

# The Strategic Resilience Utility Toolkit

Embrace the Change

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t a time when the industry is facing a historic transition to a cleaner, more mobile, increasingly distributed, and intelligent infrastructure, the global pandemic, cyberattacks, and extreme weather events have brought unprecedented levels of disruption to the U.S. power sector over the past year. The compounding impact of rapid technology, business model, operational, customer, and policy change requires recalibrating investment priorities and a more aggressive pursuit of strategic resiliency.

Guidehouse’s sixth annual State and Future of Power study in partnership with PUF shows that utility executives are responding with more urgency and purpose. Our Pulse Survey of industry leaders points to an increased focus on environmental, social, and governance (ESG) initiatives, electrification efforts, and more aggressive integration of distributed energy. But significant work remains.

Outlined below are several areas of dynamic change that will define how the industry will emerge from the global pandemic better prepared for the decade ahead.

### Engaging Remote Work, New Customer Strategies

As the U.S. workforce begins its slow return to the office, energy usage patterns are expected to return to a more typical balance between residential and business sectors with load patterns following course. Some level of permanent shift toward residential load can be expected as many in the workforce remain remote.

This trend will impact utilities directly, as a large portion of their non-essential employees will continue working remotely or in a hybrid manner. Utilities will have to assess numerous areas of their operations such as real estate, asset management, and communication systems to adapt to this new reality.

From a customer standpoint, the pandemic afforded utilities an opportunity to embrace new, creative ways to engage remotely in a safe manner for both parties. While some interactions like service calls and energy efficiency audits are likely to return to in-person, remote alternatives implemented during the pandemic – virtual energy audits, online marketplace capabilities, and program marketing events – are expected to continue based on positive customer feedback and cost savings.

Utilities can also help business customers in their return to office initiatives. An increasing focus on healthy buildings may require new HVAC solutions that can be accelerated through utility incentives. Flexible workspaces may necessitate more advanced lighting and occupancy sensors to optimize energy usage of new schedules.

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### Accelerating Cybersecurity and Grid Resilience

The grid and energy infrastructure face increasing cyber and physical risks as cyberattacks and climate change impacts increase. Eighty-six percent of respondents of this year’s State & Future of the Power Industry Pulse Survey consider cybersecurity to be a bigger risk to utilities than physical security.

The SolarWinds hack in 2020 was a wake-up call for many industries and government agencies, including utilities. The Colonial Pipeline cyber breach in 2021 was a direct shot at the U.S. energy system. Utilities will need to anticipate similar attacks going forward and pre-emptively address security risks on both the grid and customer sides of the meter, especially as distributed energy resources (DER) continue to proliferate.

While cybersecurity is certainly top-of-mind for utility

executives, the past year saw widespread blackouts linked to fires, heatwaves, hurricanes, and the Texas freeze. Increasing in frequency, these events are a reminder that the climate is changing before our eyes. Our energy system will need to be more flexible to deal with greater uncertainty.

developer, operator, or broker; and transactive platform provider, suggesting that there is no one-size-fits-all approach for utilities to transform their businesses. Each utility must respond to unique regulatory and market structures, grid topologies, resource mix, and customer segmentations.



### Responding to Corporate Structures and Competition

The past decade has seen a spate of consolidation in the energy industry, both on the regulated utility and the deregulated services sides. This reflects a belief that economies of scale and integrated offerings will benefit customers and shareholders.

That strategy appears to be under some scrutiny as of late with Exelon deciding to split into two companies and Duke facing investor pressure to split up its state jurisdictions. These developments underscore the fragile balance between operational efficiencies and regulatory risks of multiple markets.

Utility executives will need to prioritize ramping up investments in weatherizing existing assets, adding more resilient grid-hardening technologies, and creating more clean backup power options for when the main system does go down.

They must do so while also making strategic investments that prepare existing infrastructure for a very different future consisting of more modularity, variability, and flexibility across the energy system.

On the deregulated services side, there is still a strong trend toward integrating various customer products and services, like solar, storage, energy efficiency, and EVs. The rapidly evolving energy as a service market, for example, which Guidehouse Insights estimates could have a potential of two hundred and seventy-eight billion in revenue globally by 2028, represents one such highly contested market opportunity.

