

Power & Utilities

Flipping the switch on disruption to opportunity

Top 6 focus areas in 2016

February 2016



#1



Overview

Changes brought on by customer behavior, potential new competitors, increasing adoption of renewable and distributed energy and evolving regulations are converging to create considerable disruptions and opportunities for the Power & Utilities industry. While these changes have provoked some apocalyptic rhetoric and headlines, we have been and continue to be optimistic about the state of the Power & Utilities sector. As the industry continues to embrace innovation and evolve, we are confident the leaders of the sector will steer through this obstacle course of regulatory, operational, environmental, investor, cyber and technological challenges to embrace change and turn alleged disruption into opportunity. “We expect that growth will become more innovation-dependent, with success coming to those companies that use innovation, technologies, products, services, processes and business models to gain competitive advantage.”¹

No one can predict the future. But, utilities can and should be actively engaged trying to shape it. As new business challenges continue to impact the sector, it is important that companies adopt a clear point-of-view about the industry’s evolution and position themselves to succeed under a variety of possible scenarios. For 2016, we believe the following six focus areas will likely have a particularly significant impact on the velocity and trajectory of the industry’s evolution.

M&A: Will the momentum continue?

North American power and utilities companies spent more than \$66 billion on mergers and acquisitions (M&A) in 2015², signaling another strong year for transactions. As we’ve seen, the number of transactions and the dollar value of deals have been boosted by historically low interest rates and, more recently, by some utilities that see growth opportunities driven by economies of scale, geographic and fuel mix diversification as well as opportunities to expand investments across commodities, including gas.

As we enter 2016 with half a dozen significant M&A transactions pending closure, many expect M&A to continue, despite the bump in interest rates at the end of 2015 and the continuing reduction of possible acquisition candidates due to several years of consolidation.

However, the “real” challenge for leaders involved in a strategic transaction is taking the appropriate pre- and post-close steps to extract the most value out of the transaction. By their nature, strategic transactions always are at risk for under-performing. Risk can come from varying factors, including significant premiums, failing to devote attention to the “people” side of the merger or acquisition or overlooking the opportunities to implement the most tax-effective structure.

Success means persuasively articulating – to customers, regulators, investors and suppliers – the compelling value proposition behind each transaction, and then capturing that value through execution.

¹ Norbert Schwieters and Tom Flaherty, “A Strategist’s Guide to Power Industry Transformation,” *Strategy&*, issue 80 (autumn 2015)

² PwC North American Power & Utilities Deals Q4 2015 Report

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Technology: Can “disruption” be turned into opportunity?

Within the next decade, we anticipate that step-change milestones may be reached in some key disruptive technologies: with cost parity of distributed solar resources in some settings, lower-cost and larger-scale storage solutions, increased development of micro-grids, continued growth of electric vehicles and ubiquitous behind-the-meter devices all creating significant opportunities for utilities as well as their customers.

Many in the industry believe a more open and competitive power market may emerge in the years to come with innovation playing a central role. Nearly four-fifths (78 percent) of respondents to PwC’s 2015 Global Power and Utilities Survey foresee greater competition from outside the sector and are taking these competitive threats very seriously³.

In 2016, we anticipate more utility leaders to convert the potential disruptions generated by these technologies into significant opportunities for their businesses. Leaders are focusing on determining how these technologies can complement existing service offerings to improve reliability, lower costs and enhance demand-side management, all of which provide a superior level of customer value. On a sufficiently large scale, distributed electric resources, coupled with energy efficiency programs and innovative pricing plans could help reduce the need for new generation and high-voltage transmission lines. The federal Research & Development (R&D) tax credit, recently made permanent⁴, removes uncertainty and could stimulate additional investment in innovative technologies. R&D spend is critical for

innovation, and innovation is essential for growth – a widespread if not universal consistent aim across the industry.

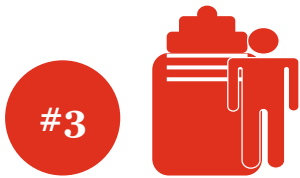
In 2016, we expect more utilities and power companies to intensify internal efforts focused on innovation and their external quest for emerging partnership possibilities. In a new technology-enabled, customer-centric marketplace, companies in this segment need to ask themselves what role they will play as the industry evolves. Defining the utility of the future, and specifying what that looks like for each company, is fundamental to shaping their business models and delivering on aspirations.

