SOUTHERN ALLIANCE FOR CLEAN ENERGY

SOLAR IN THE SOUTHEAST

SEVENTH EDITION






cleanenergy.org Southern Alliance for Clean Energy

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AUTHOR

Heather Pohnan
Senior Energy Policy Manager
heather@cleanenergy.org

CONTRIBUTORS

Bryan Jacob
Solar Program Director
bryan@cleanenergy.org

Maggie Shober
Research Director
maggie@cleanenergy.org

ABOUT SOUTHERN ALLIANCE FOR CLEAN ENERGY

The Southern Alliance for Clean Energy 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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INTRODUCTION

"Solar in the Southeast" describes the critical role that utilities, policymakers, and customers have in the growing solar market in the Southeast. Utilities in Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee operate as monopolies and are granted 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 a normalized comparison among hundreds of different utilities in the Southeast, SACE has ranked utilities on the basis of solar watts per customer (W/C). This illustrates the amount of solar power sourced to a utility or state relative to the amount of retail customers. As a regional organization, SACE tracks and compiles electric utility integrated resource plans (IRPs) that investor-owned utilities file with state-level regulators. These resource plans, along with data that all utilities report annually to the U.S. Energy Information Administration (EIA), are used to produce forecasts for total installed capacity of solar power (in megawatts, MW) for the entire region out to 2027.

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.

EXECUTIVE SUMMARY

SOLAR GROWTH, EVEN MORE UNTAPPED POTENTIAL

The Southeast can now claim about **22 gigawatts (GW) of solar (22,183 megawatts, MW)** on a full-year operational equivalent basis, or an average solar ratio of **665 watts per customer in 2023.** The Southeast is projected to nearly double the amount of solar in the region to almost 44 GW for 2027. Yet, there is still some unrealized potential in recent utility resource plans and regulatory approvals. With utilities across the region forecasting significant demand for the first time in over a decade, **each utility resource plan is an opportunity to add more solar to the grid, especially if it is paired with battery storage.**

UTILITY TRENDS

Utilities across the Southeast have made larger capacity deployments in shorter time frames than ever. For example, Florida Power & Light alone deployed approximately a gigawatt of solar capacity in 2023. This is a trend that can only continue to improve with stronger planning processes for utility resources and transmission. Solar deployment leads to a strong uptick in the watts per customer (W/C) metric. **Duke Energy Progress** remains ranked number one in the region in this metric, with a cumulative 3 GW of solar in 2023 translating to 1,710 watts per customer. They are followed by Tampa Electric, Dominion Energy South Carolina, Georgia Power, and Florida Power & Light in the top five large utility rankings.

STATE STANDOUTS

Florida expanded its position as the largest contributor to installed solar capacity in the Southeast, reaching 9,217 MW in 2023 and doubling to an expected 20 gigawatts (20,697 MW) by 2027. In terms of the W/C average, **Georgia** and **South Carolina** are effectively tied for the number one slot in 2023. When normalized by customer count, Florida is in the middle of the pack and is closer to the regional average along with **North Carolina**. However, **Alabama, Tennessee,** and **Mississippi** fall far short of other Southeast states in both installed capacity (MW) as well as W/C solar ratio.

SUNRISERS

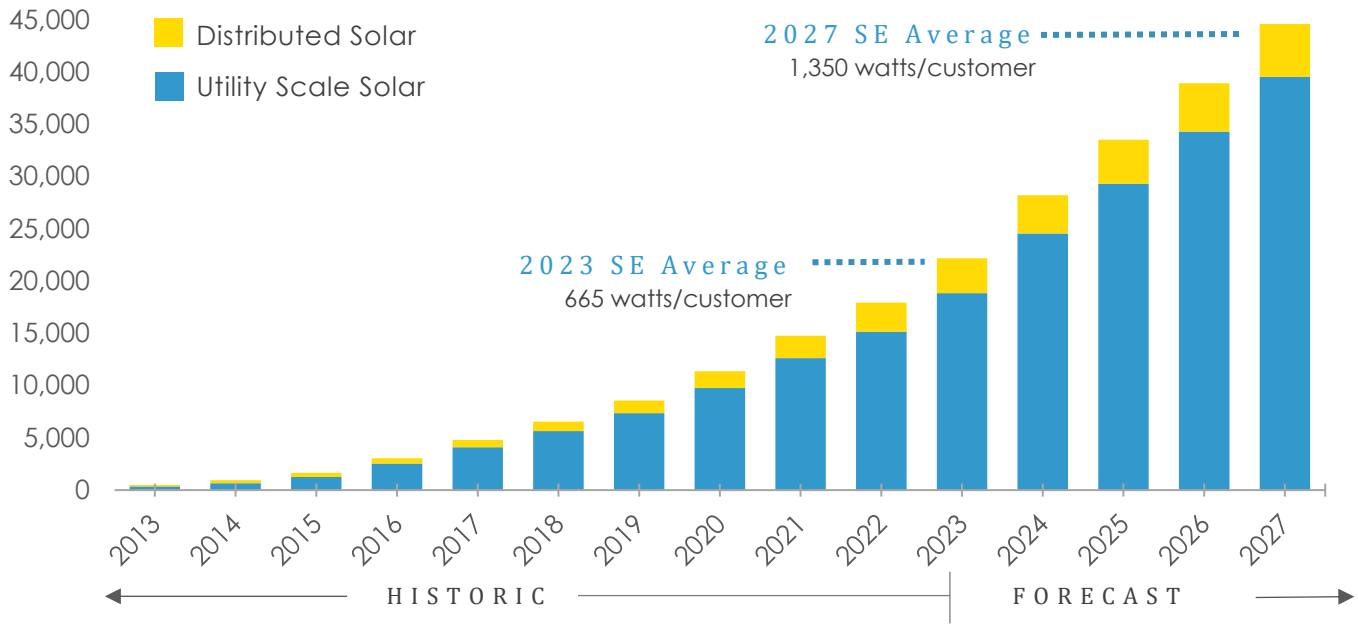
This year's SunRisers list notably has multiple Florida-based utilities. Municipal utility the **Orlando Utilities Commission** has the top slot and is joined by **Florida Power & Light** and **Duke Energy Florida** in the rankings, reflecting a trend of both investor-owned utilities and municipal utilities increasing solar in the state. Utilities **Georgia Power** and **Duke Energy Progress** have made plans to deploy more solar, although some of this has been slow to materialize. State-owned utility **Santee Cooper** makes the list again this year due to its own resource plan as well as solar that Central Electric Cooperative has commissioned directly.

