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AMERICAN PUBLIC POWER ASSOCIATION

THE EFFICIENCY ISSUE



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PATHWAYS TO EFFICIENCY

BY **SCOTT CORWIN**, PRESIDENT AND CEO, AMERICAN
PUBLIC POWER ASSOCIATION



Public power utilities are at the forefront of pursuing efficiency in many forms. In addition to highlighting trends in customer-focused programs, this issue features an array of operational examples such as more efficient delivery of mutual aid for utilities hit by devastating storms, the use of artificial intelligence for utility applications, heightened security and safety awareness when using new technology, and our push to streamline the federal permitting process.

As tools for efficiency change, so must awareness of and attention to the risk and challenges that come with these tools. The explosion of AI applications is a prime example. Utilities are being deliberate about learning how to leverage AI-based applications safely before deciding to use them.

American Public Power Association members in several regions are also assessing how to manage significant data-driven load growth that will be compounded with escalating AI adoption. As AI-based models become smarter, they thirst for continually increasing computing power along with the electricity to drive it. A report from the International Energy Agency noted that the average AI search requires energy equivalent to that used by a 60-watt lightbulb for close to three minutes – about 10 times that of a normal Google search. Some estimates show data loads doubling by 2026, with AI leading the growth wave.

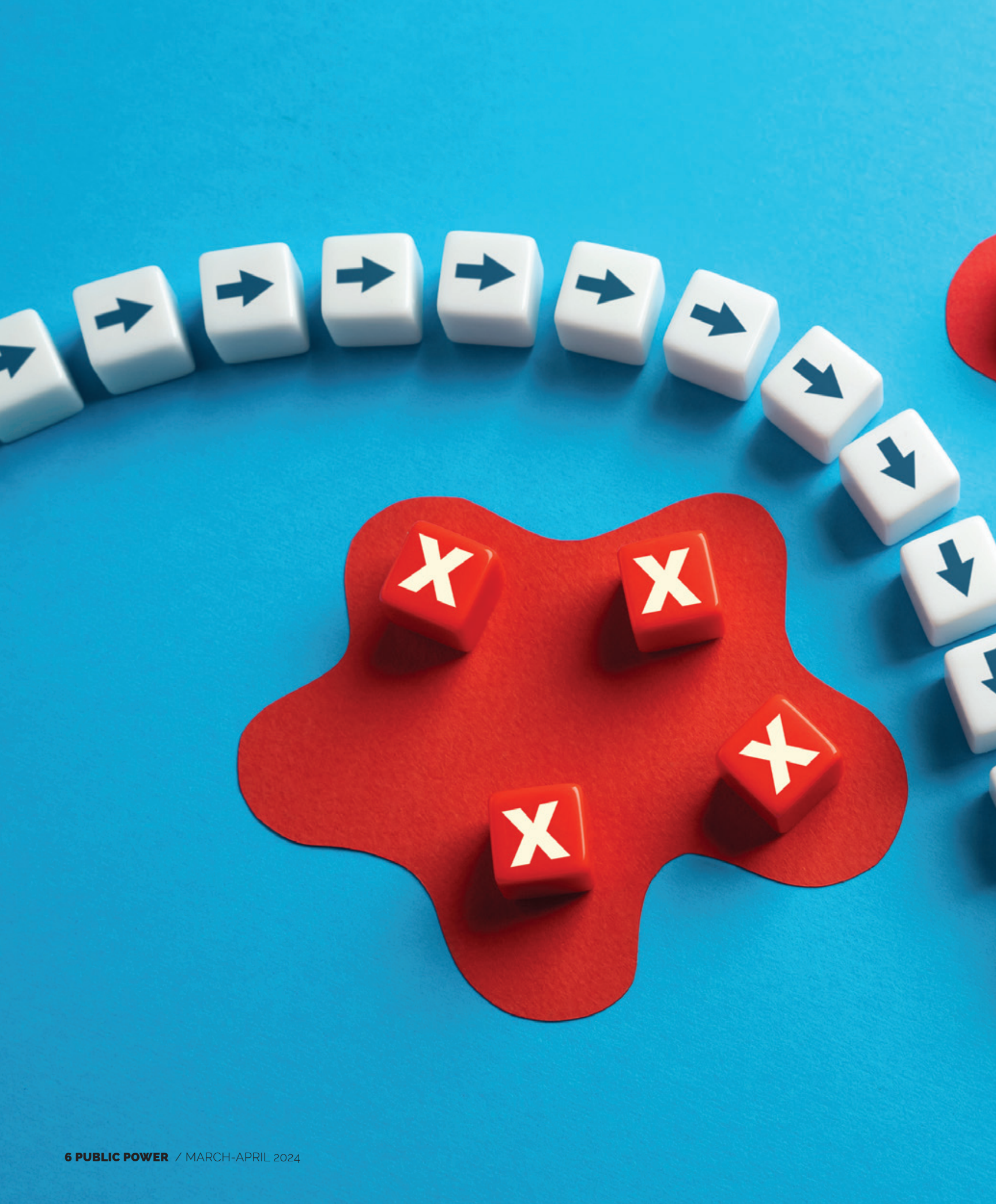
Rapid efficiency developments, such as advanced chip and server design, will be critical to offset the enormous growth in energy demand. With data centers, transportation, and other increasingly electrified end uses, there is a renewed drive for finding efficiencies where possible to manage and offset some of the growth without adding untenable costs or undermining grid reliability.

At times, policy proposals to pursue efficiency are not adequately informed by other considerations. In its first draft of a new efficiency standard for distribution transformers, the Department of Energy proposed shifting most of the steel used in transformers to an amorphous core type not yet widely available. APPA repeatedly questioned the feasibility of implementing such standards amid an ongoing supply chain crisis, and DOE listened. The final rule flips the percentage of affected transformers to allow most to continue using grain-oriented electrical steel and lengthened the implementation timeline. While not all we wanted, it is a notable improvement over the first proposal.

After decades of implementing efficiency standards and incentives, much of the “low-hanging fruit” of residential appliances and lighting has been picked, and utilities are refocusing their efforts. Federal funding made available through the Inflation Reduction Act offers opportunities to target and incentivize households that have higher potential to boost efficiency by implementing a suite of upgrades.

APPA recognizes efforts to boost efficiency within utility operations and among customers via our Smart Energy Provider designation. Even utilities that do not earn the SEP designation can use the application as a tool to benchmark their efforts and identify areas for improvement, whether in enhancing outreach efforts or adjusting program offerings.

Being efficient with our energy, technology, resources, and time is a hallmark of how public power works to stretch customer funds and bring value, affordability, and reliability to communities. APPA will continue to listen to our members on how best to help them in this work through our advocacy, communications, technical support, and training.





How Permitting Reform Will Help Public Power Build

BY BETSY LOEFF, CONTRIBUTING WRITER



HOW PERMITTING REFORM WILL HELP PUBLIC POWER BUILD

For the power sector, many factors point to the coming years as a time to build. States, municipalities, and the federal government have set ambitious goals to reduce carbon dioxide emissions from the electric sector. Both the Inflation Reduction Act and the Infrastructure Investment and Jobs Act have funding and tax credits that support building new generating facilities and updating aging infrastructure. Plus, there's increasing electric demand from the electrification of buildings and transportation and the growth of energy-intensive industries, such as data centers.

But building or repurposing this infrastructure isn't just about having the demand and the capital ready. Utilities and non-utility generators are faced with uncertainty — in costs, timelines, and rules — when it comes to siting and permitting for these projects.

“Without permitting reform, many goals in [the IIJA and IRA] cannot be reached because it's too difficult, time-consuming, or costly to build,” said Amy Thomas, vice president of government relations at the American Public Power Association. “We need to build infrastructure faster, so we need to make some changes.”

That's why permitting reform on energy infrastructure is one of the priority advocacy areas for APPA. Some of the specific hurdles that need to be addressed to build for the future responsibly include setting clear timelines, streamlining the federal review process, and getting clarity on regulatory statutes.

A Closed Loop


In Vermont, municipalities with small hydroelectric plants are struggling to attain renewed operating licenses from the Federal Energy Regulatory Commission.

“Most of those hydroelectric plants were built around 1900. Depending on the generation facility, FERC requires that the license be renewed every 30 to 40 years,” explained Ken Nolan, general manager of the Vermont Public Power Supply Authority, a joint action agency. Part of that process involves the state approving a Section 401 certification under the Clean Water Act. “FERC will tell you that you're supposed to submit your first documents five years before your license expires. In my experience, five years is optimistic,” he added.

Part of what makes this such a lengthy process, said Nolan, is that there is not a set time frame for when other parties, such as environmental groups, can request additional impact studies or reviews. This can mean that such studies, which can take years, might have to be repeated, leading to further delays.

Among the list of priorities for permitting reform for energy infrastructure siting, APPA is working with members to recommend adjustments to 401 certification processes. APPA would like to see Congress encourage prompt action and decision-making among state agencies, consistent Section 401 permitting requirements from state to state, and a limit to the scope of such efforts to water-quality issues only.

