SOLAR IN THE SOUTHEAST

Fifth Annual Report

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INTRODUCTION

"Solar in the Southeast" illuminates the critical role of utilities in the growing southeastern solar market. Southeastern states, particularly Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee, grant monopoly utilities–rather than a competitive marketplace–the responsibility and control over power supplies. Consequently, the location of a home or business is the primary determinant not only of which utility will supply the electricity, but also the amount of solar within that portfolio.

To provide an equitable, unbiased comparison of various-sized utilities throughout the Southeast, SACE has ranked utilities on the basis of **watts per customer** (W/C) of solar power sourced to customers. SACE has also calculated and forecast total installed capacity of solar power (in megawatts, MW) particularly for state comparisons.

The purpose of this report is to review emissions and generation trends of the electric power sector in the Southeast. The purpose of this report is to document current progress and trends at both utility and state levels, as well as identify policies and practices to drive continued solar growth in the Southeast.

ABOUT SACE

The Southern Alliance for Clean Energy (SACE) is a nonprofit organization that promotes responsible and equitable energy choices to ensure clean, safe, and healthy communities throughout the Southeast. As a leading voice for energy policy in our region, SACE is focused on transforming the way we produce and consume energy in the Southeast.

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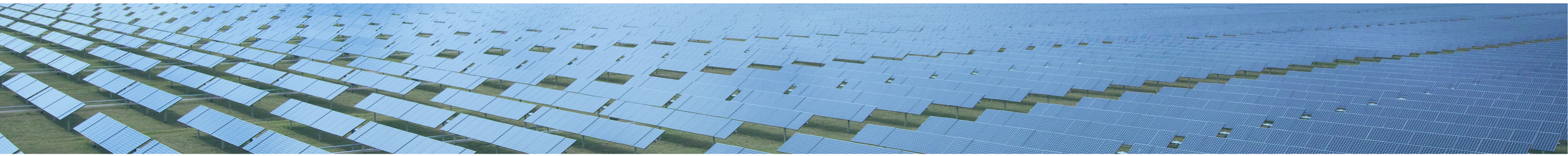


EXECUTIVE SUMMARY

UTILITIES

- The top four utilities on the large utility leaderboard remained the same from last year: **Duke Energy Progress (DEP)**, **Dominion Energy South Carolina**, **Tampa Electric** and **Georgia Power.** *Page 6*

- **Florida Power and Light** has moved into the top five for the first time.

STATES

- **Florida** has definitively established itself as the Southeast leader in installed solar capacity. The state had almost 5.7 gigawatts (GW) for 2021 on a full-year operational equivalent basis – 2 GW more than any other state. *Page 11*

- **Alabama**, **Tennessee**, and **Mississippi** fall far short of other Southeast states in both installed capacity (MW) as well as watts per customer (W/C) solar ratio. By 2025, even the **North Carolina** solar ratio is forecast below the region average. *Page 12*

SUPPLY CHAIN DISRUPTION

The present supply chain disruption has influenced the SACE **near-term forecast**. For example, in last year's report, we had been anticipating 20.6 GW for 2022 and 24.4 GW for 2023. Those forecasts are now reflecting 18.4 GW and 22.5 GW, respectively. The projection for 2024 reunites with the 27 GW forecast in last year's report.

FEDERAL AND STATE POLICY

The bipartisan Infrastructure Investment and Jobs Act (IIJA) includes **substantial investment in transmission** critical for a nationwide clean energy transition. A federal clean electricity standard (100% by 2035) no longer seems possible, but Congress still has an opportunity to adopt a package of **clean energy tax credits**. State legislation in **North Carolina requires a Carbon Plan** (70% reduction by 2030). An evolution of **net metering policy** was approved in South Carolina and is being considered in North Carolina. Florida's Governor vetoed a bill that would have destroyed the state's distributed or rooftop solar market.

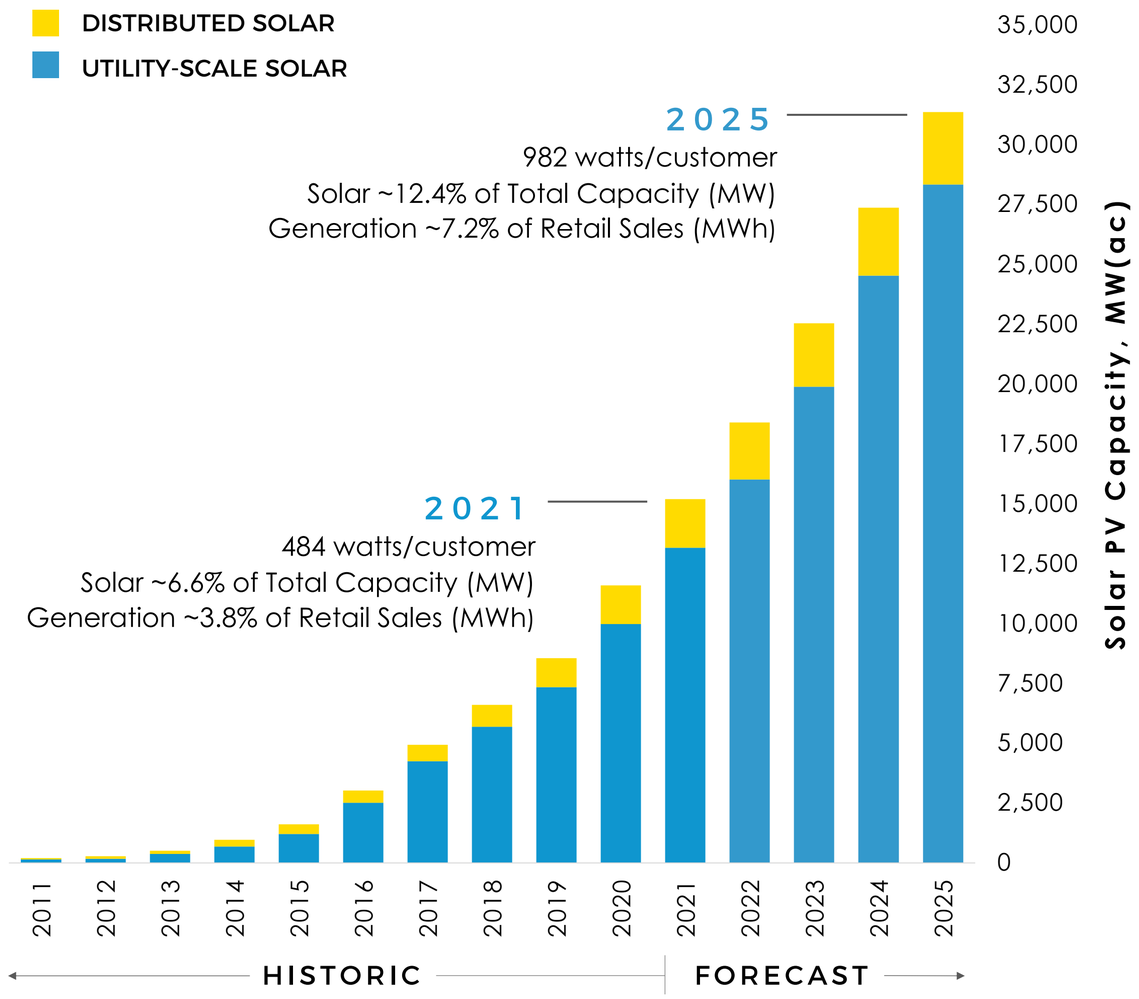
SUNRISERS

The **Knoxville Utilities Board (KUB)** earned the top SunRiser slot. **Lakeland Electric** burst onto the SunRiser list and **Florida Power & Light** returned to the list for the first time in three years. A familiar name is missing this year. **Tampa Electric** had been a perpetual SunRiser, the only utility to appear on all four of our prior lists. *Page 8*

SUNBLOCKERS

Alabama Power and the **North Carolina Electric Cooperatives** again appear at the bottom of the forecast for 2025. **Tennessee Valley Authority (TVA)** and **Seminole Electric** have rejoined them with the designation as **SunBlockers** – those utilities whose four-year forecast remains below last year's region average.

