Predicts 2021: Get Ready for the Energy Transition

Published 18 November 2020 - ID G00736154 - 27 min read
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Initiatives: Energy and Utilities Digital Transformation and Innovation

The energy transition and disruptive innovation challenge energy provisioning business models and set the stage for utilities to explore new opportunities while also attracting new entrants. Gartner predictions highlight challenges and opportunities for utility CIOs during upcoming turbulent times.

Overview

Key Findings

- Increasing prosumer defection from the grid places a disproportionate cost of generation and grid operation onto the remaining consumers who cannot afford to get off the grid, bringing back energy poverty concerns. External disruptions, such as the pandemic-induced economic crisis, can make energy services unaffordable for some utility customers, aggravating energy poverty concerns.

- Climate change; the increasing frequency and damage from storms; concerns from customers, investors and shareholders; and mandates from policymakers will increasingly propel utilities worldwide to revisit their decarbonization strategies and accelerate their decarbonization and sustainability initiatives.

- As renewables are connected to the grid at both utility and prosumer scale, rising toward 30% of installed capacity, they create intermittent energy availability issues in the grid, with periods of both over- and undersupply.

- Capital investment, interrupted by the COVID-19 pandemic, will increase as the industry comes to grips with and adapts to the eventual resolution of the health and financial crisis. Physical and digital investments will target decarbonization, environmental sustainability, operations agility and enterprise resilience.

- New entrants are emerging in the utility sector whose access to capital and deployment agility, combined with technology know-how and skilled workforce gain during oil fields buildout, are directly transferable to renewable generation development. This is particularly the case for the offshore wind subsector, where oil and gas (O&G) companies’ marine engineering and operational expertise are a competitive advantage.

Recommendations
To operate successfully amid disruption in the forthcoming energy transition, CIOs should:

- Identify the capabilities needed for a universal basic energy business model and adopt composable enterprise architecture to address them by applying the appropriate custom composed assembly of packaged business capabilities.

- Analyze the overall business case for utility sustainability initiatives by taking into consideration the full environmental, social, regulatory, financial and economic improvement opportunities included in each investment.

- Discuss how, as energy flows become bidirectional at all voltages, power system assets will need to support multiple, sometimes conflicting configurations, requiring grid operations to become software defined and optimized.

- Critically examine how current budget pressures and cuts might unreasonably set back the enterprise in terms of flexibility and resilience by analyzing changing conditions and 4D megaforces necessitate a stronger advocacy for additional or accelerated investment.

- Specify the powerful forces behind the convergence of the O&G and utilities sectors by planning in advance. Create a tailored set of plausible future-of-energy scenarios in which your business has a unique value offering in the energy transition.

**Strategic Planning Assumption(s)**

By 2026, at least five G-20 countries will introduce universal basic energy products to address emerging energy poverty issues.

By 2024, 30% of Tier 1 utilities will lead national-level initiatives in reducing overall greenhouse gas (GHG) emissions.

By 2025, 20% of energy consumers in G-20 markets will have experienced intermittent interruptions of supply due to the shortfall of investment in flexibility services.

By YE26, utility global capital expenditures will increase by more than 20%.

By 2026, O&G companies will dominate global renewable energy generation.

**Analysis**

**What You Need to Know**

As weather patterns and climate norms change, societal pressure rises on participants in the energy sector to start addressing their impact on the environment. O&G dominance in the energy sector through the 20th century is coming to an end due to a global push toward a sustainable energy future. There is increased focus on renewable sources and a shift toward electrification, in general, and electric
transportation, in particular. Drop in the demand for oil, caused by the COVID-19 pandemic, and a consequent price collapse have made for a jittery recovery, but a return to the previous status quo is unlikely. Incidentally, the COVID-19 pandemic also confirmed a correlation between our energy consumption and climate change, as the economic slowdown created by lockdown measures taken in many regions resulted in improved environmental conditions. In addition to the sustainability challenge that impacts both the O&G and power sector, power utilities face another major challenge: a disruption created by exponential innovation in consumer energy technologies.

