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PUBLIC POWER MAGAZINE

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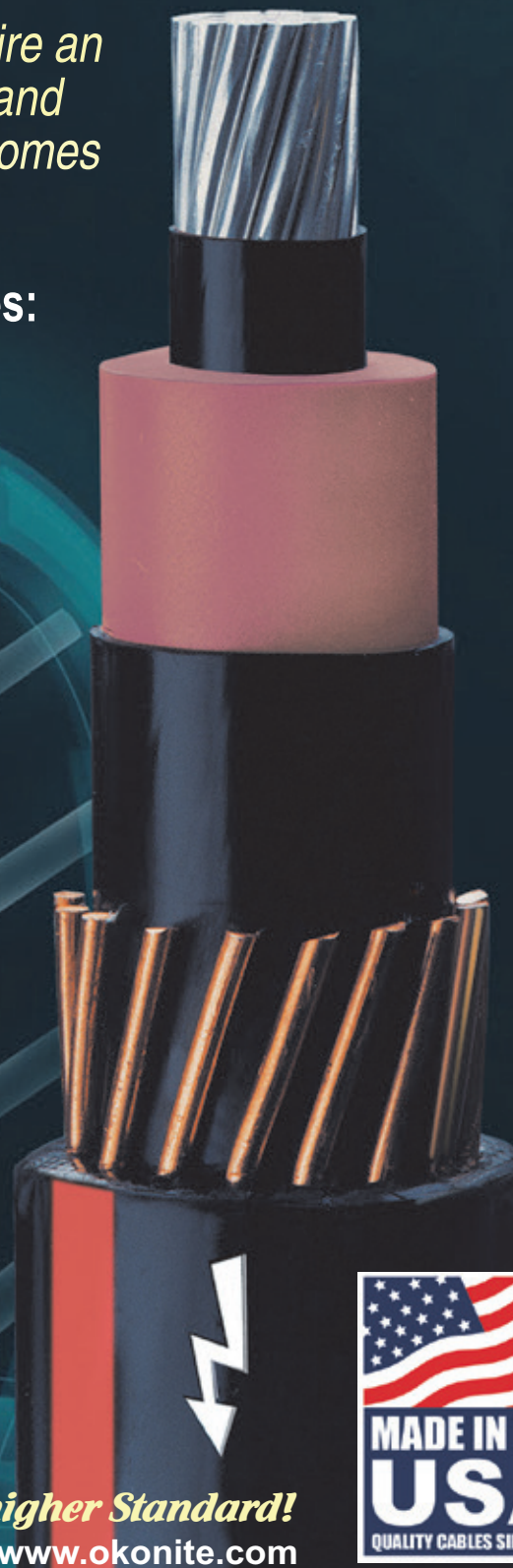
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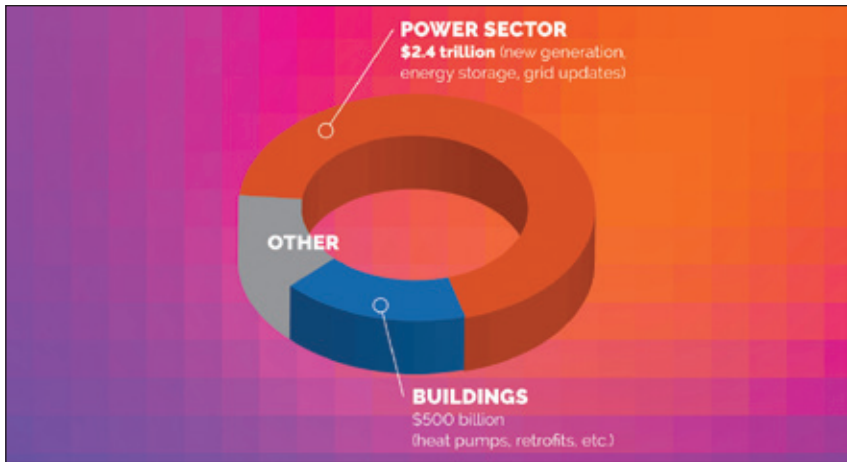
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The American Public Power Association is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. We advocate before the federal government to protect the interests of the more than 49 million customers that public power utilities serve, and the 93,000 people they employ. Our association offers expertise on electricity policy, technology, trends, training, and operations. We empower members to strengthen their communities by providing superior service, engaging citizens, and instilling pride in community-owned power.

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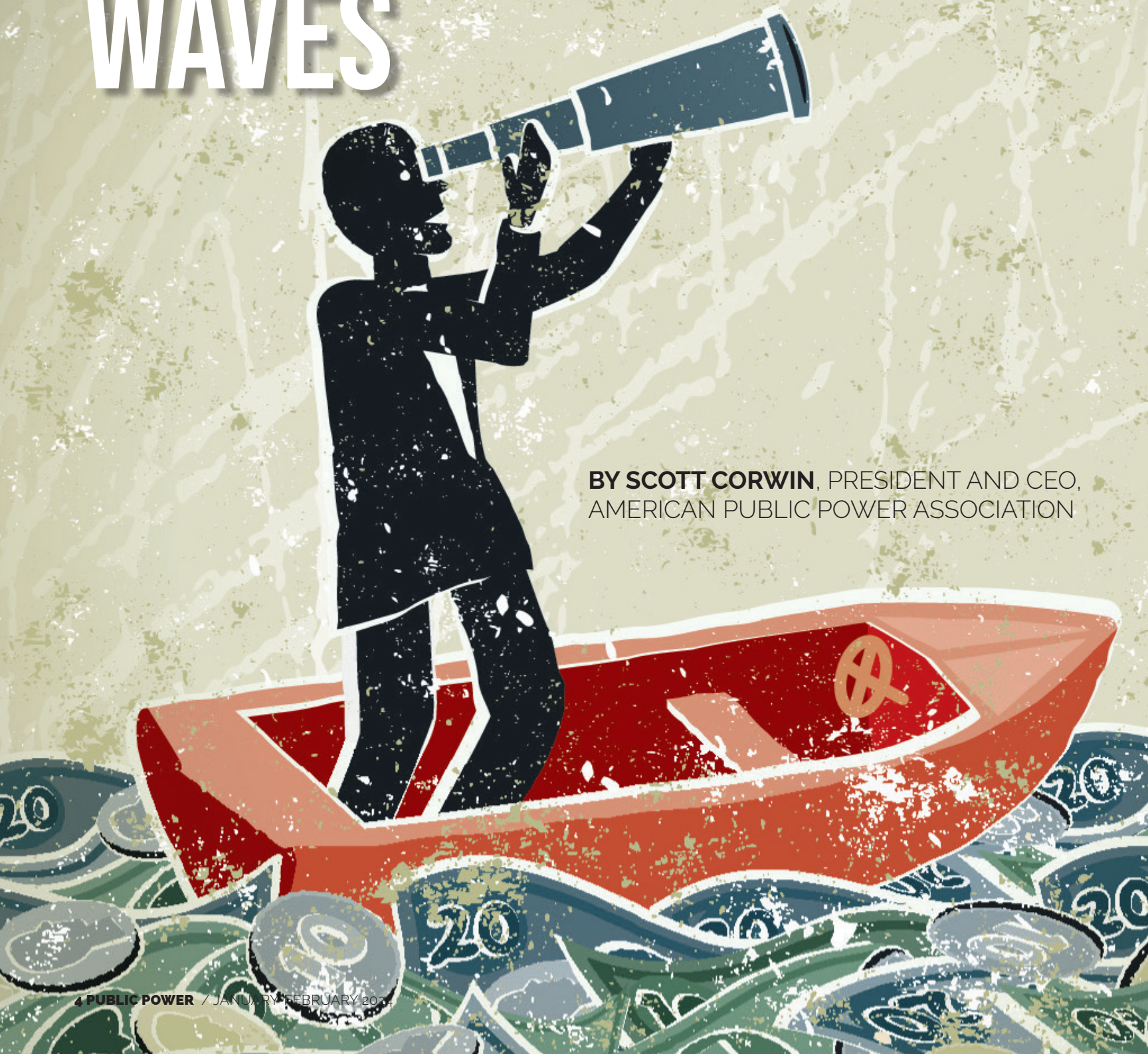
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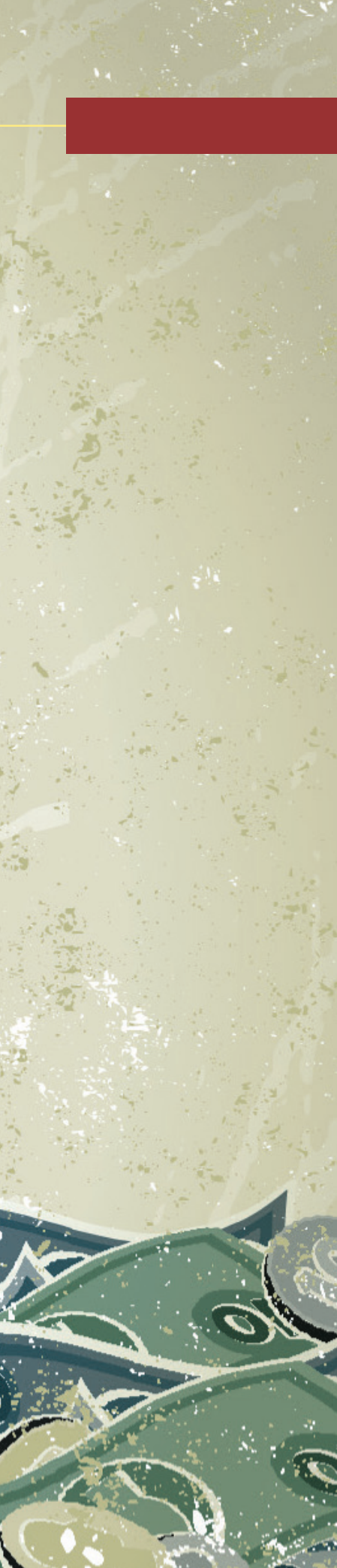
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RIDING THE ECONOMIC WAVES

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





In late January 2024, strong winter storms are battering many parts of the country, supply lines and shipping channels for critical commodities are threatened, a short-term budget deal is keeping the federal government functioning, and another rollicking presidential primary season is in full swing. Many economists see GDP growth tapering for 2024 as inflation, consumer spending, and hiring slow just enough to allow the soft landing targeted by the Federal Reserve. Seemingly immune to other forces, the magnificent seven technology-related stocks continue to outperform, including Nvidia up 233% from this time last year on a wave of investment in artificial intelligence.

