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GTTSi

Global Technical Training Services, Inc. Newsletter

The State of the Industry

Sid Crouch, GTTSi Chief Technical Consultant

While our national leaders push political rhetoric to make us feel good, their actions are making our energy more expensive and less reliable. No nation is really having any impact on global warming, and we find ourselves in a spiral of extreme weather events such as drought conditions drying up lakes and rivers thereby limiting hydro-electric production and escalating fire risks, while other parts of the country are battling flooding and hurricanes.

U.S. electricity sales rose by 2.7% in 2022 due to increased economic activity and a relatively hotter summer, but sales are expected to fall by 0.9% in 2023. As utilities continue to retire coal–fired plants, and some states transition from natural gas-fired plants, an increase in solar and wind generation is expected – rising from 22% of the total in 2022 to 24% for 2023. This means that baseload will require more reliance on nuclear and the addition of energy storage with renewables.

This winter, wholesale electricity prices will dramatically increase in the range of 20% to 60%, primarily due to natural gas prices and reduced inventories. The greatest impact will be in New England due to their natural gas pipeline constraints, reduced inventories, and the uncertainty of LNG (*liquefied natural gas*) shipments (*recall* ***December 22 "Did You Know"***). The result is much higher electricity prices for the consumer. **Check out our article on page 2 -** some of the same issues affecting Georgians are being experienced across the nation.

I welcome your comments or questions - sid.crouch@gttsi.com

Highlights

Minority and Woman-Owned MWBE Business Enterprise

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GEORGIA POWER'S RATE CASE – COMMON CONCERNS ACROSS THE U.S.?

Photo Credit: Nowhambersham.com

The Georgia Public Service Commission will soon decide just how much money the largest unit of Atlanta-based Southern Company should be able to charge ratepayers over the next three years, starting in January 2023.

These proceedings could also have an effect on the future of rooftop solar for Georgians, as the current Pilot Program has reached its endpoint with 5,000 participants.

The Public Service Commission's staff claims that Georgia Power only needs to raise rates by $529 million over the next three years, but Georgia Power disagrees. They have proposed a 12% rate hike to provide $2.9 billion more for the same time period.

To put this into perspective, a residential customer that uses 1000 kilowatt hours of electricity per month currently pays $128. The proposed rate hike would raise that customer monthly bill by $14.32/month in 2023, reaching a total of $16.29/month over the three-year period, totaling about $200/year more by 2025.

The commissioners also have to consider other bills that are coming due, such as the higher natural gas costs. They have already approved an increase that will begin once Georgia Power's Vogtle Unit 3 begins operation, and another increase is likely when Vogtle Unit 4 becomes operational, scheduled for the 4th Quarter 2024. The Public Service Commission has warned that all these additions could increase bills $55 to $60 month, or 45%.

Part of the Commission's concern is their recommendation that Georgia Power earn a lower return on its capital - a 9.45% return on equity, down from the current target of 10.5%, while Georgia Power wants to increase their earnings to 11%.

Georgia Power claims the need for more money to improve the grid, retire old coal plants, acquire electricity from new sources, and upgrade customer-facing computer systems. However, the Commission questions these plans, concluding that Georgia Power wants to unnecessarily replace transmission equipment before it wears out while getting few benefits in reliability as a result.

Another equipment or infrastructure concern is the Commission's opposition to Georgia Power spending money on equipment and wiring to charge electric vehicles. They argue that the utility is spending money on private property that the general public can't use, and opponents, such as gas station owners, warn that this spending on infrastructure for electric vehicles lets Georgia Power *(continued)*

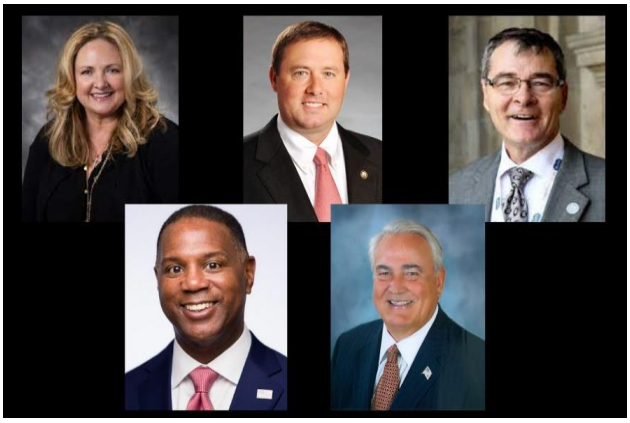
Georgia Power's Rate Case – Cont.

spend regulated customer revenue to dominate an unregulated market for vehicle charging.