The confluence of these factors is forcing a series of structural changes in energy provisioning — the energy transition — which encourages the emergence of new entrants into the utility sector (such as enertechs, O&G companies and digital dragons). O&G companies in particular are increasingly looking for opportunities in less carbon-intensive energy options and are following their customer flight to an increasingly electric future. The energy transition creates challenges for the existing utility environment and transformational opportunities for the future of utility business (see Figure 1). Consequently, utility CIOs and business leaders will need to find and maintain the right mix of ambition and investments to address the challenges for the current utility business and the opportunities for new energy provisioning created and enabled by the digital transformation of the utility sector.
This note provides a set of predictions that will impact, and to some extent will reshape, the utility industry during the initial phase of the energy transition (the next five years). The common, underlying theme in these predictions is an increased focus on sustainability and its consequential impact on utilities and the extended energy ecosystem, including water utilities. This research should spur our clients to evaluate the impact these predictions will have on their enterprise and on the industry overall. Clients should take a particular note of the significant effects technology deployment/adoption can have on utility business outcomes in the future as these predictions unfold. Figure 2 depicts the impact of predictions on utility value chain domains.
### Impact of Predictions Throughout Utilities Value Chain

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<thead>
<tr>
<th>Prediction</th>
<th>Generation</th>
<th>Delivery</th>
<th>Retail</th>
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<tbody>
<tr>
<td>Basic Energy Model</td>
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<tr>
<td>Utility Sustainability Leaders</td>
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<td>Adverse Impact of Energy Transition</td>
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<td>Capital Expenditure Growth</td>
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<td>O&amp;G Companies Dominate Renewables</td>
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Source: Gartner

### Strategic Planning Assumptions

**Strategic Planning Assumption:** By 2026, at least five G-20 countries will introduce universal basic energy products to address emerging energy poverty.

**Analysis by:** Zarko Sumic

**Key Findings:**

- Increasing prosumer defection from the grid places a disproportionate cost of generation and grid operation onto the remaining consumers who cannot afford to get off the grid, bringing back energy poverty concerns.

- External disruptions, such as the pandemic-induced economic crisis, can make energy services unaffordable for some utility customers, aggravating energy poverty concerns.

- During the pandemic, many jurisdictions focused on the well-being of their citizens, introducing moratoriums on shut-offs for nonpayment of essential utility services.

- Some governments in countries with significant excess energy have started to provide free (or highly subsidized) energy to their citizens.

- As the percentage of renewable sources increases and ultimately reaches 100%, the variable cost of energy goes to zero. This transition requires a different revenue model based on physical asset cost, such as fixed connection fees or per capita fees, which can be partially or fully subsidized.
Near-Term Flag:

By the end of 2021, there will be a rising sentiment in some markets that access to energy is a basic human right that must be provided by the government.

Market Implications:

The energy transition puts more emphasis on renewable sources and encourages prosumerization, which drive different business and operating models for energy provisioning. When combined with the impact of COVID-19 on the affordability of essential utility services, these factors force policymakers, regulators and utilities to consider different business and operating models. The original utility business model guaranteed customers access to ubiquitous, reliable and economically priced energy in exchange for granting utilities a monopoly. The introduction of competitive retail markets, with a commercial business model, and disruption at the grid edge, with a prosumer-centric digital platform business model, have started to challenge original energy affordability and equitability tenets. COVID-19-related financial hardships have made energy unaffordable for a portion of the population, bringing back energy poverty concerns. The reemergence of energy poverty consequently triggers discussions of energy as a basic human right, an entitlement or a service that should be provided by governments.

The notion of “free” energy or “energy entitlement” is loaded with political, economical and societal connotations, which will take time to sort out and distil into workable energy provisioning business models. National governments are assuming a more active role in policy enforcement by more aggressively managing and regulating the energy sector during the energy transition. Balancing sustainability obligations and ensuring citizens’ access to energy at the same time will require more government involvement as well as different energy-provisioning principles. One way to do it is by making access to energy a public service the same way access to health services, in many developed countries, is a public service. The best way to do so is by providing a basic universal energy that will be available to all citizens. The concept is similar to “universal basic income” or “universal basic health service.” In this model, the cost for the service can be financed through income taxes (an “energycare”) or by other means of sales, income or land ownership taxation. The oil-producing countries, or other countries rich with natural resources, can consider universal basic energy as a “royalty” payment to their population.

