STATE OF GEORGIA

BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION

Georgia Power Company's 2019 Application for the Certification, Decertification, and Amended Demand Side Management Plan	)))	**DOCKET NO. 42311**

DIRECT TESTIMONY OF FOREST BRADLEY-WRIGHT ON BEHALF OF SOUTHERN ALLIANCE FOR CLEAN ENERGY

April 25, 2019

I. Introduction

Q. Please state your name, position and business address.

A. My name is Forest Bradley-Wright. I am the Energy Efficiency Director for Southern Alliance for Clean Energy ("SACE"), and my business address is 3804 Middlebrook Pike, Knoxville, Tennessee.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of SACE.

Q. Please summarize your qualifications and work experience.

A. I graduated from Tulane University in 2001 with a Bachelor of Arts degree in Latin American Studies and in 2013 received my Master of Arts degree from Tulane in Latin America Studies with an emphasis on international development, sustainability, and natural resource planning. My work experience includes Shell International Exploration and Production Co. as a Sustainable Development Team Facilitator.

From 2005-2018 I worked for the Alliance for Affordable Energy. As their Senior Policy Director, I represented the organization through formal intervenor filings and before regulators at both the Louisiana Public Service Commission and the New Orleans City Council on issues ranging from Integrated Resource Planning, to energy efficiency rulemaking and program design, rate cases, a utility acquisition case, power plant certifications, net metering and utility scale renewables.

In 2014, I was a Republican runoff candidate for the 1st District seat on the Louisiana Public Service Commission.

Since 2018, I have been the Energy Efficiency Director for SACE, where I am responsible for leading dialogue with utilities and regulatory officials on issues related to energy efficiency in resource planning, program design, budgets and cost recovery. This takes the form of formal testimony, comments, presentations, and/or informal meetings in the states of Georgia, Florida, North Carolina, and South Carolina, and with respect to the Tennessee Value Authority.

A copy of my resume is included as Exhibit SACE-FBW-1.

Q. Have you previously testified before the Georgia Public Service Commission ("GPSC" or "the Commission")?

A. No.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to offer alternative Demand Side Management ("DSM") budgets, targets, and program concepts. Overall, I recommend that the Commission put Georgia Power Company ("GPC" or "the Company") on a track to double DSM program impacts over the next three years. This would be a signature achievement that would put Georgia on the path towards helping its customers have lower bills, ensuring families have economic security and the state's business climate is more economically productive.

Ideally, the Commission would achieve this by adopting budget flexibility, with strong cost-effectiveness standards. This would allow resource planning needs to drive the type and scale of DSM resources that the Company acquiring. A proposal to adopt budget flexibility for residential programs, as a trial approach, is included in the testimony of

SACE Witnesses John D. Wilson and Bryan A. Jacob, as it relates to their proposal for the Commission's additional sum policies.

Another way to achieve this would be to simply adopt the Advocacy Case, with some recommended modifications. The Advocacy Case would achieve double the annual energy savings of the proposed Base Case by 2022, which substantially reducing the percentage of total budgets going to administration and overhead.

Finally, I would also emphasize that an important purpose of my testimony is to highlight improvements that are needed to the Company's low-income energy efficiency programs. Low-income customers often face high energy burdens, and lack both opportunity and resources to make economically efficient choices regarding their energy use. Well-designed energy efficiency programs help address the needs of those low-income customers.

These changes will enhance benefits to customers, and ensure that the Company does not pass up opportunities to secure dependable, cost-effective energy resources.

Q. Are you submitting exhibits along with your testimony?

A. Yes, I am submitting six (6) exhibits along with my testimony, as follows:

- SACE-FBW-1: Forest Bradley-Wright Resume
- SACE-FBW-2: Advocacy Case Program Submissions
- SACE-FBW-3: Base and Advocacy Case Program Correspondence
- SACE-FBW-4: GPC Final Advocacy Case Program Report
- SACE-FBW-5: Duke Energy – Low Income Impact Reporting

- SACE-FBW-6: Manufactured Home Parks, Georgia Power Territory

II. Summary of Findings and Conclusions

Q. Please summarize the results of your review of the Company's 2019 DSM Plan and the analysis you have conducted.

A. I have reviewed the Company's DSM Plan, and related materials in its IRP, and reached the following conclusions:

- Georgia Power has not effectively modeled Demand Side Management resources against alternative supply side additions, nor provided comparable data relating the cost of their Proposed Base Case DSM portfolio to alternative supply side resources.
- By freezing budgets and energy savings at essentially the same levels as the past DSM cycle, GPC has substantially limited the scale of energy efficiency programs in their Proposed Base Case and unduly constrained utilization of this least-cost resource in the 2019 Integrated Resource Plan ("IRP").
- Higher levels of DSM are achievable and economically efficient, while associated rate impact issues can be resolved with increased levels of participation over time.
- New programs, such as those included in the Advocacy Case are needed to expand access to capture new measures opportunities and reach underserved customer segments as well as customer segments that currently have no program offerings at all.
- Low-to-Moderate Income ("LMI") program budgets should be expanded, savings tracked, and the programs should receive at least equal levels of Commission oversight as standard energy efficiency programs.

Therefore, As a condition of approving the 2019 IRP, and until such time as GPC fully models DSM as a resource against alternative supply side additions, the Commission should set required savings targets that ramp up to at least double current energy savings level by 2022. And further, the Commission should either approve the Advocacy Case, or GPC should be required to reach the required target of doubling current energy savings levels by 2022 while being granted a degree of flexibility in program design - but with explicit corresponding cost benefit requirements to be established by the Commission.

III. Doubling Energy Efficiency on the Georgia Power System

Q. Why do you recommend that Georgia Power should double its investment in energy efficiency, or Demand Side Management (DSM), programs?

A. Doubling Georgia Power's investment in DSM programs would be a signature achievement that would put Georgia on the path towards helping its customers have lower bills, ensuring families have economic security and the state's business climate is more economically productive. Currently, 75% of states achieve higher levels of energy savings as a percentage of sales than Georgia.[1]

Unnecessarily high power bills place a burden on many moderate or low income households. While some businesses pursue energy efficiency as part of their core business plan, others lack comparable internal capacity. Georgia Power's efficiency programs can help raise productivity and economic vitality for all businesses by giving them easy access

[1] American Council for an Energy Efficient Economy, 2018 State Energy Efficiency Scorecard, October 2018

to energy saving options. In this way, DSM programs are something that Georgia Power can do to make Georgia a more prosperous, and efficient state.

Demand Side Management (DSM) programs serve many purposes:

- reducing supply-side energy generation costs,
- avoiding or delaying new power plants, avoiding or delaying transmission and distribution investments,
- improving grid reliability,
- reducing total utility system costs,
- mitigating future risk for the utility and its customers, and
- assisting customers who desire to lower their energy bills, including households with low to moderate incomes.

These and many other benefits are why energy efficiency is a priority resource in Georgia and many states across the country

Q. Are there parallels between the treatment of solar resources in previous IRP cycles and DSM investment levels in GPC's filings in this IRP cycle?

A. Energy efficiency has long been a least-cost energy resource, but price points for solar began to fall quickly and steadily over the past decade to become one of the most competitive energy resources.

As with energy efficiency, regulators and utilities across much of the country soon saw the attractive solar economics and began making substantial investments, which not only saved customers money it diversified their resource portfolio. By the time Georgia Power filed

its 2013 IRP, annual solar growth was climbing exponentially with over 7 GWdc installed through 2012.[2] But Georgia Power downplayed the technology in their IRP filing and argued against solar resource economics. To overcome the Company's initial resistance, the Commission demonstrated leadership in charting a course of action that has led to more than 3 GW of solar procurement for Georgia Power.[3]

Like with solar, Georgia Power has consistently downplayed and refused to consider cost-effective expansion of DSM resources, despite efficiency's superior economics and an extensive and irrefutable record of success across the country. Nationwide, energy efficiency's importance as a utility resource has grown year after year, but Georgia Power has lagged behind. The Company's proposal in this IRP to essentially freeze efficiency savings and budgets at current levels for the next three years and beyond is consistent with their past behavior, but out of step with national trends and fails to serve the public interest.

Today, energy efficiency is the nation's third largest resource, employs 2.5 million Americans, and in 2017 alone saved 27.3 million MWh (a 7.3% increase over 2016) on an investment of $7.9 billion in utility sector spending.[4]

Georgia's existing policies and programs provide a solid foundation on which to substantially grow energy efficiency at Georgia Power, but the solar experience has shown that it will be Commission leadership during the IRP that has the power to make it happen.

[2] Solar Energy Industries Association, *U.S. Solar Market Insight 2012 Year in Review* (March 2013).
[3] According to the Company's response to Data Request STF-JKA-4-4, with its 1,000 MW CRSP, solar would increase to 4,200 MW.
[4] American Council for an Energy Efficient Economy, 2018 State Energy Efficiency Scorecard, October 2018.

Q. In light of your concerns, what do you recommend the Commission and Georgia Power do to strengthen DSM in the 2019 IRP?

A. The Commission should double the level of energy efficiency savings and either allow GPC a degree of flexibility in program design (with clear cost-effectiveness requirements), or simply accept the DSM portfolio described in the Advocacy Case.

IV. Demand Side Management Planning and Evaluation

Q. Has GPC demonstrated that higher levels of DSM are more economically efficient than lower levels?

A. Georgia Power's data and analysis clearly demonstrate that higher levels of Demand Side Management are economically efficient by delivering greater net benefits to the utility system and society. When comparing the GPC Proposed Case (roughly the status quo) to the Advocacy Case (roughly a doubling), the Advocacy Case has a net system benefit that is approximately $70 million higher.[5]

Net system benefit is best measured by the Program Administrator Cost Test (PACT). Along with the Total Resource Cost (TRC) test, these industry standard cost benefit tests are used for determining optimal levels of DSM portfolio investment within an Integrated Resource Planning framework. The TRC test is often used from a regulatory perspective to determine whether the regional benefits from energy efficiency exceed the total direct costs for both the utility and customers.

[5] 3 – PD 2019 IRP DSM Case Summary Data - ERRATA

According to the National Action Plan for Energy Efficiency,[6] the PACT is best suited to least cost utility resource planning:

- "The PACT allows utilities to evaluate costs and benefits of energy efficiency programs (and/or demand response and distributed generation) on a comparable basis with supply-side investments."

- "A positive PACT indicates that the total costs to save energy are less than the costs of the utility delivering the same power. A positive PACT also shows that customer average bills will eventually go down if efficiency is implemented."[7]

A PACT score greater than 1.0 indicates that it is economically efficient for the utility to invest in DSM rather than supply side resources, while TRC score of 1.0 or more is similarly indicative of economic efficiency from the regional perspective.

The value of GPC's existing programs was measured in the most recent GPC Evaluation, Measurement and Verification (EM&V) report. In 2017, GPC's recorded a strong 2.6 TRC score for their DSM Portfolio and a remarkable 6.1 PACT.[8] For every dollar spent in DSM, this PACT score indicates it would have cost $6.10 to meet comparable needs through supply side resources.

[6] The National Action Plan for Energy Efficiency was a private-public initiative to create a sustainable, aggressive national commitment to energy efficiency that was led by a diverse Leadership Group of more than 60 leading gas and electric utilities, state agencies, energy consumers, energy service providers, environmental groups, and energy efficiency organizations.
[7] National Action Plan for Energy Efficiency, *Understanding Cost-Effectivenss of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*, November 2008.
[8] Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.

According to the Lawrence Berkeley National Laboratory report on program administrator cost of energy saved, Georgia had the lowest cost of energy saved among utilities in the Southeast over the period 2009-2015, placing it among the lowest in the nation.[9] In GPC's 2020-2022 DSM filing, both TRC and PACT scores are forecast to remain well above 1.0, indicating that DSM is economically efficient to both the region and the utility.

Considering these successes, it is time for Georgia to build on this foundation and expand Georgia Power's energy efficiency programs.

Q. How does customer participation over time resolve rate impact issues?

A. The Commission has designated energy efficiency as a priority resource to be selected based on economic efficiency, with corresponding attention to reducing rate impact. The shortcomings of the GPC method concern their use of the RIM test, their approach to calculating long term percentage rate impacts, and their failure to account for customer program participation over time. While the RIM test treats the effect of spreading fixed costs over reduced sales as a negative consequence of efficiency, the fixed costs themselves are directly attributable to the service of delivering of supply, and are not a true cost of DSM.

In the first few years of a program, rate impacts can mean that many non-participants pay slightly higher bills than they otherwise would. But after many years of operating DSM programs, the Company has likely already reached many of its customers. If the Company were to expand the scale of its programs, it would quickly reach many more. As Sierra

[9] Lawrence Berkely National Laboratory. The Cost of Saving Electricity Through Energy Efficiency Program Funded by Utility Customers: 2009–2015. Released June 2018.

Club Witness Tim Woolf demonstrated in 2016, nearly a quarter of all residential and commercial customers could participate over the course of a three year DSM cycle, suggesting that the vast majority of customers could participate in just a few DSM cycles.[10]

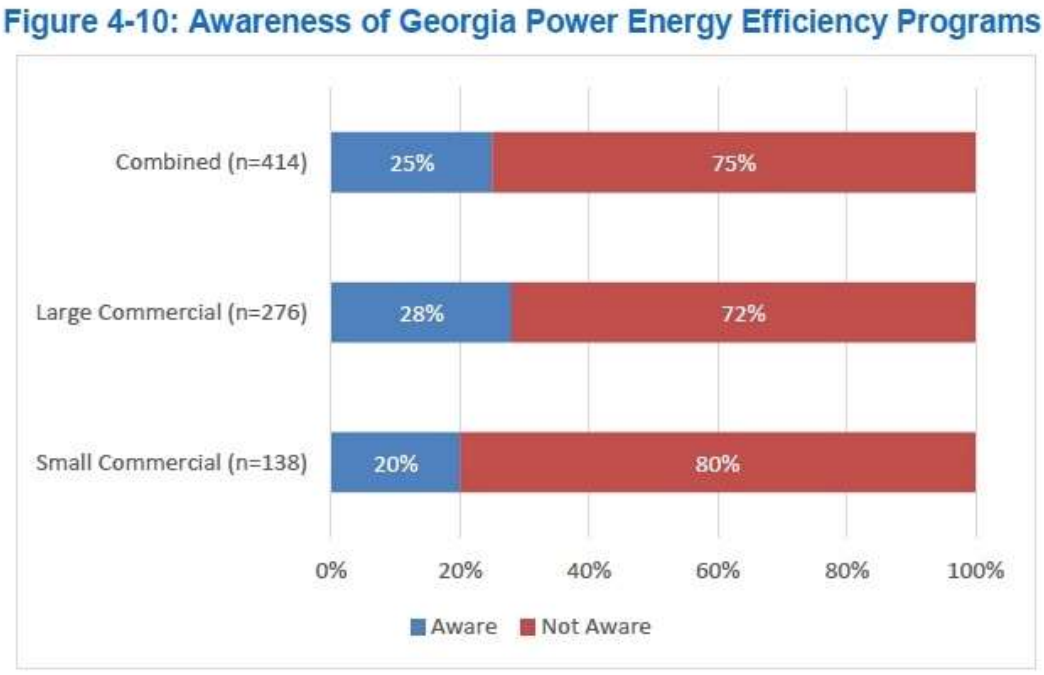
The best way to choose the scale of DSM resource investment is the same way that any resource should be evaluated: through Integrated Resource Planning. Optimizing investment in least cost resources, particularly energy efficiency, is the best way to decrease total utility system costs, and thereby reduce revenue requirements and customer bills. GPC has acknowledged that they did not evaluate DSM against specific future supply additions through competitive IRP modeling analysis. Until such time as GPC is able to perform such analysis, doubling efficiency levels is a practical method to ensure growth in energy savings while expanding customer access to participation. Ultimately, considerations of equity for costs and benefits among customers is appropriate, but the solution is not to reduce savings, it is to increase participation.

Q. Could Georgia Power achieve much higher customer participation rates?

A. Yes, Georgia Power's TEAPOT study and Evaluation, Measurement & Verification (EM&V) report both point to substantial opportunities for, and benefits of, increased participation among all customer classes. As illustrated in Figure 1 customer awareness of Georgia Power's programs is low.

[10] Direct Testimony of Tim Woolf, *Georgia Power Company's 2016 Integrated Resource Plan and Application for Decertification of Plant Mitchell Units 3, 4A and 4B, Plant Kraft Unit 1 CT, and Intercession City CT*, Dockets 40161 and 40162 (May 3, 2016).

- FIGURE 1 -



Source: Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.

As Figure 2 illustrates, 75% of Georgia Power's commercial customers were not aware that the company offers commercial energy efficiency programs.[11]

[11] Nexant, *Georgia Power Company's Report on Achievable Energy Efficiency Potential Assessment*, filed January 2018 in Docket No. 41253

- FIGURE 2 -

Table 4-11: Specific Program Awareness (Unaided and Aided)

Program	2014 Awareness		2017 Awareness	
	Aided	Unaided	Aided	Unaided
Refrigerator Recycling	42%	12%	41% (-1)	25% (+13)
Home Energy Improvement	27%	25%	30% (+3)	30% (+5)
Georgia Power Marketplace	-	-	21%	18%
Lighting	12%	3%	17% (+5)	22% (+19)
Energy Assessments and Solutions	-	-	17%	16%
New Homes	9%	4%	11% (+2)	7% (+3)
Residential HVAC	-	-	10%	14%

General population survey Q2. "When thinking about energy efficiency programs, which, if any, Georgia Power energy efficiency programs are you aware of?" Q3. "Have you heard of the following energy-efficiency rebate programs offered by Georgia Power?"

Source: Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.

Awareness among residential customers was higher: 47% of were aware of Georgia Power's efficiency rebate programs,[12] but knowledge of specific programs was much lower.

Perceptions of energy efficiency's importance were overwhelmingly high among residential customers, with 95% agreeing to the statement, "It is important to conserve as much energy as possible" and a strong majority indicating that it is very important to reduce monthly energy bills (average rating of 8.4 out of 10).[13] Georgia Power's customers want to participate, they just aren't aware of the opportunity.

[12] Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.
[13] *ibid*

For residential customers who had not yet participated, a compelling 61% of respondents indicated they were likely to participate in the next six months.[14] Perhaps this survey was itself an effective marketing effort by Georgia Power!

By increasing program offerings and doubling the amount of energy saved through GPC's efficiency programs by 2022, customer participation will increase. This could be achieved through approving the Advocacy Case or setting the target level and enabling a degree of flexibility in how the utility achieves it. Not only would this mean many more customers will see their energy bills go down immediately because of energy efficiency, it will in turn result in total utility system costs going down substantially more than in the Base Case, which will reduce revenue requirement costs and help mitigate rate impact for all customers.

Q. What are the principle advantages of the Advocacy Case?

A. The principle advantages of the Advocacy Case are:

- Higher total energy savings, resulting in lower utility system costs
- Increased program offerings, enabling participation by more customers – including segments that are underserved or currently have no efficiency program offerings at all
- A better customer incentive to non-incentive cost ratio as a percentage of total budget

[14] *ibid*

Q How do the Advocacy Case and the Base Case compare with regard to the ratio of dollars directed to customer incentives to versus overhead, admin, and EM&V costs?

