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Via electronic delivery

Walter L. Thomas, Jr., Secretary
Alabama Public Service Commission
RSA Union Building
100 North Union Street, Suite 850
Montgomery, AL 36104

Re: Petition for a Certificate of Convenience and Necessity
Docket 32953

Dear Secretary Thomas,

Please find attached a public, redacted version of Sierra Club's post-hearing brief in the form of a proposed order. A confidential, un-redacted version of this document was filed directly with the Secretary's office this afternoon.

Please contact me with any questions.

Sincerely,

Joel E. Dillard

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Counsel for Sierra Club

BEFORE THE ALABAMA PUBLIC SERVICE COMMISSION

IN RE: Petition for a Certificate of	)	
Convenience and Necessity by	)	Docket 32953
Alabama Power Company	)	

PROPOSED ORDER FILED BY INTERVENOR SIERRA CLUB

I. INTRODUCTION

Alabama Power Company ("APC," "Alabama Power," or "the Company") filed a petition for a certificate of convenience and necessity ("Petition") with this Commission under section 37-4-28, Code of Alabama, seeking to add approximately 2400 megawatts ("MW") of new capacity resources to meet an alleged winter capacity deficit that has been met to date—and that APC plans to meet in the near future—using existing resources, amidst predictions of declining load growth and no commensurate planned retirements.

The Company's Petition has been properly noticed, and an evidentiary hearing has been held. Based on the evidentiary record, as discussed in further detail below, this Commission concludes that Alabama Power failed to present credible, competent, or substantial evidence that (i) existing resources that the Company will rely on to meet demand until 2023 are insufficient to meet any demand beyond 2023, such that the Company needs to add a full 2400 MW of new capacity resources, and (ii) the portfolio of resources proposed in the Company's Petition are least cost, or equivalently, cost-effective for Alabama ratepayers.

This Commission's conclusions regarding cost-effectiveness are based in no small part on the Company's inappropriately narrow Request for Proposals ("RFP") for generation assets to meet its alleged winter capacity need. That RFP excluded demand-side resources, as well as the

Southern system's existing resources, upon which APC regularly relies. The only renewables included in the Company's Petition were taken from an entirely separate RFP, in which APC received offers for solar photovoltaic and battery storage ("solar/BESS") resources that the Company's witnesses acknowledge are significantly lower cost than the gas-fired plants in the Company's Petition.

Both APC's and Southern's decision makers recognize that renewables paired with storage are cheaper and more flexible than gas-fired generation. Yet their proposal would lock APC's customers into bearing the financial risk associated with gas-fired units for multiple decades at a time of great change in the utility industry, as renewable energy and storage costs plummet.

Thus, for the reasons discussed in greater detail below, the Company's Petition is denied with respect to its proposed gas-fired generation assets, and approved with respect to the solar/BESS resources. This Commission previously approved 500 MWs of solar and storage generation projects in its 2015 Order, subject to final approval of specific projects. The record in this case proffers credible, competent, and substantial evidence that the specific solar/BESS projects proposed by Alabama Power are cost-effective, or least cost, but fails to do so with respect to the proposed gas generation assets. Should Alabama Power seek approval for additional capacity resources in the future to meet a winter target reserve margin, the Commission recommends that Alabama Power better document the scope of its claimed need, such as in its upcoming 2021 Reserve Margin Study, and issue a broad RFP that allows for renewable energy and storage projects, and demand-side resources, to compete on equal footing with gas-fired plants and with existing capacity resources in the Southern system.

II. PROCEDURAL BACKGROUND

A. Docket No. 32953

On September 6, 2019, Alabama Power filed a Petition under Alabama Code section 37-4-28, as well as Parts A and B of Rate CNP–Adjustment for Commercial Operation of Certificated New Plant. *See* Alabama Power Company Pet. for a Certificate of Convenience and Necessity 1, Sept. 6, 2019. If granted, the Petition would permit Alabama Power to add approximately 2400 MW of new capacity, consisting of nearly 1900 MW of combined cycle gas-fired turbine facilities, 340 MW of solar/BESS generation, and 200 MW of demand-side resources. *Id.* at 3-5. Those proposed resource additions are discussed in greater detail below.

Alabama Power's Petition was accompanied by pre-filed direct testimony and exhibits from two Alabama Power employees: John B. Kelley, Director of Forecasting and Resource Planning, and Christine M. Baker, Director of Regulatory Pricing & Costing Services. APC also pre-filed direct testimony and exhibits from three employees at Southern Company Services, the consulting arm of APC's parent company: Jeffrey B. Weathers, Manager of Resource Planning; Michael A. Bush, Manager of Generation Planning and Development; and M. Brandon Looney, Manager of Reliability and Resource Procurement.

This Commission granted several parties leave to intervene in the proceeding, including Manufacture Alabama, the Alabama Industrial Energy Consumers ("AIEC"), Sierra Club, Energy Alabama and GASP, the Alabama Coal Association, Energy Fairness.org, the American Senior Alliance, the Alabama Solar Industry Association ("AlaSIA"), and the Alabama Office of the Attorney General.

In September 2019, intervenors began submitting pre-filed direct testimony and discovery requests. Alabama Power later submitted the pre-filed rebuttal testimony of Mr. Kelley, Mr. Weathers, Mr. Bush, Mr. Looney, Ms. Baker, Astrapé Consulting Director Kevin D. Carden, and APC Forecasting Manager Maria J. Burke. Testimony containing information designated by Alabama Power as confidential was filed in both a redacted public form and a confidential non-public form.

In January and February of 2020, depositions were taken of Alabama Power witnesses Ms. Baker, Ms. Burke, Mr. Bush, Mr. Carden, Mr. Kelley, Mr. Looney, and Mr. Weathers; AIEC witness Jeffry Pollock, President of J. Pollock, Inc; and Sierra Club witnesses Mark D. Detsky, partner at the law firm Dietze and Davis, and Rachel S. Wilson, Principal Associate with Synapse Energy Economics, Inc. Between March 18 and March 26, 2020, Energy Alabama and GASP, Alabama Power, and Sierra Club filed deposition designations entering selected portions of the deposition transcripts into the record.

On March 4, 2020, Sierra Club moved for denial of Alabama Power's Petition, arguing that the Company failed to meet its burden of proving, with substantial evidence, that its proposed resource portfolio was necessary and cost-effective under section 37-4-28. Sierra Club's Mot. Den. Pet., Mar. 4, 2020. Alabama Power responded by providing a copy of the Intercompany Interchange Contract, which Sierra Club had noted was absent from the record, and otherwise stating it will address Sierra Club's arguments in its post-hearing brief. Pet'r's Resp. to Sierra Club's Mot. Den. Pet., Mar. 5, 2020. This Commission held Sierra Club's motion to deny in abeyance and has considered it in conjunction with Sierra Club's post-hearing brief. Tr. 16:14-17:1. Sierra Club's motion to deny Alabama Power's Petition is hereby granted, for the reasons discussed in Part III below.