In addition to its political, societal and consequent business and financial implications, the universal basic energy concept will have an impact on utility companies’ capabilities with the resulting implications on the utility application portfolio and architecture. To better deliver on new business opportunities and respond to challenges during the energy transition, utilities need to be agile and resilient. They need to adapt and respond faster than ever. An organization’s ability to adopt is often limited by the state of its application portfolio, which tends to be bloated, difficult to change and created by somebody else to be aligned to the legacy strategy at the point in time when it was developed or implemented. That approach works well if there are no significant changes in the business model.
To operate under different business models — such as energy as a public service, self-service and commercial service at the same time — application leaders need to modernize their application portfolios to ensure they can operate at the pace of business change. To do so, utilities need to become composable enterprises, able to adapt to the pace of business change through the assembly and combination of packaged business capabilities.

Recommendations:

- Evaluate the impact of the social, technological, economical, environmental and political forces that will drive the introduction of the universal basic energy business model in your market.

- Identify the capabilities needed for a universal basic energy business model and adopt composable enterprise architecture to address them as needed by the appropriate custom composed assembly of packaged business capabilities.

- Create composable utility enterprise by evolving applications in your portfolio —
  - From their current state of inflexible, monolithic application
  - Toward a portfolio that is more modular and adaptable to business change

Related Research:

Navigating the 2020 COVID-19 Disruption in Utilities

Top 10 Trends Driving the Utility Industry in 2020

Future of Applications: Delivering the Composable Enterprise

Strategic Planning Assumption: By 2024, 30% of Tier 1 utilities will lead national-level initiatives in reducing overall GHG emissions.

Analysis by: Sruthi Nair

Key Findings:

- Adverse-weather-related events fueled by the increasing (GHG) emissions, demanding stakeholders and customers, and challenges from policymakers will force utilities around the globe to revisit and redesign their decarbonization goals.
Reducing GHG emissions used to be a peripheral issue for utility businesses’ objectives but it must now become one of their top-of-mind concerns. Traditionally, utilities have been on consumption-based growth models, which are unsustainable and outdated. This will be the right time for utilities on the vanguard to decide if it is “now or never” for them to become investment and thought leaders in preparing for a sustainable future (or expect to pay penalties).

O&G companies with a higher greenhouse emission rate are already accelerating their efforts toward net-zero commitments. The plans charted out by the few utilities embarking on the low-GHG emission journey are siloed initiatives as a result of mounting pressures from regulators and investors. Utilities must consider creating concrete plans for integrating sustainability initiatives into enterprise-level strategies and operations.

Market Implications:

The utility sector finds itself at a crossroads. Increasing pressures from regulators, investors and even consumers are forcing utilities to reevaluate their journey to reduce their GHG emissions. Achieving a neutral position, while meeting a growing increase in electricity demand, will require significant investments and an overall cultural shift for utilities. Both public and investor-owned utilities will have to set ambitious targets of reducing GHG emissions or to achieve net-zero commitments by the middle of this century. However, it is important to understand that the pathway to achieve these goals will need to be actionable and not limited to mere environmental regulatory reporting. The following drivers will strengthen the sustainability initiatives by utilities in the next two to three years:

- **Increasing climate change events** — Growing frequency of wildfires, storms, hurricanes, extreme flooding and the vulnerabilities associated with these events have caused catastrophic damage to utilities, physically and financially.

- **Regulatory pressure** — Rising pressures from regulatory authorities at the state and national levels, combined with global mandates, such as the Paris Agreement, to reduce the carbon footprint.

- **Investor pressure** — The combined effect of climate change and regulatory pressure makes investors the key drivers for decarbonization. Investors are seeking to invest in utilities with minimal fossil fuel generation and consumption and maximum opportunities for green energy.

- **Consumer preference** — There has been an overall increase in the support and preferences by consumers for utilities that are on a “greener” path. Additionally, in some cases, there has been a growth in consumer interest for utility programs for energy efficiency and green power offerings.