A. From GPC's own figures, overhead, administration, and EM&V costs in the Base Case are 55.5% higher than the Advocacy Case, as a percentage of total annual program budgets.[15] In practical terms, this means that administrative overhead costs in the Base Case consume a substantially larger portion of the annual budget than dollars actually being spent on efficiency incentives to customers. With the Advocacy Case, the opposite is true, substantially more dollars are spent to directly assist customers with efficiency improvements than on administrative overhead. In this way, the Advocacy Case is a more responsible approach to spending customers' money, one that results in substantially more of every dollar spent going into the projects that actually help customers lower their energy bills.

Q. Should DSM programs primarily aimed at assisting LMI customers be considered differently than other DSM programs?

A. Yes. The primary difference is that programs serving low-to moderate income (LMI) customers are not customarily approved on the same cost effectiveness basis as other DSM programs. Broadly speaking, utility DSM programs serve two distinct functions. First, as a utility system resource that supports and offsets the need for traditional generation, transmission and distribution investments. Second, assisting customers with lowering their energy bills. Quite appropriately, most DSM programs are held to a requirement of

[15] 3 PD – 2019 IRP DSM Case Summary Data - ERRATA

demonstrating both cost effectiveness against supply resources and their ability to lower customer energy bills.

However, programs designed to assist low to moderate income (LMI) customers earning equal to or less than 200% of Federal Poverty Guidelines are often exempted from this cost effectiveness requirement. An income-qualified exemption from the cost effectiveness requirement is in recognition of the fact that the upfront cost associated with making efficiency improvements required to access utility program funding are beyond the financial reach of many LMI customers.

Considering the financial circumstances, LMI efficiency programs frequently pay all of the efficiency improvement costs for eligible participating customers, and the programs are sometimes exempt from the requirement of costing less than alternative supply resources. From a social benefit perspective, this exception ensures a degree of equity for low income customers who pay the DSM rider but may not otherwise be able to participate; and it directs funding to customers most in need of assistance lowering the burden of energy costs as a percentage of household income.

An additional difference that the Commission might consider is the general absence of an income-qualified certified program in the DSM portfolio. Currently, customers participating in the EASP program do not benefit from the same level of Commission oversight as other DSM program participants. This means that the Company is not obligated to report income-qualified energy savings in quarterly report to the Public Service Commission, making it difficult to judge how well the program is performing in relation to other DSM measures. Non-certified programs also do not undergo activities like

program evaluation and verification of energy savings as a routine matter. Given the vulnerable nature of low-income participation, gauging customer benefits and getting feedback from program participants is a higher priority than typical DSM programs. The Company has performed EM&V for some pilots, but it was conducted as a separate activity and on a voluntary basis. As a certified program, Commission oversight and reporting requirements would ensure program delivery was held to a high standard.

I also recommend that Georgia Power routinely evaluate *all of its programs* to assess the degree to which they are reaching LMI customers. Recently, Duke Energy voluntarily provided this information to its stakeholder collaborative, which is attached as Exhibit SACE-FBW-5.

V. Advocacy Case Programs

Q. How was the Advocacy Case developed?

A. The Advocacy Case was jointly developed and submitted to Georgia Power by eight participating organizations of the Demand Side Management Working Group (DSMWG) including:

- Center for Sustainable Communities
- Georgia Watch
- National Housing Trust
- Partnership for Southern Equity
- Sierra Club
- Southern Alliance for Clean Energy

- Southern Environmental Law Center
- Southface

The Advocacy Case was initially submitted on October 18th, with modifications made based on correspondence between GPC and the Advocates included with this testimony as Exhibits SACE-FBW-2, SACE-FBW-3.

Q. What programs are included in the Advocacy Case?

The Advocacy Case, as modeled by GPC, included the following components.

- Five programs not included in the GPC Base Case:
  - Manufactured Homes
  - LED Streetlight Program – Governmental
  - LED Legacy Outdoor Lighting Program – Unregulated
  - Commercial New Construction
  - Industrial Custom Program
- Removal of the GPC Income Qualified (Crowd Funding) program and replacement with the Income Qualified (Fully Funded) program, which is based off of the existing EASP program
- Increased savings levels for several programs included in the GPC Base Case

The inputs for each of the certified programs were based on prescribed savings levels (kwh) set by the Advocates, while non-certified program inputs were based on defined budgets ($). At Georgia Power's direction, the Advocates did not set both savings levels and budgets for any given program. Instead, the savings to budget relationship was defined by GPC. Savings levels for 2020-2022 increase annually, then hold steady at 2022 level for the remainder of the planning period.

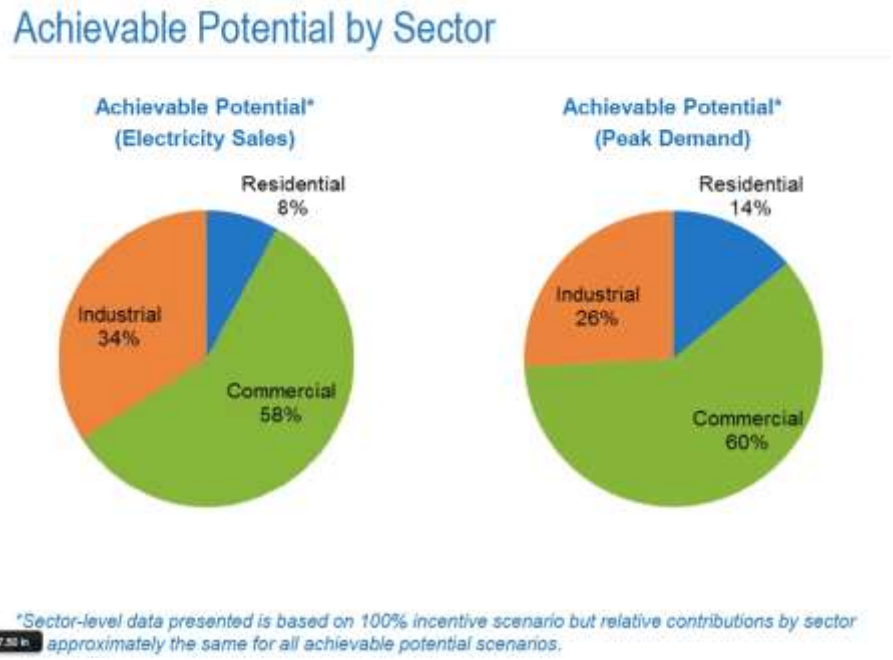
Q. Is there evidence that supports the assertion that higher savings levels are possible with existing GPC DSM programs?

A. Yes, higher participation rates are generally supported by GPC's DSM potential study. The Advocacy Case increases participation rates for many of the GPC Base Case programs that had a combination of comparatively higher total resource cost test scores,[16] lower levelized delivery costs,[17] and higher identified cost effective achievable potential.[18]

The largest program participation increases were focused on the commercial customer segment, which had the highest energy and peak capacity saving potential in GPC's Technical and Achievable Energy Efficiency Potentials Assessment, known as the TEAPOT study, filed with the commission on January 31, 2018.

[16] Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.
[17] Nexant, *Evaluation of Georgia Power Company's 2017 DSM Programs – Volume I*, August 2018.
[18] Nexant, *Georgia Power Company Energy Efficiency Potential Study Methodology and Findings Presentation*, (March 18, 2019), p. 12.

- FIGURE 3 -



Source: Nexant, *Georgia Power Company Energy Efficiency Potential Study Methodology and Findings Presentation*, (March 18, 2019), p. 12.

Elsewhere in the Southeast, major investor owned utilities in North Carolina, South Carolina, and Arkansas have all achieved savings levels that are more than twice as high as Georgia.[19] Recognizing these achievements, the Advocates recommended that total energy savings in the Advocacy Case should be approximately double the energy savings in the GPC Base Case.

Furthermore, national research by the American Council for an Energy Efficient Economy indicates that 3/4 of all states nationwide have annual electric utility efficiency savings percentages that are higher than Georgia.[20]

[19] Southern Alliance for Clean Energy, *Energy Efficiency in the Southeast 2018 Annual Report*, 2018.
[20] American Council for an Energy Efficient Economy, 2018 State Energy Efficiency Scorecard, October 2018.

Q. Should the Company expand their DSM portfolio by establishing new programs?

A. Yes. There are many reasons for GPC to establish new energy efficiency programs:

- Reaching market specific / underserved customer segments
- Adding measure choices that expand customer participation levels
- Achieving deeper savings for each project location
- Targeting specific end uses

Other drivers for new program deployment include advances in efficiency technology, demonstrated success of program models from other jurisdictions, and targeted pursuit of savings opportunities identified in Demand Side Management (DSM) potential studies.

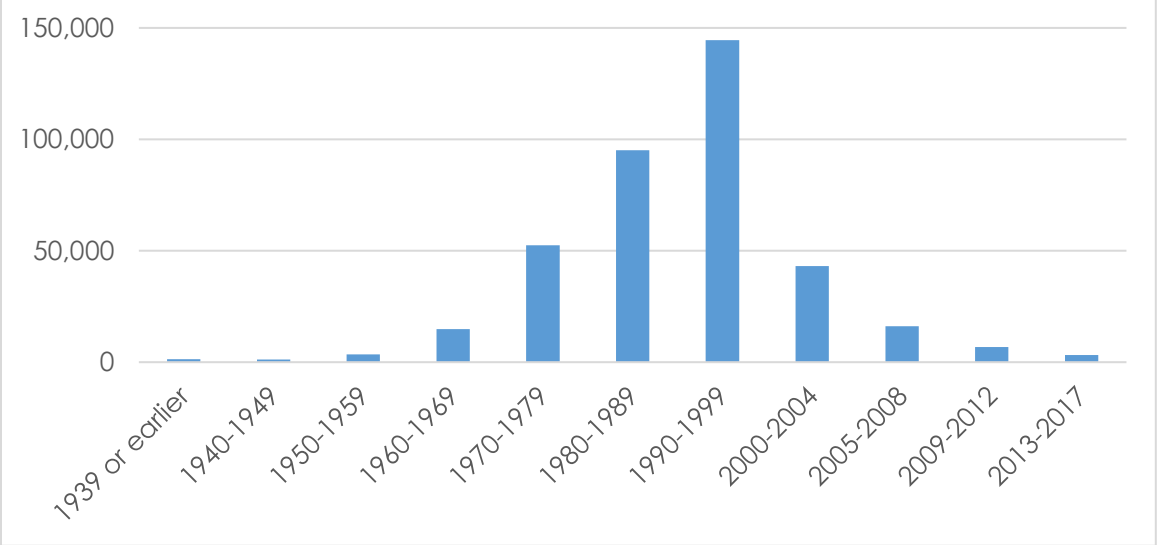
The most recent TEAPOT study indicated that substantial cost effective savings potential remains, with particularly large opportunities in the Commercial and Industrial customer classes. Georgia Power is also not doing enough to assist low and moderate income customers address their energy burdens. There is a need for new program offerings to capture this potential.

Q. Why should Georgia Power add a manufactured homes program?

A. Manufactured homes are a priority for a new program because Georgia Power's Base Case does not include a program targeted at the particular types of equipment and systems found in manufactured homes. As a result, the manufactured housing stock in Georgia Power's service territory remains a significant source of untapped savings potential. In short, households residing in manufactured homes should be a priority, not an afterthought.

The state of Georgia has the fifth largest number of total manufactured homes in the country, an estimated 379,000-388,500 homes or approximately 9.1%[21] of the state's residential housing units are manufactured homes. SACE analyzed the raw data to estimate that 141,000-145,000, or roughly 6%, are in Georgia Power's service territory. On top of that, the majority of manufactured homes in Georgia were built during a period of time when standards existed to ensure the longevity of factory-built homes (going back to 1976), but basic energy conservation standards were not put in place until 1994 (and updated in 2000). Thus, the manufactured housing stock in Georgia is long-lasting, but extremely inefficient.

- FIGURE 4 -



Georgia Manufactured Home Units, by Year Built[22]

[21] Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates.
[22] U.S. Census Bureau 2013-2017 ACS 5-year Public Use Microdata Samples (PUMS) Georgia Housng Unit Records. ACS data groups manufactured homes in the "mobile homes" category of unit structure type.

While it is common for older homes to be less efficient, the degree to which this occurs in manufactured homes appears to be unique. Based on annualized billing data, residents of manufactured homes use more electricity per square foot that any other residential housing type.[23] On top of that, a relatively small portion of manufactured homes are responsible for a disproportionate amount of electricity consumption. Regional data obtained directly from utilities by the U.S. Energy Information Administration (EIA) indicate that a group of "high energy users" (households with usage above the median) are responsible for 71% of all electricity usage by the manufactured homes customer segment, indicating that large savings may be possible by lowering usage among the extreme outliers.[24]

Q. Is it likely that energy savings will occur in manufactured homes without a program?

A. No, it is not. Despite the scale and degree of need, it is unlikely that energy savings can be achieved without intervention from a third party. Residents of manufactured homes face a distinct difficulty in obtaining loan funds for home improvement projects compared to single family homeowners, regardless of income. This in turn leads to deferred maintenance and "do it yourself" methods of home improvements that do not resolve high energy usage issues.

[23] U.S. Energy Information Administration (EIA), Residential Energy Consumption Survey (RECS), Released October 2017.
[24] U.S. Energy Information Administration (EIA), Residential Energy Consumption Survey (RECS), Released October 2017.

Q. Please describe how the manufactured homes program proposed in the Advocacy Case can achieve energy savings.

A. The manufactured homes program proposed in the Advocacy Case[25] can achieve savings through incentivized installation of volume heat pumps in new and existing homes by participating HVAC contractors, as well as through incentives to lower the upfront cost of new Energy Star Manufactured Homes (ESMH) to prospective buyers.

For existing manufactured homes, the program prioritizes replacing electric resistance heat with volume heat pumps. With high rates of manufactured home shipments to the state, the program offers incentives for retailers to build to Energy Star standards for deep, long-term savings. In some extreme cases, homes may have issues with structural integrity or incompatible equipment that prevent installation of a volume heat pump, the new homes incentive still encourages energy savings by facilitating the replacement of older homes with new, efficient homes.

Q. Are there utilities that have implemented and achieved savings through a manufactured homes program similar to the one in the Advocacy Case?

A. Yes. The program included in the Advocacy Case is modeled after a pilot program formerly offered by the Tennessee Valley Authority (TVA) that delivered significant savings to participating customers and was successful in achieving broader market transformation within the service area. A volume heat pump incentive has been offered and delivered energy savings to TVA since 1999, but TVA went through several different program designs for encouraging efficiency in new home sales. After switching from a retailer

[25] See Exhibits SACE-FBW-2a and 2e, SACE-FBW-3, and SACE-FBW-4

incentive to a producer incentive, TVA found that it is most effective to directly incentivize manufactured home producers and HVAC contractors or wholesalers. As a result of the jump started demand for Energy Star manufactured homes, a producer that accounted for 96% of manufactured homes in the Valley switched production of all manufactured homes to Energy Star Manufactured Homes (ESMH).

Q. Please describe the observed results (savings, benefits, impact on market) from TVA's manufactured homes program.

A. TVA's Energy Star manufactured home pilot program[26] achieved evaluated savings of 62,462,828 kWh over three program years (2014-2016) and 5,180 participants. Savings achieved through the volume heat pump incentive during the same three program years totaled 28,866,931 kWh and 7,215. The kWh savings per installation of volume heat pump and Energy Star home were 3,856 and 11,947 (Energy Star Plus homes were 12,676 kWh).

The per participant savings reported in Energy Star manufactured home are higher than expected due to dual participation in the volume heat pump incentive, such that 79% of all Energy Star manufactured homes program participants also received the volume heat pump incentive. TVA paid the incentive in both programs, but could only claim savings in the Energy Star manufactured homes pilot program. TVA also accepted a proposal from the program administrator to provide an additional incentive for an additional 729 kWh savings per install.

[26] Information in this section is drawn from DNV KEMA Energy & Sustainability, *Tennessee Valley Authority Technical Resource Manual, Version 3.0* (January 2015); and Lisa Haislip, *TVA's Manufactured Homes Programs: An Overview*, Tennessee Valley Authority (March 31, 2015).

In fiscal year 2012, TVA's evaluator found that the ESMH program had a TRC ratio of 4.8. Looking at all of the measures, TVA's upstream manufactured homes offerings had a first-year cost of saved energy of $0.12 per kWh in fiscal year 2014. More recently, TVA eliminated the Energy Star incentive (the volume heat pump incentive remains), in part because of its success in transforming the market.

Q. Are there alternative approaches to implementing an energy efficiency program for manufactured homes in Georgia Power's service territory?

A. Yes. Georgia Power should also consider neighborhood program delivery to manufactured homeowners in its service area. By targeting communities/parks for direct install no-cost energy efficiency measures alongside incentives for more in-depth measures, the Company would reach a greater number of homes quickly and efficiently. This approach differs from the Advocacy Case program design since it does not target new homes for deeper savings and instead achieves savings by offering smaller individual measures to a larger number of existing homes.

As illustrated in Exhibit SACE-FBW-6, Georgia Power has manufactured homes across its entire service territory, in both urban and rural areas. Often, the high density of housing units in manufactured home communities/parks will give program implementers access to 100-500 manufactured homes in a relatively small area, assisting in achieving low-cost program delivery. Similarly, dense clusters of manufactured homes are found in Entergy Arkansas's service area, where a successful manufactured homes program has been running for three full program years.

Q. Please describe the program implementation, budget, and observed results of the Entergy Arkansas manufactured homes program.

A. The program achieved evaluated savings of 6,995,868 kWh over three years with a cumulative budget of $2,696,197 and 4,658 participants.[27] The most recent DSM report cites the introduction of incentivized measures in Program Year 2 as vital for a 1.1 MW surge in demand savings reported the following year. The measures included in the Entergy Arkansas program are as follows:

- *Direct install measures at no-cost*: 1) Energy Star LEDs that replace incandescent bulbs, 2) 1.5 gallons-per-minute showerhead and faucet aerators, and 3) Advanced Power Strips for qualifying home entertainment systems.
- *Incentivized measures*: 1) A/C Tune-up Measure, 2) Duct Sealing, and 3) Air Sealing.

Entergy Arkansas also found that there was strong crossover between participants of this program and low-income customers. In 2017, 37.1% of program participants were found to be low-income and an additional 29.2% either likely or potential low-income.

[27] Entergy Arkansas 2017 Program Year Arkansas Energy Efficiency Program Portfolio Annual Report filed in Docket No. 07-085-TF.

- FIGURE 5 -

Table 2.5.2.3

Manufactured 2017 Only		
Low Income	231	37.1%
Likely Low Income	76	12.2%
Potential Low Income	106	17.0%
Unlikely Low Income	78	12.5%
Not Low Income	84	13.5%
Blank or NA	47	7.6%
Total	622	

Source: Entergy Arkansas 2017 Program Year Arkansas Energy Efficiency Program Portfolio Annual Report filed in Docket No. 07-085-TF, p. 51.

