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November 14, 2018

Via Electronic Delivery

Walter L. Thomas, Jr., Secretary
Alabama Public Service Commission
RSA Union Building
100 North Union Street, Suite 950
Montgomery, AL 36104

RE: Docket No. U-4226, Rate Rider RGB (Supplementary, Back-Up, or Maintenance Power)

Dear Secretary Thomas:

Due to confidentiality concerns raised by Petitioner in Docket No. U-4226, Intervenors are withdrawing the redacted filings from the previous day, November 13, and resubmitting the following redacted filings on November 14, 2018. This has been confirmed with the Commission, and Intervenors submissions will still be considered timely filed.

Intervenors reserve all rights to contest confidentiality designations claimed by the Petitioner, regardless of claimed confidentiality designations herein. This refiling is made as a courtesy to Petitioner and in no way should be construed as agreeing with Petitioner's claimed confidentiality designations.

Please call if you have any questions or concerns.

Sincerely,

Keith Johnston
Southern Environmental Law Center

Enclosures
KAJ/ ghl

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RE: Docket No. U-4226, Rate Rider RGB (Supplementary, Back-Up, or Maintenance Power)

Dear Secretary Thomas:

On behalf of the Intervenors James H. Bankston, Ralph B. Pfeiffer, Jr. and Gasp, Inc., in Docket No. U-4226, pleased find the enclosed, redacted testimony of Karl Rábago, expert witness in this matter. This testimony, along with supporting evidence, is being filed pursuant to a Procedural Ruling from the Public Service Commission, dated 23rd of August, 2018, in Docket Nos. 32767 and U-4226. In this ruling, the Commission granted Intervenors the right to submit testimony and evidence responsive to Alabama Power Company's filing in Docket U-4226 attempting to modify Rate Rider RGB. Alabama Power Company sought to modify Rate Rider RGB in response to Intervenors' original complaint in Docket No. 32767.

Intervenors are submitting this filing to the Commission through its e-filing system, consistent with the rules and practices of the Commission. The parties agreed, and the Commission allowed, an extension of time in filing this testimony until November 12, 2018, and the Veterans Day holiday allowed for electronic filing on November 13. Since this filing includes trade secret, confidential information, a sealed version of this filing will also be hand delivered and submitted to the Commission.

Please call if you have any questions or concerns.

Sincerely,

Keith Johnston

Keith Johnston
Southern Environmental Law Center

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CERTIFICATE OF SERVICE

I certify that copies of the foregoing and following have been served upon the following, either by hand-delivery, electronic transmission, or by depositing a copy of the same in the United States Mail, properly addressed and postage prepaid on this 13th day of November, 2018.

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BEFORE THE ALABAMA PUBLIC SERVICE COMMISSION

JAMES H. BANKSTON, RALPH B. PFEIFFER, JR., Intervenors,	)	**Docket No. U-4226**
GASP, INC. Intervenor	)	
v.	)	
ALABAMA POWER CO., Petitioner	)	
In re: Rate Rider RGB (Supplementary, Back-up, or Maintenance Power)	)	

DIRECT TESTIMONY OF KARL R. RÁBAGO

ON BEHALF OF

Intervenors James H. Bankston, Ralph B. Pfeiffer, Jr. and Gasp, Inc.

November 12, 2018

I. INTRODUCTION

Q. Please state your name, business name and address, and role in this matter.

A. My name is Karl R. Rábago. I am the principal of Rábago Energy LLC, a New York limited liability company, located at 62 Prospect Street, White Plains, New York. I appear here in my capacity as an expert witness on behalf of Intervenors in Docket U-4226.

Q. **Please summarize your experience and expertise in the field of electric utility regulation.**

A. I have worked for more than 28 years in the electricity industry and related fields. I am actively involved in a wide range of electric utility issues across the United States, as an expert witness; and in my capacity as Executive Director of the Pace Energy and Climate Center, as a party in New York rate cases and in Reforming the Energy Vision proceedings. My previous employment experience includes Commissioner with the Public Utility Commission of Texas, Deputy Assistant Secretary with the U.S. Department of Energy, Vice President with Austin Energy, and Director with AES Corporation, among others. A detailed résumé is attached as Exhibit KRR-1.

Q. Do you have a specific experience relating to distributed energy resources, including distributed solar generation?

A. Yes. I have extensive experience working in the field of distributed energy resources, a category of energy resources that includes distributed solar generation, energy efficiency, energy management, energy storage, and other technologies and related services. That experience includes regulation of electric utilities in Texas, including review and approval of rates, tariffs, plans, and programs proposed by electric utilities. I co-authored

the seminal treatise on distributed energy resource value, entitled "Small Is Profitable,"[1] when I was a managing director at the Rocky Mountain Institute. I have also published several articles and essays relating to the topic, as detailed in my résumé. As a vice president for Distributed Energy Services for Austin Energy, I had responsibility for all of the utility's customer-facing programs relating to distributed solar generation, energy efficiency, demand management, low-income weatherization, energy storage, electric transportation, building energy ratings and codes, and the utility's electric vehicle initiatives. While with Austin Energy, one of the largest municipal electric utilities in the nation, I developed and implemented the nation's first distributed solar tariff based on objective and comprehensive valuation of solar generation, often referred to as the "Value of Solar Tariff." At the U.S. Department of Energy, I was the federal executive responsible for the nation's research, development, and deployment programs relating to renewable energy, energy efficiency, energy storage, and other advanced energy technologies in the Department's Office of Utility Technologies. In my current position with the Pace Energy and Climate Center, based at the Pace University Elisabeth Haub School of Law in White Plains, New York, I lead a team that is actively engaged as a public interest intervenor in the ground-breaking "Reforming the Energy Vision" process administered by the New York Public Service Commission. The Pace Energy and Climate Center is committed to growing self-sustaining markets for distributed energy resources in order to save money for consumers and utilities, advance free market competition, and address environmental challenges. I am a frequent speaker, commentator, and expert witness across the country on issues relating to electric utility

[1] Amory B. Lovins, et al., *"Small is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size,"* Rocky Mountain Institute (2003). Witness Rábago was a co-author of the book.

regulation, distributed energy resource markets and technologies, and electricity sector market reform.

Q. Have you ever testified before the Alabama Public Service Commission ("Commission") or other regulatory agencies?

A. I have not previously appeared before the Commission as an expert witness. In the past six years, I have submitted testimony, comments, or presentations in proceedings in Arkansas, Arizona, California, Colorado, Connecticut, Florida, Georgia, Guam, Hawaii, Indiana, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, and Wisconsin, and before the U.S. Congress, the Federal Energy Regulatory Commission, and the Federal Trade Commission. A listing of my recent testimony, which includes testimony in a wide range of public service commission proceedings relating to solar tariffs, distributed energy resources, grid modernization, electric utility transformation, and utility planning and rate making, is attached as Exhibit KRR-2.

Q. What materials did you review in preparing this testimony?

A. I reviewed applicable provisions of Alabama law and regulation, the testimony, documents, and discovery responses by Alabama Power Company ("Company") in these proceedings, prior related Commission actions and proceedings, the deposition testimony of Natalie Dean, affidavits from witnesses and other related materials.

Q. What is the purpose of this testimony?

A. In this testimony, I review the Company's Rate Rider RGB (hereinafter "Rate Rider RGB"), primarily with regard to Part I.B., Revision Fifth proposed by the Company in its

Docket Nos. U-4226 and 18126 on December 20, 2012. The Commission's order approving modifications in that proceeding is dated January 10, 2013, and the new Rate Rider RGB became effective in May 2013. I also review the Company's proposed modifications to Rate Rider RGB (Revision Sixth) filed on June 15, 2018 in Docket No. U-4226. Based on that review, I conclude that the rate is unjust and unreasonable, and therefore, I recommend that the Commission order the Company to withdraw Part I.B. of Rate Rider RGB and make several modifications in its approach to customer-owned distributed generation.

Q. How is this testimony organized?

A. My testimony is organized as follows:

I. Introduction (above)

II. The Company's Rate Rider RGB, Back-Up Power Part I.B., as Approved and as Proposed for Modification

III. Evaluation of the Company's Rate Rider RGB

IV. Conclusions and Recommendations

II. THE COMPANY'S RATE RIDER RGB, BACK-UP POWER PART I.B., AS APPROVED AND AS PROPOSED FOR MODIFICATION

Q. Please summarize the Company's Rate Rider RGB as approved by the Commission and as proposed for modification.

A. Rate Rider RGB is the Company's rate rider providing the terms and conditions for back-up, supplementary, and maintenance power. It applies to customers who self-generate electricity. Rate Rider RGB was amended by Commission order at the request of the Company, effective in 2013, to add section I.B., relating to new charges for customers on

Company rates FD, LPS, RTA, and SCH. Now, the Company proposes to increase those charges and otherwise leave Rate Rider RGB as approved in 2013. The specific charges in Rate Rider RGB that I address in this testimony are the "Capacity Reservation Charge" set out in Rate Rider RGB, Back-Up Power I.B.1., and the so-called "Super-Peak Energy Charge" set out in Rate Rider RGB, Back-Up Power I.B.2. Rate Rider RGB is a mandatory rate for "any customer connected to the Company's system where the customer obtains any portion of its electric requirements from installed on-site, non-emergency electric generating capacity that operates in parallel with the Company's system."[2] Under Rate Rider RGB, the act by a customer of obtaining *any* energy from such an interconnected system "render[s] the customer a partial requirements customer and require[s] the Company to furnish Supplementary, Back-up, and/or Maintenance Power to the premises."[3] The Capacity Reservation Charge is a Back-Up Power charge that applies to all distributed generation customers who take service under Rates FD, LPS, RTA, and SCH. The Super-Peak Energy Charge is a Back-Up Power charge available to customers taking service under Rate RTA.

Q. How are customer-generators charged for energy and capacity that they purchase from the Company when not relying on their own self-generation?

A. It is not entirely clear from the language in Rate Rider RGB what charges apply for energy and capacity services from the Company. Presumably, customers subject to the Rate Rider RGB Capacity Reservation or Super-Peak Back-Up Energy charges pay consumption charges pursuant to their basic applicable service rate (FD, LPS, RTA, or

[2] Ala. Power Co., Rate Rider RGB (Revision Fifth and Proposed Revision Sixth) at 1, https://www.pscpublicaccess.alabama.gov/pscpublicaccess/PSC/PSCDocumentDetailsPage.aspx?DocumentId=404ecea8-12ff-4cf8-a493-2c2c3c229c2e&Class=Filing [hereinafter Rate Rider RGB].
[3] *Id*.

