective of new construction projects at utilities that may or may not be used in studies, depending on the time period being evaluated.

Because the CIM provides a solid and flexible foundation for the effective creation, maintenance and exchange of network model information to support the needs of network analysis, it is the foundation on which the NMM architecture is based.

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From Research to Action

Making It Real

During 2013 and into 2014, personnel from across the planning, operations, protection and IT domains at FirstEnergy and American Electric Power (AEP) worked together with EPRI to envision how transmission network model management at their respective utilities, and across the industry, might be streamlined. At both companies, cross-functional teams analyzed existing network model information flows, developing a detailed understanding of data flows and application inter-relationships. The feasibility of a consolidated network model management approach was explored and validated.

The teams articulated potential benefits including improved accuracy and speed of data exchange, reduction in manual efforts for validation and error correction, and the 'freeing up' of engineering expertise to focus more on system analysis rather than data management. Required NMM functionality was investigated and documented by means of use cases. From this work, the teams developed a high-level roadmap for each utility, and provided guidance on next steps for starting down the path toward implementation.

Collaboration Works

The cross-work group collaboration that occurred at both utilities allowed the NMM approach – a 'big picture' solution strategy for Transmission network model maintenance – to be validated. It also illustrated the pervasiveness of the disjoint model maintenance problem at utilities throughout the world and the widespread applicability of an NMM-based architecture for improving the situation.

"It certainly appears we have influenced the industry on a vision for network model management, as evidenced in a vendor road-mapping the functionality," said Donna Bursick, Director, IT Real-Time Operations at FirstEnergy.

Eric Hatter, who works in EMS Applications Support at AEP, echoed Bursick's enthusiasm, "Integrated Network Model Management is no longer a 'nice to have' idea, but is CRITICAL for utilities who plan to thrive in today's regulatory and competitive environment!"

Encouraging a Product-Based Solution

The universality of both the network model management problem and its solution strategy set up a true product development opportunity: an industry with a widespread need, a need that could be satisfied by a configurable software tool, a tool that could be sold to many

utilities. Recognition of the NMM product niche, however, has been thwarted by 'siloed thinking'; some may not recognize the magnitude of the problem or the feasibility of the solution; others may have difficulty perceiving the potential size of the NMM product market and the full range of functionality such products need to support. The glimmers of interest in an improved network model management would need an industry-wide 'boost' to allow the NMM product niche to attract serious vendor product investment.

Spurred by decisions on the part of both FirstEnergy and American Electric Power to move forward with network model management improvement initiatives, EPRI launched a Network Model Manager requirements overview project, believing that it would benefit everyone (the utilities, their selected vendors, the industry at large) if the solutions being implemented were viewed as the deployment of a widely useful product that had been intentionally designed to serve the needs of network model consumers throughout the utility organization. The approach taken to encourage the vision was to engage a critical mass of interested participants to help define the essential functionalities a quality network model management tool should have and to share results of the work freely and widely.

Spreading the Word

Through the collaborative efforts of eight utilities and two vendors, the NMM requirements that had been identified during the American Electric Power and FirstEnergy deep-dive projects were explored, refined and augmented. A collection of common use cases, reflective of typical ways in which a Transmission System Operator (TSO) or Independent System Operator (ISO) might use a NMM tool in managing its network models, were explored and documented. The use cases led to the identification of eight high-level requirements for a network model management tool:

1. Provides a secure, redundant permanent store for physical network model parts;
2. Manages the identities of network modeling objects in different contexts;
3. Supports multiple workspaces for carrying out NMM operations in parallel;
4. Provides capabilities for users to browse and edit NMM content in variety of ways (graphical, tabular, individual items);
5. Supports the IEC CIM modular concept for assembling network models and network analysis cases;
6. Supports the development of a testing and validation regimen;
7. Provides CIM-based integration services that support integration with other systems without requiring amendment of NMM product code;
8. Supports a data-driven and extensible data model, definable by an accepted information model.

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From Research to Action

Happening Now!

The detailed results of the collaborative Network Model Manager Requirements project are available in the *Network Model Manager Technical Market Requirements* document, downloadable from the EPRI website. Additional information about CIM support for network analysis data is available in a recently published EPRI report, *Using the CIM for Network Analysis Data Management*, also available from the EPRI website. And webcast recordings of four training sessions on the CIM's support for network model data are available at the *UCAIug YouTube Channel*.

In Conclusion

The utility industry has an opportunity to significantly improve how it manages its network models. Coordinated NMM architecture-based network model management, underpinned by the CIM data model, provides a feasible and realistic way to efficiently manage network

model data originating from multiple sources and going to multiple consuming applications. This approach offers sizable potential benefits in reduced engineering labor and increased accuracy of utility network models. It offers even greater promise in creating the seamless network model infrastructure on which forward-looking T&D applications will be built, and it can be done now.

About the author



Pat Brown, Principal Technical Lead, Information and Communication Technology in EPRI's Power Delivery and Utilization program, has more than 25 years of experience supporting electric utility control center applications. She is currently engaged in a range of projects leveraging industry standards, including the Common Information Model (CIM), in the deployment of data sharing solutions for transmission. Pat serves as the lead U.S. expert on IEC TC57 Working Group 13 (CIM for Transmission) and as the EPRI liaison to UCA International. She has a B.S. in Architecture from the University of Michigan and is a certified Project Management Professional.

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Taking T&D Development into the Next Dimension at Southern California Edison (SCE)

By Marcia Carrillo and
Daniel Hurtado

Introduction

According to physicist Albert Einstein “if you cannot explain it simply, you don’t understand it well enough.” When it comes to visualizing new transmission power facilities to support vital capacity growth in southern California, a picture is truly worth a thousand words as SCE community relations and transmission development teams paint the ‘big picture’ for all stakeholders. SCE has piloted a new design and modeling system that can literally be used to develop three dimensional (3D) renderings of how new facilities will sit in the landscape relative to their physical surroundings. This article covers the systems involved, how they’ve been put to use, the savings and benefits SCE has experienced, as well as some suggestions that will benefit other utilities considering similar approach.

Background

As one of the largest electric utilities in the USA and a leader in renewable energy, Southern California Edison (SCE) provides electricity service to more than 14 million people in a 50,000 square-mile area of central, coastal and Southern California. Reliable, renewable, and affordable electricity for California depends critically on a robust transmission system. SCE piloted a new 3D technology including 3D design and simulations to streamline the capital project planning and execution processes around the design, permitting and construction of large transmission systems.

SCE’s transmission projects support California’s renewable power goals and help deliver cleaner electricity, while also supporting system reliability to meet the region’s increased demand for electricity. However, the flux of electricity markets, uncertain opportunities for profitable transmission investments, and public concerns regarding the impacts on the environment and on public health, have created a challenging environment in which to undertake transmission projects of any scale. These facts have helped drive the SCE Major Project Organization (MPO) into 3D visualization technology. But SCE MPO needed a simple solution that was fairly easy to implement and worked with the existing design and Geospatial data.

The Challenge

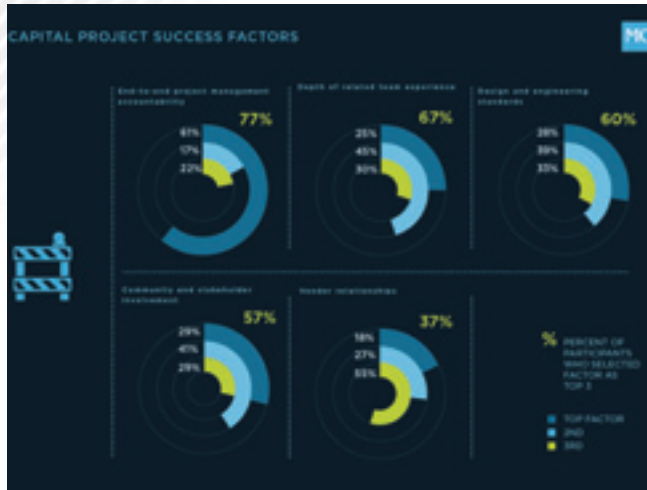
Historically SCE large capital transmission project teams only had two sources to envision transmission projects: engineering drawings and project mapping. Engineering drawings are difficult to communicate to outside stakeholders as the renderings are geared for engineers. Mapping – though it is easier to understand – has limited visual aspects. Given the restricting nature of these types of 2D modeling approaches – the lack of depth and lack of ability to integrate and read LIDAR (ground terrain, vegetation, roads) data, along with the amount of time and resources spent surveying out in the field – MPO realized a need for technology with greater visualization and insight that was simple to use. MPO turned to Autodesk InfraWorks 360 to create a 3D project model that could easily integrate data-rich information that was locked in the engineering world.

Senior Project Manager – “When talking about understanding the project impact, showing stakeholders the model facilitates an overall understanding and helps make better decisions. Stakeholders want to see the grading and where the towers are going to go – it’s far beyond a 2D map – the visual impact is invaluable.”

Potential New Platform for Stakeholder Engagement

The utility industry has always had challenges in stakeholder involvement. In McDonnell Group’s 2014 Global Utility Evolution Benchmarking Study, sponsored by Autodesk, utility executives from the top 25 utilities in North America and Europe identified the top critical factors for successful capital projects. Seventy percent of participants ranked community and stakeholder involvement as top or as the second most important factor critical to the success of both utility capital projects and infrastructure investments.

Taking T&D Development into the Next Dimension at Southern California Edison (SCE)



Research Graphic Courtesy McDonnell Group

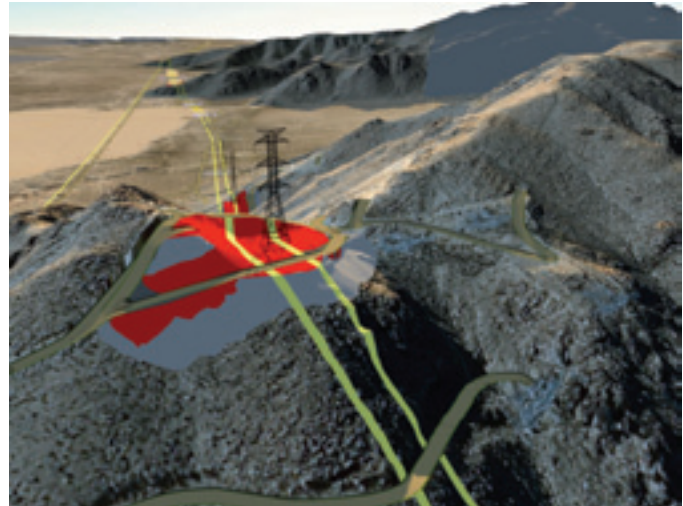
Southern California Edison's pilot of a new 3D visualization design and modeling toolset has shown promise in getting stakeholders to the table both internal and external. Using InfraWorks 360, internal stakeholders such as utility engineers, designers, policy makers, and regulators were able to clearly see the vision for a new project and quickly evaluate issues. The piloted 3D model was used as a common design reference across departments, and in team reviews of transmission projects by bringing together the civil design, transmission design, construction and environmental constraints data into a realistic rendering. This helped the team identify issues and take corrective action early in the project design and review cycle.