Q. Please provide inputs and assumptions for an alternative implementation approach for a manufactured homes program.

A. The premise for an alternative implementation approach is based on the same direct install and incentivized measures that Entergy Arkansas offers. I recommend direct install approach be offered in addition to the incentives modeled in the Advocacy Case. (Georgia Power may also consider offering just the direct install and volume heat pump incentive as a more streamlined option if new home incentives are not approved.) The energy savings are derived from an assumption of 938 kwh per participant, the level initially set by Entergy Arkansas. This level is used as the basis for the below table showing the suggested inputs adjusted to the Georgia Power service territory market size. However, I'd also note that this assumption reflects minimal participation in the incentivized measures when Entergy actually observed a far greater level of savings at 4,658 kWh per participant due to savings from the incentivized measures. In addition to the baseline levels reflected in the table below, Georgia Power should consider evaluating program economics based on higher

levels, such as those evaluated and verified by Entergy, that reflect increased participation in incentivized measures. The table below reflects these assumptions, adjusted to the Georgia Power service territory market size.

- FIGURE 6 -

Inputs for Georgia Power Direct Install Approach to Manufactured Homes Program

	kWh	kW	Participants
2020	2,905,074	728	3,096
2021	2,905,074	728	3,096
2022	1,452,537	364	1,548
3-Year Total	**7,262,684.2**	**1,819.9**	**7,740**

Q. Are there any other potential benefits not reported or tracked by utilities?

A. Manufactured homeowners experience the highest rates of energy insecurity relative to any other housing type. By addressing this insecurity, utilities can increase their customers' health, safety, and quality of life due to lower bills and a more comfortable home. When surveyed about the different ways households experience energy insecurity, rates were 2-3 times higher than household types typically targeted by DSM programs, such as single-family homes and larger multifamily apartment buildings.

- FIGURE 7 -

Housing Unit Type	Total U.S. (Millions)	Any Energy Insecurity	Reducing /Forgoing Food or Medicine	Unhealthy Temperature	Disconnect/ Delivery Stop Notice	Unable to Use Heating
Single-family Detached	73.9	27.1%	18.0%	8.1%	12.7%	4.3%
Single-family Attached	7.0	34.3%	22.9%	12.9%	15.7%	5.7%
Apartments – 2-4 units	9.4	45.7%	33.0%	17.0%	19.1%	8.5%
Apartments – 5+ units	21.1	30.3%	20.9%	10.9%	12.3%	2.8%
Mobile Homes	6.8	58.8%	44.1%	25.0%	30.9%	17.6%

Source: U.S. Energy Information Administration (EIA), Residential Energy Consumption Survey (RECS), Released October 2017

Q. Please describe the Street Lighting and Outdoor LED Programs.

A. These programs[28] would replace legacy street and outdoor lighting fixtures, typically high-pressure sodium (HPS) or metal halide (MH) lights, with efficient Light Emitting Diode (LED) alternatives.

Q. What savings would the Street Lighting and Outdoor LED Programs achieve?

A. I disagree with the modeling results in the GPC Advocacy Case,[29] and believe higher savings are likely. The difference in opinion centers on the impacts of GPC's existing LED Roadways Initiative streetlight replacement program.

[28] See Exhibits: SACE-FBW-2b and 2e, SACE-FBW-3a and 3g-h, and SACE-FBW-4.
[29] See Exhibits: SACE-FBW-2e, SACE-FBW-3e and 3g-h, and SACE-FBW-4.

Georgia Power reported 230,000 conversions in August 2016.[30] Then, in February 2018, Georgia Power indicated that 230,987 streetlight fixtures out of approximately 400,000 had been converted to LEDs.[31] This indicates no substantial change during the period of August 2016 to December 2017. Nevertheless, in October 2018, GPC indicated a goal of completing the remaining conversions by 2020 and requested that the program be removed from the Advocacy Case.

Due to the slow progress reported by the Company through its existing offer, the Advocates retained this program in their recommended case. SACE staff estimated that at the Company's current pace, only 48,433 conversions would be completed through the remainder of 2018 and 2019, leaving 89,969 eligible fixtures for conversion during the 2020-2021, the first two years of the DSM planning period.

Therefore, the inputs provided by the Advocates for modeling show 30.5 MWh of savings from 53,002 conversions in 2020 and 21.3 MWh saving from 36,967 conversions in 2021. In its December 2018 correspondence, GPC did not confirm that customers leasing light fixtures had requested upgrades that would equal savings that match the Company's own revised installation forecast assumptions for 2020-2021. The numbers actually included in the Company's worksheet were not further explained. While I acknowledge Georgia Power's stated desire to complete the LED Roadway Initiatives at a faster pace than they have demonstrated over the past several years, the inputs included in the Advocate Case

[30] Goergia Power Outdoor Lighting Service, Bright Ideas Newsletter ,Volume 13, Fall 2016.
[31] On December 18th, 2018 GPC revised this number downward to 30,039 through September 2018. Exhibit SACE-FBW-3h.

are consistent with reported results to date, which is generally consistent with Georgia Power's approach on similar questions.

Since GPC provided no clear explanation for the kWh savings forecast it substituted in the Advocacy Case, I recommend that the program modeling be revised to the original inputs requested in the Advocate's Case, and that both the LED Streetlight and the LED Outdoor Lighting programs be approved with budgets, energy savings targets, and program concepts similar to those submitted by the Advocates.

If GPC achieves higher verified savings levels for its existing LED Roadway Initiative prior to the 2020-2022 program period, the budgets, energy savings targets, and program concepts should be revised accordingly.

Q. Please describe the Commercial New Construction Program.

A. The purpose of the Commercial New Construction program[32] is to encourage the installation of high efficiency equipment in new buildings for commercial class customers, such as (but not limited to): K-12 schools, colleges and universities, hospitals, government buildings, grocery stores, multifamily construction, hotels, and other commercial property. Rather than relying on conventional theoretical baselines, the program will focus on real performance with benchmarking. Features of the program include reduced-cost energy assessments, design team performance payments, and incentives to offset a portion of the higher cost for new efficiency equipment. Applicable measures are comparable to the existing Georgia Power Commercial Custom and Prescriptive programs, such as high

[32] See Exhibits: SACE-FBW-2c and 2e, SACE-FBW-3e, and SACE-FBW-4.

efficiency lighting, HVAC, pumps and variable frequency drives, and information technology equipment.

This Commercial New Construction program is targeted to maximize savings in the commercial customer class, which has been the largest source of cost-effective DSM in each DSM potential study commissioned by Georgia Power from 2007 to the present (see Figure 8 below). To date, Georgia Power's commercial savings have come primarily from retrofit measures on existing commercial buildings. Expanding program offerings to target efficiency savings for new construction will capture more of the available potential in the commercial customer class before building is complete, typically at lower cost with greater savings than attempting to retrofit efficiency improvements after the fact.

- FIGURE 8 -

Achievable Potential by Sector - Georgia Power Energy Efficiency Potential Studies

	2007	2012	2015	2018
Residential	35%	21%	15%	8%
Commercial	54%	60%	58%	58%
Industrial	11%	19%	27%	34%

Source: NRDC, Commercial New Program Description provided to GPC on February 14th, 2018. See Exhibit SACE-FBW-2d.

I recommend that the Commercial New Construction Program be adopted as described in the Advocacy Case.

Q. Please describe the Industrial Custom Program.

A. The Industrial Custom Program[33] provides a modest investment with limited program offerings, but reflects a significant new efficiency resource offering for a very important customer class with huge untapped DSM potential and potentially some of the lowest costs per kWh saved. Presently, industrial customer have no option to participate in utility efficiency programs offerings.

With the Industrial Custom Program, industrial customers with monthly demand of 500 kW or more would be eligible for an array of services including Strategic Energy Management (SEM) programs, which could in turn potentially be paired with energy efficient equipment replacement programs, such as custom and/or prescriptive incentives. Typical components of SEM programs include, but are not limited to, energy management assessments, detailed energy studies and a project register that captures all performance improvement opportunities stemming from capital equipment, O&M practices, or adjustments to significant energy use key characteristics. Training may be offered to suitable managers and executives along with for support for developing or refining energy management information systems (EMIS), and assistance seeking applicable utility- and government-funded efficiency project incentives.

Industrial customers with monthly demand under 500 kW would be eligible for technical assistance that identifies O&M, behavioral, and capital measures with potential for electric savings impacts. The program is designed to encourage the implementation of energy

[33] See Exhibits: SACE-FBW-2d-e, and SACE-FBW-4.

efficiency projects that would not otherwise be completed without GPC's technical or financial assistance.

The first step following approval by the Commission will be for GPC to issue a request for proposals (RFP) to retain a qualified program administrator, with experienced technical assistance and training advisors, to set up the final program protocols. We suggest that the Georgia Power Industrial Custom Program should incorporate key recommendations from the American Council for an Energy Efficiency Economy's 10 tips for designing good industrial programs.[34]

The need for industrial energy efficiency programs is clear. Industrial sector energy efficiency comprise 34% of all cost-effective DSM potential in Georgia Power's most recent Achievable Energy Efficiency Potentials Assessment. Furthermore, it is notable that the customer class in which Georgia Power has not offered DSM programs is the only one that has seen its relative percentage of efficiency potential increased to more than triple compared to other customer classes since 2007 (see Figure 8 above).

It has often been suggested that industrial customers have already or will easily capture all cost-effective savings through normal business operations. The growing industrial energy efficiency potential appears to be a backlog of opportunity for energy savings and greater economic productivity.

[34] American Council for an Energy Efficiency Ecnomy (ACEEE), Industrial Efficiency Programs Can Achieve Large Energy Savings at Low Cost (February 2016).

A partial explanation for this disconnect may lie in part with the diversity of Georgia's industrial sector, which includes a wide variety of business types ranging from large to small enterprises. In total, the state of Georgia has over 20,000 industrial facilities, many of which are smaller concerns with fewer dedicated facilities staff than those who are represented before the Commission. An effective industrial DSM program through Georgia Power could not only be tailored to meet a range of needs across industry categories, it could tip the scales in favor of greater industrial energy efficiency that will make Georgia's entire industrial sector more competitive in the region and across the globe.

I recommend that the Commission approve the Industrial Program as described in the Advocacy Case.

Q. Does this conclude your testimony?

A. Yes.

Testimony of Forest Bradley-Wright

GPSC Docket No. 42311

Exhibits

Exhibit 1	**Forest Bradley-Wright Resume**
Exhibit 2	**Advocacy Case Program Submissions**
Exhibit 2a	February 14, 2018 - SACE - Manufactured Homes Program Description
Exhibit 2b	February 14, 2018 - SACE - LED Outdoor Lamps Program Description
Exhibit 2c	February 14, 2018 - NRDC - Commercial New Construction
Exhibit 2d	February 14, 2018 - NRDC - Industrial Customer Program Description
Exhibit 2e	October 2018 - Southface - "Re: Demand Side Management Working Group: 2019 Advocates' Case Modeling Proposal"
Exhibit 3	**Base and Advocacy Case Program Correspondence**
Exhibit 3a	March 5, 2018 - GPSC Staff - "Subject: Clarifying Questions/Data Requests on DSWMG Advocate Programs"
Exhibit 3b	March 16, 2018 - SACE - "Subject: Re: Clarifying Questions/Data Requests on DSWMG-Advocate Programs"
Exhibit 3c	September 5, 2018 - GPSC Staff - "Subject: GPC followup regarding Program submittals"
Exhibit 3d	September 7, 2018 - SACE - "Subject: Fwd: Clarifying Questions/Data Requests on DSWMG-Advocate Programs"
Exhibit 3e	November 12, 2018 - GPSC Staff / GPC - "Subject Questions Regarding Advocates Case"
Exhibit 3f	November 28, 2018 - Southface - "Nov 28 - Southface - Email to GPSC Staff.rtf"
Exhibit 3g	November 2018 - SACE - "Response to GPC Questions on Manufactured Homes and Street and Outdoor Lighting Programs"
Exhibit 3h	December 18, 2018 - GPSC Staff / GPC - "Response to SACE's questions regarding GPC's Advocate Case"
Exhibit 4	**GPC Final Advocacy Case Program Report**
Exhibit 4a	February 1, 2019 - GPC - "DSMWG Jan 2019 Program Advocate summary"
Exhibit 4b	GPC - "Advocate Case - notes on changes in final version"
Exhibit 5	**Duke – Low Income Impact Reporting**
Exhibit 6	**SACE - "Manufactured Home Park Georgia Power"**

Forest Bradley-Wright

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PROFESSIONAL EXPERIENCE

Energy Efficiency Director: Southern Alliance for Clean Energy, Knoxville, TN **April 2018 – Present**

- Regulatory filings, testimony, strategy, and stakeholder management on integrated resource planning, energy efficiency program design, cost recovery and related matters throughout the Southeast.

Senior Policy Director: Alliance for Affordable Energy, New Orleans, LA **February 2017 – April 2018**

- Regulatory filings, strategy, and stakeholder management on integrated resource planning and energy efficiency rulemaking, power plant proposals and related matters at the city and state level.

Consultant: Utility Regulation and Energy Policy **December 2014 – February 2017**

- Technical and strategic guidance on clean energy policy and utility regulation for Opower, Gulf States Renewable Energy Industries Association, the Alliance, and Mississippi PSC candidate Brent Bailey.

Candidate: Louisiana Public Service Commission **July - December 2014**

- Won the open primary and secured 49.15% of the vote in the general election against a highly favored, well-funded incumbent.
- Raised nearly $500,000 in campaign contributions while publicly pledging not to accept money from monopoly companies regulated by the PSC.
- Campaign focused on ethical leadership, reducing bills, energy efficiency, the rights of customers to generate solar energy, and government transparency.

Utility Policy Director: Alliance for Affordable Energy, New Orleans, LA **October 2005 – June 2014**

- Directed successful policy efforts for energy efficiency, renewable energy, and integrated resource planning at the Louisiana PSC and New Orleans City Council, spurring every major Louisiana utility investment in clean energy over the past decade.
- Reviewed and filed intervenor comments, met with commissioners, utilities, and technical consultants, assembled and managed relationships with a broad coalition of stakeholders, worked with media, and served as the organization's public face.
- Launched and managed energy efficiency and solar workforce training programs, public education campaigns, and direct service projects to improve energy performance in over 100 homes following the city's rebuild post-Katrina.

Owner and Director: EcoPark LLC (d.b.a. The Building Block), New Orleans, LA **February 2008 – Present**

Created an innovative co-location business center to serve as a catalyst for moving green commerce and social entrepreneurship to the mainstream.

- Developed the business concept and plan, brought initial funding to the project, hired staff, established brand identity, and secured tenants.

Sustainable Development Team Facilitator: Shell International, New Orleans, LA **May 2001 – June 2004**

- Worked to facilitate a paradigm shift within corporate management's core business practices toward social and environmental issue management.
- Engaged a diverse team of professionals across the company to identify energy and resource inefficiencies and methods to reduce carbon emissions from venting and flaring in oil and natural gas exploration and production.
- Analyzed ways to incorporate sustainability accounting into each stage of new venture development for major drilling projects.

EDUCATION

Tulane University

- **Master of Arts in Latin American Studies, 2011**
  Concentration in environmental law, business, and international development
- **Bachelor of Arts with Honors in Latin American Studies, 2001**

ADDITIONAL PROFESSIONAL/PUBLIC SERVICE

Board President for the Louisiana Green Corps, Gulf States Renewable Energy Industry Association; Mayor's Sustainability Task Force; founder of Groundwork NOLA

February 14, 2018

Submitting Party: Southern Alliance for Clean Energy (SACE)
Contact: Heather Pohnan – heather@cleanenergy.org
Applicable Measures: EnergyStar Manufactured Homes (ESMH), and Volume Heat Pump (VHP)

Program Title:
Manufactured Home Program

Program Description:
The proposed program would serve both new and existing manufactured homes in Georgia Power's service territory. The new homes component would achieve long-term energy savings by providing incentives to retailers who build and install ENERGY STAR Manufactured Homes (ESMF) or ENERGY STAR Plus Manufactured Homes (ESPMF). Existing homes would save energy and lower utility bills by replacing electric resistance heat with incentivized volume heat pumps installed by participating HVAC contractors.

Goal/Purpose:
The proposed program would fill a gap in the current DSM portfolio by offering incentives targeted at the types of equipment and systems found in manufactured homes. Manufactured homeowners experience the highest rates of energy insecurity relative to any other housing type. When surveyed about the different ways households experience energy insecurity, rates were 2-3 times higher than household types typically targeted by DSM programs, such as single-family homes and larger multifamily apartment buildings.

Housing Unit Type	Total U.S. (Millions)	Any Energy Insecurity	Reducing /Forgoing Food or Medicine	Unhealthy Temperature	Disconnect/ Delivery Stop Notice	Unable to Use Heating
Single-family Detached	73.9	27.1%	18.0%	8.1%	12.7%	4.3%
Single-family Attached	7.0	34.3%	22.9%	12.9%	15.7%	5.7%
Apartments – 2-4 units	9.4	45.7%	33.0%	17.0%	19.1%	8.5%
Apartments – 5+ units	21.1	30.3%	20.9%	10.9%	12.3%	2.8%
Mobile Homes	6.8	58.8%	44.1%	25.0%	30.9%	17.6%

Table 1 - Household Energy Insecurity 2015-2016. Source: U.S. Energy Information Administration (EIA) Residential Energy Consumption Survey (RECS) Released October 2017

Associated Costs of Program:

- **Incentives to manufacturer** – Initial incentives are necessary to address the barrier of upfront capital costs, which can prevent existing manufactured homes from repairing heating equipment[1] or limit options for new purchasers. The following incentive levels are recommended:

Measures	Volume Heat Pump	ENERGY STAR	ENERGY STAR Plus
Incentive	$450	$1,300	$1,375
Recipient	Contractor/Wholesaler	Producer	Producer
Eligibility	Existing Homes	New Homes	New Homes

[1] Unable to use heating equipment is a type of energy insecurity that "Includes inability to use main heating equipment because equipment was broken and household could not have it repaired; or electricity, natural gas, or bulk fuel disruption due to lack of payment."

- **Program design & implementation** - The delivery costs go towards providing support to retailers or contractors by helping determine how existing products and services can meet efficiency standards.
- **EM&V** – EM&V isn't expected to be a major contributor to program costs since manufactured home producers can cost efficiently add ENERGY STAR verification to existing HUD inspection processes.

Target Participants:
Based on data from the U.S. Census Bureau, SACE estimates that there are between 121,000-183,000 existing manufactured homes in the Georgia Power service territory[2]. This makes up nearly 6% of the housing stock, which is summarized by housing unit type below.

Housing Unit Type	Estimate – Count of Housing Units
Single-family Detached	1,781,289
Single-family Attached	50,622
Apartments – 2-4 units	37,275
Apartments – 5+ units	234,263
Mobile Homes	136,805

Key Market Barriers:
There are several market barriers that can be addressed with adequate program design and implementation:
- Little or no existing relationship between utility and manufactured home retailers.
- Retailers may not know how energy efficient models could benefit their customers.
- Upfront costs limit new manufactured home purchasers from choosing ENERGY STAR homes.
- The demand for new manufactured homes in Georgia Power's territory is unknown.