SCH), but the language of the rider is unclear. Rate Rider RGB says that customers may "remain on their current rate" (and are subject to the Back-Up Power charges) "when the nameplate capacity of the installed on-site, non-emergency generating capacity is no greater than the lesser of 6% of the maximum integrated fifteen (15) minute kW demand during the previous 11 months or 25 kW."[4] Assuming an average residential customer maximum demand of [redacted],[5] according to Rate Rider RGB, customers are therefore not eligible to remain on their current rate for Supplementary or Back-Up Power if the nameplate capacity of their distributed generation exceeds [redacted]. However, Rate Rider RGB does not say what rates apply for which services for customers with systems larger than the 6% of maximum demand or 25 kW thresholds. I will offer recommendations to address this problem later in my testimony.

Company witness Dean offered an alternative interpretation of the intended meaning of the "remain on their current rate" provisions in the tariff, though this interpretation cannot be gleaned from the plain language of the tariff without external explanation. That interpretation is that customers who are on any tariff not expressly listed in the tariff are entitled to remain on their current tariff even after installing a distributed generation system unless their system size exceeds the threshold levels.[6]

Q. What are the rate classes FD, LPS, RTA, and SCH?

A. Rate FD is the family dwelling-residential service rate. Rate LPS is the rate for non-residential lighting or power service for customers with maximum demand not exceeding

[4] *Id.* at 2–3.

[5] This value is the average monthly peak capacity of the Company's "Representative Profile." (*See* Exhibit KRR-3, Resp. of Ala. Power Co. to Intervenors' First Set of Interrogs. & Reqs. for Produc. of Docs, No. 1-27, [redacted] [hereinafter Ala. Power Resp. to Interrogs.], at tab [redacted]

[6] Ex. KRR-4, Dean Dep. 148:13–155:7 (Oct. 29, 2018). Cited portions of Natalie Dean's October 29, 2018 deposition have been excerpted and attached in Exhibit KRR-4.

20 kW and energy usage not exceeding 24 GWh in the previous 12 months. Rate RTA is a time-of-use residential rate option for single residences and individual family apartments that has energy charges differentiated by season of the year and hour of the day. Rate SCH is a rate for electric heat pre-college schools that includes a seasonally differentiated declining energy charge indexed to the amount of energy per kW. Taken together, the Rate Rider RGB modifications imposed new charges, and now the Company proposes higher charges, for solar customer-generators that do not take service under a rate with a ratcheted demand charge.

Q. What is the Company's stated authorization for the Rate Rider RGB charges?

A. The Company states that it is "entitled under both federal and Alabama law to collect charges for back-up power service."[7] Under regulations promulgated by the Federal Energy Regulatory Commission ("FERC"), electric utilities shall provide supplementary power and back-up power to qualifying facilities.[8] Under the Alabama Code, "[t]o the extent a utility purchases electrical energy from any distributed generation facility under [a "renewable energy program whereby the utility purchases energy from a distributed generation facility that generators electrical energy from a renewable resource"[9]], the Commission "shall approve the utility's rates, fees, and charges for services to a distributed generation facility including . . . supplementary power [and] back-up

[7] Letter from Scott Grover, Balch & Bingham LLP, to Walter Thomas, Secretary, Ala. Pub. Serv. Comm'n, Rate Rider RGB (Docket No. U-4226), at 1 (June 15, 2018), https://www.pscpublicaccess.alabama.gov/pscpublicaccess/PSC/PSCDocumentDetailsPage.aspx?DocumentId=404ecea8-12ff-4cf8-a493-2c2c3c229c2e&Class=Filing.
[8] Federal regulations require that electric utilities provide supplementary and back-up power upon request by a qualifying facility. *See* 18 C.F.R. § 292.305. Supplementary and back-up power are defined in federal regulations. *See* 18 CFR §§ 292.101(8) & (9). Qualifying facilities are defined in 18 C.F.R. Part 292, Subpart B, and include small renewable energy generation facilities, including the solar customer-sited generation facilities covered by Rate Rider RGB.
[9] Ala. Code § 37-4-140(b).

power."[10] As discussed later in this testimony, however, there are material and significant differences between the federal definitions of supplementary power and back-up power and those used by the Company. The Alabama Code does not define the terms.

Q. What is the Company's justification for the charges imposed through Rate Rider RGB?

A. The Company states, in pertinent part, that Rate Rider RGB "provides for the recovery of costs associated with providing the services offered through the rate rider to customers with interconnected, on-site generation."[11]

Q. What kinds of customers are impacted by the Rate Rider RGB modifications?

A. The customers affected by Rate Rider RGB are non-demand charge, energy-only customers or customers on non-ratcheted demand rates[12] who theoretically could install any form of generation to reduce their bills. Customer-owned solar generation is increasingly economic for customers, though Rate Rider RGB impairs the economics of private customer investments in distributed solar generation.[13] As a result, Rate Rider RGB operates solely to impose discriminatory charges on customers who install solar systems.[14]

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[10] *Id.* § 37-4-140(c). It is my presumption that the utility obligation to propose just and reasonable rates for back-up and supplementary power services for Commission approval under this statute springs from both the Alabama Code and federal law.

[11] Test. of Natalie Dean on behalf of Ala. Power Co. 7:3-5 (June 15, 2018), https://www.pscpublicaccess.alabama.gov/pscpublicaccess/PSC/PSCDocumentDetailsPage.aspx?DocumentId=404ecea8-12ff-4cf8-a493-2c2c3c229c2e&Class=Filing. [hereinafter Dean Test.].

[12] *Id.* 9:4–10:15.

[13] [redacted]. DG fueled by fossil fuels would not be economic under current market conditions. [redacted]. *See* Ex. KRR-4, Dean Deposition 141:3–143:6. [redacted]

See, e.g., Dean Test., Exs. ND-2 to ND-7, which refer exclusively to solar customers. Remarkably, the Company asserts that [redacted]

Q. Did the Company perform and submit a rate impact analysis to accompany its initial or subsequent proposals for Rate Rider RGB?

A. No. The Company did not perform or provide a rate impact analysis to accompany its proposals for Rate Rider RGB. The Company offered no evidence, for example, that it evaluated the impacts of its charges on large customers or small customers, large or small exporters of DG energy, high users or low users, high or low load-factor customers. The Company collected about [redacted] in charges under Rate Rider RGB in 2016.[15] To put this amount in perspective, the Company collected more than $5.6 billion for sales in 2016.[16] Empirically, therefore, the Company's Rate Rider RGB charges could be financially devastating to a distributed generation customer but appear to be financially unnecessary to the Company.

Q. What impact do the Rate Rider RGB modifications have on the economics of customer investments in self-generation?

A. I will address the manner in which the Ride Rider RGB charges are calculated later in this testimony. As proposed in this proceeding, the Company would impose a monthly "Capacity Reservation Charge" of $5.42 per kilowatt of customer generation, based on the nameplate capacity of the generation system. For a 5 kW solar system that costs $3.00 per watt,[17] the total system cost is $15,000. Rate Rider RGB would add $27.10 in monthly charges, or $325.20 in annual charges, paid to the utility. Over the 30-year life of a typical solar system, these charges, if they did not go up, would total $9,756, adding

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[redacted]. *See* Ex. KRR-3, Ala. Power Resp. to Interrogs. [redacted]
Ex. KRR-3, Ala. Power Resp. to Interrogs. [redacted]

[16] Dean Test., Ex. ND-1, Sched. 210, p. 14.

[17] *See, e.g.*, EnergySage, "*How much do solar panels cost in the U.S. in 2018?*," https://news.energysage.com/how-much-does-the-average-solar-panel-installation-cost-in-the-u-s/ (last visited Nov. 12, 2018).

65% to the private investment cost of the solar system.[18] The Company's Rate Rider RGB charge does not vary with the level or pattern of a customer's usage, is not impacted by the extent to which the customer reduces or contributes to system demand, and is not based on any data measured at the customer's premises.[19] In other words, the Rate Rider RGB Capacity Reservation Charge makes solar investment materially less economic or totally uneconomic for many customers because it operates as a flat tax on each unit of solar investment, without regard to the customer's material usage, or cost or benefit impact on the utility or other customers.

Q. How does the Company develop the Back-Up Power service charges on customer-generators in the Rate Rider RGB?

A. The Company takes several distinct steps to developing the charges it imposes on customers for Back-Up Power service in Rate Rider RGB:

- The Company uses a definition of back-up power service that is materially different from the federal regulatory definition for back-up service, and that calibrates charges as a kind of insurance charge, but one that is unsupported by actuarial data. That is, where the federal definition describes back-up service as service *supplied* to replace energy and capacity due to an *unscheduled outage* at the distributed generation facility, the Company in Rate Rider RGB defines back-up service as service *available* to replace energy used at the customer's premises during such unscheduled outages.[20]
- The Company models, but does not meter, a single, hypothetical customer with a 4.3 kW solar system and that customer's usage before and after the installation and operation of the solar system. The Company calls this the "representative profile."
- The Company uses data from a recent cost-of-service study to estimate the difference in energy and capacity costs for this hypothetical pre- and post-solar customer.
- The Company then calculates how much revenue it would not collect from this single hypothetical customer after the solar system operates and, after some adjustments,

[18] These charges are having real world impacts. Customers who install solar must pay thousands of dollars in charges to Alabama Power over the 30-year life of their systems. *See, e.g.*, Ex. KRR-10, Affs. Bankston ¶¶ 8–10, Johnston ¶ 4, Attch. ¶ 8, Pfeiffer ¶¶ 8–10 and Thorne ¶ 4, Attch. ¶ 8. The charges are also dissuading others from installing solar systems. *See id.* Aff. Hansen ¶ 6.
[19] Ex. KRR-4, Dean Dep. 55:4 to 57:16.
[20] Rate Rider RGB at 1.

including an arbitrary adjustment for demand-related cost reduction, arrives at a net level of unrecovered costs for that one representative hypothetical customer with a 4.3 kW solar system.

