PLANT VOGTLE

THE TRUE COST OF NUCLEAR POWER IN THE UNITED STATES

REPORT

MAY 2024

SECOND EDITION FEBRUARY 2025

ACKNOWLEDGMENTS

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SECOND EDITION FEBRUARY 2025

Georgia Power's Plant Vogtle is near Augusta in Burke County, Georgia. It is the largest nuclear power plant in the United States.

The U.S. South hosts so many commercial and military nuclear facilities it can be considered the nuclear hub of the United States.

The South is the only region with new nuclear reactor construction, and is home to over three dozen operational nuclear reactors,[1] two significant nuclear weapons manufacturing complexes (Oak Ridge National Lab in Tennessee and Savannah River Site in South Carolina, bordering Georgia), a majority of the nuclear fuel factories in the U.S., the contaminated "low-level" radioactive waste burial site at Barnwell, SC, the two original uranium enrichment sites (Paducah, Kentucky and Portsmouth in Appalachian Ohio — both now closed), and a closed Superfund nuclear waste burial site at Maxey Flats in Kentucky. One-fourth of the U.S. nuclear weapons arsenal is deployed from the Kings Bay Trident submarine base on the coast of Georgia.

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[1] United States Nuclear Regulatory Commission Power Reactor Status Report https://www.nrc.gov/reading-rm/doc-collections/event-status/reactor-status/ps.html#R4

PLANT VOGTLE

THE TRUE COST OF NUCLEAR POWER IN THE UNITED STATES

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UPDATE to the 2nd Edition 2025

It has been almost one year since two additional reactors at Georgia Power's Plant Vogtle in Burke County, Georgia, entered commercial service. Georgia's experience raises fundamental questions about the role of nuclear power in the United States' energy future — whether to meet future data center energy demand or to decarbonize the grid. As other states and utilities consider nuclear projects, the lessons from Georgia must inform decision-making and approaches to project management, financing, and consumer protection.

This report, **PLANT VOGTLE: The True Cost of Nuclear Power in the United States**, was published following the first commercial electric output of Georgia Power's Vogtle 4 in April 2024. This UPDATE outlines some major developments which occurred in the interim.

NUCLEAR CANNOT BE RAPIDLY DEPLOYED AS DATA CENTERS CAN AND THEREFORE MAKES NO SENSE AS AN EMERGENCY POWER SOURCE SHOULD THE EXPLOSIVE A.I. DEMAND ACTUALLY OCCUR.

MAY 2024 Georgia Power raised residential base rates 23.7 percent to pay for Vogtle's construction and cost overruns, resulting in the largest rate increase in Georgia history.

As a result, nearly 190,000 Georgia Power residential customers were disconnected in 2024, a 30 percent increase in disconnections over the same time period in 2023. At the same time, Southern Company profits increased more than 43 percent compared to the previous year, including $1.4 billion in the third quarter of 2024 alone, largely due to Georgia Power rate increases and an influx of data centers to its service territories.[U1]

As explained in this report, Vogtle 3 and 4 were never needed. Georgia's electricity grid is overbuilt with 40% reserve capacity — nearly three times the 15% reserve recommended by the National Electric Reliability Corp.

AUGUST 2024 heralded a rush of announcements by tech giants of their intent to build energy- and water-intensive data centers. Electric utilities and nuclear energy corporations formed a narrative that nuclear and outmoded large thermal energy plants like gas and coal were the only solutions to meet this growth.

Georgia Power projections in recent years have often overstated demand.[U2] In Georgia, as in the entire United States, energy demand has remained relatively flat for 20 years. Even so, Georgia Power forecasts electricity demand to triple by 2030 due to data center consumption.[U3]

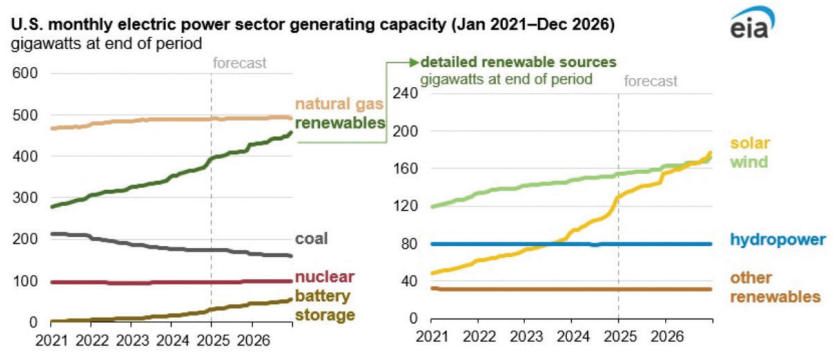
[U1] Adrianne Murchison, "Georgia Power plan to meet demand for data centers criticized," **Saporta Report**, January 31, 2024. https://saportareport.com/georgia-power-plan-to-meet-demand-for-data-centers-criticized/columnists/adrianne-murchison

[U2] Drew Kann, "Georgia Power to reveal its plan to serve all those power-hungry data centers," **Atlanta Journal-Constitution**, January 30, 2024. https://www.ajc.com/news/business/georgia-powers-plan-to-serve-energy-hungry-data-centers-is-coming/2F5FDXZILJC65K624W4XLSEWL4/

[U3] Stanley Dunlap, "Georgia Power says data center growth will cause electricity demands to triple in next decade," **Georgia Recorder**, December 2, 2024. https://georgiarecorder.com/2024/12/02/georgia-power-says-data-center-growth-will-cause-electricity-demands-to-triple-in-next-decade/

Forecasted load growth from data centers is challenging Public Utility Councils like Georgia's PSC in every region of the country, as they are inundated with novel proposals from rich and powerful utility companies teaming up with global technology corporations looking for new profit streams like Amazon, Microsoft and Google.

New solar plants expected to support most U.S. electric generation growth



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook* (STEO), January 2025
Note: Capacity values represent the amount of generating capacity at utility-scale power plants (greater than 1 megawatt). *Other renewables* include geothermal, waste biomass, wood biomass, and pumped storage hydropower.

In Pennsylvania, Amazon's proposal to link directly to the Susquehanna nuclear reactor for power has been rejected by FERC (Federal Energy Regulatory Commission).[U4] Microsoft proposes to restart Three Mile Island which has been shut for more than five years.[U5] California and Michigan are paying billions in an unprecedented attempt to bail out reactors which were scheduled to shut and/or have been shut for many years and are in degraded condition.[U6, U7] There is even a scheme in South Carolina to resurrect the partially constructed Summer reactor, a debacle which landed several executives in jail for misconduct and fraud following its abandonment eight years ago.[U8] South Carolina ratepayers are still obligated to pay off $9 billion in outstanding debt for the fiasco.

It is important to note that much of the reporting on the nuclear/data center merger is in the financial sector as the mega proposals seek investors. Significantly, however, China's recent announcement of its powerful, cheap and efficient DeepSeek data computing has sent shockwaves through the U.S. artificial intelligence market. **Forbes** says, "The emergence of DeepSeek this week is a reminder that energy efficiency is a better bet than one of the largest energy production ramp-ups in human history." [U9]

From the beginning there have been voices calling for a measured response to data center load growth, among them AES (Applied Energy Services) President and CEO Andres Gluski, who said during an interview with CNBC that "euphoria" over nuclear energy as a power source for data centers is a "little overblown." He noted that renewables are cheaper, easier to site, and "the future is going to be renewable energy."[U10]

[U4] American Nuclear Society, "FERC rejects interconnection deal for Talen-Amazon data centers," **Nuclear Newswire**, November 4, 2024. https://www.ans.org/news/article-6534/ferc-rejects-interconnection-deal-for-talenamazon-data-centers/

[U5] Laila Kearney, Mrinalika Roy, Sourasis Bose, Timothy Gardner, "Microsoft deal propels Three Mile Island restart, with key permits still needed," **Reuters**, September 21, 2024. https://www.reuters.com/markets/deals/constellation-inks-power-supply-deal-with-microsoft-2024-09-20/

[U6] Julia Johnson, "Here's how much Californians will pay to keep PG&E's Diablo Canyon nuclear plant running," **San Francisco Chronicle**, October 12, 2024. https://www.sfchronicle.com/california/article/pge-bills-diablo-canyon-19821155.php

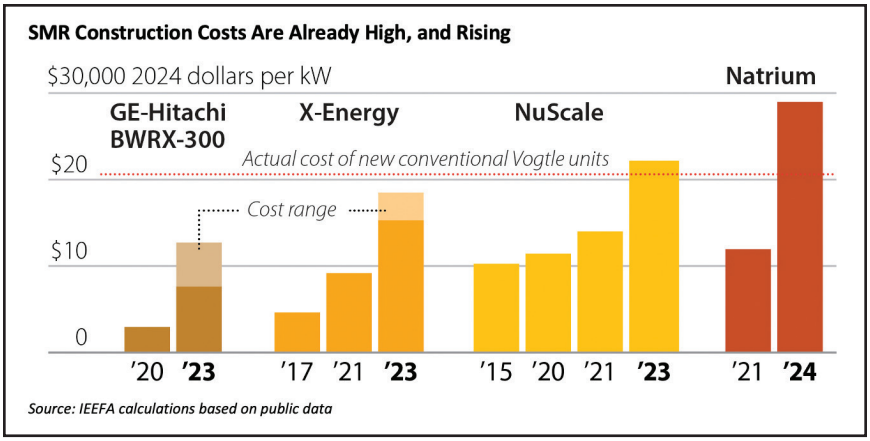
[U7] Spencer Kimball, "Michigan nuclear plant finalizes federal loan to support first reactor restart in U.S. history," **CNBC**, September 30, 2024. https://www.cnbc.com/2024/09/30/michigan-nuclear-plant-finalizes-federal-loan-to-support-first-reactor-restart-in-us-history.html

[U8] Santee Cooper, "Santee Cooper seeking proposals to acquire and finish V.C. Summer Nuclear Station expansion," **PR Newswire**, January 22, 2025. https://www.prnewswire.com/news-releases/santee-cooper-seeking-proposals-to-acquire-and-finish-vc-summer-nuclear-station-expansion-302357571.html

[U9] John Rau, "Has DeepSeek Popped The "Mini Nuke" Bubble For AI Power?" **Forbes**, January 28, 2025. https://www.forbes.com/sites/johnrau/2025/01/28/has-deepseek-popped-the-mini-nuke-bubble-for-ai-power/

[U10] Spencer Kimball, "Nuclear power is 'overblown' as an energy source for data centers, power company CEO says," **CNBC**, June 10, 2024. https://www.cnbc.com/2024/06/10/nuclear-is-overblown-as-energy-source-for-data-centers-aes-ceo-says.html

As the 15-year construction timeline for Vogtle reactors 3 and 4 has shown, nuclear cannot be rapidly deployed as data centers can and therefore makes no sense as an emergency power source should the explosive A.I. demand actually occur.



Since Vogtle, only one nuclear reactor, Flamanville 3 in France, has been connected to the grid. Flamanville 3 was completed 12 years behind schedule and costs ballooned from $3.6 billion to $13.75 billion, mirroring the Vogtle experience. [U11] Conversely, renewables can be deployed rapidly and are an excellent fit for data centers. According to the U.S. Energy Information Agency, in 2024 the electric power sector added a record 37 GW of solar power capacity to the electric power sector, almost double 2023 solar capacity additions. [U12]

It is reasonable to be skeptical of the promises being made by the nuclear industry now. At the start of commercial nuclear power in the 1960s and 1970s there were rosy projections of 1,000-2,000 reactors and "electricity too cheap to meter." Instead, declining energy consumption and ballooning construction costs resulted in a total of 112 U.S. reactors being built, of which only 94 are in service today.

The 2005 Energy Policy Act was intended to launch a so-called "Nuclear Renaissance." Thirteen utilities submitted license applications for 31 reactors to the U.S. Nuclear Regulatory Commission. Only Georgia Power's two Westinghouse AP1000 reactors at Vogtle were built, going $17 billion over budget and taking twice as long to complete as experts predicted.

According to the recent report, **Small Modular Reactors: Still Too Expensive, Too Slow and Too Risky**, by the Institute for Energy Economics and Financial Analysis (IEEFA): "The rhetoric from small modular reactor (SMR) advocates is loud and persistent: 'This time will be different because the cost overruns and schedule delays that have plagued large reactor construction projects will not be repeated with the new designs.' But the few SMRs that have been built (or have been started) paint a different picture — one that looks startingly similar to the past. Significant construction delays are still the norm and costs have continued to climb." [U13] These realities have resulted in no orders or plans for SMRs as of this writing (February 2025). As new reactor designs, SMRs will suffer from being “FOAK” or first of a kind, undercutting claims that Vogtle's completion means reduced costs or a shorter timeline for any reactors that follow. Modular construction processes planned for Vogtle were a failure. Nuclear supply chains and a nuclear workforce were never developed. Any deviation from the AP1000 is a FOAK.

This report shares Georgia's lessons learned from Plant Vogtle in hopes of helping others avoid a similar outcome.

[U11] David Dalton, "Long-Delayed Flamanville-3 Nuclear Plant In France Connected To National Grid, EDF Announces," **NUCNET**, December 23, 2024. https://www.nucnet.org/news/long-delayed-nuclear-plant-connected-to-national-grid-edf-announces-12-1-2024

[U12] EIA, "New solar plants expected to support most U.S. electric generation growth," **U.S. Energy Information Administration**, January 24, 2025. https://www.eia.gov/todayinenergy/detail.php?id=64364

[U13] David Schlissel and Dennis Wamsted, "Small Modular Reactors: Still too expensive, too slow and too risky," **Institute for Energy Economics and Financial Analysis**, May 29, 2024. https://ieefa.org/resources/small-modular-reactors-still-too-expensive-too-slow-and-too-risky

Executive Summary

Georgia Power's Plant Vogtle 3 and 4 are the only new reactors that have been built in the U.S. in over 30 years.[2] At the start of construction in 2009 Georgia Power executives claimed that, unlike Vogtle 1 and 2, Vogtle 3 and 4 would be on time and on budget.[3]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BUSINESS

How Georgia nuclear project's big finish went so wrong

Things have not gone well: cost overruns were immediate, and by March of 2017 were so excessive that Westinghouse, the main contractor and designer of the AP1000 reactors, declared bankruptcy.[4] The bankruptcy provided an opportunity for the Georgia Public Service Commission (Georgia PSC) to cancel the project, or add consumer protections against cost overruns if it continued.

South Carolina's twin AP1000 project at SCANA's V.C. Summer was cancelled in July 2017 after nine rate increases were imposed on ratepayers between 2009 and 2017 to pay for the reactor's construction.[5] Investigations in South Carolina after the bankruptcy determined that Westinghouse and utility officials had not been truthful about the progress and costs of reactor construction, which led to large fines and jail time for two SCANA utility executives and a Westinghouse executive yet to be sentenced.[6] Similar behavior by Westinghouse and Georgia Power/Southern Company officials occurred in Georgia,[7] but there has been no accountability.