Section 401 permits relate to how utilities obtain water-quality certifications to discharge water from generation facilities, explained Carolyn Slaughter, APPA's director of environmental policy. “Making sure agencies adhere to a one-year clock will ensure that utilities have some certainty about whether a project is going to move forward,” she said.



“Without permitting reform, many goals in [the IJA and IRA] cannot be reached because it’s too difficult, time-consuming, or costly to build.”

AMY THOMAS,
VICE PRESIDENT OF GOVERNMENT RELATIONS
AMERICAN PUBLIC POWER ASSOCIATION

“Having that level of certainty helps utilities reduce costs because they know what the endpoint might be.”

Desmarie Waterhouse, senior vice president of advocacy and communications for APPA, explained why limiting the scope of Section 401 certification processes could help expedite energy infrastructure projects. Often, she said, utilities will be close to having a decision on the certification when someone raises a question about whether the facility as a whole will negatively impact water quality rather than if the “discharge only” would impact water quality. “The state agency then has to go back and start a different process,” she said, noting that this can make Section 401 certification an open-ended, ever-changing process in which a permit never gets approved.

“There’s already a statutory requirement on Section 401 certification timelines. It’s a one-year clock,” Slaughter said. “We’re asking Congress to hold federal agencies accountable to that statutory requirement. If you’ve come to the end of the year and you’ve had no interaction or communication from the state agency, then the permit just moves forward.”

Reducing Redundancies

Changes could also make it easier for utilities to navigate the National Environmental Policy Act. One idea is giving agencies more flexibility in establishing their categorical exclusions so that these could be tailored to specific project types and environments.

“Categorical exclusions are for projects that have minimal environmental impact, so they conceivably don’t have to go through a full-blown environmental impact assessment,” explained Waterhouse.

“Every federal agency has its own categorical exclusions, and some of the rules are very rigid.”

Giving agencies more flexibility with categorical exclusions would help permit-seekers move more quickly “because they’re not having to jump through multiple hoops,” Slaughter said.

Another change APPA thinks would help speed up permitting is having agencies use existing studies of project impacts that were done by other federal, state, or local agencies. Right now, new studies are mandatory for environmental reviews.

Two of the utilities served by Nolan’s joint action agency in Vermont have tried to combine permitting efforts because they have dams located on the same river about 20 miles apart. “They’ve found themselves kind of wrapped around the axle in not being able to share studies and having the state come in and say, ‘We’re not happy with this study that was performed. We want the other utility to do something a little different,’” Nolan said.

Along with reusing studies, APPA has suggested that agencies should be required to review prior studies during the scoping process and determine whether those studies address the issues under review and how much information should be incorporated.

“These changes are important to public power entities because they are working with state and local agencies that are more familiar with a particular geographic area. They may already have done some type of analysis of impacts to the area,” Slaughter said. “Using all that existing information in developing an environmental assessment or environmental impact statement just saves time. You don’t have to go out and recreate analyses.”



HOW PERMITTING REFORM WILL HELP PUBLIC POWER BUILD

“Making sure agencies adhere to a one-year clock will ensure that utilities have some certainty about whether a project is going to move forward.”

CAROLYN, SLAUGHTER
SENIOR DIRECTOR OF ENVIRONMENTAL POLICY
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Another recommendation is to reduce redundancies when multiple permitting agencies are reviewing a project. For example, if a project must satisfy requirements under the National Historic Preservation Act or the Endangered Species Act, then all relevant permitting agencies should consult on these efforts, increasing coordination and reducing redundancy, saving time and reducing permitting costs.

To facilitate coordination of permitting processes and information sharing, APPA is also hoping to see Congress create an interagency portal. “It would provide a clearinghouse where agencies could go look at what is being done across each other’s boundaries and allow APPA members to pull up information on their computers,” Slaughter said.

Thomas added that such a move would not only ease the administrative process, it would also add transparency on the project status and timeline.

No More Flip-Flops

Another area that would help: regulations that have more staying power.

“Utilities can be affected when changes in presidential administrations bring changes to existing regulations,” Waterhouse said. “It creates regulatory uncertainty for our members because the rules may change during the middle of a project. It makes long-term planning very difficult.”

Andy Kellen, vice president of power supply resources for WPPI Energy, a joint action agency serving 51 municipalities in Wisconsin, Iowa, and Michigan, can attest to that. “We had the Clean Power Plan during the Obama administration, the Affordable Clean Power rule under Trump, and now we have a new proposed rule regulating greenhouse

gas emissions,” he said. It’s hard to meet a moving target, and it may be counterproductive, he added.

“We entered into several purchase power agreements for renewables in the 2006–2007 time frame,” he explained. Kellen said jumping in then — before meeting renewable portfolio standards was necessary — means WPPI Energy bought into renewables at a higher price point than it might have secured by waiting. He said the timing of this decision also made it more difficult for his organization to meet Clean Power Plan targets, because WPPI Energy had already lowered its emissions during the baseline year.

This kind of experience, Kellen said, can make organizations reluctant to move quickly. “You don’t want to incent people to hold off on renewables because they’re not sure what the regulations will be or what the effect of those regulations will be on their portfolio,” he noted.

“APPA is supportive of congressional efforts to provide regulatory certainty through the use of clear statutory text, expedited and coordinated reviews by federal agencies, and firm timelines for reviews,” Waterhouse said.

Clarity and certainty are key drivers behind all the permitting reform priorities that public power providers have.

Although some priorities on transmission are listed in APPA’s permitting reform document, APPA is targeting more comprehensive permitting reform. “We want to focus on environmental reforms, judicial reforms, putting a time frame on how long it takes to get a permit, and limiting the number of times something can be reviewed,” Thomas said. “We don’t think transmission-specific policy changes are necessary. To meet decarbonization goals, we need broader policy changes that will make it easier for all energy infrastructure to get built.”



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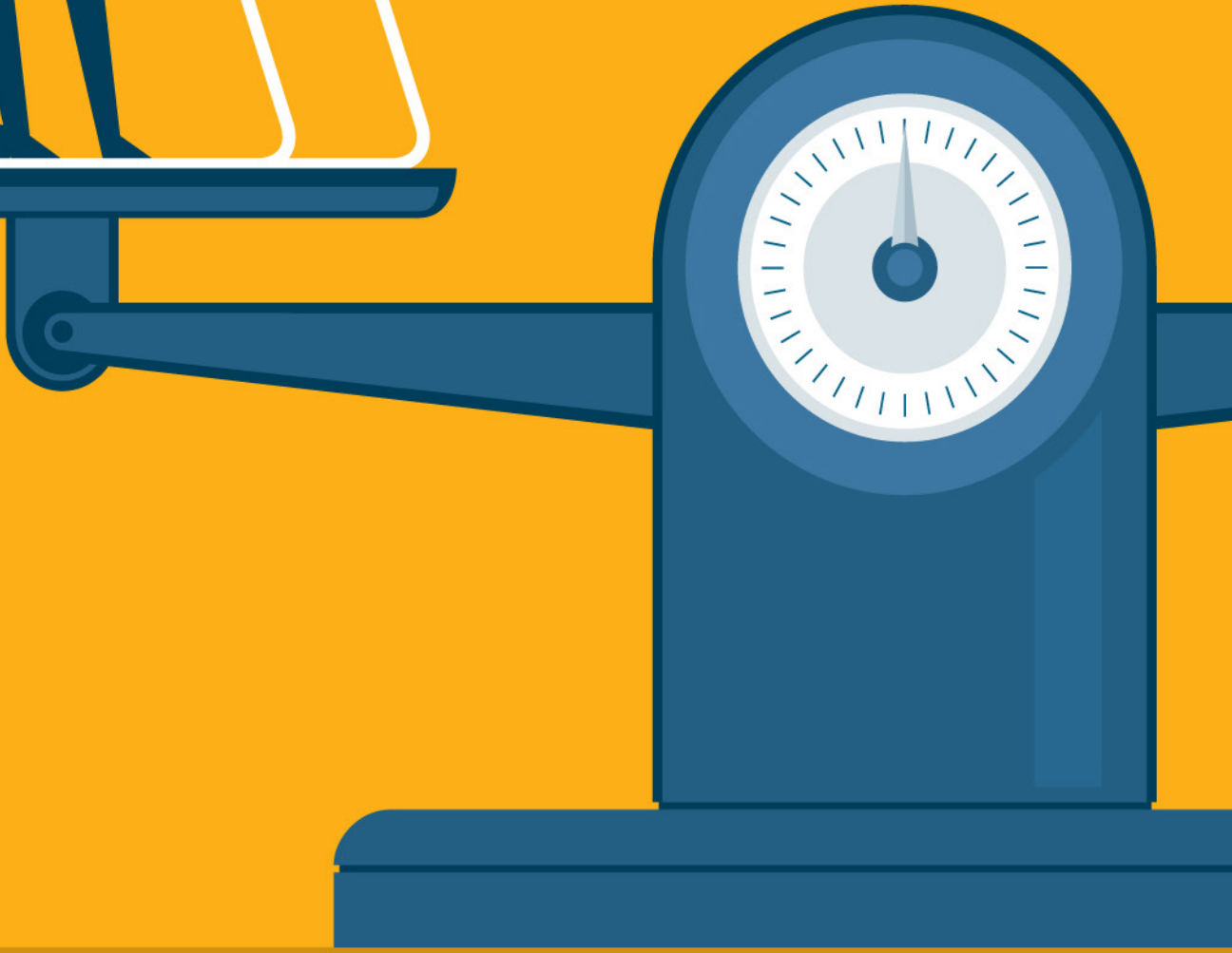
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THE RISKS AND POSSIBILITIES OF AI FOR UTILITIES

BY SUSAN PARTAIN, DIRECTOR, CONTENT STRATEGY,
AMERICAN PUBLIC POWER ASSOCIATION

This story is based in part on a presentation at our 2023 Customer Connections Conference, which featured Jared Combs, Business Intelligence Analyst from CDE Lightband in Clarksville, Tennessee; Juan Corredor, Chief Technology Officer at Open International; and Brian Lindamood, Vice President of Content & Marketing Strategy for Questline.