- The Company then divides the unrecovered revenues amount by the size of the hypothetical average solar system to arrive at a per-kW charge that it applies to every solar customer regardless of their actual system size or performance, or of the time or level of their energy use.
- For the optional Super-Peak Energy Charge available to customers on Rate RTA, the Company uses exactly the same methodology, but substitutes a different hypothetical level of pre- and post-solar revenues due to assumed differences in consumption levels, and in the final step, allocates the unrecovered revenue on a kWh basis to the assumed number of kWh that the hypothetical customer (based on a Rate FD profile) on Rate RTA would use during the super-peak hours of 3:00 to 5:00 pm.[21]

[redacted][22] Therefore there is no contention that the act of export or reliance on the grid for export is driving these charges.

Q. How does the Company rely upon or reject cost-of-service rate making methods in its development of Rate Rider RGB charges for back-up power service?

A. The charges for back-up power service in Rate Rider RGB are not based on or calibrated against any actual data relating to the frequency, duration, or level of unscheduled outages at any of the distributed generation facilities interconnected to its system.[23] Instead, the Company starts with a "representative profile" for a hypothetical customer who does not have distributed generation, but "is likely to install and interconnect on-site generation."[24] The "representative profile" is described as "an indicative weighted

[21] Dean Test., Ex. ND-7.
[22] Ex. KRR-6, Ala. Power Resp. to Interrogs., [redacted]
[23] *See* Ex. KRR-4, Dean Dep. 55:4 to 57:16.
[24] Dean Test. 14:21-23.

average load profile developed from stratification of the usage profiles of current solar customers."[25]

Q. Is the Company's Rate Rider RGB based on the application of widely-recognized principles of cost-of-service rate making?

A. No. I provide my evaluation of the Company's Rate Rider RGB in the next section, but at this time it is appropriate to review some basic rate making principles and methods. First, the foundational cost principle is that electric utility service should be provided at cost.[26] This cost principle applies to overall rates and to "the rate set for individual services, classes of customers, and segments of the utility's business."[27] Raw data is collected, with metering devices, from customers receiving particular or general services and from within the utility about costs incurred to provide that service. The principle tool used to assign raw usage and cost data to customers is the cost of service study. These studies are used to:

- Attribute costs to different categories of customers based on how those customers cause costs to be incurred.
- Determine how costs will be recovered from customers within each customer class.
- Calculate costs of individual types of service based on the costs each service requires the utility to expend.
- Determine the revenue requirement for the monopoly services offered by a utility operating in both monopoly and competitive markets.[28]

Once data has been gathered and the cost of service study has been completed, the process of designing a rate or charge to recover costs can begin.

[25] *Id.* 14:23 to 15:6.
[26] Ex. KRR-7, National Association of Regulated Utility Commissioners (NARUC), "*Electric Utility Cost Allocation Manual,*" at 12 (Jan. 1992), https://pubs naruc.org/pub.cfm?id=53A3986F-2354-D714-51BD-23412BCFEDFD [hereinafter NARUC Electric Utility Cost Allocation Manual]. Cited portions of the NARUC Electric Utility Cost Allocation Manual have been excerpted and attached as Exhibit KRR-7.
[27] *Id.*
[28] *Id.*

Q. Did the Company conduct a study of the cost to serve customers who have invested in and operate solar distributed generation ("DG") as a predicate for proposing its Rate Rider RGB tariff and its associated charges?

A. No. The Company developed Rate Rider RGB by manipulating data and results from a cost of service study conducted on non-DG customers.[29] The Company methodology definitively revealed that DG customers do indeed have a lower cost to serve than non-DG customers.[30] And yet, the Company did not conduct an independent study of the costs or the benefits of DG system operations to the grid.[31] Rather, the Company relied upon the embedded costs to serve non-DG customers.[32]

Q. Why is the fact that the Company relied upon embedded costs associated with serving non-DG customers significant?

A. The Company's current and proposed Rate Rider RGB charges are, according to the utility, intended to capture the costs of providing supplementary and back-up power services to DG customers that do not otherwise take service under demand-based rates. That is, the Rate Rider RGB charges are supposed to reflect the costs that the Company incurs when the DG customer is not generating sufficient energy to meet their own needs as an ordinary function of the operating capability and performance of the DG system (supplementary service), or when the DG system is not operating due to unscheduled outages (back-up service). Without actual metered data about when DG customers

[29] *See* Dean Test. 10:10-11 ("These rates were designed based on the energy consumption profiles for full-requirements customers.").
[30] *See id.* at Ex. ND-4.
[31] *See* Ex. KRR-4, Dean Dep. 167:12-18.
[32] *Id.*

require service that their DG systems cannot or do not provide, there is no way the Company can construct a fair, non-discriminatory, and cost-based rate for those services.

Q. Please explain how the Company characterizes what it calls the "representative profile" from which it develops the values on which it bases its charges.

A. The Company approach separates the few DG customers it currently has into four groups. Then it decides, in a manner not made clear, on a weighting for each of those groups and applies that weighting to the average of the consumption level of the existing customers in each group. Then it sums those weighted consumption levels to create twelve monthly consumption levels for a hypothetical "representative profile" customer. Then the Company assumes that this single hypothetical customer installs a solar generation unit sized at exactly 4.3 kilowatts.

Q. Did the Company rely upon actual DG customer load data in developing its "representative profile" customer?

A. No. As described in the NARUC Electric Utility Cost Allocation Manual,[33] a load study to support the allocation of utility fixed costs, which are a major portion of utility costs, should be based on data relating to coincident demand, non-coincident demand, non-coincident maximum demand, coincidence factor, diversity factor, on- and off-peak energy use, and load factor.[34] The Company did not collect or analyze such data specifically relating to DG customers in developing its "representative profile" customer.

Q. Why does the Company's method of characterizing a "likely" solar customer matter?

[33] Ex. KRR-7, NARUC Electric Utility Cost Allocation Manual at 12.
[34] *Id.* at 167–68.

A. Based on my expert experience, solar DG "early adopters" tend to be relatively high users of electricity. As solar markets mature, the usage patterns for solar adopters tend to reflect those of the customer class as a whole. The Company is a very long way from that situation, of course. Indeed, given the high level of the Rate Rider RGB charges, solar investments are still most economic only for very high electricity users or price-insensitive customers. Still, solar prices are falling rapidly and solar is of interest to more customers every day. As a result, the Company estimates are made in a dynamic market environment. Estimation techniques like those the Company uses might be useful at a high level for strategic market outlook planning, but they are too hypothetical and too many steps removed from actual cost data to serve as a just and reasonable foundation for a charge based on the cost of providing back-up or supplementary power service.

Q. What does the Company do next to develop its charges?

A. Having left real customer data behind in the development of the "representative" profile of the "likely" solar customer, the Company then estimates how much solar energy would be produced by a hypothetical 4.3 kW system installed behind that customer's meter. The Company assumes that the "representative" customer installs a 4.3 kW solar system and that the system offsets consumption according to the consumption-weighted average level of performance that comes from hypothetical systems operated in Birmingham, Montgomery, and Mobile.[35] The cost-of-service data for all of the Company's residential Rate FD customers is then used to estimate the cost of service for the representative residential solar customers. The Company's back-up service charge takes no meaningful

[35] Dean Test. 15:7-18.

account of the actual consumption level, system size, or usage patterns of actual solar DG customers.

III. EVALUATION OF THE COMPANY'S RATE RIDER RGB

III.A. Criteria for Evaluating the Company's Rate Rider RGB Charges

Q. Please state your overall understanding of the way in which the Company approached the creation of its back-up service charge.

A. The Company approach is to develop a price for back-up power service by reverse-engineering an estimate of hypothetical lost revenues.[36] So, rather than measure when unscheduled outages actually occur, and the Company must provide back-up service, the Company assumes that the cost of providing back-up power service is exactly equal to the revenues (with minor adjustments) the Company would have collected had the customer never installed solar in the first place. The Rate Rider RGB appears intended to create a charge that obviates the savings a customer would realize, for themselves and for the utility and other customers, by installing solar. The resulting charges have nothing to do with the actual level of energy use by customer-generators. That is, a customer with 5 kW of solar capacity, very low use, and a high level of exports occurring exactly during the system peak will pay exactly the same Capacity Reservation Charge as a customer with 5 kW of solar capacity, very high use, and a very low level of exports, or even imports during the system peak.

[36] The Company attempts to dispute that the charges are based on "lost revenues" by instead characterizing the charges as "necessary for cost recovery." *See* Ex. KRR-4, Dean Dep. 17:21–18:4; 116:17–117:7. This is a semantic distinction without a difference under rate making. The Company's rates under Rate FD, like all of its tariffs, are designed to recover the revenue requirement allocated to the customer class by cost of service analysis and the jurisdictional separation study. That is, the costs that are embedded within those rate structures are the Company's costs to serve and its allowable profit. By structuring the Rate Rider RGB charges based on lost kWh sales to solar customers—what the Company calls the "cost recovery difference," Dean Test., Ex. ND-6, the Company is therefore basing the charges on anticipated lost revenues associated with self-generation by a hypothetical DG customer.

Q. What does Alabama law require regarding the rates charged by regulated electric utilities?

A. As in most states and modern nations, Alabama law requires that "rates and charges for services rendered and required be reasonable and just to both the utility and the public."[37] Alabama law also provides that the utility is "entitled to such just and reasonable rates as will enable it at all times to fully perform its duties to the public and will, under honest, efficient and economical management, earn a fair net return on the reasonable value of its property devoted to the public service."[38]

Q. What provisions of federal law and regulation apply to solar distributed generation?

A. The federal Public Utility Regulatory Policies Act[39] requires utilities to interconnect "small power production facilities" as defined by FERC eligibility requirements for qualifying facilities ("QFs").[40] QF status automatically applies to on-site solar generators up to 1 MW.[41] FERC's regulations implementing PURPA require that rates for electricity sales to QFs "shall be just and reasonable and in the public interest" and "[s]hall not discriminate against any qualifying facility in comparison to rates for sales to other customers served by the electric utility."[42] Under FERC's regulations, rates for QFs that differ from the rates otherwise applicable to non-QF customers are considered to be non-

[37] Ala. Code § 37-1-80(a); *see also id.* § 37-1-97, providing that whenever "the commission shall find any existing rate or rates or any regulation or practice whatsoever or any service, unreasonable or unjustly discriminatory, or any service inadequate, it shall so determine and by order fix, to the extent that it is within its power to do so, a reasonable rate, fare, charge, classification or joint rate as between like carriers, to be imposed, observed and followed in the future in lieu of that found to be unreasonable or unjustly discriminatory, or inadequate, as the case may be."
[38] *Id*.
[39] 16 U.S.C. Ch. 46.
[40] 18 C.F.R. § 292.303(c).
[41] Facilities with net power production of less than 1 MW are exempt from the QF certification process. *Id.* § 292.203(d).
[42] *Id.* § 292.305(a)(1)(ii).

discriminatory only when they are "based on accurate data and consistent system-wide costing principles" and only "to the extent that such rates apply to the utility's other customers with similar load or other cost-related characteristics."[43]

Q. How should the Company's Rate Rider RGB charges be evaluated against the standards set forth in the Alabama statute?

A. Application of the standard to the Rate Rider RGB requires addressing several related questions:

1) Are the charges reasonable and just to both the public and the Company?
2) Are the charges necessary to enable the Company to fully perform its duties to the public under honest, efficient, and economical management?
3) Are the charges necessary to enable the Company to have a fair net return on the reasonable value of its property devoted to public service?

