**SUPPLEMENTAL DIRECT TESTIMONY**

**OF DR. DAVID GATTIE**

**ON BEHALF OF**

**GEORGIA POWER COMPANY**

**DOCKET NO. 44280**

1. **INTRODUCTION**

**Q. PLEASE STATE YOUR NAME, TITLE, AND BUSINESS ADDRESS**

A. My name is Dr. David Gattie. I am an Associate Professor of Engineering in the School of Environmental, Civil, Agricultural, and Mechanical Engineering at the University of Georgia. My business address is Driftmier Engineering Center, Room 1211, 597 D. W. Brooks Drive, Athens, Georgia 30602.

**Q. ON WHOSE BEHALF ARE YOU SUBMITTING TESTIMONY?**

A. I am testifying on behalf of Georgia Power Company (“Georgia Power” or the “Company”).

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION?**

A. Yes. I previously submitted testimony on behalf of Georgia Power in Georgia Public Service Commission (“Commission”) Docket No. 29849.

**Q.**  **DR. GATTIE, PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL EXPERIENCE.**

A. I am an Associate Professor of Engineering in the University of Georgia’s (“UGA”) College of Engineering, and a Senior Fellow in UGA’s Center for International Trade and Security, which is in UGA’s School of Public and International Affairs. I have fourteen years of private industry experience as an energy services engineer and environmental engineer. Currently, my research is in the area of energy policy and integrated energy resource planning for the power sector and the security implications of transitioning the U.S. economy to low- or zero-carbon energy resources. A particular focus of mine is the national security implications of U.S. nuclear power. I established UGA’s first environmental engineering undergraduate program in 2009, which I ushered through full accreditation in 2012, and I teach graduate and undergraduate courses in energy systems and energy security for both the College of Engineering and the Center for International Trade and Security. I serve on the Advisory Board for the Energy Policy Institute at Boise State University and as an uncompensated member on the Advocacy Council for Nuclear Matters.

I’ve conducted research in natural resources engineering and in material and energy flows in ecosystems as a basis for understanding the limitations of energy flows in ecological and coupled human-natural systems, and the importance of stored energy for sustaining growth in ecological systems and industrialized economies. Based on my extensive international experiences and firsthand involvement around the challenges of meeting electricity needs in developing and recently developed countries, my current research focus is energy policy for the electric power sector. Part of my current research efforts have included research with the 1 MW solar demonstration project in Athens, GA and a solar plus storage project as a resource for renewable generation intermittence (both in collaboration with Georgia Power)

With increased attention and national policy efforts directed at transitioning the U.S. away from conventional resources to low- or zero-carbon resources, I’ve dedicated my most recent research efforts toward evaluating the broader security implications of such an unprecedented shift in the world’s largest industrialized economy and greatest military power. Over the past eight years, I have made over one hundred presentations at the local, state, national, and international levels and have authored or co-authored over thirty journal articles and commentaries on energy policy. One of these is a co-authored article with President Ronald Reagan’s former National Security Advisor, Robert “Bud” McFarlane, entitled, “China and the Importance of Civil Nuclear Energy,” which was published in *The National Interest*. For the past five years, I’ve spent time in fourteen states, including Georgia, meeting with individuals associated with the electric power industry to discuss the energy transition issue, as well as my own research on the security implications of energy policy at the state and national levels. These meetings and discussions have included industry professionals, state legislators, academicians, and working-class citizens. Moreover, I have been, and continue to be, engaged in extended energy policy summits with practitioners, policymakers, and academics from South Korea and Japan (two key U.S. allies in global and national security) to discuss our respective countries’ energy and nuclear power policy within the energy transition framework and the challenges confronting us in such a transition. I am particularly engaged with South Korea having recently participated as an invited participant for the Inaugural US-ROK Energy Security Dialogue held in Seoul, South Korea. This was followed up by a reciprocal Multilateral Nuclear Energy Dialogue that I organized and hosted on the University of Georgia campus. In all, these summits and deliberations focus on energy as a national, economic and climate security issue.

I am currently leading the development of the Applied Energy Studies (AES) initiative at UGA. This is a collaboration between UGA’s College of Engineering and Center for International Trade and Security in the School of Public and International Affairs. Whereas energy is generally debated in the U.S. as either a market commodity or as a climate change issue, the mission of the AES initiative is to elevate the security implications of energy policy within the energy policy debate. To this end, I have led the development of the Energy Security track within the School of Public and International Affairs’ Master of International Policy degree program. This has included the development of three graduate courses: INTL 8278 Energy Statecraft, INTL 8279 Energy Security and Policy and MCHE 8500 Technical Foundations of Energy for Policymakers.

I also have provided testimony before the U.S. House Energy and Commerce Committee on energy, climate, and nuclear power policy and the critical role of energy diversity.[[1]](#footnote-2)

In summary, my research efforts are focused on elevating energy security, national security, economic security, and climate security as core issues around which our energy and climate policy debate, as well as any energy transition we pursue, should revolve. And, germane to these efforts, is the role of renewable energy resources such as solar.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. The purpose of my testimony is to respond to the Commission’s request for Georgia Power to address whether its monthly netting program is a fair and long-term way to compensate customers with behind the meter generation resources such as rooftop solar photovoltaic (“PV”). In this testimony I offer to the Commission my opinion on whether monthly netting, known in other states as monthly net metering, is the right policy choice for Georgia. Directly, my recommendation is that the Commission should not extend Georgia Power’s monthly netting pilot whereby solar customer-generators are compensated at approximately the retail rate for excess energy exported onto the grid. In my testimony, I recommend that the Commission adopt a rate structure and compensation rate that ensures solar customer-generators pay their fair share of the costs to operate the Company’s electric system while also fairly compensating customer-generators for the energy they export to the grid.

**Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

A. I recommend that the Commission reject expanding Georgia Power’s monthly netting pilot as monthly netting represents a fundamentally flawed mechanism for compensating customers with behind the meter (“BTM”) generation in Georgia. I make this recommendation for a variety of reasons, including the discrepancy in value placed on electricity exported by solar customer-generators onto the grid, the lack of consensus on the use of monthly net metering as a policy tool in other states, and because disproportionately compensating customer-generators as a means to increase solar development does not align with Georgia’s energy policy goals. I base this conclusion on the following key considerations:

* **Disparity in Value**: Under monthly netting, a customer-generator who exports electricity onto the grid is treated as providing *all* of the services, like transmission and distribution, traditionally associated with electric utility service. But the cost to provide electricity coming from the grid to the solar customer-generator is higher than the value of electricity exported from the solar customer-generator onto the grid. This is because the solar customer-generator is not providing the same transmission, distribution and other services required to transmit power across the Company’s system and maintain reliable electric service for its customers. As I explain further below, any rate structure or compensation rate that does not appropriately account for this discrepancy unfairly shifts costs to other customers by compensating customer-generators for services they do not provide. This cost shift most egregiously occurs under monthly netting but can occur under any rate design or compensation mechanism that fails to align the compensation provided to customer-generators for the energy they export to the grid with the actual costs of providing them with electric service.
* **Excess Subsidization**: The Inflation Reduction Act (“IRA”), President Biden’s signature climate change policy, includes a 30% tax credit specifically designed to spur investment and lower barriers for entry into rooftop solar. All estimates suggest the IRA’s impact on the rooftop solar market will be profound and that it is likely to have a transformative effect on the rooftop solar industry. The Commission should, therefore, allow the financial impacts of this game-changing federal subsidy to unfold before committing additional ratepayer dollars in the form of expanded monthly net metering subsidies. This is especially the case when these additional ratepayer subsidies may not be needed for continued and stable solar customer-generator deployment in Georgia. Federal dollars, not state ratepayer dollars, should be the first to support these resources. And federal IRA subsidies may be enough.