Special hearings were held in 2017 to determine if Plant Vogtle's reactor expansion should continue, and Georgia PSC staff determined the costs outweighed the benefits and recommended cancelling this project.[8] In addition, there was intense public opposition to continuing, plus extensive expert testimony that the energy from Vogtle was not needed,[9,10] and that there were cheaper and faster ways to meet any energy demand that materialized in the future.[11] Despite all of these factors, Commissioners voted to continue the project

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[2] Georgia Power is a wholly owned subsidiary of Southern Company, a U.S. gas and electric utility holding company headquartered in Atlanta, Georgia. Southern Nuclear is also a wholly owned subsidiary of Southern Company and operates a total of eight nuclear facilities (two at Farley, two at Hatch, four at Vogtle) for Alabama Power and Georgia Power, including Plant Vogtle's reactors 3 and 4.

[3] Steve Prenovitz and Buzz Miller, "Pro and Con: Can Georgia Power contain costs of Plant Vogtle reactors?" **Atlanta Journal-Constitution**, Sept. 15, 2010. https://www.ajc.com/news/opinion/pro-con-can-georgia-power-contain-costs-plant-vogtle-reactors/JkNTMWGgRmnGd2JIERzGAJ/

[4] Tom Hals and Emily Flitter, "How two cutting edge U.S. nuclear projects bankrupted Westinghouse," **Reuters**, May 2, 2017. https://www.reuters.com/article/idUSKBN17Y0C7/

[5] Gavin Bade, "Santee Cooper, SCANA abandon Summer nuclear plant construction," **Utility Dive**, July 31, 2017. https://www.utilitydive.com/news/santee-cooper-scana-abandon-summer-nuclear-plant-construction/448262/

[6] Jack Hagel, "South Carolina Utility Agrees to $137.5 Million Settlement to Resolve Fraud Charges," **Wall Street Journal**, Dec. 3, 2020. https://www.wsj.com/articles/south-carolina-utility-agrees-to-137-5-million-settlement-to-resolve-fraud-charges-11607037368

[7] Georgia PSC filing VCM-27 Newsome Hayet Kollen, p. 15. https://psc.ga.gov/search/facts-document/?documentId=192559.

[8] Anastaciah Ondieki, "PSC analysts: Scrap Vogtle project," **Atlanta Journal-Constitution**, Dec. 5, 2017. https://shorturl.at/nHTHM

[9] Peter Bradford Georgia PSC filing, "Direct testimony of Peter A. Bradford," Southern Alliance for Clean Energy, December 1, 2017. https://psc.ga.gov/search/?q=170376.

[10] William M. Cox Georgia PSC filing, "Direct testimony of William M. Cox, PhD. and Jeffrey Berhold," Georgia Interfaith Power & Light and Partnership for Southern Equity, December 1, 2017. https://psc.ga.gov/search/?q=170388.

[11] Mary Landers, "Plant Vogtle decision nears as calls to cancel grow," **Savannah Morning News**, December 15, 2017. https://www.savannahnow.com/story/news/2017/12/15/plant-vogtle-decision-nears-calls-cancel-grow/13847128007/

with a larger budget and longer timeline and declined to add consumer protections against further cost overruns.

After the decision to continue was made, cost overruns accelerated and the timeline became years late. Costs for Plant Vogtle's reactors 3 and 4 now exceed $36.8 billion, making it the most expensive power plant ever built on Earth. The reactors took 15 years to construct, with reactor 3 entering commercial service in July, 2023 and reactor 4 entering commercial service in April, 2024 — double the timeline estimates provided to the Commission.[12]

Each reactor is a Westinghouse AP1000 (Advanced Passive) and produces 1117 megawatts (MWs) of energy. Since Georgia Power owns a 45.7% share of the project, Vogtle's two new reactors are adding 1020 MWs to Georgia Power's overall generating capacity, expanding it by only 7.5%.

AT $36.8 BILLION, PLANT VOGTLE IS AN ASTONISHING $20 BILLION OVER BUDGET AND IS THE MOST EXPENSIVE POWER PLANT EVER BUILT ON EARTH.

On December 19, 2023, the Georgia PSC voted to approve $11.1 billion in costs being imposed on Georgia Power ratepayers.[13] This is approximately four times more expensive than any other generation choice would have cost,[14] an astonishing sum for 1020 MWs.

As a result of these decisions, Georgia Power's residential rates have increased a total of 23.7%.[15] This rate increase is on top of the $1,000 each Georgia Power household has paid since 2009 from an on-bill nuclear financing mechanism called Nuclear Construction Cost Recovery (NCCR) tariff also known as "CWIP" or "Construction Work in Progress."[16] Indeed, Commissioners allowed Georgia Power to amass a record $17 billion in profits between 2009 and 2023, while allowing $20 billion in cost overruns for Vogtle 3 and 4 to accrue.

This report will answer the following questions:

1. What is Plant Vogtle?
2. What were key Vogtle events and decisions?
3. Why were Vogtle reactors 3 and 4 so expensive to build?
4. What role did the Georgia Public Service Commission play in Vogtle?
5. Why did Georgia Power pursue Vogtle reactors when all other U.S. utilities cancelled theirs?
6. Did Georgia Power need the energy from Vogtle 3 and 4?
7. How does Plant Vogtle perpetuate and worsen energy poverty in Georgia?
8. What are some myths vs. truths about nuclear energy?

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[12] Jeff Amy, "Georgia nuclear rebirth arrives 7 years late, $17B over cost," **Associated Press**, May 25, 2023. https://apnews.com/article/Georgia -nuclear-power-plant-vogtle-rates-costs-75c7a413cda3935dd551be9115e88a64

[13] Georgia PSC Administrative Proceeding December 19, 2023, https://www.youtube.com/watch?v=7YqXtkbbJEM&t=8s time stamp 17:19.

[14] Energy Information Administration, October 3, 2023. "U.S. construction costs dropped for solar, wind, and natural gas-fired generators in 2021," https://www.eia.gov/todayinenergy/detail.php?id=60562.

[15] Georgia Power PSC filing DKT 29849 - Georgia Power Company's Application to Adjust Rates to Include Reasonable and Prudent Plant Vogtle 3 and 4 Costs, November 1, 2023, Document #216217. https://psc.ga.gov/search/facts-document/?documentId=216217.

[16] Drew Kann, "Hearings on Vogtle's final cost to Georgia Power customers start today," **Atlanta Journal-Constitution**, December 4, 2023. https://www.ajc.com/news/hearings-on-vogtles-final-cost-to-georgia-power-customers-start-today/CJTQ4FOPMJB6LDWKQPYAEMLBGI/

What is Plant Vogtle?

Vogtle Unit 3 with 4 in the background

March 2024

The Alvin W. Vogtle Electric Generating Plant is a nuclear reactor power station in Georgia. Georgia Power had originally planned to construct four reactors in Burke County, Georgia, on the Savannah River in 1970. The four-unit project was scaled back to two reactors after the company nearly went bankrupt from cost overruns only 10 weeks after beginning construction, and Vogtle reactors 1 and 2 finally came online in 1986-87 with an astounding 1200% cost overrun.[17] This experience, in combination with the Three Mile Island nuclear meltdown in 1979, contributed to the abandonment of nuclear reactor construction in the U.S. for three decades.[18]

In 2009, Georgia Power began construction for the second set of reactors at Plant Vogtle. The initial budget was $14 billion, and new Westinghouse AP1000 reactors 3 and 4 were scheduled to be completed in 2016 and 2017, respectively. However, reactor 3 was completed in July 2023, and reactor 4 was completed in April 2024, taking 15 years to construct. The cost of construction for both reactors exceeds $36.85 billion, making it the most expensive power plant ever built on Earth.

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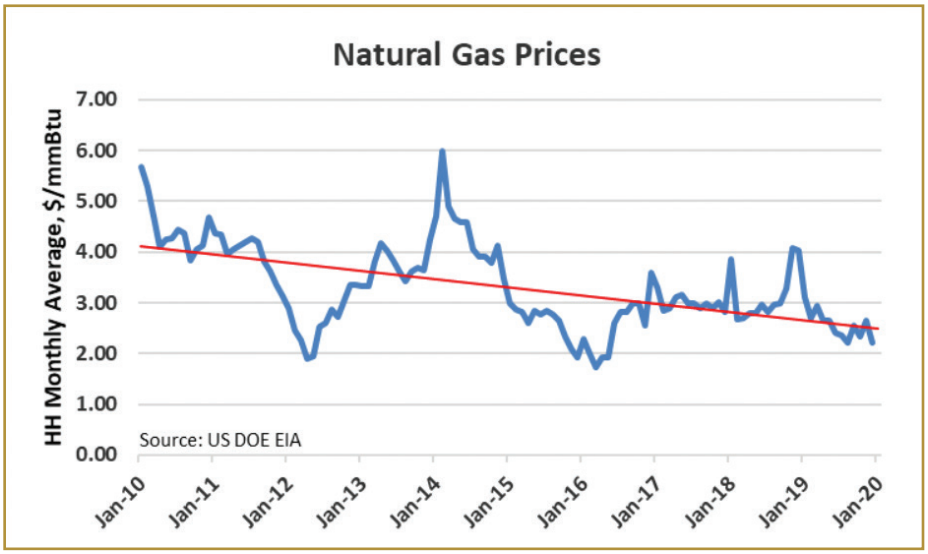
[17] David Schlissel, "Southern Company's Troubled Vogtle Nuclear Project," Institute for Energy Economics and Financial Analysis, January 2022. https://ieefa.org/wp-content/uploads/2022/01/Southern-Companys-Troubled-Vogtle-Nuclear-Project_January-2022.pdf

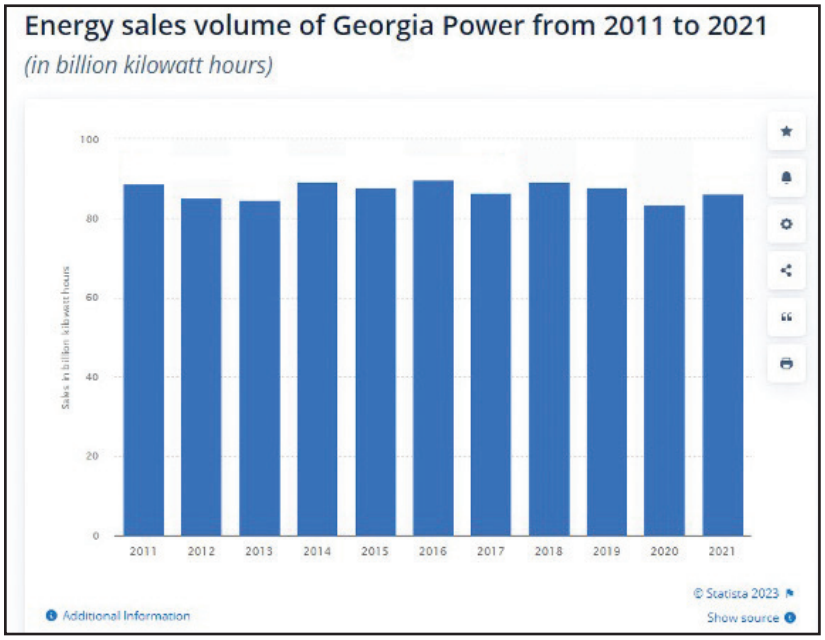
[18] Brett Sholtis, "Three Mile Island Nuclear Power Plant Shuts Down," **National Public Radio**, September 20, 2019. https://www.npr.org/2019/09/20./762762962/three-mile-island-nuclear-power-plant-shuts-down

What Were Key Vogtle Events and Decisions?

In 2005 Congress passed the Energy Policy Act, which aimed to jump start a resurgence of nuclear power in the United States. The act offered significant incentives to the nuclear industry, including loan guarantees, tax breaks, and limiting liability to utilities by extending the Price-Anderson Act which provides protection from the full financial consequences of a nuclear accident.



Utilities responded enthusiastically to these new incentives: in the two years between July 2007 and June 2009, 18 applications for Combined Operating Licenses (COL) for 28 new reactors were received by the U.S. Nuclear Regulatory Commission (NRC). Nuclear Plants Vogtle in Georgia and V.C. Summer in South Carolina were the first in line to receive the NRC licenses. However, in 2009 and 2010, prices dropped significantly for natural gas, solar panels, and wind energy components, and most utilities pivoted to more affordable options for meeting projected demand for energy.[19]



In addition, there was essentially zero growth in electricity demand nationally because of improved energy efficiency, advanced lighting (for example, LED lighting), better building codes, and the advent of grid modernization capabilities. This was true for Georgia Power as well: since 2007 there has been zero growth in energy sales.

All these factors weakened the economic argument for new nuclear reactors.[20] Between June 2010 and December 2016, utilities withdrew or suspended nearly all new nuclear reactor applications, choosing cheaper and easier solutions to meet whatever modest energy demands materialized as U.S. energy consumption has remained generally flat for two decades.[21]

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[19] Evelyn Teel, "Down, Down, Down: Energy Prices in the 2010s," **Avalon Energy Services**, January 27, 2020. https://avalonenergy.us/2020/01/down-down-down-energy-prices-in-the-2010s/

[20] Steven Nadel and Rachel Young, "Why is electricity use no longer growing?" American Council for an Energy-Efficient Economy, February 2014. https://www.aceee.org/files/pdf/white-paper/low-electricity-use.pdf

[21] Michael Wald, "Treat Southern Company like a government insurance bond," **Seeking Alpha**, December 18, 2019. https://seekingalpha.com/article/4313082-treat-southern-company-like-government-insured-bond?dr=1andutm_medium=emailandutm_source=seeking_alpha

Only two of the proposed new nuclear projects moved fully forward — Vogtle reactors 3 and 4 in Georgia and V.C. Summer reactors 2 and 3 in South Carolina. Both projects were in the Southeast, where regulator deference to utility decision-making is conspicuous.


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Business

Huge nuclear cost overruns push Toshiba's Westinghouse into bankruptcy

By Tom Hals, Makiko Yamazaki and Tim Kelly

March 29, 2017 8:46 PM EDT · Updated 7 years ago

Significantly, due to heavy utility lobbying, both Georgia and South Carolina legislatures passed anti-consumer CWIP (Construction Work in Progress) laws enabling utilities to place a tariff on customers' bills while the reactors were being constructed. Georgia passed the Georgia Nuclear Energy Financing Act of 2009[22] and South Carolina passed the Baseload Review Act, both of which provided the utilities in these states with extra profits as an extra incentive to build new reactors.

