

The American Utility in 2022

Threats and Opportunities Abound

By Dan Hahn, Mackinnon Lawrence, and Richelle Elberg



xtrême weather events, aging infrastructure, and liability risks. Grid and load disruption caused by accelerating distributed energy resource (DER) penetration. A shifting generation mix. Vocal consumers increasingly demanding action on climate change and social equity. Cybersecurity concerns.

These are just a few of the challenges utilities face today. Taken together, the drivers behind the ongoing energy transition are like a snowball rolling downhill: the farther it goes, the larger it becomes, and the faster it travels, the greater its impact at the bottom of the hill. For utility leaders facing that threat, the outlook can be daunting.

Each year, Guidehouse and Public Utilities Fortnightly survey utility executives across the U.S. to understand key industry trends and top-of-mind concerns. In 2022, participants noted many of the same opinions as in prior years – rising DER penetration and cybersecurity represent major threats – while also acknowledging that regulatory restrictions and conservative utility culture inhibit progress.

But there is at least one key difference in 2022. Thanks to the Infrastructure Investment and Jobs Act (IIJA), passed in November 2021, utilities have a unique opportunity to make strategic upgrades and investments to address not only concerns around grid resiliency and cybersecurity, but growing social equity concerns and competitive threats on multiple fronts as well.

Rather than thinking of IIJA funding as merely an opportunity to accelerate infrastructure investment plans – and which it absolutely is – utility leaders should take a step back and consider holistically, the role their organization can play in bettering the fabric of their local community, economy, and environment. Because business resilience in the utility context extends beyond hardening substations.

The Infrastructure Bill and Resilience

There’s no denying the acceleration in climate change, and the impact it’s having on critical infrastructure and society. Extreme weather events are more frequent, more destructive, and more costly than ever. Wildfires are burning millions of acres annually.

Back-to-back hurricanes, coupled with increased flooding, cause damage to climate-vulnerable communities unable to fully recover before the next disaster strikes. According to the National Oceanic and Atmospheric Administration, twenty such events caused a hundred forty-five billion dollars in damage in 2021,

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up from a hundred billion the year before.

IIJA funding targeting the electric utility industry offers a powerful jump-start to mitigation and adaptation projects designed to address these threats. It is critical that utility leaders balance resilience strategies focused on upgrading and hardening assets, as well as deploying the organizational design, new processes, revised job

responsibilities, and employee training to support these initiatives.

They should also consider disadvantaged communities and social equity – not only because it’s the right thing to do but because it can become an upward spiral benefiting the utility, its customers, the community, and shareholders as well.

For example, electrification of mass-transit systems benefits the utility and shareholders in terms of increased load, and also has the added benefit of reducing emissions in the disadvantaged communities that rely most on public transportation, and which tend to have the poorest air quality in urban areas.

Mackinnon Lawrence is a director in the Guidehouse global Energy practice and leads Guidehouse Insights. He is responsible for overall strategy and operations, including management of a global analyst team, development of the Firm’s Energy Cloud thought leadership framework, and client engagements supporting utility, oil & gas, telecom, manufacturing, IT, and consumer tech companies. His expertise covers energy transformation, business model innovation, and technology disruption.

Dan Hahn leads the Energy Providers

practice within the Guidehouse global Energy, Sustainability, and Infrastructure segment. He advises executives on strategies to address complex operational, financial, and organizational challenges, in areas of enterprise value creation, customer engagement, new products and services, operating model design, business process improvement, organizational change and restructuring, costs takeout, performance management, digital transformation, intelligent automation, business process management, application outsourcing, and technology imple-

mentation. He has extensive business transformation experience.

Richelle Elberg is an associate director at Guidehouse. Her primary focus is on utility communications networks for AMI and distribution/substation automation applications. Elberg has more than twenty years of experience in the telecommunications industry, including an extensive background analyzing and writing on the wired and wireless communications industries from operational, financial, strategic, technical, and regulatory perspectives.

This can ultimately reduce illness and improve quality of life, keeping people employed, attracting new residents to the region, and contributing to the local economy.

Infrastructure resilience should encompass a strategy that can account for the increasing variety of potential disruptions. Weathering these disruptions successfully will lead to more reliable and equitable access to goods and services, continuous operability, greater durability of service and supply chains, and a higher degree of adaptability in response to unpredictable changes. More robust resilience strategies can also aid rapid emergency response capabilities.

Increased digitization of the grid in response to customers' needs – such as EV charging, control over their energy usage, and desire to use weather-dependent renewable sources – has the downside of increasing vectors for cyber-attacks. Such risk should be managed on an ongoing basis and the IIJA's increase in funding will further support the industry's efforts to keep pace with the changing security and grid landscapes.

A new Guidehouse white paper, "Future-Proofed: Protecting Infrastructure in Uncertain Times," further details the ways strategic investment can build infrastructure resilience and maintain physical, social, and economic viability.