While I do not offer my opinion as to a specific rate structure and compensation rate for solar customer-generators, I do urge the Commission to only compensate these resources for the services they actually provide—and not provide a level of compensation that unfairly shifts costs to other customers. The right mechanism will ensure that solar customer-generators pay their fair share of the costs of electric service and fairly compensate them for the energy they export to the grid.

From a policy perspective, my testimony also provides a broader view of the implications associated with leveraging monthly net metering as a tool for regulators and policy makers to accelerate the transition away from conventional energy resources. In this regard, monthly net metering is a national issue, as the U.S. is in a sharply divided debate as to which energy resources will power its 21st century economy. States that have led the way in adopting aggressive net metering strategies as a means to achieve their energy policy goals are now walking back or reevaluating net metering policies, on account of significant negative externalities and issues of ratepayer fairness. My recommendation is that the Commission consider the lessons learned in other jurisdictions and that it avoids the expansion of monthly net metering in Georgia, which is a flawed policy with fading national support.

1. **NET METERING**

**Q. PLEASE EXPLAIN THE HISTORY OF NET METERING POLICY.**

A. The origins of net metering are rooted in the Public Utility Regulatory Policies Act of 1978, which was enacted following the energy crisis of the 1970s and required utilities to compensate solar customer-generators based on the utility’s avoided cost.[[2]](#footnote-3),[[3]](#footnote-4) The first actual application of net metering was in 1979 in Massachusetts.[[4]](#footnote-5) Some of the original motivation for, and interest in, net metering is summarized in the National Renewable Energy Laboratory’s (NREL) *Net Metering Programs Topical Issues Brief*, published in 1996:

There has been a recent surge of interest from the renewable energy industry and environmental groups in net metering. The reason for this interest is that net metering is a simple, low-cost, and easily administered method to encourage direct customer investment in renewable energy technologies. The renewable energy industry supports net metering because it removes an economic disincentive for potential customers by increasing the value of the electricity generated by renewable energy technologies. Environmental groups support net metering because it promotes clean energy production.[[5]](#footnote-6)

NREL defines net metering as “a metering and billing arrangement designed to compensate distributed energy generation (DG) system owners for any generation that is exported to the utility grid.”[[6]](#footnote-7) The Congressional Research Service, in 2019, defined net metering as “a policy that allows electricity customers with their own generation capacity to be financially compensated for the energy they produce.”[[7]](#footnote-8)

Net metering, then, is a policy that governs the billing arrangement and compensation structure between a solar customer-generator and the utility providing the grid and utility services to which the solar customer-generator is connected. In other words, this debate examines the appropriate compensation level paid by the utility to the solar customer-generator for the excess energy they deliver to the grid. The billing arrangement, compensation structure, and the value assigned to this excess energy are the points of contention. Currently, there is no shortage of studies, papers, briefs, and reports on the issues of net metering, with myriad proposals for how solar PV customer-generators should be compensated.[[8]](#footnote-9),[[9]](#footnote-10),[[10]](#footnote-11),[[11]](#footnote-12) One literature review in 2006 found twenty-two distinct definitions for the term “net metering” and proposed “a taxonomy that distinguishes between sixteen distinct compensation practices.”[[12]](#footnote-13) For the purpose of my testimony and my recommendation around the appropriate rate of compensation for solar customer-generators, I primarily address concerns associated with monthly netting, which provides compensation for excess generation at or near the retail rate of electricity.

**Q. HOW DO YOU DEFINE THE “RETAIL RATE OF ELECTRICITY”?**

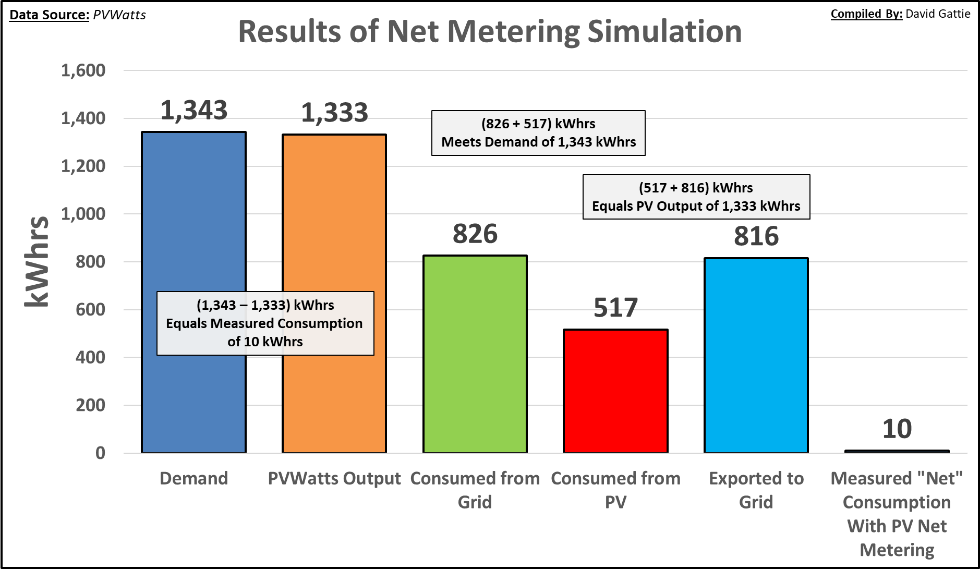
A. The retail rate of electricity includes a utility’s fuel costs, generation costs, transmission costs, distribution costs, grid infrastructure costs, and administrative support costs provided by the utility. All costs beyond fuel and marginal operations and maintenance costs incurred at the power plant represent added value provided solely by the utility to move electricity reliably and safely from the generating source to its customers—including moving electricity to those customers with distributed solar generation. Because of these delivery costs, the value of electricity generated at the power plant is much lower than the value of electricity delivered to the meter of a customer. This discrepancy in value reflects all the costs associated with transmission, distribution, grid infrastructure, and support services provided by the utility—costs that go unrecovered where a solar customer-generator fails to pay its fair cost of electric service or is overpaid for the excess energy it exports to the grid, as is the case under monthly net metering.

**Q. HOW DO YOU DEFINE MONTHLY NETTING?**

A. Under monthly netting, when a solar customer-generator generates sufficient electricity to meet its own demand, no electricity flows to the customer from the grid through the meter. When a solar customer-generator generates less than its own energy demand, the insufficiency is made up by consuming electricity from the grid, in which case, the meter spins forward and registers the customer’s consumption of electricity. When the solar customer-generator generates electricity in excess of its own demand, the excess electricity is exported to the grid through the meter, which then essentially “spins backwards,” reversing the customer’s previously registered consumption of electricity from the grid. As I understand Georgia Power’s monthly netting pilot, participating customers are billed based upon the lower netted usage, meaning that the customer-generated electricity that is exported to the grid is valued at close to the retail rate of electricity.[[13]](#footnote-14)

**Q.** **CAN YOU PROVIDE AN EXAMPLE?**

A. Yes. The following hypothetical example illustrates how I interpret monthly netting. Consumption for an Oconee County, Georgia residence was compiled for the month of April 2022, during which time the residence consumed and paid for 1,343 kWh of electricity (Figure 1). PVWatts was then used to model electricity output from a 10 kW solar PV system installed at this location.[[14]](#footnote-15) This output was estimated to be 1,333 kWh. This would then translate to a net difference of 10 kWh, which, under monthly netting would result in a bill to the customer-generator for 10 kWh of measured consumption. However, this is only measured consumption since electricity from the grid and electricity to the grid are considered equivalent under monthly netting arrangements that do not account for the difference between actual consumption and export. In reality, based on hourly data for both the residence and from PVWatts, the residence with a solar PV system would have consumed 826 kWh during times when the PV system either was not generating electricity or was not generating sufficient electricity to meet the solar customer-generator’s demands. At the same time, the solar customer-generator would have exported 816 kWh of excess electricity to the grid during times when solar PV generation exceeded the solar customer-generator’s demands. Monthly netting would report this as a 10 kWh consumption, even though the solar customer-generator was still dependent on the grid for providing its consumption of 826 kWh of electricity. Such is the difference between “measured consumption” under monthly netting, which in this case is 10 kWh, and “actual consumption” which in this case is 826 kWh.