The main contractor for both projects was the company that designed the AP1000 reactor, Westinghouse.[23] Westinghouse has a long history of declaring bankruptcy and despite its 100-year history and being a major player at the inception of the nuclear industry, at the time of its selection as construction manager for the Vogtle expansion, Westinghouse had never previously managed a construction project of this magnitude and complexity.[24]

Cost overruns at both reactor sites began immediately, and by early 2017 were so extreme that Westinghouse declared bankruptcy once again.[25] The bankruptcy triggered an opportunity for Georgia and South Carolina to reexamine their commitment to building the AP1000 reactors. Soon after the Westinghouse bankruptcy, SCANA and Santee Cooper (South Carolina's state-owned electric utility) were forced to cancel the V.C. Summer reactors, with South Carolina leaders acknowledging that nine rate increases over eight years had already taken place and ballooning costs would be untenable for their state's small population.[26]

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[22] Senate Bill 31, "Georgia Nuclear Energy Financing Act," April 21, 2009. https://www.legis.ga.gov/legislation/26144

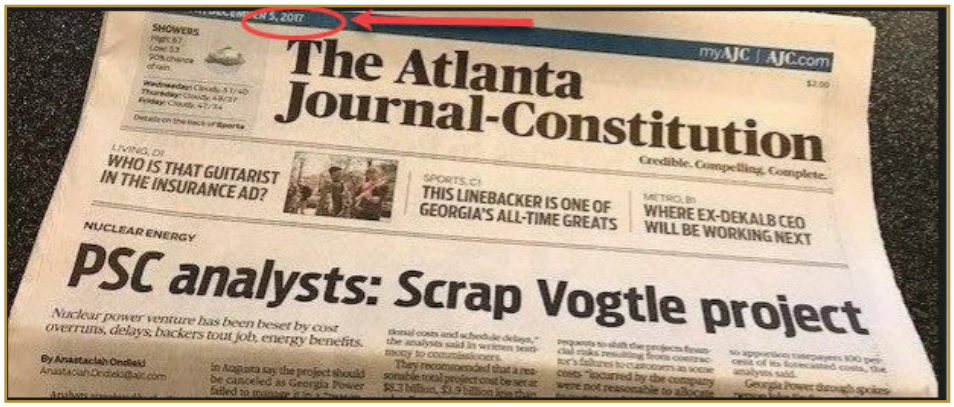
[23] Toshiba Press Release, "Toshiba Completes Westinghouse Acquisition," October 17, 2006. https://www.global.toshiba/ww/news/corporate/2006/10/pr1702.html.

[24] Edward Shyloski, "What Went Wrong on the Westinghouse Nuclear Projects," **Engineering News-Record**, May 1, 2017. https://www.enr.com/articles/41869-what-went-wrong-on-the-westinghouse-nuclear-projects.

[25] Tom Hals and Emily Flitter, "How two cutting edge U.S. nuclear projects bankrupted Westinghouse," **Reuters**, May 2, 2017. https://www.reuters.com/article/ustoshiba-accounting-westinghouse-nucle/how-two-cutting-edge-u-s-nuclear-projects-bankrupted-westinghouse-idUSKBN17Y0CQ lear-projects-bankrupted-westinghouse-idUSKBN17Y0CQ

[26] Brad Plumer, "U.S. Nuclear Comeback Stalls as Two Reactors Are Abandoned," **New York Times**, July 31, 2017. https://www.nytimes.com/2017/07/31/climate/nuclear-power-project-canceled-in-south-carolina.html#:~:text=The%20V.C.,saddle%20customers%20with%20additional%20costs.

After the cancellation, revelations unfolded that Westinghouse and utility officials had not been truthful about the progress and costs of the project, and federal and state criminal investigations followed. Two Westinghouse and two SCANA executives have been sentenced to jail and fined hundreds of millions of dollars for lying about the costs and progress of the project,[27] fines which were used to offset a portion of the $9 billion ratepayers will be required to pay for the two cancelled reactors. At this point the much celebrated nuclear renaissance was reduced to two reactors in Georgia.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WHO IS THAT GUITARIST IN THE INSURANCE AD?

THIS LINEBACKER IS ONE OF GEORGIA'S ALL-TIME GREATS

WHERE EX-DEKALB CEO WILL BE WORKING NEXT

NUCLEAR ENERGY

PSC analysts: Scrap Vogtle project

Nuclear power venture has been beset by cost overruns, delays; backers tout job, energy benefits.

Georgia Commissioners followed a different course. In December 2017, despite expert testimony that the energy was not needed, PSC staff recommendations to cancel, and intense public opposition to continuing, Georgia Commissioners voted to continue. A new schedule and budget were adopted, and despite recommendations to add consumer protections against additional cost overruns, Commissioners declined to do so. These risks indeed came to bear, as Commissioners would require Georgia Power ratepayers to cover nearly all the billions of dollars of cost overruns, even as Georgia Power posted $17 billion in profits during Vogtle construction years.[28]


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NEWS

Georgia Power rates: Public to pay bulk of Plant Vogtle costs

Customers will feel a cumulative 10% increase in their monthly electric bills

Plant Vogtle costs will be passed along to Georgia Power customers and Southern Co. shareholders.

[27] Jack Hagel, "South Carolina Utility Agrees to $137.5 Million Settlement to Resolve Fraud Charges," **Wall Street Journal**, December 3, 2020. https://www.wsj.com/articles/south-carolina-utility-agrees-to-137-5-million-settlement-to-resolve-fraud-charges-11607037368

[28] Drew Kann, "Georgia Power rates: Public to pay bulk of Plant Vogtle costs," **Atlanta Journal-Constitution**, December 19, 2023. https://www.ajc.com/news/psc-raises-georgia-power-rates-passing-most-plant-vogtle-expansion-costs-on-to-customers/6BAIOWM7J5BVHFZ2UN27KYXENA/

Why were Plant Vogtle reactors 3 and 4 so expensive to build?

There are five key reasons why Vogtle cost overruns were extreme:


The Post and Courier

FOUNDED 1803 WINNER OF THE PULITZER PRIZE

Stamped for failure: Westinghouse and SCANA used unlicensed workers to design abandoned S.C. nuclear reactors

BY ANDREW BROWN ABROWN@POSTANDCOURIER.COM

SEP 24, 2017 UPDATED DEC 28, 2022

1. The NRC licensed the Westinghouse AP1000 design before it was complete, which led to a cascade of problems and cost overruns.[29]

2. Southern Company chose Westinghouse's incomplete design for the AP1000 reactor, saying design work would be completed as the project progressed. Federal law did not require licensed engineer review and approval of all revisions, and the construction blueprints had so many flaws that nearly every drawing was revised on site. An audit found the blueprints lacked details necessary for construction.[30]


Nuclear regulators confirm violations in Plant Vogtle construction

Plant Vogtle Units 1 and 2 (rear) and 3 and 4 (fore) in June 2021. (WRDW)

By Staff and wire reports

Published: Nov. 19, 2021 at 8:13 AM EST

3. The AP1000 design featured modular construction which was supposed to streamline construction. The modular components were intended to be manufactured off site, but the work was shoddy and factories had to be set up on-site at Plant Vogtle to rework nearly all of the modules.[31]

4. On-site (construction) management was ineffective and poor quality.[32] A few examples:

   - In 2012, the first rebar was installed incorrectly and had to be completely redone.
   - In 2013, the first concrete pour violated Westinghouse's own specs and resulted in NRC findings of significant breakdown in quality assurance. This resulted in a 20-month setback, forcing Westinghouse to rework their installations based on their own specifications.
   - In 2021, weld testing in the spent fuel pool deformed the steel floor, which had to be replaced.
   - Throughout the project NRC safety standards for electrical cabling were not followed, leading to a significant amount of electrical rewiring.
   - Component failure rates of 80% resulted from leaving components uncovered and exposed to weather and without a chain of custody.

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[29] Friends of the Earth, "Public interest groups call for nuclear regulators to halt the AP1000 reactor approval process," June 2011. https://foe.org/news/2011-06-public-interest-groups-call-for-nuclear-regulators-t

[30] Andrew Brown, "Stamped for failure: Westinghouse and SCANA used unlicensed workers to design abandoned S.C. nuclear reactors," **The Post and Courier**, September 24, 2017 Updated Dec. 28 2022. https://shorturl.at/4GkqR

[31] Richard Korman, "Witness to the Origins of a Huge Nuclear Construction Flop," Engineering News-Record, November 1, 2017. https://www.enr.com/articles/43325-witness-to-the-origins-of-a-huge-nuclear-construction-flop

[32] Georgia PSC filing VCM-27 Newsome Hayet and Kollen, "Direct Testimonies and Exhibits of Tom Newsome, Philip Hayet and Lane Kollen," https://psc.ga.gov/search/facts-document/?documentId=192559 p. 15.

5. Executive management and judgment was critically deficient, as indicated by these examples:[33]


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Monitors blame Georgia Power's lax oversight for Plant Vogtle delays

By Drew Kann

July 19, 2022

- Shaw Modular Solutions was hired as the main subcontractor to fabricate AP1000 modules despite having no experience in major nuclear construction projects.[34]
- Both Westinghouse and Southern Nuclear executives provided materially inaccurate cost and schedule estimates throughout the project, resulting in a cascade of poor management decisions.[35]
- Southern Nuclear and a succession of construction contractors including Westinghouse, CB&I, Fluor and finally, Bechtel, failed to create an Integrated Project Schedule. Because of this critical failure, worker activity (9,000 craft workers at the peak) was poorly organized, and many times workers were either idle or literally in the way of each other. This caused an average of one day of delay for every day of construction throughout the project.[36]
- As Vogtle 3 was nearing its supposed completion date in 2021 (six years late), it was revealed that 25,000 documents required to complete the NRC safety review (ITAAC, i.e., inspections, tests, analysis and acceptance criteria) were missing or incomplete.[37]

Once the ITAAC forms were completed and the NRC signed off on Georgia Power's safety review, a missing strut caused a vibration in the reactor core cooling system leading critics to wonder why the ITAAC process did not discover this issue. The repairs caused an additional three month delay just as Vogtle reactor 3 was ramping up to provide commercial output for the first time.[38] The same problem occurred one year later with Vogtle reactor 4, causing many months of additional delay.[39]

IT'S IMPORTANT TO DISPEL THE NOTION THAT PLANT VOGTLE WAS EXPENSIVE DUE TO HEIGHTENED GOVERNMENT REGULATIONS. IN FACT, COSTS WERE EXCESSIVE DUE TO INADEQUATE NRC REGULATION, CAUSED BY STREAMLINING PROCEDURES THAT WERE ADOPTED TO ENCOURAGE INVESTMENT IN NEW NUCLEAR PROJECTS.

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[33] Georgia PSC filing VCM 26 "Direct Testimony Donald N. Grace," June 17, 2022. https://psc.ga.gov/search/facts-document/?documentId=190494.

[34] Richard Korman, "Witness to the Origins of a Huge Nuclear Construction Flop," **Engineering News-Record**, November 1, 2017. https://www.enr.com/articles/43325-witness-to-the-origins-of-a-huge-nuclear-construction-flop

[35] Georgia PSC filing VCM-27 Newsome Hayet and Kollen, "Direct Testimonies and Exhibits of Tom Newsome, Philip Hayet and Lane Kollen," https://psc.ga.gov/search/facts-document/?documentId=192559 p. 15.

[36] Andrew Brown, "Stamped for Failure: Westinghouse and SCANA used unlicensed workers to design abandoned S.C. nuclear reactors," **The Post and Courier**, September 24, 2017 Updated Dec. 28 2022. https://shorturl.at/Lf1NW

[37] Matt Kempner, "How Georgia nuclear project's big finish went so wrong," **Atlanta Journal-Constitution**, December 21, 2021 https://www.ajc.com/news/business/how-georgia-nuclear-projects-big-finish-went-so-wrong/NWPE4XPG6NC5JJTMYTVJK4W2NQ/

[38] Nuclear Newswire, "Vibrating pipe causes delay to Vogtle-3 startup," January 13, 2023. https://www.ans.org/news/article-4641/vibrating-pipe-causes-delay-to-vogtle3-startup

[39] Drew Kann, "Vibrations at second new Vogtle nuclear reactor trigger new delay," **Atlanta Journal-Constitution**, February 2, 2024. https://www.ajc.com/news/business/vibrations-at-second-new-vogtle-nuclear-reactor-triggers-new-delay/PEWR4NJSDBCYDM7Y7TEEX5NMVE/#:~:text=Vibrations%20at%20second%20new%20Vogtle%20nuclear%20reactor%20trigger%20new%20delay,-Reactor%20won't&text=The%20completion%20of%20the%20second,a%20hit%20as%20a%20result

Repeating construction failures between the two new Vogtle reactors brings into question claims from the U.S. Department of Energy Loans Program Office that Plant Vogtle was a FOAK (first-of-a-kind) project and that lessons learned in Georgia would benefit future U.S. nuclear projects because experienced craft workers were now trained and available, when such experience did not prevent problems from one reactor to the next even on the same site on the same project.[40]

> Public Disclosure Direct Testimony of Don Grace
> Docket No. 29849, Twenty-Second Semi-Annual Vogtle Construction Monitoring Period
>
> **Q. GIVEN SNC'S APPROACH TO PROJECT PLANNING AND THE SCHEDULE PERFORMANCE TO DATE, HOW WOULD YOU CHARACTERIZE THESE EFFORTS?**
>
> A. Simply stated, it is to develop an unachievable plan, fail relatively quickly, and repeat the process to develop a new (and still unachievable) plan. When first creating the unrealistic plan, this is usually accompanied with, and based upon, a "Productivity Improvement Plan" wherein improvements in productivity are assumed within both the newly established Schedule Baseline and in the going forward cost estimates, but performance then falls far short of these assumed improvements.

It's important to dispel the notion that Plant Vogtle was expensive due to heightened government regulations. In fact, inadequate NRC regulation and streamlining procedures meant to encourage investment in new nuclear projects contributed to excessive costs.

