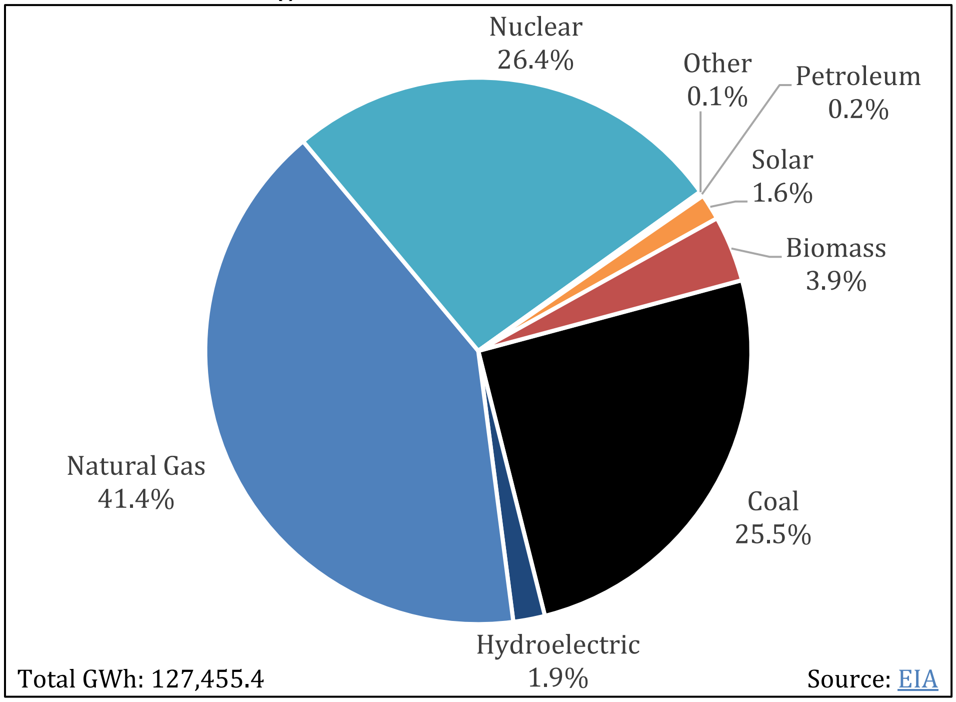
State Brief: Georgia

BACKGROUND

Georgia's Net Electric Generation, 2017



Natural gas is the largest contributor to Georgia's generation mix. Georgia has no appreciable in-state fossil fuel resources of its own. While transportation is the leading energy consuming end-use sector, there are many energy intensive industries in the state.

The Peach State ranks first in the nation for use of wood and woo-derived fuels for electricity generation in 2016 and third for biomass-derived generation in 2017. Georgia's solar generation more than doubled from 2016 to the end of 2017. In 2017, the state had 1,553 megawatts (MW) of installed solar capacity, the vast majority of which was provided by utility-scale projects. This year, the Solar Energy Industries Association ranked Georgia 11th in the U.S. in terms of cumulative installed solar electric capacity.

Georgia does not have a renewable energy standard or a voluntary renewable energy target; however, state policymakers have recently been looking to initiate a transition away from fossil fuels toward clean energy. In July 2019, utility regulators approved Georgia Power's integrated resource plan (IRP), which will result in the retirement of five coal-burning units and the addition of 2,210 MW of solar capacity.[1] The City of Atlanta passed a resolution in 2017 declaring that municipal buildings will be powered by 100% renewable sources by 2025, with a community-wide target of 100% by 2035. It is the first city in Georgia to pass such a resolution.

The Georgia Public Service Commission (PSC) regulates the state's major investor-owned utility (IOU), Georgia Power Company, and has limited regulatory authority over 42 electric membership corporations (EMCs) and 52 municipally-owned electric power companies in the state. The PSC is composed of five members, and commissioners are elected to six-year terms. Currently, all five commissioners are Republicans. The state is under unified control with the Republican Party holding majorities in both chambers of the General Assembly. Republican Governor Brian Kemp leads the executive branch.

POLICY STRENGTHS AND OPPORTUNITIES[2]

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[3] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency

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1 The original IRP submitted by Georgia Power in January 2019 only planned one gigawatt, but the PSC ordered the increase to 2,210 MW.

2 For more information on policy opportunities, please visit the SPOT for Clean Energy. For more information on specific policy actions related to these opportunities, please review the *Clean Energy Policy Guide for State Legislatures*.