**Figure 1**. Net metering simulation profile of the grid and PV electricity consumption and export for a residence in Georgia.

Under monthly netting type arrangements, all electricity moving through the meter, in either direction, is treated equally at the retail rate, with no distinction in value. The question then comes down to the value of electricity coming from the grid to the solar customer-generator compared with the value of electricity exported from the solar customer-generator onto the grid. And in my determination, this value of excess energy exported by the customer-generator is nearly always less than the value of the energy delivered to the customer.

**Q. WHY SHOULD THE COMPENSATION RATE OF electricity exported from the solar customer-generator BE LOWER THAN THE retail rate of electricity?**

A. Customers with solar resources are still dependent on the grid itself, including the generation, transmission, and distribution services a utility provides — but which the solar customer-generator avoids paying under a monthly netting arrangement. Under monthly netting arrangements, solar customer-generators are compensated at approximately the full retail rate and are thus significantly overpaid for the energy they export. As such, the solar customer-generator essentially avoids paying for the fixed operating costs of generation, transmission, and distribution, even though it uses them and, in fact, depends on access to them to export its own energy to the electric grid. As such, monthly netting represents a regressive policy that favors and rewards those who choose to participate at the expense of those who choose not to participate or who can’t participate in behind-the-meter solar generation. This underscores the need for an appropriate rate structure that ensures solar customer-generators pay their fair share of the costs associated with electric service while also being fairly compensated for the energy they export to the grid.