Project managers and public relations team leads also need to explain to external stakeholders the project impacts. Using 3D technologies, the extent of the project can be easily shown to reduce uncertainty in the final project build out.

In addition to a bevy of technical challenges, the planning process at any utility is subject to a host of non-technical stakeholder concerns. The interconnectedness of the transmission system means that the interests of many parties are affected both directly and indirectly by transmission planning decisions and external advocates are inevitable in projects of all sizes. 3D modeling of a project early-on can reduce issues and promote transparency, thus building public trust.

The intensity of these types of large capital projects for SCE calls for a need to easily visualize, understand and communicate transmission plans in real world context in order to effectively facilitate the public understanding necessary to reach a consensus. Greater clarity into reviewing corridor alignment alternatives results in a visual understanding of the impacts on schedule and costs. And with new transmission assets slated for a 50 year plus lifespan on the line, it's critical to keep the project development process moving forward in a timely, safe and cost-effective fashion.

SCE 3D MODEL



3D Model of proposed tower with grading limits (red) and limits of disturbance (gray)



3D model of proposed 220 kV tower with footing and conductor on proposed grading limit and new roads.

Data Input Streams & What It Takes Behind the Scenes

SCE envisions the application of 3D modeling to transform the engineering and project design workflows on capital projects. SCE's approach helped non-engineering project team members quickly and easily understand project design data in a real-world, contextual environment. The InfraWorks software allows for the quick and easy integration and layering of multiple key data sets including existing surface terrain, road, site, and other civil data, PLS-CADD data, and LIDAR (light detection and ranging), environmental, and geospatial data (GIS) data (See 3D modeling (InfraWorks) Implementation Process Graphic). The software generates a holistic, digital 3D model of the transmission project for use throughout the project lifecycle and allows for scenario modeling and comparison. SCE can leverage this technology to plan, design and engineer with real data, in the real world, in real time while potentially avoiding costly environmental issues.



3D modeling (InfraWorks) implementation Process

2D vs. 3D Solutions

The ability to visualize the project design at the concept stage without having to interpret 2D engineering drawings and maps, proved valuable in the early planning stages of capital projects to explain project impacts to various SCE stakeholder groups.

Since the 3D InfraWorks model is dynamic, the project team can quickly analyze project design alternatives in the office, and potentially avoid costly field visits. The model also provides stakeholders realistic views from key observation points (KOP) perspective.

For capital projects, the bottom line is the more detailed the information, the better decisions can be made and the quicker SCE can get projects completed. The design models of existing assets, terrain, and environmental conditions can be created in hours instead of weeks, without potentially having to go to the field and aggregate data. Both the transmission and environmental teams are able to start on desktop analysis promptly saving time, resources and field trips. For SCE, it cuts down processing time and improves productivity and the ability to make informed decisions earlier in the project stage.

Conservation & Environmental Impact

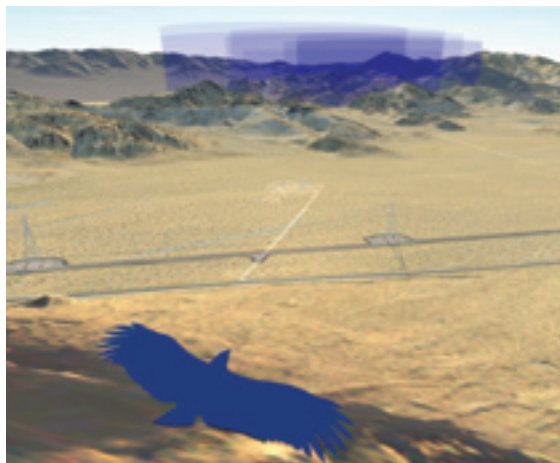
SCE transmission projects can involve particularly sensitive desert, mountain, and coastal areas. One of the biggest challenges on large capital projects is assessing the impacts of project design on natural resources, and requires close attention to environmental constraints and to the conservation of wildlife— especially nesting raptors. SCE piloted the uses of the 3D modeling system to conduct virtual field visits to aid in the evaluation of design changes on the environment and to save schedule and budget. The 3D model easily incorporated environmental data and allowed project teams to foresee areas of concern for environmental impacts.

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In working with the 3D model, SCE was able to have a real-world view of the location of bird nests and to evaluate impacts. In the past, nest evaluation was limited to field visit. SCE is evaluating the ability to analyze the transmission assets and various design alternatives by utilizing a point of view from a nest perspective. Furthermore, line of sight analysis can be evaluated from a nest location to determine impacts. Once a nest location is known, a nest buffer can be created that visually shows where the project components and nest buffer intersect. This can allow for better construction planning and scheduling to potentially avoid impacts to nesting birds.



3D model visualization from nest perspective showing project components and nest buffers in the distance.

“When talking about understanding the project impact, showing stakeholders the model facilitates an overall understanding and helps make better decisions. Stakeholders want to see the grading and where the towers are going to go – it’s far beyond a 2D map – the visual impact is invaluable.”

Marcia Carrillo

Conclusion

With plans for large investment over the next four years in expanding and strengthening SCE electric system infrastructure, the 3D modeling solution has the potential to play a major role in helping SCE design teams, clients and other stakeholders better understand projects to support timely and well-informed transmission planning and execution decisions.

Utilities seeking to build better project communications earlier in project reviews and throughout the project lifecycle, could benefit greatly from the deployment of 3D models and integrated project design business processes that leverage the cutting edge capabilities of today’s newest advancements in spatial modeling. 3D transmission models have a place at the table with business benefits accruing across a range of areas including:

1. Strengthened stakeholder involvement and buy-in
2. Improved productivity and sharpened decision-making
3. Reduced safety risks
4. Enhanced ability to anticipate, analyze and reduce environmental impacts

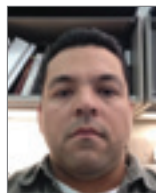
About the authors



Marcia Carrillo BSEE, Ph.D.

As a senior technical specialist at southern California Edison Marcia has the role of bringing innovative and best practices to large transmission projects. With over 15 years of experience in enterprise spatial data management and innovative technology solutions, she continues to devote her career to making technology work for everyone.

Contact: Marcia.carrillo@sce.com



Daniel Hurtado is a technical specialist in transmission and distribution engineering at Southern California Edison, leading geospatial efforts at the company.

Reykjavik Energy gets the Advantage

By Dave Daly

With its rich natural resources and picturesque landscape reminiscent of Disney's Frozen, Iceland is a draw for industry establishments. In Iceland, 73 percent of the electricity is generated from hydropower plants and 27 percent from geothermal power plants. Its energy system is virtually 100 percent carbon dioxide neutral, but its complexity requires that the energy supply is under control from source of generation to point of consumption at all times to balance the load. For Reykjavik Energy, Iceland's largest utility, maintaining control of this delicate balance and managing the people working on its power system is fundamental to ensuring a safe and reliable power system for all of its customers.

Reykjavik Electricity, which was merged into Reykjavik Energy in 1999, began its operation in 1921. Its electricity distribution extends to more than half of the population of Iceland – approximately 182,000 inhabitants living in six municipalities in the capital area. Reykjavik Energy's grid system includes 13 substations and about 890 distribution stations; its distribution network consists mostly of underground cables.

Grid modernization and optimization is no new concept for Reykjavik Energy. It has been operating a computerized SCADA system since 1974. Prior to installing GE's Advantage Advanced Distribution Management System (ADMS), Reykjavik's previous SCADA platform dated back to 1996 and was delivered by CAE Electronics in Montreal. To further ensure the quality and reliability of the power it supplies to its customers and reduce operational costs, Reykjavik Energy has embarked on a project to upgrade its existing SCADA platform with GE's solution.

"Iceland is a forerunner country in modern energy production with virtually 100 percent of its electricity generated from renewable resources such as geothermal and hydro. Enjoying these high-quality power sources encouraged us to improve our distribution management system," said Runar Svavar Svavarson, technical manager of Reykjavik Energy's electrical systems. "With this new system, we can improve our control over our electricity grid and to provide our customers with the high-quality power they require in a cost-effective way."

The switch to the new enterprise ADMS will work to dramatically improve Reykjavik Energy's profitability, quality of service and customer satisfaction through both the addition of a comprehensive set of distribution applications and a completely modernized solution.

This system deployed by Reykjavik was developed to address top concerns surrounding global utility distribution and outage processes and is the result of direct collaboration between GE and utilities from around the globe. During the development process, feedback was gathered from customers to create a solution capable of meeting their needs and improving their operating experience.

The full-featured and integrated solution will provide Reykjavik Energy's distribution operators with exceptional workflow capability, intelligent prediction management and a next-generation user experience. Comprehensive work processes are seamlessly integrated between planned, unplanned and a broad array of optimization tasks. Platform modularity supports distribution and outage management processes and procedures, thereby improving operational efficiencies and communications in no matter what the weather outside looks like.

The ADMS provides Reykjavik's utility professionals with a unique and easy-to-use interface where data finds the user via a pre-defined dashboard with user-configurable widgets – a new paradigm in how data is collected and displayed. This custom dashboard becomes the center of attention for the user. It features user-specific modules that can be configured to present a wide array of information, provide customized alarms and link to other optimization applications. The system also features intuitive work pages that are designed for user-specific tasks. These pages provide all of the data tables, forms and diagrams needed on a daily basis. Through these guided work pages and streamlined and robust workflows, Reykjavik Energy's skilled team will be provided with advanced situational awareness and will be able to continuously access critical grid information, allowing the utility to proactively handle the challenges of its modern and dynamic distribution grid.

Reykjavik Energy gets the Advantage

Mobile and other information technology (IT) use among Icelanders is among the world's highest. Thus, customers' expect utilities to be able to communicate efficiently and in a timely manner via those mediums when and if a disturbance occurs. The ADMS's communication module enables an integrated view of network voice, chat and video communications – both internally and externally. By interconnecting the ADMS solution with other IT systems, Reykjavik Energy can expand its communication capabilities, making it possible to keep customers informed of disturbances as they reveal themselves.

With the ADMS, Reykjavik Energy will now be able to continuously access critical grid information, advancing the functionality of its network and helping to modernize its grid. With this real-time data, it can instantaneously assess its network, pinpoint the location of a disruption and disperse well-informed restoration teams faster than ever before. This instantaneous availability of grid data also allows Reykjavik Energy to meet its customers' increased demand to access their individual usage information and stay in the loop if and when an outage does occur.

In addition, the solution replaces Reykjavik Energy's existing paper-and-pin wall with a new video wall, making it possible for operators to see the entire electrical network dynamically in real-time, in both schematic and geographical layouts. The overview provided on the video wall enables users to maintain perspective across their entire network and increase the situational awareness of their assets. The solution further improves the flow of information with end-to-end network model management processes and streamlined workflows. In addition, field crews will be able to access these graphical representations remotely using smartphones, tablets or laptops.