SUNBLOCKERS

This year's report reflects several **SunBlockers**: utilities whose four-year forecast remains below last year's regional average. The **Tennessee Valley Authority (TVA)** unfortunately fell just short of the benchmark needed to avoid making the list this year. And despite a promising increase from new solar capacity expected to provide power **Alabama Power** has yet to make it off the SunBlocker list. The **North Carolina Electric Cooperatives, Seminole Electric,** and **PowerSouth** are all at the bottom of the list this year.

REGIONAL TRENDS – CAPACITY FORECAST

TOTAL SOUTHEAST SOLAR PV CAPACITY (MW) BY PROJECT TYPE



Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

SOLAR PROJECTS OF ALL SIZES PROVIDE CAPACITY

Solar projects can be categorized as either utility-scale solar or distributed solar. Distributed solar is typically installed on the rooftops of residential or commercial customers, while utility-scale solar is owned by the utility or a developer and is ground-mounted in a much larger number of arrays. Altogether, the Southeast is able to claim more than 22 gigawatts (GW) of solar (22,183 megawatts, MW) on a full-year operational equivalent basis as of 2023. That equates to an average solar ratio of 665 watts per customer for the region's approximately 33 million customers served by electric utilities.

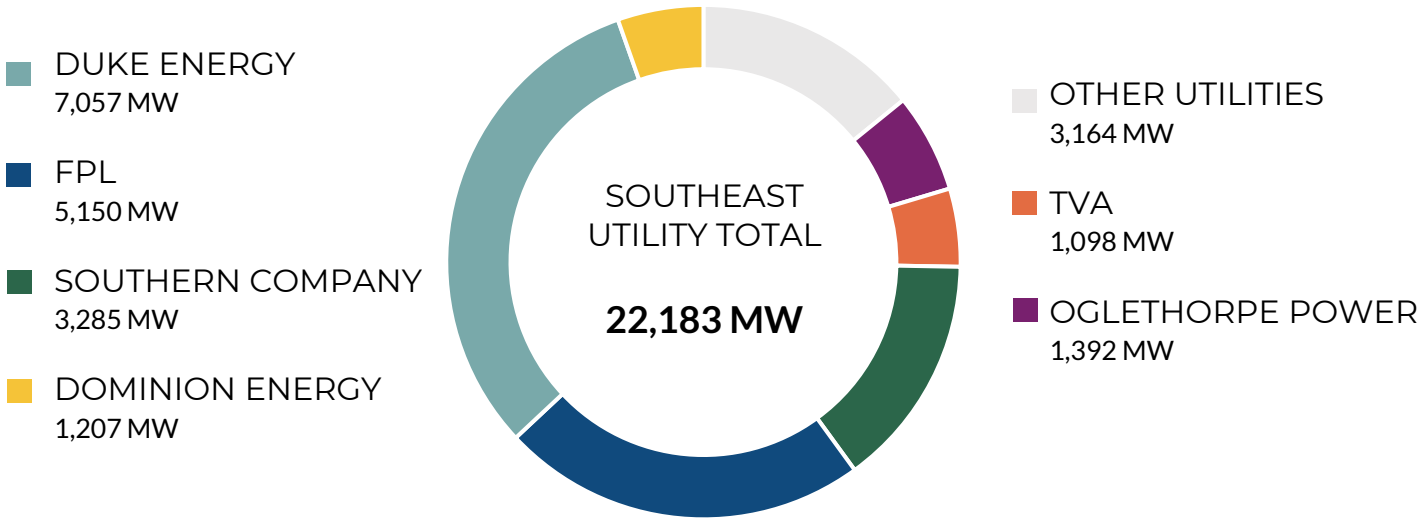
WHAT IS INCLUDED IN THE FORECAST?

For utility-scale solar, the forecast includes both planned projects that have been reported to federal data collectors, and the aggregate capacity of future solar resources in a utility's integrated resource plan (IRP) that have yet to be sited at a specific location. In both cases, the utilities may opt to enter into a power purchase agreement (PPA) with a solar developer to receive the solar project's output for a 20–30-year period instead of owning it outright, but the capacity itself is still attributed to the utility for that time period. For distributed-scale solar, the forecast includes net-metered solar, virtual solar, and tariffed solar.

STORAGE MAY PLAY A BIGGER ROLE IN THE FUTURE

Utilities across the region are projecting significant load growth for the first time in over a decade. This is primarily driven by an anticipated demand for data centers to support processing of cryptocurrency and artificial intelligence. Each utility resource plan is an opportunity to add more solar to the grid, especially if it is paired with battery storage. Although not currently included in the summary metrics for this report, a growing number of utilities now have large-scale solar plus battery storage projects in service.

REGIONAL TRENDS – SNAPSHOT OF 2023 SOLAR CAPACITY BY UTILITY



Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

One way to look at regional trends is by seeing what portion different utility systems or different states contribute to the total solar capacity. Because the largest utility systems in the region serve about three quarters of all customers and load in the Southeast, they also tend to make up around the same amount of the regional total capacity.