The \$1.2 trillion IIJA includes more than \$62 billion for electric and grid infrastructure, including \$47.2 billion dedicated to resilience, including cybersecurity, and more than \$15 billion to supporting vehicle electrification. In contrast, the last major infrastructure legislation, the American Recovery and Reinvestment Act of 2009, allocated just \$4 billion to smart-grid projects – and yet the subsequent spate of investments led to marked grid modernization and industry advancement over the course of many years.

With an order of magnitude greater funding available, the industry has a once-in-a-generation opportunity to make substantive change – and because disadvantaged communities are more likely to live in areas most vulnerable to climate change-related events, there is a real chance for tangible social equity benefits to be realized.

ESG Goes Beyond Compliance

ESG has moved from the periphery to mainstream corporate practice and the underlying imperatives are serious enough to warrant immediate action by utilities. As the incidence of climate-related disasters and market disruptions accelerates, society is looking to utilities for leadership.

Public utilities and co-ops are in fact owned by their customers,

and those customers increasingly hold them accountable for either compounding or mitigating climate threats. Similarly, investor-owned utilities are regulated monopolies tasked with providing a public good in exchange for a reasonable rate of return. If the public (or regulators) determine the company is not adequately providing a net good, longer-term deregulation and competitive threats are certain to undermine IOU economics.

Utilities can lead the charge in combating climate change, stabilizing markets, and protecting society, thereby meeting evolving stakeholder expectations, while at the same time



maximizing shareholder value and capturing upside from the energy transition.

But first, the industry must evolve beyond a compliance and risk avoidance-based approach, instead embracing ESG as a tool for value creation. This means engaging both internal and external stakeholders in a thorough materiality assessment, identifying risks, and highlighting opportunities for change, constructing, and implementing a comprehensive ESG strategy, and reporting on goals and achievements through annual ESG reporting.

By leveraging ESG reporting as an opportunity to control their sustainability narrative, utilities can positively affect internal and external stakeholder perceptions and understanding of their role as good stewards and responsible partners driving social and environmental good.

The Energy Transition and Risk Management

The IIJA will build thousands of miles of new transmission lines to facilitate the expansion of renewables and clean energy. In addition to funding grid modernization and resilience enhancements, it includes billions of dollars for investment in hydrogen, nuclear, and hydroelectric resources.

It funds new weatherization assistance programs and expands energy efficiency grant programs. Finally, it dedicates billions to EV-charging infrastructure, electric school bus programs, and state-level battery processing programs.

Guidehouse Insights tracked total investment in utility scale wind, solar, and storage projects that came online in the U.S. in 2021 at nearly thirty-nine billion dollars. More broadly, the 2021 Advanced Energy Now Market Report, prepared by Guidehouse and Advanced Energy Economy, found that overall advanced energy revenue in the U.S. totaled some two hundred forty billion in 2020.

With the IIJA, utilities can accelerate investment in the green-energy transition while proactively managing and minimizing disruption to the grid. Small and midsize utilities that may have previously lacked budgets, will now have an opportunity to invest in sophisticated operational technologies, such as advanced distribution management systems or DER management systems. Along with new analytics and machine-learning software, these investments will smooth the energy transition for all stakeholders.

Utility leadership must devote resources to this transformational opportunity, considering the funding opportunities they may be positioned to pursue, both directly and through partnerships. Thinking strategically and proactively about IIJA funding now – while conducting targeted

Utilities should quantify their risk from extreme climate hazards by using downscaled stochastic climate models to understand acute physical risks such as extreme wind and flooding, and chronic risks such as extreme heat and cold. This data can be used to understand the probability of system failure and impact across the utility footprint and over time.

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By quantifying this risk, utilities can prioritize investments to improve system resilience and business continuity, implement resilience programs that mitigate both acute and chronic risk, integrate the results in their infrastructure planning processes, and be prepared to comply with climate-risk disclosure requirements.

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outreach to potential partners such as state and local governments – can allow utilities to identify the highest-value opportunities with shared interests and alignment.

Throughout this transition, effective risk-management practices are essential to business resilience. In today’s turbulent economic and geopolitically charged environment, strengthening business resiliency should be a priority. A growing number of institutional investors, state utility regulators, and the U.S. Securities and Exchange Commission are bringing focus to climate-related risk reporting.

Customer Centricity and Competitive Forces

Utilities are well-positioned to be the orchestrator for change in the energy transition, but they also face new competition on many fronts. In the Guidehouse/PUF survey, utility executives indicated they continue to see tech and telecom companies as their greatest competitive threat, but increasingly oil and gas and automotive entities are also viewed as competitors. Long a virtual monopoly industry, power utilities today understand that they risk losing their once-captive customers to third-party providers and competitive markets.

In response, utilities are building next-generation solutions. Taking advantage of increased data availability and advanced analytics solutions, they are investing in personalized digital customer experiences to guide and engage customers on their energy use.