PowerOn Advantage has been designed from the customer's perspective to bring stakeholders together on a single platform enabling them to efficiently interact with the network, perform work and share information in real-time. One network model provides a single view of all work across the entire distribution network. This ability helps ensure that on-site field workers are viewing the same information as dispatch crews and grid operators, speeding up and simplifying outage restoration processes.

Safety and Simplification

The implementation of GE's ADMS also provides Reykjavik Energy with features that can improve the safety of its workers, something that the company values immensely. The ADMS ensures the highest level of network awareness during switching processes and other maintenance activities as well as strong mechanisms to ensure all stakeholders (including consumers) are aware of the network condition. The system provides Reykjavik Energy with an improved overview of its grid,

allowing personnel to quickly assimilate information needed for particular tasks unique to their roles and needs. This heightened awareness equips both dispatchers and field crews with more accurate information on individual grid parts – thus making their work safer.

Another way the ADMS will streamline processes for Reykjavik Energy is its ability to make the creation of work orders faster and easier by proactively recommending the best solutions and working sequences based on advanced power flow calculations. Its pre-defined dashboard with user-configurable widgets provide greater situational awareness and streamlined, intuitive, guided work pages.

This technology also simplifies the process of creating outage reports. The new system automatically provides information including the number of customers without power and the duration of the outage. It also provides calculated values for the standard system reliability indices (SAIDI, SAIFI, etc.).

A utility's ability to control its network and manage the people working on its power system is fundamental to ensuring a safe and reliable power system for its customers and employees. With technology like GE's Advantage, grid operators can access real-time information to help keep the lights on for their customers, to prevent and rapidly respond to outages and to maximize their utility's return on network investment.

With the new system, Reykjavik Energy is able to increase the number of small remote terminal units in its distribution stations, providing improved control and fault indications. This gives dispatchers a better overview of the whole distribution grid, ultimately leading to shortened outage times.

With this implementation, Iceland, which was already a leader in the sector of modern electricity production and distribution, is now in even better position to meet evolving electrical challenges. GE's ADMS provides Reykjavik Energy with capabilities to help keep the lights on across the beautiful, scenic island of Iceland both today and in the future.



About the author

David (Dave) Daly is the product director responsible for Advanced Distribution Management Systems (ADMS) for Digital Energy's Asset Control product line.

Dave has eighteen years of experience in utility control solutions, focused on distribution management. At GE, Dave has held various leadership roles across product management, engineering, project delivery and customer services. Prior to joining GE, Dave worked at ASCADA and IBM as a software engineer.

Dave holds a B.Eng in Electrical Engineering from the University of Glasgow, UK.

Deconstructing Decommissioning: Best Practices for Managing the Final Mile of Critical Assets

By Guy Barlow

For decades, asset decommissioning has been relegated to afterthought status in many industries, including utilities. Instead, businesses have focused their attention on bringing new projects online as rapidly and cost-effectively as possible to optimize opportunity, service delivery, and revenue. With decades-long lifecycles for critical assets, there was little compelling desire or incentive to plan early for their decommissioning. But, times are changing. And utilities are rapidly realizing the need to plan for and manage the final mile of their assets – the process of asset retirement, or decommissioning – as carefully as they do their initial construction.

What has changed?

First, assets and the people that manage them are aging. For example, the *2015 State of the Electric Utility Report* revealed that old infrastructure and an aging workforce are the top two challenges facing the industry today. Much of the nation's utility infrastructure is decades old, with many critical assets nearing the end of their practical lifecycle. In addition, the skilled professionals who constructed these facilities and managed them for decades are retiring. Utilities are having difficulty replacing them, and more importantly, are not effectively capturing, archiving, and sharing their institutional knowledge for future use. At the same time, regulatory requirements and safety and environmental concerns continue to escalate, making older units, in many cases, unprofitable.

Driving further urgency to decommissioning is the overarching need to continually do more with less while accelerating transformation. Organizations are looking to realize maximum value from their assets while minimizing costs and risk. Increasingly, a comprehensive decommissioning strategy is essential to achieving these objectives.

Danger Ahead: Kicking the Can down the Road

Only 23 percent of utilities organizations have a plan in place for the retirement phase of their assets, according to Aberdeen Group. Several factors are driving this surprising statistic:

- **New Assets are the First Priority.** New assets and infrastructure are vital to ensuring the scale and reliability needed to meet rising demand in the utility industry. As such, enterprises are first focused on completing these new projects on time and on budget.
- **Asset Lifecycle Pushed to Its Limits.** Utilities are looking to squeeze every last drop of productivity out of their assets. This often involves extending lifecycles well beyond the original targets.
- **Increasingly Limited Resources.** Enterprises today must frequently choose between applying skilled resources on new projects as opposed to using them to plan for or proceed with decommissioning.

Focused on these shorter-term considerations, many utilities overlook the considerable opportunity costs associated with a mismanaged decommissioning project and therefore fail to devote sufficient attention to this important process early in the asset lifecycle. Simply stated, a decommissioning project that is late or over budget consumes precious resources that could be leveraged elsewhere in the enterprise to drive innovation and return on investment.

Beyond opportunity costs, failure to plan effectively for decommissioning can bring additional risks, including insufficient funds set aside to complete the project and greater regulatory scrutiny and intervention—all of which shift an enterprise's focus away from its core mission.

Proof in the Numbers

Decommissioning projects can carry just as much risk as new projects, and sometimes more. For example, enterprises typically decommission assets much less frequently than they bring new ones online. As such, organizations have fewer best practices on which they can rely and have to “reinvent” each time they launch a decommissioning initiative. In addition, documentation about the facility being decommissioned is likely to be paper-based and institutional knowledge is dispersed informally throughout the organization – which makes the collaboration and information sharing required for a successful project extremely difficult.

In its research, Aberdeen found that decommissioning projects can derail at several points.¹ For example 52 percent of utilities companies in the study said that they experienced poorly defined project requirements, 32 percent cited changes introduced after the start of a project, and 25 percent cited time spent waiting for decisions and communication due to manual processes as sticking points. Aberdeen's research made one important point very clear: companies who plan for decommissioning in the beginning of the lifecycle have an 88 percent advantage over peers who do not implement a plan.

Roadmap for Success

Decommissioning is an essential part of the asset lifecycle and should be approached with the same deliberation as the design, build, and operate phases. Here are seven best practices that when implemented can go a long way to ensure a successful decommissioning:

Deconstructing Decommissioning: Best Practices for Managing the Final Mile of Critical Assets

1. **Collaborate early and often.** It is important to involve all key stakeholders consistently throughout the life-cycle planning process to define and validate project scope and approach. This includes internal stakeholders (facility managers, line of business leaders, risk officers, as well as executive management) as well as multiple external stakeholders (contractors, partners, as well as local, state, and Federal regulators who have jurisdiction over the project). It is also important to seek input early and often from individuals who will manage and ultimately decommission the asset. Their perspective can provide important insight into design features that can facilitate and reduce the cost and risk of decommissioning decades later.
 2. **Create a centralized plan repository with the ability to embed risk assessment into the plan.** These repositories, often the core of enterprise project portfolio management (EPPM) solutions, capture and store information needed to manage the entire asset lifecycle, including decommissioning. They enable enterprises to effectively communicate and manage tasks internally and externally by creating a one-stop shop for all project information. By embedding risk information into these repositories and resulting plan, leaders can prepare and react to unforeseen issues and apply lessons learned to future projects, perform 'what if' scenarios, and monitor the status of in-process progress to approve, continue, and optimize decommissioning projects. This information is vital to capturing and standardizing institutional knowledge that is essential in decommissioning when an asset has reached end of life.
 3. **Optimize resources.** As resources become increasingly scarce, key stakeholders must have complete and real-time visibility into the skill sets at their disposal, as well as where and how resources are deployed throughout the organization. It is also critical to standardize procedures for selecting resources and predefine exception processes. Working within this framework, leaders can accurately identify required skills and resources and effectively map them to project requirements – enabling them to fully leverage increasingly precious resources to avoid delays, mistakes, and cost overruns.
 4. **Ensure real-time visibility into project as well as asset performance.** Asset-intensive enterprises have long understood the need for effective project management. It is just as important to include during the decommissioning phase. Leaders require real-time visibility into project performance – in terms of progress and budget adherence – and must be able to share this information with internal and external stakeholders, as appropriate and necessary. Clear insight via analytics into milestones achieved and missed, status updates, budget versus actual spend, and work breakdown structure (WBS) updates are essential. Today, utilities are eager to extend visibility beyond individual projects to encompass the complete lifecycle of an asset. This approach enables enterprises to better determine and plan effectively for end of life, ultimately, optimizing return on investment.
 5. **Equip managers with tools needed to plan and execute.** Automating the asset lifecycle management process is increasingly essential. The days of disparate spreadsheets and paper based processes are no longer tenable in the modern utility enterprise. Instead, they require modern, often cloud-based capabilities that not only enable complete visibility but can automate processes such as scheduling, costing, project management, reporting, and collaboration. Solutions, such as EPPM systems, can help leaders improve strategy execution, operational excellence, and financial performance across the entire enterprise to ensure that projects are not only completed within budget and on time, but also support the execution of business outcomes that drive strategic value.
 6. **Institute formal processes for managing change.** Change is inevitable during any larger project. The key is to learn to manage it by setting up processes that guide change management; standardizing processes to require a change; creating formal process to report and approve changes; establishing protocols to communicate change effectively; and instituting a closed loop process for change related tasks.
 7. **Focus on continuous improvement.** Always take time to assess progress and capture knowledge for future initiatives. Leading enterprises bake continuous improvement into their standard operating procedures for project management and benefit greatly from continued evolution of best practices.
- By embracing a holistic and aligned approach to asset lifecycle management and project management best practices, utilities set a solid foundation for improving performance, reducing risk, optimizing return on their strategic investments, and most importantly, scaling effectively to support current and future customer demands. With careful planning and proven methodologies, utilities can finally put an end to decommissioning distress.

About the author



As the director of industry strategy for Oracle's Primavera global business unit, Guy Barlow leads the global go-to market strategy across the energy, engineering & construction and public sector industries.

He has more than 20 years of industry experience working with and marketing to global enterprises. At Oracle, Guy works with business leaders to help them realize a vision for enterprise project and portfolio management through portfolio and project management, business analytics, process improvement, and risk solutions.

Prior to joining Oracle, Guy worked at BearingPoint (KPMG Consulting), IBM Software, IBM Management Consulting, and PwC.

Reference

- 1 Paquin, R., "The Importance of Decommissioning in Asset Intensive Industries," Aberdeen Group, September 2014

Managing Utility Fleets on Mobile Platform

By Mary Brittain-White

It's no secret, the implementation of new technologies in any enterprise is no easy task, and utilities industry is no exception, especially when it comes to fleet management and mobile tech. To complicate matters further, there are a few barriers that separate the first thought of implementation from the actual execution.