Larger utility systems include utilities like Dominion Energy South Carolina, the Tennessee Valley Authority (TVA), Florida Power & Light (FPL), as well as systems made up of multiple operating companies, such as Southern Company and Duke Energy. "Other Utilities" include both individual and regional municipal power agencies, as well as Electric Membership Cooperatives (EMCs).

However, this doesn't make it easy to compare utilities of different sizes to one another, which is why **the primary metric for utility and state trends is solar watts per customer.**

UTILITY TRENDS – LARGE UTILITY RANKINGS

UTILITIES WITH > 500,000 CUSTOMERS	2023 W/C
Duke Energy Progress	1,710
Tampa Electric	1,629
Dominion Energy SC	1,531
Georgia Power	1,168
Florida Power & Light	815
Duke Energy Florida	930
Duke Energy Carolinas	781
Southeast Average	**665**
Oglethorpe Power	640
Santee Cooper	245
Tennessee Valley Authority	200
Seminole Electric Cooperative	132
NC Electric Cooperatives	126
PowerSouth	116
Alabama Power	67

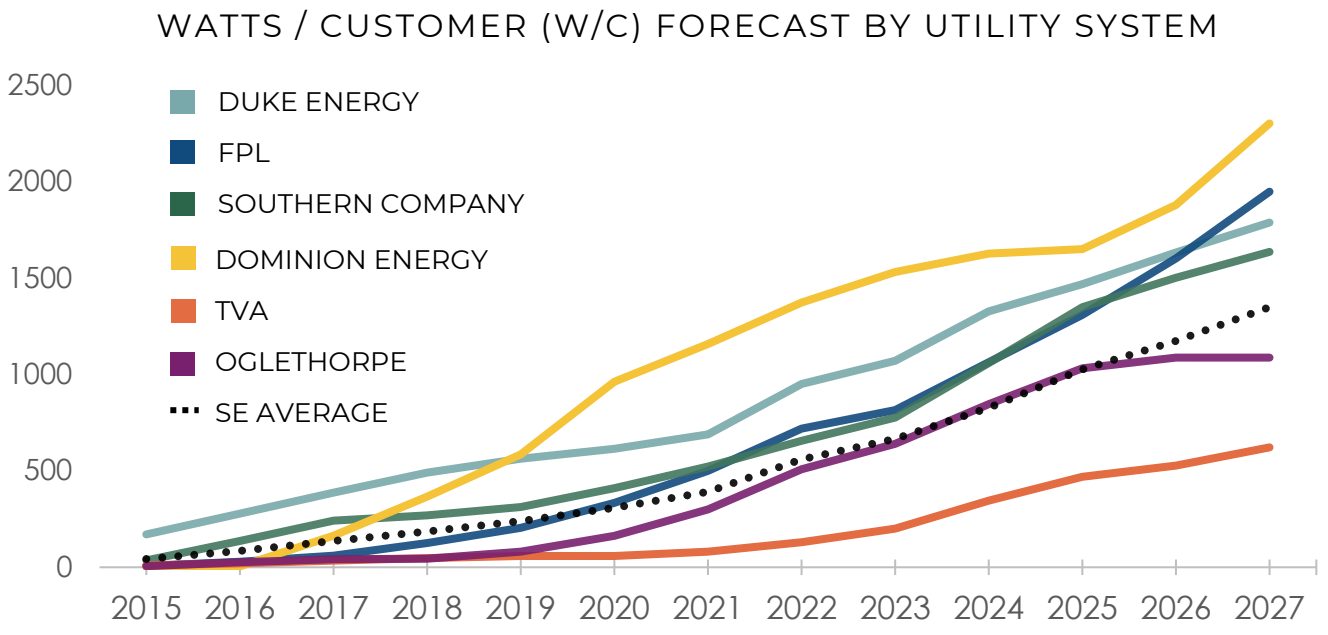
UTILITIES WITH > 500,000 CUSTOMERS	2027 FORECAST W/C
Duke Energy Progress	2,880
Tampa Electric	2,499
Georgia Power	2,322
Dominion Energy SC	2,300
Florida Power & Light	1,947
Duke Energy Florida	2,117
Santee Cooper	1,205
Southeast Average	**1,350**
Oglethorpe Power	1,082
Duke Energy Carolinas	1,029
Tennessee Valley Authority	621
Seminole Electric Co-Op	544
Alabama Power	416
NC Electric Cooperatives	212
PowerSouth	154

In addition to leading rankings in total solar capacity, Duke Energy's operating companies also lead the Southeast in terms of watts per customer (W/C). Duke Energy Progress (DEP) remains the leader in 2023, while Duke's two other operating companies are also well above the regional average. Tampa Electric remains in the number two slot on that leaderboard, followed very narrowly by Dominion Energy South Carolina. Meanwhile, Georgia Power maintained its number four ranking and Duke Energy Florida rose to number five.

The average amount of solar capacity per customer in the Southeast will approximately double over the next four years, from 665 W/C in 2023 to 1,350 W/C in 2027. While DEP remains in the top slot in 2027, Duke Energy Carolinas (DEC) appears to slow down relative to other utilities in the Southeast. Santee Cooper will go from far below the regional average in 2023 to 1,205 W/C in the four-year forecast, earning its spot on the SunRiser list for the second year in a row.

As more projects become operational over the next four years, some utilities are failing to catch up to even low benchmarks. Utilities whose *four-year forecast* remains below *the 2023 regional average* (called "SunBlockers" in this report) include several cooperative utility systems such as PowerSouth, Seminole, and North Carolina Electric Cooperatives. And some utility systems do not have high solar capacity numbers to match their high customer counts. For example, the current solar watts per customer average of the Tennessee Valley Authority (TVA) remain below the regional average, but despite additions and announcements in the past few years have gotten them off the SunBlocker list.