Another fight is over how much Georgia Power must pay for electricity generated by the owners of rooftop solar panels. Georgia Power's pilot program allowed up to 5000 participants with rooftop solar panels to use a billing mechanism called "net metering". These customers were allowed to sell the power they were generating back onto the grid for the same rate that they would pay for their electricity. But Georgia Power wants to eliminate this practice for the future because they argue that "net metering" shifts costs onto customers who don't have solar panels. Without "net metering" Georgia Power would pay much less for the power generated back to grid from these rooftop solar panels.

A concern is being raised by the consumer advocacy group, Georgia Watch. Liz Coyle, executive director of Georgia Watch, said, "These additional costs are a real burden for so many Georgians, who already have a relatively high energy burden. We hear from people almost every day who are struggling to pay their power bills." Mahogany Bowers, founder of Blessing in a Bookbag, works with low-income families in Savannah, said she knows people who avoid running the air conditioner, even when its dangerously hot, or who end up having to choose between paying their energy bills and other essentials, like medicine. Whether you operate a window unit or central air and heat throughout the house … "your electricity bill is through the roof", she said.

Resolution is dependent on whether or not Georgia Power and the Commission can reach a negotiated settlement. Until 2019 settlement was achieved rather quickly. While this was not the case in 2019, the commission ultimately did grant a $1.77 billion increase over three years. This time it seems that negotiations will require deeper compromise, by all parties, if an agreement is to be reached.



The Georgia PSC (*from left to right, top to bottom*) - *Tricia Pridemore, Chairman, Jason Shaw, Tim Echols, Vice-Chairman, Fitz Johnson, and Lauren "Bubba" McDonald*

Photo Credit: The Georgia Virtue

GREAT LAKES CLEAN HYDROGEN PARTNERSHIP SEEKS DOE FUNDING

Hydrogen is an important energy carrier that can play a key role in reducing carbon emissions from heavy-duty vehicles and aviation, heating and distributed power, and industrial applications like steel-making, glassmaking, and semiconductor manufacturing.

With growing interest around wider adoption of hydrogen and its potential economic and environmental benefits, The Great Lakes Clean Hydrogen (***GLCH***) Partnership made up of Linde, Energy Harbor, GE Aerospace, Cleveland-Cliffs steel manufacturing and the University of Toledo, have moved forward with submittal of their application as a Hydrogen Hub with the US Department of Energy (***DOE***).

The DOE wants to establish 6-10 regional clean hydrogen hubs across the country and the Great Lakes Clean Hydrogen Partnership believes the Ohio region is a prime location for a clean hydrogen hub due to its access to ample carbon free nuclear power, access to Interstate 80 and Interstate 75, a high concentration of technology and manufacturing companies, the Great Lakes marine shipping fleet, and a highly skilled workforce.

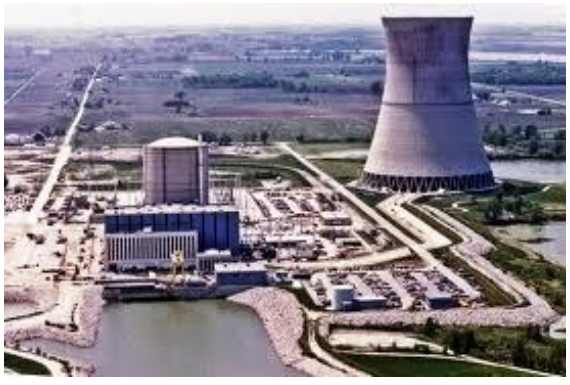


Photo Credit: NIRS

Photo Credit: Innovation News Network

The low-carbon hydrogen would be produced at Energy Harbor's 2.8 GW Davis-Besse nuclear plant (*pictured below*), where hydrogen can be produced at a "very competitive price" and meet the ultra-pure DOE standards without the need to sequester carbon dioxide.