One reason is lack of credible and consistent information about the differences in various features and feature sets in mobile platforms, software and hardware. Additionally, not enough attention is paid to objectively discussing how operating systems affect the mobile workforce experience in the field.

Another is the overuse of industry terminology. Despite the availability of dozens of mobile enterprise products and services, one still needs a dictionary to translate 'engineer English' into plain English, or any other language for that matter.

Then there are the one-trick ponies, the one-feature solutions that fail to support the complete work cycle or integrate into other software products well. Go with one of these and, instead of more efficient operations you got yourself a headache.

As a result, many utility companies shy away from taking the plunge into mobile automation, instead observing from the sidelines while still depending on dinosaur manual data input processes to manage fleets. All this despite the availability of automated mobile applications designed specifically for field force.

But all that might change.

We are approaching a transformation, with several trends altering the direction for the utility industry. Among them are:

- Limited resources
- Increasing power demands
- Carbon footprint reduction requirements
- Increasing security risks
- Greater deployments of smart metering systems and smart grids
- Increased fines for service interruptions

In the last couple of years, we've observed an overall industry push to increase productivity, ensure fleet driver safety and transparency and, of course, to reduce costs associated with fleet operations.

These developments bring about a new perspective but also put pressure on operations and fleet managers to automate fleet management.



Successful implementations of mobile strategies have shown concrete and measurable results for the field technician level, as well as for the managers. Mobile solutions are as strategic as they are tactical: Capable of shortening sales and service cycles, reducing power outages, improving quality of work and increasing overall revenues. ROI is a critical factor in any business purchasing decision. According to a 2008 study by industry research firm Aberdeen Group, the average ROI associated with fleet automation includes:

- 28 percent improvement in fleet utilization
- 27 – 42 percent improvement in work order completion
- 9 – 23 percent reduction in vehicle maintenance costs
- \$1055 in fuel savings per vehicle, per year

At Retriever, we recognize the need for a comprehensive end-to-end mobile-based platform that addresses the priorities of fleet managers and field technicians: Giving real-time updates on vehicles, techs, activities-in-progress and service calls to help increase employee productivity and reduce costs associated with manually performed procedures.

Managing Utility Fleets on Mobile Platform

To combine this mobile automation expertise with the most innovative technologies in GPS-based telematics systems, we formed an alliance with LoJack, an undisputed leader in vehicle recovery and tracking.

The collaboration produced a new mobile field service management platform that provides enterprise and utility fleets with a scalable mobile solution that integrates telematics and fleet management with dynamic data capture and real time scheduling.

Until now, the enterprise didn't have access to a comprehensive mobility solution that could combine wide-ranging mobile workflow functionality with specialized fleet management and telematics. Thanks to this relationship, field service enterprises can now implement an end-to-end solution that sends and receives data while managing and tracking field workers and commercial fleet vehicles.

Unlike competing single function offerings, the solution creates a comprehensive mobile workforce platform that caters to a variety of operational needs, from simple to complex workflows. The solution creates a new standard for the field service market by offering a complete and connected mobile force ecosystem.

Decision-making and knowledge sharing

On the strategic level, the platform improves field technician and operator decision-making by putting the latest and most accurate information at their fingertips. The data spans across business processes, from outstanding and in-progress work orders to technician status updates. Field operators can track vehicles in real-time, monitor traffic, review current orders and receive automatic notifications as their status changes so the techs in the field can be updated.



Additionally, the mobile platform supports all field force procedures needed to complete work orders and field tickets, such as parts inventory, labor and time allocation, job procedure tracking, asset tasking, site history reviews and safety management. Trip reports, fuel consumption, order and maintenance reports – all available in real-time, contribute to more accurate and confident decision-making.

Data collection in the field

In any industry these days, data collection is crucial. The platform facilitates on-site data collection, improving accuracy, eliminating paperwork and increasing workforce accountability while minimizing expenses.

Collecting information digitally, instead of using paper-based reporting, also makes information more secure and easier to track.

Efficiency

A top priority for utility companies is increasing efficiency across the board, from operations and fleet and field force management to environmental conservation. The Retriever / LoJack platform does just this by providing insight into a vehicle's trip details, including routes, idling times and stops. These details ensure the fastest response by dispatching the nearest field worker to the jobsite, eliminating after hours or weekend vehicle use while reducing carbon footprints through decreased fuel use.

The new offering allows utilities companies to integrate a complete fleet management solution into their overall field service program, bypassing extensive customization phases by using the app's built-in pre-configuration. The software integrates with a company's back office ERP system, facilitating immediate work-order distribution and condensed service cycles by enabling real-time job approvals with digital signatures.

Transparency and safety in the field

Designed around critical field force operator needs, such as 360 visibility and transparency, vehicle protection and driver safety, the platform tracks driver habits to identify and correct dangerous driving. Improved driver behavior reduces fuel and repair costs associated with servicing the fleet. Fuel consumption and maintenance bills make up nearly 30 percent¹ of the total cost of operating each vehicle in your fleet. Both factors are affected by driving style.

A 2010 studies by Frost & Sullivan demonstrated that changing driving style alone could reduce fuel consumption by up to eight percent.² Prolonged idling, constant revving of the engine and harsh braking all contribute significantly to reduced fuel economy, and all these driving styles can be modified. It is for this reason the new platform facilitates managers and drivers to monitor and then modify their driving style to curb excessive fuel usage.

Anywhere, anytime, on any device

In any industry, time is money. A mobile platform that fails to perform in areas of limited connectivity wastes both. Built with real-world environmental circumstances taken into consideration, the platform allows fleet operators to operate in limited and zero wireless coverage areas, in addition to 3G, 4G and WIFI environments.

The platform can integrate with any operating system, working on any mobile device supporting Android, iOS or Windows. It also supports mixed 'device' deployments and integrates with any back office system, including: Maximo, SAP, Oracle, SAGE, Kronos, Home Grown, Microsoft GP, and QuickBooks through Web Services, HTTP/s, and FTP.

Simply put, this latest collaboration offers a holistic IT approach to field service, improving cost savings by streamlining paperless internal business processes. Ushering in a different approach and philosophy to field force management and service, the platform facilitates the elimination of information silos and encourages collaboration and transparency.

Predictably, socio-economic, technological and regulatory trends are pointing in the direction of automating field force and fleet management. And, if the transition is unavoidable, then moving to a mobile-based platform isn't taking a huge leap of faith after all.

References

¹ Athlon Car Lease, total cost of ownership average values, February 2011.

² Frost & Sullivan, Essential European Fleet Management, February 2010.

About the author



Mary Brittain-White is CEO of Retriever Communications. After 20 years in the wireless data industry, of which 16 years are with Retriever, Mary Brittain-White has established herself as a thought leader in the area of wireless field automation. Prior to founding Retriever, she worked for a Silicon Valley based Motorola subsidiary, RadioMail, which pioneered wireless email. From University, she joined IBM and over a 14 year career there held Sales and Marketing executive management roles. She has a Bachelor of Economics from Sydney University and a post graduate Executive Development program from Melbourne University.



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Microgrids: Changing the Face of Energy Output and Consumption

By John Dirkman, P.E.

According to the Department of Energy, peak demand for electricity has outpaced transmission growth by nearly 25 percent every year since 1982. Power outages in the U.S. have steadily increased in the last decade, costing an estimated \$150 billion annually in lost productivity. One ideal solution to respond to these mounting challenges would be a nationwide smart grid – a modern grid that utilizes renewable energy – but it would cost more than \$300 billion and take many years to install. As federal funds for grid improvements continue to deplete and aging infrastructures lend themselves to more power inconsistencies, the world needs to approach power production from a new point of view. Microgrids are emerging as a cost-effective solution to the worldwide power crisis, with experts expecting it to be a \$20 billion market by 2020, according to Navigant Research. This article will explore some of the trends driving microgrids adoption, as well as who uses them, their components, and the future of the industry.

What is a microgrid?

Simply put, a microgrid is a set of systems with the ability to generate power near or at the source of consumption. It can completely disconnect from the main utility grid (a process known as ‘islanding’) in the event of an emergency, and produce enough energy to power its critical loads. Microgrids can also work connected to the main utility grid, serving as a mutually beneficial resource to the grid and its users. A microgrid can be small enough for a single residential home or large enough to power critical loads for an entire military base, university campus, or municipality.

For microgrids to produce and store power properly, an intelligent infrastructure needs to be in place, which consists of an advanced energy management system, generators – traditional and renewable, storage systems, and most importantly, a reliable, intelligent controller. The controller is responsible for examining the data collected from the various components in the microgrid network and orchestrating various distributed energy resources and other components into one actionable system.

A reliable, efficient microgrid also leverages data to implement predictive control systems – these systems determine when to generate energy, when to store and dispatch it, and how to effectively and efficiently manage it.

What do microgrids provide?

Above all else, microgrids provide a safe, reliable, energy efficient power source, offering greater reliability to organizations than the traditional grid can provide in today’s rapidly changing energy landscape. They can sense a pending outage before it impacts the microgrid and reduce or eliminate the outage locally. From a security standpoint, microgrids protect businesses and municipalities from potential threats that could otherwise bring electricity to a halt – from weather emergencies and human error to malicious intent from outside forces.

Much of the electrical grid infrastructure in the U.S. was built before the 1980s, often near sources of fuel, wind, or water power and far from the communities they serve. The aging infrastructure of the grid and long distance to the end user causes the country’s power efficiency delivery to fall below 50 percent – meaning more than half of the power utilities produce goes to waste as lost heat. Alternatively, microgrids often run at 80 percent efficiency and hold steady at 66 percent efficiency. This difference alone is a compelling reason to consider a microgrid deployment.

Most importantly, microgrids can provide a sustainable energy resource to organizations and individuals by effectively generating, often via renewable sources, storing and using its own energy while also having the ability to sell excess power back to the main grid, reducing the amount of power the grid needs to produce and deliver during times of high demand. Because of the proximity microgrids have to the end user, these systems provide power at a lower generator fossil fuel burn rate, reducing the amount of CO₂ released into the atmosphere for power generation.

What's driving microgrid adoption?

Climate change, increasing energy costs and record-breaking electricity demand are other key drivers moving organizations and government entities to look to energy options outside of the traditional grid. Additionally, widespread sustainability efforts are further driving interest in microgrid deployments as microgrids can harness renewable energy resources including solar, hydro and wind power, reducing the need to rely on carbon-producing resources. Microgrids can also use excess heat from power generation, known as combined heat and power or CHP, for other applications to offset the grid load, further reducing energy waste.

Financial incentives from federal and state governments are making this the best time to invest in microgrid technologies – the U.S. Department of Energy announced \$7 million in funding to advance the design of community-scale microgrids. In addition, several states including New York and Connecticut have microgrid-related incentives. In addition, California plans to provide \$45 million in incentives over the next five years to reduce its current load on the grid.

Also driving microgrid adoption is the greater need for security as more energy systems come online and are exposed to potential threats. In fact, the Department of Defense currently accounts for 36 percent of all operational microgrids in the U.S. and continues to install microgrids to enhance security measures. If an attack were to affect the central power grid, military and government bases would still be able to produce their own power and continue to operate.