THE RISKS AND POSSIBILITIES OF AI FOR UTILITIES



Since OpenAI released its ChatGPT platform over a year ago, many articles have been written about the potential for artificial intelligence to transform how each of us approaches our work and aspects of our daily lives. And as people have gotten more used to discerning whether an image or text has been produced using generative AI, the data pouring into these systems has also helped train AI platforms to produce material that seems less uncanny valley and more “real.” (Note: AI didn’t help write this story).

From enhanced operational awareness and forecasting capabilities to assisting with complex modeling, predictive maintenance, or system planning — AI offers the potential to help those who work in utilities to be more efficient and more effective. But before AI transforms utility jobs, people working in utilities need to gain some understanding of what trying out such applications could mean for the quality of their work and the safety of the system.

Knowing the Terms

Although generative AI systems have been the focus of attention over the past year, there are several distinct types of AI that can serve different purposes.

Heuristics are about solving problems or wading through complex decisions. They are a foundational function of AI, and have been in use for a while, underlying the algorithms behind website searches. For utilities, heuristics could be established to identify potential problems with equipment or parts of the system.

Machine learning takes a step beyond mining through data and attempts to learn from the data and to recognize patterns. Machine learning systems are often about trying to help predict future actions, such as for load forecasting.

Generative AI is about creating and adapting work, such as writing and images. Some of these platforms use large language models. For utilities, generative AI could be used to come up with potential responses on a customer service chat, or to develop images and messaging for the utility.

Potential Concerns with AI

The people working with AI in any field have several areas of concern, often relating to safety, ethics, and accuracy.

The Department of Energy is working on a report about the potential benefits and risks of using AI in critical energy infrastructure. Key findings from the draft DOE report include that there is a need for the workforce who interacts with critical energy infrastructure to better understand AI

THE RISKS AND POSSIBILITIES OF AI FOR UTILITIES

applications and risks and to do further research into the implications of using AI within the energy sector.

As an emerging field, the use of AI is largely unregulated. As regulations are imposed on its use, utilities that have implemented AI will need to be aware of potential additional compliance measures.

The rapid proliferation of AI-based applications – and the data that feeds them – also poses another challenge to utilities: increasing demand. In its 2024 Electricity report, the International Energy Agency projects that in the U.S., demand from data centers will increase to 260 terawatt-hours by 2026, up 30% from the energy use from data centers in 2022. The IEA's report predicts that data centers will account for about a third of the overall 1.5% estimated annual growth in electricity demand for the next two years. This growth is concentrated in areas seen as most favorable to data centers, where rates are low and supply reserves healthy, but the rapid increase in demand threatens both factors.

Part of the accuracy factor is for utilities to have “clean” data sets to work from. Higher confidence in the data translates to higher confidence in the analysis. Still, there are continual opportunities to maintain data and check for inconsistencies, either as part of training and maintaining the AI or in ensuring it isn't developing misinformation.

Misinformation and bias can crop up when using generative AI and should be checked. For example, ask for sources for any claims made in a piece of writing and then review them to see if the sources are credible or if the claim was taken out of context. Another known problem is that AI can “hallucinate,” which is the term for when it makes information up. Using open-source AI code poses data security risks, from the potential to download malicious code that could harm a utility's system to the potential for sensitive information being accessible if data gets shared into an open system.

Possibilities

The biggest plus that utilities bring to the table in being ready to use AI is access to data. The AI then would be a tool in running various analyses on the data. Benefits including scaling up efficiency, understanding customer needs, and saving time. The idea is that AI allows utilities to analyze customer preferences – not just on a few data points, but on all data points in a timely manner.

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Utilities could automate sending of certain communications, such as program promotions or predicted peak events, based on real-time customer needs. It could advance customer service by giving customer service representatives additional information and make recommendations for the most appropriate programs to suggest, based on eligibility or other factors. The recommendation is ultimately a human one, but analysis makes it possible to do more quickly.

Jared Combs, an analyst for the department of electricity in Clarksville, Tennessee, known as CDE Lightband, shared how the public power utility used AI in several applications in recent years, including for load forecasting, customer segmentation, and analyzing organizational documents.

For the latter, the utility used an open-source large language model, but set it up to only run within the utility, to search through utility documents and the full text of the Inflation Reduction Act to find the best matches for opportunities for the utility within the programs created by the law.

CDE Lightband was also able to create more meaningful segments of its customers by doing detailed cluster analyses from its advanced metering infrastructure data. This type of clustering allowed the utility to model different scenarios of how its system would be affected if customers with different load profiles were to adopt certain behaviors or technologies, such as electric vehicles.

AI could also allow utilities to create more tailored messaging and even refine customer segmentation based on specific factors. For example, Brian Lindamood from Questline mentioned working with the Long Island Power Authority to first analyze how customers could be affected by

proposed rate changes, and then created targeted communications based on those changes, such as what ways customers could save energy based on detailed usage profiles and details on how much savings could be possible based on different behavior and usage changes. In Iowa, Lindamood mentioned that Questline worked with Duquesne Light to have AI analyze which segments of customers were more likely to adopt practices, such as paperless billing, and then the team identified potential hurdles that might be keeping people from doing so. AI-created newsletters can also pull in content that can be tailored to readers' interests, resulting in overall higher engagement. Lindamood mentioned working with AEP Ohio on such a newsletter for commercial customers, which led to significantly increased engagement metrics.

Others pointed out the possibility of AI being able to connect with an outage management system to help pinpoint fault areas or other system issues more quickly, or aid in predictive maintenance. It could also help predict and automate sending expected restoration times to customers in the event of an outage, based on history and other factors.

Your Passenger, Not the Driver

AI needs hardware to run on, coding to tell it what to do, training to make sure it is performing correctly or improving its performance, and maintenance to ensure it isn't creating or running into problems. While machine learning and generative systems require ongoing training and maintenance, heuristics require legwork to ensure the coding is correct.

THE RISKS AND POSSIBILITIES OF AI FOR UTILITIES

New technologies and platforms are making AI cheaper and more accessible, however the cost to develop or train your own system can involve upfront expenses to learn how to code such software, paying a third-party to do so, and the operational costs to run the machine(s).

It is important to take the time to ensure utility leaders and other stakeholders are aligned on what business goal the AI would help to achieve.

Even if engaging a third-party to develop AI for your utility to use, it is important for utility professionals to become literate in it — understanding the basics of what it does and doesn't entail and the limits of what it can and can't do. With the ongoing difficulty in being able to recruit or retain certain technical staff, utilities might feel that the level of expertise needed to be able to use AI safely and effectively is out of reach. AI literacy doesn't mean getting a degree in computer science. Having a basic level of AI literacy will make it easier for utilities to ask the right questions of any developer and to appropriately define the scope of any program.

Lindamood noted how people might already have some familiarity with AI through examples we've become accustomed to, pointing to

features such as recommendations from Netflix and voice assistants on mobile phones.

"Because it is new, people are learning together," added Combs. He mentioned that there are a variety of high-level courses, including from prominent universities, available online through sites like Coursera that don't cost too much and help people understand some of the basics of AI and machine learning. He said that such courses can help utility professionals learn which options are decent tools and what problems or different situations the tools are suited for.

While critical infrastructure owners and operators could establish applications for AI, the key piece of advice in moving forward is to ensure that such tools are set up to help humans make better decisions, but not be empowered to make those decisions directly.

While AI might be able to run analyses or offer suggestions, it isn't sophisticated enough to develop an overarching strategy, especially for areas like communication.

"The AI can make a human more effective at their job, but without a human is much less useful," noted Lindamood. He said that being able to use generative AI will be a skill that can help, but not replace, creators.