Because of these incompetencies and material misstatements, as of 2024 Plant Vogtle construction costs approach $37 billion, clocking in at almost $7 million per day for 15 years.[41]

Where are the Vogtle billions? Here:

	Ownership structure:			
	45.7%	54.3%		
	GA Power	Partners†	Toshiba PG*	Total
Total Construction**	$ 11.646	$ 13.84	$ 3.70	$ 29.18
Not Claimed 2018	$ (0.694)			
Net Construction	$ 10.20			
Forgone Stipulated agreement 2023	$ (2.64)			
Net Contruction Stipulated agreement 2023	$ 7.56			
Financing for capital costs	$ 3.50	$ 4.16		$ 7.67
Total costs (construction and finance)				$ 36.85

*Parental guarantee
** Total constructure figure $11.646 from VCM-28 Table 1 Hayet Newsome
† MEAG, Oglethorpe Power, Dalton Utilities

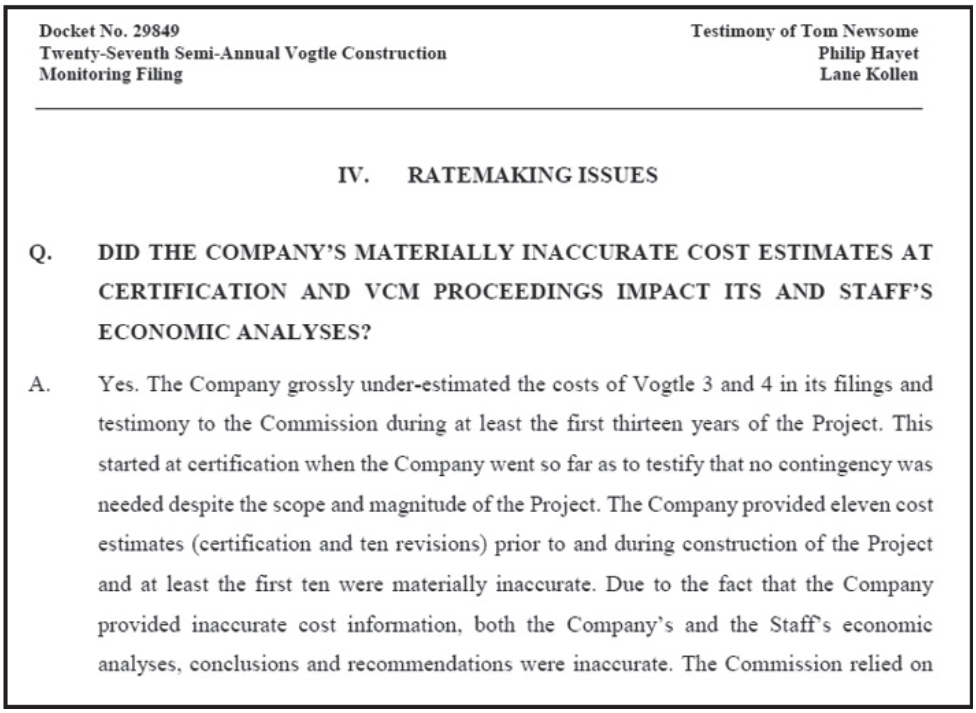
VCM = Vogtle Construction Monitor report

[40] U.S. Department of Energy Loans Program Office, "Pathways to Commercial Liftoff: Advanced Nuclear," March 2023, p. 4. https://liftoff.energy.gov/wp-content/uploads/2023/05/20230320-Liftoff-Advanced-Nuclear-vPUB-0329-Update.pdf

[41] Georgia Power PSC filing VCM-30 Semi-annual report, February 15, 2024, https://psc.ga.gov/search/facts-document/?documentId=217538. Compiled by authors from data found on P. 7.

What role did the Georgia Public Service Commission play in Vogtle?

By all appearances, the Georgia PSC is deep in regulatory capture, a phenomenon where a regulator prioritizes the interests of the companies it regulates (like Georgia Power) over the public good. Regulatory capture is evident in proceedings before the Georgia PSC and is most clearly evident in how the Commission handled Plant Vogtle's nuclear reactor expansion. Commissioners repeatedly accepted Georgia Power's budget and schedule forecasts in defiance of documented evidence from the Commission's own staff and consultants that they were materially inaccurate for over ten years.[42]



Docket No. 29849
Twenty-Seventh Semi-Annual Vogtle Construction Monitoring Filing

Testimony of Tom Newsome
Philip Hayet
Lane Kollen

IV. RATEMAKING ISSUES

Q. DID THE COMPANY'S MATERIALLY INACCURATE COST ESTIMATES AT CERTIFICATION AND VCM PROCEEDINGS IMPACT ITS AND STAFF'S ECONOMIC ANALYSES?

A. Yes. The Company grossly under-estimated the costs of Vogtle 3 and 4 in its filings and testimony to the Commission during at least the first thirteen years of the Project. This started at certification when the Company went so far as to testify that no contingency was needed despite the scope and magnitude of the Project. The Company provided eleven cost estimates (certification and ten revisions) prior to and during construction of the Project and at least the first ten were materially inaccurate. Due to the fact that the Company provided inaccurate cost information, both the Company's and the Staff's economic analyses, conclusions and recommendations were inaccurate. The Commission relied on

Despite cost overruns in the billions of dollars, schedule delays measured in years, and proof of mismanagement from Vogtle Construction Monitor reports filed both by PSC staff and independent construction monitors hired by the Commission, commissioners never criticized Georgia Power. In fact, the opposite occurred. Commissioners were outspoken advocates of nuclear power generally and of Georgia Power specifically, which violates Rules and Regulations of the State of Georgia that commissioners will reserve their opinion on the merits of any matter before them. One commissioner notably said Georgia Power and its partners had "hutzpah for sticking it out"[43] while failing to mention that Georgia Power was making substantially greater profits from Vogtle 3 and 4's delay than if it had finished on schedule.[44] Indeed, commissioners allowed Georgia Power to amass a record $17 billion in profits between 2009 and 2023, while allowing $20 billion in cost overruns for Vogtle 3 and 4 to accrue.[45]

The PSC has absolute authority over ratemaking and could have reduced Georgia Power's return on equity (ROE), the metric on which they earn profits, to balance profits against ballooning cost overruns. Instead, they did the opposite. In December 2022, Commissioners set Georgia Power's authorized ROE at an astonishing 11.9%, far higher than electric utility industry norms of norms of 9.5%. This rich ROE delivered $700 million

[42] Georgia PSC filing VCM-27 Newsome Hayet Kollen, p. 15. https://psc.ga.gov/search/facts-document/?documentId=192559

[43] Video interview Georgia PSC Commissioner Tim Echols, "One on One with Richard Rogers | Ga. Public Service Commission," **WRDW.com,** September 4, 2023. https://www.wrdw.com/video/2023/09/04/one-one-with-richard-rogers-ga-public-service-commission/ Time stamp Minute 2:16.

[44] Matt Kempner, "Nuclear cost overrun could mean billions in extra Georgia Power profit," **Atlanta Journal-Constitution**, July 9, 2021. https://www.ajc.com/news/business/nuclear-cost-overrun-could-mean-billions-in-extra-georgia-power-profit/YIA3T3YHZRHI5A7GCZHREIXCPE/

[45] Jeff Amy, "Georgia nuclear rebirth arrives 7 years late, $17B over cost," **Associated Press**, May 25, 2023. https://apnews.com/article/Georgia-nuclear-power-plant-vogtle-rates-costs-75c7a413cda3935dd551be9115e88a64

in excess profits to Georgia Power and is a key reason why Georgia power bills are ranked as the 6th most expensive power bills in the country.

What are the reasons the Georgia Public Service Commission does not regulate Georgia Power to protect consumers against monopoly profit-seeking?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Consumers lack voice at PSC as big utility cases loom, advocates say

LOCAL NEWS

By David Markiewicz

Feb 20, 2010

1. **No Consumer Utility Counsel:** Georgia is one of only six states without a Consumer Utility Counsel (CUC),[46] a department designated to function as an independent ratepayer advocate at the Georgia PSC. The Georgia legislature defunded the CUC in 2008, coincidentally the year before the Plant Vogtle expansion began.[47] The loss of this agency cannot be overstated: there was no advocate representing residential ratepayers as decisions about Vogtle were being made, while manufacturing and industrial customers were investing millions of dollars to effectively lobby for lower rates and exemptions from the Nuclear Construction Cost Recovery tariff. As a result, industrials paid only 11% of NCCR collections while residential customers paid over 88% of collections.

2. **"A Constructive Regulatory Relationship":** Georgia is one of only four U.S. states that adheres to the thinking that a friendly relationship between the regulator and the regulated benefits all parties.[48] The PSC was created to regulate in the public interest and be a check on monopoly power, and that requires neutrality, not friendship, especially in the absence of a Consumer Utility Counsel.

3. **Political Patronage:** There is an informal slating process of sitting Commissioners resigning between elections, allowing Georgia's governor to reward a political donor, typically with no knowledge of the utility or energy industry, with an appointment to a PSC seat.[49] Four of the five PSC Commissioners were appointees in this process, which gives them the power of incumbency when meeting voters for the first time. Georgia's governors also receive financial contributions from Georgia Power, creating a closed loop of political patronage.[50]

INDEED, COMMISSIONERS ALLOWED GEORGIA POWER TO AMASS A RECORD $17 BILLION IN PROFITS BETWEEN 2009 AND 2023, WHILE ALLOWING $20 BILLION IN COST OVERRUNS FOR VOGTLE 3 AND 4 TO ACCRUE.

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[46] David Springe, Executive Director of NASUCA, National Association of State Utility Consumer Advocates, https://www.nasuca.org/members/ (only ND, SD, LA, GA, MS, RI have no consumer advocate)

[47] David Markiewicz, "Consumers lack voice at PSC as big utility cases loom, advocates say," **Atlanta Journal-Constitution**, February 20, 2010. https://www.ajc.com/news/local/consumers-lack-voice-psc-big-utility-cases-loom-advocates-say/oHklWe6eQXk4r8BtwGMwPJ/

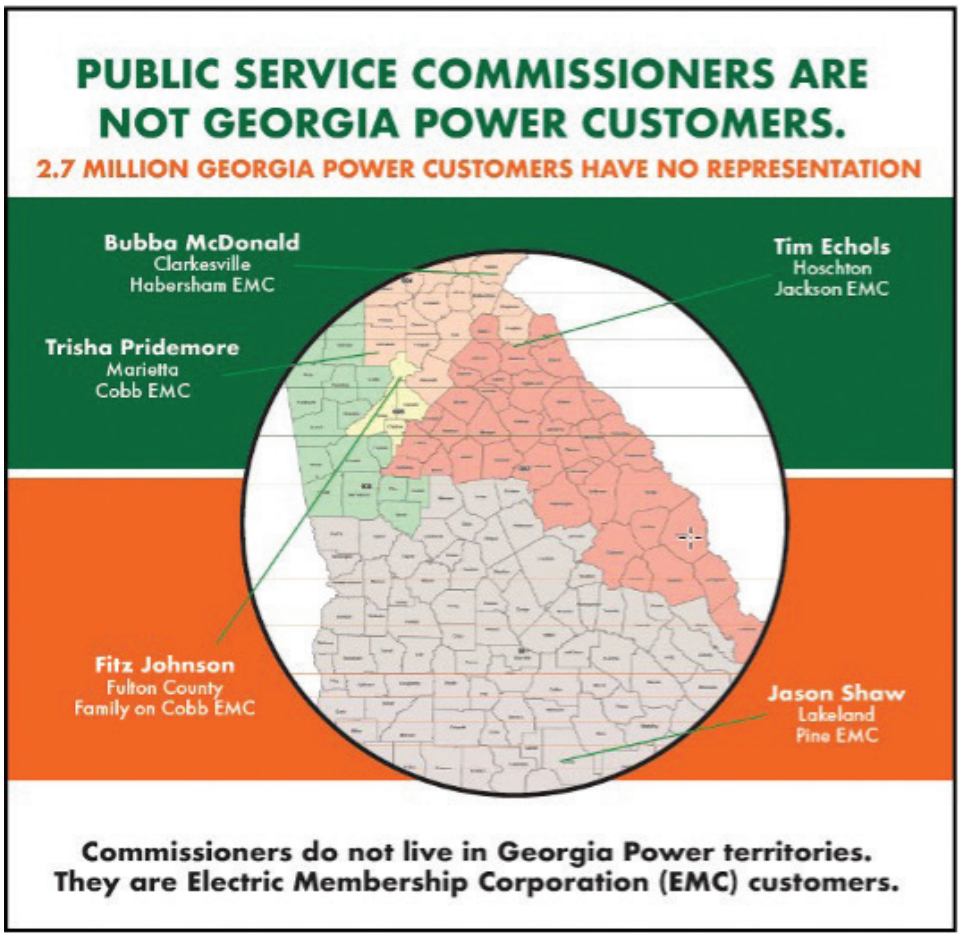
[48] Georgia Power website "Filings, Regulations & Compliance," https://www.georgiapower.com/company/filings.html

[49] IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF GEORGIA ATLANTA DIVISION Rose case opinion Filed January 5, 2021. https://images.law.com/contrib/content/uploads/documents/404/56701/NDGa-Rose-v.-Raffensperger-opinion.pdf p. 4.

[50] IN THE UNITED STATES DISTRICT COURT FOR THE NORTHERN DISTRICT OF GEORGIA ATLANTA DIVISION Rose case Filed August 5, 2022. https://cases.justia.com/federal/district-courts/georgia/gandce/1:2020cv02921/279066/151/0.pdf?ts=1659778463 p. 16.

4. **Six-Year Terms:** Commissioners are elected to staggered, six-year terms, a time frame far longer than any other state office, which makes it difficult for voters to hold Commissioners accountable for specific votes or actions.

5. **Secret Backroom Deals:** Georgia PSC rate case proceedings are undermined by a distorted process that Georgia Power controls called stipulated agreements.[51] Georgia Power hand-selects participants among the organizations who are intervenors in the case, allowing some to participate and others not, and meetings are held in secret, outside of public awareness. Other parties in the proceeding learn an agreement has been made after it is published and nearly impossible to change.[52] The stipulated agreements have poor outcomes for ratepayers, as seen by Georgia's ranking among the highest electric bills in the country.[53]



6. **No Representation:** All five commissioners pay their private homes' utility bills to electric membership corporations (EMCs).[54] Those utilities are nonprofits run by governing boards made up of their own customers primarily serving rural Georgia. EMCs would never allow a non-customer to govern their utility for obvious reasons of fair representation. Yet customers of Georgia Power, a corporation with a strong incentive to maximize profits, have no one sitting on the commission who pays a Georgia Power bill for electricity in their home.

7. **Weak ex parte rules:** The Georgia PSC has one of the weakest ex parte rules in the country. Ex parte rules bar communications between a judge and litigants before the court, but are not illegal in the similar structure of the PSC. In Georgia ex parte communications are in effect only for seven days prior to the conclusion of a proceeding which allows Georgia Power lobbying influence throughout the proceeding.[55]

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[51] Washington State Legislature stipulations. https://app.leg.wa.gov/wac/default.aspx?cite=230-17-080

[52] Southern Environmental Law Center Press Release, "Groups Request Evidence of Behind-Closed-Doors Discussions between Georgia Power, PSC," May 14, 2018. https://www.southernenvironment.org/press-release/groups-request-evidence-of-behind-closed-doors-discussions-between-georgia/.series.