Beyond military installations, colleges like the University of Connecticut are installing microgrids to not only produce their own energy, but also as a way of teaching students about energy sustainability and other microgrid concepts. Microgrid deployments in the higher education market serve as a real-world tool to teach students how to become energy independent, reduce overall energy costs and reduce their carbon footprint.

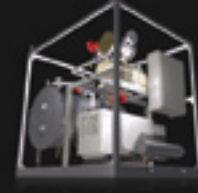


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Microgrid adoption is being driven by environments where a constant power supply is critical – such as hospitals, municipalities, schools, manufacturing centers and more. These facilities need to stay running at all times and can't afford to risk power loss due to a major weather event or peak demand for power. During periods of grid disruption, microgrids have the ability to restore power to a facility and even control how available energy should be utilized. For example, in the event of a power disruption at a hospital, the microgrid can provide medical equipment with electricity over vending machines – and even control which rooms receive more electricity than others.

While the challenges influencing the need for microgrids are not new, recent industry shifts have made microgrids more accessible. The price of renewable energy technologies has dramatically decreased in recent years – the cost of solar installations is down 75 percent since the end of 2009 according to IRENA, while wind energy is expected save consumers \$280 billion by 2050, according to the EIA.

Does this mean the end for utilities?

Absolutely not. While utilities initially viewed microgrids as a threat, many are now starting to develop microgrids within their infrastructure. Microgrids not only offer a new revenue stream to utilities, but act as a resource to reduce load during peak demand – offering customers an uninterrupted, more reliable power source and avoiding power purchases during peaks. Through innovative software capabilities, utilities are able to collaborate with independent microgrids to deliver high quality power to end users.

Communities around the country are already seeing benefits of utility-led microgrid installations. For example, California's San Diego Gas & Electric recently developed a solar-based microgrid that can provide power to an entire community in the event of a power outage. It empowers the utility to maintain control over the power structure while also ensuring their customers in rural areas maintain access to electricity, even during times of disruption. Texas-based Oncor is also using microgrids to improve its stability as an electricity provider and recently unveiled a project that connects four independent microgrids to act as one. The technology provided by Schneider Electric and S&C Electric Company marks a transition in how

utilities are using innovative technologies to expand their capabilities and improve power reliability.

What does the future hold?

The future for microgrids is bright – one of the biggest trends impacting how microgrids will evolve is the ability to store energy. While about one third of microgrids now include electrical energy storage, solution providers have a long way to go to make this technology universal for the widest impact.

Technology innovations will create an environment where microgrids will be able to sync with each other more effectively. Software will develop to a point where small microgrids will be able to communicate with each other and balance energy requirements when needed. When microgrids work together, they'll be able to provide more reliable energy and provide power more universally to urban, suburban, and rural areas.

The need for microgrids is apparent – what's left now is for regulators, consumers, utilities and private companies to work together to determine opportunities to build a network of reliable, efficient and clean energy. Continued investment and adoption of microgrid technologies – from storage to solar and controls – will lead to new ways of thinking about how we consume and produce power, and will create more reliable energy supplies for generations to come.

About the author



John Dirkman P.E., Sr. Product Manager, Smart Grid Global for Schneider Electric has over 20 years of experience and leads product and program management for advanced integrated Smart Grid systems.

Advanced Connectivity for the Internet of Things

By Jason Wilson

As utilities increase their reliance on ubiquitous data to monitor and operate complex smart grids, advanced connectivity for the Internet of Things (IoT) is an important facet of the overall system plan.

Benefits such as improved grid reliability and operational efficiencies are driving the adoption of IoT. In order to create a communication structure that realizes these benefits, system automation, communication network and data visibility are important considerations.

United States utility companies are looking to bolster energy infrastructure to meet the demands of a growing population while taking into account new regulations and resource scarcity. These will have a dramatic affect on utility companies that must make the appropriate transition while maintaining a high quality of service. Additionally, the implementation of green initiatives, including electric vehicles and solar panels, are impacting the electric grid in ways the system was not originally planned to handle. Therefore, automation is integral to performance. The advantage for utility companies is that an IoT-enabled system will collect and store a high volume of data from multiple sources. Analyzing the data will offer insightful information that will also improve performance, enhance operations and reduce costs.

For instance, in a rural area stretching hundreds or thousands of square miles, IoT devices can help measure and manage what is happening throughout the utility grid in near real-time. Sensors can be configured to send status and condition data and send immediate alarm notifications – depending on how frequently the utility provider needs the information. This results in the most cost-effective and error-free approach to capturing data from devices on the grid.

An IoT-enabled grid allows for real-time communication, which is critical in an emergency. Reliable electricity and public safety are paramount concerns to the industry. With pervasive connectivity to meters and other sensors, utilities can know immediately if power is out, reduce the time to restore service and analyze data to improve efficiencies to prevent or reduce outages. For example, many cities and utilities are rolling out energy efficient street lighting. Two-way communications to existing and new street lights enables cities and utilities to monitor illumination levels, receive notifications of light outages and schedule timely maintenance

to improve public safety. Previously, if a street light went out, companies were only notified once a customer called.

Utility providers want a single wide-area network to support smart meters, grid automation and demand response. Having total visibility into the smart grid enables near real-time monitoring and remote management capabilities.

In severe weather conditions, these smart grid applications allow utility providers to allocate power where it is needed most, and proactively locate faults that could result in an outage.

With a reliable communication network structure in place, having full visibility into the network or devices is possible. As a result, captured data can feed into constantly improving models for supply and demand and creates a more efficient system for delivery of power and services.

Advancements in IoT technology are completely shifting the landscape for the smart grid. With IoT-enabled devices and networks, utilities can better monitor their assets, provide more accurate data and reporting and fully optimize the delivery of energy to the consumer while remaining competitive.

About the author



Jason Wilson holds an M.S. in Systems Management from the University of Southern California and a B.S. in Astronautical Engineering from the United States Air Force Academy. He has extensive experience in product and program management in the telecommunications, defense, electronics and wireless industries.

Jason currently serves as Senior Vice President, Business Development at On-Ramp Wireless, where he manages the global sales organization and drives adoption of the company's innovative RPMA® network, a low-power, wide-area network communications technology. Prior to On-Ramp, he served in various product and program management roles at large companies and start-ups, and early in his career, he served as an officer in the United States Air Force as program manager for the Delta IV and Atlas V launch vehicle systems.

THE BIGGER PICTURE

BY JOSH DAVIDSON, HILLARY H. HOLMES, AND MOLLIE DUCKWORTH



The Era of the Big MLP

If you have been watching the market for initial public offerings this year, you have probably noticed that three of the five largest IPOs so far in 2015 have been of either master limited partnerships (MLPs) or general partners of MLPs. Columbia Pipeline Partners, LP (NYSE: CPPL) closed its initial public offering on February 11, 2015, raising over \$1.2 billion in gross proceeds. A few months later, Tallgrass Energy GP, LP (NYSE: TEGP) raised over \$1.3 billion in gross proceeds in its initial public offering that closed May 12, 2015, and EQT GP Holdings, LP (NYSE: EQGP) raised over \$700 million in its initial public offering that closed May 15, 2015. The stage was set for this strong first half of 2015 by the first two MLP IPOs to exceed one billion dollars in proceeds in late 2014 – Shell Midstream Partners, L.P. (\$1.1 billion) and Antero Midstream Partners LP (\$1.2 billion).

Moreover, we are in the midst of a period of record-setting growth for the MLP marketplace. MLP capital markets activity generated gross proceeds of \$23.0 billion in 2014 and a record \$24.5 billion in 2013. There were 18 MLP IPOs for a record \$7.2 billion in gross proceeds in 2014 and there were a record 19 MLP IPOs for \$5.2 billion in gross proceeds in 2013. Although overall MLP capital markets activity has gotten off to a slower start for 2015, generating gross proceeds of \$9.0 billion in the first half of 2015, the IPO market has seen a small number of MLP IPOs generating significant amounts of proceeds. During the first half of 2015 there were 6 MLP IPOs for \$2.4 billion in gross proceeds (in addition to the TEGP and EQGP general partner IPOs that together generated over \$2.0 billion in gross proceeds).

At a time like this, we examine why being big matters to an MLP, why general partner IPOs are so large and what might be the next source of rapid growth in the sector.

MLP Basics and the Need for Growth

The MLP sector is comprised of approximately 120 MLPs with a combined market capitalization of approximately \$800 billion. Of all MLPs, 80 percent by number and 90 percent by market capitalization are in the energy industry. Even after accounting for acquisitions of several MLPs, the sector has grown at a rapid pace in the last few years. Activity in MLP creation and

capital markets was the heaviest between the second quarter of 2010 and the fourth quarter of 2014, and more than half of existing MLPs are less than six years old. Since the beginning of 2013, 42 MLP IPOs have priced raising approximately \$17.8 billion of gross proceeds. Within all of this activity, MLPs in the midstream sector have raised the most capital and publicly traded general partners of MLPs provided the greatest total return among MLP equities.

An MLP is usually a state law partnership that has a class of public securities traded on a stock exchange. The MLP is governed by a general partner, which in turn is controlled by the entity that created the MLP (the ‘Sponsor’). An MLP does not pay corporate-level income taxes and unitholders generally do not pay taxes on the distributions they receive from the MLP. Instead, there is only one level of tax, which is paid by the unitholders (on a partially deferred basis) on their allocable share of the MLP’s income. In order to avoid the double taxation that corporations face, a publicly traded partnership generally must receive at least 90 percent of its income from qualifying sources (i.e., ‘qualifying income,’ as defined in the Internal Revenue Code). For example, the most important categories of qualifying income for midstream MLPs are from transporting, gathering, processing, terminalling, and storing crude oil, natural gas and refined petroleum products, and certain alternative fuels, such as ethanol.

An essential feature of an MLP is that it makes a quarterly cash distribution (similar to a corporate dividend) to its unitholders. The general partner determines the amount of cash from operations to distribute each quarter, after taking into consideration reserves for future operations and debt service or covenants. It is a common misconception that there is a legal requirement for an MLP to distribute a certain percentage of its cash flow, like a REIT. When determining the amount of the distribution, the general partner pays attention to the coverage ratio, or the ratio of the amount of cash available that could be distributed over the amount actually distributed. As the MLP grows and the coverage of the distribution increases, the general partner has room to increase the distributions. However, there is no guarantee or requirement that the MLP distribute a certain, or any, amount of cash to its unitholders.