### Understanding Business Model Risk and Innovation

While utility executives are increasingly embracing change, only a quarter of major utilities in the U.S. have made meaningful progress in developing future-oriented business models, according to Guidehouse’s Energy Cloud Readiness assessment.

Only one in ten have done so proactively with little outside pressure from regulators, customers, or competition. As 2021 unfolds, we expect a higher uptake of performance-based ratemaking, subscription-based retail services, and other new product and service offerings to diversify revenues in response to the events of the past year.

A majority (sixty-three percent) of State & Future of the Power Industry Pulse Survey respondents see increasing renewables and DER as the most disruptive force to legacy utility business models.

Meanwhile, there was a fairly even split regarding the best way to address DER among asset developer/owner; grid services



Larger energy players continue to acquire smaller entities to bolster their offerings. The key to true integration, however, is less technical and more financial and customer packaging, which vendors have yet to fully unlock.

Aside from traditional power players, the power sector is continuing to see increasing interest from the broader energy space and beyond as climate concerns reach across all industries.

Over half of State & Future of the Power Industry Pulse Survey respondents believe that technology and telecom companies pose the biggest threat.

Such entities are large energy users in their own operations and are developing solutions that could potentially compete directly with utilities. The oil & gas sector has also shown significant interest in crossing over into the power arena to diversify and accelerate its transition to lower-carbon suppliers. According to Guidehouse's Energy Cloud Tracker of energy transactions, European oil & gas companies dominated the transaction space for utilities in 2021.

### Building an ESG Advantage

In the midst of a historic energy transition, utilities are also faced with a significant opportunity to improve their standing in the jurisdictions they serve. ESG funds and investments were one of the few bright spots in the global economy in 2020.

With this in mind and coupled with protests in response to the recent social unrest, utility boards and shareholders are likely to ramp up pressure on utilities to demonstrate progress toward ESG goals.

Impacts include environmental metrics (decarbonization, water management, air quality); business model resiliency (including climate change risk, which utilities typically have not addressed); governance and business ethics (especially in the wake of recent utility scandals); and expanded diversity, equity, and inclusion initiatives (focus on hiring and staffing to reflect changing community demographics and diversifying leadership).

As a critical industry serving local communities, the power industry has an opportunity to lead a transition toward a more inclusive and equitable society.

Most directly related to the utility business are decarbonization efforts at global, federal, state, and local levels, which impact both electric and gas systems. Guidehouse Insights forecasts an accelerated uptake of electrification of buildings and transportation based on advances in technology and supportive policies.

These additions to electric load may lead to short-term grid instability, but represent an important long-term opportunity for

increased utility business development, customer engagement, and improved system resiliency. Over half of utility executives think utilities should embrace electrification for sustained growth according to this year's State & Future of the Power Industry Pulse Survey.

While the natural gas system can support resilience through its inherent physical and operational capabilities that enable it to meet the volatile demand profiles resulting from resilience events, an expected increase in hydrogen infrastructure investment

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unlocks opportunities for further decarbonization. In the last six months alone, forty billion dollars of new hydrogen projects have been announced.

While the events of the past year have had considerable short-term impacts on the energy industry, these disruptions are expected to accelerate the power industry's transformation into a more resilient, customer-centric, and technologically advanced future.

For utility executives, the key to success will be proactively anticipating and preparing for the known and unknown challenges ahead rather than waiting to react once it is too late to prevent temporary or permanent losses.

This is more difficult to accomplish as destabilizing events increase in frequency. The utilities that remain flexible and adaptive by embracing strategic resilience, ESG initiatives, and business model innovation will be the most successful in weathering the decade ahead. 

“Women Leading Utilities, the Pioneers and Path to Today and Tomorrow,” PUF's new book, documents that one prejudice after another – about the role a woman could play in the utilities industry – has fallen over the past hundred years. Whether a woman could innovate, could manage departments and divisions of mainly men, and could even be at a worksite of mainly men. Whether a woman could lead core utility functions such as operations, engineering, and corporate strategy, and could lead a whole company with just as much success as a man. Each of these prejudices have been decisively and now repeatedly disproven, by the skill and the courage of the women whose stories are told in this book.