[53] Cost of Living Data Series, "2023 Annual Average Cost of Living Missouri Economic Research and Information Center," https://meric.mo.gov/data/cost-living-data-series

[54] Georgia Public Service Commission website, "Meet the Commission". https://psc.ga.gov/about-the-psc/commissioners/

[55] Daniel Tait, "Georgia PSC messages reveal cozy relationship with Georgia Power, possible ex parte communications," Energy & Policy Institute, March 7 2018 https://energyandpolicy.org/georgia-psc-decisions-influenced-cozy-relationship-georgia-power/

2.1 MONTHLY ENERGY REQUIREMENTS

Attachment 2.1-1: Budget 2022 Monthly Energy Requirements by Class of Service – Forecast

Year	Retail Sales (GWh)						Territorial Requirements (GWh)	Territorial Supply (GWh)	Peak Demand (MW)
	Res.	Com.	Ind.	Gov. Lighting	MARTA	Total Retail			
Jan-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Feb-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Mar-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Apr-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
May-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Jun-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Jul-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Aug-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Sep-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Oct-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Nov-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Dec-21	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Jan-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Feb-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Mar-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Apr-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
May-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Jun-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Jul-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Aug-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Sep-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Oct-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Nov-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED
Dec-22	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED	REDACTED

Source: 2022 Integrated Resource plan filing https://psc.ga.gov/search/facts-document/?documentId=188519

8. **Extensive redactions:** The Georgia PSC allows Georgia Power extensive use of redactions and trade secrets - far more than any other state commission. This is especially damaging to the public interest given that nearly every expense and decision made by Georgia Power is paid by customers, who are not allowed to see or know the details of what they are required to pay. Expansive redactions and trade secrets clearly harm the public interest and are not necessary, given they are not the norm in most U.S. states.

Why did Georgia Power pursue Vogtle reactors when all other U.S. utilities cancelled theirs?

In the wake of the Westinghouse bankruptcy, the Georgia PSC staged a "go/no go" review as part of its regularly scheduled 17th Vogtle Construction Monitoring proceeding in December 2017. Despite significant expert testimony from multiple intervening parties that the project was more harmful to ratepayers to continue than to cancel, and calling into question the ability of Georgia Power to complete the project even within its new, higher budget and extended schedule, Commissioners still voted to move forward. So Georgia, the 8th poorest state in the country,[57] continued on alone, racking up shocking costs for new nuclear energy.[58, 59]


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BUSINESS

Nuclear cost overrun could mean billions in extra Georgia Power profit

The more utility spends, the more it can earn; consumers pay price

By Matt Kempner

Throughout the Vogtle expansion project, a Georgia State Commission deep in regulatory capture has given Georgia Power everything it wanted, including:

1. A blank check on construction costs. There was no limit to how expensive the Vogtle expansion could become.

2. Financial risks for reactor construction cost overruns remained with ratepayers and not Southern Company's shareholders, despite energy experts, consumer advocates, and Georgia PSC staff repeatedly urging Commissioners to add protections.

3. Allowing the Construction Work in Progress (CWIP), a.k.a. Nuclear Construction Cost Recovery (NCCR) tariff, to continue collecting money from ratepayers long after the project was supposed to be completed, which perversely rewarded Georgia Power with billions in extra profits despite being seven years late.[60]

[57] World Population Review, Poverty Rate by State 2024, https://worldpopulationreview.com/state-rankings/poverty-rate-by-state

[58] U.S. Chamber of Commerce: "How Rich is Each State." https://www.chamberofcommerce.org/how-rich-is-each-us-state

[59] Georgia PSC filing, "Order on the Seventeenth Semi-Annual Construction Monitoring Report for the Period January 1, 2017 through June 30, 2017." https://psc.ga.gov/search/?q=170765

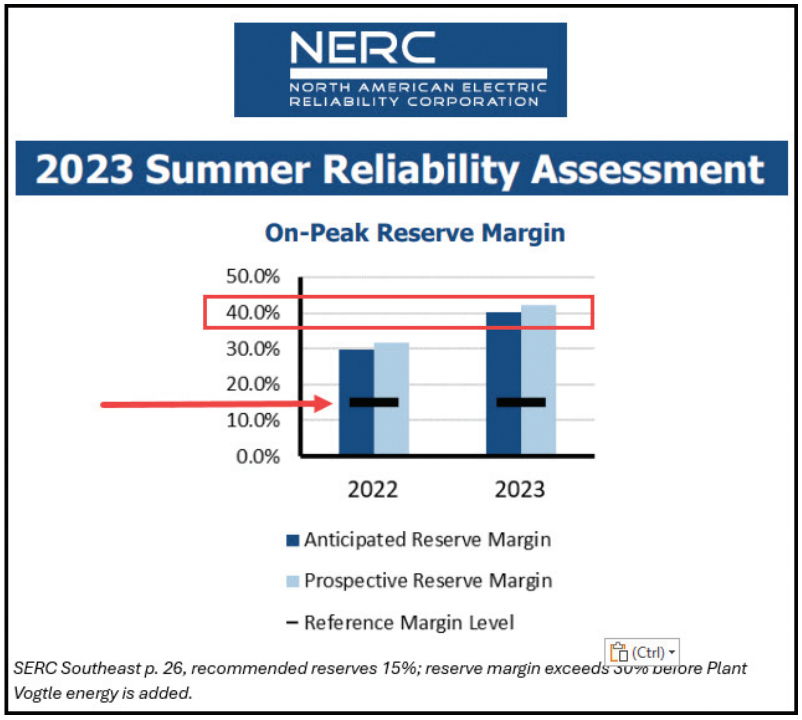
[60] Matt Kempner, "Nuclear cost overrun could mean billions in extra Georgia Power profit," **Atlanta Journal-Constitution**, July 9, 2021. https://www.ajc.com/news/business/nuclear-cost-overrun-could-mean-billions-in-extra-georgia-power-profit/YIA3T3YHZRHI5A7GCZHREIXCPE/

Did Georgia Power need the energy from Vogtle 3 and 4?

Georgia Power did not need to build Plant Vogtle reactors 3 and 4. Energy sales have been flat both nationally and in Georgia for two decades. Additionally, Georgia Power's generating capacity is nearly three times the peak reserves recommended by NERC, the National Energy Reliability Corporation, a federal agency responsible for national grid stability.[61]

Without the need for this generating capacity, and with documentation that cost estimates were materially inaccurate for over a decade, it becomes clear that similar misbehavior leading to arrest of executives in South Carolina occurred in Georgia, and that there has been no accountability.

Although Georgia is a growing state in terms of population and GDP, it is not growing in terms of electricity consumption due to improved building codes, advances in lighting technologies, and more efficient machines and devices. While data centers may add unexpected new demand, this demand can be met with grid improvement solutions to better utilize the grid for which customers have already paid.[62]



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[61] North American Reliability Corporation, "2023 Summer Reliability Assessment" SERC – Southeast, P. 26. https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC_SRA_2023.pdf

[62] Maeve Allsop, "Data center experts on energy use for AI: 'Calm the heck down," **Latitude Media**, January 31, 2024. https://www.latitudemedia.com/news/data-center-experts-on-energy-use-for-ai-calm-the-heck-down

How does Plant Vogtle perpetuate and worsen energy poverty in Georgia?

Energy poverty emerges when families either lack access to modern energy services or allocate a significant portion of their income to energy bills. Those experiencing energy poverty find themselves in a relentless cycle, unable to afford the energy essential for their health, well-being, education, and quality of life.

The Atlanta Journal-Constitution

News

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BUSINESS

Black Georgians face disproportionate energy burden, study says

Georgia Tech study finds race a determining factor in struggles to pay utility bills

By Drew Kann and Meris Lutz

March 14, 2024

Southern states have endured some of the costliest weather and energy-related events in recent decades, including increasing numbers of hurricanes (Katrina, Rita, Harvey, Andrew, Irma, Jose, Maria and Ian), BP's Deepwater Horizon disaster in the Gulf of Mexico, catastrophic flooding, droughts, and more frequent and severe storms including summer heat waves, winter deep freezes, powerful hurricanes and tornados outside of the normal window of occurrences. Four of the top five most expensive severe weather events in the U.S. since 2000 have occurred in southern states.[63] Of particular concern are impacts to nuclear power plants from superstorm events: as climate-related issues change southern geologic, atmospheric, and hydrologic landscapes, these severe storms create a dangerous intersection with nuclear energy.[64, 65]

S&P Global

Market Intelligence

21 Oct, 2020

Climate change poses big water risks for nuclear, fossil-fueled plants

Nuclear plants have proven to be unreliable during deep freeze events such as 2021's winter storm Uri, and as excessive heat and drought reduces lake and river water below levels required by nuclear power plants to keep reactors and

[63] Rainbow Restoration, "U.S. States With the Costliest Severe Weather Events," August 10, 2023. https://rainbowrestores.com/blog/the-costliest-severe-weather-events.

[64] Zahra Hirji, "Winter Storm Exposes Vulnerability of Nuclear Power Plants," **Inside Climate News**, January 29, 2015. https://insideclimatenews.org/news/29012015/winter-storm-exposes-vulnerability-nuclear-power-plants/.

[65] Erin Sikorsky, "The Promise and Peril of Nuclear Energy in a Climate Changed World," Perry World House, 2023 Global Order Colloquium. https://global.upenn.edu/perryworldhouse/news/promise-and-peril-nuclear-energy-climate-changed-world.

radioactive waste cool and to prevent meltdowns. Sea level rise increases the threat of flooding at nuclear plants on U.S. coastlines.[66]


Reuters

World | US Election | Business | Markets | Sustainability | Legal

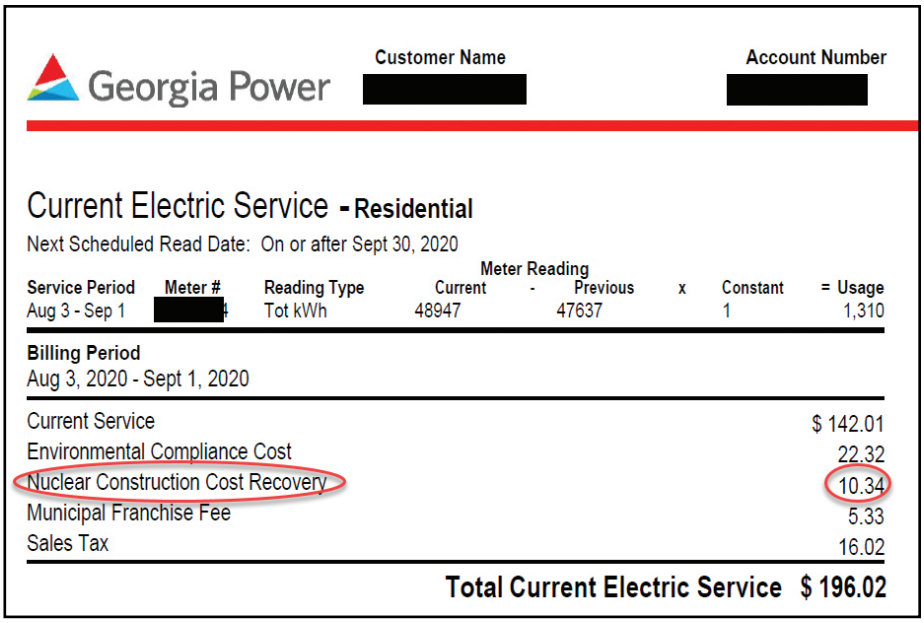
Energy | Grid & Infrastructure | Nuclear

Hot river water curbs output at French nuclear plant

By **Forrest Crellin**

August 2, 2024 7:08 AM EDT · Updated 3 months ago

In addition to struggling with more frequent and severe billion-dollar natural disasters, southerners work daily to overcome the disproportionate burden of living in the South where they struggle with a lack of access to adequate healthcare, livable wages, affordable housing, political representation, job training, and quality schools, often resulting in low educational attainment.[67] In general, southern communities lack adequate resources to handle widespread damage to personal and public infrastructure caused by storms, flooding, droughts, and freezes.


Georgia Power

Customer Name [redacted]

Account Number [redacted]

Current Electric Service - **Residential**

Next Scheduled Read Date: On or after Sept 30, 2020

Service Period	Meter #	Reading Type	Meter Reading Current	- Previous	x Constant	= Usage
Aug 3 - Sep 1	[redacted]	Tot kWh	48947	47637	1	1,310

Billing Period
Aug 3, 2020 - Sept 1, 2020

Current Service	$ 142.01
Environmental Compliance Cost	22.32
Nuclear Construction Cost Recovery	10.34
Municipal Franchise Fee	5.33
Sales Tax	16.02
Total Current Electric Service	**$ 196.02**

Georgia Power customers in particular have seen tremendous costs related to Plant Vogtle's expansion before a single electron of electricity was produced as a result of the aforementioned Construction Work in Progress that authorized on-bill tariff for nuclear construction financing.[68, 69] This type of law is rare and forces utility customers to finance a project before they benefit from the new infrastructure. If someone moves or dies, they will have paid significant increases on their electricity bill for something they never received. Early construction cost recovery due to the state legislated mandate imposes the role of corporate investor onto utility customers, many of whom have low incomes and suffer financially.[70] NCCR collections were substantial, in some years exceeding 10% of a customer's electricity bills, yet delivering nothing for that customer.

By the end of 2023, Georgia Power had collected over $4 billion from this tariff.[71] Residential and small-medium business customers paid over 88% of that $4 billion, while industrial customers only paid about 11%

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[66] Christina Nunez, "As Sea Levels Rise, Are Coastal Nuclear Plants Ready?" **National Geographic**, December 16, 2015. https://www.nationalgeographic.com/science/article/151215-as-sea-levels-rise-are-coastal-nuclear-plants-ready

[67] Tony Rehagen, "How We Rank: Study says Georgia is tenth worst in quality of life," **Atlanta Magazine**, October 13, 2024. https://www.atlantamagazine.com/news-culture-articles/rank-study-says-georgia-tenth-worst-quality-life/#:~:text=24%2F7%20recently%20ranked%20Georgia,safety%2C%20and%20accessibility%20to%20services

[68] Georgia PSC filing, NCCR Tariff 8, November 9, 2018. https://psc.ga.gov/search/facts-document/?documentId=174457

[69] Stanley Dunlap, "State regulators poised to OK steep Georgia Power rate hike request this week," Georgia Recorder, May 15, 2023. https://georgiarecorder.com/briefs/state-regulators-poised-to-ok-steep-georgia-power-rate-hike-request-this-week/

[70] Sarah Davis, "Atlantans feel pinch of extreme heat, rate hikes in their power bills," **Atlanta Journal-Constitution**, July 28, 2023. https://www.ajc.com/news/atlanta-news/atlantans-feel-pinch-of-extreme-heat-rate-hikes-in-their-power-bills/OLNP2NZ4HBAJBKDRMSGG73LYWY/

[71] Georgia Power Georgia PSC filing, DKT 29849 STF-255 Data Request Responses NCCR tariff, April 11, 2024. https://psc.ga.gov/search/facts-document/?documentId=218321 at STF-255-1 PD Attachment STF-255-1.xls

due to a carve-out in the legislation achieved by their lobbyists.[72] The Georgia General Assembly legislation favored industrial customers by limiting their advance payments for Vogtle's expansion to less than 3% of industrial customer bills while allowing residential bill NCCR collections as high as 10.76% some years.


