Best of 2020

A collection of insights from Accenture Utility industry leaders
Foreword
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Change has been in the air for utilities for a while now, but never have we required such rapid response to such powerful forces of disruption. Utilities have no doubt risen to the challenge and have shown incredible leadership in embracing change to continue to deliver value for their customers, employees, communities and business stakeholders.

Over the course of the past year, Accenture Utility industry Leaders have published a series of blogs that capture leading practices and recommendations based on our work with utilities across the globe as they grow their businesses and drive the energy transition. From strengthening grid resilience to reimaging energy retail services to maximizing the benefits of a green recovery, this collection of insights from our thought leaders explores a range of topics across the utilities value chain.

I hope you find these articles interesting and are able to draw some inspiration for unlocking more value from your organization. On behalf of the entire Accenture Utilities team, I wish you and your loved ones a happy and healthy holiday season and all the best for 2021.

Stephanie
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Chapter 1: Leading the Energy Transition
“Digital-led modernization presents significant opportunity to continue to drive down LCOE.”

Melissa Stark, Managing Director and Global Renewables Lead
How can we maximise the benefits of a system value approach?

Stephanie Jamison
Senior Managing Director,
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With COVID-19 shining a light on societal disparities, and growing climate impacts making the energy transition more pressing than ever, governments and businesses alike are reconsidering and accelerating their ambition towards a net-zero carbon future. Think of Europe’s 2030 emissions targets, or Google or Walmart’s recent announcements.

But how will markets achieve this vision? Broader thinking is emerging on what value means and how energy opportunities should be evaluated. It’s about more than just cost; it’s also about the economic, environmental, social and technical outcomes of those possible solutions – from job creation and air pollution reduction to improved energy system resiliency and security. This is what we mean by the overall system value.

To expand thinking around value in this more holistic sense, the World Economic Forum’s Electricity Industry Action Group, which is comprised of more than 25 global energy technology and utility companies, has created the system value framework, with support from Accenture. A dozen dimensions have been defined, each representing an outcome that delivers value across the economy, environment, society and the overall energy system.

To drive further thinking around the system value framework, we analysed six very different markets – Brazil, China, Europe, India, South Africa and the US – to identify recovery opportunities for accelerating the clean energy transition. Through this work, a common path emerged to maximise system value and achieve an integrated zero-carbon energy system.

• The path to an integrated zero-carbon energy system needs to take into account not only cost, but also system value.

• The journey towards a sustainable energy transition has three stages.

• Investments in renewables, efficiency and the grid come first and remain essential throughout the path.
A common path to maximising system value

Wherever a market is along the journey, the path can be applied to drive conversation around solutions for today and the near future. So what does that really mean? There are essentially three stages to this path:

1. **Core elements**: The first stage is focused on advancing core elements to lay the foundation for transition: expanding variable renewables, enhancing grid capabilities and interconnections, and efficiency improvements. These elements don’t lose relevance as the market progresses – they remain essential throughout the path.

2. **Transformational elements**: As a market’s annual electricity generation mix hits 20%-30% variable renewables (wind and solar) – which means that at certain points in time, more than 50% of the electricity consumed will be generated by variable renewables – the market enters the second stage, in which it faces a series of pivot points. Here, a greater emphasis on power market reform and ancillary services markets, advanced capabilities in grid operations and the transmission-distribution interface, smart flexibility solutions and storage, demand optimization, and electrification of other end-use sectors such as transport and heating are needed to continue to drive system value.

3. **Net-zero integrated energy system**: Finally, to achieve a net-zero future beyond 100% renewable electricity to 100% net-zero energy, there must be an integrated energy system. This means large-scale electrification of buildings, transport and industry, which will require high levels of additional zero-carbon electricity. For hard-to-abate sectors such as heavy transport and heavy industry, solutions beyond electricity, such as hydrogen, will be needed. As the system becomes more and more integrated, cross-sector stakeholder collaboration is key to drive towards greater levels of systemic efficiency.

Markets are at different stages, but must all follow the same general trajectory

While baselines vary, most markets are currently in the first ‘core elements’ phase, with the goal of maximising system value while setting the foundation for a more integrated energy system.

For instance, India is in the core elements stage. It has made significant progress in recent years with renewables and ranks 4th globally by total generation from wind and solar. However, India’s electricity generation mix is still largely dominated by coal with a near-term focus on transmission grid expansion and modernization and renewables deployment, as well as improvements to efficiency. The US has a varied landscape for the energy transition, with most regions still working on core transition elements such as renewable expansion through offshore wind in the northeast US. A few US markets, such as California and ERCOT in Texas, are experiencing pivot points with higher variable renewable penetration, and seeing increased need for smart flexibility solutions and demand optimisation.

Across the Atlantic, Europe is at the pivot point with many markets – such as Denmark, Portugal, Ireland,
Spain, Germany and the UK – already exceeding 20% annual variable renewables in their generation mix. By 2030, Europe is projected to achieve 55% variable renewable share and more than 70% total renewables in its generation mix. Transmission and distribution networks and power markets must be transformed to support increased variable resources through greater European grid interconnection, connected and harmonised balancing markets, and distributed energy resource participation in balancing markets.

Taking the path forward

Overall, the path to maximising system value is about supporting policy-makers and businesses to understand where they sit now, and where they need to be next. It’s about making recovery investments (for example in expanding renewables, grid upgrades or in modern energy-efficiency measures), while in parallel making plans to progress along the journey to a net-zero future.

We believe that articulating the path in this simple way, and showing it can be applied regardless of starting point, will enable faster progress as well as better planning. Science requires us to collectively achieve the energy transition.

We must consider more than just the cost to get there, and bring system value into clear view.
Industrial clusters are critical to getting to net-zero

Industrial clusters have a big role to play in the clean energy transition. But what are they? And how can they help?

Industrial clusters are groups of industries, such as cement, steel and chemicals, physically in the same location. Europe is home to 3,000 such industrial clusters, representing 54 million jobs. Notable global examples include Humber (UK), Nagoya (Japan) and Suzhou Industrial Park (China).

As many countries and regions have set net-zero greenhouse gas (GHG) emission targets looking out to 2050, abating industrial emissions is coming into greater focus. The industries in these clusters are heavy users of fossil fuels and account for some of the hardest-to-abate emissions in our economy. Today, industrial clusters represent around 20% of Europe's GHG emissions (excluding transport), but that share could rise to a majority of emissions as other sectors decarbonize earlier.

So what role can industrial clusters play in the clean energy transition? The answer lies in the proximity of the businesses in each cluster. This size and aggregation of energy demand across industries not only creates opportunities for systemic efficiencies, electrification, demand optimization, and carbon capture, utilisation and storage (CCUS), but also an internal market for hydrogen – the most promising technology for decarbonizing hard-to-abate sectors of the economy. The production and consumption of hydrogen can be co-located, meaning you don’t need to invest in long-distance infrastructure.

Think of an industrial cluster like a city

These clusters share many characteristics of a city, and thinking of them in that vein helps focus on the levers for decarbonization. In the same way as a city, think about pursuing efficiency and demand optimization opportunities to improve system
efficiency as well as electrifying what you can. In the case of industrial clusters, this would mean electrifying light industrial and medium-pressure processes. But today this will only take you so far: high-temperature, high-pressure processes or heavy goods transport cannot be easily electrified. You may need other solutions – and that’s where hydrogen comes in.

Today, most hydrogen is produced via fossil fuels such as coal or natural gas (grey hydrogen). However, alternate hydrogen production methods that can significantly reduce or eliminate emissions are advancing. Examples include splitting water into hydrogen and oxygen through electrolysis using electricity from wind and solar or producing hydrogen from nuclear generation (green hydrogen); as well as capturing, using and/or storing the CO2 produced when hydrogen is made using fossil fuels (blue hydrogen).

For instance, offshore wind generates electricity that can be converted to hydrogen via the electrolysis of seawater and transported via existing gas pipelines. Demonstration projects are already underway: Shell, Gasunije and Groningen Seaports have teamed up for a renewable hydrogen project to achieve annual production of 800,000 tons of green hydrogen by 2040 with power from up to 10 GW of offshore wind.

Implementing hydrogen, combined with cost-effective electrification opportunities, can chart a zero-carbon future for Europe’s industrial clusters. Hydrogen can be used for:

- **Industry:** as a feedstock for high-pressure, high-heat industries which are difficult to electrify
- **Storage:** when electricity from wind and solar exceeds demand
- **Mobility:** to derive fuels for long-haul land and maritime shipping and aviation
- **Heat:** through long-term, large-scale storage replacing natural gas for heat

### Industrial clusters: a true team sport

Humber, in the North of England, is home to one of many ongoing projects to decarbonize clusters across Europe. Currently, Humber is the UK’s largest cluster by industrial emissions, emitting over 12 million tonnes of CO2 each year.

The goal is to transform the Humber region into the UK’s first net-zero carbon cluster by 2040. The best strategy would be to electrify what is possible, create efficiencies and ramp up efforts on CCUS and blue hydrogen. This would then allow the hydrogen infrastructure that is initially developed for blue hydrogen to also be used for green hydrogen, as Humber is close to two of the largest offshore wind farms in the UK – Hornsea and Dogger Bank. The industrial cluster is able to decarbonize by using blue/green hydrogen as a replacement for fossil fuels in industrial processes and power stations.

The effort is a true team sport, bringing together supporters and partners across the value chain, including Associated British Ports, British Steel, Centrica Storage Limited, Drax, Equinor, Mitsubishi Power, National Grid Ventures and SSE Thermal.
Because industrial clusters are about industry co-location, they are often found in more socially disadvantaged areas. Decarbonization of industrial clusters is poised to create significant jobs; blue and green hydrogen could create upwards of 900,000 jobs in Europe by 2050.

**New partnerships for integrated energy systems**

As we move to net-zero carbon, systemic efficiency, clean electrification and hydrogen – combined into an integrated energy system – are part of the solution. And the European hydrogen opportunity is big. For example, if 80% of industrial energy needs were met by green hydrogen by 2050, an estimated 45 million tonnes of hydrogen would be required, and more than 400 GW of associated wind and solar.

Cross-industry collaboration and an ecosystem are required to make this work, with industrial companies essential to the cluster. The industrial cluster is a way to decarbonize, generate new jobs in underserved areas, and deliver vital benefits like better air quality and health. We’re excited to support collaboration around this essential part of the energy transition as we look ahead to a net-zero future.

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**The industrial cluster is a way to decarbonize, generate new jobs in underserved areas, and deliver vital benefits like better air quality and health.**
How can utilities harness the power of cloud?