Community-owned electric utilities adjust to the ups and downs of this sea of economic inputs in various ways. This issue focuses on some of the trends and elements that enable public power to consistently add economic value to the communities we serve.

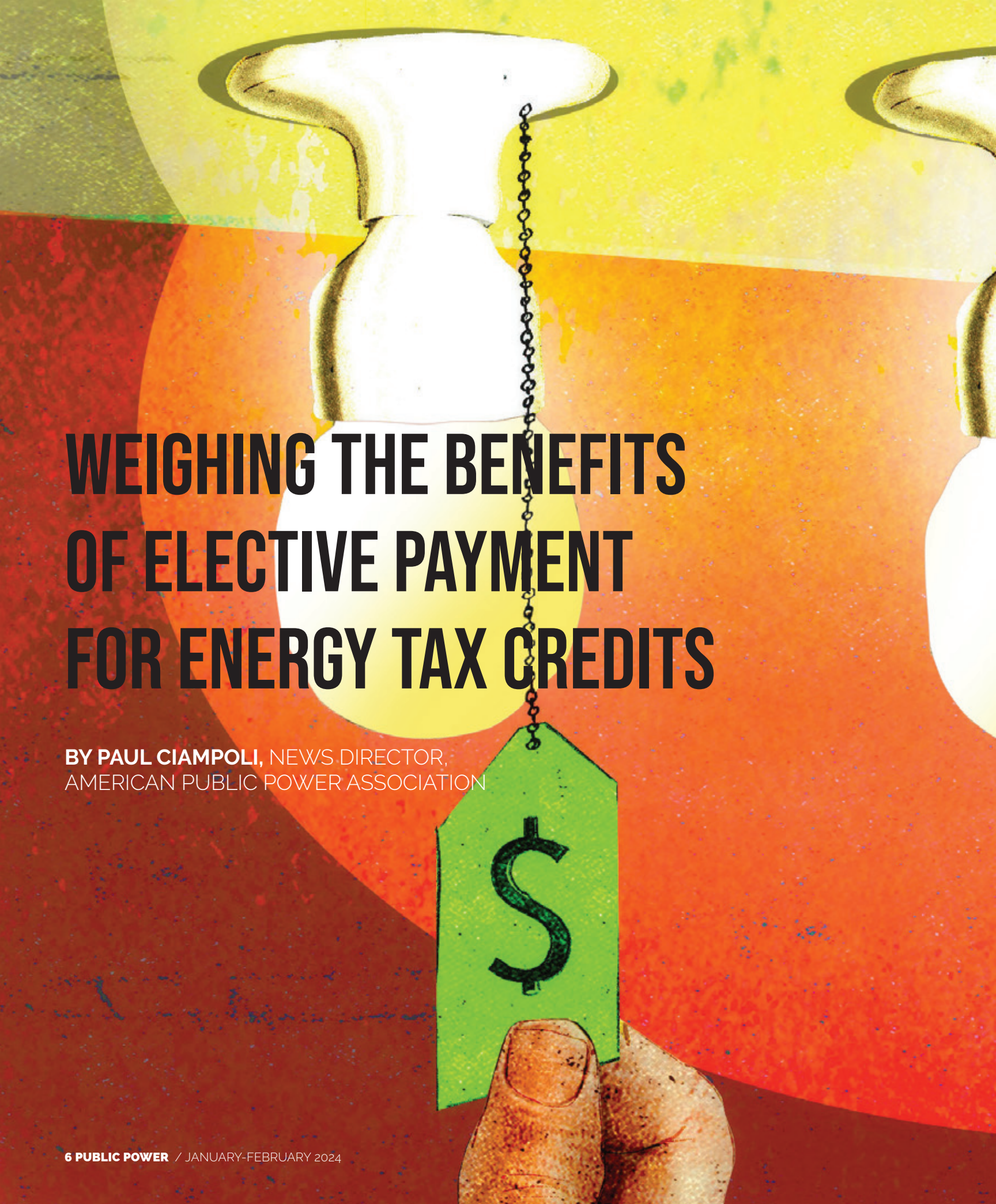
The utility sector will continue to face what Jim Robb, CEO of the North American Electric Reliability Corp., called a “hyper-complex risk environment” at our recent Joint Action Conference. He was referring to the combination of federal and state policies, the rapidly changing resource mix, extreme weather complexities, and a landscape of other cyber and physical security threats.

The same technological heyday fueling the magnificent seven creates electricity demand that will stress the balance of reliability, affordability, and transition to new generation with less capacity to balance system operations. In addition, while national supply chain constraints have generally improved, the energy sector continues to have long lead times for order fulfillment of key components like transformers.

These issues directly impact the economics of our industry and remain front and center in our advocacy, training, and technical services at APPA. At the Legislative Rally in February, member delegations will be armed with timely points to make the case for policies like ending the specter of sequestration of Build America Bonds and elective pay tax credits, stopping regulations that could compound the transformer shortage, streamlining permitting processes to enable key infrastructure investments, and protecting existing infrastructure like hydropower projects that provide much-needed clean, economic, dispatchable electricity.

Closer to home, local governance helps community-owned utilities create strategies to address economic risk and add value where it matters most. This issue includes some poignant examples of how to add and showcase a utility’s value. You can also beef up your knowledge on the value of public power on our website, where there are specific pages detailing the steps to take when buyout/sellout proposals arise or when communities are considering forming a new public power utility. We are updating and refining these tools to make them easier for members to use, and a free on-demand series called Public Power 101 describes how the industry evolution is impacting public power and the basics of how we provide reliable, affordable power and enhance economic development.

There is a good story to tell about how we are successfully riding today’s economic waves. Please let us know how we can further help you to tell this story in D.C. or in your home community.



WEIGHING THE BENEFITS OF ELECTIVE PAYMENT FOR ENERGY TAX CREDITS

BY PAUL CIAMPOLI, NEWS DIRECTOR,
AMERICAN PUBLIC POWER ASSOCIATION





Elective payment of energy tax credits could be transformational for public power utilities wanting to own wind, solar, storage, geothermal and other projects.

The elective payment mechanism was created as part of an expansion and extension of existing energy tax credits by the Inflation Reduction Act of 2022 and has the potential to offer benefits for public power utilities and joint action agencies interested in the development of renewable energy, storage, carbon capture, and electric vehicle projects. These benefits include savings for customers, more funds to make further investments, and operational control of assets previously obtained primarily through power purchase agreements.

Historically, tax-exempt entities, including public power utilities, could not directly benefit from energy tax credits for facilities they owned. Instead, public power utilities have indirectly benefited from such credits by entering long-term agreements, such as a power purchase agreement, with taxable entities that can claim these credits. Elective payment will allow a public power utility to claim these credits when they directly own eligible assets. However, the American Public Power Association has warned that how Treasury and the Internal Revenue Service implement elective payment could determine its success or failure.

While some aspects of implementation continue to be developed, here is a snapshot of how different public power entities are weighing whether to tap into the value of elective pay for planned projects.

Maximizing Benefits

The Indiana Municipal Power Agency has multiple solar park projects that help serve the joint action agency's 61 member cities across Indiana and Ohio. From 2015 through 2022, Jack Alvey, President and CEO of IMPA, said that the agency worked with a third party to receive a portion of the benefits available from the federal government to taxable entities for the solar park projects.

"Those deals were structured such that we would receive half of all of the benefits available to the taxable entity," he said. The deals were complicated and required many different contracts, which also included the option for repurchase of the sites at a certain date.

IMPA entered the third party power purchase arrangements because elective payment was not an option until 2023.

Alvey noted ways the agency maximized the benefits to member communities for its solar program through the PPAs. "We wanted to make sure the solar parks were located in our member communities to keep the benefits local to our member communities as opposed to the solar park being built elsewhere and IMPA paying for and receiving the power and energy. We wanted to keep the personal property taxes we pay local and to have the local presence and visibility of the solar," Alvey said.

Now, due to the elective pay option, IMPA is looking to directly own, from the outset, the solar park projects it is developing.

The elective pay provisions "should both simplify the development phase by eliminating all third party negotiations and documents and deliver more savings to us by not having to share the benefits with a third party," Alvey noted.

"It is also a better use of federal dollars. Instead of diverting a substantial portion of the credit to a third-party, whose only reason to be in the deal is to monetize the tax credits, the elective pay credit is now being passed along as a benefit to our members and their customers," Alvey said.

As for how IMPA expects elective pay credits to help save IMPA money on the solar parks it is planning to develop, Alvey listed the following:

- Increased portion of the tax credits to be received;
- Decreased staff time structuring and managing deals with third parties; and
- Decreased time to negotiate the fair market value for re-purchase and no re-purchase cost risk at the time of the buyback option.

"Overall, we see elective pay provisions requiring fewer internal resources and time for our solar project developments. We do foresee it

WEIGHING THE BENEFITS OF ELECTIVE PAYMENT FOR ENERGY TAX CREDITS



“We wanted to keep the personal property taxes we pay local and to have the local presence and visibility of the solar.”

JACK ALVEY,
PRESIDENT AND CEO, INDIANA MUNICIPAL POWER AGENCY

requiring additional outside tax review to ensure compliance as we enter this program from a new direction with direct pay,” he said.

“In the past, we still were determined to add additional solar to our portfolio because it is a low-cost source of energy,” said Alvey. “But if federal dollars are going to solar installations, our customers should get the benefit of their tax dollars like any other project.”