UTILITY TRENDS – W/C FORECAST



Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

CAROLINAS UTILITIES LEAD THE SOUTHEAST…FOR NOW

Duke Energy and Dominion Energy South Carolina currently exhibit the highest solar W/C ratio when compared to other major utility systems in the Southeast. DEP and DEC filed a joint Carbon Plan-Integrated Resource Plan (CPIRP) in North Carolina, but the earliest that the model could pick new solar was 2028/2029. Dominion Energy South Carolina has climbed the solar rankings in previous reports and continues to add more solar, most of which is expected to be placed into service in 2026.

FLORIDA POWER & LIGHT TO SURPASS SOUTHERN COMPANY

Florida Power & Light (FPL) exhibits the third–highest W/C ratio of major utility systems. FPL announced a "RealZero" carbon goal that relies on a substantial solar component, and those plans are beginning to materialize. FPL's strong solar ambitions have been reflected in the past few Ten-Year Site Plans (TYSP) filed at the Public Service Commission, though much is still left to be sited and the largest capacity deployments are expected to occur in 2028 or later.

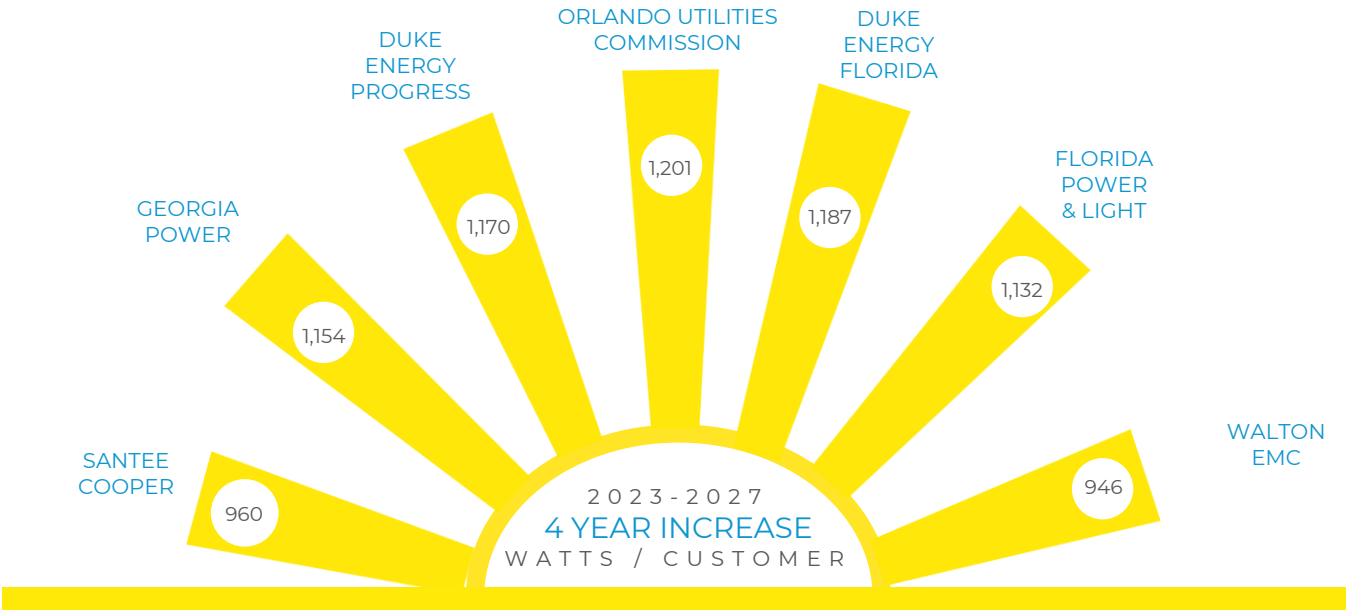
SOUTHERN CO. AND OGLETHORPE MIDDLE OF THE PACK

The Southern Company forecast has typically been driven by Georgia Power and its IRPs. Despite unexpectedly filing an updated IRP outside the regular schedule due to unanticipated load growth, Georgia Power has not sought to add any incremental solar beyond what was approved in its previous IRP. And Oglethorpe is home to one of our previous SunRisers, Walton EMC, which represents about half of the total solar deployment within the Oglethorpe Power system and its Green EMC affiliates.

AWAITING TVA'S NEXT RESOURCE PLAN

TVA's solar plans sadly fall below its peers, but an upcoming Integrated Resource Plan (IRP) represents a key opportunity for the nation's largest public power entity to exhibit higher solar ambition. Meanwhile, TVA's Local Power Companies (LPCs) continue to plan projects under the limited Generation Flexibility program, which are included in the TVA total.

UTILITY TRENDS – SUNRISER LIST



Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

SunRisers are the seven utilities exhibiting the highest solar ambition – measured by the total increase in watts *per customer* solar ratio between the baseline year (2023) and the four-year forecast (2027).