SOUTHEAST SOLAR CAPACITY FORECAST[5]



SOLAR IS RESILIENT

The Southeast is not immune to the various headwinds presently confronting solar across the USA. Yet, solar in the Southeast continued to exhibit **substantial growth in 2021 – exceeding 15 gigawatts** (GW, or 15,000 megawatts) on a full-year operational equivalent basis. The Southeast achieved an average solar ratio of **484 watts per customer** for 2021.

SUPPLY CHAIN DISRUPTIONS

The COVID-19 pandemic presented both direct and indirect challenges including conventional supply chain issues. Those were compounded by supply chain disruptions of a political variety when the Department of Commerce was forced to investigate **potential circumvention of the antidumping and countervailing duties** imposed on crystalline silicon solar cells from China. This investigation and the uncertainty it created have paralyzed the international solar supply chain (at least temporarily). President Biden announced a series of steps on June 6 to address this situation – including a 24-month moratorium on import duties for four key countries.

TEMPERING THE FORECAST

SACE has accommodated the present supply chain disruption by **reducing the near-term forecast**. For example, in last year's report, we were anticipating 20.6 GW for 2022 and 24.4 GW for 2023. Those forecasts are now reflecting 18.4 GW and 22.5 GW, respectively. The projection for 2024 reunites with the 27 GW forecast in last year's report.

FEDERAL POLICY UNCERTAINTY

Congress failed to pass a federal Clean Electricity Standard (100% by 2035) but still has an opportunity to adopt a package of **clean energy tax credits**.

LARGE UTILITY SYSTEM RANKINGS

SYSTEMS WITH > 500,000 CUSTOMERS	2021 W/C
DUKE ENERGY PROGRESS	1,448
DOMINION ENERGY SC	1,342
TAMPA ELECTRIC	1,090
GEORGIA POWER	824
FLORIDA POWER & LIGHT	649
DUKE ENERGY CAROLINAS	630
SOUTHEAST AVERAGE	**484**
DUKE ENERGY FLORIDA	467
OGLETHORPE POWER	361
SANTEE COOPER	130
TENNESSEE VALLEY AUTHORITY	121
NC ELECTRIC COOPERATIVES	88
ALABAMA POWER	62
SEMINOLE ELECTRIC CO-OP	60

The top four Southeast utility systems remained unchanged in 2021. **Duke Energy Progress (DEP)** and **Dominion Energy South Carolina (DESC)** are followed by **Tampa Electric** and **Georgia Power**. **Florida Power & Light** moved into fifth place on this ranking of watts per customer (W/C) for the largest utility systems in the Southeast.

With current plans, the forecast for 2025 projects those same five at the top of the leaderboard. The **Southeast average will more than double over the next four years**, from 484 W/C in 2021 to 982 W/C in 2025.

Recalibration with the most recent annual filings to Energy Information Administration (EIA-860) resulted in the peculiar circumstance where the 2021 ratio for two utilities is lower than had been reported for 2020. This applies for **Duke Energy Progress** and **Alabama Power** at the top and near the bottom of the list respectively.

The present supply chain disruption is factored into this revised forecast. Impacts may vary between utilities. **Georgia Power**, for example, has announced a one-year delay on nearly one gigawatt of contracts. Nonetheless, it remains on the **SunRiser list**.

Alabama Power and the **North Carolina Electric Cooperatives** again appear at the bottom of the forecast for 2025. **Tennessee Valley Authority (TVA)** and **Seminole Electric** have rejoined them with the designation as **SunBlockers** – those utilities whose four-year forecast remains below last year's region average.

SYSTEMS WITH > 500,000 CUSTOMERS	2025 FORECAST W/C
DUKE ENERGY PROGRESS	2,056
DOMINION ENERGY SC	2,040
TAMPA ELECTRIC	1,819
GEORGIA POWER	1,651
FLORIDA POWER & LIGHT	1,414
DUKE ENERGY FLORIDA	1,208
SOUTHEAST AVERAGE	**982**
SANTEE COOPER	927
DUKE ENERGY CAROLINAS	891
OGLETHORPE POWER	701
SEMINOLE ELECTRIC CO-OP	480
TENNESSEE VALLEY AUTHORITY	445
ALABAMA POWER	307
NC ELECTRIC COOPERATIVES	117

The 13 largest utility systems in the Southeast each serve more than 500,000 customers. *This includes individual investor owned utilities like Georgia Power, as well as the combination of utilities organized into cooperatives like Oglethorpe and the federally-owned Tennessee Valley Authority. Also studied, but not exceeding the 500,000 customer benchmark, are several regional municipal power agencies.*

FORECAST FOR SELECT UTILITY SYSTEMS[7]

DUKE ENERGY STILL LEADS THE SOUTHEAST

Across its three Southeast utilities, Duke Energy still has the most total installed solar in the region. That is true for watts per customer (W/C) ratio, as well. The Carbon Plan under development by the North Carolina Utilities Commission will impact the forecast for Duke utilities there.

FLORIDA POWER & LIGHT SOLIDLY NUMBER TWO

The combined Florida Power & Light (FPL) and Gulf Power utility has the second-most total solar and also exhibits the second highest W/C ratio. The near-term forecast for 2025 shows FPL achieving the highest solar ratio. FPL has subsequently announced a "Real Zero"™ goal which will dramatically expand its solar (90 GW) and storage (50 GW) portfolio by 2045.

SOUTHERN COMPANY EXPERIENCES DELAYS

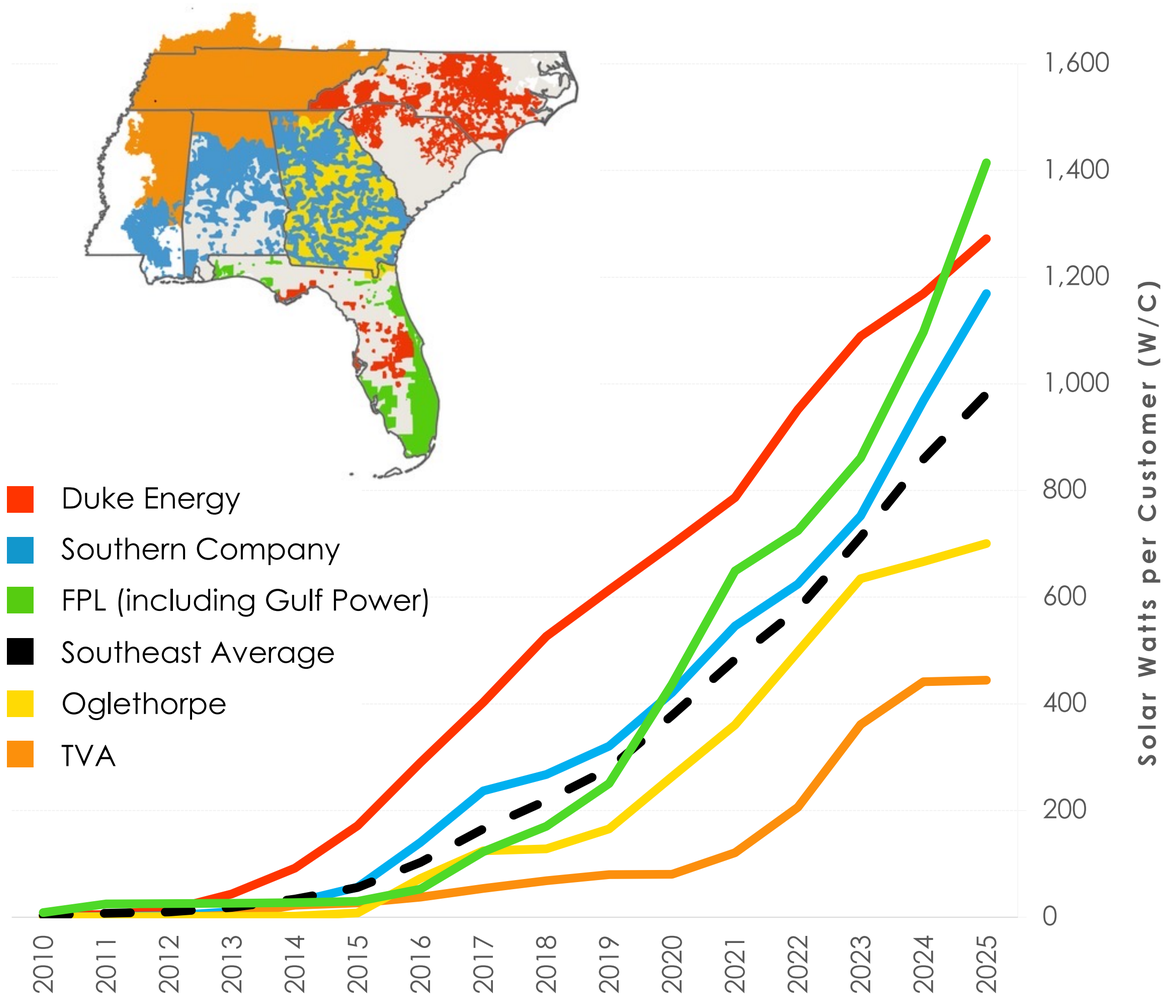
Georgia Power announced a one year delay of 970 MW due to the present supply chain disruption. This is most obvious in the Southern Company result for 2023 but the growth trajectory is forecast to resume for 2024-2025.