"This industry-led hydrogen hub intends to ensure that the Midwest is a leader in de-carbonization so that regional industries and supply chains are globally competitive, and opportunities are created for workers and their communities," said Frank Calzonetti, vice president for research at University of Toledo.

This central location will benefit the Great Lakes Clean Hydrogen Partnership in serving the Ohio and Michigan region's automotive, power generation, trucking, technology, and steel manufacturing suppliers.

The region's 20.5 GW of nuclear power generation capacity has the potential to produce 8,900 to 12,300 tons/day of hydrogen from electrolysis. Producing, processing, delivering, storing, and using clean hydrogen in the industrial sector is critical to the DOE's strategy for reaching President Biden's goal of a 100% clean electrical grid by 2035 and net-zero carbon emissions by 2050.

SYNCHRONOUS CONDENSERS, GAS-FIRED GENERATION, and SVC's – IMPROVING GRID STABILIY

The grid is rapidly transitioning to low-carbon or no-carbon generation as coal-fired power plants are being retired. Between 2010 and 2022, coal fell from supplying 40% of the nation's power, to around 20% today. About half of that loss has been replaced by renewable generation, the remaining demand (*plus recent load growth*), has been provided by nuclear and natural gas. As of 2022, natural gas has replaced coal as the primary resource for electric generation, supplying nearly 40% of our nation's power today.

With baseload projected to increase through 2050, our grid stability and quality of power are as important as ever. Because of the basic physics of transmitting and distributing alternating current (***AC***) power, rapid swings in load can change the grid voltage, creating the need to either generate or absorb reactive power or load.

Some utilities are converting their retired coal units into synchronous condensers (*pictured below*), where the generator is decoupled from the old steam turbine and modified for this new functionality. Today, synchronous condensing is also a standard option available on newer aero-derivative gas turbines, a solution many utilities are choosing for their new gas-fired generation projects.

Photo Credit: NRC.gov

These gas-fired generation units are not in competition with renewables, but rather enable their continued growth by providing reliability and stability to the grid in addition to reserve capacity.

Another way of suppressing voltage fluctuations, thereby improving power factor and adding stability to our grid, is with Static VAR Compensators (***SVC****s as pictured below*). VAR stands for volt-ampere reactive and SVC technology is being integrated into both existing and new power infrastructure, such as substations.

Photo Credit: Siemens Energy

Renewable resources lack any automatic frequency response mechanism, such as those found in large turbine-generators. SVCs mimic the action of rotating turbines, and provide the ability to respond quickly, usually within milliseconds, to reactive power transients on high-voltage electrical transmission lines.

Capacity and reliability are underlying themes in recent resource plans of many major utilities. This new technology can help "support weak grids," and "improve the performance of renewables". While most headlines revolve around decarbonization and increased renewable capacity, the nation's utilities are simultaneously taking action to maintain our grid's reliability and resilience.

EPA RENEWS THE 2015 COAL ASH RULES

Photo Credit: PBS

The EPA (***Environmental Protection Agency***) is enforcing a rule enacted several years ago to crack down on coal ash pollution.

In 2015, under the Obama administration, the EPA began regulating coal ash storage and disposal with a requirement to close holding ponds that were unstable or had contaminated water. The Trump administration relaxed this rule in 2020, but the current administration has called on the EPA to carry out the 2015 coal ash rules.

Coal ash, the byproduct of burning coal for electricity, often contains mercury, cadmium, arsenic, and other heavy metals. It can pollute waterways, poison wildlife, or cause respiratory illness among those who live near where the coal ash is stored.

Earlier this year, the agency denied three coal ash permit extension requests from three different facilities: Clifty Creek coal plant in Madison, Indiana, owned by Indiana-Kentucky Electric Corp.; General James M. Gavin Power Plant in Cheshire, Ohio, owned by Blackstone Group and ArcLight Capital; and Alliant Energy's Ottumwa plant in Iowa. According to the EPA, the plants had previously indicated they might have to close if extensions weren't granted. Together, the plants represent around 4.6 GW of generating capacity.