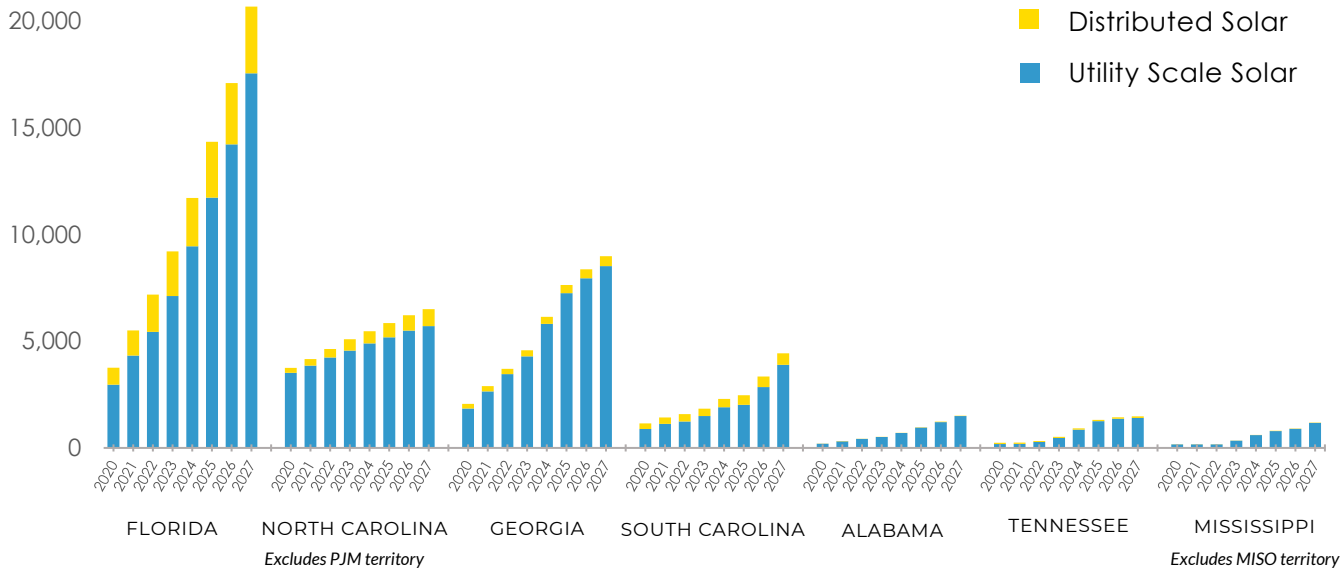
- There are several Florida-based SunRisers that top the list this year. Notably, the municipal utility **Orlando Utilities Commission** is in the top slot due to their leadership in the Florida Municipal Solar Project and their plans to boost capacity to more than 270 MW by 2025.
- Meanwhile, they are followed by **Florida Power & Light** and **Duke Energy Florida** in the rankings, reflecting a trend of both investor-owned utilities and municipal utilities increasing in the state.
- Elsewhere in the region, large investor-owned utilities **Georgia Power** and **Duke Energy Progress** have made plans to deploy more solar, although delays in construction or signing power purchase agreements have made some of this potential slow to materialize.
- **Santee Cooper** and **Walton EMC** are both SunRisers again this year. Santee Cooper's figures reflect their own plan as well as solar that Central Electric Cooperative has commissioned directly.

UTILITY	2023 WATTS PER CUSTOMER	2027 PROJECTED WATTS PER CUSTOMER
Duke Energy Progress	1,710	2,880
Georgia Power Co	1,168	2,322
Duke Energy Florida	930	2,117
Florida Power & Light	815	1,947
Orlando Utilities Commission	598	1,799
Santee Cooper	245	1,205
Walton EMC	5,138	6,085

Minimum 100,000 customers.

STATE TRENDS – CAPACITY FORECAST

SOLAR CAPACITY (MW) FORECAST BY STATE AND PROJECT TYPE



Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

Florida utilities have taken a strong lead in both total installed solar capacity and watts per customer. Cumulatively, they are expected to reach approximately 9,217 MW of solar in 2023 and 20,697 MW by 2027. Florida is also notably one of the only states to have a significant amount of capacity coming from distributed solar relative to the total capacity. One contributor to this was the approval of solar leasing models in 2018 followed by strong growth each year for several years.

North Carolina currently remains second in the Southeast in installed solar capacity (MW). However, this chart reflects states where the solar is installed; while other charts and tables in this report reflect where the load is served. For example, many of Duke Energy solar projects are located in North Carolina but may partially be attributed to South Carolina since the utility serves load in both states.

The forecast indicates that Georgia is still expected to surpass North Carolina in total installed solar by 2025, if not earlier, due primarily to several large utility-scale projects coming online. Distributed solar has historically shown very weak growth in the state, but with the arrival of innovative solar leasing programs made possible by the IRA, that may change in future forecasts.

Despite several utility-scale projects from TVA going into service, Alabama, Tennessee, and Mississippi still have a lot of catching up to do. They all fall far short of other Southeast states in both installed capacity MW as well as watts per customer (W/C) solar ratio. Unfortunately, the slow solar growth from TVA and other utilities operating in these states make it difficult to keep pace with the rest of the region.

STATE TRENDS – W/C RANKINGS AND POLICIES TO SPUR GROWTH

Five states (as well as a multi-state regional program) in the Southeast received a total of $750 million in grant funding through the $7 billion EPA Solar For All program. These funds will expand equitable access to solar for low-income households. Rural electric cooperatives across the Southeast applied for funding through the $9.7 billion New ERA (Empowering Rural America) program and are eagerly awaiting allocation of those funds. SACE expects New ERA to empower rural electric co-ops in the Southeast to achieve clean energy adoption rates comparable to investor-owned utilities.

Unprecedented load growth across the Southeast, led primarily by energy-intensive data centers, is prompting competition between fossil gas resources and dispatchable solar and storage resources – with many utilities (and regulators) predisposed to favor traditional fossil fuels. Once enacted, recent FERC Orders, such as Order 1920 (planning) and Order 1977 (permitting), will help the Southeast transition to a cleaner, more resilient electricity system. Transmission is critical for deploying clean energy, including solar, at the pace necessary for decarbonizing the electricity sector.

A provision in the IRA called "direct pay" allows tax-exempt entities to access clean energy tax credits, making it easier for all types of electric utilities to participate in the development of large-scale solar projects.