OGLETHORPE / GREEN POWER EMC

Walton EMC projects for Facebook represent the majority of the solar anticipated for the Oglethorpe Power system through 2022. The forecast for 2023 and 2024 includes two additional projects (combined 187 MW) for a broader coalition of Green Power EMC members.

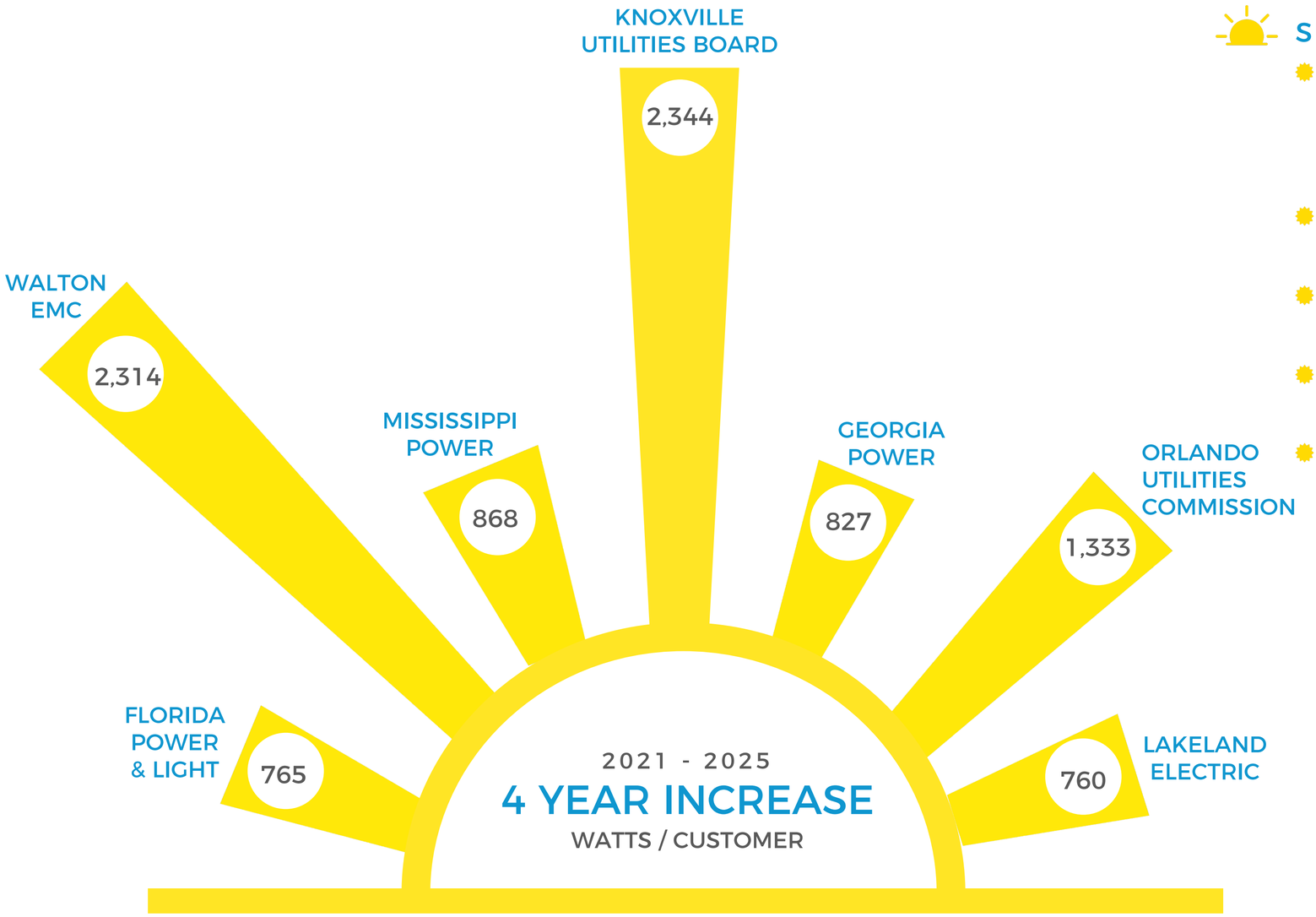
TENNESSEE VALLEY AUTHORITY STILL LAGS

TVA has returned to the SunBlocker list this year. Its solar outlook is not keeping pace with other utilities in the region. An upcoming Integrated Resource Plan (IRP) represents an opportunity for the nation's largest public power entity to exhibit higher solar ambition. Local Power Companies (LPCs) are starting to develop projects under the Generation Flexibility program, as well.



These five utility systems serve 75% of retail customers in the Southeast.

SOUTHEAST SOLAR MOMENTUM: SUNRISERS



SUNRISERS

- SunRisers are the seven utilities exhibiting the highest solar ambition – measured by the increase in watts *per customer* solar ratio between the base year (2021) and the four-year forecast (2025).
- The Knoxville Utilities Board (KUB) earned the top SunRiser slot. This is despite the 2025 forecast being reduced.
- Lakeland Electric burst onto the SunRiser list and FPL returned to the list for the first time in three years.
- Familiar SunRisers include: Walton EMC, Orlando Utilities Commission, Mississippi Power and Georgia Power.
- A familiar name is missing this year. Tampa Electric had been a perpetual SunRiser, and until this year, was the only utility to appear on all four of our prior lists.

