

CIGRE/EPRI SYMPOSIUM: GRID OF THE FUTURE

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Tutorial #3

Journey to Build the Utility of the Future at ComEd

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Tutorial Abstract

The electric utility industry is in the middle of an unmatched evolution driven by a combination of emerging new technologies, regulatory mandates, and economic incentives.

Utilities are faced with the dual challenges of providing a secure and resilient supply of electricity to customers on one hand and an unprecedented upsurge in operational uncertainties resulting from the increased use of renewable energy and proliferation of distributed generation. This unrelenting challenge has made the case for not only revisiting traditional utility business models but also embracing and leveraging emerging technologies.

A panel of seasoned utility industry experts from Commonwealth Edison (ComEd), the electric utility company serving the greater Chicago area and Northern Illinois will demonstrate how ComEd is taking a proactive approach to address these emerging challenges and to ensure a sustainable and viable future for energy in Illinois. The panel has over 100 years of combined experience in the utility industry with rich diversity of experience in various facets of the industry, including, Smart Grid, Regulatory Affairs, Transmission and Distribution Engineering, Information Technology, Customer Operations and Asset Management amongst others.

This tutorial will provide a practical guide and insights into the path ComEd is taking to build a utility for the 21st Century. It will cover the Energy Infrastructure and Modernization Act (EIMA), a law passed by the Illinois legislature that set in motion a ten year \$2.6 billion effort by ComEd to strengthen and modernize its electric grid. The scope of the mandate, its unique performance metrics and incentive model, and the progress thus far will be discussed.

Furthermore, the tutorial will examine all the trends that are currently shaping the evolution of the utility industry; the trends will be investigated from the proliferation of distributed generation, aging infrastructure and increasing frequency of extreme weather events as well as future trends such as disruptive technology and evolution of customer behavior and preferences. The combined effect of these trends has created the necessary impetus for ComEd and the industry to revisit the exiting utility business model.

These changes represent challenges as well as opportunities to both the grid and the customer operations. Operational challenges like bi-directional power flows, increase in net metering, and intentional islanding will need to be considered in the planning and operations processes. For example, traditional ways of planning and protecting the power system may not be sufficient to accommodate increasing penetration of renewable generations. On the other hand, customer expectations are also changing. With the increase in digital electronics, power quality is receiving increasingly more attention. The tutorial will present the ways ComEd is addressing operational and planning for both the Grid and Customer Operations.

In addition, big data analytics are a large part of enabling the transformation to the utility of the future. Multiple challenges relating to the scale, storage, processing, and analysis of large data sets need to be overcome to realize the full potential of the data analytics. This tutorial will discuss the role of the data analytics in this context, and the approach ComEd is taking to tackle the issues with Big Data. Overall, the tutorial will provide a comprehensive picture of the journey ComEd is taking to build the Utility of the Future.

About the Instructors

Dan Brotzman is the Manager of Reliability Programs for ComEd. In this role, Dan is responsible for developing and executing programs that address reliability performance areas on the ComEd distribution system to increase the reliability and resiliency of the system and to deliver improved service to customers and system performance. Dan manages the execution of ComEd's programs associated with the Energy Infrastructure Modernization Act and the Grid Resiliency Investment Portfolio scopes for the distribution system. Dan began his professional career with Commonwealth Edison in 1988 and in his 26 plus years with ComEd has held various positions within the Transmission and Distribution areas of the company.

Isaac Akridge is Vice President, Regulatory Projects. Akridge provides leadership, oversight and guidance for the strategic development and implementation of short and long-term initiatives. He is currently assuming a leading role in coordinating ComEd efforts toward building a strategic playbook for evolving to a 21st century utility. Akridge has more than 18 years of experience in the energy industry working in a number of capacities within ComEd. Prior to his role as VP of Regulatory Projects, Isaac served as Director of Electric Operations for Chicago Region, Director within Business Intelligence and Operational Strategies and Director of ComEd New Business. Akridge has held several managerial positions within the company in the areas of construction, maintenance, performance assessment, finance & planning and Large Customer Services.

Mike Moy is responsible for the material condition assessment of ComEd's transmission and delivery system, evaluating the component health compared to the system risk for the development of the lifecycle strategies and long term capital requirements. Mike is also responsible for the business support & governance for the company's large scale IT assets. ComEd, a unit of Chicago-based Exelon Corporation delivers electricity to approximately 3.8 million residential and business customers across northern Illinois, or 70 percent of the state's population. Mike has 29 years with Exelon, including previous roles serving in various engineering and key leadership positions in areas such as system operational analysis, field testing & commissioning, relay protection, and transmission and substation engineering. Prior to his current role, Mike was ComEd's Transmission & Substation Director, where he was responsible for all areas of ComEd's transmission and substation engineering functions across the transmission and distribution system which included engineering designs, equipment/protective relaying standards and reliability programs. Mike holds a Bachelor's degree in electrical engineering from the Illinois Institute of Technology.

Jane Park is Director of Business Strategy & Technology for Customer Channels at ComEd. She is responsible for directing strategic business planning, shaping tech enhancements to web, mobile, voice, and social media, developing new products, services, and collaborations as they relate to demand response & dynamic pricing, and shaping customer experience enhancing projects and process changes. Previously, Park served as Chief of Staff to ComEd President and CEO Anne Pramaggiore. Prior to this role, Jane was in-house counsel to Exelon Corporation, first as Assistant General Counsel in Exelon's Litigation Group, and then working with ComEd's General Counsel, where she oversaw a wide range of ComEd-specific legal matters. Prior to Exelon, Jane was a partner at Kirkland & Ellis, LLP where she worked on complex commercial matters. She has a B.A. from Harvard University and a J.D. from Harvard Law School.

Tim Webster is a senior manager at Exelon with more than 16 years of experience in Information Technology; his experience includes research, solution development, and project management. Tim is a “Technology Scout” on the Emerging Technology team, plus also has responsibility for Exelon’s Mobile Center of Excellence team and the Digital Worker Strategy. His role involves researching the latest trends in big data, sensors, robotics, and energy tech and figuring out ways to apply them to business challenges. Prior to his current role, Tim worked for ComEd for 6 years as the manager of the Real Time Outage Management System and GIS support team. He has worked collaboratively with the business on many initiatives related to damage assessment, customer communications, and improvements to the flow of information. Tim was also a founding member of the Exelon IT Academy (My Career) team which helps employees find the resources and make the connections they need to advance their careers.

Bart Enright Bart Enright is the Manager of Protection & Control Engineering at ComEd. As manager of Protection and Control Engineering, Bart is responsible for engineering activities relating to Relay Protection, SCADA Engineering, Communications, NERC/CIP Compliance, and Real Time Analysis. Bart is a graduate of the University of Illinois in Champaign-Urbana with a BSEE and a Masters in Business Administration from Keller Graduate School of Management. He has 13 years of utility experience in field testing/commissioning and engineering.

Shay Bahramirad is Director of Smart Grid and Technology and Innovation Ambassador at ComEd. Her responsibilities include leading the Smart Grid organization across ComEd, business case development and performance measures for Smart Grid technology deployments, and defining, developing, and implementing Microgrid and Smart City initiatives in ComEd’s service territory. Dr. Bahramirad is also an Adjunct Professor at the Illinois Institute of Technology. She is the Chair of the IEEE Power & Energy Society (PES) Women in Power, Technical Chair of the 2016 IEEE PES T&D Conference, Vice Chair of the IEEE PES Distribution Subcommittee, and an IEEE Senior Member. She holds multiple advanced degrees, including a Ph.D. in Electrical Engineering from the Illinois Institute of Technology.