As recently as ten years ago, MLP investors were principally focused on yield and an MLP traded more like a bond. Today, an MLP trades like an equity security and its growth prospects are at least as critical as the yield it generates. This requires distributable cash growth through organic growth or acquisitions. When preparing for an IPO, the future MLP must not simply determine that it has qualifying income today but also that it has sources of additional qualifying income in the years after the IPO. The market will have a strong expectation that an MLP will increase its distributions over time. A solid growth story has been one of the main selling points in each of the largest MLP IPOs. Even as recently as a year ago, a distributable cash growth rate of 12 to 20 percent annually was considered high. But some recent IPOs of high-growth MLPs have targeted closer to 20 percent initial annual distribution growth. The Sponsor's significant ownership interest in the MLP, including its ownership of incentive distribution rights (which entitle the holder to an increasing percentage of the MLP's cash distributions as certain cash distribution thresholds are achieved), incentivize it to increase cash distributions to all unitholders by growing the MLP's distributable cash flow. The increased emphasis on growth has favored large companies and large IPOs. On the demand side, a significant component of the growth of the MLP markets and IPO size can be attributed to increased participation by institutional investors. No longer are strong MLPs only a retail product, as institutions often purchase a significant majority of the public equity. This increasing access to institutional buyers supports larger securities offerings and contributes to less volatility in MLP equity, although overall institutional ownership of MLPs still remains at a level below that of other yield stocks.

As a result of this market expectation and the Sponsor's economic incentive, MLPs are generally designed at the IPO stage to provide increasing distributions over time, either through organic growth, expansion capital projects or acquisitions of assets from the Sponsor or third parties. Recent MLPs have provided visibility into their growth stories by presenting a portfolio of assets with qualifying income that they expect to acquire from the Sponsor, by describing in detail well-developed organic growth opportunities, or by using an OpCo Structure in which the Sponsor will sell to the MLP additional interests in one large entity that holds qualifying income over time. These MLPs will fund most of their acquisitions and expansion projects with external capital, such as bank borrowings and the issuance of debt and equity securities. Therefore, the cost of these growth capital expenditures will not reduce the amount of cash available for distribution to the MLP's unitholders.

General Partner IPOs Are Big

Two of the five IPOs discussed at the beginning of this article are 'GP IPOs,' or IPOs of a new public entity that holds interests in the general partner of an existing MLP. In order to understand why GP IPOs are so big, you have to look at the ownership structure of an MLP.

When an MLP is doing well and growing its quarterly cash distributions, an increasing percentage of the cash flows (most commonly up to 50%) are distributed to the incentive distributions rights, which are typically owned by the general partner. The impact of this structure is magnified even further if the underlying MLP issues additional equity interests to fund acquisitions and other growth activity while maintaining the same or higher distribution levels. As a result, there can be significant value in the interests held by the general partner of an MLP that has increased its distributions well above the minimum quarterly distribution and into these 'high splits.' This value is not reflected in the market price of the common units for the underlying MLP, and one way the owner or owners of the general partner can fully unlock this value is to take the GP entity public. Because the share of the cash flow paid to the IDRs increases as the distribution per common unit increases, MLP GPs are high growth securities and trade at low yields and high multiples. The downside risk is that a reduction in distributions on the common units would trigger a proportionately larger decrease in the incentive distributions.

How Does a Public GP Work?

The general partner entity will typically hold the general partner interest in the underlying MLP, which may or may not include an economic interest that entitles the general partner to a percentage (e.g., 2%) of the quarterly distributions made by the MLP, and the incentive distribution rights. In addition, it is fairly common for the GP entity to also have some ownership of the underlying MLP common units (although there are some pure play GPs that do not hold any common units), which reduces the risk of quarterly variability in cash flow from owning only incentive distribution rights. Unlike the underlying MLP, the GP entity does not typically own any operating assets. Rather, its only cash generating assets are the partnership interests that it owns in the underlying MLP. A public GP is generally structured to distribute all cash received from these partnership interests in the underlying MLP, less reserves for items like general and administrative expenses, debt service, and income taxes (if it is taxed as a corporation), to the unitholders or shareholders in the public GP. Public GP entities do not typically issue incentive distribution rights, subordinated units or other equity interests that would provide for a non-pro rata distribution of cash.

There are two primary ways in which a GP IPO can be structured from a tax perspective. If the GP entity will be treated for tax purposes as a partnership, which it can do because the underlying MLP provides it with qualifying income, then investors will own common units representing limited partner interests in the GP entity, and will receive a Schedule K-1 with respect to their share of the income of the GP entity, similar to the underlying MLP. The majority of GP MLPs are structured this way. However, this can result in some level of cannibalization of the underlying MLP's existing investor base, who could choose to invest in the GP entity rather than directly in the underlying MLP. As an alternative, several public GPs have elected to be taxed as corporations.



Treating the public GP entity as a corporation allows a broader institutional investor base to invest in the GP entity, and indirectly in the underlying MLP, which can be increasingly important the larger the anticipated size of the GP IPO. The first example of a GP IPO structured as a limited partnership, but taxed as a corporation, was Plains GP Holdings LP (NYSE: PAGP), which raised nearly \$3 billion in its IPO in October 2013, the largest US IPO of that year. TEGP is the second GP IPO structured as a limited partnership to elect corporate tax treatment, and at approximately \$1.3 billion is the largest US IPO of 2015 to date.

YieldCos as the Next Frontier for Growth

Renewable energy assets, such as solar and wind, do not currently qualify for MLP tax treatment, although legislation has been introduced in Congress to permit that. Because certain renewable assets, such as long term power purchase agreements with utilities, can provide a stable stream of cash flow from investment grade entities over many years with minimal maintenance capital expenditure requirements, a new vehicle, called a YieldCo, has been gaining popularity as a way for renewable energy companies to use the successful MLP growth template to go public. Though some YieldCos are structured as traditional state law corporations, more recent ones, such as NextEra Energy Partners (NYSE: NEP) and 8point3 Energy Partners (NASDAQ: CAFD), have been formed as state law partnerships with MLP features, such as subordinated units and incentive distribution rights, and MLP governance and fiduciary duty provisions. In these YieldCos, the Sponsor and the public YieldCo form an operating company, similar to an MLP OpCo, in which both own an economic interest. Unlike in an MLP, the Sponsor does not own an economic interest in the YieldCo but does have the right to exchange its interest in the OpCo for public YieldCo securities. This structure, combined with the rapid tax depreciation write-offs available for renewable assets, results in the YieldCo paying no or very low federal income taxes for a significant period of time, thereby obtaining one of the principal benefits of an MLP.

Though the YieldCo IPOs have not been as large as some of the recent MLP IPOs, the IPOs for TerraForm Power, Inc., NextEra Energy Partners, NRG Yield, Inc. and 8point3 Energy Partners have all been in the \$400-500 million range. TerraForm Global, Inc. has registered up to \$800 million of common stock for its pending international YieldCo IPO. Furthermore, these YieldCos all have aggressive growth strategies based on a stated strategy of the Sponsor's offering the YieldCo assets from an identified pool of retained 'ROFO' assets on which the YieldCo has a right of first offer should the Sponsor choose to sell these assets. YieldCos have been in the forefront of giving multi-year, high distribution growth targets (12-18% per annum) in the IPO itself. The combination of relatively large IPOs, identified ROFO assets, and high targeted growth rates should result in significant increases in size for many of the YieldCos.

YieldCos have been well received in the marketplace by institutional investors. The potential universe for YieldCos is very large as the current market is much smaller than MLPs, the prospects for Congress expanding the MLP universe to encompass alternative energy is uncertain and companies with foreign assets have shown significant interest in accessing the YieldCo market.

The Future of the Big MLP

Our expectation is that the current trend of large, high growth, dropdown MLPs and YieldCos with an OpCo strategy will continue for the foreseeable future. However, as we examine the drivers of some of the largest IPOs so far this year, it is important to note that these MLP and GP IPOs were accomplished in the midst of a difficult overall market for MLPs during the first half of 2015. Investors in the MLP market will continue to focus on quality and long-term growth potential, particularly as the energy industry adjusts to recent commodity price volatility, but we believe the fundamental structural drivers of the Big MLP are here to stay.

ABOUT THE AUTHORS



Working as a Partner at Baker Botts, **Mollie Duckworth** represents public and private businesses in a wide variety of corporate and securities matters. She represents both public and private companies in connection with M&A transactions, and represents issuers and investment banking firms in public offerings and private placements of equity and debt securities. In addition, she advises public and private companies with respect to general corporate and transactional matters, including compliance with federal securities law issues, state corporate law issues and general corporate matters.



As a Baker Botts Partner, **Hillary Holmes** focuses her practice on capital markets transactions for master limited partnerships (MLPs) and corporations in the energy industry. Ms. Holmes also has deep experience with mergers and acquisitions in the energy industry and complex SEC, securities law and corporate governance matters. Ms. Holmes' clients include issuers and underwriters in securities offerings; buyers, sellers, conflicts committees and financial advisors in M&A transactions; and public corporations and MLPs in day to day corporate counseling.



Josh Davidson is a Partner at Baker Botts. He handles a wide range of corporate and securities work, and he is nationally recognized for his experience in transactions involving master limited partnerships, (MLPs), YieldCos and royalty trusts. Mr. Davidson is head of the firm's Capital Markets and MLP/YieldCo Practice and has concentrated on MLP companies for over 20 years. He has participated in hundreds of equity and debt public offerings and private placements of MLPs, including approximately 60 initial public offerings. Mr. Davidson works with other alternative entities in the pipeline, midstream, oil and gas, renewable energy, shipping, refining, coal, propane and heating oil industries.

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By Maggie Wu

SECURITY SESSIONS

Striking the Balance: Ensuring High Performance, Complete Security of Power Grid

Over the years, the North American Power Transmission & Distribution (PT&D) market has benefitted from major investments in generation, transmission and distribution infrastructure in both Canada and the United States.

These investments are intended to:

- Renew aging equipment
- Improve electrical network reliability and performance
- Visualize and quickly reduce grid congestion

Along with this trend, utility companies are making considerable investments to protect PT&D infrastructure from both physical and cyberthreats. In response to physical disasters such as Superstorm Sandy in October 2012 – and tough lessons learned from that incident – utility companies are attempting to stormproof the distribution networks by sealing conduits, installing fiber optic cabling and flexible connectors and elevating relay panels – relatively simple solutions that were not common practice until recently. Cyberthreats from online attacks, however, are presenting tougher challenges and threatening the integrity of power substations across the globe.

Multiple factors contribute to increased cybersecurity threats for power substations today. The Industrial Internet of Things (IIoT) and the adoption of new technologies, such as transmission control protocol/Internet protocol (TCP/IP)-based technologies for both substation automation networks and wide area network (WAN) communications between substations, has opened these

utility networks up to more cyberthreats. The number of opportunities for an outside force to break into the network has increased tremendously. To combat these threats, a comprehensive and effective cybersecurity policy should be implemented to maintain the reliability and the safety of substation and grid operations.