Alvey also provided insight into what else public power utilities should keep in mind when weighing whether to pursue projects that would use the elective pay credits.

“With the expected increased benefits, there is also additional time required to research and comply with all of the new rules,” he said. “Regulatory guidance has been very slow in coming, but it is vital to understand and comply with the elective pay regulations. Failure to follow prevailing wage or domestic content requirements can severely limit or even eliminate the credits available.”

Increasing Accountability

Terry Crowley, Utility Director for the City of Healdsburg, California, also weighed in on the key factors driving whether to pursue direct ownership or enter into a power purchase agreement for a project.

Crowley noted that historically, public power utilities couldn’t gain access to tax credits for renewable energy projects.

“[O]ur only option was to contract with a for-profit, third party to develop new renewable resources. Under the elective pay option, we are now able to shop the financing of the project and gain significant savings for our customers,” Crowley said. “This allows us to better support our goals of providing both affordable and clean energy.”

The public power utility is looking at potentially using the elective payment option to secure energy credits for projects including a new solar

facility, to develop hydrogen at an existing natural gas facility, and for adding battery storage at an existing solar project.

Crowley said that regardless of a PPA or elective pay arrangement, “any entity can either staff-up and provide those local jobs or choose to contract for ongoing monitoring and maintenance. Largely the need for staffing is determined by type of generation. Once built, solar and battery storage don’t require a lot of ongoing staff time. Other types of renewable generation will create additional, ongoing jobs which is always a plus for the local economy.”

“In the past, we understood there would be some sharing of the tax credit, but to what extent is largely unknown,” said Crowley. “For Healdsburg, we expect elective pay to reduce renewable energy costs by as much as 20% versus traditional PPA contracts,” he said. “Also, ownership of the project provides additional security in maintenance and operation of the plant. With a PPA, the third-party owner makes the decisions on maintenance, operations, and the sale of the project to other, unknown third parties after the tax benefits expire.”

As for what else public power utilities should be aware of when weighing whether to pursue projects that would use the elective pay credits, Crowley noted that the rules and guidelines around elective pay credits “are in their infancy and actual implementation is not well understood.”

He said that this “provides uncertainty regarding joint power agencies owning and operating a project on behalf of several smaller public power entities and will likely delay some projects. Also, rules around bonus payments for certain types of projects (low-income, prevailing wage, apprenticeships, etc.) need to be well understood to maximize the benefits.”

This is where public power’s “long-term relationship with federal policymakers can help assure the intentions and functionality of elective-pay are met,” Crowley said.



“The ability to access direct pay will hopefully put us back on our traditional path of ownership and lower costs.”

GREG FRITZ,

CEO, NORTH IOWA MUNICIPAL ELECTRIC COOPERATIVE ASSOCIATION

A Return to Tradition

“Traditionally we have owned the generation and transmission assets needed to serve our members so another party has not been earning a ‘return’ on those assets, which helps keep our power supply costs lower,” said Greg Fritz, CEO of the North Iowa Municipal Electric Cooperative Association.

“With the inability to access various tax credits our best option was to enter into PPAs with private entities that developed the projects,” he added. “While the projects have been favorably priced, someone is earning a return on their investment and we are paying for it,” he said.

The joint action agency is now weighing whether to directly own or enter PPAs for solar projects in each of its 13 member communities.

Fritz said the key factors that drive whether a project should pursue direct ownership or a third-party PPA include “the size of the project, location, transmission/interconnection issues, staffing, and financing related issues” such as cost of debt and debt service coverage.

“Ongoing project operation after construction, particularly staffing and maintenance, is a major concern for us,” he said.

With respect to how the joint action agency expects elective pay credits to help save money on renewable energy projects that the joint action agency is planning to develop, “We are exploring options for development of solar projects and the ability to access direct pay will hopefully put us back on our traditional path of ownership and lower costs,” he said.

As for what else public power utilities and joint action agencies should consider and pay attention to when weighing whether to pursue projects that would use the elective pay credits, Fritz said, “Long-term reliability of the projects is another concern for us. While companies may provide a warranty of 10, 20, or 25 years, will they still be in business 5 years from now? What will long term [operating and maintenance] costs be?”

Factoring All Costs

“Not being able to utilize any federal tax credits has pushed every in-town [distributed generation] project to date into the third-party PPA model,” shared Clint Allen, Assistant Utility Director for the Town of Danvers Electric Division in Massachusetts. For Danvers, he said these types of agreements have historically inflated the dollar per kilowatt-hour cost for the project 40-50%.

The public power utility is currently pursuing several solar projects, including at its schools and at a landfill.

“The primary factor is total project cost. We look at the expected energy production vs. equipment lifetime and determine the average unit cost per [kilowatt-hour],” he said. “When assessing an ownership model, we factor in maintenance costs and any [payment in lieu of tax] payments into the formula. The objective is to have a direct comparison on total energy cost that we can use to make a business decision.”

Allen noted that Danvers is in the process of developing a 3-5 MW ground mount solar array. “With the now available federal tax credit, our preliminary analysis shows the ownership model may be competitive with the third party PPA,” he said. “The biggest variable is the total lifetime cost of ownership factoring in maintenance and replacement costs.”

“In my experience, the elective pay credits may put the initial construction costs below a competitive PPA. However, when you factor in panel/battery replacement and annual repair and refresh, the third party PPA may still come in at a better project lifetime energy cost,” he said.



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SHARING AND PROTECTING THE VALUE OF PUBLIC POWER

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





The value of a utility isn't just in the sum of its equipment and assets. Especially for public power utilities, the value is gained through how it supports its community in ensuring rates are affordable and equitable, reliable service doesn't interrupt economic potential and opportunities, and that locally made decisions reflect the best interests of the community.

Despite the many ways public power provides value to the communities served, this true value is not often recognized, especially when it isn't pointed out. Public power utility leaders need to ensure that their communities see the value of the utility as it is embedded throughout the community, not just its potential dollar value. Many public power utilities are making the effort to ensure their communities understand the value the utility brings, whether in pushing back against a buyout threat, spreading awareness, or reminding customers of the reasons to protect what they have.

Assets and Value

With their backs against a proverbial wall, city council members can start seeing potential price tags on any city asset — and overlook the long-term ramifications of a sale.

In Massachusetts, the Merrimac Municipal Light Department had to quickly pull together the numbers behind these distinctions when it faced a sudden proposal from the town's Board of Selectmen to consider selling the utility. Mary Usovicz, Merrimac Light's general manager, said the topic likely arose on the board's agenda as a potential way to increase funds for the town.

The board brought up the consideration of selling the department at its meeting in late March 2023, proposing to add the article to sell to be voted on in its April meeting, less than one month away.

Given the short turnaround to address the sale, the message about the value of the utility to the town needed to get out quickly to drum up support. Right away, Usovicz called Energy New England, a regional electric cooperative, which includes Merrimac Light Department. Energy New England brought in support from the Northeast Public Power Association and the Municipal Electric Association of Massachusetts. The leadership of these entities joined with Usovicz and the Merrimac Light union leadership to develop a detailed response. Campaign activities, which could not be directly from the utility, included the utility's commissioners sending a letter to all customers and a local union chapter helping to create and distribute lawn signs and door hangers to customers, among other materials. The materials pulled in key data, such as comparing rates and reliability indices between Merrimac Light and the neighboring investor-owned utility. Materials also explained how customers could participate in the board meeting to oppose the sale.

More than 1,000 people — out of a population of under 7,000 — came to the meeting to show their support for keeping ownership of the utility. The vote tally was 782 opposed to six in favor of the sale, and the measure was dropped.

Another key piece of educating about the utility's value came in helping the board to better understand the nature of the utility's financial position and potential value to the town. This involved getting a third-party evaluation, which helped clear up misconceptions about how any funds from a sale could be allocated to the town and what agreements and costs would change under a different ownership model. The evaluation helped show that while the utility held a strong financial position

SHARING AND PROTECTING THE VALUE OF PUBLIC POWER

and consisted of high-value assets, by state law, most of any cash value from the sale would revert back to ratepayers, not to the city. The assessment also helped explain how the nature of offering the utility for sale would position it to be available at a discount to any buyer.

“They would buy us if it’s a fire sale, but their system might not integrate. They are buying an asset that might not be worth anything to them,” said Usovicz. If a sale had been allowed to go through, then the main value to the buyer, whether an IOU or another private entity, would be cracking open the door to allow for more buyouts, she cautioned.

“We’re a small [municipal light plant], but we are fighting the long-term threat. All you need to have is one example... It would be a crack in the foundation that could grow,” she said.

“We’re a small [municipal light plant], but we are fighting the long-term threat. All you need to have is one example... It would be a crack in the foundation that could grow.”

MARY USOVICZ
GENERAL MANAGER,
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Usovicz credits having established dedicated communication channels for the utility, including a website and social media accounts, as being helpful in getting the message out. She noted that it could have set up a tough situation if the department had to rely on other city channels to connect with customers.

“The fact that we had built our own followers, our own website... it made it so people could reach us and ask questions,” she said.

She stressed that having separate communication channels isn’t just important when facing a potential sale but is increasingly helpful to communities who have lost other forms of local news, such as city papers that have stopped circulation in recent years.

Changing how utilities communicate with their customers isn’t about creating more work, but about aligning and updating utility roles with modern realities, said Usovicz. What used to maybe be a contribution to a bill stuffer or newsletter is now what becomes a slider on your website or a blog post, she gave as examples.

The experience pushed Usovicz to consider how to engage with the community more often. In addition to continuing to post to a blog and using the utility’s channels to share information and gratitude for customers’ support, Usovicz said Merrimac Light now holds a vote for customers to select electrification projects for local nonprofits to get funded each

year. The department has long had funding allocated for such projects, but now customers can take an active part in the process, which also reminds them of the department’s continued investment in the community.

Honoring the Legacy

On March 18, 1895, the city of Elberton, Georgia held an election to decide whether to put in power for lighting the street. The measure passed 318 to nothing.