From March 9-11, 2020, Administrative Law Judge Garner held a public hearing in Montgomery, AL. Alabama Power witnesses Mr. Weathers, Mr. Carden, Ms. Burke, Mr. Kelley, Mr. Bush, Mr. Looney, and Ms. Baker were cross-examined at the hearing. Various intervenors' witnesses were also subjected to cross examination. Relevant portions of the hearing, as well as relevant pre-filed testimony, discovery responses, and deposition responses, are discussed in Part III below, with confidential information redacted.

To establish associational standing, intervenor Sierra Club pre-filed direct testimony from six witnesses—Myrtle Jones, Carol Adams-Davis, Joe Neal Womack, Lella Lowe, Riva Fralick, and Stephen Stetson—all of whom are Alabama residents and members or employees of Sierra Club. Sierra Club Test. and Supporting Ex., Dec. 4, 2019. As customers of Alabama Power, all six witnesses bear the financial and environmental risks associated with Alabama Power's multi-decadal investment in fossil fuel infrastructure, and will be exposed to the pollution generated by APC's proposed gas-fired plants. *Id.*; *see* Part C, *infra*. On March 2, 2020, Sierra Club and APC filed a stipulation "agree[ing] that Sierra Club has associational standing to participate in this case on behalf of its members who will be affected by the outcome of this proceeding." Stipulation Between Pet'r and Sierra Club, Mar. 2, 2020. No intervenors opposed Sierra Club and Alabama Power's stipulation. On March 11, 2020, Administrative Law Judge Garner granted Sierra Club associational standing, and entered the direct testimonies of its six standing witnesses into the record. Tr. 1185:14-21.

B. <u>Docket No. 32382</u>

Alabama Power periodically acquires limited quantities of renewable energy pursuant to a 2015 Order from this Commission. Ala. Power Co., 324 P.U.R.4th 441, No. 32382 (Ala. P.S.C. Sept. 16, 2015) [hereinafter "2015 Order"]. That Order grants APC a Petition to "develop or

procure up to 500 megawatts of capacity and energy from renewable energy and environmentally specialized generating resources." *Id.* at 1-2. The Commission, in granting the CCN, specified that "[i]ndividual projects under this certificate could not exceed 80 megawatts." *Id.* at 3. APC holds one renewable RFP every two years, and submits projects generated under its renewable RFPs to the Commission for approval. Tr. 349:4-6; Kelley Direct Test. 24.

APC is planning to hold its next renewable RFP in the fall of 2020, although the 2015 Order does not require APC to wait until autumn to conduct an RFP. Kelley Depo. 139:1-6. In fact, the Order does not even require periodic RFPs, but instead allows "project opportunities [to] be identified through other means, such as unsolicited offers." 2015 Order, *supra*, at 10.

Both APC's actions under the 2015 Order, and the resources it seeks in its present Petition, illustrate the Company's prioritization of fossil fuel generation sources over renewables. The 2015 Order provides that, "if any of the authorized 500 megawatts has not been exercised" six years after the Order, "the certificate authorization for that unexercised capacity will expire." *Id.* at 6. Yet, according to Kelley, APC identified cost-competitive renewable projects in its last renewable RFP that it is still in the process of "marketing... to customers." Tr. 350:4-8. APC is aware that the Petition in that docket will expire in 2021, yet has sought neither a renewal of the Petition nor a modification allowing it to acquire more than 500 MW of renewables. Kelley Direct Test. 24.

III. DISCUSSION

This Commission denies Alabama Power's Petition because the Company failed to adduce credible, competent, or substantial evidence that it has an approximately 2400 MW capacity need that cannot be met by its existing resources, and even if it had adequately demonstrated a need to add 2400 MW of new capacity resources to its system, the Company

failed to provide substantial evidence that it selected a least-cost portfolio of resource additions. APC seeks to make its customers bear both the financial and environmental risks of a long-term investment in large, inflexible gas-fired plants, without having done its due diligence in assessing and mitigating those risks. Part A discusses the Commission's Findings of Fact regarding Alabama Power's Petition, and Part B presents the Commission's Conclusions of Law.

A. Findings of Fact

1. Alabama Power Has Failed to Proffer Credible, Competent, or Substantial Evidence of a Need for an Additional 2400 MWs of Capacity

i. Alabama Power Company and the Southern Company Corporate Structure

Alabama Power is an investor-owned public electric utility headquartered in Birmingham, AL. Ala. Power Co. Hr'g Ex. 20, at 5. APC has about 1.48 million customers, eighty-six percent of which are residential. *Id.* Alabama Power is a wholly-owned subsidiary, or "operating company," of Southern Company. *Id.* at 5; Ala. Power Co. Hr'g Ex. 1, at i; AlaSIA Hr'g Ex. 2, at II-225.

Alabama Power has several sister companies that are also wholly-owned subsidiaries of Southern Company (also called "Southern"), including Georgia Power Company ("Georgia Power"), Gulf Power Company, and Mississippi Power Company, which are collectively known as Southern Company's "operating companies." *See* AlaSIA Hr'g Ex. 2, at II-233, -241, -249. Southern Company Services ("SCS") is an arm of Southern Company that "provides consulting services and other specialized services for the operating companies . . . working on their behalf." Tr. 683:11-14.

ii. The Operating Companies' Capacity Sharing Arrangement Under the Intercompany Interchange Contract

Alabama Power and its sister operating companies "operate their systems on a coordinated basis in order to achieve economies of scale and other available efficiencies." Kelley Direct Test. 4. They achieve this coordination through the Intercompany Interchange Contract ("IIC"), under which "Alabama Power and other members of the Pool combine their supply- and demand-side resources and service obligations." *Id.*; Kelley Rebuttal Test. 8. According to Mr. Weathers, Southern's Manager of Resource Planning, "to the extent one operating company can purchase from another operating company on an energy basis cheaper than it can produce it, it does that and it saves customers money." Tr. 117:12-16.

The IIC was formed between Southern operating companies Alabama Power, Georgia Power, Gulf Power Company, Mississippi Power Company, and Southern Power Company. Ala. Power Co. Hr'g Ex. 30, at 1 [hereinafter "IIC"]. The IIC has no designated termination date, and APC expects that the IIC "will be in effect for the period of 2020-2029," at a minimum. Ala. Power Co. Resp. to AIEC Disc. Req. 2 Interrog. 30. And APC "assumes that the Southern Company will continue planning for both production and transmission capacity on a coordinated, system-wide basis for the period of 2020-2029," at a minimum. Ala. Power Co. Resp. to AIEC Disc. Req. 2 Interrog. 31. Prior to the current IIC, the operating companies had operated under their previous interchange agreement, which was executed in 2000. IIC, *supra*, at § 2.1.