Utilities have been on the forefront of reducing emissions primarily by using filters on existing plants and by including renewable energy generation as a part of their portfolio. It is essential to jump from the “aware” stage to the “action” stage. As the global sustainability initiatives continue to evolve and improve, utilities must:
The days of reducing GHG emissions are already here for utilities and all other carbon-intensive industries. Whatever stage of “green” maturity, utilities are in, decisive actions need to be taken right now or else they will face grave consequences.

Recommendations:

- Gain a consolidated view of the inputs, processes, outputs, assets, consumer preferences, policies and most importantly their supply chains to understand that the scope of decarbonization of utilities must not be limited to its systems.

- Include technology as a critical, enabling component of the sustainability, climate change goal and establish best practices to architect and deliver business processes.

- Assess, evaluate and measure the overall business case for GHG emission reduction that considers environmental, social, regulatory, financial and economic aspects by viewing the opportunities for improvement and investment.

- Evaluate the enterprise’s level of maturity in terms of efforts and initiatives for emission reduction by identifying lags to achieve mandated ambitions and to set its own stretch targets.

- Evaluate different technologies across the utility operational footprint to satisfy environment, social and governance reporting and performance improvement. Consider technologies such as hydrogen fuels; biofuels; energy management systems; upgrades to HVAC systems; carbon capture, utilization and storage facilities; retrofits to coal power plants; and continuous and portable emission monitoring systems.

- Work with business leaders and set goals that span short, medium and long time frames by aligning to measurable targets that refocus organizational priorities and communicate to investors about the revisited organizational goals.

Related Research:

Succeeding in a World Where the Future of Energy Disrupts Everything

Strategic Planning Assumption: By 2025, 20% of energy consumers in G-20 markets will have experienced intermittent interruptions of supply due to the shortfall of investment in flexibility services.

Analysis by: Lloyd Jones

Key Findings:

- As renewables penetrate the grid at both utility and prosumer scale, rising toward 30% of installed capacity, renewables introduce intermittent energy availability issues, with periods of both over- and undersupply.
Implications:

Energy policy and market incentives create the mechanisms to satisfy the resource adequacy requirements needed to ensure sufficient energy resource availability across an appropriate resource mix. As renewable penetration levels rise, so does the potential for unexpected impacts of intermittency on the power system. ¹ Renewables such as solar, which has an inertialess characteristic, exposes the grid to voltage and frequency fluctuations, and due to the intermittent nature of wind and sunlight, the power system could be exposed to over- or undercapacity implications.

Periods of undersupply could lead to system operators requesting load reductions through their demand response systems or a contribution for consumer-owned sources and storage via a virtual power plant. In an extreme scenario, as when load reductions are not available, system operators may be forced to rely on automated relay's operating under frequency load shedding with no notice, causing widespread disruption. ² Periods of oversupply could lead to negative energy prices on the wholesale market if producers cannot adequately curtail production. In an extreme scenario, system operators may be forced to disconnect renewable suppliers or over frequency relays may automatically disconnect controllable sources.

Reserve and response planning is a core process aimed at creating pools of adequate supply and demand levers. Resources options include backup generation, grid interties that cater for resource pooling across jurisdictions, which are subject to congestion limits and demand response.

The supervisory control and data acquisition (SCADA) energy management systems, which provide real-time capability to dispatch physical resources based on the economic dispatch criteria, will need to be extended with operational performance management software to optimize the planning, bidding and scheduling of resources.

Recommendations:

- A shortfall of investments in flexibility services, typically ancillary grid services in wholesale markets, will result in under-resourcing of the grid that would create services that allow the grid to respond rapidly to fluctuations in frequency deviations.

- Supply interruptions related to intermittent capacity constraints have occurred in developed and emerging economies, causing widespread societal disruption.

- Intelligent grid operations will be enabled by model-driven software across all voltages, requiring IT to build real-time modeling capabilities that can orchestrate assets throughout systems.