“There is basically nothing we have accomplished, whether domestically, economic development wise, or culturally, that would have happened had we not made that brave decision,” said Daniel Graves, Elberton’s mayor. “It was a public choice — a unanimous choice of a visionary people. We saw the future ahead of us and had the courage to reach out and grab it. It put us on a path to where we are today.”

Today, Elberton is known as the granite capital of the world and produces a significant portion of memorial headstones globally — about two-thirds, according to Graves. The industry is electricity-intensive, as it relies on various machinery including electric compressors, pumps, and saws.

SHARING AND PROTECTING THE VALUE OF PUBLIC POWER



“It relieves tax burdens for our citizens while providing an essential service at a discount rate.”

DANIEL GRAVES

MAYOR, ELBERTON, GEORGIA

He believes that visionary spirit continues to live on in Elberton, pointing to the development and expansion of high-speed internet service in the city. Such service, he said, helps in attracting new industrial and large business customers.

“While that’s not related to power directly, it is an offshoot of that same vision and is made possible because of the success that public power allowed us to venture into other areas,” he said.

Graves sees the indirect value of public power showing up in Elberton in many ways. As an example, he pointed to how any margins from the community-owned utility get immediately reinvested in the community to support everything from its police force and fire department to local athletics and nonprofits. He also credits the non-profit utility for staying ahead of system improvements and offering local jobs.

“It relieves tax burdens for our citizens while providing an essential service at a discount rate,” said Graves.

Elberton makes a point to celebrate Public Power Week each fall and makes sure that the utility is represented as a supporter on community service projects to maintain positive visibility across the community. Still, Graves acknowledged that it is difficult to keep the message of what public power means in front of the community.

“When things move smoothly and work well, when your reliability is world class, it’s inevitable that people just assume that’s the way it is,” said Graves. “When you’re talking about electricity and rates, these things are not real attention-getters. People will let you hide in the shadows and just do your job, as long as everything is going well.”

But, he said, public power utilities should make the effort to “toot their own horn a little bit,” to stay in front of the narrative and public sentiment about the utility.

As mayor, Graves has had numerous meetings with residents who are concerned about their utility bills. Residents have brought their bills to meetings with him, showing how their total amount to pay looks high compared to maybe a family member’s bill who lives outside of the city. This is primarily because the monthly bills in Elberton combine electric with other services, including water, sewer, and trash. He said he takes time to break down the bill and shows people how their electric rate compares to the rates of other providers across the state, which are publicly available on the Georgia Public Service Commission’s website.

“I have not had a single time that I haven’t been able to show the savings,” he said. And while he recognizes that residents are more concerned with how to pay the bill than how it is calculated, he noted that residents often “leave with a better understanding and appreciation for what they do in fact have.”

As a member of the Municipal Electric Association of Georgia, or MEAG, he and utility staff can also access data in real-time about how much power the city is using, how much energy it is selling and for how much, and what types of sources are comprising the fuel mix. He has found sharing this data has become more helpful in talking with prospective industrial and business customers in recent years.

“If you want to compete for modern industrial prospects, then the types and sources of electricity you are able to provide are a key factor,” he said. “If they’re really going to build a factory here, then we have to provide them with sustainable, non-carbon emitting sources of power.”

“One thing people don’t realize about our cities is that we were non-emitting before non-emitting was a thing,” he shared, in reference to the combined membership of MEAG. “We were over 60% non-emitting last year.”

Graves advised other public power utilities to extend awareness of what community ownership means, and its uniqueness, to the public.

“I’d encourage all public power utilities to learn about their story and be proud of it, own it. Pull your old minute books, learn about those who had this vision,” he stressed. “If we don’t protect the vision we’ve inherited, nobody else will.”

SHARING AND PROTECTING THE VALUE OF PUBLIC POWER



Essential Awareness

A few years ago, the Oklahoma Municipal Power Authority noticed a concerning result in its biannual survey of customers in its member cities: customers weren't aware that their utility was locally owned and operated.

To remedy this, OMPA decided to launch an awareness campaign, Our Local Power, that would not only help people realize that their utility is community-owned, but that would also showcase the different contributions its 43 members make to their communities. The campaign includes a suite of messages that members can use on social media or other outlets, including video testimonials about the value of public power to different types of residents. In Comanche, Oklahoma, a video interview with the individual that runs the city's recreational facilities spoke about how the utility provides power to local athletic fields at no charge.

Chuck Ralls, city manager for the City of Comanche, said the public power utility has been sure to use campaign materials in a customer appreciation event during Public Power Week, in local radio advertisements, and in branding prizes given out as part of an annual raffle.

Ralls said that the efforts has helped boost awareness of community ownership in Comanche by 60%.

Oklahoma doesn't collect property taxes, so Ralls said the municipalities are reliant on sales tax. For small towns like Comanche, which get very low sales taxes from the few local businesses, the utility's transfer to the general fund is imperative to cover other essential services, like the fire department and police.

"Without it, we would cease to exist. We would be a ghost town," said Ralls.

Ralls said that awareness efforts need to be continuous, especially in areas like Comanche, which is seeing a lot of new residents moving in from other states. "As the demographics continue to change, we have to continually market who we are and what we do. [Customers] just don't know," he noted.

While high-visibility events and activities help, Ralls said it also helps to be able to tout the utility's reliability against its neighboring IOUs, and reminding customers that local ownership correlates with higher reliability.

"We have a chain of grocery stores from across the state, and the response time and reliability is much lower in IOU territory. Whereas if we go out, we're back up within an hour or two. Businesses recognize that local power... [means] we respond in a timely manner," he said.

Utility messages also distinguish public power from cooperatives, which some customers might be familiar with.

“Without it, we would cease to exist. We would be a ghost town.”

CHUCK RALLS

CITY MANAGER, CITY OF
COMANCHE, OKLAHOMA

Reinforcing Accountability

Ralls noted that utilities need to keep adapting along with technology and available methods of communication. Like Merrimac, Comanche’s local news outlets are limited, which is why Ralls said the utility focuses on radio ads for now, and is exploring other opportunities, like geofencing. He’s seeing reduced engagement on the utility’s Facebook account, and more in other social channels, like Instagram. The city also put in a public electric vehicle charger that is branded with the Our Local Power campaign.

While the channel might change, “the message is going to stay consistent — the value of ownership. That they have control over what the utility does,” added Ralls.

“A lot of companies pay experts thousands of dollars to gauge public sentiment concerning their utility. We have a pretty darn impactful community satisfaction survey every two years — it’s called an election,” said Graves.

With the elections, whether for his position as mayor or for council members, “there is nothing between our actions and the people,” said Graves. “We are directly accountable to our citizens on decisions we make on our power.”



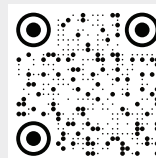
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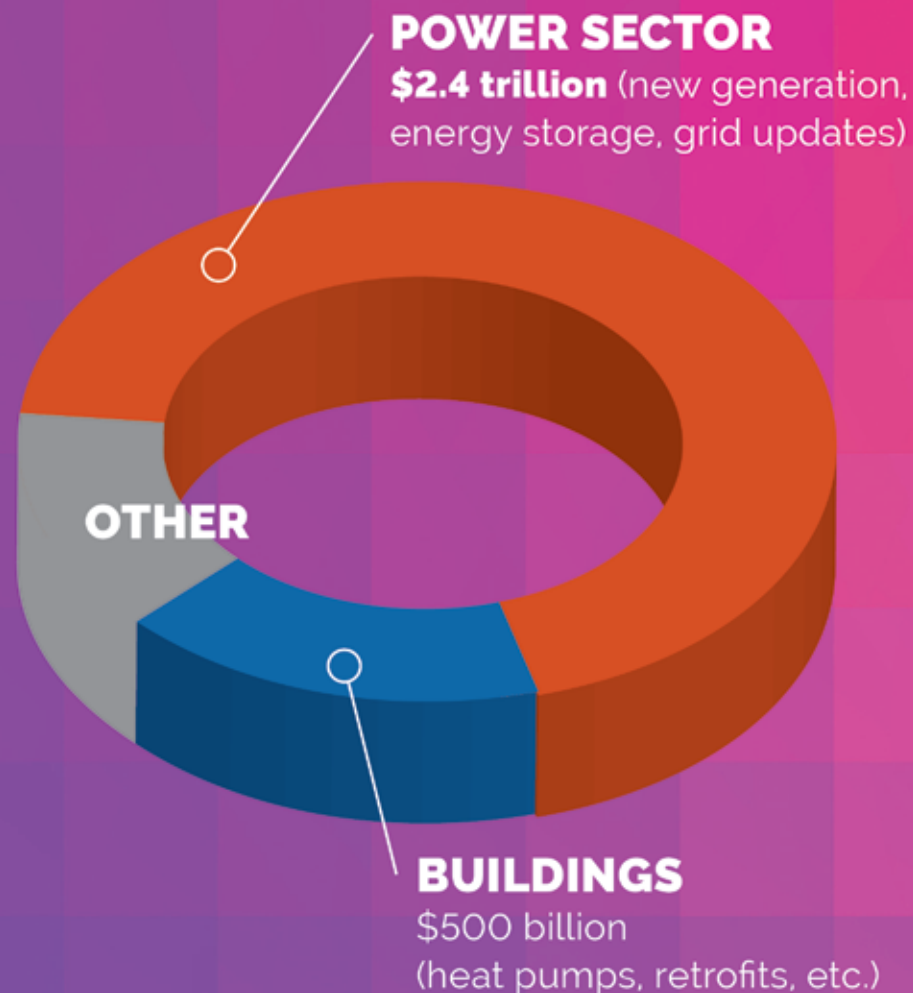