Recently increased section 301 tariffs on solar cells from China are not anticipated to have a significant impact on the SACE solar forecast. Imports from other countries have become more available and domestic manufacturing is increasing particularly with incentives from the Inflation Reduction Act.

SOUTHEAST STATE SOLAR PERFORMANCE

STATE	2023 WATTS PER CUSTOMER	2027 PROJECTED WATTS PER CUSTOMER
Florida	765	1,716
Georgia	859	1,643
South Carolina	852	1,589
Southeast Average	**665**	**1,350**
North Carolina	802	1,156
Mississippi	314	741
Tennessee	213	645
Alabama	117	459

Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

This summary excludes the portion of Kentucky served by TVA. Similarly, the analysis itself excludes both the PJM portion of North Carolina and the MISO portion of Mississippi.

STATE PROFILES

ALABAMA: TOO LITTLE TOO LATE?

Alabama is home to many types of utilities: investor-owned giants like Alabama Power, electric cooperatives like PowerSouth, and even the federally-owned, multi-state Tennessee Valley Authority (TVA). Sadly, all of them have been below the regional average. TVA is the main driver "upwards" from three large projects totaling 593 MW planned for 2027 and 2028.

ALABAMA SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Southeast Average	665	1,350
TVA	188	651
Alabama Average	117	459
Alabama Power	67	416
PowerSouth	110	213

Source: Southern Alliance for Clean Energy (SACE), "Solar in the Southeast" Seventh Edition Report published July 2024.

Alabama Power has been a SunBlocker for each of our past six reports, with this year being no exception. This is despite a promising increase from new capacity additions expected to provide power to the grid and several more that may be on the horizon: in addition to approving a six-year extension to the Renewable Generation Certificate allowing Alabama Power to continue building 400 MW of previously-approved solar, the Alabama Public Service Commission also authorized up to 2,400 MW of additional renewable generation by 2029. However, that is the upper limit on the amount of solar Alabama Power can add to the grid, and it much of that approved generation has yet to be sited yet. In fact, one of the sizeable solar projects (80 MW, HEP Greenville) that was included in last year's report was terminated by Alabama Power in early 2024.

On the distributed solar side, Alabama is one of only 5 states nationwide (and the only one in the Southeast) that was not granted Solar for All funding through the IRA. This is on top of already poor historical policies limiting rooftop solar: a discriminatory solar fee imposed by Alabama Power has been constraining the distributed solar market in Alabama since 2013.

FLORIDA: STILL A SOLAR POWERHOUSE

True to its name, the Sunshine state has the most total installed solar capacity (MW) in the region, approximately 9,200 MW in 2023. However, due to its large population and number of customers, it has historically not reached very far above the regional average in terms of watts per customer. This holds true for the forecast out to 2027 as well, with the state averaging 1,716 watts per customer.

FLORIDA SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Tampa Electric	1,629	2,499
Florida Power & Light	815	1,947
Orlando (OUC)	598	1,799
Duke Energy Florida	930	2,117
Southeast Average	665	1,350
Florida Average	765	1,716
Gainesville (GRU)	118	825
Jacksonville (JEA)	426	1,098
Tallahassee	626	611
Seminole	133	544
PowerSouth	133	207

There are multiple noteworthy solar leaders in the state: Orlando Utilities Commission (OUC), Duke Energy Florida, and Florida Power & Light (FPL) each remain on the SunRiser list, while Tampa Electric again tops the Florida utilities on solar ratio (W/C). And JEA (Jacksonville Electric Authority) appears to be back on track with three solar projects totaling 200 MW by the end of 2027.

FPL, in particular, is home to a number of notable projects and continues to scale up solar deployment by adding 1,192 MW of solar in 2023 (and another 1,639 MW already reached commercial operation in early 2024). *FPL is also accelerating battery storage deployment: now anticipating 522 MW in 2026 and 300 MW in 2027*. One example of a solar plus storage project that is already in service is the Echo River Solar project in Suwannee County.

Distributed solar is another bright spot in Florida, showing much higher growth than other states. This is at least partially attributable to solar leasing, since sharp increases were observed each year for several years following approval of those programs in 2018.

GEORGIA: UNREALIZED SOLAR POTENTIAL

In 2023, Georgia Power unexpectedly filed an updated IRP outside the regular schedule. The update will expand standalone battery energy storage by 1,000 MW, with 500 MW developed by Georgia Power and another 500 MW to be competitively procured. However, a potential 200 MW of hybrid solar plus storage was rejected in the final PSC Order, thus it is not included in the forecast. The silver lining is that the final Order did sanction a residential solar plus battery storage pilot program expected to be introduced in 2025, as well as a sleeved Purchased Power Agreement pilot program for large commercial & industrial customers.

GEORGIA SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Georgia Power	1,168	2,321
Georgia Average	859	1,643
Southeast Average	665	1,350
Oglethorpe	644	1,088
MEAG	13	153

Georgia is also home to Green Power EMC, a renewable energy provider to 38 electric membership cooperatives and can be credited for a great deal of solar development in the state. However, the seed for this interest in solar comes primarily from an agreement that Facebook (now Meta) has with Walton EMC. Walton is part of the Oglethorpe Power system and a Green Power EMC affiliate, and has continued to expand well beyond this project due to this partnership.

Solar projects in Georgia continue to get larger. The state already has five projects larger than 150 MW, including the 213 MW Cool Springs Solar project in Decatur County from 2021, which is yet another example of utility-scale hybrid battery plus storage projects. Meanwhile, a 260 MW project (Wadley Solar) is scheduled for operation later in 2024.