- Customers with critical loads need to have load-resilience strategies in place. Technical options include uninterrupted power supply ride through, auxiliary backup power or even nanogrid solutions. The utility customer information systems will need to support these new products.
Define and drive the changes that utilities need to make in their SCADA energy management system to address the impact of renewable sources intermittency on economic dispatch and contingency planning algorithms.

Related Research:

How Utility CIOs Can Use Intelligent Operations to Achieve Resilience During the Energy Transition

Strategic Planning Assumption: By YE26, utility global capital expenditures will increase by more than 20%.

Analysis by: Ethan Louis Cohen

Key Findings:

- Capital investment, interrupted by the COVID-19 pandemic, will increase as the industry comes to grips with and adapts to the eventual resolution of the health and financial crisis. Investments will target operations agility and enterprise resilience to navigate energy transition.

- New capabilities are required to address a variety of energy provisioning business models, water supply and wastewater treatment, market incursion by digital dragons, and the creation of new customer services and industry ecosystems capabilities.

- Business model change and operations model modernization are temporally converging on digital business. Utilities will invest to drive cost efficiency, streamline operations and automate, if for no other reason than to manage asset risk.

Near-Term Flag:

By the end of 2021, utilities will raise stakeholder visibility to new resilience strategies and concurrently increase investment in resilient capabilities, such as intelligent operations.

Market Implications:

At the beginning of the COVID-19 pandemic, few understood how long it would be before life returned to “normal.” In the current, renewal stage of the pandemic, many are assuming, without much evidence, that the economic recovery, when it comes, will be V-shaped. It may not be. It is also evident, barring major improvements in COVID-19 treatment, that capital investment suspension or deferral strategies will be ill-fated. We strongly believe the pandemic, the energy transition, water sustainability requirements and general utility requisites for new and higher levels of efficiency, productivity, flexibility and resilience will drive increased utility capital spending, irrespective of the pandemic life cycle.
In analyzing 4D trends — decarbonization, digitalization, decentralization, democratization — we find many factors that will underpin the increased utility capital spending, perhaps even to unprecedented levels. Drivers behind the increased spending vary and include:

- The need to upgrade and strengthen electric, water and gas infrastructure due to age, increasingly severe weather, cyber and physical threats, accommodating growth in demand, and a reshaping of the physical network to accommodate the energy transition.

- The equally critical need to deploy information, operational and engineering technology to boost efficiency, agility and resilience while accommodating the surge of new digital technologies (including Internet of Things [IoT], artificial intelligence and blockchain) and respond to prosumer demand for more flexible and customized products and services.

- The need to address carbon and other environmental concerns with sustainability as a primary driver, circular economic business models as a focus, and total positive outcomes for customers, utilities and society as objectives.

- The requisite to renew the utilities application portfolio contributing to accelerated digitalization and enabling a composable business that is more agile and resilient to the change anticipated during the energy transition.

In addition, the pursuit for predictable growth is shifting the focus of utility leaders back to regulated or otherwise subsidized investments with reliable reduction of risk and comparatively predictable rates of return. These drivers are evolving and altering the pattern of investment across individual companies and the industry. Considering this predicted rise in capital spending, we expect established utility industry vendors and new market entrants alike to compete for position, influence and profits.

**Recommendations:**

- Critically examine by discussion with the CFO how current budget pressures and cuts might unreasonably set back the enterprise in terms of flexibility and resilience and how changing conditions and 4D megaforces necessitate a stronger advocacy for additional or accelerated investment.

- Plan for multiple scenarios and prioritize investments to emphasize outcomes by running tabletop exercises on business model and operational model change. This can be challenging in a changing industry, where new technologies and business fads emerge quickly, grabbing unwarranted attention, and truly urgent needs can become muddled in conservative thinking and inaction.

- Identify ecosystem partners by studying value chains throughout the utility industry sector to co-develop digital business solutions that can emancipate utilities from traditional vendor, techno-economic dependencies. Future enterprise capital efficiency can hinge on the degree and maturity of industry ecosystem solutions.
Determine the real costs and benefits of vendor offerings and scrutinize products and services by analyzing the trade-offs in vendor solution adoption and deployment that will shape degrees of success in this critical period.