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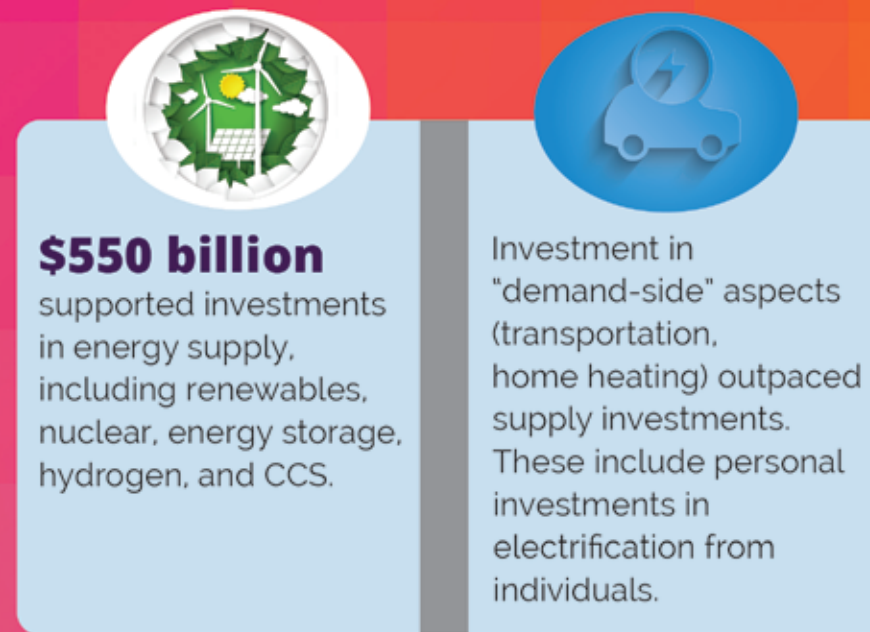
As efforts to move electricity generation to cleaner resources continue, there is no denying the heavy capital investment required — between **\$3.5 trillion and \$4.5 trillion** per year globally — to achieve a zero-carbon economy by 2050.^{i,ii} This cost is being borne across various industries, public and private funds, and individuals.



High-income countries, including the U.S., will require **\$1.4 trillion** in annual investments economy-wide through 2050.

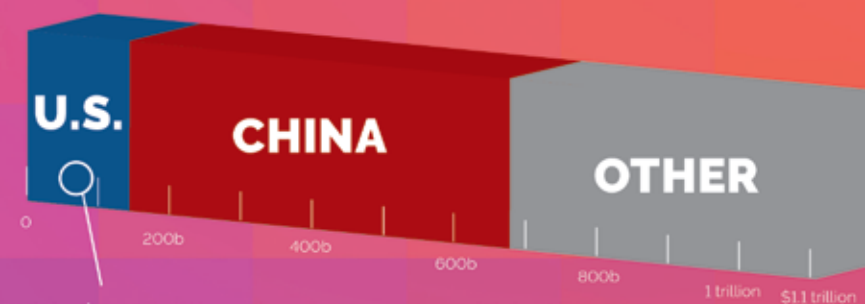
Where We Are Now

Bloomberg NEF estimated investments in the global transition topped **\$1.1 trillion** in 2022.



Plus, an additional **\$274 billion** into power grids.

Global Investments in 2022

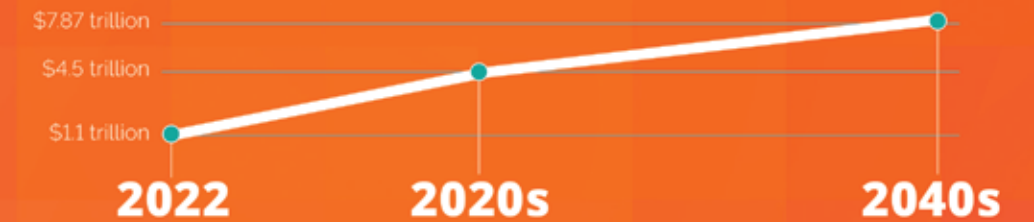


With \$141 billion, investments within the U.S. made up 12.7% of the 2022 total.

This investment is up **\$261 billion** from 2021 and more than double the 2019 total.

What's Needed

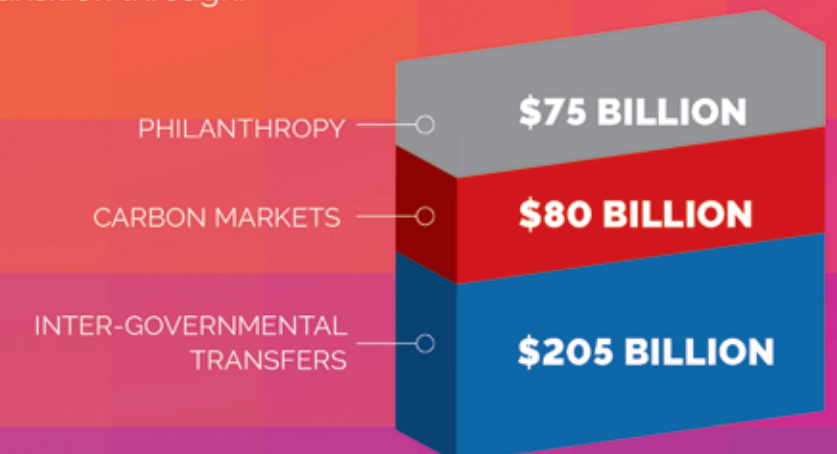
To reach 2050 net zero goals, BNEF forecasts that **total annual global investments need to more than triple through 2030**, at \$4.5 trillion, and peak in the 2040s with \$7.87 trillion per year.



The majority of the added investments need to occur in electrified transport

Renewable energy and electric grid investments surpass \$2 trillion annually through 2050

The Energy Transitions Commission suggested that \$300 billion per year through 2050 could be raised to support the transition through:



Sources:

i Financing the Transition: How to Make the Money Flow for a Net-Zero Economy. Energy Transitions Commission. March 2023.

ii Energy Transition Investment Trends 2023. BloombergNEF. January 2023.



Demand Response **Are Residential Customers** **Ready to Participate?**

BY BETSY LOEFF, CONTRIBUTING WRITER



DEMAND RESPONSE

Demand response programs that incentivize customers to reduce load or shift load usage to off-peak hours can help utilities balance the grid with fast-ramping flexibility and defer system investments. The catch is this: Utilities can't implement demand response plans alone. Customers must participate, but will they? Utility professionals say customers will play their part, and there are proven ways to boost participation.

Baking It Into the Rate

Ava Community Energy, a community choice aggregation organization in northern California, supplies clean power to 683,000 customers, and its 615,000 residential customers were moved to time-of-use rates in 2021. This opt-out option follows the format imposed on the Golden State's three biggest investor-owned utilities, which were mandated by the state to move all residential customers into TOU rates by 2019. Today, 70% of Ava's residential customers remain on the TOU rate.

JP Ross, vice president of local development, electrification and innovation, said this is because people in the communities he serves are environmentally conscious and savvy about time-based rates, but other demand response

rates are more complicated and less likely to gain traction.

For instance, the CCA piloted commercial critical peak pricing in 2019, where Ava Community Energy paid customers to reduce load up to eight days per year. "It had limited participation, and it's hard to baseline a customer's responsiveness to those programs," Ross explained. "We did not continue that program."

The CCA also is now looking at real-time pricing as an option, and Ross expects it to appeal more to aggregators or commercial customers than residential ones. It could, however, be paired with things like Nest thermostats that could automatically respond to shifts in wholesale power costs.



ARE RESIDENTIAL CUSTOMERS READY TO PARTICIPATE?

Taking a Load Off

A Nest thermostat program that supports peak load shedding has been a winner for the Electric Division of Westerville, Ohio. Utility Director Chris Monacelli explained that the program incentivizes customers with a one-time rebate to enroll. The program sends a pre-cooling prompt to thermostats when summer temperatures are expected to spike demand. That allows the public power utility to cycle thermostats and household cooling off during peak events.

"We have over 1,000 of our 15,000 residential customers enrolled in this program," Monacelli said. "It nets us more than a megawatt of peak reduction during each event, and that's almost 1% of our peak consumption. That's fantastic for a program like this."

Similar programs are available to members of Massachusetts Municipal Wholesale Electric Company, a joint action agency. At Shrewsbury Electric & Cable Operations, for example, 1.56% of the utility's 16,000 accounts are enrolled in MMWEC's Connected Homes program, which can call a peak event and shed load of connected devices up to five times per month.

The program allows customers to bring their own smart thermostats, water heaters, electric vehicle chargers, mini-split controllers, or batteries, explained Kate Roy, MMWEC director of communications and external affairs. Many enrolled customers have more than one device connected, and Roy said customers have the chance to opt out of each event by responding to a text or email with an opt-out button in it.

"If you provide a customer only upfront incentive and then they opt out later on, you have no recourse."

JP ROSS

VICE PRESIDENT OF LOCAL DEVELOPMENT, AVA COMMUNITY ENERGY, CALIFORNIA



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DEMAND RESPONSE

“More than 70% participate in a given event under normal circumstances,” noted Zoe Eckert, senior manager of sustainable energy programs and policy for MMWEC. “Those who sign up are interested in receiving the incentives. To do so, they need to participate in all events in a given month.”

Results in Shrewsbury are particularly high. With 251 households participating in a smart devices program, the utility shed 493 kilowatts per event — saving about \$91,000 in 2023 — and avoided 4.5 tons of carbon emissions. In turn, customers received \$5,895 in direct incentives.

New Technology, New Behaviors

Although Monacelli noted that some people still feel somewhat uncomfortable about handing off control of a home device to the utility, Rebecca Keane, Shrewsbury’s director of integrated resources and customer experience, sees some of that apprehension declining. “When I started in this field, there was a lot of mistrust of direct load control and allowing utilities into the home. I don’t see it as much anymore,” she said. Rather, she’s hearing concerns from people in her Massachusetts town about the performance of new technology, such as heat pumps in cold weather.

Chris Roy, general manager of MMWEC, said it’s important to educate customers, and one theme his team drives home is that things like EVs and heat pumps are “superior technology” that can help consumers save in ways beyond energy use.