Delivery Mechanism:
- **Manufactured home producers:** Incentives to manufactured home retailers/producers
- **HVAC contractor or wholesaler:** Incentives to promote replacement of electric resistance heat with efficient heat pumps with SEER rating of 15+ in manufactured homes up to 10 years old.
- **Consumer:** Increase ESMF and ESPMF sales by promoting and educating manufactured homebuyers on the benefits of energy-efficient models.
- **Utility:** Establish quality-control (QC) and energy efficiency specifications for qualified homes.

Other Utilities Offering Similar Program & Observed Results:
Tennessee Valley Authority (TVA) – The proposed program is modeled after TVA's manufactured home program, which is run by third-party administrator, Systems Building Research Alliance ("SBRA"). SBRA has noted that the rate of manufactured homes sales in Georgia is similar to that in Tennessee. TVA found that it is most effective to incentivize manufactured home producers and HVAC contractors or wholesalers. Looking at all of the measures, TVA's upstream manufactured homes offerings had a first-year cost of saved energy of $0.12 per kWh in fiscal year 2014.

TVA's 2014 Performance

-ESPMH: (($1,375 Incentive + $100 fee) X 188 installs) = $277,300 Total Costs
-ESMH: (($1,300 Incentive + $100 fee) X 1,543 installs) = $2,160,200 Total Costs
-VHP: (($450 Incentive + $50 fee) X 2,168 installs) = $1,084,000 Total Costs

-ESPMH: $277,300 Total Costs / 2,383,088 kWh = $0.12/kWh first-year cost 12,676
-ESMH: $2,160,200 Total Costs / 18,434,221 kWh = $0.12/kWh first-year cost11,947
-VHP: $1,084,000 Total Costs / 8,296,936 kWh = $0.13/kWh first-year cost
-Total: $3,521,500 Total Costs / 29,114,245 kWh = $0.12/kWh first-year cost

[2] Estimates based on 2017 American Community Survey (ACS) datasets and a margin of error. Housing unit count was allocated proportionally to the area of each census tracts within Georgia Power service territory.

Challenges Expected During Analysis/Implementation:

- Customer confusion for those not in Georgia Power territory
- Determining eligibility at point of sale
- Building relationships with manufacturers

Program Element	1st Program Year	
	New Homes	Existing Homes
Current estimated saturation of equipment in this market	N/A	N/A
Per unit annual kWh savings (at the meter)	12,000 ESMH 12,675 ESPMH	3,825
Units used for savings estimates (i.e. sq ft, ton, etc) Residential	Housing Unit	Housing Unit
Units used for savings estimates (i.e. sq ft, ton, etc) Commercial	N/A	N/A
Per unit annual kW savings (at the meter)	N/A	N/A
Projected Net-To-Gross Ratio	1.0	1.0
Incremental Measure Cost Per Unit ($) Residential	$1300 ESMH $1375 ESPMH (Though costs may vary by manufacturer $700 - $2,000)	$450 to install heat pump
Incremental Measure Cost Per Unit ($) Commercial	N/A	N/A
Weighted average measure life	~20 years	~15 years
UCT	8.5	4.2
TRC	3.9	4.8

	PY 1	PY2	PY3
Budget	$2,171,875	$3,062,000	$4,102,750
Participants - Residential Homes	105 ESPMH 850 ESMH 2,050 VHP	150 ESPMH 1,250 ESMH 2,735 VHP	210 ESPMH 1,750 ESMH 3,420 HVP
Participants - Commercial Sq. Ft	N/A	N/A	N/A
Annual Savings Targets (MWh)	19.4 GWh	27.4GWh	36.7 GWh

February 14, 2018

Submitting Party: Southern Alliance for Clean Energy (SACE)
Contact: Heather Pohnan – heather@cleanenergy.org
Program Title: Street and Outdoor Lighting Amortization Cost Recovery
Applicable Measures: LED Outdoor Lamps

Program Description:
The proposed program would replace street and outdoor lighting fixtures with efficient Light Emitting Diode (LED) alternatives. Utility-leased light fixtures, typically high-pressure sodium (HPS) or metal halide (MH) lights, would be converted to LED service over a period of 3-5 years using a tariff to recover unamortized costs from existing light structures.

Goal/Purpose:
In a petition to approve a similarly designed program, Tampa Electric estimated that approximately 35 percent of its lighting services are delivered to government customers within the company's service territory, primarily for roadway lighting. Street lighting is typically the first or second largest local government energy use, and can account for 25-50% of a municipal energy bill.[1] Broad scale conversion to LED lighting would dramatically reduce energy usage and help public entities and other customers work towards their energy or environmental goals.

Georgia Power has approximately 890,000 outdoor lighting fixtures (leased and non-leased), and 400,000 of those have already been converted to LED. Georgia Power's current offerings include a voluntary governmental roadway tariff (RLG-1) that was approved in 2014 in order to convert all the regulated, leased governmental lights in its service territory. Out of 400,000 governmental lights, the tariff was ultimately responsible for 230,987 conversions during 2014-2016.

However, the program does not address unrecovered costs and has not made significant progress towards its goal since August 2016. The proposed program will serve the remaining portion in order to convert 100% of the remaining 169,000 fixtures to LED. Below is a sample timeline for Georgia Power:

Year	Eligible Fixtures	Annual Program Number	Cumulative Penetration	Cumulative Fixtures	Savings (kWh)
2018	169,013	3,380	2%	3,380	1,947,030
2019	165,633	33,127	20%	36,507	19,080,892
2020	132,506	53,002	40%	89,509	30,529,427
2021	79,504	47,702	60%	137,212	27,476,484
2022	31,801	31,801	100%	169,013	18,317,656

Associated Costs of Program:
- Providing LEDs
- Installation & field work
- Notification and communication
- Recovery of unamortized costs

Target Participants:
Local governments and municipalities that have not participated in RLG-1 voluntary tariff.
Key Market Barriers:

[1] CityLab, *The Secret Energy Drain on Cities: Streetlights*, April 2012, at http://www.citylab.com/cityfixer/2012/04/secret-energy-drain-cities-streetlights/1856/

The results of a survey on "How Energy Technologies are Reshaping America's Cities" by the U.S. Conference of Mayors support the need for the proposed program and recovery tariff. When asked about challenges to implementing LEDs, city governments highlighted several barriers:

- Lack of resources or local funding/budget constraints
- Current lighting fixtures still performing or not yet fully amortized
- Utility practice and return on investment (e.g., staff tariffs)
- Bid or procurement systems

Georgia Power will bulk purchase LEDs at a lower cost that will benefit customers. Other implementation costs include communication with customers to notify them about expected installation dates and program benefits, and the actual work to complete the installations. Finally, a tariff for unrecovered costs of current lighting is necessary make LED upgrades justifiable if current fixtures are still working, but have not been paid off yet.

Delivery Mechanism:

- Recovery tariff (or "universal customer participation")
- Local government and municipalities

Other Utilities Offering Similar Program & Observed Results:

The primary model for this program is Tampa Electric's Lighting Conversion Program. Tampa Electric Company (TECO) owns approximately 242,000 leased fixtures with approximately $37,780,595 in amortized costs.[2]

TECO's desire to convert existing fixtures to LED is motivated by trends in the lighting market, which the company describes as "retooling and moving away from HPS and MH" because "LED lighting products have rapidly cannibalized the market share". This is a cost concern for TECO because approximately 209,000 of its existing light fixtures are grandfathered HPS and MH customers. The market shift described above will affect the utility's ability to cost-effectively purchase replacement fixtures or parts from manufacturers for its grandfathered customers.

Overall, the program performed well on three different cost tests with a Rate Impact Measure (RIM) of 1.05, Total Resource Cost (TRC) of 2.17, and Participant Cost Test (PCT) of 61,884. It is estimated the 209,821 fixtures will be converted over a five-year period, resulting in 29.7 MW in total winter peak demand savings and 127.9 GWh in annual energy savings. The program impacts are summarized below:

PROGRAM NAME: STREET AND OUTDOOR LIGHTING CONVERSION

	AT THE METER					
Year	Per Luminaire kWh Reduction	Per Luminaire Winter kW Reduction	Per Luminaire Summer kW Reduction	Total Annual GWh Reduction	Total Annual Winter MW Reduction	Total Annual Summer MW Reduction
2017	576	0.133	0.000	2.022	0.467	0.000
2018	576	0.133	0.000	26.280	6.068	0.000
2019	576	0.133	0.000	50.538	11.669	0.000
2020	576	0.133	0.000	74.796	17.271	0.000
2021	576	0.133	0.000	99.055	22.872	0.000
2022	576	0.133	0.000	120.857	27.906	0.000
2023	576	0.133	0.000	120.857	27.906	0.000
2024	576	0.133	0.000	120.857	27.906	0.000

Table 1 - Tampa Electric – Street and Outdoor Lighting Conversion Program Impacts[3]

[2] "Petition of Tampa Electric Company For Approval Of Conservation Street and Outdoor Lighting Conversion Program" filed at Florida PSC in Docket No. 20170199 on September 5, 2017.

[3] *Id.*

Challenges Expected During Analysis/Implementation:

- Unclear what portion of existing lighting are already LEDs/what extent LED has been deployed.
- Leakage of savings in EM&V due to pre-existing RLG-1 tariff for governmental customers.
- Customers may want to be "grandfathered" and keep old lights. (see concerns described above).

Program Element	1st Program Year
	LED Outdoor Fixtures
Current estimated saturation of equipment in this market	400,000
Per unit annual kWh savings (at the meter)	576
Units used for savings estimates (i.e. sq ft, ton, etc) Residential	N/A
Units used for savings estimates (i.e. sq ft, ton, etc) Commercial	Fixture
Per unit annual kW savings (at the meter)	0.133
Projected Net-To-Gross Ratio	1.0
Incremental Measure Cost Per Unit ($) Residential	N/A
Incremental Measure Cost Per Unit ($) Commercial	$180.06
Weighted average measure life	25 years
UCT	N/A
TRC	2.17

	PY 1	PY2	PY3
Budget	$608,650	$5,964,766	$9,543,626
Participants - Residential Homes	N/A	N/A	N/A
Participants - Fixtures	3,380	33,127	53,002
Annual Savings Targets (MWh)	1.9 GWh	19.1 GWh	30.5 GWh

Georgia Power Company
DSM Program Submittal Form

Submitting Party: __Brian Henderson, Southeast Consultant for NRDC__ Date: _2/14/2018_

Contact Phone Number or Email: ___518-469-7497__bhenderson527@aol.com_____

Program Title/Description:

- Commercial New Construction

Goal/Purpose of Georgia Power implementing this program:

- Since 2007, Georgia Power has commissioned four energy efficiency potential studies. Across this decade and these four studies, the commercial sector has been consistently the largest energy efficiency potential in Georgia Power's service territory, as a percentage of total achievable efficiency potential (see Table 1). To-date, Georgia Power's efforts in this sector have been focused towards the existing commercial buildings. Significant opportunities can be further achieved with the expanding commercial new construction and dedicated program features for early targeting commercial property owners and the design community, particularly with the continuing growth of schools, colleges and universities, commercial office buildings, grocery stores, multifamily housing and health care facilities.

Table-1. Achievable Potential by Sector - Georgia Power Energy Efficiency Potential Studies

	2007	**2012**	**2015**	**2018**
Residential	35%	21%	15%	8%
Commercial	54%	60%	58%	58%
Industrial	11%	19%	27%	34%

- The purpose of this program is to encourage the installation of new high efficiency equipment in new non-residential buildings. The program will provide incentive payments for energy assessments, bonuses to design teams and to offset a portion of the higher cost of new energy efficiency equipment. This program would build on successful energy performance-based procurement with a concentration of owner/design team focus on the early planning, than on the traditional current practices of the later stages of construction design. This includes early engagement (i.e. energy charrettes) with the owner in aligning processes more with the design and procurement practice, rather than only with the design team. The program will focus on real performance with benchmarking versus the conventional theoretical baseline approach. All assessments will be performed by experienced firms that have been pre-selected and contracted by Georgia Power, or third party professional assistance selected by the customer that meets pre-established criteria that conforms to the Program's high engineering standards and quality of work.

Applicable Measure(s) within Program:

- Refer to the Georgia Power Commercial Custom and Prescriptive Program for applicable measures. In addition to energy efficiency measures, the Program may provide incentives for demand response measures.

Associated Costs of Program/Measures (describe below and also complete Table 1 on following page):

- High efficiency lighting, HVAC, pumps and variable frequency drives, information technology equipment, etc. See Table 1.

Target Participants:

- Qualifying commercial, institutional, and industrial customers. The program will be designed to target specific customer segments that have significant opportunities for cost effective energy efficiency, such as but not limited to: K-12 schools, colleges and universities, multifamily, government buildings, grocery stores, commercial property, and hospitals. The program will encourage the changing of design practices with key customers, transforming regional design approaches within key segments resulting in significant spillover effects that will be captured in the EM&V evaluation processes.

Key Market Barriers:

- The potential market barriers include: 1) identifying experienced energy engineering and design resources, 2) the cost of the customer to participate in the program, 3) customer's perception regarding the payback period for recovery of its investment.

Delivery Mechanism (i.e. rebate program, training program, etc.):

- Design assistance will assist customers with new construction, major renovations, and additions by providing design assistance to help enable construction beyond the applicable Georgia state energy code. Design assistance will include a number of benefits: 1) professional energy engineering and design resources, 2) computer simulated energy modeling to develop multiple energy efficiency design options providing each customer with varying design choices and benchmarking targets, 3) final computer simulated energy modeling with selected design, 4) support for application to Georgia Power's Commercial Custom and Prescriptive Programs.

Other Utilities Offering Similar Programs Along with Observed Results (if any):

- A number of utilities and program administrators across the nation are providing similar Commercial New Construction Programs. For example, Duke Energy Carolinas and Duke Energy Progress Non-Residential Smart $aver® Custom Program that includes New Construction Energy Efficiency Design Assistance. [NCUC Docket No. E-7, Sub 1032].

Challenges Expected During Analysis and/or Implementation:

- Georgia Power would need to identify and contract with qualified energy engineering and design firms that can provide the required level of new construction design and commissioning technical assistance. However, a number of 3rd party firms and contractors exists that have the necessary expertise and qualifications to implement the new construction program.

Table-1: Measure Specifications and Program Targets (High Priority)

Program Element	1st ProgramYear
Current estimated saturation of equipment in this market	TBD
Per unit annual kWh savings (at the meter)	"
Units used for savings estimates (i.e. sq ft, ton, etc) Commercial	"
Per unit annual kW savings (at the meter)	"
Projected Net-To-Gross Ratio	"
Incremental Measure Cost Per Unit ($) Commercial	"
Weighted average measure life	"

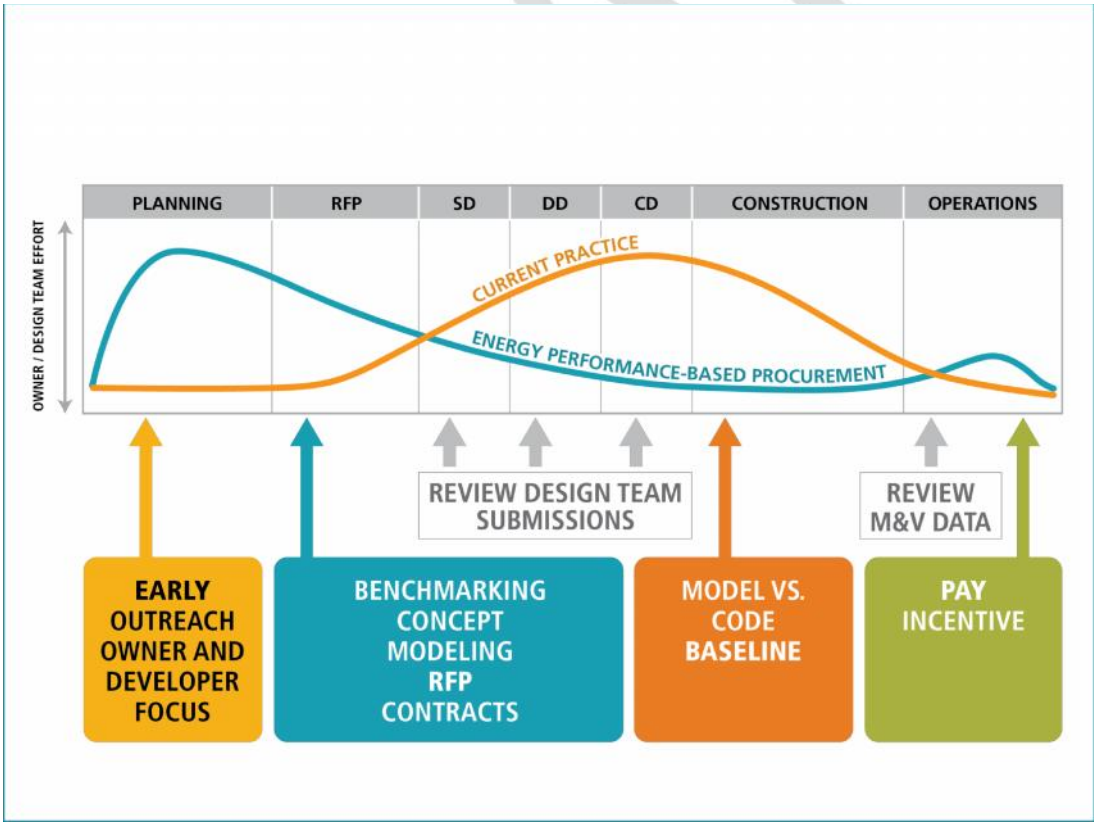
UCT	5.47[1]
TRC	1.42[1]

Program Planning Data[1]

	PY 1	PY2	PY3
Budget	$2.5 M	$3.5 M	$3.5 M
Participants - Commercial	200	275	275
Annual Savings Targets (MWh)	17,000 MWh	24,000 MWh	24,000 MWh

[1]Values included above are from the Duke Energy Carolinas' Non-Residential Performance Incentive Program and the Custom Assessment. The thought is that these 2016 values for North Carolina and South Carolina would be similar to those in Georgia.

Institute for Market Transformation:



Georgia Power Company
DSM Program Submittal Form

Submitting Party: Brian Henderson, Southeast Consultant for NRDC Date: 2/14/2018
With assistance from Kevin Kelly and Lisa Binachi-Fossati, Southface and Matt Cox, Green Link Group

Contact Phone Number or Email: 518-469-7497 bhenderson527@aol.com

Program Title/Description:

- Industrial Energy Efficiency Program

Goal/Purpose of Georgia Power implementing this program:
Since 2007, Georgia Power has commissioned four energy efficiency potential studies. Across this decade and these four studies, industrial energy efficiency potential in Georgia Power's service territory has grown consistently, as a percentage of total achievable efficiency potential (see Table 1). It does not make sense to ignore this energy efficiency potential in the market, particularly because tapping it only improves Georgia's overall economic competitiveness.

