The American Utility in 2023

Back to the Future

By Guidehouse's
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In the face of an accelerating energy transition and increasing economic uncertainty, the utility today must draw upon its public service roots now more than ever to accelerate an all-hands-on-deck decarbonization transition, while ensuring reliability and resilience and maintaining affordability across the communities they serve. Meanwhile, clean, distributed, mobile, and smart technologies are upending distribution grid stability.

Aging transmission and distribution infrastructure requires wholescale upgrades, while connecting utility-scale renewable power to expanding communities faces challenging bottlenecks. An aging utility workforce and operating model requires retooling to meet increasing threats from cyberattacks and destructive weather events. All of this must be achieved in an affordable and equitable way.

While the challenges are multifaceted, the opportunity to build public-private coalitions to deliver transformational infrastructure change offers an exciting path forward for an industry looking to keep pace with solution innovation and shifting customer demand. According to our ninth annual "State and Future of the Power Industry" pulse survey of utility stakeholders, conducted in partnership with Public Utilities Fortnightly, most industry respondents prioritize state and local governments and regulators as critical partners to navigate the energy transition.

The passage of the Inflation Reduction Act (IRA) on the heels of the Bipartisan Infrastructure Law, signals sustained investment in power system reliance, electrification, and hydrogen. When asked what the IRA would most likely be remembered for in twenty years, roughly two-thirds of utility industry stakeholders pointed to the mainstreaming of electric vehicles (EVs) and charging infrastructure. The growing impact of transportation electrification underscores the important role multinational companies will play in the energy transition alongside utilities.

As highlighted in Guidehouse's "State and Future of the Power Industry" 2023 report, utilities are increasingly embracing the changing world in which they operate and making critical investments to achieve their goals. While a restrictive regulatory landscape still frustrates more ambitious change, according to our pulse survey, utilities around the world are demonstrating a willingness to be more proactive in pushing public sector officials and regulators to support change ahead of looming threats, while recognizing the importance of strategic partnerships. In the U.S. in particular, the current rigidity of the utility business model will require policy reform at the federal and local levels to facilitate expedited innovation.

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Integrating Clean and Distributed Energy

The power industry remains most occupied with unlocking opportunities created by a surging deployment of clean and distributed energy. The focus on clean and distributed energy coincides with a wave of emerging technology deployment across

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the industry. The global clean energy economy has matured into a multitrillion dollar industry in the past decade, with solar investment reaching more than one billion dollars per day in the current year, according to the International Energy Agency.

This is a major contributor to new distributed energy resources (DER) capacity deployments overtaking new utility-scale generating capacity deployment this year in the U.S. Annual DER capacity deployments are expected to triple by 2030, according to Guidehouse Insights analysis.

While these trends place acute pressure on a historically analog grid, ramping deployments of enabling digital technologies such as second-generation Advanced Metering Infrastructure (AMI) allow utilities to introduce more tailoring and optionality to their customers.

This will be critical as utility customers enjoy unprecedented access to cost competitive, flexible, and customized third-party solutions. Digital controls, advanced data analytics, and Virtual Power Plants (VPPs) can help utilities deliver additional value to their customers while enhancing grid flexibility.

Residential VPPs, part of a rapidly growing VPP portfolio in the U.S. over the next decade, can deliver low-cost grid resources to utilities, while offering additional non-energy benefits, such as opportunities to defer transmission and distribution (T&D) upgrades, emissions reductions, and increased resilience. All these solutions can help utilities balance increased load expectations from electrification with the unpredictability of proliferating DERs across their network.

At the same time, utilities will need to stay ahead of commercial and industrial (C&I) defection. If C&I customers can receive a more reliable, resilient, and predictably priced supply through power purchase agreements or behind-the-meter assets at scale, there is very little incentive for them to stay with their legacy power provider. Utilities should ensure that their organizational structures are aligned with customer demand and supporting incentives. Rather than rate-basing system upgrades, the utility should examine how to lower the total cost of their customers' bills over time.

The Community Leadership Imperative

As cities and communities are impacted by more frequent and destructive storms, utilities are in a unique position to further engage customers through resilience and grid-hardening initiatives. By partnering with state and local governments, for example, utilities are actively building coalitions of actors focused on protecting aging critical infrastructure. Solutions such as microgrids that can work as an island in the wake of natural disasters around public facilities are gaining traction in communities most impacted by recent natural disasters.

As a pioneer and early adopter of smart city applications, the utility has proven itself willing to champion innovation, and in so doing, earned a seat at the table to shape the lived experience for

customers within its territory. Not surprisingly, electrification of buildings and transportation are expected to remain at the forefront of these efforts for the foreseeable future. At the same time, as noted in our "State and Future of the Power Industry" pulse survey, a quarter of respondents felt that partnering with solution and emerging technology providers is a critical priority for utilities to successfully navigate the energy transition.

While technology innovation is an important vehicle to engage customers and invest in local communities, low-tech solutions remain equally critical in driving community impact. We expect utilities to continue playing a key role in community outreach and education, particularly around weatherization and energy efficiency opportunities.

While not necessarily at the cutting edge of innovation, utilities must prioritize energy equity initiatives to continue building goodwill in the communities they serve. This is especially true given the utility's unique position to help channel IRA funds to invest back into the communities within their service territories.