UTILITY	2021 W/C	2025 W/C
KNOXVILLE (KUB)	79	2,423
WALTON EMC	1.750	4,064
ORLANDO (OUC)	599	1,932
MISSISSIPPI POWER	844	1,712
GEORGIA POWER	824	1,651
FPL	649	1,414
LAKELAND ELECTRIC	194	954

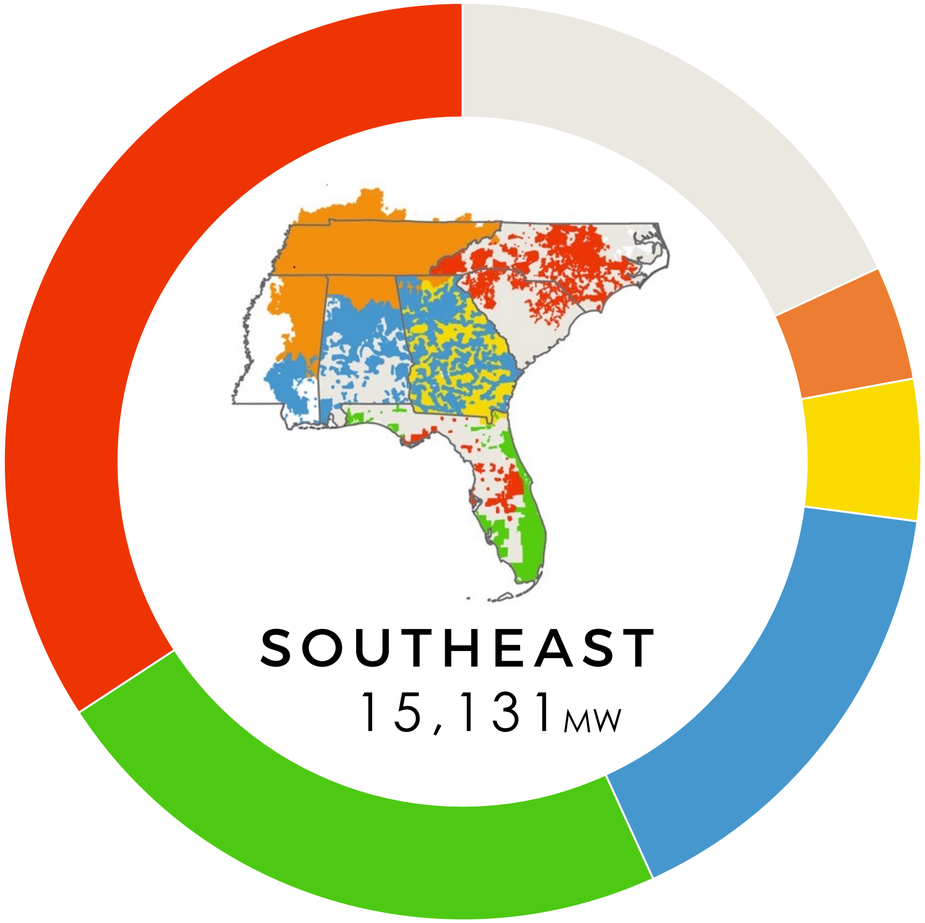
Minimum 100,000 customers

2021 SOUTHEAST SOLAR SNAPSHOT BY UTILITY

DUKE ENERGY
5,201 MW

FPL (including GULF POWER)
3,435 MW

SOUTHERN COMPANY
2,447 MW



OTHER UTILITIES
2,745 MW

TVA
546 MW
TVA also has 68 MW in Kentucky

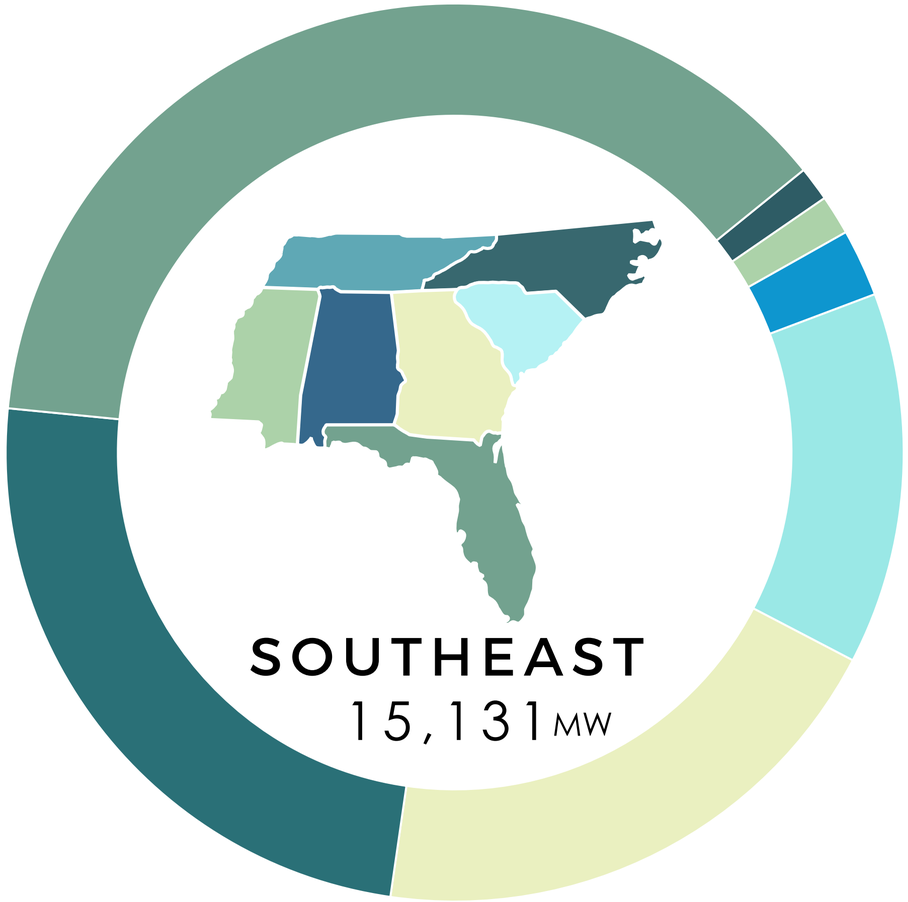
OGLETHORPE POWER
757 MW

2021 SOUTHEAST SOLAR SNAPSHOT BY STATE

FLORIDA
5,688 MW

NORTH CAROLINA
3,675 MW

GEORGIA
2,970 MW



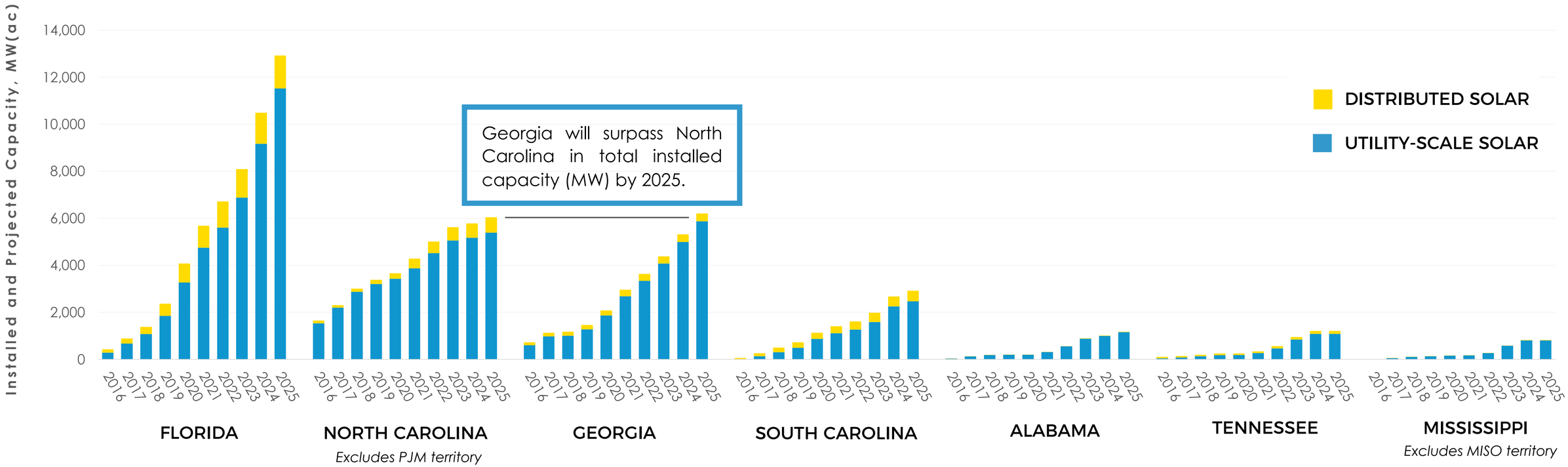
ALABAMA
188 MW

MISSISSIPPI
215 MW

TENNESSEE
369 MW

SOUTH CAROLINA
2,026 MW

SOLAR FORECAST FOR SOUTHEAST STATES

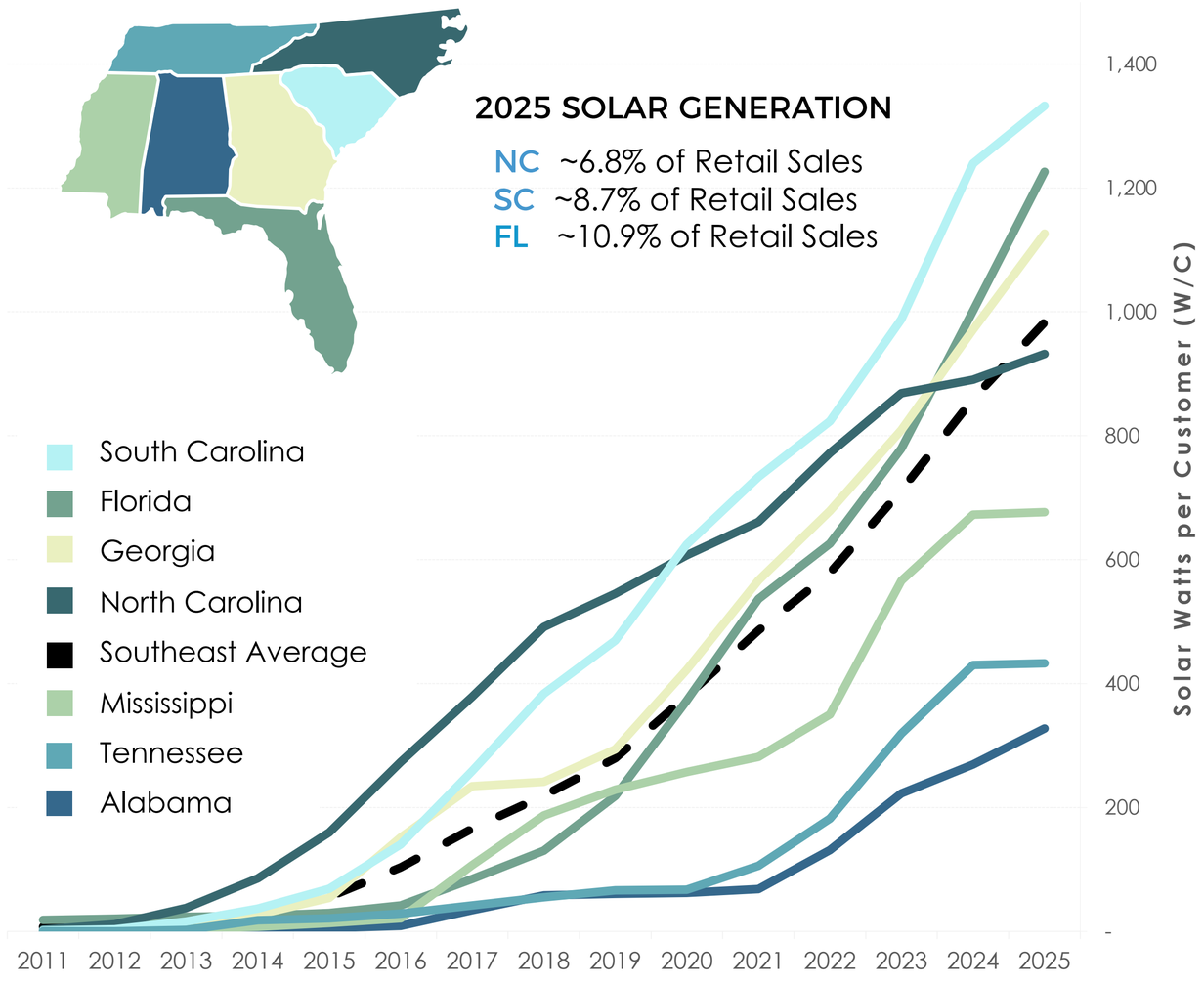


- In 2021, Florida expanded its position as the Southeast region leader in total installed solar capacity (MW) – reaching 5,688 MW total. Even accounting for the short-term supply chain disruption, the state is forecast to exceed 12 gigawatts (12,000 MW) by 2025.
- North Carolina remains second in the Southeast in installed solar capacity (MW). The percentage of North Carolina solar that serves load in South Carolina has increased to approximately 14%. With 3,675 MW apportioned to North Carolina and 2,026 MW to South Carolina.
- Last year's report forecast that Georgia would surpass North Carolina by 2024. With delays associated with the present supply chain disruption, that transition now projects to 2025.