The IIC enables Southern Company's operating companies to use their "electric facilities . . . in such a manner as to achieve the maximum possible economies consistent with the highest practicable reliability of service . . . and to provide a basis for equitably sharing among the OPERATING COMPANIES the costs associated with the operation of facilities that are used for

the mutual benefit of all the OPERATING COMPANIES." IIC, *supra,* at § 3.1 (capitalization in original). John Kelley, APC's Director of Forecasting and Resource Planning, testified that exchanging energy "*under the IIC lowers total production cost and enhances system reliability, which benefits all of the operating companies.*" Kelley Direct Test. 5 (emphasis added).

The IIC calls for "coordinated planning" among its members, Tr. 369:18-20. In accordance with the IIC, the operating companies undertake "a comprehensive and coordinated resource planning process." Kelley Direct Test. 5. The IIC also anticipates that its members will share "temporary" capacity, though it does not define the term "temporary," nor otherwise limit the extent to which operating companies can share capacity. Tr. 371:12-22.

Mr. Kelley, APC's Director of Forecasting and Grid Planning, acknowledged that "temporary" capacity sales can occur for multiple consecutive years, Kelley Depo. 108:3-19, and evidence in the record demonstrates that capacity sales can involve large amounts of capacity. In fact, Mr. Kelley testified that APC intends to rely upon "temporary" capacity sales under the IIC from 2020-2023 to cover the capacity shortfalls that APC contends warrant its proposed capacity additions. *Id.* By 2023, APC predicts that its proposed resource additions would be online to replace the capacity that the IIC will be covering in the meantime. *See* Part III.A.1.vii *infra.*

APC has itself engaged in numerous purchases and sales of reserves in the IIC Pool over the last ten years. *See* Attach. A to Ala. Power Co. Resp. to AIEC Disc. Req. 3 Interrog. 49. From [redacted] APC spent a [redacted] period engaged in such transactions. *Id.* From [redacted] APC bought and sold power into the IIC Pool for [redacted] in a row. *Id.* While APC had surplus capacity levels from 2014-2018, it "was in a position of capacity need in 2019 and was able to rely on the surplus of the system to meet such need." Ala. Power Co. Resp. to SELC Disc. Req. 1 Interrog. 8.

In various instances, APC sold or purchased [redacted] worth of capacity from sister companies. Attach. A to Ala. Power Co. Resp. to AIEC Disc. Req. 3 Interrog. 49. In [redacted] for example, APC sold [redacted] worth of reserves into the IIC pool. *Id. See also* Attach. U to Ala. Power Co. Resp. to Sierra Club Depo. Notice Attach. A ([redacted]).

In the last ten years, members of the IIC Pool have engaged in twenty-five capacity sales to the wholesale market. Ala. Power Co. Resp. to AIEC Disc. Req. 4 Interrog. 56. The terms of those sales demonstrate that IIC members are able to make multi-year commitments regarding their surplus capacity, *id.*, and that APC could feasibly secure sales with such terms from other IIC members. Alabama Power itself documented a sale of 200 MW whose fifteen-year term extends from November 2015 to December 2030. *Id.* While the capacity sold by operating companies was typically between 100-200 MW, *id.*, it also has a history of being much larger. For instance, for a ten-year term between 2005 and 2015, Georgia Power entered into a 700 MW sale of power in the wholesale market. *Id.*

iii. APC's Existing Generation Capacity, and the Generation Capacity of the Operating Companies' Pool

In 2019, Alabama Power reported having a 12.6 gigawatt ("GW") supply-side winter generating capacity and a 12.5 GW summer capacity. Ala. Power Co. Hr'g Ex. 20, at 5. The Southern system's operating companies currently have about 45 GW of capacity. Tr. 588:22-23; 589:1-2; *Facts and Figures*, Southern Company, https://www.southerncompany.com/about-us/facts-and-figures0.html (last visited Apr. 29, 2020), and the record indicates that their capacity is set to increase, through acquisitions of low-cost renewable resources, in the coming years. In July 2019, the Georgia Public Service Commission ordered operating company Georgia Power

to procure an additional two GW of solar energy over the next three years, as part of its integrated resource planning process. *See* Ga. Power Co., Nos. 42310 & 42311 (Ga. P.S.C. July 29, 2019) [hereinafter Ga. Power Co. 2019 Order]; Ga. Code Ann. § 46-3A-2. The Order's mandate that Georgia Power undertake two additional capacity-based RFPs, beginning in 2022 and 2026, is likely to add even more gigawatts of new capacity to the Southern system. Ga. Power Co. 2019 Order, *supra*, Attachment A at 4.

iv. In Its Petition, APC Proposes to Add 2400 MW of New Capacity Resources, or Nearly Twenty Percent of the Existing Capacity on Its System, Predominantly in the Form of Fossil Fuel Generation Sources

Alabama Power seeks to add approximately 2400 MW of capacity resources to its system by the winter of 2023-2024. This would constitute a nearly twenty percent increase above APC's total capacity, which was 12.6 GW as of 2019. Tr. 340:3-18; Pet. for a Certificate of Convenience & Necessity 3-5.

APC seeks to add the 2400 MW of additional capacity in several forms, though the vast majority, or approximately seventy-eight percent, of the proposed new capacity is gas-powered combined cycle generation. More specifically, APC seeks to build a 743-MW combined cycle gas turbine facility called Barry Unit 8; purchase a 915-MW combined cycle gas-fired facility called Central Alabama; and enter into a nineteen-year power purchase agreement ("PPA") for the 238-MW Hog Bayou combined cycle gas plant, for a total of 1896 MWs of gas-fired combined cycle power plants. Kelley Direct Test. 19. In addition, APC plans to move forward with 340 MW of solar/BESS projects, which it selected pursuant to a process already authorized by this Commission in a certificate of convenience and necessity docket in 2015, and 200 MW of demand-side management and distributed energy resource programs. *Id.*

Barry Unit 8 will be constructed by Mitsubishi Hitachi Power Systems Americas, Inc. and Black & Veatch Construction, Inc., which contracted with APC "for the turnkey delivery of a new generating facility... by November 1, 2023." Bush Direct Test. 3. Barry Unit 8's projected operational lifespan is forty years. *See* Bush Direct Test. 4. Barry Unit 8 is slated to run for four years before it can receive a scheduled uprate that raises its winter capacity from 726 MW to 743 MW. *Id.*[1]

Central Alabama is a 915 MW unit currently owned by Tenaska Alabama II Partners, L.P., and remains subject to a PPA with a third party until May 2023, after which it "is expected to have a remaining useful life of approximately 23 years." Kelley Direct Test. 22. After the closing of APC's Purchase and Sale Agreement with Tenaska, APC will derive revenue from the existing PPA, and can use the plant's energy once that PPA expires.[2] *Id.*

The nineteen-year PPA for the 238 MW Hog Bayou Energy Center "provides the Company rights to the entire capability" of that facility. Kelley Direct Test. 21-22. The PPA includes an early start period in 2020, followed by a fifteen-year term beginning in December 2023.[3] *Id.* at 22.