In addition, because the charges in Rate Rider RGB purport to be charges for services provided by the Company to solar customers, in my opinion the Company must also answer:

4) Is the charge for a specific and reasonably defined service that the Company is actually providing to the customer?
5) Is the charge for the service reasonably calibrated to the cost of providing that service?
6) Do the charges rely upon objective, metered determinants that are indicative or reflective of the cost of service for a particular customer or level of usage of the service?
7) Does the service charge unjustly or unreasonably single out a particular customer or group of customers for disparate and unjustly discriminatory treatment?

My review and analysis of Rate Rider RGB charges leads me to conclude that the charges do not comport with these standards.

III.B. The Flawed Methods Used by the Company

Q. How did the Company develop its charges for back-up power service?

[43] *Id.* § 292.305(a)(2).

A. Both the Capacity Reservation Charge and the Super-Peak Energy Charge follow a similar approach of estimating lost revenues for a hypothetical solar customer and then spreading recovery of those lost revenues over either the number of installed kWs of solar (Capacity Reservation Charge) or an estimate of super-peak energy consumption (Super-Peak Energy Charge).

Q. How did the Company measure the cost of back-up power service that it provides to customer-generators?

A. The Company did not measure the cost of providing back-up power service to customer-generators. The charges that it imposes and seeks to increase on distributed generation customers are not calibrated as any other type of electric service would be calculated. That is, the charges are not differentiated by the volume, time, peak coincidence, or number of customers to whom they are provided.[44] There are no identified costs to classify, functionalize, allocate, or recover in rates. The charges are not based on any measured levels or changes in usage, demand for capacity, or the need for new infrastructure. The back-up power service charges in Rate Rider RGB are unrelated to any demonstrated provision of service by the Company to customer-generators.

Q. Which distributed generation customers covered by Rate Rider RGB does the Company identify as receiving either supplementary or back-up power services?

A. [redacted] [45] However, the Company does not cite or rely upon any actual data relating to unscheduled outages in the development of its charges for back-up power service in Rate Rider RGB. As a result, the Company does not

[44] Ex. KRR-4, Dean Dep. 55:4 to 57:16.
[45] Ex. KRR-3, Ala. Power Resp. to Interrogs. [redacted]

even offer a legitimate or statistically valid foundation for a probabilistic determination of the costs associated with the provision of back-up power service.[46]

Q. Please explain why the Rate Rider RGB charges are not reasonable and just.

A. The primary problem with the Rate Rider RGB charges is that they are not based on the actual costs of serving customer-generators during periods of unscheduled outages, when back-up service is required. The Company makes no factual or data-based showing that a customer who, in the words of the Rider, "obtains any portion of its electric requirements from installed on-site, non-emergency electric generating capacity that operates in parallel with the Company's system"[47] creates costs that the Company must bear in order to provide services rendered to such customers during unscheduled outages. This problem has two distinct components: First, the Company imposes charges for not using services. That is, the charges are *not* calibrated against the cost of providing a service, but against the revenues the Company loses because the customer needs *less* service. Second, the Company is imposing charges on customers who actually reduce the Company's costs of service in general.

Q. Are the charges necessary to enable the Company to fully perform its duties to the public under honest, efficient, and economical management?

A. No. A fundamental principle of cost of service regulation is that a utility must enjoy a reasonable opportunity to recover the prudently incurred costs associated with the provision of electric service. And because the monopoly utility stands in a position of

[46] See 18 C.F.R. § 292.305(a), providing that "(1) Rates for sales: (i) Shall be just and reasonable and in the public interest; and (ii) Shall not discriminate against any qualifying facility in comparison to rates for sales to other customers served by the electric utility. (2) Rates for sales which are based on accurate data and consistent systemwide costing principles shall not be considered to discriminate against any qualifying facility to the extent that such rates apply to the utility's other customers with similar load or other cost-related characteristics."
[47] Rate Rider RGB at 1.

immense market power over small customers, the rates it charges must be based on the costs associated with services used by customers. In seeking regulatory approval to charge and collect rates, utilities have the legal responsibility to produce competent evidence of the costs incurred and to prove that the rates charged are reasonable, just, and not unduly discriminatory. The Company has not based the charges in Rate Rider RGB on actual costs that is has incurred or will incur in providing back-up power service to distributed generation customers during periods of unscheduled outages. Therefore, the Company fails to meet its burdens under Alabama law.

Q. How does the Company impose charges on customers for not using services under Rate Rider RGB?

A. The Company uses Rate Rider RGB to target small customers seeking cost-effective, self-help alternatives to the Company's high electric service costs. The Company asserts that small solar customer-generators are relying on the Company for back-up power service during periods of unscheduled outages, and that the correct way to calculate the cost of this service is based on electricity that these customers do not buy in the ordinary and expected course of the operation of their solar generation equipment. The Company's approach eliminates the savings that Rate Rider RGB distributed generation customers achieve through private investment in solar equipment by charging them the amount of those savings as a charge for back-up power service.[48]

Q. Are the charges necessary to enable the Company to have a fair net return on the reasonable value of its property devoted to public service?

[48] *See, e.g.*, Ex. KRR-10, Affs. Bankston ¶¶ 8–10, Johnston ¶ 4, Attch. ¶ 8, Pfeiffer ¶¶ 8–10 and Thorne ¶ 4, Attch. ¶ 8.

A. No. The Company has made no showing of the equipment or the amount of capacity or energy required to provide back-up power service for Rate Rider RGB distributed generation customers during periods of unscheduled outages. As pointed out in more detail later in this testimony, even under the most fantastical assumptions of unscheduled outages at all Rate Rider RGB Part I.B distributed generation facilities, there is no credible claim of any incremental investment or cost incurred to provide back-up power service. In fact, the Company admits there are no such incremental costs.[49] The Company estimates of *savings* created by distributed generation customers exceed any reasonable estimate of back-up power costs. The Company therefore fails to meet this prong of the requirements of Alabama law.

Q. Are the Rate Rider RGB charges levied for a specific and reasonably defined service that the Company is providing to the customer?

A. The Company has not specifically or reasonably defined the back-up power service that it is providing under Rate Rider RGB. Rather, the Company has adopted a definition of back-up power service that is unreasonably vague and therefore not limited by any actual costs the Company incurs.

Q. What is back-up power and how does the Company define it?

A. Under regulations promulgated by the Federal Energy Regulatory Commission ("FERC"), back-up power is defined as "electric energy or capacity *supplied* by an electric utility to replace energy ordinarily generated by a facility's own generation equipment during an unscheduled outage of the facility."[50] This definition comports with common sense—it is power provided when there is an unexpected or non-ordinary

[49] *See* Ex. KRR-4, Dean Dep. 124:10–125:5.
[50] 18 C.F.R. § 292.101(b)(9).

reduction or cessation of generation. The Company definition of back-up power alters this federal definition in an important way that significantly deviates from principles of cost-causation in rate making. The Company definition of back-up power in Rate Rider RGB is "[e]lectric energy or capacity *available* to replace energy used at the premises and ordinarily generated by a customer's own generation equipment."[51] Under the Company's definition of back-up power service, the charges can be based on any costs of energy or capacity that the Company deems "available" to provide back-up power service, regardless of whether it is ever called upon, or even likely called upon, to provide that service. Even with such a vague definition, the Company makes no effort to characterize resources used to provide back-up power service, and instead, sets the charges based solely on lost revenues due to reduced use. The Company uses an oxymoron to describe it: "firm back-up service." [52] The concept is nonsensical because back-up service is service provided to meet a customer's needs during periods of unscheduled outages. The Company should base the charges for back-up power service on costs it incurs when the solar customer's generation is not operating as it ordinarily would; instead, the Company has built its charges on the bill the customer would have paid if they had never invested in solar generation. Simply stated, the Company charges are based on reduced demand for services, not on additional services required.

Q. Is there any reason to impose back-up power service charges in advance, and based on estimates?

[51] Rate Rider RGB at 1 (emphasis added).
[52] *See* Dean Test. 7:18.

A. Back-up power service charges are only appropriate for service provided during unscheduled outages.[53] The Company has not demonstrated any reasonable basis for charging for back-up service in advance. The Company has not demonstrated any threat to its financial integrity resulting from providing back-up power service and any consequences of regulatory lag (i.e., a delay in recovering actual costs due to regulatory reviews and approvals). The Company has not demonstrated any inequitable cost shift on an intra-class or inter-class basis. The Company has not demonstrated the rate and frequency of unscheduled outages at all. In fact, the Company admits that its analysis supporting the charge relied on no data regarding unscheduled outages.[54] The Company's method of calibrating the price of back-up service against the difference in revenue collected from a single solar and non-solar "representative" profile has not been demonstrated to have any statistical foundation or legitimacy.

Q. Is it reasonable that a monopoly utility should be able to create and impose charges based on reductions in services used, rather than on services the customer actually uses?