Comprehensive program aggregation strategies are increasingly
(Cont. on page 93)

The Grid's Wood Poles and More

(Cont. from p. 65)

career as a field service engineer. I did that for nine years. To put some context on that, my first few years I didn't have a laptop. I was working on carbon paper for my documentation, so the world has changed.

We have to have a value proposition for our employees that has them love what they do. There are still people who love to be in the outdoors working every day. It's not for everybody, so being more selective in our candidates, training them in the right way, giving them incentives to be here, whether financial or just being a good place to work, these are the types of things we are focused on.

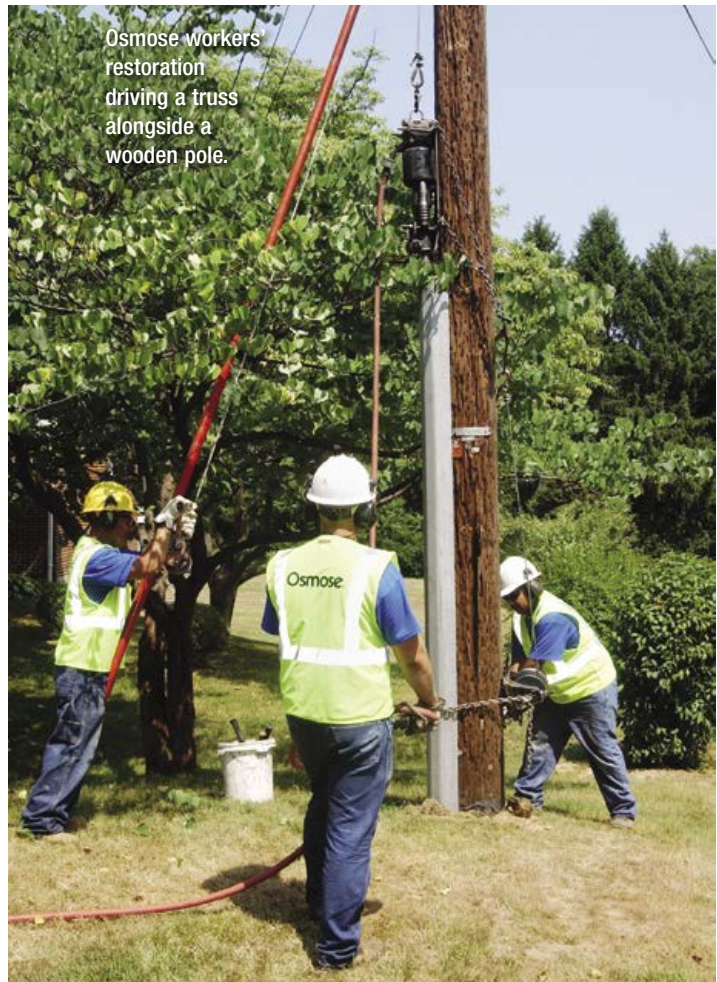
Not just for Osmose but for the whole industry, people don't tend to want to work with their hands as much as maybe they did thirty or forty years ago. We have to play our role as leaders and make our work more interesting and bring in more technology. There will still be a need for working with our hands, but we've got to be leaders in that space and recognize we need to have a valued proposition for our employees.

Also, very challenging is our turnover is higher than we would like it to be. I had similar problems in my career with GE and Alstom and I worked for a company, NCR, with such problems.

That's part of my job, to figure out how to deal with them and how to manage these issues well, so our customers don't feel the impact.

So far, we're doing okay, and we have good capacity of labor and equipment.

Having to truck people and equipment into the right places is a process, it's not accidental. Because we have more scale and size than our competitors, we are able to do this to respond to



Osmose workers' restoration driving a truss alongside a wooden pole.

customer needs and changes more effectively. We spend a lot of time on that, and it's something we're strong at, but I don't take it for granted.

We're able to serve our customers better than many in the industry with our size and scale, so you can't take that for granted, and you've got to keep predicting what your future capacity's going to be. **PUF**

The American Utility in 2022

(Cont. from p. 89)

leveraged to merge energy efficiency and DER programs that maximize operational and systems benefits while giving customers cleaner energy choices.

Market-based pay-for-performance approaches designed to promote innovative projects are being used to offset the saturation of traditional programs and lagging cost-effectiveness. Utilities are also applying workforce-development strategies to drive community and energy savings growth through career assistance for emerging green jobs.

Utilities are at the core of the clean-energy value chain and are well-positioned to own and optimize key parts of the energy transition. They should embrace this role and drive collaboration with other players, as opposed to putting up walls to protect their franchise. New sustainability focused customer solutions will require once-disparate industries to collaborate.

For example, a regional transportation electrification initiative will have a much bigger impact if automotive manufacturers, traditional oil and gas players, governmental entities, major customers, and utilities all work together.

By taking a lift-all-boats approach, utilities can optimize the clean-energy outcomes for all stakeholders – and their own bottom lines. **PUF**