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ENERGY & ENVIRONMENT GOVERNMENT & POLITICS

Cost controversies still inflame critics of Plant Vogtle expansion as kilowatts go online

BY: STANLEY DUNLAP - JUNE 5, 2023 7:32 PM


The Atlanta Journal-Constitution

News

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NEWS

Georgia Power rates: Public to pay bulk of Plant Vogtle costs

Customers will feel a cumulative 10% increase in their monthly electric bills

Normally, U.S. businesses finance large capital construction projects with a variety of corporate financing mechanisms, then charge customers as that product or service is purchased. Businesses choose the lowest possible cost of capital to remain competitive, and the risks of capital projects are undertaken by the corporation. This is standard business market structure. Since Georgia Power is a monopoly and operates outside of a competitive business market, it can shift risks and costs onto customers if regulator or legislative bodies enable it. That is exactly what the Georgia PSC did.

In an unprecedented 2016 "prudency review," when the new reactors were far from finished (prudency reviews deal with cost overruns and are normally conducted when projects are fully complete), the Georgia PSC authorized Georgia Power to separate Vogtle 3 and 4 rate increases, and approved a rate increase of $2.1 billion that would take place within 30 days of Unit 3 entering service. On July 31, 2023, Unit 3 entered commercial service and Georgia Power's residential rates increased 7.85%.[73]

On December 19, 2023, the Georgia PSC voted to approve a $7.56 billion rate increase for Georgia Power customers to pay for capital cost for reactor 4 and overruns related to construction of both reactors. Financing costs, on which Georgia Power also profits, added another $3.5 billion for a total rate base expansion of $11.1 billion.[74] In addition to the 7.85% rate increase for reactor 3, another 15.9% rate increase began in May 2024 for reactor 4. Together these reactors drove a 23.7% rate increase, in stark contrast to claims Georgia Power made in 2016 that completing Vogtle units would put "downward pressure on rates."[75]

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[72] John D. Wilson, "Are industrial power customers favored too much?" Southern Alliance for Clean Energy, December 4, 2017. https://www.cleanenergy.org/blog/georgia-power-vogtle-industrial-rate/.

[73] Georgia Power PSC filing "DKT 29849 - Georgia Power Company's Application to Adjust Rates to Include Reasonable and Prudent Plant Vogtle 3 and 4 Costs," November 1, 2023. Document Filing #216217 https://psc.ga.gov/search/facts-document/?documentId=216217.

[74] Georgia PSC Document Filing #217284 Order adopting stipulation January 31,2024. https://psc.ga.gov/search/facts-document/?documentId=217284

[75] Georgia Power press release via PR Newswire "1,800+ cubic yards of concrete placed for Vogtle Unit 3 CA20 module," March 7, 2016. https://www.prnewswire.com/news-releases/1800-cubic-yards-of-concrete-placed-for-vogtle-unit-3-ca20-module-300231888.html

Other types of generating choices such as solar + storage, distributed energy, demand response, or numerous other choices would generally cost between $35 and $50/MWh, compared to Vogtle's cost of $170/MWh. The goal of every utility is to expand their rate base because those are the assets on which a utility earns a profit. Vogtle 3 and 4 will increase Georgia Power's capacity just 7.51% while expanding their rate base 47%, a mismatch so extreme there can be no credible claim that this Commission is regulating in the public interest.[76, 77]

OTHER TYPES OF GENERATING CHOICES SUCH AS SOLAR + STORAGE OR DEMAND SIDE MANAGEMENT WOULD HAVE COST BETWEEN $35 AND $50/MWH COMPARED TO VOGTLE'S $170/MWH.

Plant Vogtle's other partners, Oglethorpe Power, MEAG Power, and Dalton Utilities own 54.3% of the project and its costs. There is no transparency for what Vogtle-related rate increases will be for the customers of these entities.

Oglethorpe Power provides electricity to rural electric membership corporations that primarily serve rural Georgians, the poorest area in the state. Yet, Oglethorpe Power will spend $8.2 billion for 660 megawatts for their 30% ownership stake, with no accountability for this extreme cost burden placed on rural Georgians.[78]

Georgia Power's Plant Vogtle

Year	Rate Base ($ Billion)	Expansion	Capacity (MWs)	Expansion
2022	23.19		13,587	
2024	34.17	47.3%	14,608	7.51%

Source: rate base ASR filings; Vogtle stipulated agreement 8/31/23

MEAG Power provides electricity to small public power companies that primarily serve rural Georgians living in small towns. Yet, MEAG will spend $8.034 billion for just 169 megawatts for their own use, while selling another 331 megawatts to utilities in Alabama (PowerSouth) and Florida (Jacksonville Electric Authority aka JEA), with their 22.7% ownership stake.[79] How will people living in Georgia's small towns afford rate increases to pay $8 billion for just 169 megawatts? It is not possible that MEAG Power's sale of 332 megawatts could come close to the $8 billion they must pay for their share of Vogtle.

Dalton Utilities is the only municipal utility in Georgia to have an ownership stake in Vogtle's expansion, a utility so small that its 2023 revenues were only $110.9 million. Ranked in 33rd place for population size among Georgia's cities, they will spend an astounding $306.2 million for just 35 megawatts for their 1.6% ownership stake.[80] An equivalent sized solar farm + long term battery storage would have cost approximately 80% less.

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[76] H. A. Averch, "The New Palgrave Dictionary of Economics," palgrave macmillan publisher, pp. 618-624. https://link.springer.com/referenceworkentry/10.1057/978-1-349-95189-5_388

[77] Georgia PSC Order adopting stipulation, January 31, 2024. https://psc.ga.gov/search/facts-document/?documentId=217284

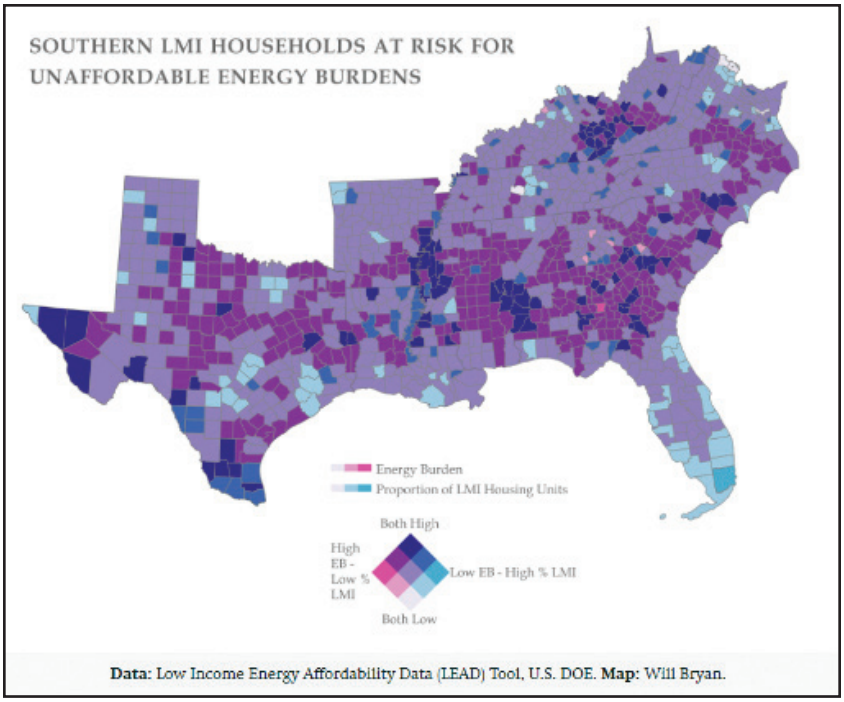
[78] Oglethorpe Power Corporation Securities and Exchange Commission filing Form 10-Q for Quarterly period ending March 31, 2024, p. 24. https://opc.com/wp-content/uploads/2024/05/Q124-Form-10Q.pdf

[79] Powered Up Vogtle Units 3 & 4" MEAG Power 2023 Annual Report, p. 30. https://www.meagpower.org/wp-content/uploads/2024/05/MEAG-Power-2023-Annual-Report.pdf

[80] City of Dalton Annual Comprehensive Financial Report for the period ended December 31, 2022, https://www.daltonga.gov/sites/default/files/fileattachments/finance/page/2741/city_of_dalton_2022_acfr.pdf, p. 49

For Georgia Power's 2.7 million customers, the cost of NCCR collections raised bills between 8% and 10% for 15 years, making it difficult for many to afford. According to Southeast Energy Efficiency Alliance, 15.4 million households in the South (35% of all households) report experiencing energy insecurity, higher than any other region in the United States. Atlanta is one of the top ten U.S. cities experiencing the highest energy burden for low-income residents, where the median energy burden for low- and moderate-income (LMI) households is 10.2%.[81] HUD considers 6% of a household's budget to be the maximum for an energy bill to be affordable, illustrating that thousands of Georgia households struggle with utility bill affordability. Only 88 counties in the South have an average energy burden that is deemed affordable for low-income households, while 1,229 have energy burdens that exceed the widely used 6% affordability threshold.[82] Meanwhile, in 2022, over 240,000 Georgia Power customers were disconnected for non-payment. While only 32% of Georgia's population is minority, 68% of those 240,000 disconnections were people of color.[83]

The Georgia Legislature's mandate to the Georgia Public Service Commission is similar to all state mandates for monopoly utilities: they must set a reasonable profit for Georgia Power, and they must set just and reasonable electricity rates.[84] There can be no credible claim that it is just and reasonable to build a $36 billion nuclear plant in the poorest region of the U.S.



TITLE 46 PUBLIC UTILITIES AND PUBLIC TRANSPORTATION

46-2-71. Power of commission to allocate utility service and to alter, amend, suspend, or terminate existing rates, schedules, contracts, rules, or regulations; findings required before commission exercises powers of allocation.

a. Subject to subsection (b) of this Code section, the commission shall have the power and authority to allocate any utility service in such manner as it deems proper in order to protect the public health, safety, or welfare, including for such purposes the power and authority to alter, amend, suspend, or terminate any existing rate, schedule, contract, rule, or regulation affecting such utility service and to prescribe new or additional rates, schedules, contracts, rules, or regulations affecting such utility service, provided that in any event such rates, schedules, contracts, rules, or regulations as are altered, amended, or prescribed by the commission shall be just and reasonable.

[81] Georgia Tech Climate and Energy Policy lab, "The Low-Income Energy Burden of Atlanta Households," May 13, 2018 https://cepl.gatech.edu/projects/low_Income
[82] Southeast Energy Efficiency Alliance & Texas Energy Poverty Research Institute, "The South has the lowest electric rates in the contiguous United States, but the highest residential bills," December 11, 2020. https://storymaps.arcgis.com/stories/4377299f586a493984222bfc6ee84e60
[83] Georgia PSC filing, "Georgia Power Incremental Bad Debt report," December, 2022. https://psc.ga.gov/search/facts-document/?documentId=192730
[84] Georgia code 46-2-71 PUBLIC UTILITIES AND PUBLIC TRANSPORTATION CHAPTER 2 - PUBLIC SERVICE COMMISSION, https://law.justia.com/codes/georgia/2010/title-46/chapter-2/article-4/46-2-71

What are some myths vs. truths about nuclear energy?

We live in amazing times to experience the benefits of technology, not only with smartphones, computers and medicine, but especially for energy. The number of advancements in how energy is produced and delivered and stored is enormous. Things like data analytics, virtual power plants, renewables, and distributed energy mean the electricity grid can decarbonize affordably and rapidly, and it means people can be engaged in ways never before possible.

For example, people now have access to their energy information in online portals, they can enroll in new programs that allow them to shift energy usage to less expensive periods in exchange for compensation and they can produce and store their own electricity through rooftop solar and battery storage. Two common programs that residential customers often find appealing are smart thermostat programs that reduce energy consumption at peak times of the day to save both the utility and the consumer money, and time of use rate plans that compensate consumers to use energy when it is less expensive to produce. Electric vehicles (EVs) can also be automated to charge overnight, and a future is coming where EV batteries can provide back-up power to homes during blackouts.

Nuclear energy proponents claim that nuclear energy is required to decarbonize the electricity grid, and that massive new generation requirements can only be met with nuclear power. These claims are false.

The following is a list of common myths about nuclear energy.

Myth #1: Nuclear energy is clean

Proponents claim that nuclear energy is clean because it emits no carbon dioxide, the main gas that is causing climate change. However, the mining of uranium for fuel is polluting and reactor construction is extremely energy intensive.[85] In Vogtle's case, for 15 years construction activities have been heavy emitters of carbon emissions, including the extensive use of concrete which produces significant amounts of carbon dioxide. So much concrete was used to build Plant Vogtle's new reactors that, according to Georgia Power, it was the equivalent of paving a sidewalk across the United States from Miami to Seattle.[86]

Claims that nuclear is clean energy also ignore the risks of highly radioactive waste that remains lethal for hundreds of thousands of years, which is generated and stored on-site at every nuclear facility in the country.[87] Despite years of research and debate, no viable, secure method for long-term storage for radioactive nuclear waste has been found.

DESPITE YEARS OF RESEARCH AND DEBATE, NO VIABLE, SECURE METHOD FOR LONG-TERM STORAGE FOR RADIOACTIVE NUCLEAR WASTE HAS BEEN FOUND.