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Taking the ESG Plunge

Amidst the maelstrom of disruptive threats facing legacy U.S. utilities, increasing focus around measurement and transparency around environmental, social, and corporate governance (ESG) is on the rise. Utilities will need to balance the shift from a legacy model rooted in carbon-intensive fuels to a net-zero future.

Increasing scrutiny from investors, customers, and the public writ large will make this transition uncomfortable at times for the industry. But that does not mean utilities should back away from the challenge.

New rules proposed by the U.S. Securities and Exchange Commission requiring disclosure of certain ESG metrics, including greenhouse gas footprint and climate risks, are a harbinger of the regulatory scrutiny utilities will face in the future. While many utilities have taken meaningful steps forward – and as discussed earlier, are already community leaders around engagement, energy access, and equity – reporting and accuracy requirements are expected to tighten in the years ahead.

This includes focusing as much on the S and G aspects of ESG as the E through decarbonization. Industry leaders among publicly traded utilities such as American Electric Power (AEP), Edison, and Public Service Enterprise Group (PSEG) have all been recognized, according to Just Capital, as leading companies committing resources and effort to improve their employees' living wages, work-life balance benefits, and prioritizing diversity, equity, and inclusion.

As described in our latest "State & Future" report, utilities should act today by identifying metrics and key performance indicators, implementing durable governance standards, disclosing with confidence, and finally, capitalizing the associated financial and brand benefits to reinvest back into critical initiatives. By all measures, the utility workforce of the future attaches more

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value to these efforts than its predecessors. An investment today will reap rewards later in a more engaged workforce, the ability to attract top talent, and improved integration of critical skills.

Leveraging Dynamic Monitoring to Position for the Future

The energy transition will continue to drive a large-scale shift in value creation away from conventional industry infrastructure toward a more diverse mix of clean, distributed, mobile, and digital solutions. Utility customers are far ahead of regulatory reform, which will put increasing pressure on utilities to protect their rate base as the landscape of competitors, technologies, and solutions rapidly expands. While staying ahead of the energy transition requires a more agile, holistic, and integrated approach across traditional organizational siloes, what does this mean in practice?

In an era of increased volatility and change, traditional scenario planning should be replaced with a dynamic monitoring process anchored by an evolving strategic plan. One-third of respondents to our pulse survey acknowledged the importance of remaining flexible and adapting cautiously, balancing proactive steps to mitigate risks, while avoiding rocking the boat. No utility can account for every potential eventuality.

It is impractical to accurately measure all variables and too expensive and time-consuming to conduct a thoroughly comprehensive analysis. The alternative – plugging in rule-of-thumb assumptions and running multi-decade cost models – is unlikely to address the myriad uncertainties utilities face around stranded asset risk, potentially crippling cyberattacks, disruptive emerging technologies, and a far more complex competitive landscape.

Instead, utilities should embrace an evolving process that can recalibrate to real-time market, competitive, technological, and regulatory developments.

The goal is to avoid being blindsided by disruptive shifts or trapped in organizational siloes that prevent more proactive innovation. Instead, we recommend utility leaders consider the following to embrace a more dynamic strategic planning process that can build enterprise value and better react to energy transition inflection points.

First, utilities should identify disruptive, but plausible scenarios that could materially impact their competitive position in their target territories. This is less about planning around probabilities than identifying opportunities to proactively improve market position through innovative solutions.

With decarbonization targets looming over the global growth agenda, utilities are taking on leadership roles in establishing multi-stakeholder hydrogen hubs demonstrating how partnerships can facilitate innovation, benefit communities, and proactively position for potential new growth opportunities.

Second, identify strategic, no regrets opportunities that prioritize flexibility and position the organization to respond quickly to threats and opportunities. As discussed earlier, investing in VPP

solutions enables utilities to proactively embrace DER solutions and partner with customers, while buying time to invest more aggressively in T&D upgrades.

Third, test assumptions through focused investments that prove the viability of bigger bets. This is an opportunity to drive targeted innovation and learn from failure but should not devolve into placing many small bets. Utilities have shown a willingness to participate in innovative AMI, EV charging, and smart city pilots, among others. The key challenge going forward will be scaling these efforts, but early experiments can inform more aggressive scale-up strategies in the future.

Fourth, curate a dashboard of key indicators aligned with the scenarios identified in Step 1 that can signal to the organization when the opportunity is ripe to go all-in on a specific bet or pull back. With market volatility and disruption a constant, this exercise should focus on filtering noise and homing in on the leading indicators that signal imminent or rapidly materializing shifts in the market.

Finally, monitor performance in real time, with an eye toward alignment with key indicators. If performance falls out of step with these indicators and associated scenarios, then assess what corrective actions or scenario recalibrations need to take place to realign the organization.

Looking Ahead

It is increasingly likely (and critical) that a net-zero economy with a hundred percent carbon-free electricity grid will be a reality in the coming decades. While the pathway forward is complex and requires cross-industry and public sector coordination, the utility remains well-positioned to be a leader and facilitator across the energy transition ecosystem.

Taking care of the core business and protecting the delivery of a public resource must remain a priority, but the opportunity to transform the legacy utility business model has never been more within our grasp than it is today.

The successful utility business model of the future must continue to build an energy network that prioritizes livability for all customers, leverages data, and deploys automation at scale to drive efficiency and performance and focuses increasingly on selling outcomes rather than kilowatts. PUF