3 V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs in order to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

The transition to a digital economy requires affordable, sustainable, and reliable electricity and presents challenges and opportunities to the grid. Emerging physical and cyber security threats, along with increased demand for faster outage response times, require, at minimum, real-time incident tracking and response capabilities. Increased grid penetration of renewable energy coupled with the adoption of advanced metering, energy storage, microgrids, electric vehicles, and other technologies to modernize our electric system will provide economic benefits, increase security, and ensure more reliable, resilient, and clean electricity. These innovations will require substantial planning and investment in grid technologies.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation. Grid modernization strategies, while recognizing regional and inter-state diversity and avoiding one-size-fits-all plans, should take a holistic view of the electric system.

According to the GridWise Alliance's latest Grid Modernization Index, Georgia ranks in the top 10 states for grid operations and places 11th in the nation for overall grid modernization efforts, indicating the state's consistency in working to upgrade its electricity infrastructure in recent years. The state does not have a grid modernization plan, but Georgia Power's 2019 IRP includes measures to improve grid resiliency in response to outages and weather events, a first for Southern Company subsidiaries.

There are policies that Georgia's policymakers could adopt to support in-state modernization efforts.

1. Develop a grid modernization strategy through a stakeholder process. Alternatively, states might decide to require that utilities develop and propose a ten-year grid modernization plan to the public utilities commission within a specified timeframe. Utilities would then be required to implement that plan within another specified timeframe. Strategies and/or plans should outline a clear set of grid modernization goals and describe methods to measure, report, verify, and enforce progress towards those goals.

2. States might also provide incentives or cost recovery mechanisms for utilities that meet grid modernization goals. Policymakers could consider directing the IPUC to evaluate alternative ratemaking mechanisms, performance-based regulation, and/or new utility business models that support grid modernization.

3. Require that utilities' integrated resource plans (IRPs) include plans to enhance cybersecurity, integrate distributed energy resources (including electric vehicles and energy storage), increase smart meter deployment and demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts. While there is no statewide policy requiring smart meters, Georgia Power has taken the lead on residential smart meter deployment and has converted all of its meters to advanced meters.

4. Georgia does not have clear state policies governing customer data access and privacy protections. To address this, policymakers should develop legislation or rules that, at minimum, do the following: clarify who owns the energy data associated with customer energy usage; protect customer privacy; outline the process for allowing

direct access to data by third parties; and promote access to the highest resolution of data possible. While the Smart Energy Consumer Collaborative of Atlanta facilitates customer access to energy data through Green Button, the state could expand access to this program.

ENERGY STORAGE

Energy storage offers a unique opportunity to dynamically manage supply and demand while maximizing the value of grid resources. By deploying storage in strategic locations, utilities can more effectively manage their energy portfolios. First, storage provides management of intermittent demand – helping to flatten peak demand requirements for the utility. Second, the responsiveness of energy storage can allow the utility to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, storage can dispatch power to better integrate intermittent resources like renewable energy.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control, for instance, how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to a number of economic and environmental gains.

Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. State policy can help maximize these benefits through a combination of establishing a framework for easy integration of energy storage into the grid and establishing a marketplace that monetizes the benefits of energy storage for cost-effective investment.

Southern Company is exploring the potential for energy storage projects in Georgia. The updated 2019 IRP for Georgia Power includes plans to procure 80 MW of energy storage. Georgia Power will also undertake a microgrid project in conjunction with Emory University. Battery engineering company Sonnen recently launched a manufacturing and research and development center in Atlanta for the production of lithium-ion batteries.

There are several opportunities for developing supportive state policies:

1. Amend existing interconnection policies to ensure that storage can connect to the grid through a transparent and simple process. The Interstate Renewable Energy Council (IREC) has produced a series of interconnection protocols that states can easily adopt. The state could establish best practices for interconnection in statute, or legislation could provide an instruction to utilities to implement these best practices.

2. Instruct utilities to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it will be cost effective, or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Consider creating a mandatory energy storage procurement target or requirement for energy storage with a documented process for periodic review of progress towards that goal. Procurement targets can limit the amount of utility owned storage; require that a certain amount of storage be targeted to low-income customers; and create carve-outs for storage at the transmission, distribution, and customer levels. Procurement targets can jump-start market creation, spur fast learning, and guide the development of a regulatory framework.