Alabama Power's Petition also includes approximately 340 MWs of solar/BESS obtained through a process that was already approved by this Commission in 2015. The 340 MWs of solar/BESS include five PPAs from three different developers, and each consists of "a nominal 80 MW solar facility plus a nominal 80 MW BESS" that can discharge energy for two hours. Kelley Direct Test. 20-21. APC will have a right to "direct the charging and discharging of the

[1] Barry Unit 8's summer capacity rating is lower, beginning at 653 MW, with a "scheduled uprate" to 685 MW. Kelley Direct Test. 21.
[2] Central Alabama's summer capacity rating of 890 MW is slightly lower than its winter capacity.
[3] Hog Bayou's summer capacity rating of 222 MW is, again, lower than its winter rating. Kelley Direct Test. 22.

BESS during an eight-month period each year," and its payments under the five PPAs will be "energy-based." *Id.* at 21.

v. APC's Identification of an Alleged Need for an Additional 2400 MWs of Additional Capacity Was Based on Southern's Inflated Winter Target Reserve Margin

In 2018, SCS worked with consulting firm Astrapé to conduct its triennial Reserve Margin Study. Ex. Ala. Power Co. Hr'g Ex. 1, at 8; Carden Rebuttal Test. 3. This study developed winter and summer target reserve margins, or percentages by which SCS determined its system's total capacity should exceed its peak load. Ala. Power Co. Hr'g Ex. 1, at i. The study resulted in a long-term diversified winter target reserve margin of 25.25 percent, which APC relied upon in predicting its possible future capacity deficits. Kelley Direct Test. 9.

In the interest of brevity, and to prevent unneeded repetition of evidence by the Commission, this Order incorporates by reference all of the evidence on (i) APC's winter peak load forecast and (ii) Southern's 2018 Reserve Margin Study that is presented in the proposed order submitted by Energy Alabama and GASP to this Commission. There is substantial evidence in the record, and in Energy Alabama and GASP's proposed order, that the 2018 Reserve Margin Study contains flaws that inflated its resulting winter target reserve margin, and that APC's claimed 2400 MW need is overstated.

For example, Astrapé its calculation of Southern's Economically Optimal Reserve Margin by including extreme temperatures that have not occurred in over thirty years. The Reserve Margin Study involved inputting various drivers of uncertainty, including the variation in load during extreme weather, into a SERVM model, which then calculated an Economically Optimal Reserve Margin, or "EORM." Ala. Power Co. Hr'g Ex. 1, at ii-iii. Mr. Carden's team at

Astrapé worked with SCS to measure the impact of temperature on load by considering "historical annual weather patterns from 1962 through 2015" to determine future "weather year load shapes." Ala. Power Co. Hr'g Ex. 1, at 1-2.

However, uncontroverted evidence in the record demonstrates that Alabama's weather has been getting warmer. Alabama's temperatures had more extreme low values in the first half of that dataset than the more recent half. Winter temperatures in Alabama fell below 5°F six times from 1962-1988. In contrast, not once in the last thirty-two years—that is, not once since 1988—has the winter temperature in Alabama dropped below 5°F. Tr. 78:5-23; 79:1-11. Mr. Carden's team ran sensitivity analyses using datasets with different temperature data, and calculated differing target reserve margins, ranging from approximately twenty-two percent to 25.25 percent. Tr. 211: 1-12.

Thus, the use of more extreme temperature inputs altered the SERVM model's predictions regarding future weather patterns, likely resulting in colder temperature predictions. That, in turn, likely inflated the model's prediction about how much energy customers will need in the future during those cold events, leading to a higher target reserve margin than the model would otherwise indicate is needed.

There is evidence in the record, and in Energy Alabama and GASP's proposed order, which is incorporated in this Order by reference, to suggest that the 2018 winter target reserve margin was further inflated, including by Southern's treatment of economic load forecast uncertainty[4] and its upward adjustment of the reserve margin above the EORM.[5]

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[4] Southern's 2018 Reserve Margin Study assumed four years of economic growth as a means of capturing load uncertainty, Tr. 215:5-7, but expert witness James F. Wilson explained that "it would be more reasonable to model one year of load forecast uncertainty." J. Wilson Direct Test. 46.

[5] After concluding its modeling and deriving a winter target EORM of 22.5 percent, SCS decided to increase the reserve margin to twenty-six percent. Ala. Power Co. Hr'g Ex. 1, at viii. SCS claimed this would further increase

vi. APC's Integrated Resource Planning Processes Has Overestimated Load Growth Since at Least 2013, and Now Predicts Load on APC's System Will Decline From 2023 Onward

In APC's triennial Integrated Resource Plan ("IRP") process, the Company estimates the demand for electricity it will face over the next several years. Kelley Direct Test. 7. The Company then analyzes the marginal costs of both existing and potential supply- and demand-side resources, and develops a benchmark plan containing APC's preferred "combination of demand-side and supply-side resources." *Id.* at 7, 24. APC claims it will have an approximately 2400 MW capacity deficit in 2023—based in large part on Southern's winter target reserve margin of 25.25 percent.

Over the past decade, Alabama Power has consistently overestimated future load growth in the context of its resource planning processes, and in each IRP, it has had to reduce its predicted load growth from its past predictions. Most recently, in Alabama Power's 2019 IRP, Alabama Power predicted "[redacted]."[6] Ala. Power Co. Hr'g Ex. 20, at 20 (emphasis added). This was reduced from APC's 2016 IRP, in which it had predicted that its average winter peak demand would be [redacted], and [redacted]

reliability for customers, but Mr. Weathers acknowledged it would also entail additional costs—"costs that Southern Company customers will pay for." Tr. 75:9-10; Hr'g Ex. 1, at viii.

[6] APC attributed that discrepancy to "the effects of both a slower economic recovery in the near term and greater levels of appliance and lighting efficiencies." Attach. A to Ala. Power Co. Resp. to Sierra Club Disc. Req. 1 DPR 11, at 27.

[redacted].[7] Attach. A to Ala. Power Co. Resp. to Sierra Club Req. 1 DPR 11, at 26-27. APC's 2016 load growth predictions were, in turn, lower than those in Alabama Power's 2013 IRP. *Id.* at 27.