Table-1. Achievable Potential by Sector - Georgia Power Energy Efficiency Potential Studies

	2007	2012	2015	2018
Residential	35%	21%	15%	8%
Commercial	54%	60%	58%	58%
Industrial	11%	19%	27%	34%

There appears to be a disconnect between the results of Georgia Power's energy efficiency potential studies and the stance of the industrial sector advocates to-date. While these studies reflect substantial, cost-effective energy efficiency potential in the sector, the industrial representatives have historically stated all cost-effective energy efficiency is harvested by industrial facilities in the course of normal, prudent business operations. In other words, if it's cost-effective, industrial customers have already done it.

A partial explanation for this disconnect may lie in the diversity of Georgia's industrial sector. While the Georgia Industrial Group and the Georgia Association of Manufacturing represent around 135 of Georgia's top-flight industrial interests, like Kimberly-Clark, International Paper, Kia Motors, Southwire, Caterpillar and Georgia Pacific, the state hosts 21,774 industrial facilities, many of which are smaller concerns with fewer dedicated facilities staff.

Over the last 11 years, the Industrial Assessment Center (IAC) at Georgia Tech has conducted 263 industrial energy assessments for industrial facilities with median annual sales of around $40 million. In these assessments, the IAC staff identified more than 2,400 electricity saving measures that would shed more than $34 million a year in costs for these businesses. IAC reports that only one-third of the recommended measures were installed in the wake of the assessments, with a preference for the less expensive measures with lower associated energy savings; in fact, the installed measures only realized 19% of available dollar savings. With targeted support, these facilities can achieve much deeper, more valuable savings.

Georgia Power's most recent energy efficiency potential study hints at some of this untapped potential. Thirty-five percent of the industrial energy efficiency potential identified in the 2018 study is within "Other Industrial," a business classification that covers a range of businesses outside of the dominant manufacturing sectors like paper, chemicals, textiles, wood / lumber and transportation.

An effective industrial DSM program through Georgia Power could tip the scales in favor of greater industrial energy efficiency that will make Georgia's entire industrial sector more competitive in the region and across the globe.

Program Description

- The Industrial Energy Efficiency Program would initially focus on Strategic Energy Management (SEM) approach in the next 2-years with a modest program budget.
- *"SEM can be defined simply as taking a holistic approach to managing energy use in order to continuously improve energy performance by achieving persistent energy and cost savings over the long term. It focuses on business practice change from senior management through shop floor staff, affecting organizational culture to reduce energy waste and improve energy intensity. SEM emphasizes equipping and enabling plant management and staff to impact energy consumption through behavioral and operational change. While SEM does not emphasize a technical or project centric approach, SEM principles and objectives may support capital project implementation." [Consortium for Energy Efficiency definition.]*

  https://library.cee1.org/content/cee-2016-industrial-strategic-energy-management-program-summary-0

- SEM programs use several different approaches, including cohort-based energy management trainings, funding support for on-site energy managers, and implementation of energy information technologies. Rather that suggest that any intervention or delivery strategy is the most effective approach to SEM implementation, this program summary intends to demonstrate the variation of approaches being used today to drive SEM implementation.
- Typical components of SEM Program and an assigned program advisor working with the industrial participant's team that:
  - Conducts an energy management assessment
  - Develops an energy map (i.e. energy inventory to energy review defined by ISO 50001).
  - Performs detailed energy studies
  - Establishes performance metrics
  - Develops a project register. (i.e. capture all performance improvement opportunities stemming from capital equipment, O&M practices, or adjustments to significant energy use key characteristics.)
  - Conducts audit of the customers' energy management information systems
  - Identifies training needs and the Program offers scholarships to systems trainings. Also one-day SEM training suitable for managers and executives. EE subject and technology training (such as pump system efficiency, refrigeration system optimization, compressed air improvements)
  - Program support for energy IT and energy management information system (EMIS).
  - Facilitates application for capital measure incentives and "milestone" incentives (Xcel Energy $0.0685/kWh for EMIS; PacifiCorp $0.02/kWh first year savings; Idaho Power $0.18/kWh saved first year)
  - Linkages with other federal or standards programs (i.e. DOE Better Plants Challenge, ISO 50001, Superior Energy Performance, etc.)
- The Georgia Power Industrial Energy Efficiency Program should include the 10 key features ACEEE identified and incorporated in successful industrial energy efficiency programs.
  - http://aceee.org/sites/default/files/low-cost-ieep.pdf

Applicable Measure(s) within Program:

- Non-process related energy use and process energy, primarily associated scheduling, resets, cycling, sensors and controls, operations and maintenance with motors, drives, compressed air, refrigeration, lighting, chillers, etc.
- SEM Program may identify opportunities for energy using system replacement with energy efficient equipment and systems noted above.

Associated Costs of Program/Measures (describe below and also complete Table 1 on following page):

- TBD
- It is estimated that the technical assistance cost would average approximately $15,000 per participant, with half being from the participating company and the other half from Georgia Power.

Target Participants:

- Industrial customers with monthly demand of 500 kW or more would be eligible for the SEM Program.
- Industrial customers under 500 kW would be eligible for technical assistance that identifies O&M, behavioral and capital measures for the potential for electric savings impacts. The Program would be designed to encourage the implementation of energy efficiency projects that would not otherwise be completed without GPC's technical or financial assistance. This component for the smaller industries would build on the network of GPC industrial account /managers and include specialized retained experts and engineering firms in multiple disciplines [i.e. lighting, motors/drives, refrigeration, compressed air]. The technical assistance component will include feasibility studies, audits, retro-commissioning, process system improvements, etc. Trade ally buy-in will be important, including recruitment and co-marketing.

Key Market Barriers:

- The program will address technical assistance and training needs at various levels in the industrial organization from the executive level to the facility operation staff.

Delivery Mechanism (i.e. rebate program, training program, etc.):

- Primarily through technical assistance and training. Some utilities incorporated incentives and support for Energy Management Information Systems and incentives which is recommended for Georgia Power as well. In addition, the SEM Program could also link with energy efficient equipment replacement programs, such as custom and/or prescriptive incentives.

Other Utilities Offering Similar Programs Along with Observed Results (if any):

- Xcel Energy, Idaho Power, PacifiCorp, Bonneville Power Administration, Energy Trust of Oregon, Wisconsin Focus On Energy.

Challenges Expected During Analysis and/or Implementation:

- An important aspect of the initial development of the SEM program will be for Georgia Power to issue a request for proposals (RFP) to retain a qualified program administrator to set up the components of the program with experienced technical assistance and training advisors. However, a number of 3rd party contractors exists that have the necessary expertise and qualifications to implement these utility sponsored programs.

Energy Savings

- SEM programs in North America have served over 700 industrial facilities, as of reporting conducted by CEE in 2015. Ten programs reported a combined SEM program budget total of $20.4 million for that year. Total estimated electric energy savings achieved by eight reporting programs in 2015 was 78.4 GWh.
- link: *2014 Comprehensive Evaluation: Colorado Energy Management Systems: Recommendations and Responses.*
- www.xcelenergy.com/staticfiles/xe-responsive/Admin/Managed%20Documents%20&%20PDFs/CO-DSM-2014-Energy-Management-Systems-Evaluation.pdf

Table-2: Measure Specifications and Program Targets (High Priority)

Program Element	1st Program Year
Current estimated saturation of equipment in this market	TBD
Per unit annual kWh savings (at the meter)	"
Units used for savings estimates (i.e. sq ft, ton, etc)	"
Per unit annual kW savings (at the meter)	"
Projected Net-To-Gross Ratio	"
Incremental Measure Cost Per Unit ($)	"
Weighted average measure life	"
UCT	"
TRC	"

Program Planning Data

	PY 1	PY2	PY3
Budget	$2 M[1]	$3 M	$3 M
Participants – Number of Industrial Customers (1/3 large and 2/3 small)	200	300	300
Annual Savings Targets (MWh)	TBD	TBD	TBD

[1]This first year includes program administrator costs to develop the technical and training services, while PY2 and PY3 are primarily implementation deployment costs.

October 18, 2018

VIA EMAIL DELIVERY

Jeff Smith
Georgia Power Company
jksmith@southernco.com

Jamie Barber, Nick Cooper and Ben Deitchman
Georgia Public Service Commission
jamieb@psc.state.ga.us
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Re: Demand Side Management Working Group: 2019 Advocates' Case Modeling Proposal

Jeff, Jamie, Nick and Ben:

We appreciate the opportunity to provide input on the modeling of the Advocates' Demand-Side Management (DSM) Case for the 2019 Integrated Resource Plan (IRP) filing. We hope that the attached description of the Advocates' Case suffices for this purpose. Please let us know if you require additional information.

We want to highlight the fact that we have excluded the proposed income-qualified Purposity program from the Advocates' Case. Instead, we endorse the continuation of the utility-funded Energy Assessment and Solutions Program and the inclusion of an income-qualified on-bill tariff-based financing pilot program.

The following members of the Demand-Side Management Working Group endorse the attached Advocates' Case proposal:

- Center for Sustainable Communities
- Georgia Watch
- National Housing Trust

- Partnership for Southern Equity
- Sierra Club
- Southern Alliance for Clean Energy
- Southern Environmental Law Center
- Southface

Thank you for your consideration of the Advocates' Case DSM proposal.

Respectfully submitted,

Lisa Bianchi-Fossati, Policy Director
Southface

GOALS AND PRINCIPLES

Several members of the Demand-Side Management Working Group (DSMWG) have collaborated in crafting a proposed Advocates' case to be modeled by the Georgia Power Company (GPC) in its 2019 Integrated Resource Plan (IRP) demand-side management (DSM) plan. While beyond the scope of the modeling task, we want to take this opportunity to articulate a set of outcomes that we hope to see from GPC's 2019 IRP.

- Approval of a DSM portfolio that increases the current levels of energy savings for customers and puts Georgia Power on par with or ahead of other leading utility DSM programs in the Southeast and the nation.

- Approval of a 2019 IRP that expands GPC's deployment or acquisition of new solar and wind resources, growing the renewables market in the state and the region.

- An increased level of investment in low-income DSM programming. The 2019 DSM program should provide more choice to low-income customers, those GPC customers most sensitive to utility bill increases.
    - The GPC low-income DSM programs should address both single-family and multifamily housing units.
    - Use of non-energy benefits fully values all of the costs and benefits of low-income (and other) DSM programs. By using all benefits and all costs in the cost-test calculations, GPC can more accurately see the true value of low-income (and other) programs.

- A DSM plan that meaningfully helps Georgia Power contribute to Southern Company's low-carbon goals articulated by Chief Executive Officer Tom Fanning in April 2018.

- A DSM plan that includes industrial programs. Georgia Power's 2018 energy efficiency assessment reflects the fact that 34% of the available energy savings potential and 26% of the available demand saving potential is to be derived from increased efficiency in the industrial sector. The industrial sector is diverse - the state hosts more than 21,700 industrial facilities, a small percentage of which are represented before the Georgia PSC. This significant potential should not be ignored.

ADVOCATES' CASE

GPC will file its 2019 IRP in January 2019. As part of its IRP, GPC will file a DSM plan. GPC has agreed to analyze three DSM scenarios within its DSM plan: the Base Case (GPC's recommended DSM portfolio), an Aggressive Case and an Advocates' Case. This document describes the proposed Advocates' Case that we would like to see analyzed as part of GPC's 2019 DSM plan.

The 2019 GPC Advocates' Case should be a portfolio of DSM programs designed according to the following guidelines:

1. **Programs**
    a. The Advocates' Case includes select programs in GPC's Base Case (listed in black or orange font in column B of Table 1).
    b. The Advocates' Case includes the following new DSM programs (listed in blue font in column B of Table 1):
        i. Manufactured Homes
        ii. LED Streetlight Program - Governmental
        iii. LED Legacy Outdoor Lighting Program - Unregulated
        iv. Commercial New Construction
        v. Industrial Custom Program

2. **Program Characteristics**
    a. For certified programs, we have provided energy savings targets
    b. For uncertified programs, we have provided annual budgets.

3. **Timeframe**
    a. Based on our experience in the 2016 IRP, we assume the DSM modeling will cover a ten-year timeframe (2020 - 2029).
    b. Table 1 provides detailed information about program characteristics (i.e. energy savings performance or budget) for the first three years - 2020-2022. For the later seven years, Table 1 indicates that the relevant program characteristic (i.e. energy savings or budget) should be held constant at the level indicated in 2022. In other words, the program characteristics in the Advocates' Case are dynamic for years 2020-2022 and then level out for the subsequent seven years.

Table 1. Advocates' Case - Programs and Modeling Characteristics

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
			2020 Targets		2021 Targets		2022 Targets								
Ref	Programs - 2016 Cycle / GPC 2019 Base Case / Advocate Proposed	Certified?	Energy Savings (GWh)	Budget (million $)	Energy Savings (GWh)	Budget (million $)	Energy Savings (GWh)	Budget (million $)	2023	2024	2025	2026	2027	2028	2029
	Residential								Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022	Held Constant Using Relevant Vaule from 2022
1	Specialty Lighting	✓	9.9		10.9		12.0								
2	Refrigerator Recycling	✓	12.1		14.3		16.9								
3	EarthCents New Multifamily Homes	✓	6.0		6.5		7.0								
4	Home Energy Improvement (inc. Income-Qual. Carve-Out)	✓	22.2		26.6		31.8								
5	Resid. Thermostat Demand Response	✓	4.5		4.5		4.5								
6	Manufactured Homes	✓	19.4		27.4		36.7								
	Income-Qualified Residential														
7	Energy Assess. & Solutions Prog. Multi			$1.50		$1.65		$1.815							
	Energy Assess. & Solutions Prog. Single			$0.40		$0.44		$0.484							
8	HopeWorks Weatherization			$0.30		$0.33		$0.363							
9	Income-Qualified PAYS		0.2		0.2		0.2								
	Commercial														
10	Custom	✓	77.8		104.9		136.9								
11	Prescriptive	✓	311.8		429.3		568.6								
12	Small Commercial Direct Install	✓	20.8		26.1		32.4								
13	Commercial HVAC	✓	5.6		7.0		8.7								
14	Midstream Products	✓	5.0		5.5		6.1								
15	Comm Behavioral	✓	8.3		8.3		8.3								
16	LED Streetlight Program - Governmental	✓	30.5		21.3		0.0								
17	LED Legacy Outdoor Lighting Program - Unregulated	✓	23.0		25.9		27.7								
18	Commercial New Construction	✓	17.0		24.0		24.0								
	Industrial														
19	Custom program	✓	14.3		21.4		21.4								

	Subtotals	Savings (GWh)	Budget (M$)	Savings (GWh)	Budget (M$)	Savings (GWh)	Budget (M$)
20	Residential (Certified)	74.1		90.1		108.9	
21	Commercial (Certified)	499.8		652.4		812.7	
22	Industrial (Certified)	14.3		21.4		21.4	
23	Certified Portfolio Subtotal	588.2		763.9		943.0	
24	Residential Low-Income	0.2	$2.2	0.2	$2.4	0.2	$2.7
25	Total DSM Portfolio	588.4	$2.2	764.1	$2.4	943.2	$2.7

Exhibit SACE-FBW-3a
GPSC Docket 42311

Heather Pohnan <heather@cleanenergy.org>

Clarifying Questions/Data Requests on DSWMG-Advocate Programs

Jamie Barber <JAMIEB@psc.state.ga.us> Mon, Mar 5, 2018 at 2:03 PM
To: "Heather Pohnan (heather@cleanenergy.org)" <heather@cleanenergy.org>
Cc: Nick Cooper <ncooper@psc.state.ga.us>

Heather,

Good afternoon. Please find below the questions from Georgia Power regarding SACE's proposed programs. Please provide responses as soon as you can. Thanks

-

-

Manufactured Home Program (SACE)

· In the table on page 3 of the program submittal form, the incremental measure costs per unit listed are equivalent to the incentive amounts listed on page 1. Is the intent of the program to pay 100% of the incremental measure cost?

  - If not, are there different incremental measure cost values that should be applied (i.e. the cost to the manufacturer to build a qualifying EnergyStar Manufactured Home; and the incremental cost of purchasing and installing a heat pump)?

· Please provide supporting reference information for the per-unit annual kWh savings for each measure.

  - Were these kWh values based on program evaluation results, building simulation modeling, or other sources?

  - What is the baseline home energy consumption (kWh) estimated for manufactured homes (i.e. what percentage of baseline consumption is saved for each measure)?

· Budget estimates appear to only include incentives for stated participation levels. Do you have estimated budgets for other program elements, such as program administration and management, program marketing and outreach, program evaluation, or would you prefer Georgia Power to estimate anticipated costs for these items?

Street and Outdoor Lighting Amortization Cost Recovery

· Please provide the regulatory filing from Tampa Electric with details on estimate program impacts, costs, and benefits cited in program submittal form.

-

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

Manufactured Home Program

1) In the table on page 3 of the program submittal form, the incremental measure costs per unit listed are equivalent to the incentive amounts listed on page 1. Is the intent of the program to pay 100% of the incremental measure cost?

- No, the intent is not for incentives to pay 100% of the incremental measure cost. Incentives are intended to reduce and defray upfront costs. The reason they are equivalent in the program submittal is because there was no table space to include the incentive levels assumed incremental cost was synonymous. However, following the program planning meeting, SACE would like to correct the submittal in the following table:

Measure	Incremental Cost Range	Incremental Cost Input	Incentive Paid	Incentive % of Incremental Cost
ESMF	$700-2000	$2,000	$1,300	65%
ESPMF	$800-2100	$2,100	$1,375	65%
Volume Heat Pump	$500-800	$600	$450	75%

Incremental costs vary depending on the manufacturer - the ranges provided above are based on previous estimates from the Systems Building Research Alliance (SBRA), with the selected input of incremental costs mirroring the final selection by TVA.

While the selection of incentive amounts may take into account the incremental cost, they do not cover them entirely and should be periodically adjusted based on current market conditions and changes in equipment costs. (Note that the incentive % of incremental cost is not necessarily intended to be a guideline for how incentives should be adjusted.)

For example, in TVA incentive level was adjusted from $1,500 to $1,400 to $1,300 during a three-year period because of market conditions. Finally, after market transformation was complete, the incentives were eliminated.

2) If not, are there different incremental measure cost values that should be applied (i.e. the cost to the manufacturer to build a qualifying EnergyStar Manufactured Home; and the incremental cost of purchasing and installing a heat pump)?

- See above, there should be three differing values for the incremental cost.

3) Please provide supporting reference information for the per-unit annual kWh savings for each measure.

- Please see attached for TVA's summary of the manufactured homes program, which reports the per-unit kWh savings for each measure. The yearly results (kwh and

participants) for 2013-2015 per each program implementer (local power company/distributor) provided by TVA are also attached and reflect the same findings.

4) Were these kWh values based on program evaluation results, building simulation modeling, or other sources?

- The kWh values were based on measurement and verification (M&V) performed by TVA program implementers. The framework for documenting impacts are included within TVA's Technical Resource Manual, which is attached. The reported results are expected to be similar elsewhere since similar design packages will be used.[1]

5) What is the baseline home energy consumption (kWh) estimated for manufactured homes (i.e. what percentage of baseline consumption is saved for each measure)?

- The baseline home energy consumption should reflect the Georgia energy code. The kwh savings included as program inputs reflect a baseline home energy consumption that is documented in the above-referenced TRM that likely differs from Georgia.