5. Finance and incentivize energy storage for customers and utilities. Incentives could enable customers to use storage to manage their electric load and store locally produced renewable energy. Incentives in the form of rebates, grants, and tax credits can provide a bridge to scalable deployment for storage. Incentives can be designed to decline as storage values become more readily monetized and/or as the cost of storage decreases.

Policymakers could allow utilities that provide incentives to customers to recover the costs of installing smart meters. This would enable dynamic and time-varying energy management from multiple distributed battery systems. This should signal to customers the value of leveraging storage while better aligning customer costs with system costs. Financing energy storage installations for commercial customers could help reduce their demand charges. Policymakers might want to start first with a policy that provides grants to pilot projects. Policy might also target solar system owners. Financial incentives should be designed to ensure that the state will meet other goals including emissions and peak demand reductions, and equitable access to clean energy.

MAINSTREAMING RENEWABLES

As the renewable energy industry has matured, technology has improved, and global production of generating equipment has increased, renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2019 Bloomberg New Energy Finance report predicts that renewable resources will generate at least 60% of total global electricity and 43% of U.S. electricity by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, policymakers in Georgia might consider several options.

Customer-Oriented Policies

1. Interconnection, net metering, and streamlined permitting – In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. To ensure this, Georgia's policymakers could consider adopting IREC's model interconnection procedures, removing net metering system size limitations and the aggregate capacity limit, and crediting net excess generation at the customer's retail rate. Georgia's distributed generation compensation rules do not require that utilities offer net metering. Currently, Georgia Power credits distributed generation customers at the avoided cost rate (the marginal cost for a producer to generate one more unit of power) not the full retail rate. Allowing aggregated net metering would be beneficial to agricultural operations, commercial properties, and public entities like state and local governments, universities, and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program, as Atlanta has done. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction.

2. Shared Renewables – Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies where they live or work. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the project or the generation provided by the system. Georgia Power currently offers three MW of shared solar through their Community Solar Program with an additional six MW planned. To expand program participation, the state might consider adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared system as if the generation were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce. Because it is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system (and may come as a surprise to the participant).

   Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be encouraged either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program to provide recipients of assistance with participation in a shared renewable system.

There are several additional policy options that Georgia might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. Corporate Procurement – Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. Over the last five years, over 16 gigawatts (GW) of renewable contracts have been announced by corporate entities. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. Several recent actions in the state are contributing to a favorable environment for corporate renewable procurement. House Bill 57, enacted in 2015, authorized third party financing to facilitate investment in solar energy around the state. Georgia Power offers an opportunity for customers to purchase renewable energy credits or solar energy through their Simple Solar Program. This utility also created the Commercial & Industrial Renewable Energy Development Initiative (C&I REDI) as part of their 2016 IRP. Customers such as Google, Johnson & Johnson, Target, and Walmart have subscribed to the program and it meets all six of the Corporate Renewable Energy Buyers' Principles. Georgia Power is expanding corporate access further in its 2019 IRP, in which it outlined the Customer Renewable Supply Procurement Program (CRSP), making 950 MW of utility-scale solar available for corporate subscribers.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. Georgia Power has a goal to reach 1.6 GW of renewable energy by 2021, however it is set to hit this goal using solar alone, before the end of 2019. Georgia Power also has a 250 MW PPA with Blue Canyon Wind Farms in Oklahoma. The Tennessee Valley Authority's (TVA) most recent IRP projects that the utility will achieve a 70% reduction in carbon dioxide intensity, from a 2005 baseline, over the next 20 years. Not only is favorable public opinion toward clean energy increasing among Georgia's voters,[4] but the PSC has also shown increased interest in clean energy during the 2019 integrated resource planning process. For instance, Georgia Power submitted its original IRP in January 2019, declaring plans to construct approximately 1 GW of new solar facilities. However, in July 2019, the PSC determined that Georgia Power was capable of adding more renewables to its resource portfolio, and ordered additional capacity for a total of 2,210 MW, with similar increases in distributed solar projects.

To increase utility adoption of clean energy technologies, Georgia's policymakers might consider the following:

1. Emission standards are designed to drive emission reductions through either 1) a carbon portfolio standard or 2) a market-based approach. Both types of approaches can take a technology neutral stance that drives emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. These policies can also address other concerns such as pollution, asthma risk, environmental justice, and water use.

   A portfolio emissions standard sets emissions reduction targets to be achieved over time. This can be implemented through the utility planning process or by establishing a maximum allowable rate of emissions per unit.