- Alabama, Tennessee, and Mississippi fall far short of other Southeast states in both installed capacity (MW) as well as watts per customer (W/C) solar ratio. By 2025, even the North Carolina solar ratio is forecast below the region average.

POLICIES BEHIND THE PERFORMANCE

- Uncertainty remains around **federal clean energy policy**. Congress failed to pass a federal Clean Electricity Standard (100% by 2035) or even a Clean Electricity Performance Program (CEPP) incentive last year. SACE remains hopeful for the package of **clean energy tax credits** that appears poised for passage.
- Fully **decarbonizing the power sector**, along with electrification, would reduce U.S. greenhouse gas emissions by 70-80%, creating millions of jobs, cleaning our air and water, protecting public health, lowering electric bills, and securing energy independence.
- An evolution of **net metering policy** was approved in South Carolina and is being considered in North Carolina. Florida's Governor vetoed a bill that would have destroyed that state's market.

STATE	2021 W/C	2025 W/C
SOUTH CAROLINA	733	1,333
FLORIDA	536	1,226
GEORGIA	566	1,126
SOUTHEAST	**484**	**982**
NORTH CAROLINA	661	932
MISSISSIPPI	281	677
TENNESSEE	106	433
ALABAMA	68	327



** This analysis excludes the portion of Kentucky served by TVA. Similarly, the PJM portion of North Carolina is excluded as is the MISO portion of Mississippi*