6) Budget estimates appear to only include incentives for stated participation levels. Do you have estimated budgets for other program elements, such as program administration and management, program marketing and outreach, program evaluation, or would you prefer Georgia Power to estimate anticipated costs for these items?

- Georgia Power is encouraged to estimate the associated administrative costs and how the addition of this program would impact the cross-cutting program costs of the DSM portfolio. Since certain administrative costs such as marketing, outreach, and evaluation may overlap or be shared among other programs, SACE is unable to determine the administrative costs for a specific program. As Georgia Power has a more complete understanding of how costs are divided up in the context of the overall portfolio, it's preferable that Georgia Power estimate anticipated costs with SACE being given an opportunity to review.

Street and Outdoor Lighting Amortization Cost Recovery

1) Please provide the regulatory filing from Tampa Electric with details on estimate program impacts, costs, and benefits cited in program submittal form.

- Please see attached for the Tampa Electric's petition to the Florida Public Service Commission. While a full review of the filing may be of interest to GPC and PSC staff, the following tables and information were the basis for program estimates:

Summary of All Program Input Data:
Page 11, Exhibit A

[1] https://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.pt_manufactured_plants

Incremental Measure Cost Per Unit:
Pages 7 and 11, Exhibit A

Per unit annual kW saved and kWh saved:
Page 18, Exhibit C

Weighted average measure life:
Page 11, Exhibit A

Total Resource Cost/Rate Impact Measure Results:
Pages 11-14, Exhibit A

Conservation program docket:
http://www.psc.state.fl.us/ClerkOffice/DocketFiling?docket=20170199

Tariff docket:
http://www.psc.state.fl.us/ClerkOffice/DocketFiling?docket=20170198

Exhibit SACE-FBW-3c
GPSC Docket 42311

Heather Pohnan <heather@cleanenergy.org>

GPC follow-up regarding Program submittals

Jamie Barber <JAMIEB@psc.state.ga.us> Wed, Sep 5, 2018 at 5:47 PM
To: Lisa Bianchi-Fossati <lbianchi-fossati@southface.org>, "kkelly@southface.org" <kkelly@southface.org>, Cyrus Bhedwar <cbhedwar@seealliance.org>, Liz Coyle <lcoyle@georgiawatch.org>, "bhaynes@georgiawatch.org" <bhaynes@georgiawatch.org>, "Heather Pohnan (heather@cleanenergy.org)" <heather@cleanenergy.org>, Matt Cox <mcox@thegreenlinkgroup.com>, "bhenderson527@aol.com" <bhenderson527@aol.com>, "Dana Bartolomei (DBartolomei@nhtinc.org)" <DBartolomei@nhtinc.org>

Good evening,

Please find below and attached GPC's follow-up questions regarding the DSM program submittals. Please provide responses by September 21, 2018 so that the program planning modeling of this case can be completed. Please forward this email to anyone that I may have left anyone off the email that needs to respond to any part of the questions below.

Please let me know if you have any questions and I look forward to seeing you next Monday at the DSMWG meeting.

EarthCents New Homes Program (Southface)

· Does Southface have a preferred option for eligible measures from the four options provided in the program submittal, which were:

1. Existing program update (HERS 57 whole home plus individual measures)
2. Existing program update plus new prescriptive approach (HERS 57 whole home plus individual measures plus Power Prescriptive Package)
3. New prescriptive approach (individual measures plus Power Prescriptive Package)
4. Program overall – revise structure to address code compliance or new home performance issues

· (Note – as default we will plan to model Option 2 which includes all measure options other than code-compliance issues)

EASP Improvements (National Housing Trust, Georgia Watch, SEEA)

· For all parties:

  - Three different programs addressing EASP/low income were proposed, with some overlapping features and some distinct features. Would the advocates prefer that these be combined into a single low-income offering or model as separate, stand-alone offerings?
  - If combined offering is preferred, please confirm that this offering would consist of:
    - Current plus recommended direct install measures
    - Behavioral measure consisting of in-home display or app with access to hourly usage data
    - Energy assessment to identify additional savings opportunities
    - Financing/tariff to cover costs of efficiency measures (beyond direct install measures)

- For National Housing Trust:
    - Responses provided on 4/2/18 to initial clarifying questions did not include a response to the following question – please provide a response:
        - Do you have estimates for appropriate "Administrative costs" and "Costs associated with establishing financing mechanism" as listed on page 3 of the program submission form (can be provided as $ per kWh saved, $ per participant, or total $ value with accompanying estimated annual participation), or would you prefer Georgia Power to estimate anticipated costs for these items?

HEIP Plus/HEIP PAYS, EASP Plus EASP PAYS (SEEA)

- PAYS program has been suggested for both low-income and non-low income customers, and in response to initial questions you have indicated that you do not recommend analyzing as a component of HEIP). How do you prefer PAYS be included in the portfolio mix? Options include:
    - Single, stand-alone PAYS program that includes both low income and non-low income participants. Offering would be separate from HEIP and EASP programs in the portfolio.
        - If this option is preferred, is there a distinction between low-income and non-low income participation, i.e. % of project financed? Free home assessment vs. customer-paid assessment, etc?
    - Separate programs for low income PAYS and non-low income PAYS, with specific eligibility criteria for each
        - If this option s preferred, are there differences in delivery structure or financing
- How do you prefer representing participation and measures? Options include:
    - Assume whole-home improvements similar to HEIP whole-home measure that target a % reduction in home's energy use
    - Include individual measures with individual participation levels, similar to the types of measures listed in the program submittal form (air sealing, duct sealing, etc.)
        - If this option is preferred do you have list of measures to include, or should Georgia Power/Nexant select representative measures?
        - Would you prefer to specify participation parameters (i.e. average of 3 measures per home, or minimum project cost that customers would incur to make it worth it to do financing?)

Residential Demand Response/Direct Load Controls (SELC)

- For water heater direct load control – is the measure intended to provide the customer with a new water heater that has integrated controls, or install controls on an existing water heater?

Manufactured Home Program (SACE)

- In the table on page 3 of the program submittal form, the incremental measure costs per unit listed are equivalent to the incentive amounts listed on page 1. Is the intent of the program to pay 100% of the incremental measure cost?
    - If not, are there different incremental measure cost values that should be applied (i.e. the cost to the manufacturer to build a qualifying EnergyStar Manufactured Home; and the incremental cost of purchasing and installing a heat pump)?
- Please provide supporting reference information for the per-unit annual kWh savings for each measure.
    - Were these kWh values based on program evaluation results, building simulation modeling, or other sources?
    - What is the baseline home energy consumption (kWh) estimated for manufactured homes (i.e. what percentage of baseline consumption is saved for each measure)?
- Budget estimates appear to only include incentives for stated participation levels. Do you have estimated budgets for other program elements, such as program administration and management, program marketing and outreach, program

evaluation, or would you prefer Georgia Power to estimate anticipated costs for these items?

Market aligned Housing Renovation Subprogram (Southface)

- We wanted to confirm our understanding of the individual measures to be included:
    - Gut Rehab or Home Renovation Package-
        - Air sealing
        - Encapsulation of attic with HVAC moved into conditioned space (assume this would be done through spray foam, correct?)
        - Duct reconfiguration and tightness testing (assume this aligns with duct sealing measure, correct?)
        - Pipe insulation inside to-be-enclosed structure (assume this is hot water pipe insulation from water heater in attic, correct?)
    - Home Remodel Package-
        - ENERGY STAR HVAC system replacement
        - Heat recovery water heater with heat pump (assume this is consistent with existing heat pump water heater measure, correct?)

Small Business Plus/Small Business PAYS (SEEA)

- Do you prefer that this program be analyzed as a stand-alone program, separate from the SCDI offering? Or should this be considered as a component of SCDI?

Street and Outdoor Lighting Amortization Cost Recovery

- Please provide the regulatory filing from Tampa Electric with details on estimate program impacts, costs, and benefits cited in program submittal form.

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

Clarifying Questions on Advocate Programs.docx
18K

Exhibit SACE-FBW-3d
GPSC Docket 42311

Heather Pohnan <heather@cleanenergy.org>

RE: Clarifying Questions/Data Requests on DSWMG-Advocate Programs

Jamie Barber <JAMIEB@psc.state.ga.us> Mon, Sep 10, 2018 at 6:48 AM
To: Forest Bradley-Wright <forest@cleanenergy.org>
Cc: Nick Cooper <ncooper@psc.state.ga.us>, "John D. Wilson" <wilson@cleanenergy.org>, Heather Pohnan <heather@cleanenergy.org>

Thanks Forest!

Jamie

From: Forest Bradley-Wright [mailto:forest@cleanenergy.org]
Sent: Friday, September 7, 2018 5:53 PM
To: Jamie Barber <JAMIEB@psc.state.ga.us>
Cc: Nick Cooper <ncooper@psc.state.ga.us>; John D. Wilson <wilson@cleanenergy.org>; Heather Pohnan <heather@cleanenergy.org>
Subject: Fwd: Clarifying Questions/Data Requests on DSWMG-Advocate Programs

Hi Jamie,

Following up on your email from Wednesday, attached are the answers we submitted back in March in response to what appear to be the same questions from GPC. Have a great weekend and see you on Monday.

Best, Forest

---------- Forwarded message ----------
From: **Heather Pohnan** <heather@cleanenergy.org>
Date: Fri, Mar 16, 2018 at 3:58 PM
Subject: Re: Clarifying Questions/Data Requests on DSWMG-Advocate Programs
To: Jamie Barber <JAMIEB@psc.state.ga.us>
Cc: Nick Cooper <ncooper@psc.state.ga.us>, "John D. Wilson" <wilson@cleanenergy.org>

Please see attached for SACE's response to Georgia Power's clarifying questions and data requests in a word document, as well as several supporting documents in PDF format. Let us know if there are any further questions from Georgia Power regarding our program submittals. Thanks!

On Thu, Mar 15, 2018 at 10:59 AM, Heather Pohnan <heather@cleanenergy.org> wrote:

> I've been away at a conference and am just getting around to this now, thanks for the reminder!
>
> On Thu, Mar 15, 2018 at 10:46 AM, Jamie Barber <JAMIEB@psc.state.ga.us> wrote:
>
> > Heather,

Good morning. Just a reminder to send in a response to the questions below as soon as you can. Georgia Power would like to have the responses by close of business tomorrow 3-16-17 if at all possible.

Thanks

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

From: Jamie Barber
Sent: Monday, March 5, 2018 2:04 PM
To: Heather Pohnan (heather@cleanenergy.org) <heather@cleanenergy.org>
Cc: Nick Cooper <ncooper@psc.state.ga.us>
Subject: Clarifying Questions/Data Requests on DSWMG-Advocate Programs

Heather,

Good afternoon. Please find below the questions from Georgia Power regarding SACE's proposed programs. Please provide responses as soon as you can. Thanks

Manufactured Home Program (SACE)

- In the table on page 3 of the program submittal form, the incremental measure costs per unit listed are equivalent to the incentive amounts listed on page 1. Is the intent of the program to pay 100% of the incremental measure cost?
    - If not, are there different incremental measure cost values that should be applied (i.e. the cost to the manufacturer to build a qualifying EnergyStar Manufactured Home; and the incremental cost of purchasing and installing a heat pump)?
- Please provide supporting reference information for the per-unit annual kWh savings for each measure.
    - Were these kWh values based on program evaluation results, building simulation modeling, or other sources?
    - What is the baseline home energy consumption (kWh) estimated for manufactured homes (i.e. what percentage of baseline consumption is saved for each measure)?
- Budget estimates appear to only include incentives for stated participation levels. Do you have estimated budgets for other program elements, such as program administration and management, program marketing and outreach, program evaluation, or would you prefer Georgia Power to estimate anticipated costs for these items?

Street and Outdoor Lighting Amortization Cost Recovery

· Please provide the regulatory filing from Tampa Electric with details on estimate program impacts, costs, and benefits cited in program submittal form.

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

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Heather Pohnan

Energy Policy Manager

Southern Alliance for Clean Energy

250 Arizona Ave. NE, Atlanta, GA 30307

Mobile: 630-639-0631

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Forest Bradley-Wright
Energy Efficiency Director
Southern Alliance for Clean Energy
forest@cleanenergy.org | (504) 208-7597
http://www.cleanenergy.org
http://blog.cleanenergy.org

Good afternoon,

Please see the follow-up questions from GPC regarding the Advocate Case. GPC requests responses by **close of business Friday (11-16-18).** Please let me know if you have any questions.

Follow-up Q&A from Advocate Case dated Oct 18, 2018:

- Residential - Manufactured Homes program:
  - **Issue: The Advocate-suggested program savings and participation targets exceed the number of new manufactured home meter installs in Georgia Power's service territory.**
    - The Advocate suggested targets are based on the following participation levels: 955 participating Energy Star and Energy Star Plus homes in 2020; 1,400 participating ES and ES-Plus homes in 2021, and 1,960 ES and ES-Plus homes in 2022.
    - Based on Georgia Power data on new meter sets, between 2013 and 2017, there were an average of 464 new manufactured home meters installed per year.

      QUESTION:
    - *Would SACE like to provide an updated participation target for Energy Star and Energy Star Plus homes that is more in line with Georgia Power's customer base?*
  - **Issue: The Advocate suggested savings per Energy Star and Energy Star Plus home does not align with average consumption for Georgia Power manufactured homes.**
    - The Advocate suggested unit savings are 12,000 kWh

per Energy Star manufactured home and 12,675 kWh per Energy Star Plus manufactured home.

- These values are taken from the TVA TRM (provided by SACE on 9/10/18), which calculated the savings using building simulation modeling, assuming a baseline home with electric strip heat in Nashville, TN. The strip heat to HP measure accounted for 65% of the per-home savings.
- Georgia Power meter data for new manufactured homes installed between 2013 and 2017 shows that the average annual per-home energy consumption was 12,991 kWh. Therefore, it does not appear that the average consumption for manufactured homes in Georgia Power's service territory aligns with the assumptions used in the TVA TRM.

<u>QUESTIONS:</u>

- *Would SACE like to provide an updated savings per home that is more in line with Georgia Power consumption data?*
- *Or would SACE prefer Georgia Power to model the savings using the EnerSim building simulation model to calculate savings for a typical manufactured home based on the measures listed in the TVA TRM for an ENERGY STAR Manufactured Home? These measures, as listed in Table 336 on page 365 of the TRM, are:*
  - *increase ceiling insulation from R11 to R38*
  - *air sealing - Reduce CFM50 from 2500 to 1500*
  - *increase duct insulation from 1 in. to 2 in.*
  - *Replace single pane windows with double-pane windows*
  - *Replace strip heat with heat pump*

- Commercial - Midstream Products program:
  - **Issue: The Advocate portfolio included a separate Commercial HVAC program, and HVAC accounted for the vast majority of savings in the Base Case Midstream Products program. Therefore, it is not feasible to reach the Advocate suggested Midstream Products targets with only the commercial cooking measures included in the Base Case.**
    - The Base Case program included savings targets of approximately 4.3 GWh annually
    - Approximately 4.1 GWh of the program total was based on HVAC measures, with the remaining 0.2 GWh from commercial cooking measures.
    - The Advocate Case appears to separate out the Commercial HVAC measures, leaving only the cooking measures, with annual savings targets of 5.0 GWh, 5.5 GWh, and 6.1 GWh.
    - These targets are not realistically achievable with the remaining commercial cooking measures included in the Base Case.

    <u>QUESTIONS:</u>

    - *Did the Advocates intend for there to be two separate midstream programs, one for HVAC and one for commercial cooking equipment?*
    - *Did the Advocate-suggested Midstream Products program intend to include additional measures beyond what is included in the Base Case?*
    - *Based on the information provided here, that the midstream HVAC measures comprise the majority of the Base Case Midstream Products offering, do the Advocates have revised proposed targets for this program?*
- Commercial - Street Lighting program:

- **Issue: Georgia Power is currently implementing a LED Roadway Initiative that will be complete by 2020; therefore, there will no longer be opportunities to retrofit street lighting, as proposed in the Advocate program.**
  QUESTION:
- *Based on this information about Georgia Power's current initiative, do the Advocates approve removing this program from the Advocate proposed portfolio?*

Jamie Barber
Energy Efficiency and Renewable Energy Manager
Georgia Public Service Commission
404-651-5958

From: Lisa Bianchi-Fossati
Sent: Wednesday, November 28, 2018 2:57 PM
To: Jamie Barber; Nick Cooper
Cc: Kevin Kelly
Subject: Yesterday's DSMWG: following up

Good afternoon Jamie and Nick,

We appreciate the opportunity to offer refinements to the Advocates' Case in light of the discussion at yesterday's Demand Side Management Working Group meeting.

If you would please pass along to Georgia Power the following requested adjustments to the Advocates' Case, we would greatly appreciate it:

1. ***Residential Behavioral*** – please include this in the Advocates' Case as modeled in the Base Case.
2. ***EASP*** – please…

a. Change the current EASP program proposal to certified (from uncertified) and rename the program "Income Qualified (Fully-Funded)"; and

b. For modeling purposes, use annual budgets as described in Advocates' Case Table 1 and program design consistent with EASP as it currently operates.

3. ***Residential Thermostat Demand Response*** – please model the Residential Thermostat Demand Response program in the Advocates' Case to include Bring-Your-Own-Thermostats (as modeled in the Base Case).
4. ***New Home Multifamily*** – please remove the New Homes MF Program from Advocates' Case.

As always if any questions or if you or the Georgia Power and / or Nexant teams need any additional information please let us know.

Many thanks,
Lisa

Manufactured Homes Program - Existing Homes

1) Issue raised by Georgia Power: The Advocate-suggested program savings and participation targets exceed the number of new manufactured home meter installs in Georgia Power's service territory. Based on Georgia Power data on new meter sets, between 2013 and 2017, there were an average of 464 new manufactured home meters installed per year. Would SACE like to provide an updated participation target for Energy Star and Energy Star Plus homes that is more in line with Georgia Power's customer base?

SACE's Response: Based on electric metering guidelines for installing electric service for manufactured homes, as well as documentation from another Southern Company affiliate (Mississippi Power), it appears the issue outlined by the Company may be, at least in part, attributable to a difference between the number of new homes and new meters issued. Guidelines show that a meter for a manufactured home is typically installed on a meter pedestal or meter pole (depending on overhead or underground service) outside the home, but still located within sight and usually not more than 30 feet away. For this reason, if a new manufactured home were delivered to an existing location, it would not necessarily require a new meter set and request that the Company clarify and share with the Advocates when and if a new meter would be issues to a replacement manufactured home at an existing location. Ultimately, SACE believes the the number of new homes, not new meter sets, is the appropriate figure to use for modeling the manufactured homes program.

Georgia Power additionally questions whether the participant savings targets provided by SACE are too high, to which SACE would like to submit revised targets, as well as document how they were derived from data on manufactured home shipments to Georgia, rates of homes placed for residential use, and housing unit and residential customer counts for Georgia Power service area.