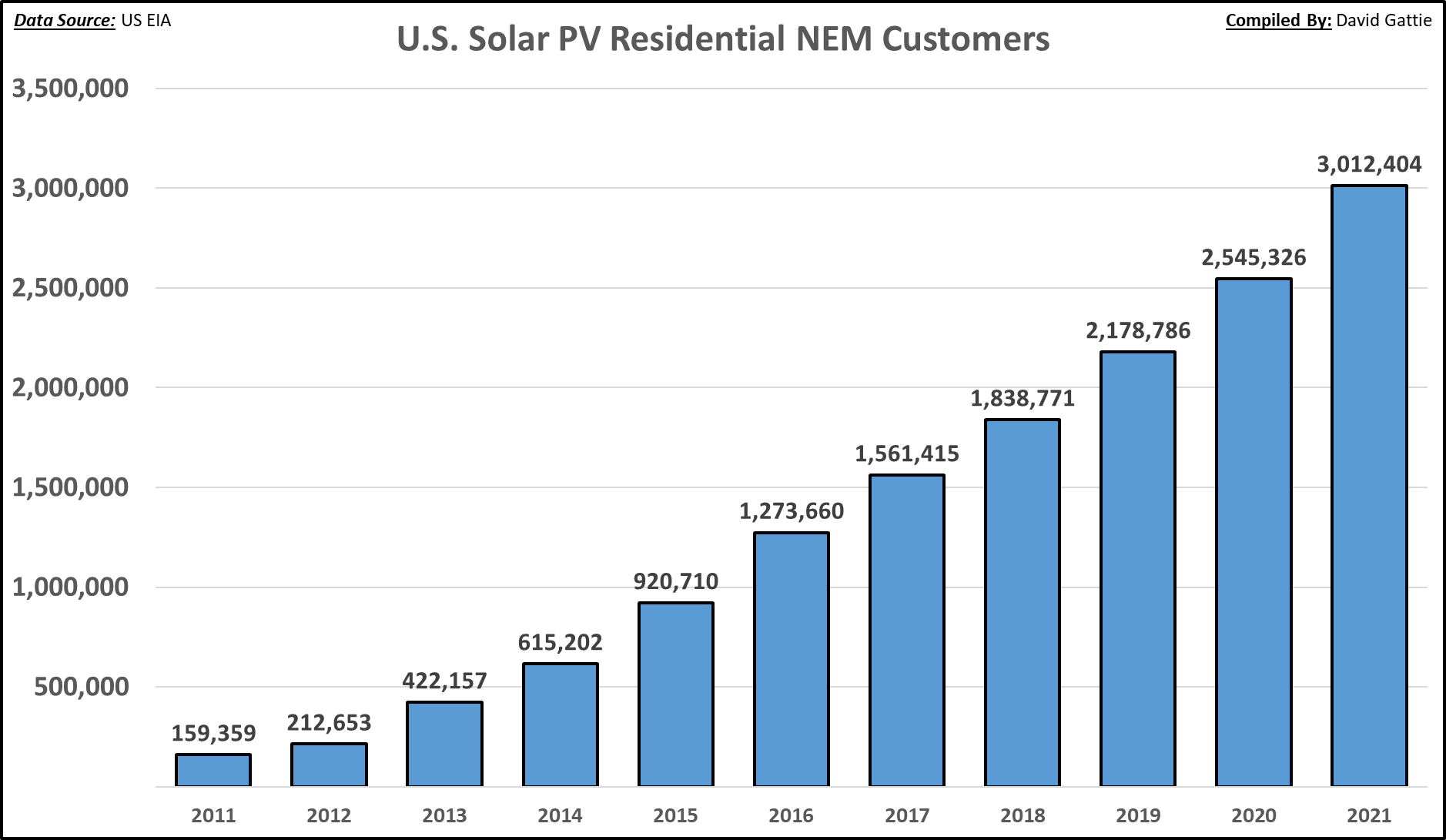
1. **STATE-LEVEL POLICY CHOICES**

**Q.** **PLEASE FRAME THE NET METERING DEBATE.**

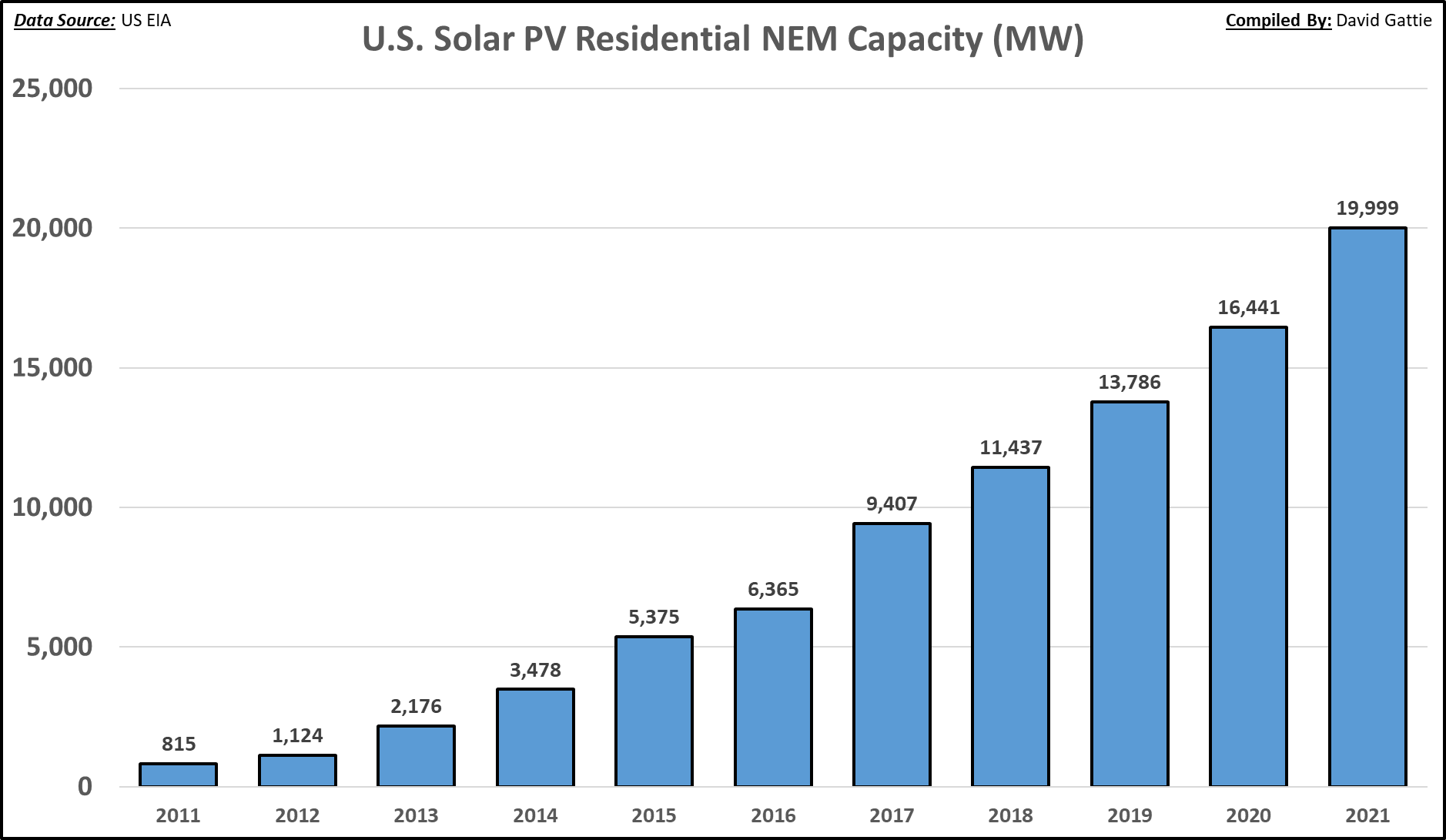
A. States have adopted monthly net metering primarily as a means to achieve renewable energy and energy resiliency goals. In the nascent days of rooftop solar PV, excess compensation in the form of monthly netting was used by some state regulators and policymakers to encourage the growth of small-scale renewables. At the time of its adoption, monthly netting provided a simple but crude billing solution for the small subset of customer-generators participating on an electric utility’s system. As solar PV technology has matured and solar PV costs have declined, participation rates in monthly net metering programs nationwide have rapidly expanded. This rapid expansion has forced state policymakers and regulators to reexamine net metering policies more holistically, with an eye towards fairness, affordability, energy diversity, and reliability. As I describe in the balance of my testimony, monthly netting is not a recommended approach for Georgia, given the negative externalities these policies have produced in other parts of the U.S. and the other far more preferable ways Georgia can achieve these objectives.

**Q. HAVE YOU REVIEWED NATIONAL NET METERING PARTICIPATION RATES?**

A. Yes, I have. In 2021, there were 3,012,404 residential net metering customers in the U.S.[[15]](#footnote-16) Since 2011, the number of residential solar PV net metering customers has increased 1,790% while net metering capacity increased over 2,350% (Figures 2 & 3).



**Figure 2**. U.S. solar PV residential net metering customers, 2011-2021.



**Figure 3**. U.S. solar PV residential net metering capacity (MW) from 2011—2021.

A breakdown of 2021 shows that two-thirds (66.19%) of residential solar PV net metering customers were located in five states—California, Arizona, New York, New Jersey, and Massachusetts—with California alone accounting for almost half (45.56%) of the country’s total residential solar PV net metering customers (Table 1).



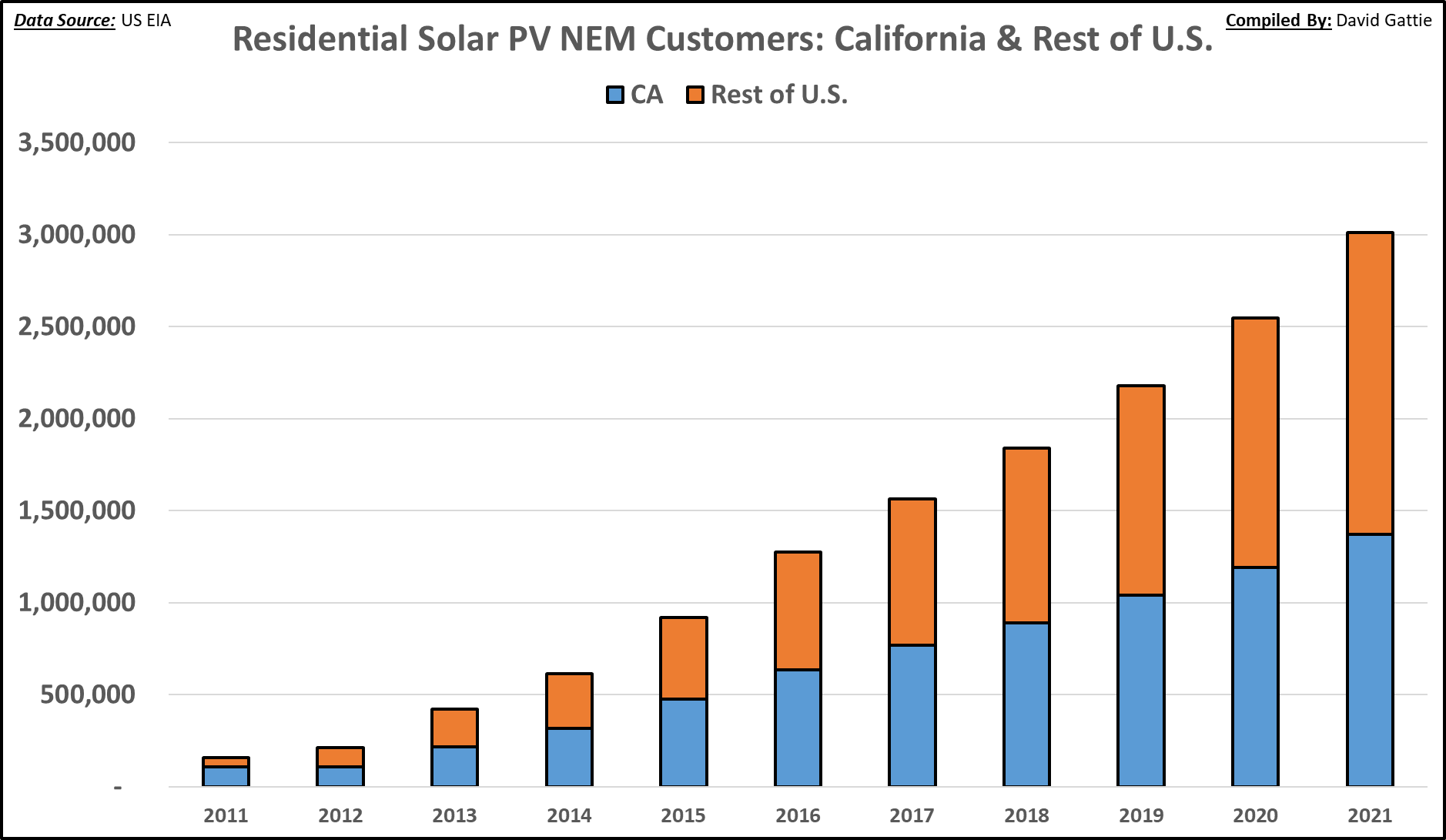
**Table 1**. Breakdown of residential solar PV net metering customers.