Utilities are already overstretched by the day job. Between cybersecurity threats, extreme weather events and COVID-19, utilities’ resilience is being tested like never before. Meanwhile, the big stuff hasn’t fallen away, with the transition to a decarbonized future more pressing than ever.

Experience tells me technology and innovation are critical to managing these challenges. They bring the firepower to help utilities design solutions quickly, test and deploy them securely, then scale them for real value across the business. For this to be successful, though, IT and the rest of the business need to work together—and stay focused on applying technology to solve business problems.

To get practical, prioritize cloud

Want fast change and innovation at scale? put cloud at the core of your business. It’s a way to access cutting-edge technologies such as artificial intelligence, machine learning or natural language processing, experiment rapidly and securely, then scale fast.

Cloud can also directly support decarbonization—our research suggests enterprise-owned-to-cloud migrations can cut energy usage by more than 60% and carbon emissions by more than 80%.

A real-world example—and one which is top-of-mind as I am based in California: utilities know the risk of wildfires is rising, with hot and dry conditions more prevalent in California and Australia among other locations. And against that backdrop, utilities know they must take preventive action to identify damage to their infrastructure that could cause a wildfire. Drones can be a powerful tool for better visibility over a service territory. But for them to be effective, you have to be able to quickly analyze millions of images and use them to pinpoint risks.

Here’s where it gets interesting: In eight weeks, Accenture worked with a leading utility to build, then test three cloud-based machine learning models using different platforms. The goal: to see how well we could identify damaged assets that could lead to a wildfire (like a leaking transformer or chipped insulator). The models we built demonstrated the value of technology to identify damage faster and more effectively. And as a result, we are now partnering with the client to scale this as a capability across the business—de-risking, improving efficiency, and driving up worker safety.
Technology helps customers too

Let’s extend the example. As well as mitigating the risk of wildfire, utilities can proactively minimize customer impact by increasing grid resiliency. One way is to take advantage of the increasing volume of distributed energy resources (DER) on the network, and accelerate the rollout of additional DER and/or clean energy microgrids to support local communities.

This technology helps utilities speak to each component, to manage the system better as they enter wildfire events. In practice, this might mean communicating directly to microgrids or local batteries to preserve power, thereby minimizing the impact of public safety power shut-off (PSPS) events. Cloud is critical as we think about scale—according to US industry estimates, we could see almost 1.9 GW of behind the meter storage by 2024 (source: Wood Mackenzie). By using cloud, we could easily scale this type of capability as the number of DERs on the system increases.

New tech also means new partnerships

Cloud opens up a lot of options for utilities. It means you can be more agile, because you can develop and test new solutions fast, and partner more easily across your ecosystem. For instance, with cloud, you can share data more easily and securely across partners, to tackle challenges together.

And as challenges mount, we are seeing interesting partnerships emerging. For instance: between utilities and start-ups; between different utilities; and across sectors. The latter is especially interesting as we look at the opportunities in sector coupling, which has the potential to integrate gas and electric sectors, or energy and transport sectors. All with the aim of driving system optimization and decarbonization.

These partnerships will be key to accelerating innovation, shoring up utilities’ resilience and driving progress on the path to a low-carbon future.

Innovation and technology can help utilities with the big challenges.
The energy transition is more pressing than ever – and as governments look to economic recovery in the wake of COVID-19, they are recommitting to their energy transition plans and investing to drive faster progress.

But different countries are starting from very different baselines. One example is varying levels of electricity access; close to 900 million people are still without reliable access to electricity, while Sub-Saharan Africa’s access to electricity rate is around 45%. Plus, the lion’s share of energy demand growth will come from emerging markets over the next decade.

In these markets, significant investment is needed to fund this extra power generation capacity. But energy must also remain affordable, given its importance in driving economic growth and providing a basic standard of living. An orderly transition is needed – one that balances the imperatives of energy transition, sustainability and economic justice.

The pace of energy transition also varies

Countries are not only starting from different baselines; they’re also operating in different conditions. Many emerging markets have large domestic reserves of coal, oil and gas. This typically results in a fossil-fuel biased generation mix, driving up the opportunity cost of transitioning to a sustainable energy future.

The pace of energy transition naturally has huge implications for employment and economic opportunity. But as countries mature along the energy transition journey and integrate more renewables into the energy mix, they are at the same time able to enable economic growth and transition to a more sustainable, affordable and resilient energy system. This is the “path to maximizing system value.”
The path to maximizing system value

Over the past 10 years, a typical path has emerged – a way to move from a traditional energy system to a zero-carbon emission system. From the System Value work at the World Economic Forum, three key stages have been identified:

1. **Variable renewables expansion**, increased efficiency and supporting investments in the grid and interconnections.

2. **When variable renewables expand** to the point that instantaneous variable renewables often exceed 50% of electricity consumption, then it’s time to increase digital flexibility – for example, storage, ancillary services markets, wider electrification of transport and heating, plus demand optimization.

3. **Finally, net-zero energy mix.** To achieve net zero requires an integrated energy system and solutions beyond electrification of other sectors like transport and heating, such as hydrogen and carbon capture, use, and storage.

Countries and regions are at different stages – but the good news is that they can learn from those ahead of them on the journey.

**Accelerating the transition in emerging markets**

So how can emerging markets make the greatest strides towards the energy transition? Countries are already seizing the opportunity to stimulate growth and move toward zero carbon at the same time.

For instance, India is setting up renewable energy zones to attract foreign investment and ease the way for solar and wind deployment.

On transport and industrials: China is electrifying transport, including trains and electric buses, to support clean cities and light duty electric vehicles. Brazil is using incentives to promote sustainable biofuel development, with a focus on economic growth and employment.

As these responses develop, emerging economies can look to these policy experiences, and consider how to:

1. **Make the most of complementary natural resources** (think hydro supporting solar growth) to accelerate decarbonization.

2. **Leverage industrials-funded power purchase agreements** (PPAs) or renewable zones to attract foreign investment and private funding, fuelling expansion of the renewables industry.

3. **Collaborate across sectors** – for example, look at collaboration opportunities across the energy and transport sector to build out the electric vehicle (EV) industry and its enabling infrastructure.

**Energy companies need to respond with new business models**

As the energy transition progresses, energy companies must think beyond traditional retail supply models. Think of Queensland, Australia, where a large percentage of houses already have rooftop solar panels, driving down their need for grid-supplied energy. It’s the equivalent of what has already happened in telecoms, with around half of US homes already entirely wireless and no longer needing telecoms connections.

So how will energy companies respond in the future? Answer: diversify and challenge legacy industry models and boundaries. Become an energy services company, or a home services company... join multiple products per customer, and create stickiness to generate new revenue streams and drive margins.

Customer experience is at the heart of this future vision, with loyalty harder than ever to secure and maintain. Meanwhile, policy-makers and regulators can help energy companies navigate this challenging landscape with regulatory stability – and allow them to really drive towards a clean energy future.

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Decarbonizing energy is not an if, it's a how. Countries and businesses are moving ahead with renewables – because standing still is more of a risk than pressing ahead.
Diving into hydropower’s digital transformation

Hydropower is super interesting. As the oldest form of renewable energy, it accounts for more than half (58%) of the world’s renewable energy, with approximately 1,300 GW installed (at the end of 2018). Electricity generation from hydropower projects achieved a record 4,200 TWh in 2018, the highest ever contribution from a renewable energy source. While hydropower is a huge renewable power source, it also has had its challenges—environmental impacts among them. As the industry and the world move forward in the energy transition, the onus is on hydropower operators to proactively demonstrate the steps they are taking to minimize the environmental risk and impact of their operations.

We recently launched a report that highlights hydropower’s significant opportunity to use digital technologies to become more operationally efficient, safer and play a larger role in supporting intermittent renewables. Not only is hydropower supporting the growth of wind generation and solar power, but the levelized cost of electricity (LCOE) is becoming more competitive. And digital-led modernization presents significant opportunity to continue to drive down LCOE.

To explore the digital opportunities for hydro, we brought together nine hydropower operators, representing more than 120 GW of hydropower capacity in Norway. Participants shared cases on production and commercial optimization, operations, automation, predictive maintenance, workforce management, supply chain and cybersecurity. From that insightful collaboration we developed this report, to draw attention to leading practices and share some of the most innovative cases. We focused on five themes:

**Production management and optimization**
Potentially delivering 5% to 15% reduction in lost production. Forecasting of external factors such as weather and water inflow, internal factors including reservoir level and market conditions to optimize power production, minimize spillage and integrate other renewable energy sources like intermittent wind and solar.

**Asset analytics**
Potentially increasing revenue by 0.5% to 1% while decreasing maintenance CAPEX 2% to 5%. Collection and analysis of data on asset conditions and performance to optimize asset operations and maintenance (O&M). Transitioning from reactive and periodic maintenance to predictive maintenance. Sharing data across the industry to prevent failures as it protects the general public perception of hydro.
Process improvement and automation
Automation and improvement of O&M processes by means of digital and internet of things (IoT) technologies for remote operations to make them safer, less labor- and capital-intensive and more efficient. This is the area with the widest gap across players—with some players operating highly automated plants with central control centers, while other players still require a high level of manual intervention in daily operations.

Connected Workers
Empowering the workforce with digital technology through increased access to data for decision making, streamlined administrative tasks, enhanced training and collaboration and other digital initiatives to improve work efficacy and safety. Although leveraging digital is now common in many industries with a large field force, the hydro industry’s aging workforce means this will be the area of biggest culture change.

Cybersecurity
Adopting a continuous-response model to cyber threats and enhancing threat intelligence capabilities through advanced data analytics to build a proactive defense plan. Hydropower is critical infrastructure to the electricity grid and the local environment, so operators need to minimize the impact of malicious attacks.

As with all renewable technologies, if the industry can achieve the required culture change—such as moving from reactive or scheduled maintenance to predictive, working together as an industry to develop and share a standard hydro data model and fault hierarchy, trusting mobile technologies and productivity tools—digital could transform the competitiveness of hydro. As the largest installed source of renewable energy and energy storage, the value of hydropower, particularly pumped hydro, increases in markets with high penetration of wind and solar. Although new hydropower might struggle in competitiveness in some markets against natural gas peaking plants or batteries, existing hydro will become more valuable, and in markets with the appropriate geographic conditions, hydropower will be an attractive complement to the greening of the energy mix.

To realize opportunities of the energy transition, operators must address aging infrastructure and enable digitally enabled, data-driven operations.