First, SACE examined 2011-2018[1] yearly totals for new manufactured homes shipped to Georgia. We learned that the yearly totals have been increasing for the past several years, and that a significant number of Georgia manufactured homes are multi-section units:

Year Reported	2011	2012	2013	2014	2015	2016	2017	2018
Total Manufactured Homes	1,163	1,360	1,407	1,529	1,762	2,484	2,852	*3,540*[2]
Single-Section	277	290	383	458	497	928	1,094	*1,368*
Multi-Section	886	1,070	1,024	1,071	1,265	1,556	1,758	*2,172*

[1] Shipments of New Manufactured Homes data tables via the U.S. Census Bureau's Survey of New Manufactured Homes. Survey provides current monthly estimates of new manufactured (mobile) homes placed for residential use and dealer inventories. All new manufactured homes that have received a Federal inspection (i.e., HUD-code homes). https://www.census.gov/data/tables/time-series/econ/mhs/shipments.html

[2] Monthly data for 2018 is only available up until the end of August. To estimate for the remainder of the year, the monthly average of homes shipped from Jan-Aug is used.

Rates of total homes shipped that were *then sold and placed into residential use* ranged from 55.6% to 69.4%[3] depending on the year[4]. SACE applied these rates to Georgia totals to calculate the number of installed new manufactured houses in the state. For the purposes of responding specifically to Georgia Power's "average of 464 new manufactured home meters installed per year" assertion, the below illustrates the 2013-2017 time frame only.

Year Reported	2013	2014	2015	2016	2017
New Georgia Manufactured Homes	1,407	1,529	1,762	2,484	2,852
% Placed for Residential Use	69.4%[5]	69.4%	64.4%	64.2%	59.0%
Installed Manufactured Homes	976	1,061	1,135	1,595	1,683
Estimated GPC New Homes	488	531	567	797	841
2013-2017 New GPC Manufactured Homes Installed = 645 per year					

An estimated 47.9-48.8% of existing manufactured homes are located within Georgia Power's service area. This is a reasonable assumption that is further supported by data in EIA Form-861 reporting that customers of Georgia Power represent 51% of the state's residential customer base. A flat 50% was assumed during the program planning process. With an average over the 2013-2017 period of 645 new homes installed per year, suggesting that relying on new meter data undercounts the new manufactured homes in Georgia Power's customer base by 905 homes.

In an effort to respond to the Company's implied request to lower program targets, SACE has revisited several assumptions used during the program planning process. Initial participation targets were set assuming the number of new manufactured homes would increase by 15% each year (yearly increase of ~15% in 2014-2015 and 2016-2017 time frame, larger increases in 2015-2016 and expected in 2017-2018 are assumed to be anomalies). Program participation rates are escalated each year, and final targets rounded so 3-year total equals 3,850.

In our revised targets, SACE assumes a lower install rate of new homes (60%) and a lower rate of Georgia Power customers among residents of manufactured housing (47.5%), but the 15% yearly increase in new homes shipped to Georgia was kept. The new 3-year program total is 3,300.

Year Reported	2018	2019	2020	2021	2022
New Georgia Manufactured Homes	3,540	4,071	4,682	5,384	6,191
Program Participation Rate	0%	0%	55%	65%	80%

[3] https://www.census.gov/data/tables/time-series/econ/mhs/month-of-shipment.html

[4] During the program planning process SACE utilized a flat 70% placement rate for future years in lieu of more detailed data assumptions.

[5] This information was not collected in 2013, so 2014 rates were used instead.

Initial Input - New GPC Homes	984	1,425	1,639	1,884	2,167
Initial Input - Target Participation	0	0	901	1,225	1,734
Revised Input - New GPC Homes	984	1,221	1,404	1,615	1,857
Revised Input - Target Participation[6]	0	0	772	1,050	1,486

2) ***Issue raised by Georgia Power:***
The Advocate suggested savings per Energy Star and Energy Star Plus home does not align with average consumption for Georgia Power manufactured homes. Georgia Power meter data for new manufactured homes installed between 2013 and 2017 shows that the average annual per-home energy consumption was 12,991 kWh.

The Advocate suggested unit savings are 12,000 kWh per Energy Star manufactured home and 12,675 kWh per Energy Star Plus manufactured home. These values are taken from the TVA TRM (provided by SACE on 9/10/18)[7], which calculated the savings using building simulation modeling, assuming a baseline home with electric strip heat in Nashville, TN. The strip heat to HP measure accounted for 65% of the per-home savings.

Would SACE like to provide an updated savings per home that is more in line with Georgia Power consumption data? Or would SACE prefer Georgia Power to model the savings using the EnerSim building simulation model to calculate savings for a typical manufactured home based on the measures listed in the TVA TRM for an ENERGY STAR Manufactured Home?

SACE's Response:
SACE does not believe that per-home energy consumption data for new manufactured homes installed between 2013 and 2017 is an appropriate baseline. The program design is intended to drive the replacement of older manufactured homes by lowering the upfront cost of an efficient home to prospective buyers.

The manufactured homes program has the complementary element of offering a volume heat pump incentive to existing homes, but many homes may not be eligible for this replacement due to age and issues with outdated equipment or structural integrity. By offering a new homes incentive, Georgia Power can help drive replacement of older, inefficient homes in its service territory.

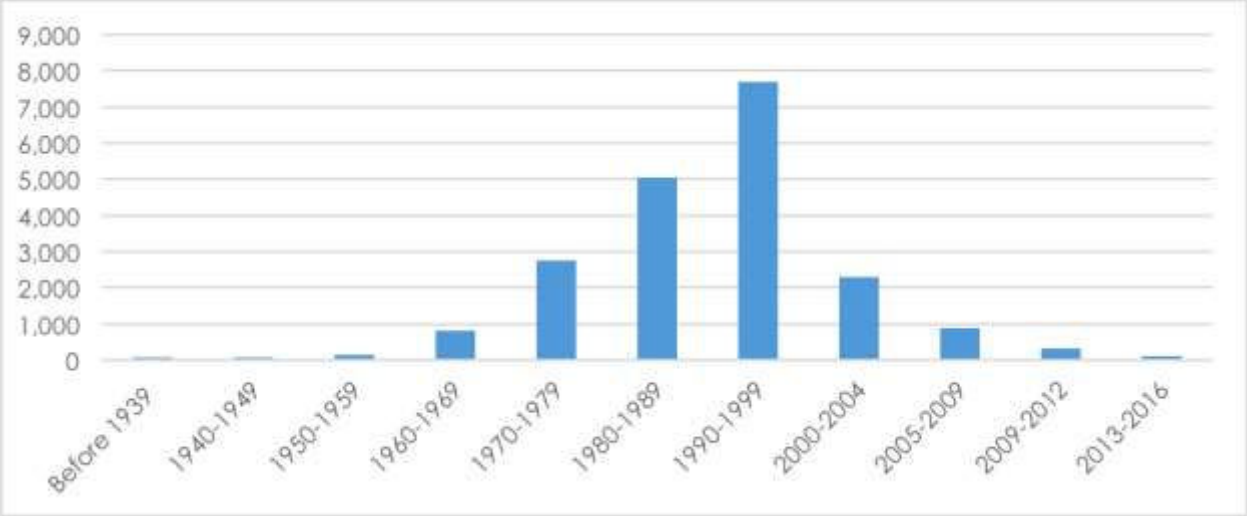
SACE estimates that the new homes segment (2013 to present) makes up approximately 0.5-0.6%[8] of the manufactured housing stock in the state of Georgia, and SACE expects this to be

[6] 10% of yearly targets should be Energy Star Plus.

[7] SACE received a first set of clarifying question on March 5th that included questions regarding the reference information for the per-unit annual kWh savings. SACE sent a response including the TVA TRM documentation via email on March 16th, and receipt was acknowledged the same day.

[8] U.S. Census Bureau 2012-2016 ACS 5-year Public Use Microdata Samples (PUMS). PUMS data is a statistically representative sampling of all ACS survey responses. Graph is based on 22,000 records of mobile/manufactured housing units in the state of Georgia. ACS data groups manufactured homes in the "mobile homes" category of

qualitatively the same for Georgia Power customers. Data also indicates that a more appropriate baseline would be manufactured houses 20-30 years old, since these are the homes the program strives to reach. Below is the distribution of manufactured homes by year built.



However, SACE is interested in any data availability Georgia Power may have regarding median housing ages or that would be representative of a typical home. SACE would prefer that Georgia Power model the savings using the consumption of an older home as the baseline following the modeling specifications below:

Energy Star New Manufactured Home

- Increase ceiling insulation from R11 to R38
- Air sealing - Reduce CFM50 from 2500 to 1500
- Increase duct insulation from 1 in. to 2 in
- Replace single pane windows with double-pane windows
- Replace strip heat with heat pump

Energy Star Plus New Manufactured Home

- All of the above
- CFLs in 75% of fixture
- Whole-house sealing and duct insulation

Street and Outdoor Lighting Amortization Cost Recovery

3) Issue raised by Georgia Power: Georgia Power is currently implementing a LED Roadway Initiative that will be complete by 2020; therefore, there will no longer be opportunities to retrofit street lighting, as proposed in the Advocate program. Based on this information about

---

unit structure type.

Georgia Power's current initiative, do the Advocates approve removing this program from the Advocate proposed portfolio?

SACE's Response: While we acknowledge Georgia Power's stated desire to complete the LED Roadway Initiative prior to the next IRP period, based on the pace of actual installations reported to us by the Lighting Services Business Unit in September 2018, we believe it remains appropriate to keep the Street Lighting program in the Advocate's Case as requested. From December 2017 through August 2018, only 30,611 street lights were converted bringing the number of conversions to date up to 261,598 of the total 400,000 estimated legacy streetlights. Continuing that pace, we estimated another 48,433 conversions would be completed through the remainder of 2018 and 2019, leaving 89,969 eligible fixtures. We therefore provided inputs for modeling 30.5MWh savings from 53,002 conversions in 2020 and 21.3MWh saving from 36,967 conversions in 2021. We appreciate Georgia Power's continued efforts with converting street lights to efficient LEDs, but believe that our inputs are consistent with reported results to date and therefore should be modeled as requested in the Advocate's Case.

cleanenergy.org

Exhibit SACE-FBW-3h
GPSC Docket 42311

Forest Bradley-Wright <forest@cleanenergy.org>

Follow-Up Regarding Manufactured Homes and Street Lighting Programs

6 messages

Heather Pohnan <heather@cleanenergy.org> Wed, Nov 28, 2018 at 4:54 PM
To: Jamie Barber <JAMIEB@psc.state.ga.us>, Nick Cooper <ncooper@psc.state.ga.us>
Cc: Forest Bradley-Wright <forest@cleanenergy.org>

Good afternoon,

As a follow up to both yesterday's meeting and SACE's correspondence with Georgia Power regarding several programs in the advocates case, we would like to request clarification on assumptions in Georgia Power's preliminary program economics modeling results. As a general request, we ask that any changes made by GPC to the inputs provided in the Advocates case be identified, described, and explained. In particular, we would greatly appreciate if you would pass along the following specific requests:

Manufactured Homes Program
1. Please identify the number of program participants, in housing units, for new manufactured homes incentives in 2020-2022.

2. Please identify the number of program participants, in housing units, for existing manufactured homes incentives in 2020-2022.

3. As discussed yesterday, SACE has been told we would receive a follow up, by email, to clarify Georgia Power's standard practice when a manufactured home replacement occurs as an existing location, and whether an existing meter set would be used or if a replacement set would be issued.

4. Did Georgia Power use new meter sets as the basis for participation targets for new manufactured homes?

5. If not, please explain what data or methods were used to derive participation targets.

6. Please provide the per units kwh savings results for Energy Star Manufactured Homes and Energy Star Plus Manufactured Homes from Georgia Power's savings modeling.

7. Please indicate the approximate age or decade built of the manufactured homes used by Georgia Power as the baseline input.

LED Street Lighting Program - Governmental
8. Georgia Power indicated during discussion that program savings for the LED Street Lighting Program reflect a lower number of eligible light fixtures than the advocates recommended. Please indicate the number of legacy light fixtures eligible for conversion as of September 2018, as well as the number assumed to be converted by 2019.

9. Did Georgia Power take into account any other factors, such as fixtures that are in the queue for upgrades, or fixtures leased by customers that submitted requests for upgrades when setting their input assumptions?

Hope these makes sense, let us know if Georgia Power has an follow up questions. Thanks!

Best,

Heather Pohnan
Energy Policy Manager
Southern Alliance for Clean Energy
250 Arizona Ave. NE, Atlanta, GA 30307
Mobile: 630-639-0631
http://www.cleanenergy.org

Jamie Barber <JAMIEB@psc.state.ga.us> Thu, Nov 29, 2018 at 6:11 AM
To: Heather Pohnan <heather@cleanenergy.org>, Nick Cooper <ncooper@psc.state.ga.us>
Cc: Forest Bradley-Wright <forest@cleanenergy.org>

Heather,

Good morning. Thanks for sending and I have sent the questions to GPC/Nexant for a response. Staff will forward the responses as soon as we get back from Georgia Power.

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

[Quoted text hidden]

Jamie Barber <JAMIEB@psc.state.ga.us> Tue, Dec 18, 2018 at 12:21 PM
To: Heather Pohnan <heather@cleanenergy.org>, Nick Cooper <ncooper@psc.state.ga.us>
Cc: Forest Bradley-Wright <forest@cleanenergy.org>

Heather and Forest,

Good afternoon. Please find attached Georgia Power's responses to your questions. Please let me know if you have any follow up.

Happy Holidays!

Jamie Barber

Energy Efficiency and Renewable Energy Manager

Georgia Public Service Commission

404-651-5958

From: Heather Pohnan [mailto:heather@cleanenergy.org]
Sent: Wednesday, November 28, 2018 5:55 PM
To: Jamie Barber <JAMIEB@psc.state.ga.us>; Nick Cooper <ncooper@psc.state.ga.us>
Cc: Forest Bradley-Wright <forest@cleanenergy.org>
Subject: Follow-Up Regarding Manufactured Homes and Street Lighting Programs

Good afternoon,

[Quoted text hidden]

SACE Follow up responses from GPC.docx

Response to SACE's questions regarding GPC's Advocate Case

Manufactured Homes Program

Please identify the number of program participants, in housing units, for new manufactured homes incentives in 2020-2022

GPC Response: 464 New homes (90% Energy Star & 10% Energy Star plus)

Please identify the number of program participants, in housing units, for existing manufactured homes incentives in 2020-2022.

GPC Response: 683 existing homes for strip heat replacement

As discussed yesterday, SACE has been told we would receive a follow up, by email, to clarify Georgia Power's standard practice when a manufactured home replacement occurs as an existing location, and whether an existing meter set would be used or if a replacement set would be issued.

GPC Response: GPC's standard practice regarding manufactured home replacement at an existing location is to use the existing meter. New meter sets are issued when a new premise is set up at a new location. Since manufactured homes are a very small part of GPC's overall residential base, we do not have the capability to track when a new manufactured home is set up at an existing location; we only have a record when a new meter is issued.

Did Georgia Power use new meter sets as the basis for participation targets for new manufactured homes?

GPC Response: Yes

If not, please explain what data or methods were used to derive participation targets.

Please provide the per units kwh savings results for Energy Star Manufactured Homes and Energy Star Plus Manufactured Homes from Georgia Power's savings modeling.

GPC Response: Energy Star: 9,445 & Energy Star Plus: 9,974

(Adjusted SACE provided kWh savings per home based on weather normalization from TN to GA)

Please indicate the approximate age or decade built of the manufactured homes used by Georgia Power as the baseline input.

GPC Response: GPC used savings estimate provided by SACE (Adjusted kWh savings per home based on weather normalization from TN to GA). GPC's baseline input for new

manufactured home is 14,663 kWh annually. This is derived from average usage data from an 18 year old manufactured home on the GPC system.

LED Street Lighting Program – Governmental

Georgia Power indicated during discussion that program savings for the LED Street Lighting Program reflect a lower number of eligible light fixtures than the advocates recommended. Please indicate the number of legacy light fixtures eligible for conversion as of September 2018, as well as the number assumed to be converted by 2019.

GPC Response: *Jan – Sept. 30, 2018 installations = 33,039*

Jan – Dec. 2018 Planned installations = 50,000
Jan – Dec. 2018 Revised projected 12/7/18 = 42,000

Jan – Dec. 2019 Planned installations = 50,000
Jan – Dec. 2019 Revised planned 12/7/18 installations = 56,000

Jan – Dec. 2020 Planned installations = 32,000
Jan – Dec. 2020 Revised planned 12/7/18 installations = 34,000

Did Georgia Power take into account any other factors, such as fixtures that are in the queue for upgrades, or fixtures leased by customers that submitted requests for upgrades when setting their input assumptions?

GPC Response: A Forecast of estimated energy reduction is calculated based on planned installations for the remaining years of the project and the monthly kWh associated with both the legacy fixtures to be removed and the replacement LED fixtures to be installed.