Myth # 2: Nuclear energy is safe

Nuclear power failures can be catastrophic, so there is no scenario in which the competitive business market would build nuclear power without government support. Similarly, the private insurance market will not provide protection for damage caused by nuclear power plant meltdowns or explosions. Indeed, utilities were only willing to invest in nuclear power reactors when Congress passed the Price-Anderson Act in 1957, which limited liability to all companies involved in all aspects of the nuclear industry, from reactor designers to construction companies to owners and operators. The federal government has pledged that the U.S. Treasury will pay for damages beyond a $13 billion insurance cap from nuclear accidents. The Act was passed to help get the nuclear industry started with reactor construction, with the claim that insurance companies would no longer need a federal backstop once the industry had experience and a track record. Yet that has never been true, and the Price-Anderson Act has been extended four times, most recently in 2024 when it was extended another 40 years, now set to expire in 2065.[88]

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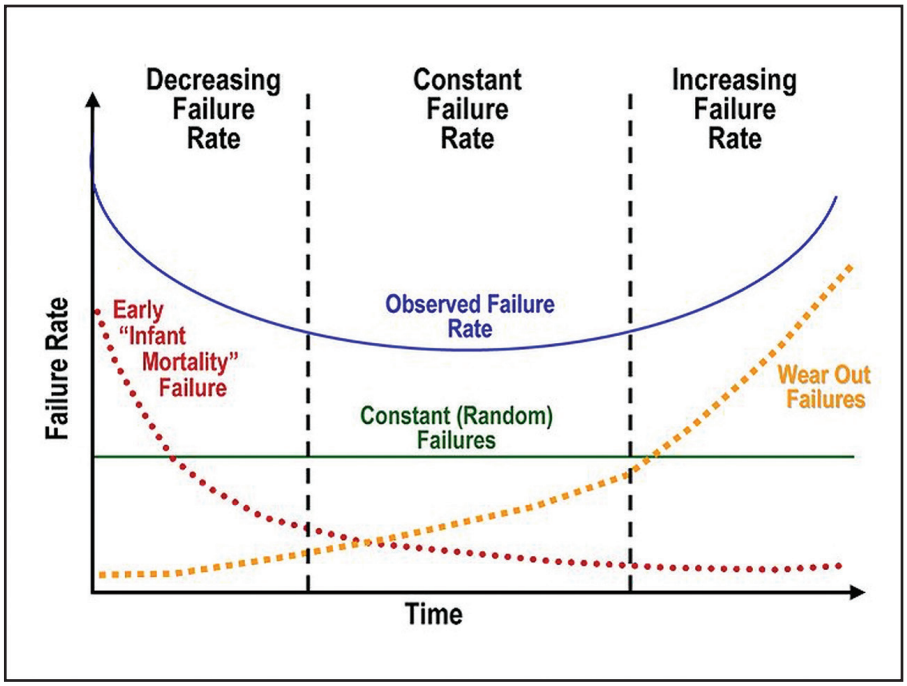
[85] Benjamin K. Sovacool, "Valuing the greenhouse gas emissions from nuclear power: A critical survey," **Energy Policy Journal**, August 2008. https://www.sciencedirect.com/science/article/abs/pii/S0301421508001997

[86] Georgia Power Press Release, "Major concrete placement completed for Vogtle Unit 4," December 22, 2017. https://www.prnewswire.com/news-releases/major-concrete-placement-completed-for-vogtle-unit-4-300575072.html

[87] Energy Information Administration, "Nuclear Power Explained," November 7, 2022. https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php

[88] Environment America, "Feds extend nuclear power subsidy," April 1, 2024. https://environmentamerica.org/updates/feds-extend-nuclear-power-subsidy/

Because the Southeast is currently the only region of the country where new reactors are being built and brought on-line, it is the region most in jeopardy of accidents due to the front-end of what is known as the "bathtub curve" effect. This documented effect shows that more accidents occur in the early stages of a reactor coming online, and, as reactors age, the rate of failure also increases, thus the curve. In Georgia, Plant Vogtle's Unit 3 and 4 are coming online around the same time as Vogtle 1 and 2 move into end-of-life phase.[89]



To illustrate the bathtub effect, Vogtle 1 had a near-miss early in its operating history when it experienced a station black-out during a 1990 refueling outage. Emergency generators failed to activate and uncirculated reactor cooling water began rapidly heating. Workers managed to avert disaster and the incident had national repercussions as officials admitted that Georgia Power nearly caused the worst nuclear accident since Three Mile Island.[90] Three Mile Island, Chernobyl, and Fukushima, with its U.S.-based GE reactor design, have starkly illustrated that accidents can and do happen and when they do, the costs and devastation are enormous, far beyond the $13 billion Price-Anderson insurance cap.

Myth # 3: Nuclear waste is no big deal

Similar to the Price-Anderson Act described above, utilities were wary of being stranded with highly radioactive, long-lived spent nuclear fuel. The U.S. government pledged to take responsibility for high-level radioactive waste which is codified in the Nuclear Waste Policy Act of 1982 and has been amended multiple times. The U.S. missed its self-imposed 1998 deadline to locate a site for, let alone build and operate, a central repository, and currently all high-level radioactive waste is stored on reactor sites. There are no viable plans underway to address this problem: over its lifetime, each operating reactor produces 30 tons of highly radioactive waste which remains highly radioactive for hundreds of thousands of years.[91]

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[89] Dave Lochbaum, "Nuclear Bathtub Safety," Union of Concerned Scientists, September 13, 2016. https://blog.ucsusa.org/dlochbaum/nuclear-bathtub-safety/.

[90] Thomas Lippman, "Reactor plays out worrisome scenario," **Washington Post**, March 22, 1990. https://www.washingtonpost.com/archive/politics/1990/03/22/reactor-plays-out-worrisome-scenario/39a2e772-84bf-4533-a0f0-a159a3d00923/

[91] Daniel Moore, "US Efforts to Store Nuclear Waste Poised for High Court Review," **Bloomberg Law**, March 28, 2024. https://news.bloomberglaw.com/environment-and-energy/us-efforts-to-store-nuclear-waste-poised-for-high-court-review

Myth #4: Small modular reactors are different

Small modular reactors (SMRs) are smaller than conventional nuclear reactors, which proponents claim would allow them to be built from modules that are manufactured in one location, then shipped, assembled, commissioned, and operated at a separate site. Instead of a traditional 1000-megawatt reactor, a small modular reactor is 300 megawatts or less. Despite the fact that SMRs are in the research phase and none have been built in the U.S., supporters promote them as a solution for forecasted increases in energy demand and reducing carbon emissions. Opponents argue that the time frame for deploying SMRs is too long to impact climate change. There have only been three SMRs built anywhere, two in Russia and one in China, but they are not considered successful due to massive delays and low capacity factors.[92]

Indeed, SMRs are already stumbling, with front runner NuScale Power Corporation cancelling their SMR project in November, 2023.[93] Recent news reports indicate that costs have escalated to well over $100/MWh,[94] once again pushing costs for new nuclear energy far above any other energy generation technology. Meanwhile, solar and wind energy, including battery storage, cost less than one-third that amount at about $30/MWh, and these technologies are available now.

Myth #5: Nuclear energy is required to provide baseload backup to renewables

There is a myth that renewables are intermittent and thus require baseload backup, or 24x7 power which can only be delivered by conventional coal, gas or nuclear power.[95] Although intermittent power sources were difficult to integrate into the grid early on, digital grid advancements means it is not true now.[96] Grids throughout the world, including the U.S., can and do use digital applications and advanced analytics and devices to intelligently integrate renewable energy resources, storage, and software advancements into very high levels of load management.[97]

Flexibility is what is needed now, and flexibility is now available thanks to distributed energy made possible by clean-energy technology.[99] Data analytics and digital applications allow for high levels of renewables to easily serve on the grid in ways never before possible, but many people don't know it, including policymakers. Nuclear and fossil fuel baseload power stations are inflexible power sources designed to run at maximum output all the time whether the power is needed or not. Conventional investments in large scale generation

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92 David Schlissel, "NuScale Power, the canary in the small modular reactor market," **Utility Dive**, March 21, 2023. https://www.utilitydive.com/news/nuscale-power-small-modular-reactor-smr-ieefa-uamps/645554/

93 M.V. Ramana, "The collapse of NuScale's project should spell the end for small modular nuclear reactors," **Utility Dive**, January 31, 2024. https://www.utilitydive.com/news/nuscale-uamps-project-small-modular-reactor-ramanasmr-/705717/

94 David Schlissel, "NuScale Power, the canary in the small modular reactor market," **Utility Dive**, March 21, 2023. https://www.utilitydive.com/news/nuscale-power-small-modular-reactor-smr-ieefa-uamps/645554/

95 Sara Hastings-Simon and Binnu Jeyakumar, "Baseload myths and why we need to change how we look at our grid," Pembina Institute, August 3, 2017. https://www.pembina.org/blog/baseload-myths-and-why-we-need-change-how-we-look-our-grid

96 George Harvey, "We Don't Need Base Load Power," **CleanTechnica**, April 2022. https://cleantechnica.com/2022/06/28/we-dont-need-base-load-power/

97 Mark Diesendorf, "Baseload power is a myth," Institute of Environmental Studies, UNSW, April 10, 2013. https://www.unsw.edu.au/newsroom/news/2013/04/baseload-power-is-a-myth--even-intermittent-renewables-will-work

99 Jaquelin Cochran et al, "Flexibility in 21st Century Power Systems," National Renewable Energy Laboratory. https://www.nrel.gov/docs/fy14osti/61721.pdf

such as nuclear power harm the ratepayer while rewarding those who build and operate increasingly obsolete 20th century technologies, a fact which the nuclear industry seeks to conceal by renaming Small Modular Reactors "advanced technology."

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OPINION

Nuclear boosterism has gotten reckless

Today's misguided focus on nuclear power is diverting us from renewables, storage and efficiency, hobbling us in our race against climate chaos.

Published March 22, 2024

By Kevin Kamps

Myth #6: Nuclear energy is required to meet future growth

There is a claim that nuclear energy is required to decarbonize the grid because the load growth from electrification, data centers, or manufacturing is too massive. There is a common misunderstanding that replacing fossil fuels with renewable energy like solar, wind, geothermal etc. requires the same amount of energy one-to-one, which is not the case. Fossil fuels and uranium are burned to boil water to produce steam to generate electricity which produces large amounts of waste heat. Renewable energy not only does not produce waste heat, but is more than twice as efficient as steam-generated power. Fossil fuel and nuclear energy can thus be replaced by less than half as much clean, renewable energy. The task of reducing carbon emissions is much smaller than many people realize. In addition, the nation's electricity grid is woefully underutilized because it is built to meet peak demand. Many programs and modern grid enhancements could improve the nation's low utilization of its grid.

Myth #7: Nuclear energy is needed to combat climate change

There are dozens of studies that model a path to a zero-carbon grid without any expansion of nuclear power, including analyses by Stanford University researchers,[100] and the highly credible RMI, a nonprofit whose mission is decarbonizing energy systems.[101] In fact, many U.S. states and countries around the world already have high proportions of renewable energy servicing their grids. Washington, Oregon, Idaho, and South Dakota produced over 60% of their electricity from renewables in 2023, and ten countries generated 60% to 90% of their electricity from renewables in 2022 including Scotland, Iceland, the Netherlands, Germany, and Guatemala, among others.[102, 103] California's output from wind, water and solar power exceeded demand for 30 of 38 days early in 2024.[104]

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[100] Mark Z. Jacobson, "100% Clean, Renewable Energy and Storage for Everything," **Cambridge University Press**, February 11, 2019. https://web.stanford.edu/group/efmh/jacobson/WWSBook/WWSBook.html

[101] Alex Engel, Charles Teplin, Mark Dyson, "Cutting Carbon While Keeping the Lights On," RMI, 2021. https://rmi.org/insight/cutting-carbon-while-keeping-the-lights-on/

[102] Mark Z. Jacobson, "Percent electricity generation in 2022 by state," Stanford University, May 22, 2023. https://web.stanford.edu/group/efmh/jacobson/WWSBook/22-WWSElecByState.pdf

[103] Blaise Hope, "Top 10: Nations that are leading the renewable energy charge," **Sustainability Magazine**, March 15, 2022. https://sustainabilitymag.com/net-zero/top-10-nations-that-are-leading-the-renewable-energy-charge-countries-emissions

[104] Christian Oliver, "California Hits 'Historical' Renewable Energy Milestone," **Newsweek**, April 15, 2024. https://www.newsweek.com/california-milestone-renewable-energy-1890345

Former NRC Commissioner Allison Macfarlane said, "Advocates hope that this renewed focus on nuclear energy will yield technological progress and lower costs. But when it comes to averting the imminent effects of climate change, even the cutting edge of nuclear technology will prove to be too little, too late. Given the long lead times to develop engineered, full-scale prototypes of new advanced designs and the time required to build a manufacturing base and a customer base to make nuclear power more economically competitive, it is unlikely that nuclear power will begin to significantly reduce our carbon energy footprint even in 20 years — in the United States and globally."[105]

THE U.S. GOVERNMENT CONTINUES TO MISLEAD THE PUBLIC AT A TIME WHEN RAPID AND AFFORDABLE SOLUTIONS TO CLIMATE CHANGE ARE AT HAND.

During COP 28 (Conference of the Parties to the United Nations Framework Convention on Climate Change) held in Dubai in December 2023, 25 countries — including France, the United Kingdom, and the United States pledged to triple global installed nuclear capacity by 2050. It is unclear what is behind such a pledge since it is literally impossible to design and build enough nuclear capacity in the time frame necessary to impact the climate emergency.[106] U.S. government support for nuclear energy as a solution to climate change is disappointing, given the decades of failures, cost overruns, accidents and scandals. The U.S. government continues to mislead the public at a time when rapid and affordable solutions to climate change are at hand.

[105] Allison Macfarlane, "Nuclear Energy Will Not Be the Solution to Climate Change," **Foreign Affairs**, July 8, 2021. https://www.foreignaffairs.com/world/nuclear-energy-will-not-be-solution-climate-change?check_logged_in=1andutm_medium=promo_emailandutm_source=lo_flowsandutm_campaign=registered_user_welcomeandutm_term=email_1andutm_content=20240401.

[106] World Nuclear Industry Status Report 2023, "Nuclear Power 2023 End of Year Update," 2023. https://www.worldnuclearreport.org/IMG/pdf/wnisr2023-endofyear-updates.pdf

Scandals and Litigation

Nuclear proponents hope that SMRs will introduce a new era of affordable nuclear power.[107] That seems unlikely given its troubles to date despite heavy investment, but what is certain is that there is an extensive history of corruption in the nuclear industry.[108] The most recent example occurred in Ohio, where former House Speaker Larry Householder was sentenced to 20 years in prison for leading a racketeering conspiracy for a billion-dollar nuclear-plant bailout.[109] This follows nuclear scandals in South Carolina and Illinois where utility executives or legislators either went to jail or paid hundreds of millions in fines for lying and bribery.[110, 111]

Nuclear energy is an expensive and complicated way to produce steam to generate electricity, but it delivers such huge profits and commands so many taxpayer subsidies that utilities and the nuclear industry constantly contrive to make the technology seem capable of solving the world's energy problems. Plant Vogtle is a good example of why that's not true: an experienced, well capitalized utility received deep financial and regulatory support from state and federal regulatory agencies but was still not able to deliver two new nuclear reactors anywhere close to the budget and schedule they themselves set. The financial risks are always imposed on residential and small business utility customers, as was the case in Georgia for Vogtle reactors 3 and 4, because if risk shifting could not occur, utilities would not build nuclear generation. That would risk their own financial stability, as it did with Westinghouse. And nuclear industry projects often lead to scandal because opportunities for large profits create incentives for corruption that do not exist with most other types of energy generation.