And as Silicon Valley and others accelerate the development of these new technologies, utility regulators are exploring new regulatory paradigms and public policy options to promote adoption of these new tools without inadvertently subsidizing or penalizing discrete segments of their customers. We believe the regulatory paradigm will likely continue to evolve in 2016 as utilities and the commissions explore ways to incent innovation while equitably allocating the costs of energy delivery in a fair manner that doesn’t advantage one customer class over another.

We anticipate more utility leaders to convert potential disruptions generated by technologies into significant opportunities.

³ PwC 14th Annual Global Power & Utilities Survey 2015

⁴ Protecting Americans from Tax Hikes (“PATH”) Act of 2015, Section 41. December 18, 2015



With Clean Power Plan uncertainty, will diversification continue?

You can't have a conversation about the power industry in 2016 without the Clean Power Plan (CPP) weaving its way into the conversation. The plan to reduce power plant emissions – formally announced by the Environmental Protection Agency in August 2015 – was the subject of litigation before it was even published in the Federal Register. Now, with the U.S. Supreme Court temporarily putting the brakes on the initiative allowing time for legal challenges to play out, one thing is clear as we publish this paper – the future of the CPP remains a bit cloudy.

One can safely predict that the noise level from attorneys, governors, members of Congress, presidential candidates and others will likely continue to escalate steadily throughout the year leading up to an expected appellate court hearing in June. However, with the stay on implementation, the pressure has eased a bit for utilities and state officials to deliver the required State Implementation Plans (SIPs) that were originally due September 2016. Even so, taking a “wait and see” approach to how everything will unfold likely remains a nonviable option for utilities across the U.S.

While the legal wrangling continues, utilities will still be busy repositioning portfolios, analyzing and potentially managing plant closures and developing renewable strategies for 2016 and beyond. The prolonged decline in natural gas prices, a result of the shale revolution, has made gas the industry's most prominent fuel for electric generation. And while there is no federal renewable electricity mandate, 29 states have requirements that a specific amount of electricity come from renewable fuels by pre-determined dates. The combination of these factors has in turn suppressed electricity prices in most regions. In response, companies are investing heavily in renewable generation and gas-fired generation because it is nearly impossible to build anything else.

Some utilities are also seeking nuclear incentives given their role in sustaining local economies and supporting electric grid stability. In recent years, plunging natural gas prices have forced down wholesale power prices, making it difficult for reactors to compete. Appropriate market pricing mechanisms to reward the reliability of nuclear power (due to the lack of fuel supply risk) and the carbon-free nature of nuclear power is critically important to the economic survival of nuclear operations in deregulated markets given the current pricing environment.

As we've seen during periods of extreme weather, gas prices can be highly volatile, and unforeseen issues such as deep freezes can lead to equipment failures, forcing electric generators to turn to their coal-fired and/or nuclear units for needed capacity. Even without certainty around the Clean Power Plan, we believe that fuel diversification will likely continue to be a topic of increasing priority in 2016 as too high a reliance on any one fuel may negatively impact reliability as a whole and pose significant, potentially unacceptable, risks to operators and consumers.

Taking a “wait and see” approach to how everything will unfold likely remains a nonviable option for utilities.



The digital utility: What's the untapped potential?

In 2016, power and utilities companies will continue their deployment of digital technologies to optimize asset performance, reduce costs, streamline processes, engage employees and provide superior levels of engagement and service, such as cost effective Demand Side Management (DSM) programs to support energy savings for customers as part of the ongoing evolution that is transforming the utility business model. Most utilities are venturing into digital offerings. Many are relying on advanced digital meter rollouts to offer B2C services. Others see smart homes as essential to improving customer relationships and an opportunity to offer new services beyond energy commodities⁵.