   Market-based approaches can take the form of an emissions trading regime or a tax. Under a market-based approach, a state or a group of states might set a certain emissions reduction target, for example, 40% below 1990 levels by 2030. This reduction is achieved by the distribution of annual emission allowances that decrease over time until the goal is met. Allowances can be bought and sold on a market that allows utilities and other emitting firms flexibility in reaching total emissions goals. Revenue generated by these markets can be used to support the development of renewable energy, energy storage, and energy efficiency programs. There are emissions trading markets in operation today that states can join. The other pathway to reaching emissions targets is through a tax on fossil fuel use that can be used to generate revenue to fund emissions reductions policies and technologies and to incentivize the reduction of emissions over time. One of the advantages of a market-based program is that these are designed to reduce emissions in the most economically efficient manner possible.

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[4] Survey conducted by Clean Energy Conservatives.

2. Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options including: planning and procurement requirements that focus on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

Bloomberg New Energy Finance estimates that 57% of all new passenger vehicle sales will be electric by 2040 and that price parity with conventional vehicles will be met for most segments in the mid-2020s. Designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid is a key part of building a modernized grid. The relationship between the increased adoption of EVs and the availability of EV charging stations is complicated. On the one hand, consumer range anxiety creates a barrier to increased adoption. On the other hand, while greater availability of charging stations would ease this anxiety, the relatively low numbers of vehicles on the road provides little incentive to install and make these stations available to the public. The good news is that both supportive policies for developing charging infrastructure and advancements in technology have eased range anxiety.

Georgia is among the top 10 petroleum-consuming states in the nation, and transportation accounts for approximately 90% of in-state use. Georgia does not have incentives for citizens to purchase electric vehicles. For alternative fuel vehicles, including EVs, the state requires an additional annual registration fee of at least $213, which dis-incentivizes the purchase of EVs and other alternative fuel vehicles. The state offers a tax credit for EV charging infrastructure and Georgia Power offers an Electric Vehicle Charger Rebate to those that install a Level 2 charging station. Georgia Power also offers a reduced plug-in electric vehicle charging rate for charging between 11pm and 7am. These incentives could be expanded, and there are a number of additional opportunities to encourage and prepare for increased market penetration of EVs in the state, including:

1. EV and EV Supply Equipment (EVSE) Financing and Financial Incentives – Providing financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing high up-front costs of EVs and EVSE. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as the credit is not applied at the time of purchase.[5] States have adopted other financial incentives including low-interest loans, grants, vouchers and rebates. A handful of states qualify EVSE under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

2. Charging Infrastructure Plan – Locating charging infrastructure is different from locating conventional fueling stations. For the most part, EVs are cars used for commuting and local trips. Furthermore, while a driver of a conventional vehicle stops only briefly at a gas station for the specific purpose of filling up, a driver of an EV is generally looking to refuel when they are parked for a longer period of time, for example when going shopping, going to a restaurant, or going to work. Charging infrastructure plans should attempt to pair the appropriate level of charging with a reasonable amount of time a person will be at that location. Legislation could direct a state agency to develop an infrastructure plan through a stakeholder process. Georgia's existing registration fee for EVs could help fund these efforts. For example, in Washington a portion of each EV registration fee is used to fund charging infrastructure development across the state.

3. Parking Infrastructure Requirements – In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Legislation could also incentivize utilities to develop make-ready locations. These locations supply power to the point where a utility or third party developer might install an EV charging station. Georgia's statewide building energy code could also be updated to include requirements for EV charging infrastructure.

[5] A study by the Congressional Budget Office however suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