Thus, the two earlier APC IRPs referenced in the record had both over-forecasted load growth. Mr. Weathers agreed that APC's "loads have not grown as quickly in the last ten years as they did before the recession." Tr. 73:23; 74:1-3. In light of APC's history of forecasting inaccurately high load growth, the Company has failed to present credible, competent, or substantial evidence that its current predictions of load growth are not similarly overstated.

vii. APC Failed to Submit Credible, Competent, or Substantial Evidence of a Need for 2400 MW of New Capacity Resources, Considering the Post-2023 Decline in Its Peak Demand and the Ongoing Availability of Capacity in the IIC Pool

Even if Southern's 2018 target reserve margin and APC's predictions about load growth were accurate, APC's proposal to add 2400 MW of new capacity to its system is unwarranted. Going forward, APC predicts a peak winter demand in 2023, but predicts a steep drop in demand of approximately 800 MWs—exceeding the size of most of its proposed resources—only three years later, in 2026. Moreover, APC has not provided credible, competent, and substantial evidence of a need for 2400 MW of *new* capacity, given that it can continue its longstanding reliance on *existing* capacity in the IIC Pool to meet any capacity deficits it does experience after 2023.

[7] In its 2019 IRP, in addition to reiterating the two explanations APC made in its 2016 IRP, the Company cited the [redacted] in 2022 and 2026 as causes for the additional declines in its expected load. Ala. Power. Co. Hr'g Ex. 20, at 24.

a. APC Predicts Its Capacity Deficits Will Fall by 795 MW Only Three Years after the Forty-Year, 743-MW Plant Barry Is Placed in Service

Based on Southern's 25.25 percent winter target reserve margin, APC predicted a peak capacity deficit of 2447 MW in the 2023 winter, when Barry Unit 8 is projected to come online. APC projected that, even if it added no additional generation, its capacity deficits would drop to 2229 MW in the winter of 2024, followed by 2243 MW in the winter of 2025, and only 1652 MW in the winter of 2026, due to the loss of a wholesale customer. Kelley Direct Test. 11; Ala. Power. Co. Hr'g Ex. 20, at 20.

The difference between the highest claimed capacity deficit in 2023, and the ostensible 2026 deficit, is a striking 795 MW—which is greater than the entire capacity of Barry Unit 8. In fact, Barry Unit 8's uprate, which would increase its winter capacity from 726 MW to 743 MW, does not even occur until 2025, just one year before APC's claimed capacity need steeply declines.

APC does not argue that having twenty to forty years' worth of gas-fired plants might help the Company fill as-yet-unidentified capacity needs resulting from future retirements. According to Mr. Kelley, "post 2025 retirement[s] really did not play a major part in the issues...present[ed] here in this petition." Kelley Depo. 132:8-10.

b. APC Intends to Continue Its Longstanding Practice of Relying upon the IIC's Capacity to Meet Capacity Needs It May Experience after 2023

APC already has capacity from the operating companies' Pool that it has relied upon, and plans to continue to rely upon until early 2023, to meet its claimed winter capacity needs.

In support of its Petition, APC calculated that its current capacity would not satisfy its winter capacity need, and predicted a shortfall of 1650 MW beginning in the winter of 2020. Kelley Direct Test. 11. During the 2020 winter, APC was planning to "rely[] upon the surplus from the other operating companies" in the IIC Pool to meet any capacity shortfall it experienced. Kelley Depo. 98:18-23.

APC predicts a higher capacity need—of 1788 MW—during the upcoming winter of 2021. APC again intends to meet any deficit it experiences with surplus capacity from the IIC Pool. Kelley Direct Test. 11; Kelley Depo. 99:15-17; 108:16-19.

APC anticipates having a lower capacity deficit of 1702 MW in 2022, but again plans to combat that deficit with excess capacity from other members of the IIC Pool. Kelley Depo. 108:16-19.

In practice, APC's reliance on its own capacity, combined with the capacity available in the operating companies' Pool, has been quite successful at meeting peak winter demand. APC experienced no capacity shortfall this past winter—nor did it fail to meet customers' demand during the 2014 Polar Vortex, its "system's all-time winter peak." Tr. 83:1-10; Weathers Rebuttal Test. 12.

In fact, there has been no load shedding event—a situation in which some customers lose power due to insufficient capacity—in the entire Southern system in forty-three years, since 1977. Tr. 82:1-14. APC does not provide any evidence that its reliability has been compromised by its reliance on the operating companies' Pool thus far; it even boasts of having a 99.98 percent service reliability rating in 2017-2018. *See* Ala. Power Co. Hr'g Ex. 20, at 5.

c. APC Has Failed to Provide Credible, Competent, or Substantial Evidence That It Cannot Continue Relying on the IIC Pool's Capacity After 2023 To Meet Its Capacity Needs

Although Alabama Power intends to resolve its claimed capacity deficits in 2020, 2021, and 2022 by purchasing around 1700 MW each year from the IIC Pool, APC simply ruled out the possibility of acquiring any IIC capacity from the winter of 2023-2024 onward.[8] APC has failed to show that it needs its proposed acquisition of an additional 2400 MWs of capacity, and that it cannot rely on the existing IIC resources to meet its capacity need—including some or all of its alleged need for a 25.25 percent winter target reserve margin—as it has in the past.

As discussed in greater detail in Part III.A.1.ii, the IIC expressly contemplates Pool members "operat[ing] their systems on a coordinated basis in order to achieve economies of scale and other available efficiencies," Kelley Direct Test. 4; operating companies "combin[ing] their supply- and demand-side resources and service obligations," Kelley Rebuttal Test. 8; and operating companies purchasing power from one another to "save[] customers money" and reduce "total production cost and enhance[] system reliability, which benefits all of the operating companies." Tr. 117:7-16; Kelley Direct Test. 5.

The IIC also anticipates that its members will share "temporary" capacity, Tr. 317:12-22, which APC is relying on through at least the winter of 2022-2023 to meet its claimed winter capacity deficits. And, as recounted above in Part III.A.1.ii, operating companies have at times engaged in capacity transfers totaling hundreds of megawatts for time periods longer than a decade. *See* Ala. Power Co. Resp. to AIEC Disc. Req. 4 Interrog. 56.

[8] Notably, at the same time that Alabama Power alleges a capacity shortfall of 2400 MWs based on its 2018 Reserve Margin Study, it is also planning to sell 200 MWs of its existing capacity to others through 2030. *See* Part III.A.1.ii *supra*.

Alabama Power and its sister operating companies' history of sharing "temporary" capacity under the IIC demonstrates a pattern and practice of sharing such "temporary" capacity on a regular basis. *See* Ala. Power Co. Resp. to AIEC Disc. Req. 3 Interrog. 49. Neither APC nor SCS provided evidence that IIC capacity was ever unavailable to Pool members with capacity needs, or that such surplus capacity will cease to be available in the future.