Cybersecurity for PT&D Networks

Historically, substation control networks were based on local connections and proprietary applications. Systems were designed for safety, reliability and ease of use, and security was not traditionally a concern for network managers or installers. This approach is no longer valid, and given the various cybersecurity concerns facing the industry, engineers need to have additional knowledge of proper security mechanisms. Today's communications networks are characterized by the use of:

- Commercial off-the-shelf technology
- Ethernet and TCP/IP-based communications protocols
- Open standards, IEC60870-5-104 and IEC61850
- Integration of legacy industrial protocols (DNP3) and Modbus TCP
- Remote connections (multiple devices and mobility)
- Interconnection with company IT systems
- Public networks
- Inclusion of wireless technologies

The complexity of the power grid has increased over the years as it has become interconnected with systems across international borders. This interconnectivity exposes the grid to more variables, making failures and mistakes more likely, increasing the potential cost and impact of such incidents.

Origins and Types of Threats

To protect utility networks, it is important to understand the origin and scope of these potential security risks. To put it simply, cyber-attacks can be either attacks from outside the network, or internal issues and modifications of information that originate within the network.

Threats can also be considered intentional or unintentional. Intentional threats include hackers and viruses, while unintentional threats consist of equipment failures and employee carelessness. Naturally, different types of threats have different consequences.

The majority of network security incidents are accidental. According to the Industrial Control Systems Cyber Emergency Response Team (ICS-CERT) vulnerability analysis, authentication flaws were the most abundant threat type identified in 2013. This liability is of particular concern because an attacker with minimal skill could potentially gain administrator-level access to devices that are accessible over the Internet. The analysis also identified other common vulnerabilities like factory hard-coded credentials and weak authentication keys.

With the source and nature of the threats in mind, the next step is to establish preventive processes for any issue that could lead to network downtime. These measures can include devices, configurations, internal security policies and employee and contractor training. And since it's not realistic to assume all threats can be prevented 100 percent of the time, it is also important to set up monitoring and remediation strategies to address issues when they occur.

A thoughtful cybersecurity policy, combined with a well-designed network infrastructure, can help minimize and contain threats. Here are a few best practices for developing better security measures for either new or upgraded substation communications systems:

1. Segment operational networks:

Networks tend to grow incrementally, resulting in large, flat networks. Too often, we find networks that have

become vast, sprawling systems that are difficult to manage or secure. Dividing up large networks into smaller ones improves the manageability, reliability and security of the system.

This is a key requirement in many standards, including the ISA IEC 62443 standard for industrial security. It also makes isolating network issues much easier, and improves overall system reliability.

There are a variety of technology options for dividing your networks into zones:

- a. **Subnets:** This technique divides devices into physical groupings based on function or location for ease of maintenance and security. Each subnet has a specified range of IP addresses and is connected to other subnets using a Layer 3 switch or router. Subnets prevent 'broadcast' messages from being sent between areas, reducing the chances of traffic storms impacting substation operations. Many of these switch and router devices can also act as packet-filters (Layer 3 firewall), offering certain protection against cyber-attack.
- b. **Virtual local area networks (VLANs):** VLANs create logical groups of Ethernet devices that cannot be physically grouped. They work by having Ethernet switches insert a "tag" (essentially, a 4-byte field) into each Ethernet message. Other switches on the network can read this tag and make decisions on whether a message should be forwarded or not. VLANs are great traffic management tools as they allow devices to access only the data they need.

Cybersecurity is an iterative process. As surrounding conditions or threat sources evolve, systems and policies need to be updated to address those changes.

2. Build multiple layers of security:

A single point security solution is a thing of the past. The electrical grid – including its substations and feeders – is an increasingly easy target for hackers and, given its critical importance, any internal errors that bring down the network would be detrimental as well. A carefully constructed and designed security strategy should deploy multiple, overlapping layers of protection to secure critical infrastructure. This can include looking at policies and procedures, as well as physical, network, computer and device security.



Multi-layer security is built on three core concepts:

- a. **Multiple layers of defense:** Layer multiple security solutions so that if one is bypassed, another layer will provide the defense. Systems cannot rely completely on a single point of security, no matter how good it is.
- b. **Differentiated layers of defense:** Each security layer should be slightly different from the rest so if an attacker finds a way past the first layer, they don't automatically have the capabilities to get past subsequent defenses.
- c. **Threat-specific layers of defense:** Each of the defenses should be designed as both context and threat specific. In essence, design for the threat. The electric power system can be exposed to a variety of different security threats, ranging from computer malware and angry employees to denial-of-service (DoS) attacks and information theft. Each needs to be considered and defended against so that the defenses can be based on the behavior and context of the systems using these protocols.

3. Implement different network security technologies:

- a. **Industrial firewalls** control and monitor traffic, comparing the traffic passing through to a predefined security policy and discarding messages that do not meet the policy's requirements. Firewalls can be installed both at the network boundary and between internal zones.
- b. **Virtual private networks (VPNs)** are networks that are layered onto a more general network using specific

protocols or methods to ensure 'private' transmission of data. VPN sessions tunnel across the transport network in an encrypted format, making the data for all practical purposes.

- c. **Industrial Protocol Zones and Conduits:** Most devices in the PT&D market still use legacy industrial protocols, often carried inside TCP/IP protocol communication. As a result, a security approach solely focused on TCP/IP protocol communication vulnerabilities may not be enough. One unique way to provide additional cybersecurity is to divide the network into multiple legacy industrial protocol zones, connected by deep packet inspection (DPI) devices, ultimately forming conduits for legacy industrial protocol communication between those zones. Such a network design ensures that even if the attacker gains access to one section or zone of the network through a TCP/IP protocol vulnerability, he or she won't be able to actually misuse the industrial devices in other zones.

4. Embed security in different elements of the network:

- a. **Security in the router:** To create a security perimeter for the substation, establish a security control point to restrict and monitor traffic flowing into and out of the substation. This could be a dedicated firewall, but in most cases, a router or terminal server can be used. These need to be able to filter large amounts of traffic and interface transparently to IT systems using security and authentication protocols such as RADIUS and TACACS+. It is critical that this device is both security hardened and monitored for indication of attacks.

- b. **Security in the switch:** To protect core processes, network switches have advanced security features for industrial use. At first glance, they appear on the network like a traditional Ethernet switch, but they actually inspect network messages in great detail. The 'transparent' feature allows them to be dropped into existing systems without readdressing the station devices. Organizations can retrofit security zones into live environments without a shutdown and install security controls within a single sub-network – for example, within a large process bus. The 'firewall' feature provides detailed 'stateful' inspection of all network protocols so inappropriate traffic can be blocked. For example, rate limits can be set to prevent "traffic storms" while deep packet inspection rules can be set to prevent inappropriate commands from being sent to IEDs or controllers. The network switches also provide additional security protection through features like device access control by IEEE 802.1x for port-based networks, access control lists that can block unknown devices and protocols, security alerts in case of suspicious network activity and IP source guard to detect network address spoofing.

5. Add redundancy into the network infrastructure:

When designing substation networks, it's important to consider how all of the pieces will communicate with each other and how the data will move from the substation to other locations on the network.

Substations can communicate with the master control station and the backup control station using a variety of networking technologies, including Ethernet WAN, Cellular 3G/4G or MPLS-PPP WAN. Whichever technology is chosen, consider making it redundant by adding yet another cellular backup. Robust communication keeps small issues contained and ensures high systems availability.

While numerous redundancy schemes have developed over the years, there are three particularly useful concepts for mastering substation redundancy: Rapid Spanning Tree Protocol (RSTP), Cellular Redundancy and Parallel Redundancy Protocol (PRP). When it is not possible or practical to add a separate physical hardwired Ethernet line, cellular redundancy can be used to provide a means of backing up communication. The cellular link remains in a standby mode until communications via the primary hardwired Ethernet line is lost. Communication is then transferred to the cellular link.

6. Establish a systematic approach to cybersecurity:

In a typical substation network, a systematic approach for cybersecurity procedures will improve the overall reliability and predictability of the network and carry long-term benefits. These procedures should include the following elements:

- Installing routers and firewalls between the corporate backbone and the substation network
- Implementing stateful inspection, or Deep Packet Inspection (DPI), to ensure that only authorized and valid packets travel between both networks. Tunneling, router redundancy and encryption are helpful features to secure access to the substation
- Segmenting between the operational network and telecom network by creating demilitarized zones (DMZs) for servers and computers in the operational network with external access. Security zones can be defined by physical location or common functions

Several standards, such as North American Electric Reliability Corporation-Critical Infrastructure Protection (NERC-CIP), Institute of Electrical and Electronics Engineers (IEEE)'s 16868 and the International Electrotechnical Commission (IEC)'s 623519, are working to address cybersecurity for substation control systems. Each covers or focuses on different areas and parts of the overall system.

In light of the various physical and cybersecurity challenges facing the power landscape, it is important for network administrators to select switches and routers that have holistic protection against all types of hazards prevalent in substations. Many providers offer such solutions.

ABOUT THE AUTHOR

Maggie Wu is a director of product line management for industrial IT at Belden. She joined the company in 2014 to lead Belden's efforts in innovating industrial networking products, focused mainly around providing complete communication solutions in the power transmission and distribution substations. Maggie is a veteran of several Silicon Valley high tech companies, mainly in the areas of semiconductor and networking.

Maggie holds a bachelor's degree from Tsinghua University in China and a master's degree from Stanford University. Reach her at maggie.wu@belden.com.

How the World's Largest Planned Microgrid Came to Be

Guest Editorial ▶

By Craig Harrison



Five years ago, Rawah Resources secured a square mile of prairie north of Denver, Colorado. At the time, we couldn't fully foresee what it would become, but after a number of twists and turns, we've finally shovel-readied the industrial site called the Niobrara Energy Park (NEP). According to Forbes, it's the world's largest planned microgrid.

When, in the summer of 2010, 662 greenfield acres was acquired, we knew we had an industrial park site with exceptional hybrid-energy potential. We also knew we needed more information so we strategically researched the site's highest and best use.

We turned to one of the 20 specialty consultants we regularly rely on for their niche expertise and ordered a due-diligence study on the high-voltage electric. It turned out that a new, \$40-million transmission grid, owned by Tri State and Western Area Power Administration (WAPA), ran over the property, quadrupling the power capacity from a single 150kV to double 230kV. A mere 18 miles downstream from the project on the existing three 230 kV transmission lines is the largest electrical trading hub in Colorado, the Ault substation. That was the first happy surprise.

The second bit of good fortune came when the next due-diligence study revealed that one of the three largest natural-gas trading hubs in the U.S., with over 50 sellers of gas in any given hour, was a stone's throw away, providing a close source for the lowest-cost natural gas in America. Later in the project timeline, we would also take the inventive step of applying for and securing the first Colorado PUC investor-owned gas utility in 17 years, clearing the way for both natural gas supply distribution and a supply pipeline from the hub. At the same time, access to three in-project major gas transmission lines for use in the industrial park already existed, with 1.5 billion cubic feet of daily gas capacity. One of these lines cost \$300 million and was built just five years earlier.

In addition to bountiful electrical and natural gas supplies, the site enjoys ample sunshine as well as wind – as attested to by the three regional wind farms located nearby – not to mention abundant fiber from over 21 providers and large volumes of clean, cool industrial water. We showed the project to experts at the Colorado School of Mines, and they told us we might have created the first hybrid energy park in America.