Related Research:

Post-COVID-19 Uncertainties: Financial Drivers

5 Steps to Improving Utility Resilience

Strategic Planning Assumption: By 2026, O&G companies will dominate global renewable energy generation.

Analysis by: Zarko Sumic

Key Findings:

- Sustainability pressure, combined with dropping oil demand with consequent detrimental impact on revenues, is forcing O&G companies to explore adjacent markets and opportunities.

- Due to the electrification trend in general, and e-mobility uptick in particular, customers are fleeing the O&G sector. O&G companies following customers largely enter the utility sector.

- Many O&G companies are making carbon-neutral commitments and investing in renewable energy business to offset CO\textsubscript{2} emissions from their incumbent fossil fuel business.

- Access to capital and deployment agility, combined with technology know-how and skilled workforce gained during oil fields buildouts, are directly transferable to wind farm developments. This is particularly the case for the offshore wind subsector, where O&G companies’ marine engineering and operational expertise have the competitive advantage.

- Energy-trading competence makes O&G companies formidable competitors as energy markets, during energy transition, become increasingly renewable, intermittent and volatile.

- Renewables development will continue to surge due to increased pressure to achieve operational CO\textsubscript{2} emission reduction. The main catalysts for this are government mandates, incentives for renewable generation and decreasing cost.

Near-Term Flag:

By the end of 2021, major O&G companies will significantly up their investments in the low-carbon economy.
Implications:

In the interest of decarbonizing the fuel mix and electrifying industries, O&G companies see the value of investing significantly in the utilities sector. Anticipating the decline in demand for oil in the near future, O&G companies are diversifying into renewable businesses. Revamping business models for increasing profits, committing to net-zero emissions through renewables and investing in the electrification of transport to offset the decline in oil demand are all reasons for the accelerated energy transition as well as its consequence.

At this point, every major O&G company (such as BP, Shell, Total, Eni, Chevron, ExxonMobil and Equinor) has made a significant investment in the low-carbon future. These investments include developing, acquiring and creating joint ventures in wind farms; utility-scale solar; battery technology; and carbon capture and sequestration. Though this growth has continued steadily in the last several years, it is still in the low single-digit of “big oil’s” overall capital expenditure. However, triggered by the confluence of dropping demand for oil and sustainability pressure, major O&G companies have significantly upped their investments in the low-carbon economy.

For example, in September of 2020, BP has announced investing $1.1 billion for a 50% stake with Equinor (formerly Statoil) for the offshore wind development in New York, U.S. and the surrounding New England region. We expect that in the next five years, “big oil” investments in renewables will cross 10% of its overall capital spending. Equinor is planning to increase its spending on new energy solutions to 15% to 20% of its total investment by 2030, while BP plans to increase its investment in low-carbon projects to $3 to $4 billion a year by 2025, which is roughly 25% to 30% of its expected $12 billion total capital expenditures. With this amount of capital planned for investment, and skills and know-how in managing large capital development and asset intensive projects, it is likely major O&G companies will come to dominate the renewable energy sector.

The move from O&G to the utility sector means a radical transition in business models. Extracting oil is a fundamentally different business from generating and provisioning power. Further, investing in renewables could mean drastically lower returns in comparison to the extractive upstream O&G business. However, increasing environmental concerns, financial risk and increasing profitability concerns are forcing O&G companies to converge on the adjacent power utility sector. Many O&G companies have already created lucrative power-trading organizations and continuous revenue streams via arbitrage. A concern O&G companies need to consider while leveraging the convergence is the high cost for digitization of utilities. Utilities are already on their journey and have created some sustainable advantages. O&G companies need to focus their attention on digitizing their business models beyond their own industry best practice if they wish to efficiently capture new service propositions and unlock new value in the utilities industry.

Recommendations:

Utility CIOs and business leaders must:
In response to your requests, we are taking a look back at some key predictions from previous years. We have intentionally selected predictions from opposite ends of the scale — one where we were wholly or largely on target, as well as one we missed.

On Target: 2017 Prediction — By 2020, 25% of new monitoring and control systems in the utility sector will use IoT to enhance algorithmic business capabilities.