A. No. Charges for non-use are fundamentally at odds with core principles of cost of service rate making. Such charges would not be known and measurable, and would be subject to abusive pricing structures, like those the Company has included in Rate Rider RGB. Charges based on "available" resources not used by the customer would be like a big-box

[53] *See* Rate Rider RGB at 1 ("Back-up power … is available only during unscheduled outages, which can occur when a customer's own generation equipment is not producing energy or capacity, or is experiencing periods of intermittent generation."); *see also* 18 C.F.R. § 292.101(b)(9) ("Back-up power means electric energy or capacity supplied by an electric utility to replace energy ordinarily generated by a facility's own generation equipment during an unscheduled outage of the facility."). As such, while the Company incorrectly defines back-up power as service that "is available," even if not actually "supplied," the Company does correctly define "intermittent generation" as a subset of "unscheduled outages."

[54] Ex. KRR-4, Dean Dep. 96:9–98:1; 101:17–102:12.

grocery store sending a bill to customers for making their spaghetti sauce with home-grown tomatoes—simply because the big store still had tomatoes "available" for purchase. Markets would not tolerate such charges, of course. A prudent and economically efficient grocery store would stock fewer tomatoes when customers started taking up home gardening. When monopoly providers collect such charges—like charging customers for the tomatoes they *do not buy*—simply because they have the market power to get away with it, economists refer to the charges as "monopoly rents." Such charges are unfair, unreasonable, and economically inefficient, and the role of Public Service Commission, as regulator, is to prevent the monopoly from abusing its power in this way.

Q. Is the charge for the service reasonably calibrated to the cost of providing that service?

A. No. Because the Company does not rely on any actual data related to the cost of providing back-up service, the charges it collects and proposes under Rate Rider RGB are not rationally related in any way to the cost of providing back-up power service.

III.C. The Company's Flawed Analysis of Distributed Generation Capacity Value for Purposes of Establishing a Back-Up Power Service Rate

Q. How does the company currently address the capacity value that distributed renewable energy provides?

A. The Company's treatment of distributed generation capacity is unsubstantiated, arbitrary, and unfairly discriminatory. The Company imposes a charge on distributed generation

capacity despite its determination that every kW of "representative" solar operating against a "representative" usage profile saves $129 in capacity costs.[55]

Q. What effect should this capacity valuation have on the Company's calculation of the price for back-up power service?

A. The Company's approach to calculating a price for back-up power service is based on lost revenues rather than actual cost of service. Therefore, the Company's charges for back-up power are not cost-based. A cost-based approach would recognize that the capacity cost savings created by distributed generation produce a credit value, and not a charge, for distributed generation. That is, the energy and capacity cost savings from distributed generation are greater than the lost revenues that the Company estimates.

Q. Why doesn't the Company price for back-up power service result in a credit for customers?

A. The Company calculates capacity cost savings of $129 per kilowatt from customer-sited solar. The Company reduces this credit by 65% based on a purely qualitative "judgment" that two of three kilowatts of all solar capacity are likely to be suffering an unscheduled outage at the same time.[56] Without this adjustment, the Company's method would yield a monthly credit of $1.57 per kilowatt per month—not a charge. If the Company used a more realistic 5% fixed capacity cost reduction decrement reflective of a solar Equivalent Availability Factor of 95% (discussed below), the analysis would produce a credit per kilowatt of installed distributed generation of $1.02 per month, even after the Company's flawed approach of treating lost revenues as a cost. Figure KRR-1, below shows the

[55] *See* Dean Test., Ex. ND-4 (showing that the annual "fixed capacity cost component" allocable to the "representative" customer with 1 kW of solar generation is $1,414, while the amount allocable to the same hypothetical customer without solar is $1,543, for a difference of $129 per kW per year).
[56] Ex. KRR-4, Dean Dep. 87:2–90:5.

Company's calculation without a demand value reduction, and more reasonable alternative calculation based on 95% solar availability.

Q. What is the Company's basis for reducing the capacity cost savings value for distributed generation?

A. The Company's position is that even though distributed generation creates capacity cost savings, these savings should not be credited to customer-owned solar generation because the Company must be "available," as it defines back-up service, and "must remain prepared to serve the customer's peak load at any time and under any conditions."[57] However, the Company concedes that "FERC's PURPA implementing regulations do not permit rates for sales of back-up power to be based on the assumption that reductions in electric output by every on-site generator on the Company's system will occur simultaneously, or during the system peak, or both. The Company therefore determined that the customer should receive credit for a portion of the fixed cost differential due to the diversity of customer back-up power needs."[58] In the end, the Company arrives at its 65% fixed capacity cost reduction adjustment (or 35% credit) purely through an exercise of subjective "judgment."[59]

Q. Does the Company offer any empirical justification for its decision to reduce the capacity cost savings value for distributed generation by 65%?

A. No. The Company states that it "considered many factors, including customer diversification, the expected annual utilization and the incremental capacity equivalent of

[57] Dean Test. 17:3-11.
[58] *Id.* 17:5-11.
[59] *Id.*; *see also* Ex. KRR-4, Dean Dep. at 87:2–90:5.

the on-site generator,"[60] but offers absolutely no evidence or data to support its determination. The 65% reduction, or 35% credit, in the words of the Company, "was not a numerical representation," "was based on the Company's judgment," [and] "not a specific number," and "was based on knowledge that the Company has," and that "[redacted]."[61]

Q. Is the Company's decision to reduce the capacity cost savings created by distributed generation just, reasonable, or appropriate as a basis for establishing the charge for back-up power service?

A. The Company's decision to reduce the capacity cost savings attributable to distributed generation is unjust, unreasonable, and inadequate as a basis for sound rate making. The Company does not even define the "factors" of "customer diversification," "expected annual utilization," and "incremental capacity equivalent," and admits that it relied on no numerical representations of these factors.[62]

Q. Is there data that provides objective and substantiated estimates of solar generation availability that could be used to reasonably estimate the need for back-up power service by distributed generation facilities?

A. Yes. My review of the publicly available information and studies establishes that solar photovoltaic generation is available to generate electricity nearly 100% of the time. As a solid-state technology with no moving parts and few, if any, exposed wires, solar generation rarely suffers mechanical or electrical unscheduled outages and is very likely

[60] Dean Test. 17:13-14.
[61] Ex. KRR-4, Dean Dep. 87:2–91:18.
[62] *Id.* 81:7-10; 89:22–90:5.

to be available to generate electricity any time the sun is shining. Solar is a passive technology and when sited on rooftops is seldom within reach of vandalism, storm damage, heavy leaf coverage, or human operational carelessness. Solar is largely self-cleaning thanks to rainfall, and its dark color absorbs solar energy at low levels to melt snow and ice. The Company cites no data or other evidence to the contrary and none were relied on in developing the contested charges.

Solar is a variable resource—meaning its output changes with insolation, or the amount of sunlight at any given moment. Such variability is already factored into the output estimates produced by production models like the PVWatts® tool used by the Company.[63] Variability impacts total output, and when subtracted from consumption, yields the solar customer's demand for supplementary power service. Availability—the amount of time that the solar generation is in working order and capable of turning sunlight into energy—is the metric that is the numerical complement to unscheduled outages, and is the basis for calculating the requirement for back-up power services.[64] A conservative reasonable estimate of solar availability is 95%,[65] a value that can be used to adjust the capacity cost savings under the Company's methodology. Using a 95% availability factor, the Company's back-up power service method yields a credit of about

[63] *Id.* 74:22–76:1. According to its developer, the National Renewable Energy Laboratory, the PVWatts tool "estimates the energy production and cost of energy of grid-connected photovoltaic (PV) energy systems throughout the world. It allows homeowners, small building owners, installers and manufacturers to easily develop estimates of the performance of potential PV installations." Available at: https://pvwatts nrel.gov (last visited Nov. 12, 2018).
[64] The Company agrees that availability is the proper metric but did not undertake to quantify it. *See id.* 100:12–102:12 (stating that back-up power makes up for energy or capacity that is ordinarily generated by a customer-sited solar installation but for unscheduled outages).
[65] *See, e.g.*, Sandia Nat'l Labs & Electric Power Research Inst., *"PV Reliability Operations & Maintenance (PVROM) Database Initiative: 2014 Progress Report,"* (Dec. 2014) at p. 37, available at https://energy.sandia.gov/wp-content/gallery/uploads/dlm_uploads/SAND2014_20612_PVROM.pdf (last visited Nov. 12, 2018); Electric Power Research Inst. & Sandia Nat'l Labs, *"PV Reliability Operations Maintenance (PVROM) Database Initiative: 2013 Project Report,"* (Dec. 2013) at pp. 3-1 to 3-10, available at https://www.epri.com/#/pages/product/3002001399/?lang=en-US (last visited Nov. 12, 2018).

$1 per kW per month. Figure KRR-1, below, shows the calculation of back-up power service charge or credit according to the Company's method, the same calculation without a decrement to the capacity cost savings value, and a calculation with a 5% decrement.

Figure KRR-1. Capacity Reservation Charge Calculation Per Company, and as Corrected

	Company Method	Calculation without Arbitrary Capacity Value Decrement	Calculation with 95% Equivalent Availability Factor
Cost Recovery Difference (Lost Revenues due to Customer Self-Generation)	$610.00	$610.00	$610.00
Annual Cost Reduction			
Energy ($0.0253/kWh @ 5,362 kWh	$136.00	$136.00	$136.00
Demand ($129/kW @ 4.3 kW)	$555.00	$555.00	$555.00
Company Assumption that 2 of 3 kW will be offline simultaneously	($361.00)		
Assumption that Solar Performance Matches Equivalent Availability Factor of 95%			($27.75)
Total Annual Cost Reduction	$330.00	$691.00	$663.25
Annual Net Unrecovered Costs (Lost Revenues)	$280.00	($81.00)	($53.25)
Charge or (Credit) (@ 4.3 kW, 12 months)	**$5.43**	**($1.57)**	**($1.03)**

III.D. A Just and Reasonable Approach to Costing Back-Up Power Service

Q. How is back-up power service properly defined?

A. As described above, the federal definition of back-up power service is "electric energy or capacity *supplied by* an electric utility to replace energy ordinarily generated by a facility's own generation equipment *during an unscheduled outage* of the facility." (Emphasis added.) The most important operative conditions are that the energy or capacity is measured by what the utility *actually supplies* to replace generation during an unscheduled outage, which, of course, is dependent upon how often those outages occur.

Q. How should back-up power service charges be properly calculated in accordance with this definition?

A. The utility must base its charges on measured usage and real data. As a result, the billing determinants of back-up service should be: (1) duration—the length of the unscheduled outage, (2) energy—the amount of energy in kWh that the utility provides, and (3) capacity—the amount of new capacity that the utility must procure in order to provide the back-up service.