APC initially contended that it could not rely on the operating companies' Pool of generation capacity for its alleged post-2022 winter capacity needs because APC was contractually prohibited from doing so under the terms of the IIC. However, Alabama Power did not submit the IIC with its Petition. Only when pressed to do so by Sierra Club did APC enter the IIC in the record. *See* Pet'r's Resp. to Sierra Club's Mot. Den. Pet., Mar. 5, 2020, *supra*. Now that the IIC is in the record, the Commission concludes, as a matter of law and as discussed below, that the IIC's terms do not prohibit APC's reliance on its Pool to meet some or all of the Company's winter capacity deficits in or after 2023. *See* Part III.B.2.i *infra*.

After the IIC was entered into evidence and it became clear that capacity transfers are broadly contemplated by the IIC and are, in fact, part of the standard practice of the operating companies, APC raised two other arguments to justify its assertion that it could not continue to rely on the operating companies' Pool to meet its claimed winter capacity need, and thus must acquire an additional 2400 MWs of capacity. Neither argument is supported by credible, competent, or substantial evidence.

First, APC argued that there is a possibility that other operating companies may retire some of their generation assets in the future. However, APC has not proffered any credible, competent, or substantial evidence about the likelihood, timing, or scale of such retirements. For example, APC implies that Georgia Power could theoretically retire two of its coal units, Bowen

Units 1 and 2, in the future. Kelley Direct Test. 13-14. However, Georgia Power has announced no plans to retire its Bowen units, much less any date by which they would be retired. *See* R. Wilson Direct Test. 13.

Meanwhile, APC does not deny that the Georgia Public Service Commission just approved Georgia Power's addition of two GWs of additional solar capacity to its grid in the next three years. *See* Part III.A.1.iii *supra*. Moreover, as APC has itself noted, APC peaks in the winter, while "the largest of the retail operating companies, Georgia Power, continues to experience its peak load in the summer." Kelley Direct Test. 12. There is no credible, competent, or substantial evidence in the record that the operating companies' Pool may suddenly cease having the capacity to support APC's alleged capacity deficit after 2023; that assertion amounts to speculation and conjecture.

Similarly, APC argued that reliance on the operating companies' Pool for capacity beyond 2023 to meet its claimed winter capacity deficit would constitute a more formal affiliate transaction that would increase the cost of such reliance. Tr. 373:16-23. Even if that were the case, that creates a question of whether such reliance on the operating companies' Pool constitutes the "least-cost," or equivalently, "cost-effective," means of meeting APC's claimed capacity deficit. It does not constitute evidence that APC cannot, as a factual matter, continue to rely on the operating companies' Pool to meet its alleged winter capacity deficit post-2023, and it does not constitute evidence that APC needs to acquire new capacity. Moreover, there is no credible, competent, or substantial evidence in the record about what the cost of reliance on the IIC Pool would in fact be, because, as discussed below, APC never even analyzed the cost of such a transaction anywhere in the record, much less in any of the economic analyses that APC conducted to determine its supposed least-cost solution to its alleged 2400 MW shortfall.

Indeed, when Mr. Pollock analyzed APC's claimed need, he concluded that the Company can currently meet its capacity obligations "by continuing to make Reserve Equalization purchases" under the IIC. Pollock Direct Test. 3:12-14. As expert witness Mr. Pollock succinctly stated, APC overestimates its future capacity needs due to its reliance on outdated "past historical data as well as assumptions" regarding Southern's generation capacity, its inflated projected summer and winter peak demands, and the "availability of power purchases from neighboring systems" that APC dismissed. Pollock Direct Test. 1, 15. Mr. Pollock concluded, as does this Commission, that "APC does not need all of this new capacity [in its Petition] to provide safe and reliable electricity service at the lowest reasonable cost." *Id.* at 7.

viii. APC Fails to Provide Credible, Competent, or Substantial Evidence to Justify the Gaping Discrepancy Between Its Short-Lived Peak Demand and the Long-Running Combined Cycle Units It Seeks to Add to Its System

APC expects to experience its peak demand during a very narrow window: weekday mornings from six to eight a.m. on extremely cold days in January, and possibly also in December or February. Tr. 440:10-12; 442:1-5. The Company is essentially proposing to spend in excess of a billion dollars increasing its total capacity by nearly twenty percent in order to meet demand during a short window of time, and only on very cold days. Moreover, Mr. Kelley testified that there were ways for the Company to meet that brief, speculative demand by shifting load. *See* Part III.A.2.ii *infra*. Not only is there a fundamental mismatch between the nature of APC's peak and the steep costs of acquiring the proposed additional generation assets, but there is a further dissonance between its short-lived peak and its desire to acquire combined cycle units, which are not designed to meet peak demand periods.

According to expert witness Mark Detsky, combined cycle gas plants are typically used for the sustained delivery of energy over prolonged time periods, and thus are not "even [the] ideal type of gas units to meet the system peak" identified by Alabama Power. Detsky Direct Test. 19. Gas peakers, which are gas-fired combustion turbines, are designed to rapidly ramp up and down to provide energy over short periods of time, such as hours, to meet brief peaks in energy demand, such as summer or winter peaks at the hottest or coldest hours, on the hottest or coldest days of the year. *Id.* Mr. Weathers also clarified that "combustion turbine units" are "expected to operate generally across peak load periods of time." Tr. 103: 21-23; 104, 1-2. Similarly, the solar/BESS assets in APC's portfolio are designed to be dispatchable to meet such a two-hour capacity need. Detsky Direct Test. 16:13-15.

As discussed below, had SCS derived an optimized portfolio of resource additions, evidence in the record suggests that it could well have discovered a costly mismatch between the nature of APC's claimed need for capacity and the nature of its proposed resource additions.

2. APC Has Failed to Proffer Substantial Evidence That Its Proposed Resource Additions Form the Least-Cost Portfolio

APC undertook a six-part process to select the 2400 MW of capacity resources presented in its Petition. In part one, in 2018, SCS oversaw a turnkey bidding process for the construction of a combined cycle gas turbine at its Barry site. In part two, separate from the turnkey process, APC issued a "capacity RFP" for supply-side generation assets in 2018. In part three, also in 2018, APC independently conducted its periodic RFP for renewables under this Commission's Order in Docket No. 32382, *see* Part II.B. *supra*, without initially intending to include any of the winning bids in its present Petition.

In part four, APC and SCS selected a subset of the "capacity RFP" responses, made up of only gas-fired units, for further analysis. In part five, SCS ran this subset of responses through a model called Strategist to analyze the production costs of various approaches to meeting its alleged capacity shortfall. In part six, SCS compared the relative costs of (i) the gas-fired generation bids from the capacity RFP with (ii) Barry Unit 8 and (iii) the renewable bids that Mr. Kelley's team analyzed separately, to develop APC's 2400 MW portfolio of proposed resource additions.