In addition, the 1.3 GW H.L. Spurlock plant in Maysville, Kentucky, owned by East Kentucky Power Cooperative, will be required to fix groundwater monitoring to continue operating its coal ash pond'; West Penn Power of Greensburg, Pennsylvania was fined $610,000 due to water discharge violations at two coal ash impoundment landfills in the southwestern part of the state. The agency also sent letters to operators of four current or closed coal-fired power plants, saying they need to make improvements to coal-ash sites to comply with the EPA rules. The AES power plant in Puerto Rico and three closed plants — the former Beckjord power station in Ohio, Tecumseh Energy in Kansas, and Gallagher Generating Station in Indiana — all received EPA warning letters.

The agency said it identified several potential deficiencies with groundwater monitoring, cleanup, and closure activities. These included a lack of monitoring wells, improper monitoring techniques, faulty identification of other contamination sources, and insufficient evaluations of clean-up technologies.

These EPA's regulations required most of the roughly 500 unlined coal ash surface impoundments – nationwide - to stop receiving waste and begin closure by April 2021. However, these rules provided a process that allowed application for two types of extensions to the closure deadline.

DID YOU KNOW?

Photo Credit: tdworld.com

Dominion Energy has proposed nearly two dozen new solar and energy storage projects with the Virginia State Corporation Commission (***SCC***). If approved these projects will provide more than 800 MW of electricity. Ten are solar and energy storage projects totaling nearly 500 MW and would be directly owned and operated by Dominion. The proposal also includes Power Purchase Agreements (***PPAs)*** with 13 solar and storage projects, totaling more than 300 MW. If these projects are approved, they are expected to be completed between 2023 and 2025. Construction activities are projected to support nearly 4,800 clean energy jobs and generate more than $920 million in economic benefits across Virginia. Dominion said these additions will add $0.38 to the average residential customer's monthly bill. ***GTTSi*** is proud to serve them as one of our valued clients.

Vistra Corporation recently announced pursuit of a 20-year license extension for Comanche Peak Nuclear Station's reactors. Comanche Peak's two nuclear plants, located in Glen Rose, Texas, are of the 4-Loop Westinghouse design reactors. They have a combined output capacity of 2,425 MW.

Unit 1 began commercial operation in August of 1990 and Unit 2 in August of 1993. Their original 40-year licenses expires in February 2030 (***Unit 1***) and February 2033 (***Unit 2***).

Comanche Peak contributes greatly to their community with greater than $30 million in state and local taxes, providing reliable power to Texans as one of the lowest-cost and highest-performing nuclear power plants in the U.S. while generating enough electricity to power 1.2 million homes under normal conditions and 480,000 during periods of peak demand. They have a proud history of safety, dependability, and operational excellence. ***GTTSi*** is proud to serve them as one of our valued clients.

Comanche Peak Nuclear Power Plant
Photo Credit: NS Energy

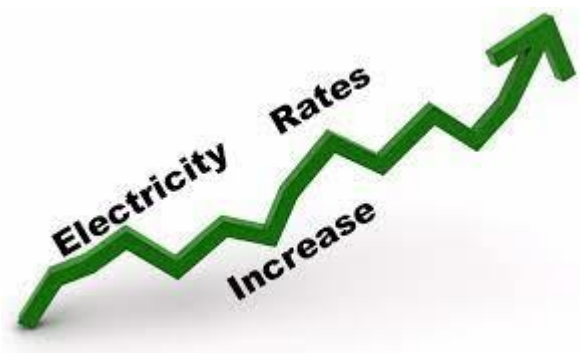


Photo Credit; neovolta.com

Duke Energy Progress has formally asked North Carolina utilities regulators to allow them to raise electric customer rates starting next year. The revenues generated would be used, in part, to strengthen the electric grid and make it more flexible for renewable power. If approved, the general rate increase would begin in October 2023 with smaller additional rate increases proposed for October 2024 and October 2025. The cumulative rate increase would equate to 16%, with an 18.7% increase for residential customers. Duke Energy Progress is one of Charlotte-based Duke Energy's two electric subsidiaries in the North Carolina, serving 1.5 million customers in eastern and central North Carolina including Raleigh, Fayetteville and Wilmington as well as the Asheville area. ***GTTSi*** is proud to serve them as one of our valued clients.

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- Transmission & Substation Engineer -Juno Beach, FL

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