Hydropower accounts for 58% of the world’s renewable energy, with approximately 1,300 GW installed (at the end of 2018)
Chapter 2: Grid Talk
“If Alexander Graham Bell and Thomas Edison emerged from their time machine, Bell wouldn’t recognize the smart phone, but Edison would recognize the components of a utility grid.”

Amol Sabnis,
Managing Director – Global Lead Transmission & Distribution
Increasing extreme weather needs greater resilience

In the face of ‘a perfect storm’ new research from Accenture examines resilience of utilities

When the hundred-year storm happens every five, and pandemics enter the lexicon, utilities must be ready to respond—and fast. Investing in grid resilience is no longer optional—it’s essential—in a world where COVID + hurricane season = potential outage at the local hospital, it becomes critical. With utilities providing a vital service, whatever the weather, their ability to flex to any scenario is being tested to the limit. Accenture recently launched the sixth edition of our Digitally Enabled Grid research, which illustrates the need for utilities to shape resilience-oriented plans and take investment proposals to regulators with new urgency. But it’s a big ask for utilities, whose operations are under unprecedented stress. Here I want to reflect for a moment on the landscape and the way forward for proactive resilience.

The perfect storm is hitting utilities—meanwhile, they’re more essential than ever

It’s self-evident that extreme weather events are increasing. To note the World Economic Forum’s 2020 Global Risks Report has identified extreme weather in their top 5 most likely risks, for the past few years. Utilities know that too, and more than 90 percent of those interviewed for our research expect these events to worsen over the next 10 years. In North America, where I live that figure was slightly above the global average, at 93 percent. And empirically, I also know this to be true in my hometown in Maryland, with two “outlier” (once in a hundred years) storm events hitting in less than five years, decimating local businesses and flooding homes (I would argue the hundred-year storm needs a new name) And as I write, I’m depending on my utility’s grid to keep me working at home, and reflecting on how an outage would affect us all emotionally and logistically, at a time of heightened anxiety and new day-to-day constraints.

Amol Sabnis
Managing Director – Global Lead Transmission & Distribution
In this context, utilities’ importance is being amplified in a totally unpredicted way. And at the same time, their normal processes and coping mechanisms are falling away. Example: in a secondary event, an electric utility would normally restore power, faster, by pulling in crews from other states or neighboring locations. But when social distancing gets added to the mix, those extra crews may not be accessible so easily. A scenario that previously took x days to fix, may now take x + n days. Now add to that, one of my clients in a COVID hotspot is working with employee absences from sickness and infection.

Enter resilience—not just reliability—for this new paradigm

For many years, utilities were operating in a reasonably simple, one-way transmission flow. (The metaphor I find myself using is: until a few years ago, if Alexander Graham Bell and Thomas Edison emerged from their time machine, Bell wouldn’t even recognize the smart phone we all have come to depend on, or have a hope of an internship in a Telco, but Edison would recognize the components of a utility grid and walk into a COO role!) But the shift to a complex, multi-directional flow happened rapidly, distributed generation in some cases, even individuals using rooftop solar selling power back to the grid and many other factors arriving at once—leaving the industry trying to play catch-up. So complexity is rising, extreme weather is no longer “outlying”—and yet there is no standard definition of resilience in the utilities industry.

So what does it really mean to be resilient, and how do you measure 1) resilience itself and 2) its value to society at large? NREL is trying to quantify the latter of these two. In our research, only 35 percent of respondents agreed that, to a great extent, the societal value of resilience was agreed with regulators and customers. But this kind of consensus is crucial for the investment business case. After all, when success equals the absence of disruption, and the ability to absorb stress unnoticed, the business case is challenging.

Now is the time for utilities and regulators to cut through the confusion

We are at the tipping point for utilities to cut through the confusion between reliability and resilience, and make resilience discussions front and center with regulators. It’s about articulating the value of resilience-based investments, and the more nuanced metrics for success. After all, what is the price of flexibility, adaptability and maintaining supply to critical customers? And the ROI is different as a result:

This takes a lot more thinking about, Former Illinois Commerce Commission Chair Brien Sheahan calls it “intellectual gymnastics”.

And utilities’ proposals for investment should consider technology explicitly as an accelerator for resilience—with remote image based damage assessments by drone, AI, and remote crews increasingly part of the narrative. Technology can put substance around these amorphous ideas of resilience and make the blueprint real for regulators. And regulators are increasingly receptive to these new types of conversations. But don’t forget to bring customers into the dialogue about why resilience is important—and the need for significant and ongoing investment, plus the potential cost to the consumer. Might customers accept a 5-cent increase in cost to avoid a 5-day outage? Arguably, with stakes higher than ever, consumers may be increasingly willing to collaborate. The time is now for utilities to take control of their journey toward resilience.

With extreme weather + security imperatives + the black swan on the horizon, now is the time to capitalize on everything AI and other digital technologies can bring to the control center. It’s a path to de-risking the grid, protecting crews, and resilience and reliability for customers.
What if I told you the control center of the future is already here?

Mario Marchelli
Managing Director – Utilities, Transmission and Distribution

Electric utilities are no strangers to intelligent technology within the grid (think sensors on the lines and advanced analytics that can forecast potential outages due to upcoming storms). But there’s a lot more scope to bring intelligence in the control room to improve operations, customer satisfaction and enable cost savings and potential new revenues. So what technologies are on the table, and how can they be used to transform the way control rooms work?

The reality check: the reactive control center

Before joining Accenture, I spent 20 years (give or take) in and around utility control centers. And the truth is, since I started, not much has changed in terms of how they operate. Control rooms are heavily dependent on human operators working in shifts, looking at screens, and interpreting data from multiple tools without much context to identify and solve real-time problems.

It’s a fundamentally reactive approach: watch and wait…see a problem occur…now find its root cause and solve it as fast as you can. That problem might be a substation outage or a fire beginning to take hold. And it’s a challenging and stressful job, requiring fast reflexes and the ability to analyze multiple inputs and derive a rational decision.

Meanwhile, those challenges are only increasing, with extreme weather events now more frequent and severe, and likely to escalate further, the increase in penetration of renewable energy on the distribution grid, and the increase in threats by foreign adversaries to the security of the grid.

Electric utilities are already acutely aware of the grid’s sensitivity. And in response, they’re adding smart technology onto, e.g., transmission and distribution lines to identify faults faster and reduce the likelihood and magnitude of an outage. So the grid is getting
smart, but is that translating to the control room?

Added to that, operators are generally siloed, with established information and process flows but limited collaboration. Example: the maintenance group is working with assets and, in many cases, possesses intelligence that provides information on the sensitivity of those assets to failure. However, the only collaboration the control center operator may have with that group is to provide clearance for people to work on those assets in high-voltage stations, which in many cases is only via voice.

Extreme weather events now more frequent and severe

Ready for reinvention?

What if I told you that adding digital technologies, like Artificial Intelligence (AI), could watch the grid for you? And not only alert you when something might happen but pre-empt it too using data-driven analytics? So let’s say you’re preparing for an event, like a storm that’s on its way. Or when a fire is moving closer to substations. AI and analytics can take the information already available in the control center systems and prompt, proactive actions to prevent an outage.

For example, one of my clients is already working on an advanced visualization tool to improve operators’ situational awareness. This tool will inform about potential circuits and stations that will be susceptible to an upcoming storm, and shows the location of available field crews in the area that could assess possible outages. The system will predict where outages may happen and bring audible warnings into play that inform the root cause of outages (before the operator has to spot it).

Meanwhile, some tasks can be automated, again removing pressure from the operator. And when AI is doing the grunt work, imagine the headspace that gives the operator to focus on outcomes in a holistic way (rather than watching a screen for 12 hours straight). And advanced collaboration tools like a mobile application, a virtual control room, augmented reality from a HoloLens application, or a collaboration table that shows a substation digital twin make real engagement with others possible. All of which reduces risk, improves productivity, crew safety, and reduces outage handling times.

Here’s an example: going back to that storm that’s now hitting. The operator can work much better with the maintenance and engineering teams if it’s possible to model: What assets are with the highest risk of failure? And what might the outage of those assets look like? How would this impact the grid?

Then engineering can run a study to examine the impact in more detail and prevent the grid from being affected.

And we’re only just hitting the cusp of what’s possible. For example, today, it takes several minutes to understand how the grid is loaded (and you need that information to optimize the grid and serve customers at a lower cost). But if you can shortcut that process, you can de-risk and save cost. Imagine if you could use sonar to send a signal through the grid and detect the location of a fault that way, or imagine if you could use AI to solve the complex power flow of a grid faster than today’s power algorithms. It’s something being examined by academia and industry and shows just how much potential there is.

The overall idea is this: by using AI and related digital technologies, you not only improve the work control center operators do, but also the outcomes they generate. And their ability to de-risk the grid at large, improving customer outcomes. AI has the potential to give transmission and distribution operators super-powers!

It’s not pie in the sky

Much of this is already happening, particularly in oil and mining. In those industries, intelligence is integrated into control centers but there is space to grow for electric utilities.

Utilities know how to bring intelligence into their field devices. Think back to the intelligent grid with sensors on the line. But there is still more opportunity to bring that intelligence into the control room and make it a force for transformation—even in the absence of regulatory pressure on this topic.

And let’s consider the workforce a moment. As control centers necessarily become more technology-driven, a new type of operator is needed. One that is a digital native and can work alongside AI for better outcomes. But to attract those people, you need a modern control center (not the ones I knew in my youth—back then, the control centers with the biggest wallboard were considered the best). A modern control center is one with AI and other digital technologies where operators increase their ability to focus on customer outcomes by 40-50% of the time. That doesn’t mean the experiential insights of the traditional operator are obsolete—far from it. It’s about augmenting those insights with technology, and with complementary skills and people.
Now add the black swan

Over this past year, COVID-19 has changed all our assumptions about the roles that can be done remotely, how co-located teams must work, and how systems can support them.

That also means electric utilities must improve the resilience of the control room systems for onsite/offsite working and all those new complexities. Example: one electric utility has been modeling what happens if an operator has COVID-19 and the control room has to be shut down. That might mean a rapid switch to another physical control room location, or even a virtual reality control room.

The same concepts apply for possible security threats. If a critical threat emerges, the idea is that you can switch to a disaster recovery site that is isolated from the security risk, with recovery tools that can transition operations fast. And naturally, AI and related technologies are at the core.

With extreme weather + security imperatives + the black swan on the horizon, now is the time to capitalize on everything AI and other digital technologies can bring to the control center. It’s a path to de-risking the grid, protecting crews, and resilience and reliability for customers.