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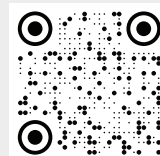
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Public Power Leaders: Hugh Grunden



A Q&A with Hugh Grunden, who joined Easton Utilities in 1983 and became its president and CEO in 1994. In July 2024, he plans to retire from his position, which has involved providing strategic direction for the multiple division municipal utility that serves more than 10,800 customers in Maryland's Eastern Shore. Grunden has served on the board of directors for both the American Public Power Association and Hometown Connections Inc. He serves in an advisory role for M&T Bank. In addition, Grunden was appointed to the Governor's Task Force for Rural Internet, Broadband, and Cellular Service and formerly served on the Governor's Task Force Advisory Group for Electric Industry Restructuring in Maryland. Grunden holds a bachelor's degree in civil engineering from the University of Maryland, College Park and an MBA from Johns Hopkins University. He is a Registered Professional Engineer in the state of Maryland.

WHAT DREW YOU TO WORK IN PUBLIC POWER? DO UTILITIES HAVE THE SAME DRAW FOR EMPLOYEES TODAY, OR HOW HAS IT CHANGED?

My dad was a bricklayer, and he worked tirelessly to get me through engineering school. Joining a public power utility felt like a meaningful way for me to meld my technical knowledge with a practical work ethic. I was the first in my family to go to college, and my dad always expressed that I "have to go." I'm glad he emphasized it, but it's not for everyone.

In the last 20 years, there was an emphasis on everyone obtaining a college degree. Thanks to people like Mike Rowe, there's been a discussion about the cost/benefit of a college education and a refocusing on the skilled trades. Hopefully, this refocusing will assist in recruiting our next generation of lineworkers and other operational technicians we need.

EASTON UTILITIES EXPANDED ITS SERVICE OFFERINGS UNDER YOUR LEADERSHIP. HOW DID YOU RECOGNIZE WHEN IT MADE SENSE FOR THE UTILITY TO OFFER AN EMERGING SERVICE TO THE COMMUNITY?

Municipal utilities were born out of a sense of self-sufficiency and providing services that either were inadequate or not provided at all.

We were formed in 1914 after the town purchased a privately held electric company that, by all accounts, was providing an abysmal service. During my tenure, we entered the cable TV business in 1984, when big businesses had little interest in serving rural communities. We have poles and wires and building systems, but we knew little about the cable business. But we learned in a hurry, and it's been hugely successful. That has morphed into the internet business. And more recently, we have an information technology services business.

That all evolved from the same sense of us seeing a need and saying that we're able to fulfill the need best for ourselves. Public power's beginnings are because the communities got together and rallied. They recognized that nobody's going to do it for us. ... They had to grab their bootstraps and do it themselves. That's an integral part of our culture that's really carried us through the years.

IS THERE A KEY LESSON OR EXPERIENCE FROM YOUR TIME IN PUBLIC POWER THAT YOU OFTEN SHARE WITH OTHER LEADERS AT EASTON UTILITIES OR WITH YOUR PUBLIC POWER COLLEAGUES MORE BROADLY?

I have been part of public power for my whole career. I'm in my 42nd year, so I'm one of the dinosaurs about. At Easton Utilities, we have seven businesses, so I have not been bored in any one of those years. When you get to work in the field and work closely with the customers, it's gratifying to be able to do that.

The shadow of a leader extends over the entire organization, whether it is positive or negative. As a leader, one needs to be ever mindful of the examples they set and embrace tenets such as always placing principle over expediency.

When you can serve your community, it's a good way to go through a career, and it makes you feel good. In the '50s and '60s, there was a large statue of Rudolph that sat on a local shopping center roof. I grew up in this town, and my parents would take me to see Rudolph during the holidays. A warehouse fire damaged the reindeer. For our 100th anniversary, we brought back Rudolph. Folks remembered, had that connection to it, and were very emotional about its return.

WHAT DO YOU HOPE WILL BE THE LEGACY YOU INSTILL AT EASTON?

A deep and abiding service to the customer. Customers may not always remember what you did, but they will always remember how you made them feel. Our colleagues have the authority to do whatever it takes to satisfy the customer. There are broad limits, of course, and there may be times when we say, "We're glad you solved it, but please don't do it that way again."

The other thing we try to do is establish a bank of goodwill. We do make mistakes, and we then must withdraw from that account. And I want to make sure it is flush every time we need it.

We've accomplished a lot with our team. A more recent example is that we received funding to run fiber-optic broadband service across the county. We may be the first county in the state to have ubiquitous broadband access. Moreover, we were able to gather a portfolio of funding so that those who are currently unserved won't face any cost to be served. As an example, some folks have long driveways — that gets to be a very expensive proposition if you live off the roadway.

WHAT DO EASTON'S NEXT GENERAL MANAGER AND OTHER FUTURE PUBLIC POWER LEADERS NEED TO BE PREPARED FOR THE JOB?

Technical competency, business acumen, and emotional intelligence. As an engineer, I came to emotional intelligence late in my career.

It is going to be key to our success to sustain public power's level of reliability and customer service for which we're known. Leaders will have to deftly navigate ever-increasing legislative and regulatory edicts that have practical implications for our services. There is sometimes a disconnect between political ideals and technical realities. When we get an audience with our policymakers, we offer background and let them know that part of our service is to offer our professional insights, and some legislators take us up on that. Most of the time, legislators are approached by someone who has their hand out asking for something. We try to flip that a bit and tell them, "We want to help you."

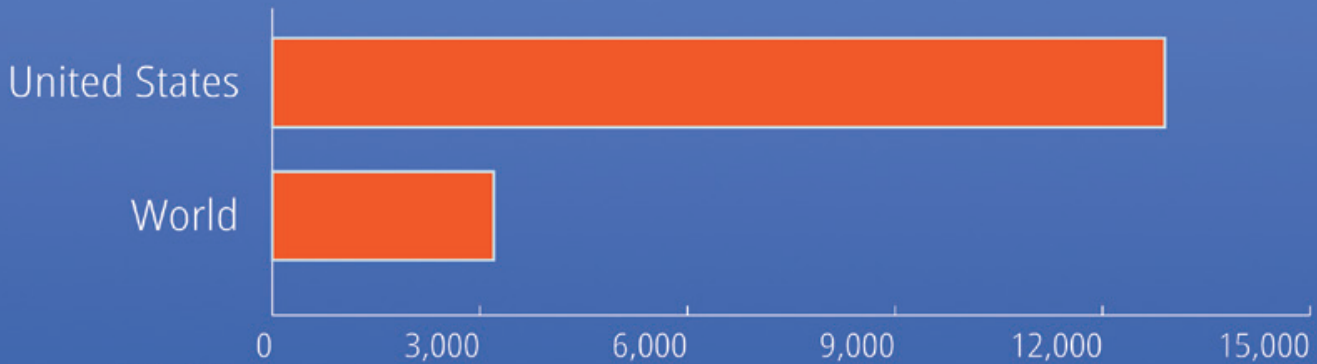
WHAT'S NEXT FOR YOU?

I have kept a list of things for me to do. The list exceeds 1,500 items, so I think that's going to keep me busy for some time.

WHERE TO INCREASE

At 12,900 kilowatt-hours, U.S. per capita electricity use was more than four times the world average (3,200 kwh) in 2018. ¹

Per capita electric use, 2018

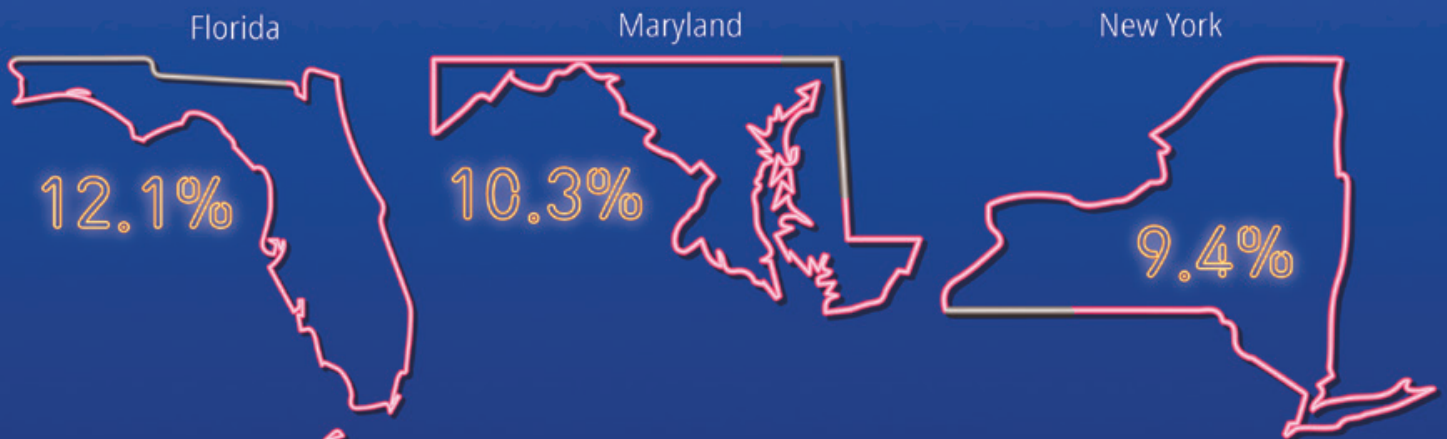


¹ 2022 IEA World Energy Outlook

A 2018 study from the Electric Power Research Institute estimated that utility efficiency programs could realistically reduce electricity use by over **365 terawatt-hours** by 2040 – equivalent to 8% of annual electricity use in the U.S., or the combined average electricity use of **34 million homes in the U.S.**



As a percent of total sales, the states with the highest efficiency savings potential are:



ENERGY EFFICIENCY

EPRI found that the three states with the highest total efficiency potential (in gigawatt-hours) are.