After compiling the by-now extensive site research, we applied for the first all-industrial/commercial PUD zoning in Weld County and we leveraged the research to achieve innovative zoning. In 2011, the Weld County Commissioners granted the project 'future-proof zoning' for 52 approved energy, manufacturing, and data land uses (some of which haven't been invented yet), along with a multitude of permissions, including environmental waivers on natural gas power plants, a substation of any size, high-transmission lines of any size within the project boundaries, and even energy storage. Very few properties in the county are zoned for both energy generation and energy consumption, much less 650 megawatts (MW) of natural gas and 50 MW of solar.



The time is ripe for an energy site with this confluence of attributes. According to Tony Georgis of NewGen Strategies & Solutions, clean energy is increasingly paramount. The Energy Information Administration (EIA) projects that almost 90 percent of all new power generation constructed in the U.S. by 2020 will be either natural gas-fired or renewable. This equates to 26 gigawatts (GW) in new natural gas capacity and 18 GW of new renewable capacity in the next five years. This added renewable and natural gas power capacity addresses the growth of the power system while replacing the nearly 30 GW of projected coal generation plant retirements. Xcel Energy's recent decision to not renew 250 MW of coal-fired power supply from the Laramie River Generating Station in Wyoming further illustrates the decline of coal-fired generation in Colorado and the U.S. The near term linkage between natural gas and renewable power generation growth will continue, as natural gas is one of the few options to replace base-load power and integrate the large amounts of renewable energy to be constructed on the national power grid and the Western U.S. in the next five to 10 years.

What's more, the site's double energy market potential makes it more than a microgrid. Existing transmission lines running through the site provide additional flexibility for serving NEP's own power needs as well as renewable/excess power generation sales to Colorado or Wyoming utilities. A study completed by Exponential Engineering estimates that an adjoining transmission substation can be expanded to provide 30 MW of near-term export or capacity needs at NEP while local generation is constructed. This provides the potential for a bridge to constructing utility-scale renewables, a micro-grid, and conventional power generation. The same study identified transmission capacity at NEP to export up to 200MW of capacity south to the Denver metro area or north to loads in Cheyenne and the Colorado / Wyoming border area.



In addition to the Denver-metro energy needs, the Niobrara-Codell shale gas production power needs continue to grow near the NEP site, with oil resources estimated as high as 2 billion barrels of oil. Public Service Company of Colorado (PSCo or Xcel) is currently evaluating the area and opportunity to expand its transmission service to serve the large power and energy loads associated with shale gas and oil production and delivery operations in the area. This electric transmission expansion could also benefit NEP with added opportunities to export power (above and beyond the existing 200 MW) from NEP to the Denver-metro or shale gas production areas.

Niobrara Energy Park's platting was completed in February of 2015. The site is 100-percent de-risked and ready for the buyer who hoists the best, brightest shovel. Not only do we have a lot of time and capital invested in this site, we have a strong commitment to seeing it succeed. So does Cushman & Wakefield and its 15,000 global professionals now representing the sale of the site. Jeff Cushman said, "Niobrara Energy Park represents a unique opportunity to acquire a strategically located, shovel-ready site with extraordinary energy and fiber infrastructure along with entitlements and zoning for a broad range of industrial and energy related development. It offers multiple revenue pathways for an investor along with speed to market. There is nothing else like it in the country."

In fact, NEP epitomizes the socioeconomic paradigm shift we are currently experiencing, what economist and author Jeremy Rifkin calls the 'Third Industrial Revolution.' According to Rifkin, the Internet and renewables are merging to create integrated, interactive, and seamless energy and information networks. The future is rife with possibility, and NEP is a shovel-ready field of dreams for the investor, developer, and/or end user with vision.

ABOUT THE AUTHOR

Craig Harrison has been a Colorado commercial land and water-rights innovator for nearly 40 years. He is also a rancher and founder of Niobrara Energy Park (www.niobraraenergypark.com). He invites interested parties to contact him at 970-612-4100 or craig@harrisonresource.com and to visit the project online at www.niobraraenergypark.com

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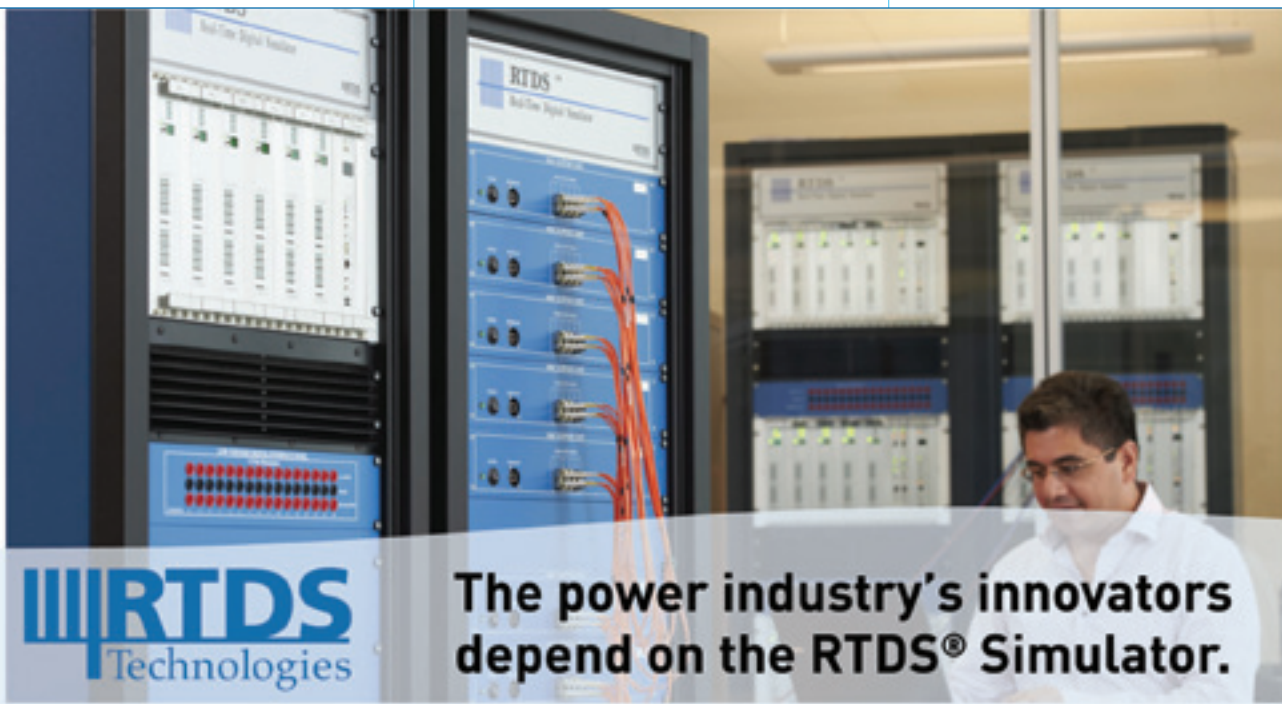
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HUBBELL POWER SYSTEMS INC.

Tel: (573) 682-5521
www.hubbellpowersystems.com

SWITCHES - DISCONNECT

S C ELECTRIC COMPANY

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www.sandc.com

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www.southernstatesllc.com

SWITCHES - DISCONNECT 25 TO 800KV

MERSEN CANADA TORONTO INC.

Tel: (416) 252-9371
www.ep-ca.mersen.com

S C ELECTRIC COMPANY

Tel: (773) 338-1000
www.sandc.com

SOUTHERN STATES, LLC.

Tel: (770) 946-4562
www.southernstatesllc.com

SURPLEC HV SOLUTIONS

Tel: (819) 821-3636
1-877-996-3636
www.surplechv.com

SWITCHES - HOOKSTICK, DISCONNECTING

ALUMA-FORM INC

Tel: (901) 362-0100
www.alumaform.com

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SWITCHES - ISOLATION

SOUTHERN STATES, LLC.

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SWITCHES - PADMOUNTED

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Tel: (773) 338-1000
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SWITCHES - REGULATOR, BYPASS

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Tel: (773) 338-1000
www.sandc.com

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www.tnb.com

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Tel: 1-800-466-1102, X234
www.tnb.ca

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Tel: (773) 338-1000
www.sandc.com

SWITCHGEAR - DC TRACTION

PRODUCTS AND SERVICES

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1-877-996-3636
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Tel: 1-800-466-1102, X234
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SWITCHGEAR - METAL ENCLOSED

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Tel: (773) 338-1000
www.sandc.com

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SURPLEC HV SOLUTIONS

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1-877-996-3636
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SWITCHGEAR - SF6

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Tel: 1-800-466-1102, X234
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TAP CHANGERS - TRANSFORMERS - LOAD, NO-LOAD

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www.techproducts.com

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TECH PRODUCTS, INC.

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1-800-221-1311
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www.comnet.net

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www.dow.com/electrical

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www.mackaysatellite.com

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www.omicronusa.com

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www.phenixtech.com

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www.voncorp.com

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www.prolecge.com

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HIGH VOLTAGE INC.

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www.hvinc.com

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www.voncorp.com

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www.hfgp.com

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Tel: (518) 329-3275
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Tel: 1-781-672-6212 • 1-800-OMICRON
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HAEFELY HIPOTRONICS

Tel: (845) 279-3644 X 245 • 800-727-HIPO
www.haefely-hipotronics.com

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Tel: (518) 329-3275
www.hvinc.com

PHENIX TECHNOLOGIES INC.

Tel: (301) 746-8118
www.phenixtech.com

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Tel: (773) 338-1000
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www.lindsey-usa.com

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S C ELECTRIC COMPANY

Tel: (773) 338-1000
www.sandc.com

SIEMENS ENERGY INC., SMART GRID

Tel: (518) 395-5000
www.usa.siemens.com/energy

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www.kitmondo.com

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lubricants.petro-canada.com

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www.prolecge.com

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Tel: 1-800-368-3017
www.deltastar.com

MOLONEY ELECTRIC, INC.

Tel: (416) 534-9226
www.moloneytx.com

PACIFIC CREST TRANSFORMERS

Tel: (541) 826-2113
www.pacificcresttrans.com

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www.prolecge.com

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1-877-996-3636
www.surplechv.com

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www.haefely-hipotronics.com

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TRANSFORMERS - DISTRIBUTION, CAST-COIL

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Tel: +52 818 030 2000
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TRANSFORMERS - DISTRIBUTION, PADMOUNTED

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www.prolecge.com

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TRANSFORMERS - DISTRIBUTION, POLE-TYPE

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Tel: (819) 821-3636
1-877-996-3636
www.surplechv.com

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www.deltastar.com

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Tel: (207) 283-0156
1-800-872-3455
www.incon.com

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Tel: +52 818 030 2000
www.prolecge.com

TRANSFORMERS - DISTRIBUTION, SUBSURFACE

PROLEC GE INTERNACIONAL, S. DE R.L. DE C.V.

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BARON USA INC.

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www.baronusa.com

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TRANSFORMERS - DRY TYPE

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