NEWS

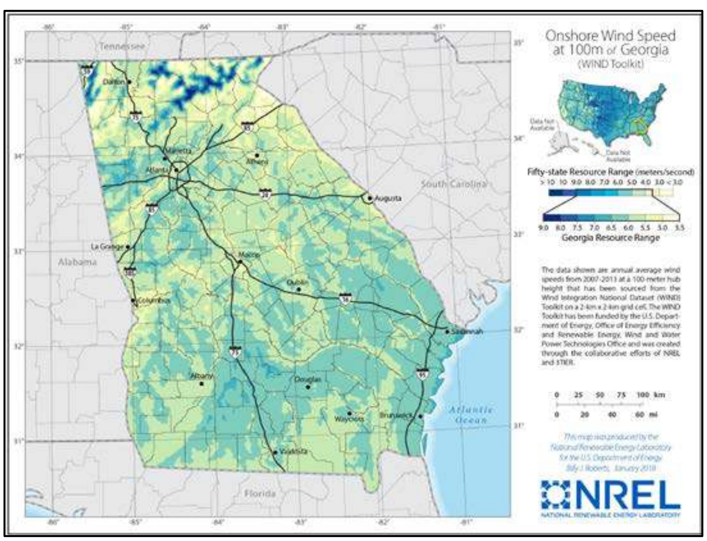
- August 13, 2019: Georgia Highway Becomes Testbed for Connected Vehicles
- August 8, 2019: Georgia Southern Helping Rural Teachers Introduce Renewable Energy into Classrooms
- August 7, 2019: TVA Climbs Out of Debt, Slashes Emissions
- August 6, 2019: DOE Celebrates Georgia Power's First 'Smart Neighbourhood'
- July 30, 2019: Georgia Regulators Raise Fresh Concerns About Nuclear Project's Timing
- July 26, 2019: Georgia Power's Solar+Storage Smart Neighborhood Unveiled in Atlanta
- July 19, 2019: Georgia Poised to Nearly Double Amount of Solar Power Production
- July 16, 2019: Georgia Commissioners, All Republicans, Increase Solar power, Cut Coal
- June 28, 2019: Georgia Power Investing Billions in Georgia's Energy Future; Requests Funding for Grid Improvements, Storm Restoration and Environmental Programs
- June 24, 2019: How Georgia Became a Surprising Bright Spot in the U.U. Solar Industry
- May 22, 2019: Athens 4th Georgia City to Adopt 100% Clean Energy Plan
- May 21, 2019: Georgia Power Adds Commercial Solar Projects Generating 2 MW of Renewable Energy
- May 13, 2019: Emory University Seeks Regulatory Support for Microgrid at its Atlanta Campus

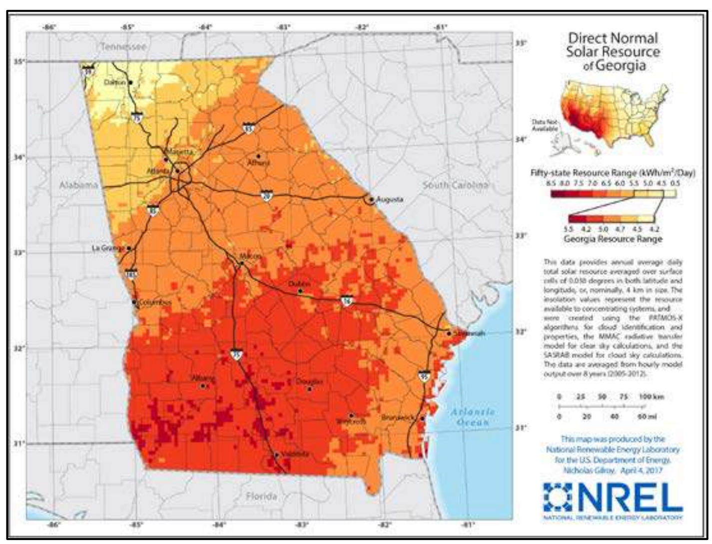
OTHER RESOURCES

- Georgia Environmental Finance Authority: https://gefa.georgia.gov/energy-resources
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Georgia: http://database.aceee.org/state/georgia
- The Database of State Incentives for Renewables and Efficiency, Georgia: http://programs.dsireusa.org/system/program?fromSir=0&state=GA
- U.S. Energy Information Administration, Georgia: https://www.eia.gov/state/?sid=GA
- American Wind Energy Association (AWEA): https://www.awea.org/resources/fact-sheets/state-facts-sheets
- National Renewable Energy Laboratory Biomass Maps https://www.nrel.gov/gis/biomass.html
- SPOT for Clean Energy, Georgia: https://spotforcleanenergy.org/state/georgia/
- U.S. Department of Energy's Alternative Fuels Data Center, Georgia: https://www.afdc.energy.gov/states/ga
- The Rocky Mountain Institute: From Gas to Grid – Building Charging Infrastructure to Power Electric Vehicle Demand
- The GridWise Alliance: EVs - Driving Adoption, Capturing Benefits
- The Regulatory Assistance Project: Performance-Based Regulation

GEORGIA'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/ga
SOLAR https://www.nrel.gov/gis/solar.html





Our Resources

CNEE Homepage: http://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

Clean Energy Policy Guide for State Legislatures: http://cnee.colostate.edu/cleanenergypolicyguide/

The Energy Policy Podcast: http://energypodcast.colostate.edu/