Due to the manifold flaws in APC's six-step process, the Company failed to adduce credible, competent, or substantial evidence that it selected a least-cost portfolio. The two most critical mistakes that present the strongest evidence of APC's having overlooked lower-cost resource portfolios are as follows:

First, at no stage in their six-part process did SCS or APC ever evaluate whether continued reliance on the IIC Pool, or on short-term PPAs for other operating companies' excess capacity, could meet some or all of APC's alleged 2400 MW capacity shortfall, or would be lower cost than the resources in APC's Petition. This is a particularly egregious oversight by APC; given that APC has been relying, and intends to continue to rely, on its sister companies' Pool for some time, APC must clearly view the Pool as an economically competitive resource. Notably, APC admits that its proposed resource additions will increase the average APC customer's annual bill by $50. Tr. 870:3-13. However, APC made no attempt to ascertain the cost of continuing to rely on Pool capacity, or contracting with sister companies for short-term capacity purchases, or modifying the IIC so it even better facilitates transfers between sister companies. Given that those strategies would not involve the steep construction and fuel costs associated with APC's proposed resource additions, those could well be lower-cost means of

meeting APC's claimed capacity needs. Indeed, APC's own witness expressly testified that using capacity from the IIC Pool "*lowers total production cost and enhances system reliability, which benefits all of the operating companies.*" Kelley Direct Test. 5 (emphasis added).

The Commission simply cannot find, on the record before it, that APC's proposal to cease its current practice of reliance on the IIC pool, and instead acquire 2400 MWs of capacity, is supported by credible, competent, or substantial evidence when APC failed to provide the Commission with (i) evidence that it could no longer continue its current practice, or (ii) evidence of the cost of doing so, particularly when APC's proposal would lead to a $50 per year increase in its average customer's bill, over the costs of its current practice.

Second, APC's process of selecting a resource portfolio was biased in favor of gas-fired plants, and especially Barry Unit 8. All of the bids that APC received from gas-fired generators were shorter in duration than the anticipated forty-year lifespan of Barry Unit 8. Southern's process penalized these units for having a shorter useful life, and favored Barry Unit 8 in comparison, by adding to the total costs of the shorter-lived units the additional costs—including the new construction costs—of replacing those units with new combustion turbines at the end of their lives, so that their lifespans would last forty years. SCS also did not use a model to choose an optimized, least-cost portfolio based on all the gas-fired and renewable bids it received, but instead evaluated renewable bids through a separate and less robust process. As for the gas-fired generation bids, SCS used a model that distorted their costs by pegging them to the forty-year lifespan of Barry Unit 8. At no stage in this six-part process did SCS or APC consider whether an optimized portfolio of demand- and supply-side measures would be a lower-cost means of meeting APC's claimed capacity deficit.

i. Part One: The Barry Unit 8 Solicitation

In 2016, Mitsubishi pitched SCS on the idea of building a combined cycle gas-fired generation unit. Bush Direct Test. 13-14. A year later, APC contacted Mr. Bush regarding its alleged capacity deficit, and he remembered Mitsubishi's pitch. Tr. 580:4-7.

In January 2018, Mr. Bush's team at SCS conducted a turnkey solicitation process—completely independent of the later 2018 capacity RFP issued by APC, which is discussed below—that yielded final proposals in August 2018. Tr. 583:21-23; 584:1-5. The solicitation process was narrowly limited to only supply-side gas-fired facilities around Barry's size that were to be located at the Barry site. Tr. 585:22-23; 586:1-5; Bush Direct Test. 14. The solicitation process yielded only three proposals, and resulted in Southern's selection of Mitsubishi and Black & Veatch. Bush Direct Test. 16.

In May 2019, APC, with SCS operating as its agent, executed a turnkey Agreement for Engineering, Procurement and Construction with Mitsubishi and Black & Veatch. Bush Direct Test. 17. The 726 MW combined cycle gas-fired unit that APC and SCS have contracted with Mitsubishi to build at the Barry site—and whose capital costs alone are [redacted]—is known in APC's proposal as "Barry Unit 8." Under the turnkey agreement, APC would provide a limited notice to proceed with Barry Unit 8's construction by March 2020, and a full notice to proceed by November 1, 2020. Bush Direct Test. 7. APC has already provided its counterparties with that limited notice to proceed. Tr. 651:7-12.

ii. Part Two: APC's 2018 Capacity RFP

In September 2018, APC issued a capacity-based RFP to acquire supply-side generation resources to meet its claimed capacity deficits. Kelley Direct Test. 16; Tr. 362:19-22. Mr. Kelley

directed the capacity RFP process, and Mr. Looney, Southern's Manager of Resource Procurement and Reliability, led a team that evaluated the results of the RFP. Kelley Direct Test. 16, 18. The RFP sought resources that were "fully dispatchable and available year-round" and that could be brought on line "in the 2019-2023 timeframe." Kelley Direct Test. 16; Ala. Power Co. Hr'g Ex. 21, at 30; Tr. 362:19-22.

The evidence in the record overwhelmingly demonstrates that the RFP was too narrowly drawn to provide a meaningful basis for determining which options in the market were cost-effective and could meet APC's alleged 2400 MW shortfall at the least cost.

First, the RFP excluded any consideration of existing resources on the Southern system that could meet APC's claimed needs. Tr. 218:22-23; 219:1-6; 708:13-19. In fact, Alabama Power explicitly prevented the other Southern operating companies from responding to its capacity RFP. Tr. 386:19-23; 387:1-12. However, as discussed below, APC provided no documentation showing that it was reasonable or cost-effective to exclude consideration of existing Southern generation resources. Precisely because APC did not include other Southern operating companies' assets in either its RFP or its Strategist modeling process, there is no evidence that the existing assets are so costly that it would have been cost-effective for APC to exclude them.

On the contrary, there is abundant evidence in the record that the existing resources are cheaper than APC's proposed acquisition of gas resources, and thereby should have been considered. APC has historically considered the Pool's surplus capacity to be reasonable and least cost—in fact, it is relying on that capacity until 2023. APC's reliance on the Pool is part of a rich history of affiliate transactions between operating companies; Mr. Kelley testified he is aware that FERC has in fact approved such affiliate transactions in the past, including between

APC and its affiliate Southern Power. Kelley Depo. 123:11-14; 125:10-23. Perhaps most tellingly, as noted above, APC itself predicts that ending its current reliance on the operating companies' Pool and investing in its proposed 2400 MW portfolio of assets will *increase* customers' bills by $50 per year on average, Tr. 870:3-13, strongly suggesting that existing assets are cost-effective and economic, and should have been included in the RFP.[9]

The RFP also explicitly excluded demand-side resources, listing them as a "non-responsive bid" meriting rejection, Ala. Power Co. Hr'g Ex. 21, at 26. SCS did not separately conduct an RFP or otherwise survey the market for demand-side measures, including energy efficiency measures. APC did not proffer documentation as to why it proposes to use 200 MWs, and not more, of demand-side resources. *See* Kelley Direct Test. 20; R. Wilson Direct Test. 14-15. Instead, Mr. Kelley's explanation suggests that demand-side resources were added as an afterthought, to fill in the gap between the 2236 MW of capacity APC garnered from the market, and its approximately 2400 MW claimed capacity need. *See* Kelley Direct Test. 19-20. Tellingly, APC still "does not know the mix of [demand-side] programs it will seek to implement." As a result, the actual cost of those programs remains unknown. Kelley Direct Test. 23.