“Adapting to range differences with an EV is an adjustment, but at the same time, you’re not going to gas stations. There are savings there. And you don’t have spark plugs or oil changes. The only time I bring my EV to a garage is for the mandatory state inspection,” he said.

New England households still have a lot of oil-based furnaces, Roy added. “With a heat pump, you just set it, and it runs,” he continued. “You’re not on a maintenance plan. You don’t have to buy supplemental heat insurance to cover spills and fires.”

In Ohio, Westerville gets nearly 100% compliance with Power Up, its EV-charging program designed to get EV owners to charge their vehicles during off-peak hours. “We offer an incentive of \$300 upfront as well as \$0.04 off per kilowatt-hour for customers to charge at night,” Monacelli said. “We estimate we’ve got about 400 EVs in our footprint, 129 applications in that program, and more than 50 enrolled. That saves us another half a megawatt in reduction right there.”

That’s impressive for a demand response program that happens daily. So is Ava Energy’s two-year-old Resilient Home program, which is available to residential customers with solar plus storage installations. “The vast majority of our 60,000 residential PV solar systems installed

“Consumers expect their utility to tell them where they can save energy and money.”

JASON MCGRADY

DEPUTY DIRECTOR, SMART ENERGY
CONSUMER COLLABORATIVE

are standalone solar,” Ross said. Still, the CCA now has 1,200 residential solar plus storage systems participating in a virtual power plant that leverages household storage four hours a day, every day.

Ross noted that participation remains high, but the CCA is still looking to change the incentive from one that pays once upfront to one that pays for ongoing participation. “If you provide a customer only upfront incentive and then they opt out later on, you have no recourse,” he said.

A Helpful Nudge

All of these programs indicate that customers who try demand response stick with it and deliver savings.

What about the customers who aren’t engaged yet? For utilities that want to bring customers into such programs, the Smart Energy Consumer Collaborative, a nonprofit research organization, has customer segmentation insights.

According to Jason McGrade, SECC deputy director, recent research shows a shift in consumers’ attention to environmental concerns. McGrade said the environment used to be a differentiation between customer segments, with some customers driven to demand response programs largely to help the planet. “It’s becoming table stakes for consumers now,” he added. “The vast majority of consumers have environmental concerns. Now the big motivators are related to technology and willingness to engage with the utility.”

SECC segments consumers into five buckets:

- Green pioneers represent what SECC calls “the sweet spot” for targeted demand response marketing. They understand the technology and have made the connection between their own electric usage and grid

ARE RESIDENTIAL CUSTOMERS READY TO PARTICIPATE?

impact. Among the segments, these are the top earners and top electricity consumers.

- Connected pragmatists are moderately tech-savvy but not concerned about the impact of their electricity usage. McGrade says hurdles exist in getting them engaged. One is that they tend to be young and renters. He also says they might not have awareness of utility programs, but they're a group worth cultivating, particularly with social media.
- Simply sustainable consumers would like to save energy, but they're technology averse.
- Trusting traditionalists understand the link between their energy use and the environment, but they don't realize what their utilities could offer. McGrade said traditionalists and sustainable consumers care about control and bill predictability, so they would likely respond to things like TOU rates. "These people would take part in direct behavioral changes," he explained. With them, traditional media, email, and bill inserts are good bets.
- Comfort seekers are motivated by home comfort but unlikely to engage with a utility or buy technology to shift energy use. "These are not necessarily the folks that you want to spend your marketing dollars targeting," McGrade noted.

A robust marketing effort is key.

MMWEC serves multiple utilities, and, Roy said, "We can see that utilities with proactive marketing get much higher participation levels than those that aren't marketing as actively."

"Customers like programs that help them save money," said Ross. "By and large, they're also not interested in spending a lot of time on managing their energy bills, which is why it's really important to have offerings out there that allow for low effort on the part of customers." He pointed to things like thermostat programs

"When I started in this field, there was a lot of mistrust of direct load control and allowing utilities into the home. I don't see it as much anymore."

REBECCA KEANE

DIRECTOR OF INTEGRATED
RESOURCES AND CUSTOMER
EXPERIENCE, SHREWSBURY
ELECTRIC & CABLE OPERATIONS,
MASSACHUSETTS

where the utility manages devices for the customers to help them reduce their energy bills.

Monacelli noted that Westerville highlights the added advantage of being a public power provider. "We tell people we're saving money and passing those savings on to customers."

Some utility leaders pointed out the parallels to how other companies turn marketing messages into a form of service. "Consumers get recommendations on Netflix and Amazon, so they're used to getting personalized suggestions from companies," McGrade said. "Consumers expect their utility to tell them where they can save energy and money."

So, go ahead: Give your customers a nudge.



Public Power Leaders: Bill Johnson



Bill Johnson has worked at the Kansas City Board of Public Utilities for more than 40 years. He began his career at KCBPU in an entry-level position and worked his way up, including directing KCBPU's Electric Operations & Technology division prior to being appointed general manager. Over his career, he has sponsored many large utility projects, including modernizing the BPU's electric infrastructure, and he has played a key role in introducing some of the utility's most advanced enterprise technology systems designed to improve utility operations. He is past president of Kansas Municipal Utilities, past president of the Kansas-Missouri chapter of the American Association of Blacks in Energy, and past board member of the Boys & Girls Club. He is a current board member for United Way of Greater Kansas City and a member of the American Public Power Association and the Rocky Mountain Electrical League. He received the distinguished Black Achievers Award from the Southern Christian Leadership Conference and the Black Man of Distinction Award from the Friends of Yates. Johnson earned an MBA from Ottawa University in 2007.

WHAT SKILLS FROM YOUR BACKGROUND IN OPERATIONS AND TECHNOLOGY DO YOU LEVERAGE IN YOUR ROLE?

I still leverage my operational background and knowledge to assist me with understanding the operations side of our business, be it electric transmission and distribution or generation. In my previous role, I managed the largest operations division at our utility. When I was offered the opportunity to manage our technology division, I was assigned additional administrative responsibilities to support the business side of our utility. Together, both areas of our utility assisted me with refining many of the skills I needed to better function later and in my current role as general manager.

HOW HAVE YOU SEEN THAT PUBLIC POWER HAS BENEFITED THE KANSAS CITY COMMUNITY?

Our community has benefited in ways beyond how I answer this question. As a public power town, our community enjoys rates that are lower than our investor-owned neighbors. KCBPU also reinvests into our community by supporting many nonprofit and other civic functions. We are intimately involved with assisting our community to help land many economic development projects that improve our citizens' quality of life. We also provide great jobs for our citizens and support to our city and county government.

WHAT KEY LESSONS HAVE YOU LEARNED FROM WORKING IN THIS SECTOR?

That many of the key decisions I make, along with those made by our board of directors, impact the lives of our customers. We should continue

to try to understand and focus on the needs of our customers. Our city today is far more diverse in many ways, and we need to continue to embrace that and ensure we are sensitive to all our customers' needs. Our customer base is also diverse, based on our rate classes. We have a near-equal split between residential, commercial, and industrial customers, and they all require services tailored to meet their needs.

Another thing I have learned is to not take anything for granted. Over the past four years, we have had to work our way through a pandemic, a downturn in the economy, supply chain issues, and inflationary issues that we have not seen for at least 40 years.

Finally, it is important to remember that we will always need to address any regulatory or legislative concerns that arise. The utility industry as a whole will have to work through environmental and social concerns in determining our strategy to sustain affordable and reliable public power for years to come.

WHAT CHALLENGES SHOULD PUBLIC POWER'S FUTURE LEADERS BE PREPARED TO FACE?

Future leaders should be prepared to deal with a world that will become less predictable. Everything we are confronted with today seems more complex, and changes happen more rapidly. Our customer base is quickly evolving, and their expectations of what their power company should provide are also changing. Customers of all types today want more options from their utility, and we need to pay attention to that. We continue to revisit our customer service programs to make sure we are addressing those customer needs.

We must also prepare for employees who will not necessarily work for one company as long as previous generations have. Our approach to recruiting has gotten harder, as the competition in our regional market now includes other businesses and industries seeking some of the same technical and professional talent that we recruit.

Finally, we will need to closely monitor how future customers and stakeholders want to receive information about our utility. With social media and the additional communication platforms that will be part of the future, we cannot risk losing touch with those we want to reach.



Affording Support for EV Charging

Public Power's Roles in Transportation Electrification

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



In 2023, nearly 8% of new light-duty vehicle sales in the U.S. were for electric-fueled models, and, according to Cox Automotive, the company behind Kelley Blue Book, that proportion is expected to exceed 10% in 2024. While consumers move out of the early adoption phase, the entities that are figuring out how to deploy the charging infrastructure — and meeting customer expectations — are still playing catch-up.

While not always the owners and developers of charging infrastructure, utilities are increasingly a key player in a positive charging experience. Utility roles include setting rate structures and incentives that support accessible and affordable public charging, advising charging infrastructure and fleet owners, and studying the local market and system impacts.

Timing and Pricing it Right

Many utilities express concern over the uncertainty of what to expect in terms of demand and load patterns as more of the transportation sector electrifies. Areas with higher adoption rates, such as Austin, Texas, have so far had few impacts on their systems, as most charging to date has come from drivers of light-duty vehicles charging at home. However, utilities are now requiring more effort to plan for charging as more public infrastructure gets developed.

Cameron Freberg, manager for the electric vehicles and emerging technologies team at Austin Energy, said that the city has more than 40,000 EVs. Through its public charging network, the public power utility has seen some usage patterns emerge, including that the peak demand from public charging usually occurs in mid to late morning, and has been minimal during Austin's traditional summer peak.

Part of what has helped Austin to offset any EV charging effects on the grid was a time-of-use program that incentivized residential customers to charge off peak, and a subscription program that allowed for unlimited charging on its network during off-peak periods. Moving forward, Freberg said Austin Energy plans to pivot to a more of a demand response-style program, where the utility can curtail residential EV charging during peaks if needed for customers enrolled.