Further Reading:
From reliability to resilience for extreme weather

Source:
1 Deep Learning Algorithm development for RTE (France)
Utilities: Getting serious about process safety

Occupational safety is great; more is needed

Utilities really understand occupational safety. It’s second nature for them at the activity level, such as reducing workplace accidents. But gas utilities’ experiences, in particular, show that fatal errors happen when people aren’t thinking about activities collectively—as a process. Dealing with that problem means taking a holistic view of safety, end to end. And as we look ahead, electric utilities must learn from American Petroleum Institute’s RP 1173 and apply process safety to their own organizations.

Process safety in a nutshell

If you’re the same age as me (or even if you’re not!) here’s the analogy for process safety: picture that famous “I Love Lucy” episode with Lucille Ball at the chocolate factory conveyer belt. She’s ready to wrap each chocolate as it passes by. At first, things go fine. On goes the conveyer belt...out come the chocolates...she wraps each one....but then, “speed it up” cries the supervisor, and everything unravels (think hats and mouths stuffed with chocolates, and the rest careening off the end)!

Jokes aside, this scenario nails process safety. By “speeding up the belt” you think you’re being more efficient. But unless you look at the whole process, and the overall effect of your decisions, you can’t see the result holistically. In reality, speeding up the belt may create pinch points or unforeseen dangers that undermine the whole process, with your metaphorical chocolates falling off the end.

In a nutshell, process safety is an enterprise-wide framework for infusing leading safety practices in all operational management processes. That includes risk management, asset management and emergency management. And at all levels/structures of the organization, from executives to the front line.

Applying the idea to electric utilities for a moment, here’s an example: When you’re selecting equipment, how do you do that right now? Maybe based on 1) expense and 2) fitness for purpose. Which means the decision is taken in isolation. Now let’s think of the equipment with the lens of process safety—all
the ways in which that equipment decision affects other activities, people and departments. How is it installed and how safe is installation? What is needed to maintain it? For instance, frequent maintenance needs = more hands-on effort and risk. What new skills are needed to use the equipment and how will we train workers to cut risk? What new technologies may workers need to master to use it safely?

**Getting a handle on process safety with a safety management system**

To make process safety real, you need a safety management system (SMS) which documents and manages safety end to end. Let's think of a scenario: If an electricity cable goes down, how do you notify people in proximity? Old model: field worker knocks on some doors to warn local residents to keep away or communications department issues blanket safety messages, hoping the effected people hear the warning. New model: Enact the specific process flow for that problem, including: how the field worker logs the problem; what pre-determined information the public need, in what radius, what format, and delivered by whom? (Because by now you'll already have planned all this out with local community groups). Knowing how to respond in turn lifts pressure from the field worker.

And all of this improves public safety, by knowing in advance how you'll respond and who needs to do what.

**SMS must live and breathe to have value**

SMS isn't about writing a process flow, putting it in a binder and moving on to the next thing. For it to work, it must breathe and that means embedding it into culture and behavior. How? Technology can help fix some of the ongoing stumbling blocks. For example, utilities’ processes are only as good as what they can record and prove. Record keeping can be simplified through technology, allowing users to access what they need in the appropriate ways (and moving past spreadsheets on hard drives) and drive up auditability.

It really is doable. It takes investment, plus an active decision to reinvent safety operations. One of my clients has been the first utility in North America to implement an SMS within electric operations, setting a clear goal to be the leader in process safety. They’ve successfully created a culture of collaboration to actively engage the right people, at the right time, to define their processes and begin to embed them. Now it’s time for all electric utilities to follow suit.

**Electric utilities must update their safety DNA for a new age.**
Applied Analytics reinvents damage assessments

It’s no surprise that extreme weather events are on the rise, and the unfortunate reality is that damage to critical lifelines and infrastructure is at the core of every disaster. Which means that being able to conduct accurate and rapid damage assessments is more critical than ever. As I reflect on the last 20 years in emergency management from both my FEMA and utility experience, I wanted to offer my thoughts on the status quo and some ways forward as technology continues to play an increasingly vital role in utility response and recovery.

Extreme weather stakes are rising. And more damage demands faster damage assessment procedures...

It’s clear extreme weather events are increasing, in frequency and intensity. Utilities executives know it too, with more than 90% of utility executives surveyed, convinced these events will increase over the next 10 years. However, only 24% believe they are very well-prepared to respond. More extreme weather results in more damage; across critical lifelines, local communities, and other services like telecom, transportation, and healthcare. All these industries and the economy rely on electricity to drive operations and support our communities. Furthermore, the scope of stakeholder expectations for immediate updates has grown significantly over the last decade. Not only do customers expect more transparency, but regulators, public agencies, and investors are also driving demand for more information and heightened pressure for power restoration (fast).

As a customer, I’ve also been on the receiving end while trying to respond to wildfires and hurricanes impacting my own community and having a young family left at home without power. It’s not only frustrating but can also be a life-or-death situation not knowing when your lights are getting turned off. But more on that later!

First up, let’s agree damage assessment is pivotal to everything...

Damage assessment is not an afterthought. It’s the driver of the entire recovery process after any disaster. Why? The extent of the damage and where it dictates everything that follows: the resources you need, where you put them, and the priority locations. The credibility of your communication is also dependent on the accuracy of damage assessment information. The information passed to key stakeholders (like local government, investors, customers, your C-suite) will drive most of the
Utilities have made a lot of improvements, but we’re not quite on par with other industries when it comes to applying the most advanced technologies to improve a capability. Sure, we can’t be as frivolous as sending a Tesla into space, but we can certainly do better than carbon copy work orders and spreadsheets. The delta is huge, as are the implications for cost and stakeholder perception. But the good news is there may be better ways forward.

**Technology won’t solve everything (yet), but it's already helping a lot...**

Right now, damage assessment is very manual and labour-intensive (wait until the storm passes, send out the crews, report the damage, identify the resources, start to fix it) and prioritization is often driven by a storm chief who is the only resource in the company that knows every circuit and substation. When events are small and geographically contained, that process is still fit for purpose. But it’s a tall order for utilities to keep responding in the same way as extreme weather escalates. Technology is not a miracle cure, but it can certainly help. Here are a few considerations from my experience:

1. **Get your asset data organized up front:** Even the most basic solutions will rely on accurate data and the ability to export, layer, and integrate with other systems. In practice, this means investing in sound asset management and GIS solutions to get a detailed picture of what assets are where.

2. **Integrate and simplify your dashboards:** Before we even start talking about analytics, I’m still a big advocate of good situational awareness – even the most advanced solutions out there can’t replace common sense when it comes to being able to clearly see the status of all your operations and make sound decisions.

3. **Don’t be afraid of technology:** Every time you type something into a search engine – it’s using advanced algorithms to create customized search results. Applying technologies like Artificial Intelligence (AI) and Machine Learning (ML) to everyday life is no longer the future, it’s a fundamental requirement to remain competitive and relevant. As an industry, we are past due to adopt and adapt AI/ML capabilities for damage assessments.

Analytics tools can merge data sources to create a picture of vulnerabilities in advance of a storm. For instance: bring together external sources (such as historical data on weather, wind forecasting) with utility-specific information (like asset management data, inspection and maintenance schedules, past damage patterns) to zero in on the locations likely to be hit hardest. Then you can predict where to stage your equipment and move crews ahead of time. And with machine learning added to analytics, you can teach the system and feed it more nuanced data.

For instance, we know vegetation management data can also inform higher risk areas for damage or fire vulnerability. Some forward-thinking utilities are even looking at soil moisture content and micro weather stations as a data point to proactively de-energize distribution circuits in high fire risk areas. And it’s paying off.

**Now you need damage assessment:** Bigger weather events hit bigger zones. And covering a huge geographic footprint with crews is only going to get harder. For a macro view of damage, aerial imagery is valuable—e.g., satellite images are often available within a matter of hours and can help validate pre-storm predictions and even provide a macro-level assessment across an entire service territory. For the detail, fixed and rotary wing aircraft and drones are increasingly useful when outfitted with the right equipment, particularly in hard-to-reach and unsafe locations. But we’re only scraping the surface as most imagery still needs to get brought back to an office and analysed by an expert. Imagine what happens when we add a layer of analytics and can analyse images from multiple drones simultaneously - and in real time using AI and ML - that’s a game changer.

**And on restoration itself:** Technology can also help accelerate your response. For instance, connect damage assessment information to the asset database. Now you can see in real time there are 10 poles down at these geographic coordinates and know how many poles are located at the closest staging area. Add in data like distance, road closures, existing work-orders and crew assignments. Now you can improve the accuracy of your estimated restoration time, help to inform priorities and evolve your restoration strategy over time, which gives you a better sense of the speed of that restoration, and informs communications (remember those stakeholders).

**Looking ahead, the crowd may be useful...**

Finally, thinking back to my own experience of my family being stuck without power...what if the public could really help? I know we’re quick to raise the safety flag, but imagine if all employees, first responders and designated volunteers (or even the general public) could augment your AI/ML capabilities by providing you with images in real time...can you take an image, submit it to the utility via a mobile app, automate the analytics which drive the resource requirements and fast-track the response? We’ve all climbed over the safety hurdle of hailing a ride with an app and getting into a car with a total stranger, I’m pretty sure we can figure out how to use an app to update a picture.

**As the extreme weather challenges increase, utilities can amplify their use of technology for the future—and protect their people and customers.**
Utilities resilience hinges on system flexibility

As extreme weather events increase, utilities must become truly resilient, not just reliable. And system flexibility will be at the core, with localized solutions such as microgrids as part of the answer. Here are some practical reflections on driving up system flexibility for the future.

The case for resilience has more than been made

Extreme weather events are growing in scale and severity, and utility leaders know it. As they move from reliability to resilience to combat this challenge, system flexibility will be crucial. In my part of the world, California wildfires, in particular, have accelerated the conversation about how to be resilient against an ever-increasing threat. I’ve been close to practitioners on the front line: in a former life, I oversaw a utility’s fire science and climate adaptation function and witnessed the scale of the problem. Of course, extreme weather goes beyond fire—with hurricanes, storms and all of the other events we’re now dealing with in a more intense way.

So in these times of heightened pressure, how can utilities respond?

Walking a tightrope between protecting and powering

The wind is roaring, it’s hot and dry—think desert winds, Santa Ana conditions. As the utility, you have to walk that fine line of determining: Is the risk high enough right now to shut down the system? How will the risk change in the coming hours? If wires come down, will they start a fire, and what are the risks to life and liability? It’s a tough call. But history proves that making these decisions at the right time can save lives, and failing to act is not an option.