As it is the dominant net metering state, California merits a closer look. In 2020, while about 1.86% of all U.S. residential grid customers were net metering customers, 8.62% of California’s residential grid customers were net metering customers while in the remaining U.S. states, 1.1% of residential grid customers were net metering customers (Table 1). Meaning, while California constituted about 10.12% of U.S. residential grid customers in 2020, it also constituted about 40.93% of U.S. residential net metering capacity and 46.84% of U.S. net metering customers.

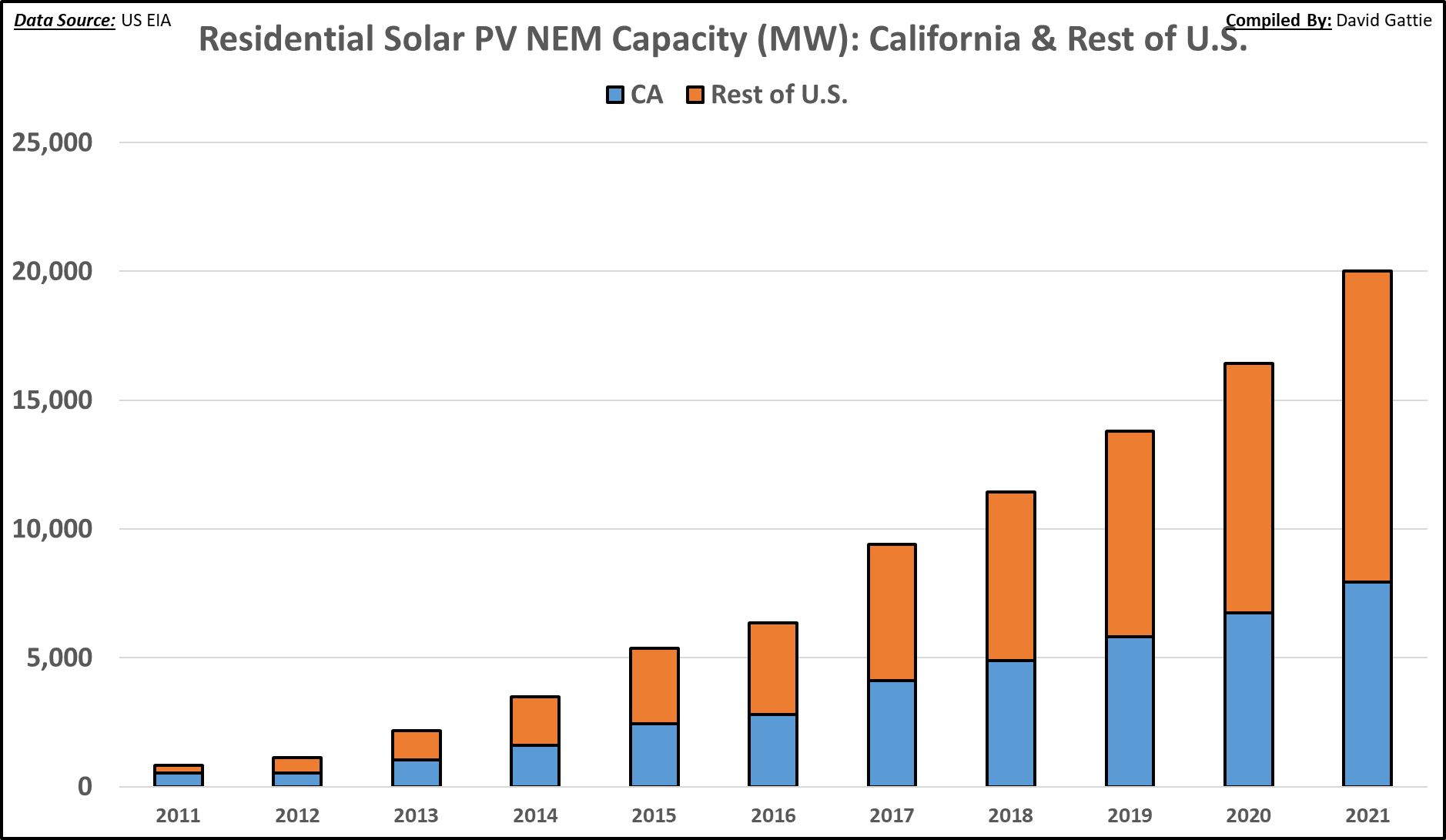


**Table 2**. Comparison of net metering customers for the U.S., California and the rest of U.S. states.

Trends of California’s share of solar PV net metering customers and capacity show that while the state’s share of the U.S. total is trending down for both number of customers and capacity, it remains the dominant state, therefore a dominant voice in the net metering policy debate (Figures 4 & 5).



**Figure 4.** Residential solar PV net metering customers for California and the rest of the U.S.



**Figure 5.** Residential solar PV net metering capacity (MW) for California and the rest of the U.S.

**Q.** **YOU HIGHLIGHT STATES SUCH AS CALIFORNIA AND OTHERS; WHAT APPROACHES HAVE THESE STATES TAKEN WITH RESPECT** **TO NET METERING?**

1. Unlike Georgia’s measured approach towards net metering, many states, including California, have implemented net metering in a manner that compensates the solar customer-generator for exported electricity on a monthly basis at the retail rate (i.e., monthly net metering), similar to the monthly netting approach piloted here in Georgia. Policymakers in these states made a policy choice to use monthly net metering as a tool to deliver rapid rooftop solar development as part of an overall decarbonization and energy transition strategy, and these policies have indeed delivered on this goal. However, this rapid development of rooftop solar has come at a cost, not only in the form of increased electric rates, but also as a result of additional stresses on these state’s electric grids and unhealthy cross-subsidies that negatively impact customers who either cannot or chose not to adopt rooftop solar.

I contend there is a better way to achieve decarbonization and energy transition goals, without relying on methodologies that increase costs, penalize existing ratepayers, and skew the efficient development of renewable energy resources. In fact, in many jurisdictions, monthly net metering has become a victim of its own success, delivering too high of a subsidy resulting in too much growth, too fast, at too high a cost, causing many state regulators and policymakers to reevaluate net metering policies in their respective jurisdictions. Despite the prevalence of monthly net metering in other jurisdictions, in my view this methodology is rapidly becoming a disfavored approach, given the negative externalities it is apt to cause when adopted at scale. No state exemplifies this more than California.

**Q.** **WOULD YOU CONCLUDE THEN THAT STATES ARE MOVING AWAY FROM MONTHLY NET METERING AS A PREFERRED POLICY OPTION?**

A. I would conclude it is near universally accepted that monthly net metering at the retail rate is no longer the preferred policy option, even in states with aggressive decarbonization and energy transition targets. Many states have adopted, or are in the process of adopting, so-called net metering “successor tariffs” intended to replace monthly net metering at close to the retail rate with new methodologies to compensate excess generation delivered to the grid. While I disagree with many of these “value of solar” studies that apply unrealistic and ethereal valuations to supposed grid benefits from distributed solar generation, my main point is to underscore that most states with aggressive net metering policies have begun to acknowledge the inadequacy of monthly net metering at close to the retail rate as a fair and sensible method for compensating distributed generation.

California’s ongoing NEM 3.0 proceeding, for example, is poised to dramatically scale back monthly net metering for distributed energy resources. While the details are still under debate, the ultimate result is very likely to be a compensation mechanism that is less lucrative to customer-generators than the prior net metering practice present in California, and results in less of a cost shift to all other customers. Other states such as Arizona, Indiana, Kentucky, Utah, and others have moved away from net metering entirely, or implemented compensation rates that are significantly less than the retail rate, fixed customer charges, time of use rates, or any combination of these measures to reduce the overall unfair cost shifts associated with monthly net metering. My objective is for the Commission to be aware that many state policy makers and regulators are moving away from—and not towards—monthly net metering at approximately the retail rate. The decision before the Commission then is to consider whether to adopt or expand the monthly netting policy at a time when the national trend is moving away from compensating behind-the-meter generation resources at approximately the retail rate. The Commission has an opportunity to avoid the problems encountered in these other jurisdictions by incorporating the lessons learned in other states and avoid adopting a disfavored methodology (i.e., monthly netting) as other states are moving away from this approach.