A 2019 analysis from the American Association for an Energy Efficient Economy found the potential for a 49% reduction in projected primary energy use through 2050 across the transportation, buildings, industrial, and electric sectors.

This includes the potential for reducing energy use:

29% IN HOMES



36% IN COMMERCIAL BUILDINGS



15% IN THE INDUSTRIAL SECTOR



4.5% IN TRANSMISSION & DISTRIBUTION SYSTEMS



FINDING GAINS

DESIGNING ENERGY EFFICIENCY PROGRAMS FOR TODAY'S CONSUMERS

BY JAMES PATERSON, CONTRIBUTING WRITER





FINDING GAINS: DESIGNING ENERGY EFFICIENCY PROGRAMS FOR TODAY'S CONSUMERS

In a 1977 speech, President Jimmy Carter, clad in a sweater and speaking in somber tones, suggested Americans should set thermostats at 65 degrees Fahrenheit during the day and 55 degrees at night to help the U.S. get through a bruising energy shortage. He wasn't widely praised.

Since the 1970s, however, energy efficiency has become a much more familiar concept. Today, sophisticated software can not only delicately fine-tune thermostat settings but also can manage huge loads at large commercial facilities and make subtle shifts in nearly any home appliance. For over four decades, public power utilities have made efficiency a priority, and now they are trying to determine what works to earn the energy efficiency gains made possible by the latest technology.

Awareness and Alternatives

"We are always looking for new opportunities and programs to increase energy efficiency," said Aneta Badalian, acting public benefits charge marketing manager for Glendale Water and Power in California. "Public power customers are interested in efficiency for a number of reasons, as are we. It cuts costs, reduces loads at critical times, and can lessen the impact on the environment. We just have to find what is most effective and cost efficient."

The public power utility, serving about 90,000 electric customers, has had success with a wide range of measures from shade-tree planting to home energy reports that show a customer's success with energy usage (even compared to similar sized-homes), along with alerts and reports about usage between bills.

Badalian said those methods of informing customers about their usage have been a priority for the utility, as has customer education overall. The utility's website is packed with residential energy-saving programs and tips.

The think tank Resources for the Future describes an "energy efficiency gap" that may be critical to increasing efficiency. The gap often is caused by a lack of information along with societal and personal preferences. Resources for the Future suggests that labeling products with certifications like Energy Star, offering subsidies, and setting performance requirements work best, along with messaging "nudges," such as those Glendale has used effectively. Electric bills, for example, can include information about a comparative home's energy use, or alerts can warn customers about higher usage.

"Customers respond to being reminded if their usage has gone up or how they compare to similar-sized homes," Badalian said.

The utility estimates that customers acting on personalized home energy reports comprised almost 40% of its energy efficiency savings, trimming 7,255,612 kilowatt-hours during the fiscal year. Its online platform, created with Opower (now a product line under Oracle), has generated 148,000 visits since it was implemented in 2009 and has undergone several advancements.

Even though consumers can often save money by investing in energy-efficient devices, research by experts at Harvard suggests that consumers leave many apparent cost-saving investments unused. Those researchers cited market failures and behavioral tendencies as two of the primary reasons for the gap. The behavioral explanations include inattentiveness, short-sightedness, and making irrational decisions rather than smart economic ones because they don't have enough information or can't comprehend the choice.



“It cuts costs, reduces loads at critical times, and can lessen the impact on the environment. We just have to find what is most effective and cost efficient.”

ANETA BADALIAN,
ACTING PUBLIC BENEFITS CHANGE MARKETING
MANAGER, GLENDALE WATER AND POWER,
CALIFORNIA AGENCY

Matt Hein, energy services manager at Cedar Falls Utilities in Iowa, said public power utilities may have to look for new alternatives in energy efficiency programs.

“Within the residential efficiency sector, energy savings from equipment efficiency is dwindling because baseline equipment is so efficient,” he said. “Future programs will need to encourage beneficial customer behavior, like charging electric vehicles during off-peak times. Educating and incentivizing customers on the benefits of using power differently is increasingly important.”

He said that educating customers in fundamentals is important, as are some incentives. The public power utility, with about 19,000 electric customers, has had success on the residential side with an effort to replace electric resistance heating with heat pumps and Wi-Fi-enabled thermostats. This program includes incentives from CFU and generous federal incentives. Wi-Fi-enabled thermostats improve efficiency now and could pave the way for more demand response initiatives later.

“We have really been focused on education, and we are trying to talk less about electricity as a nebulous thing and make the distinction between energy and power. When it comes to energy, we don’t have many concerns. Helping our customers understand power has been a major focus for us.”

Public power utilities are often educating customers while also offering a wide range of energy efficiency measures. The American Public Power Association recognizes utilities putting in this work with a Smart Energy Provider designation, which nearly 100 members now hold, including



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Glendale's Efficiency Savings

Energy efficiency measures and programs resulted in Glendale Water and Power customers saving nearly 19 million kilowatt-hours in fiscal year 2022–23 — about 1.9% of Glendale's annual retail sales. When including the savings achieved on the distribution level, via voltage reduction, the savings are nearly 24 million kWh. Here's a snapshot of which programs yielded the most savings.

Business Energy Upgrade Program:

7,878,279 kWh

Home Energy Reports:

7,255,612 kWh

Conservation Voltage Reduction:

5,175,430 kWh

Home Energy and Water Upgrade:

1,439,539 kWh

In-School Energy and Water Conservation Education:

1,039,247 kWh

Business Energy Solutions:

720,506 kWh

Peak Saving:

160,863 kWh

Home Energy and Water Saving Rebates:

67,001 kWh

Tree Power (shade-tree planting):

53,732 kWh

Glendale and Cedar Falls. The program assesses utility commitment and practices across four disciplines: smart energy program planning, energy efficiency and distributed energy resources, environmental and sustainability programs, and customer communication and education. Applicants describe their practices, such as “how they communicate smart energy policy, procedures, and programs with customers and how they evaluate customer satisfaction with smart energy programs.” The 2024 application, which is open through April 30, also asks about any training a utility offers to customer service representatives to provide better customer experience in these programs.

Finding what Works

The Department of Energy reported that overall, homes use 37% more energy today than they did about 40 years ago, although energy conservation standards and technology have prevented that use from being even higher. While the total number of households has grown, along with the number of devices in them, the average household usage has gone down about 10%.

The American Council for an Energy-Efficient Economy reported that utility-sector energy efficiency programs accounted for 2.7% of a 20% overall decline in energy use in 2017. Other areas comprising the decline included energy savings from appliance and equipment efficiency standards (6%) and adoption of Energy Star-certified appliances (4.2%).

In Cedar Falls, the utility is focused on replacing electric resistance heating with more efficient and cost-effective options because of Iowa's heating-dominant climate. Dual-fuel systems are particularly valuable because the highly efficient air-source heat pump operates most of the time and can switch to CFU's reliable natural gas when temperatures drop below the heat pump's cut-off temperature (about 25 degrees Fahrenheit).

Hein noted that it is difficult to gauge the appropriateness of energy efficiency measures since they can have a range of benefits and cost utilities varying amounts of time and money. CFU uses a societal benefit-cost ratio to evaluate the effectiveness of the portfolio of programs each year.

When asked for specifics about which programs are best, “I have a very hard time saying anything beyond, ‘It depends,’” Hein said, “because what works for CFU and our community may not work for others.”

Energy audits, for instance, increase customer awareness of opportunities to save energy and are a public relations boost for the utility. But it is hard to pinpoint and weigh how much they increase efficiency.

“Future programs will need to encourage beneficial customer behavior, like charging electric vehicles during off-peak times. Educating and incentivizing customers on the benefits of using power differently is increasingly important.”

MATT HEIN,
ENERGY SERVICES MANAGER, CEDAR FALLS
UTILITIES, IOWA

“It is something we promote, which we then hope, of course, leads to customer awareness about inefficiencies of their system or the need to upgrade — and then we offer solutions,” he said.

Both utilities promote use of energy-saving lighting, but Hein noted that CFU no longer incentivizes efficient lightbulbs for residential customers since they are typically now the only option for consumers. But for commercial customers it can make a big difference, he said, and may be the easiest program to undertake with visible improvements to building lighting and utility bills.