But public safety power shutoffs (PSPS) are a big deal to customers, and in some cases, we’re talking about a million customers at a time. Customer and business outrage are the norm and sometimes the shutoff comes too late to mitigate the fire. But if you can shut down while continuing to energize high-priority locations, you are much closer to protecting and powering at the same time.

Enter system flexibility

Our research shows increased system flexibility is one of utility executives’ highest priorities for resilience over the next 10 years. If it’s so important, how do you go about doing it?
The approach must be multi-faceted. Much of it involves engineering in resilience, including system hardening, using covered conductors, adding sensors and other smart devices on the lines, and analyzing meteorological data to help predict impacts. But for a step change, you need system-flexible assets. And increasingly, localized energy sources have a role to play, particularly in PSPS situations. For instance, when a microgrid is available, utilities can look to shut off rural or higher risk locations but maintain power to small downtown areas or critical loads, and therefore businesses, in general, and services for the public. It’s a way to energize a portion of the grid while protecting the most fire-vulnerable locations, and it minimizes the impact on customers and the public at large.

Extending this example: utilities are increasingly putting the infrastructure in place to power strategically during a PSPS event. For instance, identifying key community resources to energize (such as schools or community centers) and siting a small portable generator for now, and eventually, energy storage. All the time, greener options are emerging. Think of the solar farm charging the battery, which can then energize key portions of the locality when needed.

Meanwhile, the regulatory context is supportive: The California Public Utilities Commission (CPUC), for one, is promoting and accelerating resiliency solutions for high fire-risk areas. And utilities are getting the go-ahead to develop infrastructure specific to microgrid projects.

Micro control for a more nuanced approach to power

When you can control a microgrid, you can be much more nuanced about power in a crisis. That has huge advantages in terms of protecting vulnerable people and critical services. In the United States, wildfires often hit disadvantaged communities disproportionately. And of course, hospitals and other services for vulnerable communities must be front and center (consider home-based oxygen or dialysis needing steady power).

The forward-thinking utility is considering: How can we site microgrids and other self-contained back-up to protect the highest-risk customers and reduce inequalities in times of extreme weather? They’re conducting proactive customer outreach before the next crisis hits to understand local areas of need, to inform their planning. And solutions are becoming more creative all the time—like incorporating electric vehicles as emergency electricity sources for housing (vehicle to grid), or even electric school buses to energize community resource centers at schools.

Utilities will need to keep being creative about resilience as conditions change. But system flexibility is key to managing for the future, and technology can help.
Chapter 3:
The new energy consumer
“60% of consumers have become more aware of climate change since COVID-19 emerged, with more than half of consumers likely to invest more in energy efficiency today than before.”

Wytse Kaastra, Managing Director – Accenture Energy Retail and Customer Services
Opportunity is knocking: how can utilities become profitable digital energy service providers?

For the energy transition to be successful, customers will need to get on board with new services, delivered in new ways. But how can utilities successfully transform their businesses and place their big bets for the future?

The customer is already digital

If you’re anything like me, you take digital paths and personalisation for granted. Netflix always seems to know what I want to watch. And Amazon remembers what I like to buy, and how I want to pay. Many of us consider ourselves digital customers by default, with few day-to-day exceptions.

And it stands to reason that as the energy transition gains pace, utilities will need to bring customers on a digitally-enabled journey to new services and solutions, delivered in new ways. This type of new service demands digital pathways, and that Netflix-esque personalisation many of us know so well.

Meanwhile, consumers are increasingly purpose-driven and receptive to services that drive decarbonisation. Our latest New Energy Consumer research shows 60% of consumers have become more aware of climate change since COVID-19 emerged, with more than half of consumers likely to invest more in energy efficiency today than before.1

But we also know there’s a gap between customers’ high expectations and energy providers’ performance in delivering offerings to them.2

So how can utilities choose what to pursue, and where to place the big bets?

Enter the digital energy service provider

To bring the customer along the decarbonisation journey, utilities can evolve from energy retailer to digital service provider. This requires connected energy services—future-forward products and services that tap into new and fast-growing profit pools, like energy management, distributed energy resources (DERs), eMobility (via electric vehicles) and flexibility.

And for utilities, the delta is big, with DER and eMobility projected (based on our modeling) to reach around €8 billion (about $9.4 billion) total annual new EBITDA in 2030 for key European countries alone (25% CAGR), while traditional commodity growth levels off at 1% CAGR.
For a real-world example, let’s consider on-site generation like rooftop solar and battery storage. Our research found a third of customers anticipate investing more in solar panels now than before the COVID-19 crisis. And that means utilities will need digital, for equipment referral and installation, operations and maintenance, among other things.

There’s also huge scope for creativity with these services (which again, demands more digital technology). Finnish utility Helen lets customers choose and rent their panel from a solar farm and use the energy it produces—overcoming the barriers to adoption for people in apartments with shared roofs, or students sharing a house. It creates a whole new commercial space for people who can’t put a panel on their roof to access solar, easily and conveniently. It’s so obvious when you think about it, but it takes a leap of imagination!

**Demand flexibility: a tougher story to make simple**

Solar and eMobility services are intuitively easy to understand. But energy management and flexibility can be a tougher story to articulate in simple terms.

Flexibility has traditionally been confined to industrial customers (B2B) with larger loads and the ability to modulate or turn off production at peak consumption times. But as the need for flexibility on the grid increases, and technology brings a new range of solutions to the market, there is a growing residential opportunity.

And customers may be more ready than you think. More than half of customers are interested in time-of-use tariffs/demand-response options post-pandemic to increase cost savings by shifting electricity consumption from evenings to daytime/night.

Digital technologies and the internet of things (IoT) are making this a reality. But where do utilities start? Once customers opt in, the focus should be on tapping into the most valuable flexible loads, primarily smart water boilers, smart heat pumps and smart charging for EVs.

**Winning customer trust**

All of these connected services open up mutually beneficial solutions for the future. But they require a leap of faith on the part of the customer. And that’s where customer engagement, education and trust will be essential—driving customer comfort with the process and understanding of the value on offer.

But it’s also critical to understand what customers want in terms of information. For example, when it comes to flexibility, our latest New Energy Consumer research shows that customers typically do not fully understand the value and mechanisms of flexibility, and are not really interested in them. Creating simple propositions that “hide” the complexity could help. For instance, customers could receive a simple rebate on their bills in exchange for allowing certain type of consumption control (within defined limits).

As these new services emerge, affordability is key—and alternative financing can help foster inclusion. This may particularly mean using “lease/rent” models for assets with high upfront costs, such as rooftop solar. Energy companies own the hardware assets and provide them to consumers via subscription—reducing the upfront capital required to participate. And all the while, utilities are creating entirely new revenue streams from monthly charging set-ups.

**For energy companies, the inflection point is now, with digital technologies expanding the notion of what’s possible.**

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60% of consumers have become more aware of climate change since COVID-19

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Source:
Getting to zero emissions by 2050

The message is loud and clear—we need to combat climate change now. The European Union has set out ambitious targets to reach climate-neutral society by 2050. At the same time, policymakers are embedding consumer-centricity into policy measures and positioning consumers at the heart of the energy transition, giving them more choice, better information and protection. Consumers also want to do their part and to contribute to the energy transition, but many still face obstacles on their journey.

With this in mind, Eurelectric and Accenture set out to understand what could be done to partner with customers on this quest for a sustainable, inclusive and smart energy future. That was the question we aimed to answer through a series of design thinking workshops I held throughout 2019. The goal was to understand the perspectives of various stakeholders across the energy ecosystem to identify the barriers and opportunities for engaging consumers in the drive toward a zero-emissions society.

We conducted eight workshops across Europe with more than 120 people, including diverse representatives from NGOs and consumer associations, electricity, automotive and technology companies, academia, as well as policymakers and regulators.

Workshop participants examined the barriers, opportunities and solutions for consumer involvement in three key areas:

- **Maximizing energy efficiency in heating and cooling**
- **Promoting renewable energy integration into the system**
- **Supporting adoption of electric vehicles (EVs)**

We used interactive and creative design thinking methodologies to foster innovative thinking and cross-pollination of ideas. This enabled lively, informal exchange of ideas among multi-disciplinary experts which led to a constructive dialogue to uncover fresh, practical solutions for consumer empowerment at a local level.

Each session started with an initial design challenge: “How might we support residential consumer participation in the energy transition, in line with the EU targets in energy efficiency, demand response for renewables integration and electric mobility (eMobility)?”

The first part of the workshop asked participants to empathize with the consumer and think about the most important barriers and opportunities for adopting zero-emissions solutions. From there, we
reframed the problem definition to focus on the priority barriers and opportunities and then targeted it further toward a specific persona; for instance, commuters with respect to eMobility.

Then we turned the tables. This time participants were asked to imagine themselves as the CEO of an energy service company and identify solutions they would implement to eliminate barriers or elevate opportunities for consumer adoption of zero-emissions solutions.

And it was this dynamic of fostering a collaborative, creative environment that made the process so valuable. The opportunity to tap into a strong set of collective expertise across the European energy ecosystem allowed us to identify common themes and recognize differences between countries.

We uncovered four key barriers across all workshops and themes that hamper consumer engagement in the energy transition:

- Too many choices, determining the appropriate one for different consumers
- Insufficient information on the true costs and benefits of low-carbon solutions
- Difficulties in accessing finance for energy-efficiency investments or renewable energy systems
- Concerns about data use and privacy

But we also uncovered key enablers and opportunities for consumer engagement:

- Driving awareness and sense of urgency of action on climate change
- Leveraging technology as a key enabler for empowering consumers
- Activating community networks

And we ideated a series of innovative ideas. Here are three of my favorites:

1. **Sustainable in a day**

   This is an example of a service proposition ideated by the Amsterdam participants that nicely captures the idea behind offering standardized packaged solutions to minimize the hassle for consumers when adopting low-carbon solutions. The idea proposes a complete package including isolation, installation of solar panels and delivery of an EV with a home charger and integrated energy management system, plus financing. And all measures would be implemented in a single day. This type of solution has advantages that were also addressed in other workshops, such as:
   - It offers potential for standardization and scaling.
   - It focuses on delivering energy services rather than a commodity.
   - It reduces hassle for consumers.

2. **Stimulating EV adoption through corporate offsetting**

   In all countries, participants highlighted affordability as a key barrier to the uptake of EVs. The main problem is in the high upfront capital costs of the car and the home charging station. As a potential measure to overcome the cost barrier, participants in Germany suggested that corporations wanting to offset their carbon emissions could provide e-cars free of charge through social programs which could help accelerate adoption and improve the image of e-cars. In return, the company would get certificates of the carbon-emissions reductions, which it could use toward its emissions-reduction target.