Exhibit SACE-FBW-4a
GPSC Docket 42311

ADVOCATE Model-Tables of Budgets and Savings

Budgets ($)	2020	2021	2022
Residential			
Income Qualified (Fully Funded)	$ 1,900,027	$ 2,090,422	$ 2,292,744
Mfr Home	$ 2,079,100	$ 2,573,770	$ 3,091,952
New Home_MF			
RES Behavioral	$ 1,046,163	$ 1,090,876	$ 1,084,433
RES TSTAT DR	$ 2,883,939	$ 3,035,091	$ 3,049,912
RES HEIP	$ 8,009,694	$ 9,595,508	$ 11,713,360
Refrig Recyc	$ 3,653,964	$ 4,817,466	$ 6,431,027
Specialty Lighting	$ 2,595,684	$ 2,752,329	$ 3,078,324
Res Subtotal	$ 22,168,572	$ 25,955,461	$ 30,741,751
Commercial			
Midstream Products	$ 1,134,770	$ 1,259,460	$ 1,194,794
COM_Small DI	$ 2,376,160	$ 3,068,418	$ 3,804,325
COM New Construction	$ 2,667,180	$ 3,462,965	$ 3,419,315
COM Street Lighting	$ 5,154,874	$ 1,323,468	$ 8,468
COM Outdoor LEDs	$ 7,838,737	$ 9,010,962	$ 9,780,002
COM Prescriptive	$ 30,553,631	$ 57,528,732	$ 106,377,022
COM Custom	$ 17,572,588	$ 35,492,704	$ 48,843,650
COM Behavioral	$ 403,880	$ 448,599	$ 413,605
Com Subtotal	$ 67,701,820	$ 111,595,309	$ 173,841,180
Industrial			
IND Custom	$ 3,487,967	$ 5,219,987	$ 5,220,502
Ind Subtotal	$ 3,487,967	$ 5,219,987	$ 5,220,502
Other			
Program Management/Reporting	$ 2,849,112	$ 2,928,888	$ 3,010,896
Residential - EE Consumer Awareness	$ 4,685,664	$ 4,788,749	$ 4,894,101
Commercial - EE Consumer Awareness	$ 1,135,628	$ 1,160,612	$ 1,186,146
Industrial - EE Consumer Awareness	$ 567,814	$ 580,306	$ 593,073
Other Subtotal	$ 9,238,219	$ 9,458,554	$ 9,684,216
Totals ($ million)	**$ 102.6**	**$ 152.2**	**$ 219.5**

Other Associated DSM Activities			
Residential - Power Credit Single Family	$ 630,963	$ 567,412	$ 510,753
Residential - Income Qualified (Tariff Based Financing)	$ 1,500,000	$ 1,533,000	$ 1,566,726
Residential - HopeWorks	$ 288,750	$ 356,829	$ 357,926
Residential - Pilot Programs	$ 2,000,000	$ 2,044,000	$ 2,088,968
Commercial - Pilot Programs	$ 2,000,000	$ 2,044,000	$ 2,088,968
Education Initiative - Learning Power	$ 3,177,385	$ 3,247,287	$ 3,318,727
Program Design	$ 600,000	$ 308,400	$ 105,678
Total	$ 10,197,097	$ 10,100,928	$ 10,037,747
Total Portfolio Budget ($ million)	**$ 112.79**	**$ 162.33**	**$ 229.53**

Advocate Model-Tables of Budgets and Savings

Savings (GWh)	2020	2021	2022
Residential			
Income Qualified (Fully Funded)	2.7	2.8	3.1
Mfr Home	12.2	14.8	17.5
New Home_MF			
RES Behavioral	33.6	33.6	33.6
RES TSTAT DR	4.5	4.5	4.5
RES HEIP	21.5	25.8	31.1
Refrig Recyc	12.1	14.3	16.9
Specialty Lighting	9.9	10.9	12.1
Income Qualified (Tariff Based Financing)			
Res Subtotal	96.453	106.788	118.699
Commercial			
Midstream Products	4.3	4.3	4.3
COM_Small DI	21.8	27.3	33.5
COM New Construction	17.0	23.4	23.4
COM Street Lighting	16.0	4.0	0.0
COM Outdoor LEDs	23.0	25.9	27.7
COM Prescriptive	300.3	416.2	563.1
COM Custom	77.7	105.3	136.8
COM Behavioral	8.3	8.3	8.3
Com Subtotal	468.4	614.7	797.1
Industrial			
IND Custom	14.3	21.3	21.3
Ind Subtotal	14.3	21.3	21.3
Totals	**579.2**	**742.8**	**937.1**

ADVOCATE Model-Tables of Economic Results

TRC Net Impacts	2020	2021	2022
Residential			
Income Qualified (Fully Funded)	$ 37,968	$ 19,825	$ 138,327
Mfr Home	$ 7,293,542	$ 8,918,321	$ 10,608,307
New Home_MF			
RES Behavioral	$ 132,905	$ 114,132	$ 147,085
RES TSTAT DR	$ 2,937,519	$ 2,914,439	$ 3,030,508
RES HEIP	$ (449,553)	$ (112,855)	$ 448,346
Refrig Recyc	$ (4,711)	$ (138,725)	$ (649,199)
Specialty Lighting	$ 808,342	$ 1,038,850	$ 1,207,966
Power Credit	$ (258,525)	$ (226,429)	$ (202,791)
Res Subtotal	$ 10,497,488	$ 12,527,559	$ 14,728,550
Commercial			
Midstream Products	$ 445,381	$ 355,454	$ 455,648
COM_Small DI	$ 9,493,386	$ 12,194,340	$ 15,842,092
COM New Construction	$ 2,399,837	$ 3,657,459	$ 3,857,759
COM Street Lighting	$ 1,640,932	$ 412,860	$ (8,468)
COM Outdoor LEDs	$ 1,930,233	$ 2,231,763	$ 2,508,600
COM Prescriptive	$ 141,517,971	$ 199,881,261	$ 266,520,843
COM Custom	$ 18,945,696	$ 20,376,488	$ 23,622,992
COM Behavioral	$ 77,589	$ 43,463	$ 89,283
Com Subtotal	$ 176,451,024	$ 239,153,090	$ 312,888,751
Industrial			
IND Custom	$ 2,764,406	$ 5,848,098	$ 6,056,078
Ind Subtotal	$ 2,764,406	$ 5,848,098	$ 6,056,078
Cross-Cutting Costs	$ (3,449,112)	$ (3,237,288)	$ (3,116,575)
Totals ($ million)	**$ 186,263,806**	**$ 254,291,460**	**$ 330,556,804**

ADVOCATE Model-Tables of Economic Results

RIM Net Impacts	2020	2021	2022
Residential			
Income Qualified (Fully Funded)	$ (3,184,733)	$ (3,488,150)	$ (3,900,655)
Mfr Home	$ (9,844,740)	$ (11,946,765)	$ (14,139,267)
New Home_MF			
RES Behavioral	$ (4,257,952)	$ (4,373,324)	$ (4,439,095)
RES TSTAT DR	$ (3,356,609)	$ (3,518,160)	$ (3,543,608)
RES HEIP	$ (25,100,594)	$ (30,635,361)	$ (37,598,858)
Refrig Recyc	$ (9,769,124)	$ (12,218,352)	$ (15,353,566)
Specialty Lighting	$ (8,406,089)	$ (9,294,451)	$ (10,493,317)
Power Credit	$ (546,525)	$ (490,105)	$ (440,933)
Res Subtotal	$ (64,466,365)	$ (75,964,668)	$ (89,909,299)
Commercial			
Midstream Products	$ (5,810,759)	$ (6,038,321)	$ (6,078,790)
COM_Small DI	$ (16,020,588)	$ (20,412,428)	$ (25,471,908)
COM New Construction	$ (7,752,673)	$ (10,609,355)	$ (10,722,925)
COM Street Lighting	$ (15,041,937)	$ (3,849,613)	$ (8,468)
COM Outdoor LEDs	$ (22,051,391)	$ (25,367,749)	$ (27,658,413)
COM Prescriptive	$ (196,683,566)	$ (292,582,791)	$ (429,985,805)
COM Custom	$ (36,800,201)	$ (61,441,240)	$ (83,505,369)
COM Behavioral	$ (360,162)	$ (403,919)	$ (367,942)
Com Subtotal	$ (300,521,278)	$ (420,705,416)	$ (583,799,619)
Industrial			
IND Custom	$ (9,243,578)	$ (12,167,683)	$ (12,358,637)
Ind Subtotal	$ (9,243,578)	$ (12,167,683)	$ (12,358,637)
Cross-Cutting Costs	$ (3,449,112)	$ (3,237,288)	$ (3,116,575)
Totals	**$ (377,680,333)**	**$ (512,075,054)**	**$ (689,184,129)**

ADVOCATE Model-Tables of Economic Results

Program Administrator Net Impacts	2020	2021	2022
Residential			
Income Qualified (Fully Funded)	$ (183,531)	$ (221,425)	$ (139,730)
Mfr Home	$ 7,836,083	$ 9,593,313	$ 11,421,316
New Home_MF			
RES Behavioral	$ 132,905	$ 114,132	$ 147,085
RES TSTAT DR	$ 2,187,519	$ 2,147,939	$ 2,247,145
RES HEIP	$ (320,303)	$ (225,687)	$ (203,396)
Refrig Recyc	$ (664,388)	$ (1,199,324)	$ (2,068,980)
Specialty Lighting	$ 3,903,666	$ 4,565,499	$ 5,158,819
Power Credit	$ (546,525)	$ (490,105)	$ (440,933)
Res Subtotal	$ 12,345,427	$ 14,284,342	$ 16,121,327
Commercial			
Midstream Products	$ 2,187,337	$ 2,135,733	$ 2,275,093
COM_Small DI	$ 11,646,741	$ 14,784,054	$ 18,603,225
COM New Construction	$ 3,124,817	$ 4,676,238	$ 4,898,951
COM Street Lighting	$ 1,640,932	$ 412,860	$ (8,468)
COM Outdoor LEDs	$ 1,930,233	$ 2,231,763	$ 2,508,600
COM Prescriptive	$ 166,017,905	$ 220,886,402	$ 276,163,232
COM Custom	$ 22,996,179	$ 20,463,721	$ 23,011,193
COM Behavioral	$ 5,695	$ (30,013)	$ 14,190
Com Subtotal	$ 209,549,838	$ 265,560,758	$ 327,466,018
Industrial			
IND Custom	$ 2,678,741	$ 5,432,538	$ 5,628,790
Ind Subtotal	$ 2,678,741	$ 5,432,538	$ 5,628,790
Cross-Cutting Costs	$ (3,449,112)	$ (3,237,288)	$ (3,116,575)
Totals ($ million)	**$ 221,124,894**	**$ 282,040,351**	**$ 346,099,560**

ADVOCATE Model-Tables of Economic Results			
Participant Cost Test Net Impacts	**2020**	**2021**	**2022**
Residential			
Income Qualified (Fully Funded)	$ 3,222,701	$ 3,507,975	$ 4,038,982
Mfr Home	$ 17,138,283	$ 20,865,086	$ 24,747,575
New Home_MF			
RES Behavioral	$ 4,390,857	$ 4,487,456	$ 4,586,180
RES TSTAT DR	$ 6,294,128	$ 6,432,599	$ 6,574,116
RES HEIP	$ 24,651,041	$ 30,522,506	$ 38,047,203
Refrig Recyc	$ 9,764,413	$ 12,079,628	$ 14,704,367
Specialty Lighting	$ 9,214,431	$ 10,333,301	$ 11,701,283
Power Credit	$ 288,000	$ 263,676	$ 238,142
Res Subtotal	$ 74,963,853	$ 88,492,227	$ 104,637,849
Commercial			
Midstream Products	$ 6,256,140	$ 6,393,775	$ 6,534,438
COM_Small DI	$ 25,513,974	$ 32,606,769	$ 41,314,000
COM New Construction	$ 10,152,509	$ 14,266,814	$ 14,580,684
COM Street Lighting	$ 16,682,869	$ 4,262,473	$ -
COM Outdoor LEDs	$ 23,981,624	$ 27,599,513	$ 30,167,013
COM Prescriptive	$ 338,201,538	$ 492,464,052	$ 696,506,648
COM Custom	$ 55,745,896	$ 81,817,728	$ 107,128,362
COM Behavioral	$ 437,752	$ 447,382	$ 457,225
Com Subtotal	$ 476,972,302	$ 659,858,506	$ 896,688,370
Industrial			
IND Custom	$ 12,007,984	$ 18,015,781	$ 18,414,714
Ind Subtotal	$ 12,007,984	$ 18,015,781	$ 18,414,714
Totals	$ 563,944,139	$ 766,366,514	$ 1,019,740,933

Advocate Case:

General reason for changes is that the Advocate Case Planner was assembled and presented in November using the current measure assumptions, program cost assumptions, and forecast cost assumptions (B18) at that time. In order to meet the annual targets, which had varying escalation rates by program in Years 1 through 3, the Planner was incrementally, manually adjusted to the savings targets requested by the Advocates in each year. This required that participation levels in Years 1 and 2 be fixed prior to adjusting subsequent years, meaning that subsequent changes to measure-specific assumptions would not adjust estimated participation rates.

Since the November and December version, the measures have continued to be reviewed against final evaluation results, which resulted in select changes to measure savings values, incorporation of the updated Georgia Power forecast (B19), and modifications to estimated program administrative and management costs from feedback from Georgia Power program staff, consistent with changes made to the Company's proposed case.

Because of the fixed participation values for individual measures, these modifications resulted in different budget and savings for select programs as the manual, incremental adjustments were not re-done to each measure and program to reset to the Advocate suggested values due to time constraints.

Additional specific notes on each summary component include:

Budget Changes:

- Changes to overall program admin and management consistent with Proposed Case
- Refinement of measures assumptions consistent with Proposed Case
- HopeWorks
    - Budget changed due to measure-specific adjustments (to match evaluation results or TRM values)

kWh Changes:

- Income Qualified (Fully Funded) – savings provided in Dec were incorrect. Based on proposed budgets, savings are 2.7-3.1 GWh per year.
- HEIP – with new program economics, additional measures failed TRC (ASHP) – these measures were dropped in final version of Proposed Case and Advocate Case was updated in similar fashion (same measures dropped)
- Com Prescriptive – in comparing values versus final evaluation per unit savings, 4 or 5 measures required adjustment to match evaluation values, and based on the metrics currently included in the Advocate Planner (including a fixed participation value to match the Advocate target), this reduced overall savings.
    - Small DI – savings went up by 1 GWh annual due to similar measure updates

Program Economics:

- Cost-benefit test results were updated based on current (B19) Georgia Power forecast. The net result of this updated forecast was that TRC net benefits, PACT net benefits, and PCT net benefits all increased, while RIM net costs also increased.

Duke Energy Carolinas Collaborative Meeting

January 31, 2019

DUKE ENERGY®

Community Outreach Programs

Overview – Customer Assistance Funds

Customer Assistance Funds	2018	2018		2017	2017
ENERGY NEIGHBOR FUND	**Customer Contributions**	**Company Contribution**		**Customer Contributions**	**Company Contribution**
NORTH CAROLINA	$ 266,000.00	$ 306,000.00		$ 273,000.00	$ 313,000.00
SOUTH CAROLINA	$ 26,000.00	$ 26,000.00		$ 28,000.00	$ 28,000.00
FLORIDA	$ 194,000.00	$ 252,000.00		$ 209,000.00	$ 269,000.00
TOTAL	$ 486,000.00	$ 584,000.00		$ 510,000.00	$ 610,000.00
SHARE THE WARMTH - CAROLINAS	**Customer Contributions**	**Company Contribution**		**Customer Contributions**	**Company Contribution**
NORTH CAROLINA*	$ 350,000.00	$ 577,500.00		$ 344,250.00	$ 576,750.00
SOUTH CAROLINA**	$ 115,000.00	$ 197,500.00		$ 114,750.00	$ 197,250.00
TOTAL	$ 465,000.00	$ 775,000.00		$ 459,000.00	$ 774,000.00
HEATSHARE – OHIO	**Customer Contributions**	**Company Contribution**		**Customer Contributions**	**Company Contribution**
	$ 111,000.00	$ 200,000.00		$ 110,000.00	$ 200,000.00
HELPING HAND - INDIANA	**Customer Contributions**	**Company Contribution**		**Customer Contributions**	**Company Contribution**
	$ 112,000.00	$ 500,000.00		$ 118,000.00	$ 700,000.00
WINTERCARE - KENTUCKY	**Customer Contributions**	**Company Contribution**		**Customer Contributions**	**Company Contribution**
	$ 26,000.00	$ 50,000.00		$ 27,000.00	$ 50,000.00
SUBTOTAL Customer Assistance Funds	**$ 1,200,000.00**	**$ 2,109,000.00**		**$ 1,224,000.00**	**$ 2,334,000.00**
DEC NC Rate Settlement $ distributed to STW agencies in 2018*		$ 4,000,000.00			
DEC SC Merger Settlement $ distributed to STW agencies in 2018**		$ 600,000.00			
	Total Company Contributions	$ 6,709,000.00			$ 2,334,000.00

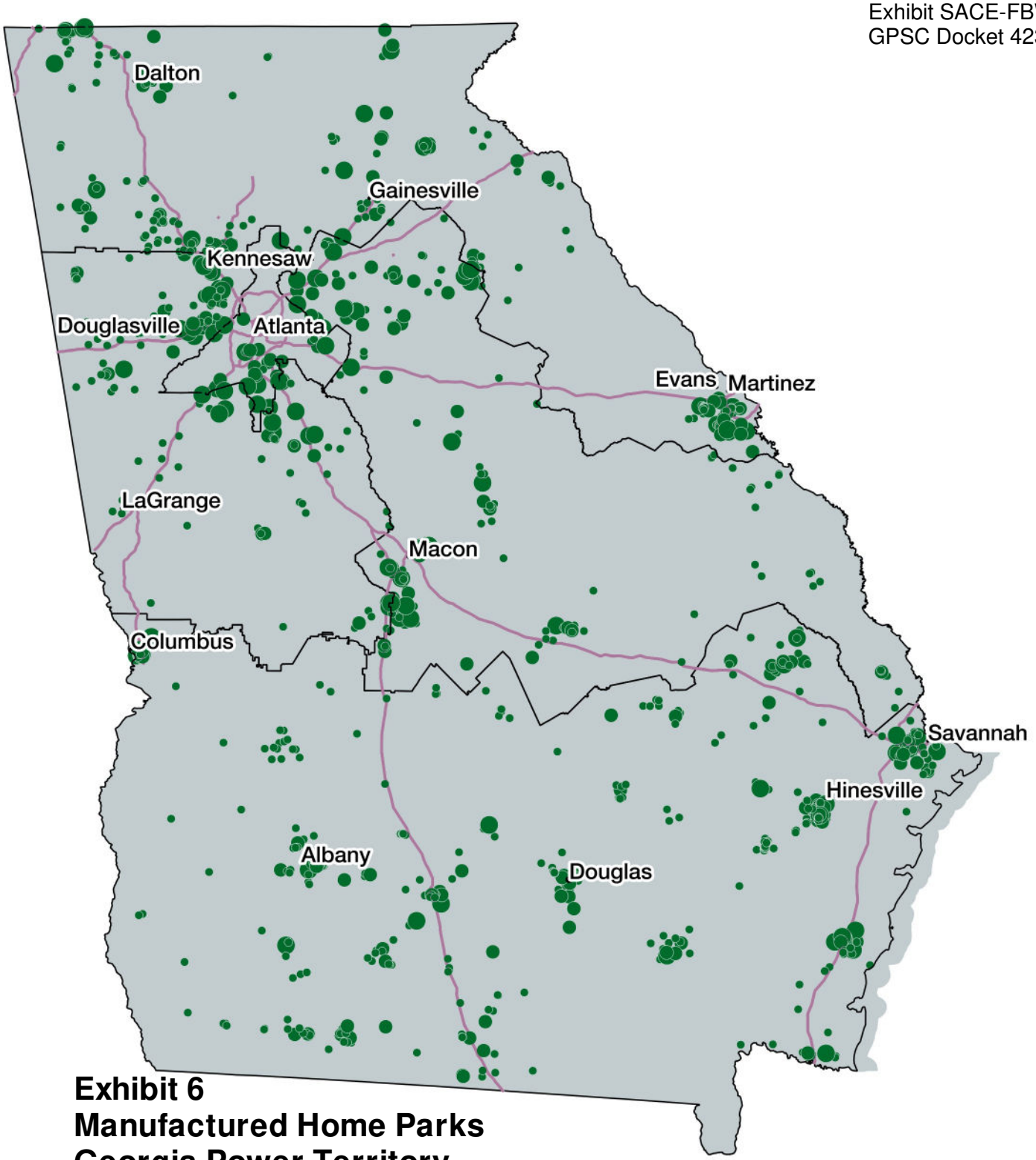


Exhibit 6
Manufactured Home Parks
Georgia Power Territory

Park Size

- Small (<50)
- Medium (51-100)
- Large (>100)
- City
- Primary Roadways

Data Sources

Primary roadway and cities via U.S. Census Bureau available at https://www.census.gov/cgi-bin/geo/shapefiles/index.php

Mobile / manufactured home park information (size, name, location, and management contact info) via Homeland Security Infrastructure Program (HSIP) available at: https://hifld-geoplatform.opendata.arcgis.com/datasets/mobile-home-parks