Q. When would a just and reasonable back-up service charge be assessed?

A. Because the charge for back-up service is based on service provided during an unscheduled outage, and because of the very small amount of distributed generation interconnected on the Company's system, the back-up power service charge for small solar generation can only be fairly calculated and applied *after* the back-up service has been provided.

Q. Should the rate for back-up service be based on the variability of generation patterns, as is experienced with solar generation?

A. No. While solar generation is variable by definition, this variability is not the same as generation intermittence. Intermittence refers to changes in output that occur at irregular or non-ordinary intervals, like unscheduled outages due to mechanical failures. This is the Company's position in its definition of intermittence, as well.[66] The solar estimator tools like PVWatts®, relied upon by the Company to derive the "representative solar profile," account for the natural patterns of variability in solar, by accounting for solar insolation

[66] *See* Rate Rider RGB at p. 1 ("Back-up power … is available only during unscheduled outages, which can occur when a customer's own generation equipment is not producing energy or capacity, or is experiencing periods of intermittent generation."); *see also* Ex. KRR-4, Dean Dep. 100:3–106:18.

(the duration and intensity of sunshine), the impact of cloudy days, module tilt, and other normal operating conditions. Variability does not generate a requirement for back-up power service. Intermittence in output is the measure of unscheduled outages.

Q. Should the capacity provided to distributed generation during unscheduled outages be quantified according to a hypothetical "reservation" of capacity for the event, whenever it occurs?

A. No. It is unreasonable and unjust to price back-up power against some kind of hypothetical reservation of capacity against the contingency of an unscheduled outage—energy and capacity that, in the terms of the Company's Rate Rider RGB back-up power service definition, is "available." Assessing a charge for service that the distributed generator does not use is fraught with the risk of improper and discriminatory levels of charges. At this stage, the Company has offered no usage-based data regarding the frequency of unscheduled outages, the history or probability of simultaneous unscheduled outages among multiple distributed generators, or the reasonableness of assessing a service charge based on revenue reductions resulting from self-generation. When the frequency and level of back-up service provision to distributed generation rises to a level that investments are required, and operational practices must be undertaken to reliably address the condition, probabilistic methods can be used to fairly assign these real and actual costs to the back-up service rate.[67] This condition does not exist in Alabama

[67] *See* FERC Order 69 (Rule Making Docket No. 79-55), Final Rule: Small Power Production and Cogeneration Facilities, 45 Fed. Reg. 12,214, 12,229 (Feb. 25, 1980) ("The effect of such diversity [among multiple qualifying facility generators] is that an electric utility *supplying* back-up power or maintenance power will not have to plan for reserve capacity on the assumption that every facility will use power at the same moment. The Commission believes that probabilistic analyses of the demand of qualifying facilities will show that a utility will probably not need to reserve capacity on a one-to-one basis to meet back-up requirements. Paragraph (c)(1) prohibits utilities from basing rates on the assumption that qualifying facilities will impose demands during simultaneously and at system peak

Power's service territory and is not reasonably likely given the low penetration rate of distributed generation on the Company system.

Q. Is it your assertion that the provision of back-up *capacity* by the Company has no capacity cost?

A. No. My assertion is that the Company has not made a reasonable showing of actual costs to support a charge for capacity. The Company system has very large capacity reserve margins. [redacted][68] and there is no evidence of the level of unscheduled outages at these facilities.[69] It is therefore reasonable to base planning for back-up power service on the inverse of an Equivalent Availability Factor of 95%, that is, at 5%.

Q. Can you definitively quantify the cost of capacity requirements for unscheduled outages?

A. No, and neither can the Company based on the evidence they have presented. There are 155 customer accounts subject to Rate Rider RGB in the Company's service territory.[70] Even under the nearly impossible statistical chance that all would suffer a simultaneous unscheduled outage while operating at 100% capacity, the total capacity requirement for back-up power service would be no more than [redacted] Even this fantastical coincidence of demand for back-up capacity would constitute only [redacted] of the *excess* capacity maintained by the Company through its "diversified short-term" reserve margin of

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unless supported by factual data." (emphasis added)); *cf.* Ex. KRR-4, Dean Dep. 102:6-12 (stating that the Company lacks data on unscheduled outages, even though the Company has access to hourly data for all DG facilities.).

[68] *See* Ex. KRR-3, Ala. Power Resp. to Interrogs. [redacted]; *see also* Ex. KRR-4, Dean Dep. 49:6.

[69] Dean Dep. 102:6-12; *supra* note 67.

[70] Dean Test. 6:1-3.

13.26%,[71] and would not, absent an even more fantastical and frequent epidemic of unscheduled outages, support Company investment in additional capacity solely for the purpose of meeting the capacity needs of those distributed generators. It is almost statistically impossible for the Company to quantify, within its current and planned excess capacity, a measurable reservation of capacity needed to serve DG solar customer requirements for back-up power service during unscheduled outages.

Q. Can the Company reasonably quantify the cost, level, and duration of *energy* requirements during unscheduled outages at distributed generation facilities?

A. Provided that the Company maintains or obtains from distributed generators a log of unscheduled outages and associated meter data, the Company should be able to support a just and reasonable charge, after the fact, for back-up energy service provided to distributed generators during unscheduled outages. In fact, the beauty of connecting such generators in parallel with the utility grid is that consumption metering automatically captures and charges customers for back-up energy during any periods of unscheduled outages. [redacted] G [redacted]. The Company's decision to base its back-up service charge on a statistical manipulation of stratified and averaged hypothetical data is therefore

[71] Ala. Power Co., Integrated Resource Plan Summary Report, at ES-1 (2016), https://www.alabamapower.com/content/dam/alabamapower/Our%20Company/How%20We%20Operate/Regulations/Integrated%20Resource%20Plan/IRP.pdf (last visited Nov. 12, 2018). Calculated by dividing .55 MW into (13.26% x 13,500 MW).

[72] *See* Ex. KRR-3, Ala. Power Resp. to Interrogs., [redacted].

unreasonable and unduly discriminatory. The Company approach is also therefore not based the charge on a probabilistic analysis that accounts for generator diversity, as allowed under federal regulations.[73] The only potential additional differentiator would be associated with time-varying energy cost. If, for example, fuel prices were demonstrably higher or lower during the period of the unscheduled outage, an additional charge or a credit would be in order as part of the back-up energy charge.

Q. Please summarize your recommendation for a just and reasonable charge by the Company for back-up power service.

A. In light of the actual data that the Company has provided or has available, the back-up service charge should be equal to the duration in hours of the unscheduled outage multiplied by the difference between the energy price during the outage and the charge for energy in the customer's applicable consumption/usage tariff. The charge or credit should be calculated and added to the customer's bill in the second bill following the date of the unscheduled outage. If the frequency and duration of unplanned outages at distributed generation facilities increases to the point that the Company is required to make incremental investments in capacity in order to provide back-up service, the Company should use the pattern of unscheduled outages and the cost of incremental capacity to probabilistically calculate a fair charge of incremental capacity. Such an incremental capacity charge should be adjusted by the actual capacity requirement—the demand level—of the distributed generation customer during the actual unscheduled outage.

III.E. Flaws in the Company's Approach to Charging for Supplementary Power Service

[73] *See supra* note 67, FERC Order 69, 45 Fed. Reg. at 12,229.

Q. How should the rate for supplementary power services be structured?

A. Federal regulations define supplementary power as "electric energy or capacity supplied by an electric utility, regularly used by a qualifying facility in addition to that which the facility generates itself." As with the definition for back-up power, supplementary power rates should be based on energy or capacity actually provided to the customer. Here, however, the rates should address the provision of supplementary energy and capacity beyond that ordinarily generated by the distributed generation facility, rather than in lieu of what is ordinarily generated.

Q. How does the Company's definition of supplementary power differ from that prescribed in the federal regulation?

A. The Company defines supplementary power in Rate Rider RGB as "[e]lectric energy or capacity regularly used at the premises by a customer *in addition to* energy that is *ordinarily* generated by a customer's own generation equipment."[74] The Company definition comports with the federal definition to the extent that it defines supplementary power as additional to ordinary customer generation, and contrasts with back-up power, which is service to replace customer generation during unscheduled outages. As a simple example, service provided at night to a solar customer-generator or to meet demand that exceeds generation during a cloudy day is supplementary service. Service to replace lost production due to an electronic failure of the generator's inverter, on the other hand, is back-up service. The Company's supplementary service definition differs from the federal regulatory definition in two ways. First, it lacks an important symmetry in recognizing how distributed generation operates. The Company definition recognizes that

[74] Rate Rider RGB at 1 (emphasis added).

supplementary service may include energy or capacity but describes that service in addition only to *energy* ordinarily generated by the customer generation. While the Company asserts that there is no capacity value to distributed generation,[75] the Company's own data shows that DG has significant value because the operation of DG reduces the allocable "fixed capacity cost component" the customer requires from and therefore costs the utility.[76] Second, the Company definition of supplementary power uses the word "ordinarily" instead of the word "regularly" to describe the energy and capacity provided by the distributed generator. It is not clear whether this choice of words represents a meaningful difference.

Q. How does the Company price supplementary service under Rate Rider RGB?

A. It appears that Rate Rider RGB prices supplementary service to distributed generation customers through the customer's otherwise applicable consumption service rate. That is, energy and capacity used by the customer is priced as energy and capacity are priced in Rate FD if the customer is on Rate FD, according to Rate RTA if the customer is on Rate RTA, etc.

Q. Is the Company's approach to pricing supplementary service reasonable?

A. The Company's approach to pricing supplementary power service overcharges distributed generation customers for supplementary service, but reflects an acceptable approach given the lack of metered data and analysis from the Company.

Q. Why do you say that the Company overcharges distributed generation customers for supplementary power service?

[75] Dean Test. 17:3-5; *see also* Ex. KRR-4, Dean Dep. 174:3-7.
[76] Dean Test., Ex. ND-4. The Company allows some of these capacity cost reductions to reduce the Rate Rider RGB charges in order to avoid a blatant violation of federal regulations, but not because it believes the DG solar avoids capacity costs. *See* Dean Test. 17:3-11.