3. **AirCnC: Enabling peer-to-peer charging infrastructure**

   Availability of charging infrastructure is another key barrier for adoption of EVs. Therefore, participants in Italy came up with the idea of “AirCnC” or Car and Charge. People that own a charging point could make it available to other EV drivers though a platform and profit from renting parking space and charging point. Another spin-off of the AirCnC idea is for a community to invest in shared charging points and a community solar installation to power it.

There many more ideas captured throughout the workshops. I invite you to read the full report on Eurelectric’s website, “Seeking shared success: Empowering consumers in the energy transition,”1 The outcomes of this unique consultation process, as summarized in the Seeking Shared Success report, also informed Eurelectric’s study, “Driving change: 15 pledges to customers,”2 signed by more than 90 energy providers representing more than 200 million citizens in Europe.

We continue to closely follow up on this study with Eurelectric and hope to see a great uptake of the energy transition triggered by all our joint actions. Consumers are at the heart of the energy transition and only if they start to move, it is going to happen with trust, simplicity, transparency and affordability as key experience drivers for adoption of zero-emissions energy solutions. Together we can make the step change needed to move toward a zero-emissions society.

The message is loud and clear—we need to combat climate change now.

Source:
1 https://cdn.eurelectric.org/media/4236/eurelectric-accenture-seeking-shared-success-h-22C4F04C.pdf
2 https://www.eurelectric.org/15-pledges-to-customers/

Accenture Utilities: The Best of 2020
Utilities have weathered everything 2020 has thrown at them to date. And as my clients emerge from this year, I’m working with them to reimagine their business in three key ways and challenge the assumption that you can’t be industrial and personal at the same time.

#1: Prioritize responsible revenue recovery

Utilities, like customers, are facing common challenges as they emerge from 2020. Over recent months, my utilities clients and I have come together through some executive roundtable events, to share their experiences and the actions they’re taking.

And one of the most prominent topics of discussion has been: how do you move forward with revenue recovery compassionately and responsibly? As moratoriums draw to a close, utilities must start to rebalance the books but also protect vulnerable customers.

So what are they doing to tread this fine line? One key tool: segmenting customers based not only on their current status, but also with their history in mind. Example: let’s think about the customers who always paid on time in the past (maybe for decades) but have lost their job this year. Utilities are working to acknowledge their history by giving them, for instance, a 15% discount on their payback sum and longer to pay it. And customers who were already struggling to pay before COVID-19 might be offered weekly micropayment plans—the idea being to make more frequent, small payments. Meanwhile, a number of utilities have dedicated groups that works directly with agencies to help customers in need.

It’s a balancing act: more complex payment calls from customers means more cost to serve. And utilities everywhere are predicting a surge of interactions post-moratorium. Accenture analysis suggests utilities will be dealing with up to a 400% increase in the volume of customer queries related to payments. (But maybe digital can help...keep reading)

#2: Give customers new ways to interact

As people struggled to pay their bills, it became evident that customers wanted to interact with their
utilities a lot less. If they weren’t able to pay their main bill, they didn’t want to call.

Instead, they turned to digital channels for payment options, bill explanations and even new products and services. They switched channels on their own. Now the challenge for utilities (and others) is to sustain the switch. And for that, digital paths (e.g., mobile apps, websites or interactive voice response (IVR) systems) have to provide all the capabilities customers want, as easily as possible.

It’s an overused analogy but a good one: personally, I never even walk through the doors of my bank. I can even deposit a paper check using a picture on an app. Digital is now my default, and utilities have the chance to fully exploit its potential.

This is where utilities can turn to artificial intelligence (AI) and analytics to keep customers with digital. An example: proactive customer outreach. Remember those customers that now have arrears? AI and analytics can help generate proactive contact to those customers by segment. For instance, this may mean contacting customers with a standard payment plan, to help them pay off their arrears balance (without additional consequence or penalty), and help customers stay current on arrears. It’s transparent, supports the customer and reduces inbound calls.

And to those inbound calls again for a moment...

#3: Draft the sustainability plan for your people

And of course, serving customers relies on resilient employees. Right now, I’m counselling my utilities clients to prioritize the sustainability plan for working from home. Who’s going to do it, why and how? And what does this mean for office space and arrangements?

We know the homeworking technology is fit for purpose. But the people equation is more complex. Two-thirds of utilities employees enjoy working from home and productivity may even be higher. But equally, 30% have reported problems.¹

It’s time to take a strategic look at employee situations. For instance: maybe certain functions can now work remotely all the time (e.g., specialized queues and non-phone channels). Or maybe homeworking should be on rotation. Or agents who want to be home-based can be, as long as they live a commutable distance from the office.

The foundation for a sustainable remote organization is strong employee relationships, forged through listening to employees, and new approaches to employee engagement and rewards. Utilities should remember that happy, engaged and rewarded employees lead to satisfied and loyal customers.

In summary

Utilities now have the momentum to shift digital up a gear—and benefit their customers and employees, as well as the bottom line.

The new default “front door” of the utility should be digital. But it’s only going to work if it’s easier and more effective than calling a human agent.

Meanwhile, the dichotomy between personalization and industrialization just isn’t there anymore. With AI and analytics, you can be big and individual at the same time (remember the conveyer belt and the oversized bag).

It all adds up to better service, and a resilient workforce ready to help customers get back on their feet.

Sidebar: And AI-powered help for the oversized bag (stay with me here…)

Think of the conveyer belt at the airport baggage hall. The bags go on, they go round and round, then the alarm sounds, and off shoots a huge bag to the side. It’s too heavy or it’s an abnormal shape (e.g., golf clubs)…so it gets thrown off the standard route.

Now think of that in terms of calls and utilities. Let’s imagine the chatbot answers the bulk of customer queries on the usual subjects, but once in a while, the “heavy/abnormally shaped bag” call gets re-routed to a human agent. Maybe it’s a complex query, or a vulnerable customer. The human agent can help put that question (“bag”) back on the standard route – at a fraction of the cost for a human agent to answer all calls. We know the benefits touch all parties, with 20% to 40% in cost reduction and up to 25% increased customer retention.¹ Read our New Energy Consumer research for more.

And let’s remember: other service providers are doing this all the time and customers expect it. And the AI that sits behind the chatbot actually drives up personalization, rather than impeding it. Throughout COVID, customers have shown they can get behind digital intuitively.
Getting your IT strategy right to grow your EV charging business

We are watching electric vehicles (EVs) enter the mainstream. And there’s money to be made from helping drivers charge their EVs whenever, wherever they want. But IT often stands in the way of scaling the EV charging business. So how do you get the IT strategy right, place your investment bets and decide what to build versus buy? Here are some reflections on the road ahead.

EVs are beyond the tipping point

EVs are truly hitting the mainstream— with established brands now moving into EV territory (not just the “showcase” brands). With the uptick in consumer purchasing comes the need for EV charging. And that means serious business—with money to be made around charging services, on the road, as well as at home. In our latest New Energy Consumer Research we project the business case for these eMobility services to reach €5 billion EBITDA (about $5.9 billion) in 2030 for key European countries alone.

So, in this landscape of commercial opportunity, how do you position yourself as the charging provider of choice, and what does this mean for technology to grow your business? How do you move the EV business from start-up/bolt-on/sideline to something you can scale and optimize for the future?

IT is frequently the bottleneck

My clients are increasingly finding that when it comes to the EV charging business, IT is their bottleneck to growth. Why? Here are a few examples I’m seeing.

**Scenario 1:** you’ve entered the EV market and now you want to grow. Problem: your current IT cannot scale effectively for increased volume.

**Scenario 2:** you entered the EV market with a technology partner that helped you get established in the market. Now you want to launch new offerings using IT and devices you engineer yourself of buy
from other partners. Problem: you’re restricted by your current vendor’s capabilities (a “vendor lock-in” situation) and your growth objectives are curtailed.

**Scenario 3:** you’ve acquired multiple companies to accelerate your progress in the EV market. Problem: each one has its own IT strategy, solution and budget (and by the way, each of them is very convinced their technology is the best). But this all adds up to unwieldy complexity, cost and rigidity.

These challenges are not exaggerated. Consider the real-world example of a utility billing EV charging customers manually (because their current EV charging system does not have a billing component and isn’t integrate with their existing billing system for electricity retail yet). That means downloading reports, calculating bills in spreadsheets and mailing out accounts. If you have 1,000 customers, it’s probably doable. But you can’t grow your customer base and capitalize on the scale of the opportunity.

**Look to IT to industrialise your EV business**

These two elements create a nice paradox: You need to invest in IT to be able to grow your EV charging business and you need to do it now to capture the hypergrowth in the market. But at the same time, the technology investment budget earmarked for EV is still small. (It is in line with the current market size, not the likely size in five years).

In this context, how does the IT manager decide where to invest that limited budget? The answer: choose your bets carefully. Don’t blindly assume continuing to build your entire solution in-house is the way to go. You may find yourself re-inventing the wheel. However, relying 100% on out of the box software won’t make your EV charging offerings stand out in the market. I counsel my clients to buy technology out of the box where possible, and only build where the component in question will make you unique in an important way.

Here’s an example, the system to manage your EV chargers does not make you unique. Its most important quality? Be reliable. For customers to get a good charging service that works, where and when they need it, EV charging providers must have good real time insights in the current state of their chargers. So, look for a system that helps you to get you data quality up and you will be able to strive for operational excellence in managing the chargers while increasing customer satisfaction at the same time. For that purpose, think about buying a platform that meets your needs, has the functionality you are looking for out of the box and is designed for easy integration with other systems. Customize this platform only where essential. By picking the right platform, most of my customers even manage to not customize their platform at all.

Now think about the other end of the spectrum. How do you want to interact with your customers? What makes you stand out with your clients (drivers, fleet managers, resellers)? The customer app/system is the place for uniqueness, to define the customer experience, showcase your selling points, represent the brand and the offering. This is where you could build or tailor heavily to your requirements.

Ultimately, it comes down to defining your roadmap for the future. Where do you want to be in two to five years, and how can your IT support those ambitions? Use the budget you have now, to put the IT foundations and architecture in place that are necessary to grow. Create an investment roadmap that will help you to capture your slice of the EV charging market over time, adding new components and features when relevant. Plan and position yourself for success as the opportunity continues to grow.

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It’s time to put IT at the top of the list for expanding your EV charging business.
What if utilities could turn customer touchpoints into trustpoints?

Utilities transact with their customers all the time (touchpoints) but loyalty and trust are hard to come by. With customer experience increasingly the determinant of success, how do you build loyalty and trust and turn customer touchpoints into trustpoints, and why does it even matter?