Analysis by: Nicole Foust

This prediction has met its target of realization by 2020. The essence of this prediction was that the IoT would extend SCADA systems and capabilities. By switching to general purpose and more open technology, utilities have started leveraging IoT platforms, tools and algorithms to go beyond traditional control and process optimization functions (such as outage determination).

In 2017, there was a growing recognition that IoT could be used to extend and augment operational technology (OT), which could influence monitoring and control system product roadmaps as well as utility OT teams. Since then, the utility industry — especially some of the traditional OT vendors that serve it — has started to embrace the IoT. We have seen a few good examples of vendor products and services offered to the market, such as the Oracle Live Data acquisition and associated products and services.

In its current state, the IoT is more prominently used to collect auxiliary data. IoT can be used to get more insight based on the data an organization has, which is then used in algorithms. For example, in a use case of extending distribution SCADA with IoT, an organization can use power harvested via line-monitoring sensors with wireless connection and smart meters data and leverage it as a pseudo-measurement added to SCADA to calculate distribution state estimation — an algorithm. In addition, the
IoT has made cloud computing and partnerships with third-party providers more attractive. With this, we have seen increased interest in and deployment of cloud products and services within utilities.

The challenges confronting utilities, such as energy transition, climate change and the 4D megatrends, will drive utilities to increasingly leverage IoT for extending SCADA capabilities and more. Gartner expects this area to continue to be an ongoing area of investment for utilities.

**Missed: 2017 Prediction** — By 2020, 30% of utility CIOs will adopt a scenario-planning methodology to anticipate and prepare for an uncertain industry transformation.

**Analysis by: Nicole Foust**

We were led to make this prediction by the initial momentum observed in 2015 and 2016 among utilities trying to evaluate and prepare for complex and increasing change in the industry. We found that traditional utility planning methods did not adequately address increased market uncertainties, making it more difficult for CIOs to directly couple business and IT strategies with diverse possible futures.

Due to this, in November of 2016, Gartner anticipated scenario planning would be more widely adopted in the utility sector by 2020. Our assumption was that due to impacts such as external social trends, rapid technological innovations, new market entrants, which would increasingly erode conventional franchises and the need to better respond to regulatory frameworks and pressures, would increasingly drive utilities to adopt scenario planning. We also predicted that energy transition would be an increased factor. All of these market dynamics did prove to be on target for realization by 2020; however, the vast majority of utilities did not move to adopt scenario planning.

Scenario-based planning uses scenarios to determine suitable action plans or strategies for different possible futures. This type of analysis reveals how to react to a specific future and details which set of actions would make sense no matter what conditions ultimately unfold (see **Use Scenario Planning to Make Business and I&T Strategies More Resilient in an Increasingly Volatile World**).

Although numerous utilities use scenario planning to shape the company's posture toward innovation, the trend has slowed. Part of this can be tied to the level of complexity and breadth of challenges that utilities are increasingly confronted with.

Though we may have misjudged the time frame, we continue to believe that scenario planning will be increasingly adopted into the utility sector. Utilities were one of the early industry pioneers and adopters of scenario planning and these frameworks have since proliferated to all industries. They provide a mental model to explore how the enterprise could respond and react to anticipated and unanticipated changes within the business. Scenario planning also provides IT strategies for energy provisioning and addresses the major disruption in the utility sector, namely, the emergence of prosumers and the challenge of integrating them into utility markets without significantly overburdening the network provider.
In response to your requests, we are taking a look back at some key predictions from previous years. We have intentionally selected predictions from opposite ends of the scale — one where we were wholly or largely on target, as well as one we missed.

Evidence

1. Heat Storm and Insufficient Planning Caused August Rolling Blackouts, California Regulators Say, Utility Dive.


4. Op-Ed: A $100 Billion Big Oil Divestiture Plan is Coming, CNBC.

Recommended by the Authors

Predicts 2020: The Future of Energy Is Here — It’s Just Not Evenly Distributed
Succeeding in a World Where the Future of Energy Disrupts Everything
The Energy Transition Question: Do We Need the Grid?
5 Steps to Improving Utility Resilience
Flexible Work Practices Improve Utilities’ Operational Resiliency