For Pacific Gas & Electric, one of the largest combination natural gas and electric utilities in the U.S., operationalizing digital technologies means creating affordable and flexible options for customers. As Deborah Affonsa, PG&E's vice president for customer service explains:

"By affordability, we mean driving costs out of the business by utilizing higher-value, lower-cost digital channels to service our customers. Our diverse customer mix expects us to provide service when they want it and how they want it – the flexibility to create a customer experience via telephone (contact centers), face-to-face (local offices) and digital (web and mobile). 'Digital' provides us an opportunity to lower costs while improving the customer experience by enhancing self-service options⁶."

Companies will continue to invest in digitizing their business. They've made strides in using digital technologies to improve the customer experience and better engage employees and enhance their productivity. But an area with the significant potential

for value creation in 2016 is improving asset performance.

Digital checklist

● Customer experience	Enabling customers to conduct business in the ways they choose, while boosting satisfaction and engagement. Examples: <ul style="list-style-type: none"> • Customized energy information • Anywhere access to billing and payments
● Managing workforce	Leveraging technology to realize significant workforce productivity gains and real cost-savings. Examples: <ul style="list-style-type: none"> • Mobile work-orders • Smart grid-enabled detection and prevention of outages
★ Improving asset performance (through digital technology deployment)	Using the internet of things to improve the management of assets, and making data-driven decisions. Examples: <ul style="list-style-type: none"> • Digitized asset tracking • Predictive performance analytics

Power and utilities companies can reap significant benefits from the deployment of digital technologies to improving asset performance. Too many are relying on paper-based records and informal processes in critical areas such as power generation, system operations, compliance and trading. Better decision-making and sizable cost savings can result by using asset-based information to better understand the location and performance of assets.

Recently extended "bonus" depreciation and the now permanent federal R&D tax credit could spur utilities to make necessary investments to automate their processes and optimize their assets this year. Digitizing asset management and making smarter decisions using data is a multi-year journey.

Ultimately, digitalization could contribute to a bifurcation of the industry: those that have made the necessary investments to become data-driven businesses and those that haven't⁷.

⁵ Digital Utility Maturity Survey, PwC Strategy& (2015)

⁶ Digital utility transformation – PwC power & utilities roundtable discussion paper (July 2015)

⁷ Digital utility transformation – PwC power & utilities roundtable discussion paper (July 2015)



Cybersecurity: A clearer view of the risks?

For the last several years, boards of directors have been asking management three questions about cyber security:

- **What is our risk?**
- **What are we doing?**
- **Are we doing enough?**

Simple questions, certainly. But they defy simple answers.

In considering cybersecurity, boards have typically relied on executive management's perspective, typically the CIO. But that has started to change in recent years, as additional expertise from the company's cybersecurity and internal audit teams is being sought. There is a growing acceptance that cybersecurity is an enterprise-wide priority and deserves a multi-lateral commitment from all levels of the organization.

We see reasons to believe that 2016 will be the year that management becomes better armed to satisfy the Board's appetite for answers to these three critical questions.

There are many drivers for this improved ability to answer these three vexing questions, including increased education and a move toward re-thinking cyber risk governance as well as looming regulatory requirements outlined in the upcoming NERC CIP version 5 and the new CIP-014 reliability standards concerning physical security threat and vulnerability related risks. In addressing the "human side of cybersecurity," increasingly, power and utilities organizations are sharing cybersecurity intelligence with external partners to better identify and respond to risks.⁸

Over a quarter of power and utilities CEOs expressed the highest concern over cyber threats and data security⁹. John G. Russell, president of CMS Energy Corporation and Consumers Energy Corporation, made this observation:

"The risk with smart grid is cybersecurity. You've opened another door to the system, so we need to ensure that access to those meters from an IT standpoint is controlled. We have to remember, too, that even though they are our meters, they're on the customers' homes, so we need to be sensitive to that¹⁰."

Security breaches involving prominent payment-card-compliant companies in recent memory reiterate the point that compliance doesn't equate security. Thus far, a handful of power and utilities companies have combined their IT, cyber security and physical security functions into the same organization while others have developed a more robust governance structure. We see 2016 as the year when many more companies will address cybersecurity issues in a more integrated and holistic way. Specifically, we anticipate companies upgrading and integrating their cybersecurity, physical security, corporate and control system environments to incorporate security and safety of data and personnel in order to provide greater protection from operational and reputational risks.