I often find myself quoting Harley Manning (from Forrester Research) on why companies must be obsessed with customer experience to overcome disruption. I was quoting him long before COVID-19. But never has his thesis been more true, with 2020 bringing the kind of disruption none of us had anticipated.

So where has this macro disruption left utilities, when it comes to brand promises, customer experience, loyalty and service? Answer: it leaves the floor wide open for thinking bigger. And asking: what if we could turn transactional customer interactions into a powerful route to building trust? That is, turn touchpoints into trustpoints?

Here are some practical thoughts on the road ahead for utilities leaders (hint: the CMO must be front and centre).

**The status quo:** utilities and customer experience

Brand trust and customer experience have not typically been core to utilities’ strategy. You could say they’ve been a side activity, rather than an essential design principle. But the stakes are changing, and utilities (as well as others) must own the experience, understand the customer, and put customer experience at the core of what they do.

**Thinking about 2020:** COVID-19 has influenced trust in utilities. And it wasn’t about the brand promise, it was about the experience people have had. (Imagine you were furloughed and under financial stress, and needed to talk to your utility supplier.) What customers experienced amplified brands who understand the power of experience and the delta for trust.

Many energy providers rose to the challenge and understood what good they could do. For instance, some powered hotels for free when they were putting up key workers. And EDF in the UK repurposed maintenance vans to deliver Boots prescriptions to vulnerable customers.

**From transaction to love.**

Historically, utilities have often had a transactional (billing only) relationship with their customers. But before this year, some utilities were already rethinking that, with varying levels of success. But some were
ahead of the curve, like Electric Ireland, already being ‘brighter together’. It’s community, home, planet (with COVID-19 customer support at the forefront).

I often like to look at other industries for examples. And Volvo springs to mind here. Traditionally the ‘all about engineering’ company, they have pivoted to a new customer model. You want a Volvo but you want flexibility? Use the subscription model. Use a car (even customise a car)...change a car...lend the car to your friend...get your roadside assist and insurance organised as standard...need help? Press the button on the roof and the truck is there in minutes. It all comes down to this: experience is at the heart of which brands will succeed and which will fail.

Because the market is wide open for new entrants, or newly transformed incumbents. Think of...Uber (no cars); Alibaba (no inventory); Airbnb (no property). But thriving business models. Utility brands of the future will be no different. So when it’s all to play for, play for customer experience.

What if loyalty could be a brand attribute?

Points-based loyalty schemes are essentially broken. Consumers no longer have the brain space, and increasingly, they don’t reclaim the points. So what if you could shift from loyalty as a reward to loyalty as a brand attribute, that informs everything you do and the service you provide?

How? The analogy I often use starts with my favourite local clothes shop. They know me, they know what size I want, the type of thing I look for...

How does this work in a digital world? Look at Stitch Fix, giving that personal shopping experience at scale. They give me a personal stylist (whom I can keep or switch over time); tailored outfits for me; shipping, returns, messaging for my stylist when they (or the algorithm!) miss the mark...

As utilities provide more services, they must also understand consumer preferences in this same, personalised way. The AI is still valuable for consumer insights...but it’s more about creating a personal, loyal experience. Electric Kiwi’s CEO wants to become the most loved brand in New Zealand (not just the most loved energy brand). How? Customers choose a free off-peak energy hour. Like cooking? Use your hour for Sunday lunch. Gamer at night? Ok then. It’s personalising at scale—creating that connection that drives loyalty and trust.

While you’re at it, decouple business models Customers want personalised services. And that means tapping into underserved groups, new ways of doing things at a micro or flexible level—and decoupling long-held notions around fees for services, or inputs and outputs. Example: utilities are increasingly providing solar...but mostly, that’s only on offer to you if you have a big roof (a sunny country helps too).

Here’s the alternative: look at Helen. Solar becomes as easy as Airbnb. You want a panel? Choose it from the solar farm and rent it. Now you’re in on the action in an affordable way, and buying into the clean energy transition too.

Data as a force for good in the customer dynamic

Utilities have huge volumes of data at their fingertips, on consumer usage patterns, demand, behaviours. And how to give them the experiences and products they need. Example: you can advertise EV charging points to consumers...but if they have on-street parking, or communal apartment block carparks, you’re going to need to offer them shared charge points. And the conversation is different.

You need to think about: where are the barriers and how can data help you overcome them, while improving the customer experience? One example I like is Copenhagen, where citizens have been riding with a red disk on their bike, transmitting data to a central hub, showing...many bridges should be bike only (no vehicles); buses should have bike space at the back for the final stage of journeys....it’s data for the greater good. And what better example of data for good than utilities working with consumers on the energy transition? Data is one of the most valuable commodities for innovating new brands, products and services, with new partnerships. And all the while driving change.

Customer experience will be a major determinant of success.
Chapter 4: Building Resilience
“It’s time for utilities to accelerate their move to holistic risk management—and pivot to digital as a way to fast-track progress.”

Andre Begosso
Managing Director – Global Utilities
Growth & Strategy Lead
What cost will customers bear for more resilience?

Utilities are under pressure to be more resilient in the face of extreme weather. They’re rising to the task, but at what cost? The challenge is to articulate the value of resilience when you’re proving the value of a disruption that you pre-empted by being ahead of the game. Here are some thoughts on the situation and what it means for utilities and customers.

Extreme weather isn’t just more frequent. It’s also more variable—and that’s a problem for utilities

Recent extreme weather events serve to highlight the extreme variability we’re now seeing—even from one U.S. state to another, and one year to the next. Scale, severity and geographic spread are so different, making the planning for these events increasingly challenging. Added to that, the factors are many and varied: Sahara dust changes the dynamics of hurricane season; pollution levels have an impact on weather; then if it’s an El Niño year…and the list is changing all the time. Utilities know they need to focus on resilience, but when predicting the next extreme weather event is harder than ever, how can they model likely scenarios and make credible plans?

First up, consensus on what resilience means would help

We understand how to measure reliability. But with no single definition of resilience or a universal way to measure it, it’s challenging for utilities to quantify the value of their investments or strategies and weigh them against potential customer outcomes. Example: most utilities can quantify the impact of short electricity outages (standard reliability). But when you’re faced with an extreme weather event—geographically broad with secondary effects for business and customers, unknown health impacts and safety implications—how do you quantify the value of what you’ve managed to avoid, if resilience has kept the power running? And how do you articulate that value to customers and regulators?

Resilience inevitably drives up cost to customers. So how do you manage expectations?

Over the past decade, utilities in the United States have taken a lot of actions in the resilience space. They have made investments in areas such as
hardening infrastructure and controlling or removing vegetation that may impact the integrity of the grid. Against that backdrop, the remaining actions on the list are increasingly costly. More cost for utilities inevitably means more cost for customers, but in the absence of a clear way to measure the societal value increased resilience brings, tension emerges (both with customers and regulators). And costs may be large. Our research shows 88% of utilities executives believe maintaining extreme weather resilience will cause significant increases in network prices.

Customers have a right to expect safety and reasonable pricing, but they also want steady power supply. Meanwhile, they’re also being exposed to extreme weather conditions they’ve never seen before: Tropical Storm Cristobal came straight through the U.S., bringing strong winds and heavy rain all the way up to Wisconsin. If you are from Wisconsin, most likely you’ve never seen a tropical storm before, and utilities will have to manage your expectations in totally new ways.

Localized solutions and collaboration may help

It may not be quite as binary as that. Utilities are increasingly driving up system flexibility with microgrids, battery storage and other ways to keep the power running to critical locations and vulnerable communities. This type of ringfencing, or islanding, will increasingly be an important tool for utilities, and they know it: 93% of utilities executives think self-islanding solutions will be a major contributor to improved resilience in the longer term. This can include bringing in temporary generation capabilities when there’s an event or connecting solar panels to charge a battery that can kick in when it’s needed.

But going a step further, the future customer will not be a passive recipient of energy. Where traditional distribution models struggle to reach isolated or high-risk communities, actively collaborating with customers on local solutions makes great sense. And it boosts overall resilience, with the utility less stretched across multiple priorities in an extreme weather event. Utilities across geographies are already doing this. For instance, Horizon Power in Australia has outfitted customers with renewable generation, storage and backup generators. These assets are owned and maintained by the utility, but the customers are no longer connected to the distribution network, saving significant costs in maintenance and repair. It’s an example of getting creative in the face of increased disruption, and this flexible mindset will shore up utilities’ path forward.

These challenges aren’t going away, and a range of solutions will be needed for a resilient future.
Experience tells me utilities excel at responding to disasters—particularly secondary events like storms and hurricanes. Their tactical business continuity planning is often best-in-class and it needs to be, given they’re at the forefront of essential customer services (crisis or no crisis). But when you change the nature of the emergency, holes emerge in the preparedness. And many utilities are finding that their emergency plans don’t translate easily to a pandemic scenario.

Why? Because as tactical needs have increased over recent years (with increasing frequency of e.g. wildfires), holistic risk mitigation has begun to fall away. And in that context, it’s no surprise that while they respond well to industry-specific incidents, many utilities lack a full risk mitigation approach that can flex to any situation. When the unexpected hits, they need to know (and fast): what does this situation mean for our customer service and billing (and the working capital risks that go with that)? How can we keep our operations online? Where do our workforce and other risks really lie? And even more fundamentally: if demand drops overnight, what does that do to our financial viability as a business? (Tellingly, some utilities have already withdrawn their credit facilities and issued, just in the U.S., about $20+ billion in March, 4x the normal rate, according to S&P Global Market Intelligence).

But as they move forward, utilities have a unique opportunity to reboot their risk approaches—and position themselves to outmaneuver future uncertainty, in whatever form. And digital will come into its own as a key lever to minimize risk.

Here are some practical reflections on how utilities can re-cast their risk approaches as they re-emerge.

(Re)build the risk capability from the ground up

Utilities need to move from tactical to strategic on risk mitigation. How? In the first instance, it’s about rebuilding scenario planning and risk mitigation as a valued capability, in an integrated way across functions. It starts with 1) assessing your current risk capabilities; 2) modeling possible scenarios—including their potential effect on supply, demand and cash; 3) translating those scenarios into risk mitigation plans that close key gaps.

But equally important is where the risk function resides, to maximize its effectiveness. That could be under the CFO, or in operations, or elsewhere. There is no single right answer, but it pays to think through how you’ll operationalize the capability you’re building. Example: how does the function...
interact with the rest of the organization? What is the reporting cadence and to whom, in what format, for what purpose? Regulation may dictate (for instance, California utilities have risk sitting with the CFO) but nevertheless the structural set-up has a lot to do with success in risk mitigation and is easily overlooked.