STATE PROFILES

ALABAMA

FLORIDA

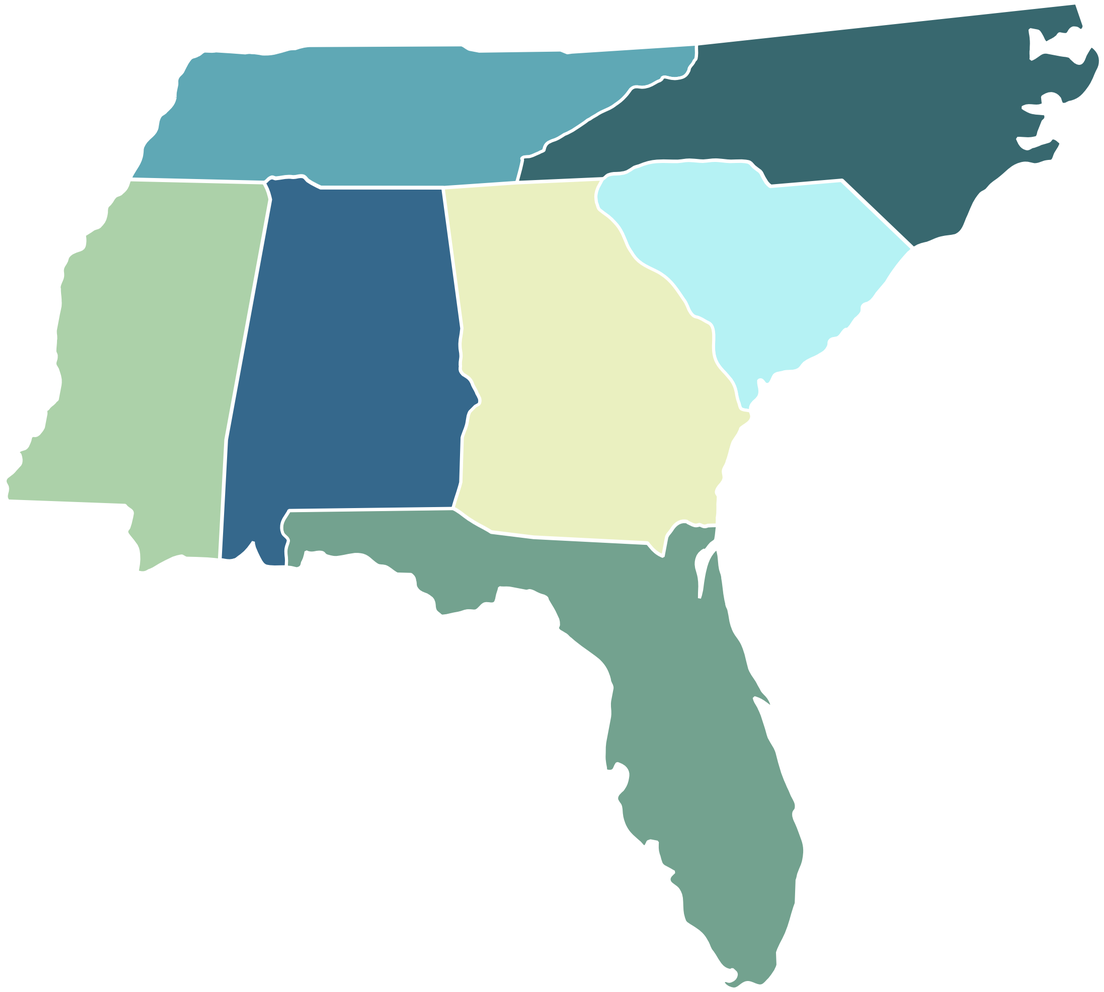
GEORGIA

MISSISSIPPI

NORTH CAROLINA

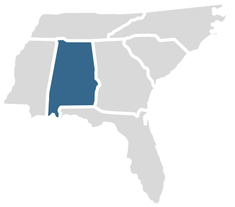
SOUTH CAROLINA

TENNESSEE



ALABAMA

GROUND ZERO FOR SUNBLOCKERS



UTILITY-SCALE SOLAR, MW

UTILITY	2021	2025
ALABAMA POWER	97	497
TVA	77	256
POWERSOUTH	0	63

DISTRIBUTED SOLAR, MW

UTILITY	2021	2025
ALABAMA POWER	5	8
TVA	7	11
POWERSOUTH	0	1

- Alabama was already far off the pace for solar ambition. And with the impact of recent supply chain disruptions, the state is projected to fall further behind.
- Alabama's state average for 2025 is now forecast to be lower than SACE projected in last year's report.
- The Public Service Commission extended the prior deadline for Alabama Power solar capacity approved in 2015. That enabled projects to be commissioned for Wells Fargo and Mercedes-Benz.

SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
SOUTHEAST AVERAGE	484	982
TVA	132	403
STATE AVERAGE	68	327
ALABAMA POWER	62	307
POWERSOUTH	1	167

- The 227 MW solar project in Muscle Shoals achieved commercial operation in September 2021. TVA commissioned that project for the Facebook data center in Huntsville, but the majority of this solar power will actually serve load or customers in Tennessee rather than Alabama.
- Several other projects are reflected for commercial operation in 2022. Those include the 100 MW Blackbear 1 solar project for Alabama Municipal Electric Authority (AMEA), along with two, 80 MW projects: AL Solar C for Alabama Power; and Wing Solar (AL Solar D) for PowerSouth.
- Alabama Power and TVA (which covers part of the state) are both SunBlockers. Their anti-solar policies will continue to prevent anything more than negligible investment in customer-owned, distributed solar.

FLORIDA

THE SOUTHEAST SOLAR LEADER

	UTILITY-SCALE SOLAR, MW		DISTRIBUTED SOLAR, MW	
UTILITY	2021	**2025**	2021	**2025**
FLORIDA POWER & LIGHT	2,945	**6,795**	252	**398**
DUKE ENERGY FLORIDA	526	**1,801**	363	**576**
TAMPA ELECTRIC	739	**1,293**	95	**152**
ORLANDO (OUC)	123	**496**	37	**61**
SEMINOLE	2	**300**	42	**66**
JACKSONVILLE (JEA)	35	**285**	22	**35**
LAKELAND	15	**115**	10	**15**
TALLAHASSEE	62	**62**	10	**14**
GAINESVILLE (GRU)	3	**62**	27	**30**
POWERSOUTH	0	**17**	7	**11**
GULF POWER	195	**n/a**	44	**N/A**

- Florida has definitively established itself as the Southeast leader in installed solar capacity. The state had almost 5.7 gigawatts (GW) for 2021 on a full-year operational equivalent basis – 2 GW more than any other state.
- Governor DeSantis vetoed HB741, the FPL-backed anti-solar bill that would have rescinded net metering and decimated the distributed solar segment in Florida. Hence that forecast remains strong but a similar bill could resurface in a future legislative session.

SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
ORLANDO (OUC)	599	1,932
TAMPA ELECTRIC	1,090	1,819
FLORIDA POWER & LIGHT	649	1,414
STATE AVERAGE	536	1,226
DUKE ENERGY FLORIDA	467	1,208
SOUTHEAST AVERAGE	484	982
LAKELAND	194	954
GAINESVILLE (GRU)	278	895
JACKSONVILLE (JEA)	121	652
TALLAHASSEE	576	586
SEMINOLE	60	480
POWERSOUTH	57	226
GULF POWER	653	N/A

- The state still boasts three SunRisers, the same number as last year but some of the names are new. Orlando Utilities Commission remains on the list; FPL returns to it; and Lakeland Electric appears for the first time.
- Despite a small increase in the watts per customer solar ratio for 2025, the forecast for Seminole Electric again falls below last year's region average, therefore it returns to the SunBlocker list.

GEORGIA

OPPORTUITY FOR SUSTAINED LEADERSHIP

UTILITY-SCALE SOLAR, MW

UTILITY	2021	2025
GEORGIA POWER	1,970	4,271
OGLETHORPE	711	1,515
MEAG	0	80
TVA	9	24

DISTRIBUTED SOLAR, MW

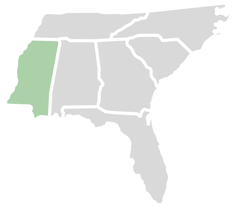
UTILITY	2021	2025
GEORGIA POWER	213	238
OGLETHORPE	46	76
MEAG	6	9
TVA	8	13

- Georgia Power announced a one-year delay on nearly one gigawatt of contracts due to the present supply chain disruptions. The utility does, however, remain on the SunRiser list.
- Oglethorpe continues its solar trajectory and Walton EMC also remains on the SunRiser list.
- Last year's report forecast that Georgia would surpass North Carolina in total installed capacity by 2024. With the above-mentioned delays, that transition now projects to 2025. Georgia will still exceed North Carolina on watts per customer ratio in 2024.

SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
GEORGIA POWER	824	1,651
STATE AVERAGE	566	1,126
SOUTHEAST AVERAGE	484	982
OGLETHORPE	361	701
TVA	106	224
MEAG	37	262

- Georgia Power has proposed a 2.3 gigawatt (GW) expansion of solar resources in its 2022 triennial Integrated Resource Plan (IRP). Significant investment in transmission from south Georgia to the northern part of the state will be necessary to sustain solar progress.
- The solar ratio for TVA is lower than the other states served by the federal public power monopoly.
- An 80 MW project championed by the City of LaGrange and Walmart is now reflected in the forecast for the Municipal Electric Authority of Georgia (MEAG).
- The Georgia Public Service Commission (PSC) has an opportunity to reinstate a form of solar net metering ("monthly netting") which had been successfully pilot tested but has since reached a cap that is limiting near-term growth of that market.



MISSISSIPPI

COMPARABLE SOLAR GROWTH

UTILITY-SCALE SOLAR, MW

UTILITY	2021	2025
MISSISSIPPI POWER	158	316
TVA	50	198

DISTRIBUTED SOLAR, MW

UTILITY	2021	2025
MISSISSIPPI POWER	5	8
TVA	2	3

SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
MISSISSIPPI POWER	844	1,712
SOUTHEAST AVERAGE	484	982
STATE AVERAGE	281	677
TVA	115	427

Note: The Southeast region for SACE does not include the portion of Mississippi in the MISO territory served by Entergy Mississippi.

- The first-ever Mississippi Power IRP left environmental advocates disappointed with no solar anticipated until 2027 (and most scenarios devoid of solar until 2031). That notwithstanding, two large projects approved by the Mississippi Public Service Commission last year mathematically propelled Mississippi Power onto the SunRiser list.
- Starkville Electric Department is too small (~14,000 customers) to be considered for the SunRiser list. Its contract for 30 MW from the Golden Triangle is projected to mathematically yield one of the highest watts per customer solar ratios in the Southeast: 2,147 W/C for 2025.
- The large, Golden Triangle I project (200 MWac solar with 50 MW / 200 MWh battery storage) for TVA originally intended for 2022 appears to be delayed until 2023. Similar projects to follow for Facebook (Golden Triangle II) and the City of Knoxville, Tennessee (Optimist Solar + Storage) were still insufficient to prevent TVA from regressing to the SunBlocker list.
- Dockets for a community solar program and for improvements to the net metering policy are both currently pending with the Mississippi Public Service Commission.

Note: The Southeast region for SACE excludes the MISO territory of Mississippi.

NORTH CAROLINA

CARBON PLAN PROPOSED

	UTILITY-SCALE SOLAR, MW		DISTRIBUTED SOLAR, MW	
UTILITY	2021	2025	2021	2025
DUKE ENERGY PROGRESS	1,902	2,739	147	231
DUKE ENERGY CAROLINAS	1,216	1,722	217	337
NC ELECTRIC COOPERATIVES	72	90	29	46
NC EASTERN MUNICIPAL	63	63	3	5
TVA	2	4	19	30
NC MUNICIPAL POWER	0	1	2	3

- After recalibration with the most recent annual filings to Energy Information Administration (EIA-860), Duke Energy Progress is one of the utilities where the current (2021) results reflect *less* solar than had been reported last year. The 2025 forecast has been recalibrated, as well. This phenomenon also impacts the state average.
- Duke Energy Progress remains atop the leaderboard of the large utilities in the Southeast – both for 2021 and 2025.
- The North Carolina state average is presently above the Southeast region average, but current utility plans are insufficient to sustain that posture through 2025.

Note: The Southeast region for SACE does not include the portion of North Carolina in the PJM territory served by Dominion Energy.

SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
DUKE ENERGY PROGRESS	1,395	1,981
SOUTHEAST AVERAGE	484	982
STATE AVERAGE	661	932
DUKE ENERGY CAROLINAS	605	856
TVA	458	730
NC EASTERN MUNICIPAL	274	275
NC ELECTRIC COOPERATIVES	88	117
NC MUNICIPAL POWER	16	26

- None of the North Carolina utilities appear among this year's SunRisers. The NC Electric Cooperatives retain designation as a Southeast SunBlocker and TVA has also returned to that list.
- House Bill 951, passed in 2021, requires the North Carolina Utilities Commission (NCUC) to develop a Carbon Plan by the end of 2022 that will deliver 70% carbon reduction by 2030. This is a significant opportunity for North Carolina to regain solar leadership.
- Likewise, the NCUC has an opportunity to usher in the next evolution of solar net metering by approving the Solar Choice Metering proposal.

SOUTH CAROLINA

SOUTHEAST LEADER ON SOLAR RATIO

UTILITY-SCALE SOLAR, MW

UTILITY	2021	2025
DOMINION ENERGY SC	893	1,359
SANTEE COOPER	88	813
DUKE ENERGY CAROLINAS	437	619
DUKE ENERGY PROGRESS	312	450

DISTRIBUTED SOLAR, MW

UTILITY	2021	2025
DOMINION ENERGY SC	172	264
SANTEE COOPER	41	63
DUKE ENERGY CAROLINAS	64	100
DUKE ENERGY PROGRESS	17	27

- As indicated on page 12, South Carolina exhibits the highest solar ratio (watts per customer) in the Southeast – for 2021 and throughout our 4-year forecast horizon.
- More than 600 MW of solar serving South Carolina load is physically installed in North Carolina. SACE apportions utility-scale solar generation to loads served across multi-state utility service territories.

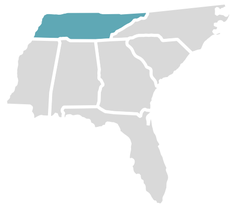
SOLAR WATTS PER CUSTOMER

UTILITY	2021	2025
DUKE ENERGY PROGRESS	1,894	2,686
DOMINION ENERGY SC	1,342	2,040
STATE AVERAGE	733	1,333
DUKE ENERGY CAROLINAS	714	1,008
SOUTHEAST AVERAGE	484	982
SANTEE COOPER	130	927

- South Carolina also has the highest penetration of rooftop solar. Prior to last year's report, the Public Service Commission of South Carolina (PSC-SC) had approved Solar Choice Metering comparable to that currently pending in North Carolina. Unfortunately the PSC-SC rejected a companion incentive that would further sustain distributed solar growth in the Palmetto State.
- The PSC-SC has also issued controversial decisions to keep coal plants open longer and incorporate far less solar than Duke had proposed. The state's Attorney General has questioned whether the Carbon Plan required in North Carolina should influence the resource plans for Duke's utilities in South Carolina.

TENNESSEE

TVA RETURNS TO SUNBLOCKER STATUS



UTILITY-SCALE SOLAR, MW

UTILITY	2021	2025
TVA	290	1,432

DISTRIBUTED SOLAR, MW

UTILITY	2021	2025
TVA	79	126

- The Knoxville Utilities Board (KUB) earned the top slot on the the SunRiser list – the seven utilities exhibiting the highest solar ambition. This Local Power Company (LPC) has leveraged the TVA "Green Invest" program to achieve this honorable distinction.
- Green Invest allows large customers in the Tennessee Valley to contract for projects through TVA. Facebook, Ford, General Motors, Google, Jack Daniels, Vanderbilt, and Nashville Electric Service are other examples of TVA customers that have executed Green Invest contracts.
- Despite the Green Invest projects, TVA itself has not matched the pace of solar ambition in the Southeast region and has mathematically returned to the SunBlocker list – the large utilities whose four-year forecast remains below last year's region average.