A. The data provided by the Company in this case shows that for a "representative" usage profile, every kW of installed distributed solar saves $129 in capacity costs.[77] In my experience, while the amount of savings may differ depending on customer usage levels and timing, all installed distributed solar generation, at least up to very much higher penetration levels than currently present in the Company's service territory, create more benefits than costs for the utility and non-solar customers. To be clear, in my experience utilities are wise to regularly evaluate the incremental capacity and other benefits of distributed solar generation and to be on the lookout for diminishing incremental benefits around the time that installed solar reaches 5% of total installed system capacity.[78] Given that installed capacity subject to Rate Rider RGB Part B charges is now only about [redacted] of the Company system,[79] the amount of installed solar distributed generation in the Company's service territory must grow by a factor of more than [redacted] before high-penetration impacts are likely to be observable and reliably quantified. Throughout this range of market segment growth, I would expect distributed solar generation to contribute capacity savings, and if all such generation were subjected to the Rate Rider RGB supplementary power service charges, nearly all distributed solar customers would be overpaying for supplementary service.

[77] *Id.* at Ex. ND-4.
[78] Ex. KRR-8, NARUC Staff Subcommittee on Rate Design, "*Distributed Energy Resources Rate Design and Compensation Manual,"* at 59–63 (Nov. 2016), https://pubs naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0. Cited portions of the NARUC Distributed Energy Resources Rate Design and Compensation Manual have been excerpted and attached as Exhibit KRR-8.
[79] Calculated at [redacted] / 13,500 MW, where [redacted] is the amount of installed distributed solar generation listed in Ala. Power Resp. to Interrogs, [redacted] (Ex. KRR-3); and 13,500 is an estimate (the approximate midpoint between "nameplate" and "IRP" generation resources) of total installed capacity from Ala. Power Co., Integrated Resource Plan Summary Report, at Fig. A1-1 (2016), https://www.alabamapower.com/content/dam/alabamapower/Our%20Company/How%20We%20Operate/Regulations/Integrated%20Resource%20Plan/IRP.pdf..

Q. Do you recommend a change in the pricing for supplementary power service in Rate Rider RGB at this time?

A. I would recommend that the Commission order and the Company conduct an objective evaluation of the cost to serve distributed generation customers. If the cost to serve these customers is materially different from the cost to serve non-solar customers, adjustments may be in order. This is not to say that distributed solar customers should be put in their own rate class. These customers most likely have a cost of service that is, in many respects substantially identical to the cost of serving non-solar customers. Solar customers provide benefits to non-solar customers by being part of the same distribution grid. And the numbers of customers and the amount of load served is simply too small to support a confident conclusion that such a sub-class rate is reasonable and just. For all these reasons, many state commissions have exercised forbearance in approving punitive rates like the charges in Rate Rider RGB or in inviting additional unjust discrimination by approving new rate classes for small distributed generation customers. In conclusion, subject to a modification I will next describe, I would find the pricing for supplementary power service in Rate Rider RGB acceptable.

Q. What modifications to Rate Rider RGB provisions relating to supplementary service are appropriate?

A. First, in conformance with my previous discussion about the energy and capacity regularly provided by distributed generation, the words “and capacity” should be added to the definition of supplementary power, after the words “in addition to energy” in the current provision. Second, the limitation language relating to customer eligibility for remaining on their current rates should be fixed.

Q. What modification to the language in Rate Rider RGB is required relating to the customer's eligibility to remain on their current rate?

A. Rate Rider RGB implies that customers should be charged for supplementary power service according to the rates in their otherwise applicable rate. As I testified, this is acceptable at the current level of the customer-generator market size. However, Rate Rider RGB says that this right to remain on the current rate is limited to systems with a nameplate capacity not greater than the lesser of 6% of the maximum integrated fifteen-minute kW demand during the previous 11 months or 25 kW. The 25 kW limit is reasonable for residential FD customers, but is too small for other small customers. The limit based on maximum integrated demand makes no sense. As previously explained, this would mean that customers with a residential average [redacted] maximum demand would not be eligible to stay on their current rate if they install a solar system larger than [redacted]. This is a ridiculously small system. And Rate Rider RGB makes no provision for what rate would apply to these customers. The Company data[80] shows that most customers on Rate Rider RGB already exceed this limit in capacity. Many states have abandoned such arbitrary limits based on system size because of the rapidly improving economics of distributed generation. Economics should dictate system size, not regulatory mandates. The limitations relating to remaining on the customers consumption rate should be eliminated.[81]

Q. Do you have a similar concern about the limitation in the Rate Rider RGB provisions for Back-Up Power?

[80] Ex. KRR-5, Ala. Power Resp. to Interrogs., [redacted].
[81] As previously explained at p. 7, above, the Company has offered another interpretation of the language in the tariff, but this explanation requires reading into the tariff words that are not in the tariff itself.

A. Yes. The language in Rate Rider RGB Back-Up Power I.B. is similarly flawed and should be stricken.

III.F. The Company's Unjustly Discriminatory Treatment of Distributed Generation Customers

Q. Do the charges currently in Rate Rider RGB rely upon objective, metered billing determinants that are indicative or reflective of the cost of service for a particular customer or level of usage of the service?

A. No. As described in detail previously in this testimony, the charges in Rate Rider RGB are not cost-based, either directly or indirectly.

Q. How do the charges in Rate Rider RGB vary with regard to the usage or generation levels of customer-generators?

A. They do not. The Company performed all its calculations and imposes charges on customers solely from its manipulation of data associated with hypothetical customers and lost revenues.

Q. Did the Company's method of developing the charges in Rate Rider RGB show that customers with distributed generation cost more to serve than customers without such generation.

A. No. In fact, the evidence provided by the Company unequivocally demonstrates that for the "representative" customers with and without solar generation, the fixed capacity cost to serve solar customers is $129 per kW, or 8.4% less.[82]

Q. What does the Company's data tell us about the cost to serve solar customers versus non-solar customers?

[82] Dean Test., Ex. ND-4. Calculated as $129 / $1,543 = 8.4%

A. The Company data tells us very little that is useful in understanding the cost to serve any particular solar or non-solar customer. For that reason, the Company data and methods are unfairly discriminatory and, in my experience, would never be an adequate basis for the setting of a service rate that is just and reasonable. The Company should completely withdraw the charges in Rate Rider RGB and instead begin to collect the data necessary to support just and reasonable rates for correctly defined supplementary and back-up power services, if any.

Q. Is there any other reason to believe that solar customers provide these capacity cost savings to the utility system and other customers?

A. Yes. As shown in the graph at Figure A, below, the Company data [redacted]. The Company's own charts of the shape of solar generation plotted against average summer, winter, and spring/fall days show that [redacted]. (It is important to note that the Company charts are potentially misleading because of the way they use different vertical scales for the system and solar plotted curves. The Company charts are therefore only useful in comparing the shape of the curves, not the area under the curves or their respective heights.)

Figure A – Company 2016 Average Hourly Loads by Month

Source: [redacted]

Figure B – Company Comparison of System Demand Shape vs. Solar Output Shape (Avg. Summer Day)

Source: [redacted]

Figure C – Company Comparison of System Demand Shape vs. Solar Output Shape (Avg. Winter Day)

Source [redacted]

Figure D – Company Comparison of System Demand Shape vs. Solar Output Shape (Avg. Spring/Fall Day)

Source: [redacted]

Q. How does solar generation help avoid utility costs even if peak solar production does not exactly match peak system demand?

A. Solar generation can save utility capacity costs by pre-cooling the distribution system and its components, which saves money because distribution systems "wear out" in relation

to the number of hours during which they operate at high loads and temperatures. Solar generation can be targeted to relieve congestion on particular feeders to save even more money. And solar generation can shift a customer's peak usage beyond the peak period, adding load diversity and asset utilization benefits for the utility. Of course, all these benefits come without utility investment in the solar system.

Q. Doesn't the simple act of integrating a variable resource like solar generation add cost to the utility system?

A. There is no evidence in this case that the small amounts of solar currently interconnected to the Company's system add any capacity or infrastructure costs.[83] Further, the Company system is a very long way from the kind of penetration levels—5% or more—where system costs that are not addressed through interconnection costs can be anticipated.

Q. Does the Company data support a finding that solar customers are, in fact, subsidizing non-solar customers?

A. The Company data is inadequate to support a finding that solar customers are in fact subsidizing non-solar customers, just as the data is inadequate to support the charges the Company imposes. However, there are proven methods and approaches for fairly quantifying the benefits and costs of solar generation deployment that the Company has so far apparently failed to try.

Q. Please describe the kind of analysis that would quantify the benefits and costs of distributed solar generation.

[83] Ex. KRR-4, Dean Dep. 124:10–125:5.

A. There are good examples very nearby to the Company's service territory – like Georgia, where the Company's sister utility, Georgia Power Company, is the largest electricity provider. There, in 2017, the public service commission conducted Docket 40161[84] relating to Georgia Power Company's 2016 Integrated Resource Plan. In that case, the Southern Companies provided "A Framework for Determining the Costs and Benefits of Renewable Resources in Georgia," which contained this helpful introduction:

> *When considering any generation technology, including renewable resources, it is crucial that all of the appropriate benefits and costs of such technology be determined and allocated in a way that ensures equitable treatment and continued reliability of the system. Such analysis is particularly important in light of the dramatic increase of renewable resources being deployed to serve customers. Additionally, there have been numerous "Value of Solar" (VOS) studies performed in the industry in recent years suggesting various benefits associated with solar generation. Over the same period, there has been increased activity by the solar industry at the various state regulatory agencies of the Southern Companies, some of which have suggested the need for a "Value of Solar" determination within those jurisdictions. As a result, the Southern Companies have established a Framework for Determining the Costs and Benefits of Renewable Resources on the Southern Company electric system ("Framework" or "RCB Framework"). The purpose of this document is to describe that Framework and how it will be used in determining the costs and benefits of*

[84] Ex. KRR-9, Georgia Power Co., *"Framework for Determining the Costs and Benefits of Renewable Resources in Georgia,"* Docket No. 40161 (Ga. P.S.C. Mar. 22, 2017), http://www.psc.state.ga.us/factsv2/Document.aspx?documentNumber=167588 (download using hyperlink on webpage). Cited portions of this document have been excerpted and attached as Exhibit KRR-9.

renewable resources on the Southern Company electric system, specifically related to Georgia Power Company.[85]

In addition, the public service commission of Mississippi, in its Docket 2011-AD-2, commissioned a study entitled "Net Metering in Mississippi: Costs, Benefits, and Policy Considerations," published in September 2014, that generated a similar analysis and found evidence that the net benefits of distributed solar generation exceeded its costs.[86]

Q. Is it your position that the Commission should adopt, in this case, the methods or findings in these or other benefit-cost studies for distributed solar?