Glendale is planning on launching an HVAC early-retirement pilot program, which will include an energy assessment and incentives ranging from \$1,200 to \$3,000 for installation of more efficient HVAC or electric heat pump units. This is distinct from a Home Energy and Water Upgrade Program, which last year saved 1,439,539 kWh. Over the life of the program, it has had a significant impact, saving 19,444,594 kWh over 17 years. Another rebate program for more efficient home appliances saved Glendale 67,001 kWh during the 2022–23 fiscal year.

There is still value in offering lower-impact programs that are relatively easy to implement and favored among customers. As an example, Badalian said a shade tree-planting program is popular in the community.

“Our Tree Power program, which provides up to three free shade trees and arborist services, has been around for 20 years. It’s a low-lift program, with substantial lifetime savings at a minimal cost. Also, our In-School



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Energy and Water Conservation Education program, which is aimed at behavior changes along with minor retrofits, was also easy to launch, and the deemed savings are significant when compared to the program cost.”

During the 2022–23 fiscal year, the tree program resulted in 53,732 kWh in savings, and the education conservation program resulted in an estimated reduction of 1,039,247 kWh in the last fiscal year, which made up about 6% of the total from energy efficiency measures.

Glendale also has a Conservation Voltage Reduction program in its portfolio that yields significant savings, Badalian said. “The purpose of the CVR program is to produce energy savings by keeping the voltage on GWP substation transformers and thus our customer meter panels at a minimum permissible level.” During the last fiscal year, that program saved 5,175,430 kWh.

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Creating Comfort

A residential and commercial peak saving program at Glendale, which offers a \$100 incentive towards the purchase of a new thermostat and \$50 annual incentive to residential customers for enrollment in the program, saved an estimated 160,863 kWh in the last fiscal year. Commercial customers are incentivized at the rate of \$50 to \$75 per kW per year, for their participation in the program.

Meanwhile, Hein said CFU is “seeding” the community with smart thermostats and hopes to make them more prevalent so that a future residential demand-response program will have the hardware needed to run successfully.

“CFU was very early to thermostat-control programs and found our customers were not ready for this type of program,” he said, noting that he believes that ease of participation is more important than the amount of financial incentive and is more likely to create buy-in. He is optimistic that customers will find future programs more appealing. Over 1,300 Wi-Fi-enabled thermostats have been incentivized in the last five years, with an estimated annual savings over 350,000 kWh per year and 100-kW reduction.

He said that apart from managing home energy usage, the smart thermostats will allow more opportunities for peak shaving by the utility. “With over 50 years of energy efficiency programs at CFU, demand response and behavior programs are our primary focus for adding future programs,” he said.

With commercial customers, educating them and offering an incentive to replace lighting has generally been easy, with a big impact. Demand response has also paid off significantly, with a current focus on a few very big customers.

CFU is working with four large commercial customers with a demand response system that involves text messaging between the utility and the companies, the largest of which is a crypto-mining operation. In 2023, CFU's demand response resources exceeded 22 MW (18% of peak load).

Glendale's Business Energy Solutions program, for businesses with a monthly electric bill of more than \$3,000, offers qualified customers up to \$100,000 in incentives per fiscal year for all types of energy-saving retrofit projects that are cost effective from both the customer's and the utility's perspective. The program saved 720,506 kWh in fiscal year 2022–23 (about 3.8% of the total savings from efficiency measures) and has saved 72,220,279 kWh over the 24-year life of the program.

Those efforts come as efficiency has steadily improved in the commercial sector. A 2022 Commercial Building Energy Consumption Survey by the U.S. Energy Information Administration noted that commercial buildings overall were consuming 12% less energy in 2018 compared to 2012.

It reports that food service, food sales, and inpatient health care buildings were the most energy intensive, while vacant, warehouse and storage, and religious worship buildings were the least. Electricity was consumed most for cooling, ventilation, lighting, and other end uses at commercial properties. It also found that large buildings (over 100,000 square feet) make up 2% of total commercial structures but consume over one-third of the total energy used by commercial buildings.





ALIGNING SAFETY OUTREACH WITH TODAY'S ENERGY TECHNOLOGIES

BY JESSICA PORTER, CONTRIBUTING WRITER



“The more outreach you do with local first responders and other stakeholders involved, the better. You’re ensuring consistency from conceptual design through permitting and final system operations.”

STEVE WILKIE

MANAGER OF RESEARCH AND DEVELOPMENT, NEW YORK POWER AUTHORITY

Utilities and their customers are both using a wider array of technologies. For public power, that includes incorporating new utility-scale assets, such as energy storage systems, as well as better recognizing how customer-sited, behind-the-meter technology can interact with the system. Today’s modern household potentially has a wide array of electronic devices: a laptop or tablet for each family member, an electric vehicle in the garage, e-bikes and scooters in the driveway, and smartphones. It might also have solar panels on the roof and a battery storage system to help keep these and myriad other household devices powered.

With the increasing ubiquity of these technologies comes new risks that are important to understand. Just as technology has evolved, so must utilities’ safety education and training about best practices.

BATTERY BOOM

Most of these new devices contain a lithium-ion battery. According to a report from McKinsey & Company, the global demand for lithium-ion batteries is projected to increase to nearly 4.7 terawatt-hours by 2030 — a sixfold increase from the 700 gigawatt-hour demand in 2022.

“Any device with a lot of energy in a small footprint that is not designed, maintained, or operated correctly can fail,” said Matthew Paiss, technical adviser in the Battery Materials and Systems Group with the Pacific Northwest National Laboratory. “The higher the energy density, the greater the potential for that failure to release, whether it’s heat or gas. When it comes to batteries, lithium-ion is a very energy-dense technology.”

When manufactured, stored, and maintained correctly, lithium-ion is a safe technology. However, these batteries are unregulated in many common devices, and their failure can lead to a range of potentially hazardous issues, including fire.

“Lithium-ion batteries in technologies like e-bikes, scooters, and skateboards tend to be cheaper or knockoffs. [A lot of] people get them off the internet, and they don’t know what they’re getting,” said Scott Gibson, manager of the Energy Storage and Emerging Technology group at the Snohomish County Public Utility District in Washington state. “There are e-bikes where emphasis has been put on safety and quality, and those are usually the more expensive ones. But when people buy something cheap off the internet, not a lot of thought has been put into battery safety.”

ALIGNING SAFETY OUTREACH WITH TODAY'S ENERGY TECHNOLOGIES

Utilities across the country are working to help consumers understand the risks of lithium-ion battery technology, how to use and store these technologies safely, and how to respond to emergency situations.

Another component is the need to build understanding and awareness of the safety measures related to utility-scale battery storage facilities. This includes training first responders about how to safely respond to incidents involving these facilities and helping other stakeholders understand measures built in to mitigate risk of incidents.

OUTREACH AND EDUCATION

The New York Power Authority, which operates 16 generating facilities and more than 1,400 circuit miles of transmission lines, has installed two battery energy storage systems.

One system was installed at its headquarters in White Plains and is a 250 kilowatt-hour, 50-kilowatt battery storage unit. The second system is a 20-megawatt facility in Chateaugay that connects into the state's electric grid. It consists of five 53-foot walk-in enclosures, each containing more

than 19,500 batteries that can collectively store and dispatch up to 4 MW of power.

NYPA uses both installations to raise awareness about lithium-ion battery safety with the local community, including emergency responders and elected officials, as well as internal utility staff.

NYPA met with the fire department in both locations many times, inviting crews to walk through the facilities to show them the technology used, where the equipment is located, and the emergency response plan. The authority also held educational sessions in a classroom setting with the fire department to provide members with in-depth knowledge about the technology.

The range of knowledge among the fire departments varied greatly. "The fire department in upstate was rural, and they were volunteers; they had some knowledge, but it was new to them overall," said Steve Wilkie, manager of research and development with NYPA. "We walked them through the whole gamut of information. In White Plains, there are two other installations in the area, so that department was somewhat familiar with battery storage."



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NYPA also ensured its internal emergency response team was prepared for any potential issues by holding one-on-one meetings with each staff member and making sure they have all the documentation needed to respond appropriately. As changes occur on the installation, Wilkie makes sure he communicates thoroughly with staff.

Wilkie's experience in battery storage technology helps deliver the message effectively to fire departments and the broader community. In 1991, he worked with the power authority in nuclear generation, supporting one of its plants as a fire protection engineer. Later, he worked with another energy company as a fire protection engineer before returning to NYPA as manager of research and development.

It's important to NYPA to spread the message of safe battery storage technology with the overall industry as well. The authority welcomes visitors to tour the facilities, including fire departments from other jurisdictions, technology providers and other stakeholders, like the Electric Power Research Institute, an independent, nonprofit energy research and development organization.

"The more outreach you do with local first responders and other stakeholders involved, the better," Wilkie said. "You're ensuring consistency from conceptual design through permitting and final system operations."

Knowledge gained by these facilities in part led NYPA to participate in New York's Inter-Agency Fire Safety Working Group, which aims to ensure the safety and security of energy storage systems across the state. In February, the group released 15 draft recommendations that include potential updates to the Fire Code of New York State.