The biggest change, said Freberg, is with third-party fast charging development. This could transform a parking lot customer, which maybe only used a few kilowatts for lighting, into a customer that could see demand of 10 to 15 megawatts with an array of fast chargers. Freberg said Austin Energy has heard from plenty of companies looking to own public charging infrastructure as well as fleet owners considering installing chargers.

The issue is with timing — while system planning teams might have a few years to figure out how to properly manage a large commercial building that would have a similar amount of demand, the timeline customers desire for installing EV charging can be much quicker.

Fortunately, Freberg said that some customers are engaging with the utility early on in their planning.

“That means the world to our distribution system planning teams to have that kind of information upfront,” he shared.

Freberg said Austin Energy now has a dedicated key accounts manager who works with EV charging companies to offer guidance and support and help level-set expectations on timing. The utility also helps prospective charging owners to understand the costs associated with setting up charging in different locations they might be hoping to acquire.

“They have to be looking at where there is electrical capacity available. [And asking,] am I going to be selecting sites where it is going to cost me three times as much to get the electrical installed as a mile down the street?” said Freberg.

He said that helping with the siting process is a very manual process, but something he hopes can be better mapped and shared via a customer-facing resource in the future.

Such support is also helpful to these customers, noted Freberg, as they might be companies that operate across multiple states or nationwide, and trying to navigate the distinct planning processes and timelines from 20 or 30 different utilities. Additionally, as both private companies and groups such as school districts receive grants related to EV charging, he said utilities will need to be mindful of how entities might be beholden to specific grant timelines that might be an added challenge.

He advised that utilities could develop guidelines for EV readiness that outline issues and expectations related to construction and

“These vehicles are coming, and that service should be there when they get here.”

CAMERON FREBERG

MANAGER, ELECTRIC VEHICLES AND
EMERGING TECHNOLOGIES, AUSTIN
ENERGY, TEXAS



installation of charging infrastructure to support customers without too much lift on the utility's part.

Austin offers some rebates for customers to install charging infrastructure. Other than a demand-based rate for large banks of fast chargers, Austin does not offer special EV rates, in part because it is more complex to add a separate meter for customers just for charging.

For Austin Energy, Freberg said the public power utility made the decision to offer EV charging services to pave the way for adoption. “We knew if we put this infrastructure out, it might not [be fully used]. But we knew if we didn't do this, it would absolutely limit the ability of our customer base to adopt them.”

“If you have charging out there with no one using them, it's mildly annoying. But having vehicles without infrastructure for charging is far worse,” added Freberg. “These vehicles are coming, and that service should be there when they get here.”

Creating a Friendly Environment

In Tennessee, Memphis Light, Gas and Water is setting the stage for increased transportation electrification by being involved in various awareness and education activities and charging infrastructure efforts throughout its service area.

MLGW is part of Drive Electric TN, which has the goal of reaching 200,000 EVs within Tennessee by 2028. Reaching that goal would mean a big shift for MLGW and other utilities across Tennessee. Nearly a tenth of the state's population lives within Memphis, and more than 13% reside within the surrounding Shelby County.

According to MLGW's website, there was a 43% increase in the number of electric vehicles registered in Shelby County in September 2023 compared to the previous year, with nearly 4,000 cars registered.

Becky Williamson, strategic marketing coordinator at MLGW, said that the public power utility has not yet taken on a careful study of the impact of EV charging in its territory, since charging has to date been fairly dispersed across single level 2 chargers that can be hard to locate when not publicly accessible. However, “It is something we realize we are going to need to study as more chargers are getting installed,” she said, especially as more banks of fast chargers get deployed. “EVs are going to be akin to the widespread adoption of central air conditioning. We're going to see that same sort of EV charging penetration at residences and businesses in the years and decades to come. So, the sooner that utilities can get engaged in researching their market and the technology, the better off they will be.”

MLGW is currently gathering data related to the potential charging impacts into the future, which will help inform its 20-year plan.

Federal Funding for EV Charging in Communities

The Charging and Fueling Infrastructure Discretionary Grant Program, administered through the Department of Transportation, provides funding for eligible entities to strategically deploy publicly accessible electric vehicle charging and alternative fueling infrastructure in the places people live and work. Program funds are intended to develop publicly accessible charging infrastructure, with a focus on serving downtown areas, local neighborhoods, and underserved and disadvantaged communities.

Public power providers are among the eligible entities that can apply for the funding, which include:

- States or political subdivisions of states
- Metropolitan planning organizations
- Units of local government

- Special purpose districts or public authorities with a transportation function, including port authorities
- Indian tribes
- U.S. territories
- Authorities, agencies, or instrumentalities or entities owned by, one or more entities listed above
- State or local authorities with ownership of publicly accessible transportation facilities

In its first year, the program awarded \$622.57 million to 47 communities, including more than \$44 million to seven communities served by public power utilities.

Applications for round two of the program are expected to open in early 2024.

Members can learn more about this opportunity, and other federal funding programs, at www.PublicPower.org/Infrastructure-Funding

AFFORDING SUPPORT FOR EV CHARGING

A new source of data for MLGW will be two new public fast charging locations, which are being developed in part through funding from a grant awarded in 2022 through the Tennessee Department of Environment and Conservation. The grant agreement specifies that MLGW will own and operate the locations for a minimum of five years. The utility is planning for four chargers at each location. “We thought if we were going to get into public-access fast charging, then we would get into it significantly.”

A few years down the road, Williamson expects that market conditions will probably mean that private operators will meet demand for public chargers. As examples, one of the

Tesla supercharger stations in the area recently expanded, and other private operators have been inquiring about when different rate structures that could better align with fast charging demand will go into effect.

The rate changes include a structure that would eliminate demand charges at DC fast charging locations and instead impose a higher price per kilowatt-hour. “That’s one of those enticements that private operators are looking for when they review a market to see if it’s a good place for them,” said Williamson.

She said MLGW also recently got its power contract amended to allow for EV charging to be an exception to a rule otherwise blocking the resale of power by third parties. The change, she

said, allows charging station owners to price by the kilowatt-hour, rather than by the minute, which is a preferable pricing structure for station owners and drivers alike.

MLGW is also hoping to expand its residential time-of-use rate, which will strengthen the price signals around home charging behaviors.

For residential customers, Williamson said MLGW focuses on correcting misconceptions about whether they need to pay to put a level 2 charger in at their house, or if their usual driving habits will be covered by using a level 1 charger overnight or other options already in the community. And while there are more individual drivers emerging, these customers have usually already learned a lot from talking



“Don’t wait to get all your plans made or until you’ve ordered your cars. Some of these projects are massive and may require electric infrastructure upgrades that could take more than a year to implement.”

BECKY WILLIAMSON,
STRATEGIC MARKETING COORDINATOR,
MEMPHIS LIGHT,
GAS AND WATER, TENNESSEE

AFFORDING SUPPORT FOR EV CHARGING



with early adopters they know to understand their charging options.

Focusing educational efforts on commercial and business customers and potential fleet owners is helpful in supporting them to understand what the most economic and impactful choices on the community will be. Williamson said that the approach with customers looking to install level 2 chargers has changed from when MLGW started such conversations about 10 years ago, when “buyers weren’t really ready” for EVs.

Williamson said MLGW has been working with several commercial customers, a local school district, and government agencies through their planning phases as they consider what it would mean to transition to an electrified fleet. She said it is key that business customers recognize the need to involve the utility in the planning process as early as possible to work through the implications of accommodating charging infrastructure.

“Don’t wait to get all your plans made or until you’ve ordered your cars. Some of these projects are massive and may require electric

infrastructure upgrades that could take more than a year to implement,” she said. This could include issues with acquiring upgraded transformers, which have faced a supply chain shortage in recent years.

It’s not just about planning for infrastructure, but Williamson noted that MLGW held educational events, including one for prospective fleet owners, to review information about charging technology options and the related tax credits and funding opportunities. She noted that educational materials available to American Public Power Association members

AFFORDING SUPPORT FOR EV CHARGING

could be helpful to use for such events or other planning purposes.

She suggested that utilities get engaged with groups such as clean cities coalitions and drive electric organizations. This helps connect utilities with the array of likely early adopters and other organizations involved in planning for transportation electrification to talk about the potential impacts of this demand and nuances of how charging behaviors can affect the grid.

Charging as Amenity

Silicon Valley Power, which serves the city of Santa Clara, California, has also not seen any major impacts on its system from transportation electrification yet, despite being in a state and an area with relatively high adoption. However, representatives from SVP said that the public power utility already has a different load profile than most, given its large industrial base. SVP said that residential customers only make up about 6% of its overall retail sales and that recent load growth has been largely driven by data centers.

SVP has been involved in various efforts to support local electric vehicle drivers, as well as multifamily housing and commercial customers looking to own charging infrastructure. SVP offers rebates for customers who install level 2 chargers. The public power utility also manages a network of chargers.

“SVP has added over 100 EV charging connectors throughout Santa Clara’s 18 square miles — in parks, community centers and other public access areas near multifamily housing; providing an amenity that increases

park utilization and access to EV charging to residents who may not have access to charging at home,” utility representatives shared in a statement.

This network of charging connectors, including at city facilities, also supports the City of Santa Clara’s electrified fleet of vehicles, which SVP helped transition from older combustion-engine vehicles in an effort to reduce fleet operational costs and environmental impact. SVP integrates EV market research about customer awareness of and interest in buying EVs and customers’ barriers to EV adoption into program design, marketing, and social media.

For enterprises that want to deploy fast or public charging within SVP’s service territory, the utility has multiple efforts to ensure prospective owners are aware of the financial implications of this infrastructure through hosting educational workshops and by providing information on total cost of ownership and available incentives. They also offer an EV charging siting suitability tool and one-on-one engineering support about existing site capacity and help planning new service upgrades, if needed.

SVP also offers a technical assistance program on EV charging for multifamily housing and businesses. In the program, potential public/DC fast charger owners receive a custom planning report and one-on-one consulting from SVP throughout the permitting and installation process.