A. No, but I certainly believe that a thorough and honest evaluation of the costs and benefits of distribution solar generation should precede the imposition of charges on customer-generators. I am not here to determine whether solar customers should be paid for their energy production based on these values. Rather, I am making two distinctly different points: First, the fact that solar customers cost less to serve is an important factor in assessing fair charges for correctly defined supplementary and back-up services, separate and distinct from the question of whether that value can or should be reflected in the price paid for energy sales. Second, I cite these studies to demonstrate the unreasonableness and unfairness of the Company's lost-revenues approach in developing its charges to be levied on solar generation customers. The Georgia and Mississippi studies are just two examples that sharply contrast with the arbitrary, hypothetical, and discriminatory approach taken by the Company in charging for what it calls supplementary and back-up power in Rate Rider RGB.

[85] *Id.* at 2.
[86] Synapse Energy Economics, Inc., "*Net Metering in Mississippi*," (Sept. 19, 2014), http://www.synapse-energy.com/sites/default/files/Net%20Metering%20in%20Mississippi.pdf (last visited Nov. 12, 2018). Another sister utility, Mississippi Power Company, serves a significant portion of that state.

Q. Are the Rate Rider RGB charges reasonable as an effort to ensure that the costs of providing supplementary or back-up power service to distributed generators do not create a "cost-shift" to non-generator customers?

A. No. The Rate Rider RGB charges are not reasonable as a mechanism to remedy or prevent intra-class or inter-class cost shifts for several reasons. First, the Company has not demonstrated the existence of a cost-shift. Indeed, the Company evidence suggests a very real likelihood that distributed generation customers provide net benefits to other customers and the utility as a result of the lower costs to serve them. Second, the Company is employing a flawed approach that is not based on actual costs to provide supplementary or back-up service, and instead is imposing charges based solely on a lost-revenues calculation that derives from hypothetical data and so-called "representative" profiles that have not been demonstrated to be statistically representative at all. This flaw is compounded by the application of arbitrary adjustments relating to the benefits of customer generator diversity and the cost and level of capacity required to provide supplementary or back-up power service. Third, the Company simply has too few solar distributed generation customers or kilowatts of installed capacity to support what are essentially discriminatory charges imposed on a very select few customers.

Q. Why are the small numbers of distributed generation customers and kilowatts of installed capacity important considerations?

A. The Company's decisions to impose charges on the small but growing set of distributed generation customers based on miniscule amounts of actual data suggest a specific intent to unjustly discriminate against those customer-generators for not relying totally on the utility monopoly for electricity generation service. Reliance on very small sets of data,

compounded by a decision to develop the charges entirely from the characteristics of a single "representative" usage profile virtually guarantees that the charges will not be representative of the actual usage and generation by any customer, and therefore, will not be cost-based.

IV. CONCLUSIONS AND RECOMMENDATIONS

Q. Are there any benchmarks against which the Commission can evaluate the charges in Rate Rider RGB?

A. Yes. For nearly 60 years, James Bonbright's treatise entitled "Principles of Public Utility Rates" has stood as a foundational reference for evaluation of rate making proposals and approaches.[87] A review of the Company's Rate Rider RGB charges for supplementary and back-up power services against Bonbright's principles serves a useful framework for summarizing my conclusions about the charges.

Q. What are Bonbright's principles?

A. Commentators and industry experts have offered varying summaries of the core principles articulated by Bonbright. Alabama law reflects these principles as well.[88] I find the following articulation[89] useful in general and in reviewing the Company's Rate Rider RGB rates:

- Rates should be characterized by simplicity, understandability, public acceptability, and feasibility of application and interpretation.
- Rates should be effective in yielding total revenue requirements.

[87] James C. Bonbright, Principles of Public Utility Rates (Columbia Univ. Press 1961), http://media.terry.uga.edu/documents/exec_ed/bonbright/principles_of_public_utility_rates.pdf.
[88] Ala. Code § 37-1-80 (2013).
[89] This summary was derived from Jess Totten, *"Tariff Development II: Rate Design for Electric Utilities,"* Briefing for NARUC/INE Partnership (Feb. 1, 2008), https://pubs.naruc.org/pub.cfm?id=538EA65C-2354-D714-5107-44736A60B037 (last visited Nov. 12, 2018).

- Rates should support revenue and cash flow stability from year to year.
- Rate levels should be stable in themselves, with minimal unexpected changes that are seriously adverse to existing customers.
- Rates should be fair in apportioning cost of service among different consumers.
- Rate design and application should avoid undue discrimination.
- Rates should advance economic efficiency, promote the efficient use of energy, and support market growth for competing products and services.

Q. How would you evaluate the Company's Rate Rider RGB charges for back-up power and supplementary power service against these principles?

A. The Company's Rate Rider RGB charges fail under the Bonbright principles:

- The Rate Rider RGB charges are unnecessarily complex and difficult to understand.[90] The charges are based on layers of extrapolation from hypotheticals and the charges themselves are unrelated to actual costs or benefits resulting from the operation of distributed generation by customer-generators. And as previously discussed, the language about eligibility to remain on the customer's current rate notwithstanding solar adoption is confusing and likely – in combination with the charges – to deter solar growth. The Rate Rider RGB charges are punitive and unjustly discriminatory against distributed generation in contravention to public policy and growing customer demand for clean distributed generation.
- As previously explained, the Rate Rider RGB charges have not be shown to have a reasonable relationship to the costs of providing supplementary or back-up power service. Therefore, the Rate Rider RGB charges fail in meeting the requirement of

[90] *See, e.g.*, Ex. KRR-10, Affs. Bankston ¶ 12 , Johnston ¶ 5, Pfeiffer ¶12, and Thorne ¶ 5.

Alabama law and Bonbright's principle that they must be demonstrated to be effective in yielding total revenue requirements associated with the cost of providing service to distributed generators.

- The Company's Rate Rider RGB charges were designed to ensure that the Company collects revenues from customers regardless of actual level of usage of supplementary and back-up power service. To that extent, they do not support *reasonable* revenue and cash flow stability for the Company. In an era of increasingly cost-effective distributed generation and other distributed energy resources, economic efficiency dictates that rates should support revenue and cash flow stability from year to year for customer investors as well as utilities. The Company's punitive Rate Rider RGB charges fail in this regard.
- The Company's Rate Rider RGB charges are based on arbitrary and unsubstantiated values not reasonably related to the costs of providing supplementary and back-up power services. The manner in which the Company defines back-up power service as based on the cost of utility resources that are "available," the unsupported reduction in the value of capacity cost reductions provided by distributed generation, and the failure to acknowledge the benefits of distributed generation all point to a likelihood that the Company will continue to impose punitive and unjustly discriminatory rates on distributed generation customers without a foundation in actual cost of service.
- The Company's own analysis demonstrates that all distributed generation customers (except those who have been grandfathered) are likely overcharged for supplementary power service and that all distributed generation customers are not fairly charged for

back-up power service. As a result, Rate Rider RGB customers are forced to subsidize the Company and, possibly, non-distributed generation customers.

- For all the reasons described above, the Company's Rate Rider RGB charges are unfairly discriminatory against distributed generation customers in both design and application.
- The Company's Rate Rider RGB charges unjustly discriminate against customer-owned distributed generation even though that generation has clear economic value, reduces the cost of utility services, is supported by private customer investment, and is delivered by competitive providers of electricity technologies and services.

Q. What are the broader consequences to Alabama citizens and the Alabama economy as a result of the Company's ill-conceived and unfair charges under Rate Rider RGB?

A. The Rate Rider RGB charges for supplementary and back-up power impose an unjust and discriminatory tax on private solar distributed generation investment that denies the opportunity of customers to realize a reasonable return on those investments, stifles the emergence and potential growth of a valuable new market and job-creating technology and services segment in Alabama, and denies Alabama the environmental benefits of more clean, renewable energy generation. The Company's Rate Rider RGB charges are not just bad rate making; they are bad for the citizens and economy of Alabama. [91]

Q. What action do you recommend that the Commission take regarding Rate Rider RGB?

A. I recommend that the Commission:

[91] *See* Ex. KRR-10, Affs. Bankston ¶¶ 4–13, Hansen ¶¶ 4, 6, Johnston ¶¶ 4, 6–7, Pfeiffer ¶¶ 4–13, Scribner ¶¶ 4–6, and Thorne ¶¶ 4, 6–7.

1) Order the Company to withdraw and cease enforcement of any and all of the provisions of Rate Rider RGB, Part I.B., relating to Supplementary and Back-Up Power.
2) Order the Company to refile new Rate Rider RGB language providing just and reasonable terms for the provision of Supplementary and Back-Up Power as those services are defined by the FERC, based only on the actual costs for those services, and that do not have the confusing applicability language currently included in the Rate Rider RGB.
3) Order the Company to evaluate and reflect the benefits and reduced costs of serving distributed generation customers in setting any rates for supplementary and back-up service.

Q. Does this conclude your testimony?

A. Yes, it does.

BEFORE THE ALABAMA PUBLIC SERVICE COMMISSION
MONTGOMERY, ALABAMA

JAMES H. BANKSTON, RALPH B. PFEIFFER, JR., **Intervenors,**	)	
GASP, INC. **Intervenor**	)	
	)	**Docket No. U-4226**
v.	)	
ALABAMA POWER CO., **Petitioner**	)	
In re: Rate Rider RGB (Supplementary, Back-up, or Maintenance Power)	)	

TESTIMONY OF KARL R. RÁBAGO

State of New York)

County of Westchester)

Karl R. Rábago, being first duly sworn, deposes and says that she has read the foregoing prepared testimony and that the matters and things set forth therein are true and correct to the best of her knowledge, information and belief.

Karl R. Rábago

Subscribed and sworn to before me
this 13th day of November, 2018

Notary Public

My commission expires: 4/2/19

NOTARY SEAL

JENNIFER A. RUHLE
Notary Public, State of New York
No. 01RU6163738
Qualified in Westchester County
Commission Expires April 02, 2019