"Most of the draft recommendations we've already implemented at NYPA to some extent. Some represent best practices we felt were important," Wilkie said. "For example, if you go to the current New York State Building Code, it does not have a code requiring an emergency response plan for each installation. We thought an emergency response plan was very important as part of our installations and should be in the code."

SHARED EXPLORATION

Snohomish County PUD took a similar approach to building understanding of battery storage technology.

It built a microgrid emergency backup system in Arlington, Washington, that includes a 500-kW solar array with smart inverters, a 1,000-kW and 1,400-kWh lithium-ion battery storage system, several vehicle-to-grid charging stations for the PUD's electric vehicle fleet, and a solar tree.

"If there's a fire, our crews will show up with the fire department; they have to know how to interact and who's responsible for what tasks."

SCOTT GIBSON

MANAGER OF ENERGY STORAGE AND TECHNOLOGY GROUP,
SNOHOMISH PUBLIC UTILITY DISTRICT, WASHINGTON

ALIGNING SAFETY OUTREACH WITH TODAY'S ENERGY TECHNOLOGIES

“This project was designed to demonstrate everything you could do with and all the benefits of energy storage,” Gibson said. “We know it’s part of our future, so we need to understand the technical challenges, costs, and benefits.”

When creating the facility, the PUD began working with the local fire department to design the battery’s fire safety system. In fact, Paiss worked with the PUD to educate the fire department. As a former fire captain, he spoke the crew’s language and was highly effective in disseminating safety education to members.

The emergency response training is external, with the fire department, and internal, with PUD staff. “If there’s a fire, our crews will show up with the fire department; they have to know how to interact and who’s responsible for what tasks,” Gibson said. Every year, the PUD holds a meeting on the site to talk through the safety plan and conduct a fire drill.

The project also serves as an example of battery storage capabilities to the broader community. Snohomish County PUD works with commercial and industrial customers who are interested in building their own microgrids to move beyond diesel generators toward renewable energy. The PUD educates those customers on the costs of a microgrid, what it takes to build and maintain them, and offers tips to keep the installations safe.

National outreach is a top priority for the PUD as well. The utility shares reports and presentations with other organizations, like the American Public Power Association and the Institute of Electrical and Electronics Engineers. Staff travel regularly to industry events and conferences, like the Northwest Energy Systems Symposium and Energy Storage Summit USA, to discuss safety. The PUD offers tours of the installation to universities, organizations, and other utilities interested in learning more about the technology.

“Those organizations reach out to us because the PUD is already out there for being very innovative. We talk at many conferences and write numerous papers on topics like microgrids and EVs,” said Aaron Swaney, the PUD’s public relations and media liaison. “Very few people have done something like this, so when you actually build it, everyone wants to see how it’s done and how they can make it work for themselves.”

AN IMPORTANT DISTINCTION

“We as a utility have been doing what we’re doing for 75 years, and now we have to change the way we’re doing it in the next 10 to 20 years — and there aren’t enough people at any one utility to do it correctly,” Gibson said. “We need to see what others are doing, share information, and talk about lessons learned and what’s working for utilities around the country.”

A top challenge is in educating the public about battery technology, primarily with the most commonly deployed lithium-ion batteries. It’s important to Snohomish County PUD and other utilities to explain the differences between lithium-ion battery technology in unregulated devices like scooters and e-bikes compared to the technology used in more-regulated areas, like utility-scale systems and light-duty vehicles.

“The biggest problem right now is guilt by association. Emergency responders respond in far greater numbers to personal mobility devices and e-bikes than to EVs and personal storage devices,” said Paiss. “The public associates lithium-ion failure with e-bike failure, but in those cases you don’t know who made them or how they were maintained. They are completely different from more-regulated technologies,” such as EVs and energy storage.

The Electrical Safety Foundation has materials to help educate consumers on safely using and storing lithium-ion battery-powered devices. These tips include looking for safety certifications on the batteries, disconnecting charging devices once charging is complete, and storing items in temperature-controlled locations.



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Consistent Tracking Improves Safety

BY DAVID L. BLAYLOCK, SENIOR DIRECTOR,
MEMBER ENGAGEMENT AND DATA ANALYSIS,
AMERICAN PUBLIC POWER ASSOCIATION

If there's one topic that is of utmost importance to every person working in an electric utility, it is safety. Public power utilities pride themselves on how firmly they emphasize safety as an imperative, making it a central part of the successes they report to their communities.

But measuring success requires having data and benchmarks. For years, safety-related data was largely collected individually by each utility using its own forms, processes, and definitions. Though standards from the Occupational Safety and Health Administration and the American Public Power Association's Safety Manual gave some guidance, there was still limited uniformity across the industry.

CONSISTENT TRACKING IMPROVES SAFETY

Early in his career, Aaron Haderle, who is now manager of transmission and distribution operations at Kissimmee Utility Authority in Florida, was tasked with preparing KUA's Reliable Public Power Provider, or RP3, application, and was surprised to fall short of the diamond designation.

"We looked into it and saw that it was partially because of the way job safety briefing documentation was scored at the time," he said. "We were doing it, but we were tracking it in paper timesheets, not in the formal way required by RP3 best practices."

Years later, in talking through this experience as a member of the RP3 Review Panel, he recounted having the idea that it would be good to have a central application where utilities could collect this documentation. This approach would help utilities know if they were meeting best practices, even if the practice wasn't yet an industry standard.

Documenting safety briefings grazes the surface of what can be tracked. Other tracking can include documenting and reporting on safety events, such as accidents and injuries, and training.

"Looking at trends and getting an idea of where we are going helps us see our utility's big picture, which is important for growth and improvements," said Greg Labbé, electric operations manager at Lafayette Utilities System in Louisiana. "You need to know what certain types of incidents and accidents are happening, how often, and under what conditions."

"We can use incident data to know what types of accidents are happening and tailor those tailgate meetings to address them," added Tori Leger, employee development coordinator at LUS. "If you don't know about it, you might never talk about it. This all just helps to create those conversations for foremen in the field. And managers can then follow up with them and know that they're having those conversations, because that's also tracked."

While some utilities have been tracking this information in-depth for decades, there is inconsistency across the industry. With these

considerations in mind, APPA released the first version of the eSafety Tracker in 2020. Building off the capabilities of that tracker and taking into account requests for enhancements to the system, this summer will see the launch of a new eSafety Tracker powered by the Enterprise Safety Applications Management System, or ESAMS. This new software will provide not just a standardized process by which utilities can track their briefings, incidents, and training, but will also allow for aggregate benchmarking that will promote a more comprehensive understanding of the greater trends and best practices across the users.

A handful of APPA member representatives tested the new system prior to its launch.

"I expect we at MMUA will track the incident data more than even our individual communities will because we want to be able to decipher trends so that we can maybe plan our training and focus it on what is actually happening and what is actually needed," said Keith Byklum, now in his third year at Minnesota Municipal Utilities Association as a regional safety coordinator after more than 20 years as a lineman and safety officer for the city of Hawley, Minnesota.

Haderle is particularly excited about an incident dashboard feature that displays heat maps and trends in real time so that administrators can make immediate changes to improve safety.

"If you don't pay attention to what is happening, you won't know what improvements need to be made to better protect everyone," he said. "Accessing trends, including specific incidents or accidents, gives you the ability to work from that in adjusting your safety protocols, and changing safety rules. This really gives you a path to do a root-causes analysis of these incidents."

Organizations are eager to see how the new tracker will allow them to supercharge their training processes.

"On the training side, you can assign training, add videos, and run training meetings within the application," Haderle added. "Some

"If you don't pay attention to what is happening, you won't know what improvements need to be made to better protect everyone."

AARON HADERLE,
MANAGER OF TRANSMISSION
AND DISTRIBUTION OPERATIONS,
KISSIMMEE UTILITY AUTHORITY, FLORIDA

utilities that are larger like KUA might not need everything in there, but there are enough tools in the toolbox to have something that can be useful for almost every utility."

Labbé pointed to a feature that allows managers to assign training and track progress. "When I go back and look at trends, I will be able to see how those trainings are doing and make changes that might become apparent."

Byklum and others noted the convenience of being able to access the tracking system in a mobile app from a phone or tablet, even when there is no data connection. Users will also have full, searchable access to the APPA Safety Manual and any utility-specific manuals and documents while in the field.

"Having this at your fingertips, especially the Safety Manual, is huge," Haderle said. "Before you'd have a book or multiple books to carry around, but now everybody can pretty much get on their mobile device and access them at all times in the field."


Ultimately, the update all comes back to that most important element: finding a way to increase safety for those working in the electric utility industry.

"This is all about making sure we are equipping our employees with everything we can give them to stay safe," said Labbé. "We make sure we provide all the necessary safety equipment and all the right training. This is an expansion of that. They need to have all the tools necessary to perform their work safely from every minute going forward so that we can meet our goal that every employee gets home safely at the end of each day."



Based on an interview with Neil James, director of distribution engineering and operations at Santee Cooper in South Carolina. James is the chair for the American Public Power Association's Mutual Aid Committee.