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[107] 2023 World Nuclear Industry Status Report, p. 316, https://www.worldnuclearreport.org/IMG/pdf/wnisr2023-v5.pdf

[108] Richard Tanter, "After Fukushima: A Survey of Corruption in the Global Nuclear Power Industry," **ResearchGate**, October 2013, https://www.researchgate.net/publication/286345864_After_Fukushima_A_Survey_of_Corruption_in_the_Global_Nuclear_Power_Industry

[109] U.S. Attorney's Office, Southern District of Ohio, "Former Ohio House Speaker sentenced to 20 years in prison for leading racketeering conspiracy involving $60 million in bribes," June 29, 2023, https://shorturl.at/B94kF

[110] Jeffrey Collins, "Executive gets 15 months in prison in doomed VC Summer nuclear project," **Associated Press**, March 8, 2023, https://apnews.com/article/stephen-byrne-scana-power-plant-prison-c97cb1aaa33c991020551b2ae5c4dd85#

[111] Dave Byrnes, "Seventh Circuit hears racketeering case against Illinois energy giant," **Courthouse News Service**, May 17, 2022 https://www.courthousenews.com/seventh-circuit-hears-racketeering-case-against-illinois-energy-giant/

There was extensive litigation related to the construction of the new Vogtle reactors. Major partners in the project including MEAG and Oglethorpe Power, the umbrella association for Georgia's Electric Membership Corporations, sued Georgia Power when cost overruns became extreme. JEA filed suit against MEAG to cancel its contract in an attempt to protect their customers from out-of-control rate increases.[112] Sadly, Georgia Power's litigation costs are another source of profits. All litigation costs are added to the rate base from which Georgia Power profits and which increases power bills for ratepayers.

JEA sues to void nuke deal

Georgia utility authority also hits JEA with federal suit

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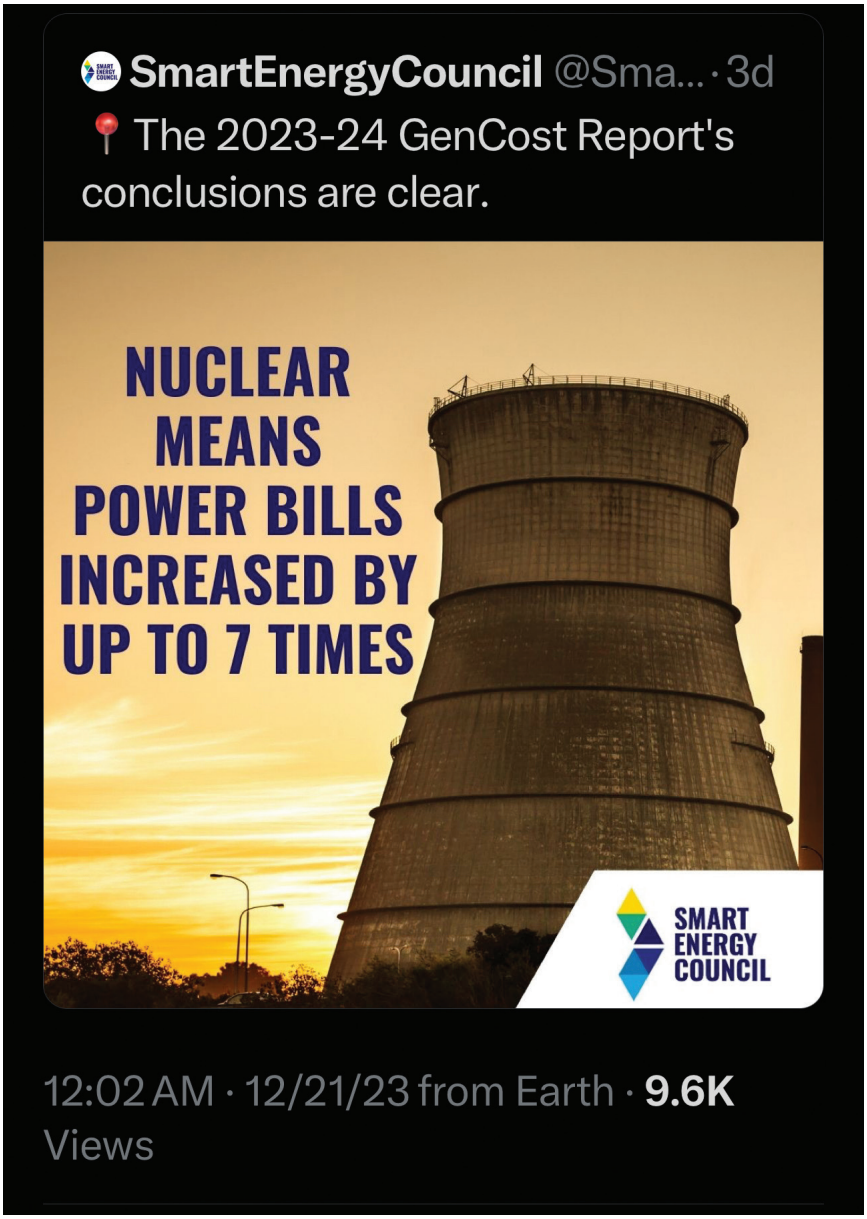
NOTE: JEA is Jacksonville Electric Authority. The Jacksonville, Florida, public utility is contractually obligated to MEAG (Municipal Electric Authority of Georgia) to purchase power from Plant Vogtle

[112] David Bauerlein "JEA loses Plant Vogtle nuclear power lawsuit," **The Florida Times-Union**, June 17, 2020, https://www.jacksonville.com/story/news/politics/county/2020/06/17/jea-loses-plant-vogtle-nuclear-power-lawsuit/41726243/

Conclusion

These are inspiring times of energy transition in many areas of the United States and the world, though not in the Southeast United States. Leaders in this region could easily accelerate the clean energy transition by making greater investments in efficiency, renewables, and a range of clean energy initiatives and technologies such as heat pumps, electric water heaters, smart connected devices, rooftop solar and vehicle-to-grid EV battery storage. It is especially tragic, given how poor the Southeast region is, and how sunny Georgia, Mississippi, and Alabama are, that these states are in 46th, 49th and 50th place in state rankings nationally for rooftop solar penetration and are equally low in energy efficiency. Investments in a clean energy transition would save substantial amounts of ratepayer money, and would quickly meet the reduced greenhouse gas emissions reduction targets the world needs to address the climate crisis. Yet these investments are not made as they are not as profitable for monopoly utilities seeking to maximize profits.



Plant Vogtle points to the failure of the State of Georgia generally, and the Georgia Public Service Commission specifically, in protecting its people from monopoly utility power and overreach. Plant Vogtle would never have happened in a competitive business environment, and should not have happened in the Georgia regulatory environment which was created to protect the public interest from monopoly abuse. This is clearly seen by Georgia's ranking in 6th place nationally for high power bills, and that is before Plant Vogtle drives up rates.[113] It is very likely Georgians will soon be paying the highest power bills in the nation due to Plant Vogtle.

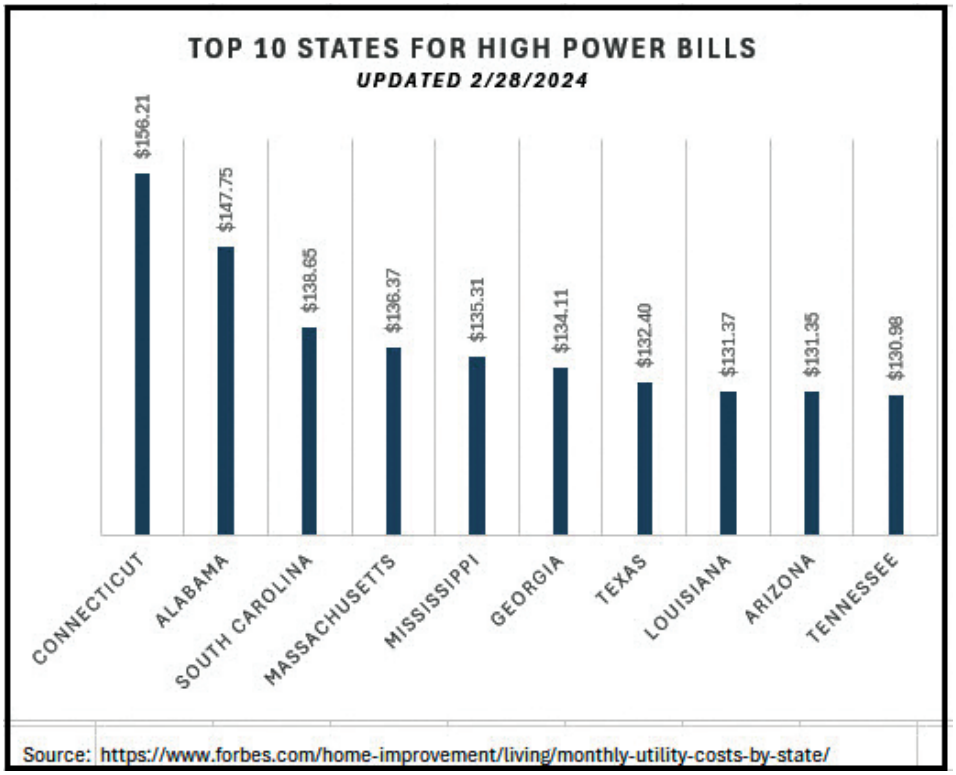
[113] Ana Durrani, "Monthly Utility Costs In The U.S. By State," **Forbes**, February 28, 2024. https://www.forbes.com/home-improvement/living/monthly-utility-costs-by-state/.

Monopoly utilities are entrenched, wealthy, powerful, and skilled at blocking change, most especially Southern Company.[114] It is worth noting that three of the top 10 states for high power bills are powered by monopoly utilities owned by Southern Company. Each Southern Company owned utility has a state commission that permits their monopoly utility to increase profits by building more generation.

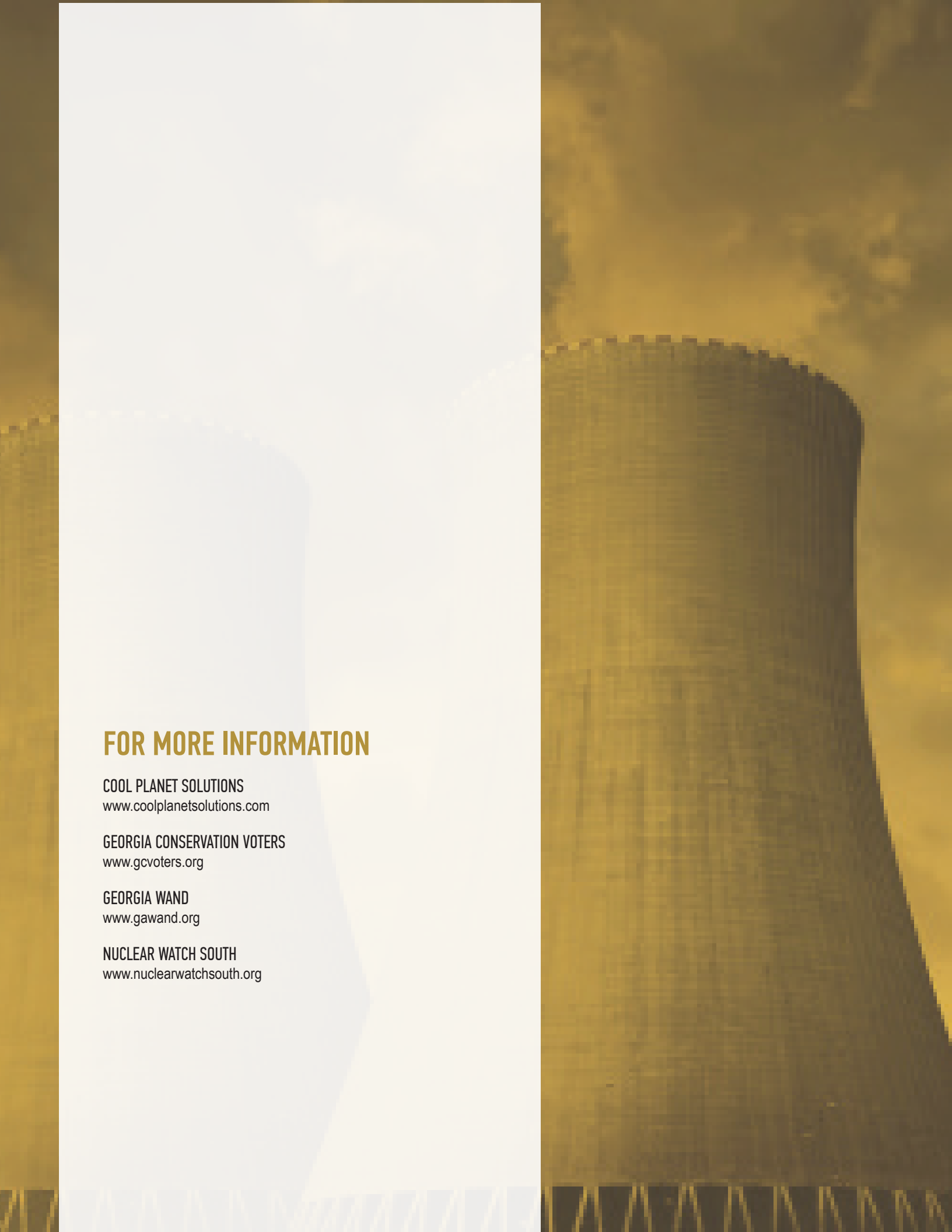
It is urgent that states either change how their utilities are compensated so they are rewarded for reducing costs and carbon emissions, or restructure their electricity markets to create a competitive market where new market entrants can thrive. An immense transfer of wealth is taking place from the people of Georgia to a rich, powerful monopoly whose only motivation is to maximize profits. There are real people paying for Plant Vogtle, people who cannot afford the resulting high electric bills that should never have happened.

Georgia's experience with Vogtle reactors 3 and 4 starkly illustrates that nuclear energy is the wrong path to a clean energy future. The authors of this report urge other states not to follow in Georgia's footsteps.

GEORGIA'S EXPERIENCE WITH VOGTLE REACTORS 3 AND 4 STARKLY ILLUSTRATES THAT NUCLEAR ENERGY IS THE WRONG PATH TO A CLEAN ENERGY FUTURE.



[114] Emily Jones, "Southern Company spent millions on misinformation despite climate change warnings, report finds," **WABE**, June 9, 2022. https://shorturl.at/qfYFb



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