We see 2016 as the year when many more companies will address cybersecurity issues in a more integrated and holistic way.

⁸ Turnaround and transformation in cybersecurity: Power and Utilities – Key findings from PwC's Global State of Information Security Survey 2016

⁹ PwC 2015 US CEO Survey

¹⁰ Digital utility transformation – PwC power & utilities roundtable discussion paper, PwC (2015)



Productivity & cost management: Is your company Fit for Growth?¹¹

For many companies in this industry, growing their way out of cost increases was for many years a widely accepted practice. As the population grew, and as electric appliances proliferated, electric utilities mitigated the cost impact of capital investments and associated earnings on new assets by spreading their costs over an ever increasing number of kilowatt-hour sales. With the outlook for power demand being flat or sluggish at best, it's fairly safe to say there will not be enough increase in demand to drive future earnings growth.

Slower demand growth could not be coming at a worse time. Even as cash flow shrinks, utilities must weigh new capital investments in their transmission and distribution businesses to maintain reliability, update aging systems, and address 21st century concerns like cybersecurity. Approximately 30 percent of transmission infrastructure is at or near the end of its useful life, and forecasts for average annual U.S. transmission capital expenditures in the next decade range from \$12 billion to \$15 billion.¹²

Flat electric and gas commodity sales growth coupled with growing capital investment needs can give rise to pessimism. In our work with clients, we find all too many are relying on outdated strategies to deal with an array of very new problems.

In 2016, the most effective tools in the tool belt come from within. In the quest to drive costs out of the business, utilities will need to also invest in capabilities that will directly achieve strategic objectives while maintaining cost discipline that fosters, rather than impedes, growth opportunities. Being “*Fit for Growth*” means having an all-encompassing strategy that spans capabilities, cost optimization, growth planning, market presence, corporate culture and operating models.

Cost structures should reflect both business criticality and efficiency. By managing costs, power and utilities companies can better manage earnings, which pleases investors. And, by managing costs more effectively, utilities can also win the confidence of their customers and regulators, which can pay off in numerous subtle ways.

The most effective tools in the tool belt come from within.

¹¹Fit for Growth is a registered service mark of PwC Strategy& LLC in the United States

¹² Utilities preparing for growth: Navigating disruption by linking capabilities and performance, PwC Strategy& (November 2015)

Where do we go from here?

This year, there will likely be no shortage of factors that steer the industry around new corners. Some will be outside forces companies can't control, like interest rates and fuel prices. Other factors will be under management's control, such as implementing strategic transactions and controlling costs.

Companies need to see opportunities as much as they need to deal with threats. While concerns over volatility and over-regulation are rising across industries, U.S. CEOs believe growth will flow to companies that are both better at reading the dangers and faster in responding to the opportunities¹³. Opportunities abound for utilities seeking strategic transactions to grow. Digital technologies offer untold potential in supporting the core business and creating new businesses. Ongoing talks with regulators to revamp rate design and adoption of wind and solar and other renewables offers opportunities for investment, infrastructure and research, while supporting improved returns through better cost recovery mechanisms.

We believe there's a lot to be optimistic about. As a start, utilities can flip the switch from disruption to opportunity by considering the answers to these questions:

- What does the utility of the future look like for you? Have you identified sources of growth to support how business gets done in 2020 or 2030?*
- Where does current and or emerging technologies (and players) come into play across operations, in servicing your customers and keeping the lights on?*
- How will you prioritize where and how capital gets deployed? Have you developed the right operating model and cost structure to support your current and future business initiatives?*
- The political context shapes the utility business model. Is your business model designed to reduce risk from change while supporting and capturing the benefits that can come from innovation?*

Contact us to learn more

Contact us to talk further about these and other industry issues. To learn more about our services and gain insight into industry programs we sponsor throughout the year to promote continuous learning and industry connectivity, visit us online at: www.pwc.com/us/utilities

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¹³ PwC 2016 US CEO Survey top findings