The public power Mutual Aid Network has been around informally since 1999 and has deployed countless utility crews to help restore power to electric systems damaged by storms and other major events. The network adopted a more formal structure and policies in the wake of Superstorm Sandy in 2012.



BETTER HELP HOW THE MUTUAL AID NETWORK KEEPS IMPROVING

The spirit behind the network is that, as public power utilities, we are all sister utilities striving to serve our respective customers. When one utility is in need, we all feel a responsibility to assist. Our product, electrical power, is an essential service no one can live without, and the satisfaction we receive from restoring that service and assisting others in their time of need is hard to put into words. It's gratifying to say the least. Everyone in public power is committed to serving and assisting others.

Unfortunately, we've had a lot of experience over the last couple of years. Since 2020, the network has been activated numerous times, for events ranging from hurricanes to ice storms, typhoons, and tornadoes.

With each activation, we've gotten better. As the Mutual Aid Network has grown, so has our understanding of how we best work together. We better understand the importance of planning, communicating, coordination, pre-staging, material/resource sharing, and the logistical requirements for both the receiving and responding utilities.

We designated individuals as state coordinators for easier identification of who to reach out to during an activation. We also improved our decision-making process on whether an event can be handled at the local, state, or national level. This is important, as we want to make sure the network uses the crews that are nearest to the affected area, thus reducing the overall outage window.

Depending on the event, matching and dispatching responding crews to requesting utilities can happen in hours or, for larger-scale events, days. Usually, the state coordinator plays a key role in matching crews. Once an event cascades beyond the local utility or state, our Mutual Aid Committee organizes a regional or national call for assistance where the needs are made known and the available resources are volunteered. For events where the impacted area and timing can be forecast, such as hurricanes, crews can be pre-staged in safe but nearby areas.

Understanding the needs of the requesting utility and the available resources from the responding utility is the first step. Equally important is knowing the type of working conditions, voltage levels, environmental conditions, special equipment needs, and other logistical requirements such as travel time, reporting location, and lodging requirements. Being a part of the network is about making it easier to communicate these needs on both sides. And communication can happen more smoothly when there is already a connection.

While we respond to emergencies year-round, the most frequent major events are in the summer and fall. We have thus timed our training sessions to occur prior to this peak season, which helps to better form the connections across the network that will remain in place all year.

We continue to share our story at the American Public Power Association's conferences and within industry-focused publications so that everyone in public power — and even more broadly into the utility sector — is aware of the Mutual Aid Network and how to contact someone when in need.

Even though we feel we have a good process, there is always room to improve. During the annual Mutual Aid Committee meetings, we discuss the most recent activations and lessons learned, and we conduct a review of our Mutual Aid Playbook to streamline or improve where possible. Our biggest opportunity is in further extending the program to all public power providers. Everyone's feedback is essential for improvement. Looking across the country, there are still gaps where we need more public power utilities to get involved. We're looking at how the state coordinators can do more outreach to engage with the right people at these utilities and determine what might be keeping them from signing on. All public power utilities can participate as either a requestor or responding utility. Participating in the network is free.

As an industry, we stand ready to assist all our fellow members in times of need. Learn more about the Mutual Aid Network and process at www.PublicPower.org/Mutual-Aid-and-Emergency-Response.

WHAT MAKES FOR AN EFFICIENT UTILITY?

The American Council for an Energy Efficient Economy compiles a Utility Efficiency Scorecard that ranks the energy efficiency efforts and achievements of the largest electric utilities in the continental U.S. (based on retail sales). Four public power utilities – Los Angeles Department of Water and Power, Long Island Power Authority, Salt River Project, and CPS Energy – were included in the 2023 report. All ranked in the top 25.

AEEE would give its highest score in certain measures to utilities that, at minimum:




- **Spend 9% of revenue on energy efficiency programs**
- **Achieve 3% net annual savings of retail sales**
- **Reduce 2% of annual peak demand**

Other items that lead to high scores include:





SPEND TO SAVE

MEASURE	AVERAGE	AMONG TOP PERFORMING UTILITIES
Portion of utility revenue spent on energy efficiency	2.2%	11%+
Funding focused on programs for customers with low incomes		12% of efficiency funding
Offer financing solutions that help customers pay for upgrades		



OFFER PROGRAMS

Offer programs across customer classes (residential, commercial, and industrial)	
Have programs focused on improving efficiency among customers with low incomes or from historically underserved communities	
Pilots and programs that explore emerging technology and transportation electrification	

MEASURE PERFORMANCE

Track and report out net electricity savings and peak demand reduction	
Set and track goals to reduce energy burden across customers	
Offer customers access to personal or building-wide energy use data	
Set incremental energy saving targets	

PLAN ACCORDINGLY

Include energy efficiency in the resource planning process similarly to how supply-side resources are considered	
Incorporate community feedback into program offerings	

CONGRATULATIONS

Congratulations to the 2024 Reliable Public Power Provider (RP3) program designees. We salute your commitment to operating at the highest levels of reliability, safety, workforce development, and system improvement as you build and support strong communities.

DIAMOND

Benton PUD, Washington
Burbank Water and Power, California
City of Bowling Green Municipal Utilities, Ohio
City of Calhoun, Georgia Electric Department, Georgia
City of College Station, Texas
High Point Electric Utility, North Carolina
City of Lompoc, California
City of Rock Hill, South Carolina
Coldwater Board of Public Utilities (CBPU), Michigan
Colorado Springs Utilities, Colorado
Denton Municipal Electric, Texas
Electrical District No. 3, Arizona
Grand Haven Board of Light & Power, Michigan
City of Greenfield Power & Light, Indiana
Holyoke Gas & Electric, Massachusetts
Idaho Falls Power, Idaho
Kansas City Board of Public Utilities, Kansas
Kissimmee Utility Authority, Florida
Knoxville Utilities Board, Tennessee
Lincoln Electric System, Nebraska
Lowell Light & Power, Michigan
City of Loveland, Colorado Water and Power, Colorado
Macon Municipal Utilities, Missouri
Manitowoc Public Utilities, Wisconsin
Memphis Light, Gas and Water Division, Tennessee
Navajo Tribal Utility Authority, Arizona
Norwich Public Utilities, Connecticut
Pasadena Water and Power, California
Piqua Power System, Ohio
Reading Municipal Light Department, Massachusetts
Roseville Electric Utility, California
Shakopee Public Utilities Commission, Minnesota
City of Stillwater Electric Utility, Oklahoma
Sun Prairie Utilities, Wisconsin
Tillamook PUD, Oregon
Town of Granite Falls, North Carolina
Traverse City Light and Power, Michigan

PLATINUM

Borough of Lansdale, Pennsylvania
Braintree Electric Light Department, Massachusetts
BrightRidge, Tennessee
City of Augusta, Kansas Electric Utility, Kansas
City of Kinston, North Carolina
City of Ottawa Kansas, Kansas
City of Tallahassee Electric & Gas Utility, Florida
Cowlitz PUD, Washington
Crawfordsville Electric Light & Power, Indiana
Fort Pierce Utilities Authority, Florida
Glendale Water & Power, California
Greenville Utilities Commission, North Carolina
Hannibal Board of Public Works, Missouri
Heber Light & Power, Utah
Hingham Municipal Lighting Plant, Massachusetts
Hope Water & Light, Arkansas
Kennett Board of Public Works, Missouri
Lehi City Power, Utah
Mansfield Municipal Electric Department, Massachusetts
Municipal Utilities Board of the City of Albertville, Alabama
New Prague Utilities, Minnesota
Northern Wasco County People's Utility District, Oregon
Orrville Utilities, Ohio
Owensboro Municipal Utilities, Kentucky
Rice Lake Utilities, Wisconsin
City Utilities Richland Center, Wisconsin
City of Rock Falls Electric Utilities, Illinois
Town of Smithfield, North Carolina
Truckee Donner Public Utility District, California
Tullahoma Utilities Authority, Tennessee
Two Rivers Utilities, Wisconsin
Wake Forest Power, North Carolina
Wisconsin Rapids Water Works & Lighting Commission, Wisconsin

GOLD

Borough of Ephrata, Pennsylvania
City of Cartersville Electric System, Georgia
Columbia Water and Light, Missouri
City of Gastonia, North Carolina
City of Harrisonville Electric Department, Missouri
City of Monett Electric Department, Missouri
City of Seaford, Delaware
City of Shelby Electric Department, North Carolina
City of Wapakoneta, Ohio
Georgetown Municipal Light Department, Massachusetts
Greenwood Commissioners of Public Works, South Carolina
Kaysville City Power and Light, Utah
Kerrville Public Utility Board, Texas
Lewes Board of Public Works, Delaware
Newnan Utilities, Georgia
Orangeburg Department of Public Utilities, South Carolina
Paris Board of Public Utilities, Tennessee
River Falls Municipal Utilities, Wisconsin
Village of Westfield Electric Department, New York
Wakefield Municipal Gas and Light Dept, Massachusetts
Waverly Utilities, Iowa



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