Distributed solar has had its ups and downs. For example, bills to allow community solar in Georgia received committee hearings, but no votes when the General Assembly was in session. A companion provision to reinstate “monthly netting” for rooftop solar was removed. But there is also a big boon to the state in the form of federal funding: the Department of Energy’s (DOE) Solar for All program awarded $156 million to expand low-income access to solar in Georgia.

MISSISSIPPI: SOLAR RESOURCE FOR *OTHER* STATES

Until recently, solar in Mississippi was primarily driven by the resource plans of the Tennessee Valley Authority, a federal utility headquartered in Tennessee that serves multiple states including Mississippi. Although the state still owes most of its current solar achievement to TVA, there are now several large additions attributable to Mississippi Power.

MISSISSIPPI SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Mississippi Power	852	1,615
Southeast Average	665	1,350
Mississippi Average	314	741
TVA	164	548

Mississippi was a late adopter of integrated resource planning (IRP), one of the main drivers of utility-scale solar elsewhere in the region. Mississippi Power filed its very first IRP under the new rules in 2021 and had a slot on the SunRiser list in previous reports. Since then, many of those projects have come online, thus the watts per customer increase projected for 2027 fell short of earning that designation in this year's report.

There are two 78.5 MW solar projects nearing completion that contribute to the Mississippi Power (Southern Company) forecast. Mississippi Power recently filed its subsequent Integrated Resource Plan (IRP) in April 2024. As part of that plan, the utility anticipates seeking approval of a solar subscription program that could provide a modest increase in its solar forecast.

One particularly noteworthy addition to Mississippi's solar portfolio is a solar plus battery storage project located in Lowndes County that supplies energy to the TVA grid. The project has 150 MW of solar and 50 MW of battery storage and came online in May 2024. The developer, Origis, has another 200 MW solar project that is under construction and is also part of a power purchase agreement (PPA) with TVA.

There is sadly less good news on the distributed solar front in Mississippi. The newly-elected Mississippi Public Service Commission (PSC) recently voted to eliminate key solar incentives referenced in last year's edition of this report. The incentives were an important part of the state's net metering rule and were aimed at increasing the benefits of rooftop solar installed on low-income households and school district buildings.

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

NORTH CAROLINA: THE DRAWN-OUT CARBON PLAN

North Carolina set the stage for large, statewide solar increases several years ago. In 2021, the passage of a bill at the legislature created a requirement for Duke's operating utilities to file a "Carbon Plan" that would reduce CO_2 emissions from electricity generation by 70% below 2005 levels by 2030, and to net-zero by 2050. However, that hasn't necessarily translated to a major departure from the traditional resource mix.

NORTH CAROLINA SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Duke Energy Progress	1,646	2,811
Southeast Average	665	1,350
NC Average	**802**	**1,156**
Duke Energy Carolinas	755	996
TVA	83	260
NC Eastern Municipal	228	228
NC Electric Co-ops	126	155
NC Municipal Power	8	12

The initial Carbon Plan adopted by the North Carolina Utilities Commission (NCUC) at the end of 2022 raised solar ambition for the state in 2030 and 2035. However, subsequent filings have not resulted in near-term incremental solar. For example, an update to the 2023 Carbon Plan filed in January 2024 does not allow new solar before 2028, so any new solar planned through that process would not impact this near-term forecast unless the NCUC requires that Duke integrate solar earlier than proposed.

Still, the state average is largely held up by Duke, and in particular Duke Energy Progress (DEP) remains atop the leaderboard for both current and future forecasts. SACE apportions utility-scale solar generation to loads served across multi-state utility service territories. Approximately 656 MW of solar physically installed in North Carolina proportionally serves load in South Carolina.

The NCUC has recently approved a Solar Choice Metering program that represents the next evolution of solar net metering that started October 1, 2023. The key feature is a time-of-use design that nets a solar customer's generation and consumption within those time-of-use periods.

In January 2024, the North Carolina Utilities Commission (NCUC) approved a new PowerPair$^{(SM)}$ pilot program to incentivize solar customers to install companion battery storage. Duke Energy is offering this pilot program in both of its utilities' territories in the state. Duke has proposed a set of customer programs; however, the structure of these programs will not result in incremental solar generation beyond what is already necessary for compliance with North Carolina law.

Note: This report does not include the portion of North Carolina in the PJM territory served by Dominion Energy.

SOUTH CAROLINA: A NEW SOLAR TRAJECTORY?

There are three main utility systems in the state of South Carolina: Duke, Dominion, and the state-owned public utility Santee Cooper. Santee Cooper is reflected as a SunRiser again this year. These figures include both solar in Santee Cooper's own plan and also the solar that Central Electric Cooperative has commissioned directly. The first of two 100 MW solar projects for Santee Cooper is scheduled for completion in 2024.

SOUTH CAROLINA SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Duke Energy Progress	2,280	3,406
Dominion Energy SC	1,531	2,300
SC Average	**852**	**1,589**
Santee Cooper	245	1,205
Duke Energy Carolinas	865	1,460
Southeast Average	665	1,350

Dominion Energy South Carolina also boasts a sizable increase in watts per customer through 2027, but missed out on the SunRiser list this year. Meanwhile, Duke's utilities provide an example of how SACE apportions utility-scale solar generation to loads served across multi-state utility service territories. Approximately 656 MW of solar serving load in South Carolina is physically installed in North Carolina.

One notable project is a 74.3 MW solar project in Horry County that received a U.S. Department of Agriculture (USDA) loan under the Rural Development program, one of many award programs that were bolstered through the IRA. The New ERA (Empowering Rural America) funding may help sustain that newfound ambition for the rural co-ops in the state.

Solar Choice metering, the time-of-use netting recently approved in North Carolina, is already offered in South Carolina. A companion demand-response incentive is still necessary to further sustain distributed solar growth in the Palmetto State.