1. **GEORGIA’S APPROACH TO ENERGY POLICY**

**Q. WITH THIS NATIONAL CONTEXT, WHAT DO YOU RECOMMEND FOR GEORGIA?**

A. Georgia has always taken a measured and practical approach to the integration of renewable resources, and this wisdom has paid dividends for all stakeholders in this ongoing debate. Solar is Georgia’s most promising renewable energy resource, and integrating it into Georgia’s energy portfolio, in the responsible manner the Commission has done for the past several years, has improved the resource and technology diversity of the state’s power sector without sacrificing reliability or putting upward pressure on retail rates. I am in favor of the most economic and cost-effective ways of deploying renewable energy. As such, I’m a proponent of utility-scale solar as it directly benefits all ratepayers in Georgia, and I am agnostic on residential rooftop solar PV as it is a customer-choice issue. However, monthly net metering (or monthly netting here in Georgia) is a separate policy issue that involves shifting costs to ratepayers who do not participate as solar customer-generators. Significantly, my testimony on monthly netting should not be misconstrued as opposition to residential rooftop solar PV nor should it be misinterpreted as opposition to compensating solar customer-generators for electricity exported onto the grid. Quite the opposite, customer-generators should be compensated for the energy they export to the grid, and at a rate that is fair and equitable for all Georgia ratepayers and that does not shift costs to ratepayers who do not participate in distributed solar PV.

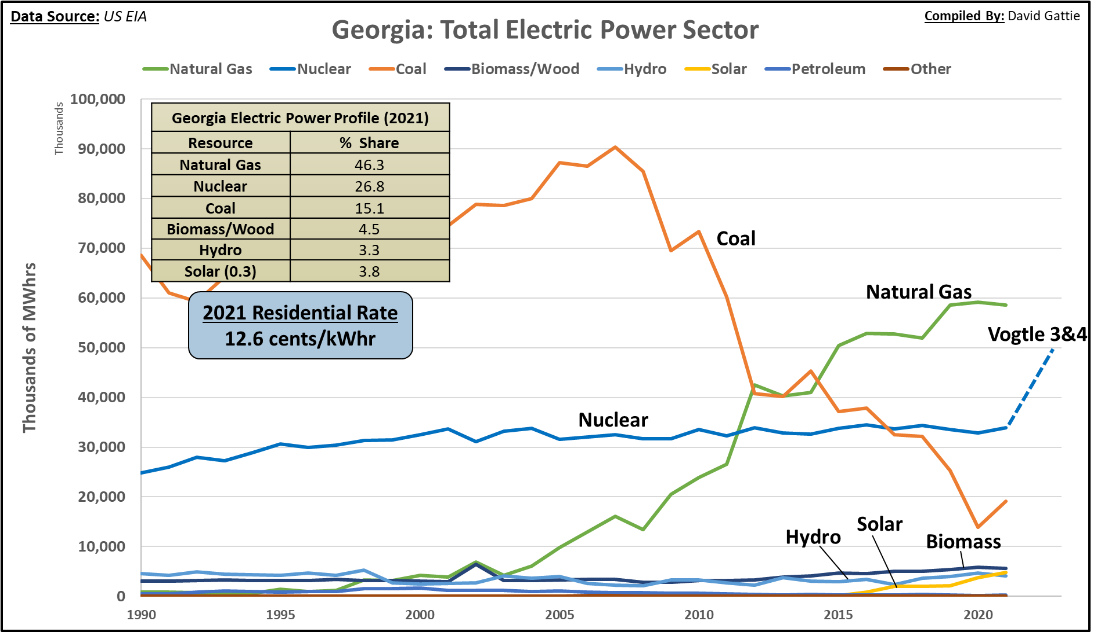
**Q. HOW DO GEORGIA’S ENERGY POLICY OBJECTIVES DIFFER FROM OTHER STATES?**

A. California is prioritizing carbon reduction, which has resulted in one of the lowest carbon footprints in the country, but also some of the highest electricity rates with regular threats of blackouts and power shortages. This can be contrasted with Texas, which is optimizing its power sector for lowest rates—and indeed has affordable rates—but has experienced severe reliability issues the past two years. States in other deregulated markets are dealing with premature closure of nuclear power plants due to deregulated markets structured around lowest marginal costs, oftentimes meaning low-cost natural gas and subsidized renewables.[[16]](#footnote-17)

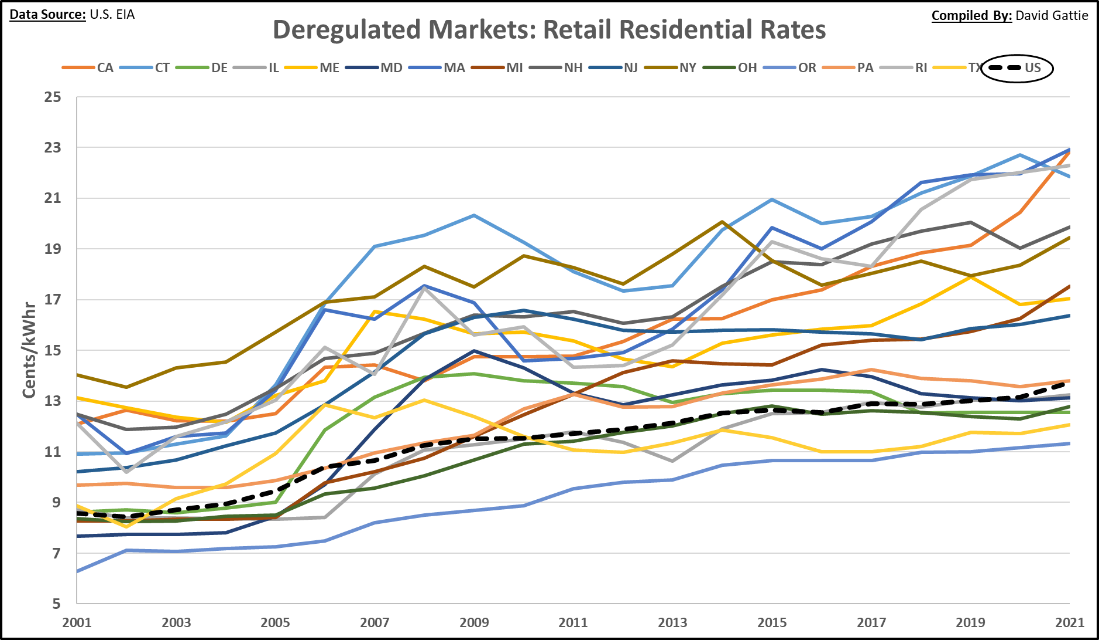
As states discuss how best to organize their respective electric power sectors within what would be an unprecedented energy paradigm for an industrial economy, some states are having heated debates and taking aggressive policy actions around renewable energy—particularly solar. And monthly net metering at approximately the retail rate is embedded in many of these policy debates.[[17]](#footnote-18),[[18]](#footnote-19),[[19]](#footnote-20)

Georgia has taken a different approach than that of states such as California and Texas as it has prioritized reliability, affordability, and resource diversity within its long-term integrated resource planning process and regulated market structure (Figure 6).[[20]](#footnote-21),[[21]](#footnote-22) I argue Georgia has struck the right balance between these competing objectives. Some data points that support Georgia’s approach towards these issues are:

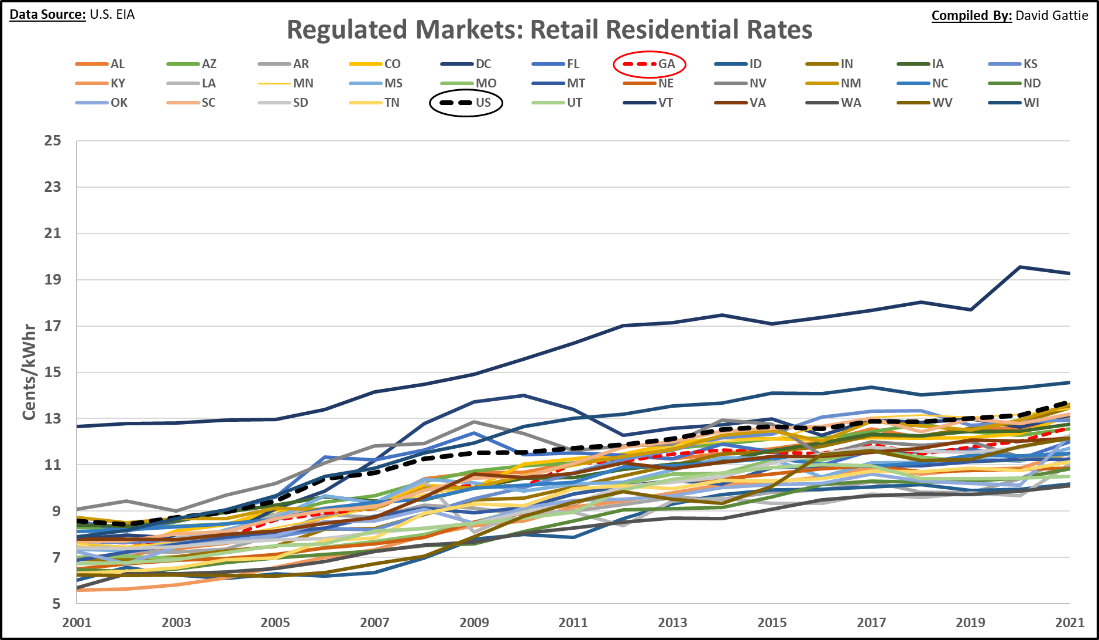
* Among regulated and deregulated market states, residential rates for Georgia’s total electric power sector remain below the national average and below those in most deregulated market states (Figures 7 & 8).[[22]](#footnote-23)
* Georgia has reduced carbon emissions from its electric power sector by 58% from 2007-2020.[[23]](#footnote-24)
* Among the top eight states with the highest GDPs in the U.S., Georgia residential rates are third lowest (Figure 9).[[24]](#footnote-25)
* Georgia ranks seventh in the country for utility-scale solar PV generation (Figure 10).[[25]](#footnote-26)



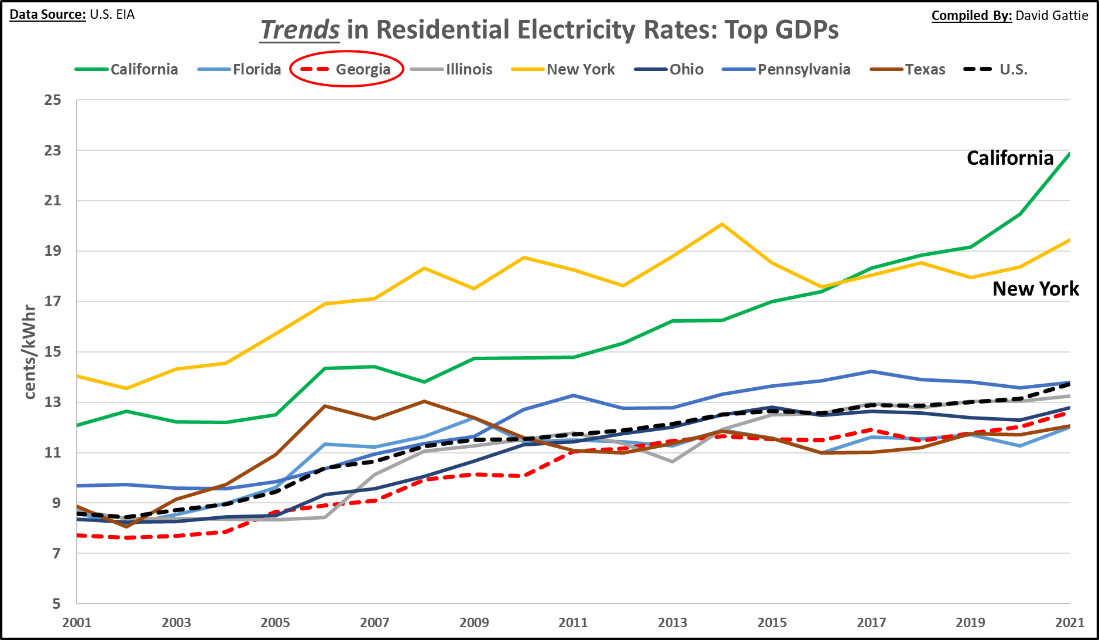
**Figure 6**. Energy resource trend for Georgia’s total electric power sector, 1990-2021.



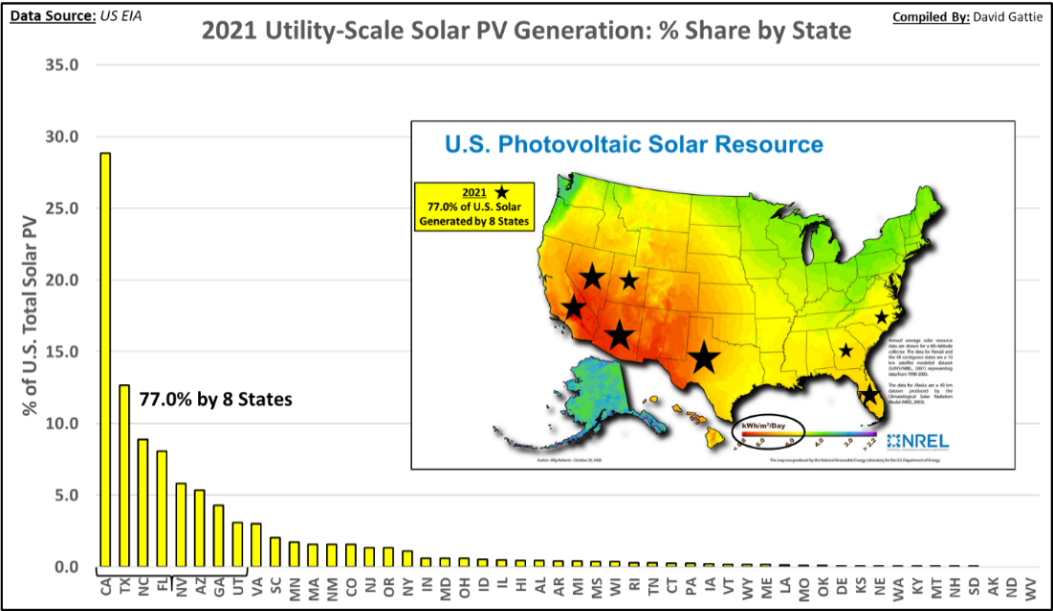
**Figure 7**. Retail residential rate trends for states operating under deregulated electricity market structures, 1990-2021.



**Figure 8**. Retail residential rate trends for states operating regulated electricity market structures, 1990-2021. Georgia is below the national average and competitive with other states.



**Figure 9**. Trends for residential electricity rates among the top eight states with highest GDPs in the U.S.



**Figure 10**. Percent share, by state, of utility-scale solar in the U.S. for 2021.

Georgia’s approach to its electric power sector has been calculated, deliberative and pragmatic, particularly with respect to solar PV.