SOLAR WATTS PER CUSTOMER

UTILITY	2021	**2025**
KNOXVILLE (KUB)	79	2,423
SOUTHEAST AVERAGE	484	982
TVA (TN) AVERAGE	106	433
NASHVILLE (NES)	86	396
MEMPHIS (MLGW)	90	185
CHATTANOOGA (EPB)	87	180
MIDDLE TENNESSEE (EMC)	86	177
VOLUNTEER ELECTRIC CO-OP	67	134

The six largest LPCs in Tennessee are included above.
Kingsport, TN (served by AEP Appalachian Power) is not included in the Southeast region.

- TVA is the largest federal public power utility and should be aligned with (and leading) President Biden's Executive Order to achieve 100 percent carbon pollution-free electricity (CFE) by 2035.
- This federal monopoly utility is self-regulated by the TVA Board of Directors. President Biden's first set of nominees for the TVA Board have been pending Senate confirmation for more than a year.
- An upcoming Integrated Resource Plan (IRP) has the potential to right the ship for TVA.

DATA SOURCES, METHODS, AND ASSUMPTIONS

Compiling data from publicly-available reports as well as proprietary forecasts, the Southern Alliance for Clean Energy (SACE) has curated a system of information about electric power generation in the southeast United States. For the *Solar in the Southeast* Annual Report, primary datasets derive from the Energy Information Administration (EIA) and the Federal Energy Regulatory Commission (FERC) – particularly, EIA 860 (Annual Electric Generator Data), EIA 861 (Annual Electric Power Industry Report), EIA 923 (Annual Electric Utility Data), and FERC 714 (Annual Electric Balancing Authority Area and Planning Area Report).

Future projections are informed by additional datasets including Wood Mackenzie Power & Renewables (formerly GTM Research), the EIA Annual Energy Outlook, utility Integrated Resource Plans (IRPs), interconnection queues, identified projects as well as utility announcements of ongoing and future plans, along with information gathered from solar developers and professional judgement of staff experts.

Solar data are reported as $MW_{(ac)}$ – alternating current. Where applicable, data identifiable as $MW_{(dc)}$ is derated to $MW_{(ac)}$ equivalent. *AC reporting is becoming increasingly more common, particularly for utility-scale solar projects.*

SACE tracks both capacity as well as generation, $MW_{(ac)}$ and MWh, respectively. Consequently, the capacity of solar projects that begin operation late in the year are only partially attributable in the first year. Tracking solar data in this manner enables a correlation between capacity and generation statistics.

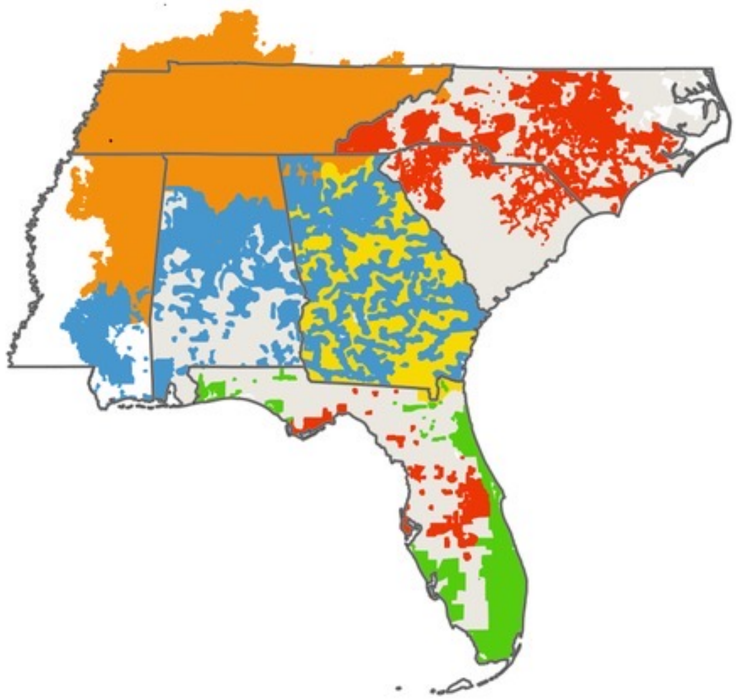
In some cases, the utility that receives the generation from planned or existing solar projects is not known. In such cases, the capacity and generation is allocated to utilities based on proximity and the degree to which utilities needs are met by generation owned or contracted for. The amount of solar capacity allocated to utilities in this manner is a small fraction of all Southeastern generation, but it can make up a substantial portion of the solar generation reported for utilities with small solar portfolios.

SACE projects distributed generation solar (e.g., residential and commercial rooftop solar) independently for large utility systems. Smaller municipal and cooperative systems are projected at an aggregate level based on the averages for those systems.

State-level reports are aggregated using two, complementary methods. The "Forecast for Southeast States" (page 11) reflects total solar capacity (MW) in the state where the generation originates. Other results correlate to the watts per customer calculation and are allocated to the state where the load is served. SACE apportions utility-scale solar generation to loads served across multi-state utility service territories. Smaller, distributed generation systems are assumed to serve their local load. This method establishes a close relationship with the retail sales and customers served by the respective utilities. *For example, a solar project in Alabama contracted to the Tennessee Valley Authority (TVA) will proportionally serve customers in multiple states across TVA service territory.*

APPENDIX A + B

APPENDIX A: SERVICE TERRITORIES OF FIVE SOUTHEAST UTILITY SYSTEMS



UTILITY SERVICE TERRITORIES

- SOUTHERN COMPANY
- TENNESSEE VALLEY AUTHORITY
- DUKE ENERGY COMPANY
- FLORIDA POWER & LIGHT (incl. GULF POWER)
- OGLETHORPE POWER CORPORATION
- OTHER SOUTHEASTERN UTILITIES
- NON-SOUTHEASTERN BALANCING AREAS

APPENDIX B: SOUTHEAST UTILITY RESULTS

Appendix B is accessible on our website and contains results more than 300 utilities in the Southeast.

APPENDIX C: STORAGE HIGHLIGHTS

STORAGE COMPLEMENTS SOLAR

- Storage allows higher levels of solar on the grid to be even more effective. As solar production increases above peak load, storage allows grid operators to shift solar to other hours of the day.
- Storage can offset the use of fossil fuels, particularly gas-fired power plants, to balance intermittent renewable resources, and thus help decarbonize electricity production.

SELECT UTILITY BATTERY PROJECTS

UTILITY	PROJECT	MW	ONLINE YEAR
FPL	Babcock	10	2019
FPL	Manatee	409	2021
DEF	Trenton	11	2022
DEF	Cape San Blas	5.5	2022
DEF	Jennings	5.5	2022
Georgia Power	Mossy Branch	65	2023
Georgia Power	Hickory Park	40	2022
TVA	Vonore	20	2022
TVA	Lowndes	50	2023

UTILITIES IN THE SOUTHEAST ARE DEPLOYING STORAGE AT VARIOUS SCALES

- In 2021 **Florida Power & Light** completed a 409 MW battery storage project that will store excess generation from the Manatee solar array in Parrish, Florida. FPL has recently announced plans for a significant buildout of battery storage to support its decarbonization goals: 50 GW of storage by 2045.

- In 2021 **Georgia Power** received approval from its Commission for a 65 MW battery project called Mossy Branch. Additionally, Georgia Power has a contract to buy power from the Hickory Park solar plus storage project. That projects includes 200 MW of solar and 40 MW of batteries. In its 2022 IRP, Georgia Power requested approval from its Commission for up to 1 GW of storage projects by 2030.

- **The Tennessee Valley Authority** is working to finish a 20 MW battery in east Tennessee this year. TVA also facilitated a project to exclusively serve Facebook data centers: a 150 MW solar project with 50 MW of battery storage in Lowndes County, Mississippi.

- In its proposed Carbon Plan filed in May of 2022, **Duke Energy** proposed between 3.5 and 5.7 GW of energy storage additions on DEC and DEP systems by 2035.

SOLAR IN THE SOUTHEAST

Fifth Annual Report
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