TENNESSEE: IRA AND IRP OPPORTUNITIES

TVA has two major milestones for solar: 5,000 MW by 2030 and 10,000 by 2035. An increase in utility-scale solar is always laudable, but most of that capacity has yet to be sited. In fact, TVA has actually declined somewhat in the solar watts per customer metric due to a 150 MW solar project that was announced back in 2019 subsequently cancelled. However, a 147 MW solar project in Fayette County TN is still expected to come online later in 2024.

TENNESSEE SOLAR WATTS PER CUSTOMER

UTILITY	2023	2027
Knoxville Utilities Board	649	1,499
Southeast Average	665	1,350
Nashville (NES)	187	605
Memphis (MLGW)	211	698
TN (TVA) Average	213	645
Middle Tennessee EMC	178	567
Volunteer Electric Co-op	149	470

T VA's *next* IRP was set to be released in March, but has now been delayed to the fall of 2024. TVA has been clear that one of, if not the largest, barrier to increasing its solar is its transmission system. TVA says that they will also start its first ever Integrated Transmission Plan (ITP) in the fall as well, and if TVA can begin to proactively build out its transmission system to support solar, it could begin to move up the ranks compared to other utilities in the region.

Because it is a public power entity, TVA should not have the same motives to block independently-owned solar. Yet it's clear that TVA has an institutional bias against renewable energy. TVA's IRP and ITP, combined with the opportunities available through IRA, present a tremendous opportunity for TVA to exhibit the kind of leadership that the nation's largest public power entity should.

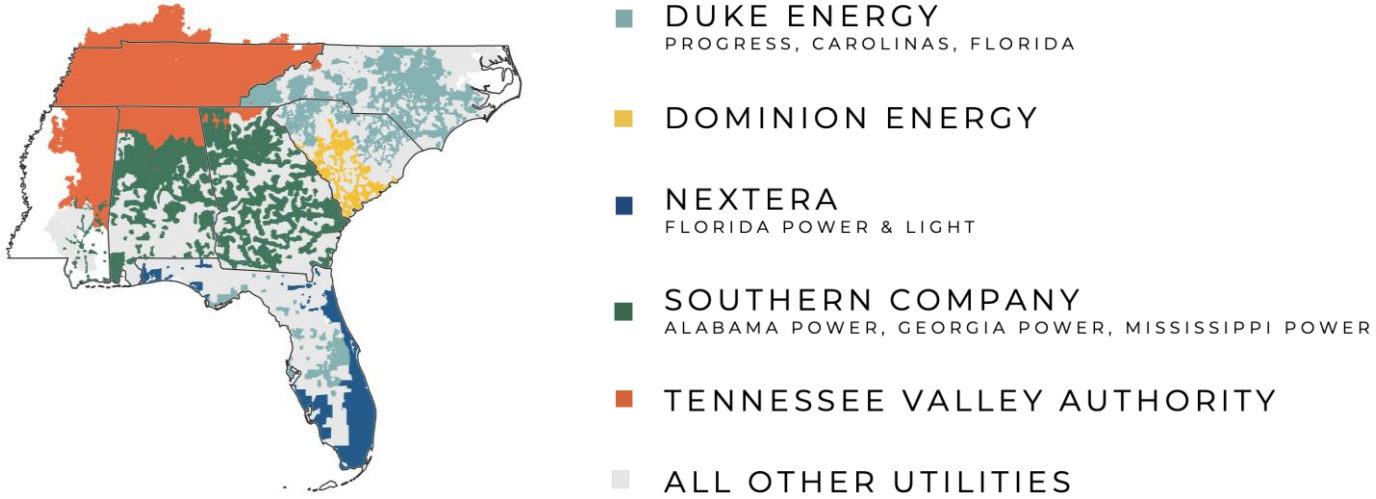
TVA continues to boast about issuing a 5 GW (5,000 MW) Request for Proposal (RFP) for carbon-free resources. Two years later, TVA has not substantially increased its forecast for solar resources and instead relies on inaccurate and outdated information about the supply chain disruption from 2022 to justify investing in fossil gas resources instead of solar.

Meanwhile, some of TVA's solar is attributed to the individual Local Power Companies (LPCs) that serve customers. Middle Tennessee Electric, the largest co-op in the TVA region, has commissioned a 110 MW solar project in Cumberland County under the expanded Generation Flexibility program. Other Local Power Companies (LPCs) continue to plan projects under this program, as well.

APPENDICES

APPENDIX A: GEOGRAPHIC COVERAGE

The geographic coverage of data encompasses Southeastern utilities outside of the PJM/MISO regions. The states of Alabama, Florida, Georgia, and South Carolina are fully covered; relatively small portions of North Carolina and Tennessee are served by utilities that participate in PJM (thus while statewide reports for these states are relatively comprehensive, they may not align exactly with other data sources); only portions of Mississippi and Kentucky that are parts of TVA or the Southern Planning Area are included.



APPENDIX B: METHODS, DATA SOURCES, AND ASSUMPTIONS

METHODS

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 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 judgment 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 are 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 12) 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 C: SOUTHEAST UTILITY RESULTS

Appendix C is accessible on our website and contains results from more than 400 utilities in the Southeast.

ADDITIONAL RESOURCES FROM SACE

The Southern Alliance for Clean Energy (SACE) releases annual reports covering clean energy and transportation topics in the Southeast. We invite you to view all of our reports, white papers, and other technical resources and select reports below.

Energy Efficiency in the Southeast, *Fifth Edition Report. (2023)*

Tracking Decarbonization in the Southeast, *Fifth Edition Report. (2023)*

Transportation Electrification in the Southeast, *Fourth Annual Report. (2023)*