**Q****.** **HOW WILL THE RECENTLY PASSED FEDERAL IRA IMPACT GEORGIA’S ROOFTOP SOLAR MARKET?**

A. The IRA[[26]](#footnote-27), signed into law on August 16, 2022, provides historic federal support to the solar industry. From tax incentives for both businesses and individuals to direct investments, the significance of the IRA to the solar industry is difficult to overstate. According to a recent study, the IRA will be a massive growth catalyst for the solar industry and will triple solar installations by 2027.[[27]](#footnote-28) Other studies suggest investment in the solar industry will increase solar manufacturing capacity by 25 GW[[28]](#footnote-29) or a fivefold annual increase from 10 GW in 2020 to 49 GW in 2024.[[29]](#footnote-30)

In addition to many supply-side subsidies for solar that will drive down overall equipment costs for customers choosing to install solar, the IRA also provides direct incentives to individual taxpayers and families to further encourage rooftop solar development. For example, the IRA’s Residential Clean Energy Credit aims to further subsidize the cost of solar by providing a 30% tax credit to homeowners choosing to install solar through 2032. Under the Residential Clean Energy Credit, a taxpayer that spends $10,000 on solar PV panels installed at their residence in 2022 may claim a 30% ($3,000) tax credit—further reducing the overall system cost and encouraging additional deployments of rooftop solar in Georgia. Nationally, it is estimated that this credit will allow 7.5 million more residential customers to install solar, reducing the cost to install these systems at an estimated $9,000 over the life of the system, or at least $300 per year.[[30]](#footnote-31)

The IRA represents a first-of-its-kind expansion of federal subsidies for rooftop solar, and the Commission should consider the magnitude of these historic federal investments before significantly altering Georgia’s longstanding net metering policy. As I have explained in my testimony, Georgia has struck the right balance by encouraging renewable energy development without significantly increasing electric rates or negatively impacting the reliability of the electric system. As a result of the IRA, Georgia is likely to see considerable growth in the rooftop solar market in the coming years—without any modification to Georgia’s existing compensation structures for customer-owned generation. As stated previously, I strongly disagree with compensating customer-generators at a rate that exceeds the value such resources provide to the grid. As such, I recommend that the Commission carefully consider not only whether additional ratepayer dollars are actually needed to encourage rooftop solar investment in the first place, but whether it is appropriate to subsidize rooftop solar at the expense of other customers. Given the generous benefits provided by the IRA and Georgia’s proven track record in developing these resources, I conclude that further ratepayer investments are not needed to encourage this growth, and additional subsidies would likely result in nothing more than additional windfall payments to solar installers and developers on the backs of other ratepayers.

**Q.** **HOW SHOULD GEORGIA COMPENSATE CUSTOMER-OWNED GENERATION?**

A. The Commission has been calculated, measured, and conservative as to the integration of utility-scale solar PV into the grid. It now has a policy choice with respect to distributed solar PV. Based on the aforementioned discussion of issues and impacts associated with compensating net metering solar customer-generators at approximately the retail rate, as is done with monthly netting, I recommend that the Commission not extend the monthly netting pilot or methodology in Georgia. As mentioned upfront in my testimony, I do not offer a recommendation for a specific rate for solar customer-generators. However, I do recommend that, moving forward, the Commission guard against enacting any program that over-subsidizes solar customer-generators, particularly given the robust set of incentives to be delivered by the federal IRA. Any net metering policy should therefore align with the broader energy legacy objectives of Georgia as pertains to fairness, affordability, energy diversity and reliability. Specifically, any policy objectives for compensating solar customer-generators, as first principles, should:

* Provide equitable credit to those who choose to be solar customer-generators;
* Retain energy diversity as Georgia determines its own long-term energy transition priorities, irrespective of the direction taken by some states with more aggressive net metering policies; and
* Avoid shifting any costs to ratepayers who elect not to or are unable to participate in distributed solar PV.

Electricity from the grid is more than a resource or commodity—it is a service from a utility that comes with a 24/7 commitment that if service is ever disrupted, the utility responds and restores service. The value of this service and commitment is calculated into the retail rate. This value is something solar customer-generators do not, and cannot, provide. They are therefore not entitled to receive equal compensation at or near the retail rate for their excess energy. This is not intended to discourage distributed solar PV, but is only intended to keep the value prospect of electricity from a solar customer-generator in the proper comparative context with the value prospect of the electrical service supplied from the utility. They are not equivalent. Therefore, state energy policy should not artificially equate these resources through a policy such as monthly net metering.

1. **CONCLUSION**

**Q.** **DO YOU HAVE ANY FINAL RECOMMENDATIONS?**

A. Yes. Rather than extend the monthly netting pilot first approved in the 2019 base rate case, I recommend the Commission adopt compensation rates for rooftop solar customers that ensure these customers pay their fair share of the Company’s cost of service while receiving appropriate compensation for the excess energy they provide to the grid. When adopting such a compensation rate, the Commission should avoid disproportionately shifting costs to customers who are not participating in distributed solar generation. By compensating customers with BTM generation at close to the retail rate, monthly netting worsens this cost shift. Ultimately, the goal of the Commission should be twofold—to protect customers from these cost shifts while simultaneously enabling the development of rooftop solar in Georgia. I contend that with revised compensation rates that more accurately and fairly compensate these resources, coupled with the generous incentives provided by the IRA, the Commission can strike the right balance between these two objectives.

**Q.** **DOES THIS CONCLUDE YOUR TESTIMONY?**

A. Yes.

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9. California Public Utilities Commission, 2013. California Net Energy Metering (NEM) Draft Cost- Effectiveness Evaluation. [↑](#footnote-ref-10)
10. Cohen, R., & Khermouch, G. (2013). The giant headache that is net energy metering. *The Electricity Journal*, *26* (6), 5-7. [↑](#footnote-ref-11)
11. Wan, Y. H. (1996). *Net metering programs* (No. NREL/SP-460-21651). National Renewable Energy Lab. (NREL), Golden, CO (United States). [↑](#footnote-ref-12)
12. Hughes, L., & Bell, J. (2006). Compensating customer-generators: a taxonomy describing methods of compensating customer-generators for electricity supplied to the grid. *Energy Policy*, *34*(13), 1532-1539. [↑](#footnote-ref-13)
13. When I say “close” to the retail rate, I mean that certain charges are excluded from the retail rate when credited back under monthly netting. While this varies by jurisdiction, certain non-volumetric, non-bypassable and other fixed charges embedded in the retail rate are not compensated under monthly netting. While these charges are usually a small amount of the overall retail rate, they are nonetheless not included when compensating customer-owned generation, resulting in a rate that is close to—but not the full—retail rate. [↑](#footnote-ref-14)
14. PVWatts Solar Calculator. https://pvwatts.nrel.gov/. [↑](#footnote-ref-15)
15. U.S. Energy Information Administration. <https://www.eia.gov/electricity/data/eia861m/#netmeter>. [↑](#footnote-ref-16)
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22. Ibid. [↑](#footnote-ref-23)
23. Ibid. [↑](#footnote-ref-24)
24. Ibid. [↑](#footnote-ref-25)
25. Ibid. [↑](#footnote-ref-26)
26. Pub. Law No. 117-169. [↑](#footnote-ref-27)
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30. By the Numbers: The Inflation Reduction Act, The White House Briefing Room (August 15, 2022), [https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/15/by-the-numbers-the-inflation-reduction-act/](https://urldefense.com/v3/__https:/www.whitehouse.gov/briefing-room/statements-releases/2022/08/15/by-the-numbers-the-inflation-reduction-act/__;!!PoWaflF1wM8F24I!bWQqJe5WmHqQ39UMA1PzyyREZ8Pr9wiCj3tjyVKSKnQwyNUFLAzpKbjurqCPuXQw9rgadPdeva3dQrj9il8fN6iwGUq_$) [↑](#footnote-ref-31)