While SVP does not offer any EV-specific demand charge relief for customers who own level 3 fast chargers, the utility is exploring offering managed charging customer programs in the future.



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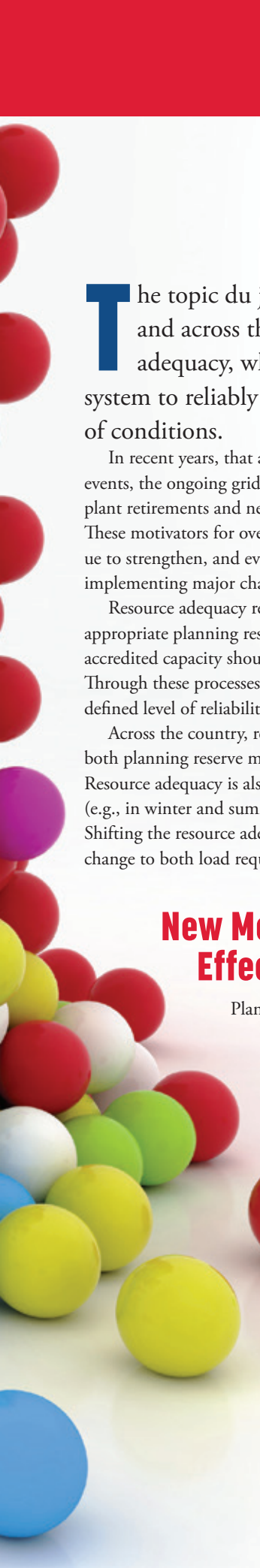
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Managing the Continuing Reconstruction of Resource Adequacy Requirements

BY MATT KING, DIRECTOR, MARKETS & ANALYTICS,
GDS ASSOCIATES



The topic du jour in organized power markets and across the power industry has been resource adequacy, which is the ability of the electricity system to reliably meet demand under a broad range of conditions.

In recent years, that ability has been stressed by extreme weather events, the ongoing grid transition to a decarbonized future (both thermal plant retirements and new renewable generation), and novel load growth. These motivators for overhauling resource adequacy requirements continue to strengthen, and every region of the country is actively considering or implementing major changes.

Resource adequacy requirements are the combination of setting appropriate planning reserve margins as well as determining how much accredited capacity should be afforded to specific generation resources. Through these processes, demand is met with supply according to a defined level of reliability for an upcoming period.

Across the country, regional operators are pursuing changes to how both planning reserve margins and capacity accreditation are determined. Resource adequacy is also being assessed over more granular time periods (e.g., in winter and summer separately instead of over an entire year). Shifting the resource adequacy assessment period compounds the level of change to both load requirements and supply accreditation.

New Models Have Dramatic Effects

Planning reserve margins and contemporary accreditation methods leverage loss-of-load expectation models to simulate system reliability and resources' capability to serve load. In light of recent reliability events and anticipated grid transition, regional operators are modifying the inputs and assumptions of those models to consider additional risk.

The incorporation of additional risk results in higher planning reserve margins and lower resource accreditation to meet the same

level of reliability. At the same time, the shift to assessing over sub-annual periods can move the traditional focal point of resource adequacy away from system peak demand. As particular times of the year are individually assessed, including in light of new risks, there can be dramatic results.

For example, the Southwest Power Pool recently presented initial figures that indicate it could need a 45% winter reserve margin in 2026, as compared to its current 15% reserve margin requirement, which does not apply to winter. The Midcontinent Independent System Operator has already implemented a four-season construct, which imposed non-summer capacity requirements that previously did not need to be planned for and significantly reduced the value of solar capacity outside of summer (to name just one effect).

Despite already having implemented those significant changes, MISO continues to pursue additional reforms and recently released a study revealing results for various resource technologies under its proposed accreditation method. For the summer season, the accreditation of solar resources on average today would be 32% — dropping to 9% by 2027 and 4% in 2032 — a far cry from some solar resources that previously received greater than 50% capacity credit for the entire year.

Plan Accordingly

Both the magnitude and pace of change to resource adequacy requirements pose a major challenge to utilities' ability to plan, especially for public power utilities with an obligation to reliably serve at affordable rates. Decision makers and planners need to consider (1) today's rules and how to operate successfully under those rules; (2) rules that are actively in flux, may have already been filed for approval, or are being implemented for future years; and (3) rules that, given current trends, are likely to be overhauled in the coming years.

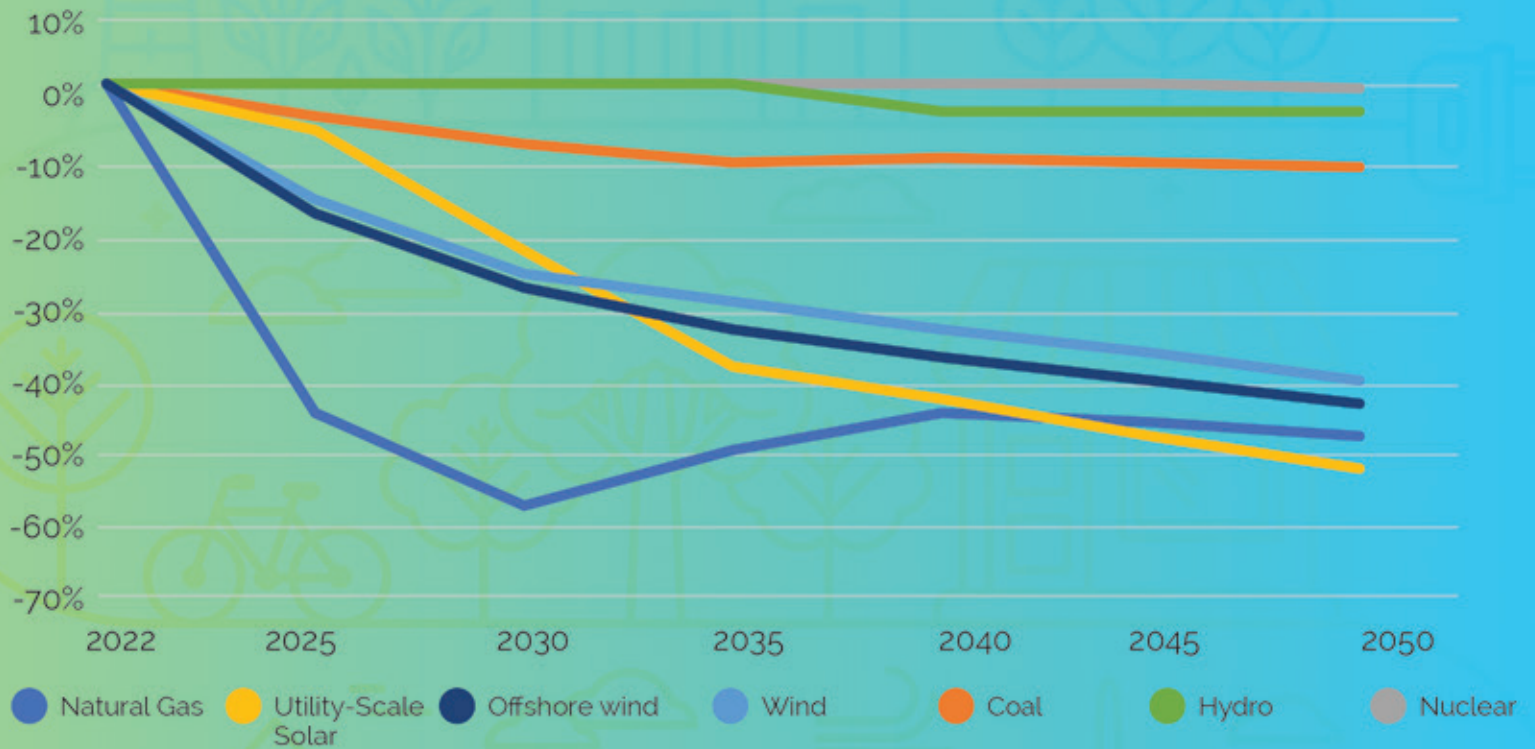
In addition to the confluence of rule changes, decision makers and planners need to be aware of the surrounding regional system since model-derived planning reserve margin and accreditation results are driven heavily by system composition. For example, will solar proliferation over the next 20 years in MISO be as aggressive as anticipated, or more or less so? Recognizing that industry changes can result in cost increases, utilities need to carefully evaluate and consider the impact of increased capacity requirements and reduced resource accreditation on their costs and ultimate rate affordability.

Although reform efforts will persist beyond this year, 2024 is shaping up to be a critical year for advancing resource adequacy changes and their trajectory for future years.

What Will it Cost to Generate Electricity?

Here's a quick rundown of how prices for different generating resources are predicted to change in the coming decades.

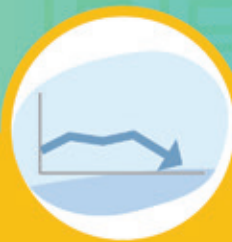
Projected change in price by fuel type, 2022-2050



*Solar, wind, and hydropower are based on the projected levelized cost of energy, which includes capital expenditures and operating costs, while natural gas, coal, and nuclear are based on the projected cost of only the heat content of these plants. Levelized costs do not include federal tax credits that can further reduce the cost. Projections are based off the dollars per megawatt-hour in 2022 dollars.



The average cost of battery storage systems is anticipated to drop more than 50% by 2050.



The cost of utility-scale solar in 2022 was down 84% from 2010.



Solar power purchase agreements in the West were an average of \$10/MWh lower than in other regions.



Larger utility-scale solar projects (20 MW+) cost 26% less per MW than projects between 5-20 MW.

Sources:
 EIA Annual Energy Outlook, 2023. www.eia.gov/outlooks/aeo/tables_ref.php
 NREL Annual Technology Baseline. <https://atb.nrel.gov/electricity/2023/Utility-Scale-Solar>. 2023 Edition. Lawrence Berkeley National Laboratory.
https://emp.lbl.gov/sites/default/files/utility_scale_solar_2023_edition_slides.pdf

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