**Write the playbook—and make it specific**

To spring into action when circumstances demand, you have to write the playbook in advance. That means defining processes in depth, and the details for how the plans will come to life. Example: how would you move people off-site in future in a health crisis? Would you stagger different teams in a control center? And/or rotate crews every 14 days? Co-locating operations and call centers sounds great until your goal is to space out people but keep business running.

And processes have to be broad and catch-all post COVID. Energy demand is likely to be lowered for some time (with reduced consumer demand for ~24 months according to some estimates), coupled with lower economic activity, which in itself reduces demand. So how do you plan for that? In the same breath, customers’ ability to pay may be hindered for years in some cases. So what’s the process to cope with that variable? Never before has the playbook needed to be so thorough, and so flexible for a “choose your own ending” scenario.

**Harness muscle memory and accelerate digital**

The pandemic has forced many utilities into “ok for now” digital solutions. Think about the virtual contact center, stood up in days in many instances, based on cloud technology and using a remote agent workforce. Under duress, utilities have reimagined what’s possible and challenged their own long-held views about what can be remotely sited. And guess what? Many CFOS and COOs are seeing that remote work has been effective.

This momentum is powerful and—if harnessed—can accelerate utilities’ recovery and future resilience. It’s a rare chance to use the muscle memory of recent months to push digital to the next level and implement what’s been working. And help rethink what operations truly need to be co-located and what ecosystem will maximize outcomes.

Similarly, AI and automation should be front and center for COOs, not only to cut costs but also reduce operating risks through cutting reliance on workers. As an example, deflecting some call types to bots can preserve human agents’ capabilities for more vulnerable customers or priority call types, while allowing for fewer agents in the event of absenteeism. And beyond the current crisis, new ways of working, flexible office and real estate configurations, and collaboration tools will be top-of-mind for proactive utilities. They have to be.

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**It’s time for utilities to accelerate their move to holistic risk management—and pivot to digital as a way to fast-track progress.**
How to build a truly resilient utilities workforce

With extreme weather events on the rise in frequency and impact, Utilities are already working towards greater network resilience and have continued to improve their agility in responding to weather events. Reacting to the current pandemic event has highlighted the value of having a resilient workforce (as well as resilient systems) to endure any type of event, ideally increasing resilience with each event. Here are some reflections.

Rising to the challenge

We’ve seen extreme weather events around the world becoming more frequent and severe as more than 90% of utilities leaders are well aware. These events don’t stop when a pandemic hits. When I think about my clients, at least one of them has dealt with two storms impacting their customers over recent months, while also managing the tremendous new challenges of COVID-19. Against this backdrop, utilities have truly risen to the challenge, showing the value of their plans and practice when it comes to emergency response.

What’s also become clear is that their emergency planning has been stretched to the max because those plans did not anticipate an event lasting several months or more. That’s new territory and undercuts long-held assumptions about disasters and the cadence of response, including prepare, switch to emergency roles/procedures, experience event, restore, and then back to business as usual. Even the most well-prepared utilities, used to handling higher magnitude and more frequent events, have found themselves having to adapt more quickly than ever before.

In addition, with many employees now working remotely and new procedures for staging crews and so on, every element of the workforce has been affected. Utilities’ people are working in new conditions and dealing with pandemic-related worries and challenges in their daily personal lives, while the next extreme weather event is on the horizon. So how can utilities look ahead and build a workforce that’s adaptable and agile enough to take on whatever the next event looks like?

Put flexibility at the core

Workforce plans and procedures must be flexible in ways that were never previously imagined. Thinking about the current challenge: How do you effectively get your people back to work? Utilities will need to plan for multiple scenarios; for example, piloting the return of some groups, then pulling back or ramping up depending on the results and environment. The
operating setting itself is now different and workers’ situations and preferences must be accounted for with plans able to flex accordingly.

The good news is that remote working has largely happened quickly under the pressure of recent months and digital can help shore up the workforce if utilities are able keep what they’ve implemented and accelerate it further. Having at least a portion of the workforce able to continue to work remotely is a cornerstone of a flexible workforce plan either in a specific event or more broadly. Now’s the time to embed those technologies properly regarding people. How? Let’s remember that people’s roles, ways of working and technology usage have rocketed overnight. Now, consider: What training do your people need to make the most of the new tools you’ve given them? How do you fill the knowledge gaps that will inevitably exist?

And thinking more macro: What does this mean for ways of working and culture? Collaboration tools, video conferencing, shared whiteboard systems—they all bring co-workers “into your home.” How does that impact your workers’ lives, and how do you successfully manage that? What new tools and techniques might they need to support their mental and emotional needs through all this change and adjustment to the “new normal?” It’s an entirely new dynamic and one that helps contribute to a more flexible, nimble culture. First you need to lay the foundations with the appropriate training and enablement, plus performance management that recognizes the shift in behaviors that may be required balanced against the need for mental and emotional resiliency that may come at varying paces by individual.

It pays to think big and broad on technology

Looking to the future, it’s clear utilities need to be able plan for any event, of any scale, and even a combination of events at the same time. In this new reality, technology can truly help the organization and the workforce. Look at artificial Intelligence (AI) or augmented reality/virtual reality (AR/VR). Conceptually they may seem nebulous and hard to understand, but put them on the ground and it all starts to make sense. For example, let’s say you have limited people in the control center due to worker distancing or illness. Using AR/VR, a control center technician can bring in a colleague to “see what they see” through a specialized wearable device to help coach and make decisions. This concept can also apply to training operations personnel remotely and calling in an expert to augment a utility crew member’s knowledge. The crux of it? It’s about taking technology out of the IT department and into operations.

Going back to emergency preparedness: all of this helps with work procedures in times of duress as well. Technology can support everything from employee wellness checks, monitoring worker locations, and risk analysis dashboards for executives to managing shift options and performing contact tracing. While there’s no “one size fits all,” these ideas all support the flexibility and agility utilities will need for the future with workers front and center.

As we look to the future, utilities should focus on the adaptability of their workforce for a truly resilient future.
Electric utilities need freedom to adopt cloud and virtualization technologies

Electric utilities’ ability to embrace the rapid technology innovations that are disrupting other industries is coming to a head. The advancement of home area networks, electric vehicles and the internet of things (IoT) has created a need for consumer usage analytics that exceeds the utilities’ capability. Even more concerning, are the wasted dollars and hours on building IT infrastructure insufficient to defend against today’s threats, let alone tomorrow’s.

In response to this challenging environment, the Federal Energy Regulatory Commission (FERC) in February asked whether electric producers and their customers would benefit by moving to cloud and virtualization technologies – the innovations that are already disrupting other industries. From our standpoint the answer is a clear yes – so long as it’s done right. We believe cloud is safe and can, if architected correctly, provide a platform for secure innovation in utility operating environments.

You read that right. Cloud offers the electric utilities less cost and less risk, along with more innovation, resilience, and security.

Let’s talk money first. As of 2018, utilities’ average annual spend on IT infrastructure was $624 million. Based on Accenture’s experience, moving to cloud could result in $70 million to $168 million in annual savings.

That said, saving money doesn’t matter unless it comes with improved resilience and cybersecurity, and when it comes to both, utilities try to defend themselves by building higher walls. However, that solution doesn’t scale and is outdated. The Department of Homeland Security has been warning utility executives since at least 2014 that U.S. adversaries have been targeting them and Russian hackers still broke into “hundreds of victims” in 2017. The threat environment is only getting worse—exponentially. But while they have made significant strides, the utilities’ fundamental strategy should change.

The many advantages of cloud

Demand management: Electricity CIOs work hard to prepare for the few times each year when they hit max capacity. Perhaps cloud’s best trait is its ability to scale up and down so utilities should never be unprepared for demand spikes;

Simulation modeling: Cloud can help utilities model resilience to simulate the impact of natural hazards and cyber threats in ways never-before possible (i.e.,
native distributed denial of service attack prevention in a cloud content delivery network);  

**A virtual toolkit:** Utilities can tap into unlimited computing power, memory, analytics, and modeling tools to understand, experiment and deliver new products and services with unprecedented speed—creating the potential for a long overdue industry modernization.

**Advanced capabilities:** Customers will see increased uptime and resilience because cloud can help utilities employ geographic redundancy and backups, deploy patches at scale, test upgrades through “sandboxing,” and leverage robotic process automation, machine learning and heuristic data mining.

**Greater savings:** All these benefits come with decreased costs, as noted above.

**Build but don’t break**

To help achieve expected savings, utilities’ need to embrace new technologies such as cloud at scale and at pace. These benefits must be carefully weighed against the industry’s necessary demands for high-bandwidth, low-latency, and high-availability system requirements. To successfully achieve this balance, we recommend prioritizing four main tenets:

1. Any adoption of cloud services must maintain or enhance the industry’s culture of safety, security, and reliability. Technology is neutral—it’s how we apply it that counts. Those who believe that this culture leaves no room for innovation are incorrect. If you aren’t moving forward, you are moving backwards.

2. It will likely be necessary to create logical separation between control and data acquisition systems, based on virtual electronic security zones.

3. Cloud and virtualization systems must enhance performance without introducing intermittent risks, which could increase latency and possibly decrease availability.

4. The industry’s current diversity of design is an advantage. Moving to a cloud and/or virtual paradigm will require careful design consideration to not simplify the problem for an adversary.

**The limitations of current regulations**

Keeping pace with this dynamic paradigm shift in technology requires the continuous evolution of the North American Electricity Reliability Corporation Critical Infrastructure Protection (NERC CIP) Reliability Standards, giving utilities access to, for example, blockchain authentication of autonomous identity and access management (IAM), the industrial internet of things (IIoT) validation, edge computing, and device-to-device communications.

**The world is moving fast**

Certainly, the use of cloud and virtualization technologies entails risk, but our experience indicates the greater risk is the status quo. The upshot: Spending time and money to raise floors and install pipes for IT equipment should not be a priority. Utilities should let a trusted entity do that so they can focus on providing efficient and resilient service. Those electric utilities that act now to seize the opportunity to adopt new technologies for their customers open new opportunities to reduce costs and risk—while enhancing resiliency and security.

**Accenture Security**

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To help achieve expected savings, utilities’ need to embrace new technologies such as cloud at scale and at pace.
Meet Accenture’s utilities industry thought leaders

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<td>Senior Manager, Global Lead – EV Charging platforms &amp; implementations</td>
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<td>Mark Sherwin</td>
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