Yet evidence in the record demonstrates that demand-side resources, including energy efficiency measures, are capable of resolving capacity needs, can address some part of APC's alleged capacity shortfall, and are considered reasonable and cost-effective resources. *See* R. Wilson Direct Test. 4, 14. According to Ms. Wilson, "[e]nergy efficiency measures are commonly referred to as the 'first fuel,' meaning that these measures should be considered first when adding new resources to a portfolio because they generally are the least-cost option." R.

[9] It bears noting that the $50 increase in the average APC's customer's bills was based only on projected costs through 2024; APC did not project the changes in costs that its customers could expect to face throughout the next forty years, or Barry Unit 8's lifespan. Tr. 878: 19-23; 879: 1-2.

Wilson Direct Test. 14. In 2015, "51 major investor-owned utilities in the U.S." spent, on average, 2.7 percent of their revenue on energy efficiency, whereas APC's "spending on energy efficiency as a percentage of the Company's revenues was less than one-tenth of one percent," Howat Direct Test. 16, strongly suggesting there are economic energy efficiency measures remaining to be implemented on APC's grid.

In fact, APC's own witness suggested that demand-side resources are well-situated to address the Company's narrow period of predicted peak demand. APC expects to experience its peak demand specifically from six to eight a.m. on weekdays. Tr. 440:10-12; 442:1-3. Even during those peak hours, Mr. Kelley agreed that "there are various ways to shave or shift peak load." Tr. 442:6-8. Those various strategies include using a standby generation program, interruptible load, pricing options, thermostat programs, water heating, and pursuing other demand-side resources. Tr. 442:6-23; 443:1-19.

iii. Part Three: APC's 2018 Renewable RFP

Alabama Power's 2018 Renewable RFP process generated 4576 MW worth of supply-side renewable energy bids. Ala. Power Co. Resp. to Energy Alabama/GASP Disc. Req. 1 Interrog. 40. In that process, APC received and evaluated [redacted] solar bids alone. Attach. F to Ala. Power Co. Resp. to Sierra Club Disc. Req. 1 Interrog. 10.

APC received a total of twelve solar/BESS bids in response to its 2018 renewable RFP. Detsky Direct Test. 23. Although APC had not initially intended to do so, it decided partway through its 2018 resource evaluation process to include five of those solar/BESS bids as candidates for its proposed resource portfolio. Kelley Direct Test. 19. APC rejected the other seven bids early on in the process, due to "some local transmission issues" that APC never substantiated in the record. Tr. 846:5-6; Detsky Direct Test. 23. APC did not contact those seven

bidders to attempt to resolve those transmission issues, it did not calculate the cost of resolving those transmission issues, nor did APC invite the many other solar bidders to pair their bids with storage. This stands in stark contrast with APC's treatment of the capacity RFP bidders, with whom APC engaged in "one-on-one negotiations." *See* Kelley Direct Test. 17.

Mr. Kelley acknowledged that the 80 MW limit in Docket No. 32382 could have prevented bidders in APC's 2018 renewable RFP from realizing the economies of scale associated with renewable projects that exceed 80 MW in size. Tr. 352:10-20; 422:1-9. Mr. Kelley never found out whether there were viable renewable projects larger than 80 MW in the market, because "everyone who is talking to [his team] knows about the 80-megawatts limits." Kelley Depo. 159:7-9.

Moreover, the 2018 renewable RFP imposed more restrictions on bidders than the 2018 capacity RFP, requiring that renewables be located in Alabama; interconnect to APC's transmission system; and be located on land owned in fee, rather than, for example, by lease. Detsky Direct Test. 22-24. Because the 2018 capacity RFP did not impose such restrictions, the gas plants selected through that process faced less rigorous requirements.

iv. Part Four: APC's and Southern's Elimination of RFP Responses

According to Mr. Kelley, the 2018 capacity RFP generated "19 proposals that totaled approximately 5,000 MW of capacity," Kelley Direct Test. 17, which resembled the total quantity of nameplate capacity APC had received from its 2018 renewable RFP. The nineteen proposals underwent "[p]reliminary evaluation on the basis of production costs and other factors." *Id.* Mr. Kelley's team first weeded out proposals that it deemed noncompliant with the RFP, before providing them to Mr. Looney's team at Southern, which input the remaining proposals into a capacity expansion economic model. Looney Direct Test. 3.

SCS provided only partial information on the components of Mr. Kelley's team's evaluation process. As an illustration, Mr. Kelley claims that SCS was presented some short-term options for electricity production during its capacity RFP, but they "weren't very attractive." Tr. 448:3-9. However, he provided no documentation or evidence on what those short-term options were. Instead, Mr. Kelley testified that the Commission and customers should "trust" that he and other SCS executives were correct to reject them. Tr. 449:10-17.

After eliminating some RFP proposals, Mr. Kelley testified that his team asked certain bidders to submit updated bids. SCS then evaluated those bids, developed a "Shortlist" of preferred bids, and conducted "[o]ne-on-one negotiations for projects on the Shortlist." Kelley Direct Test. 17. SCS did not submit to the record any documentation of those negotiations with potential bidders. Tr. 378:5-19. SCS again testified to the Commission that APC's customers should simply "trust" that SCS acted in those customers' best interests. *Id.*

v. Part Five: Southern's Faulty and Selective Use of the Strategist Capacity Expansion Model Evaluated Only APC's Fossil Fuel Proposals

After APC narrowed down the list of proposals from its 2018 capacity RFP and provided that list to Southern, Mr. Looney's modeling team further reduced the list of proposals that would be modeled using Strategist, a capacity expansion model.[10] Mr. Looney's team did not document the criteria by which it evaluated those proposals, and there is no evidence in the record of the criteria that were used to further eliminate proposals. Mr. Looney simply testified

[10] Mr. Looney's team calculated the proposed resources' production costs using the Strategist model, rather than the more advanced AURORA model. Mr. Looney testified that SCS is planning on switching from Strategist to AURORA because "the AURORA model has some advantages in modeling some resources, particularly renewables," and his team is "hopeful that they may model energy storage in a way that Strategist struggles with." Tr. 730:19-23. According to Mr. Looney, "[w]hile Strategist will yield production cost results based on deterministic inputs, it cannot resolve all competing contingencies of a dynamic nature." Looney Rebuttal Test. 4.

that his team used soft standards for evaluating them: "sanity checks" based on its employees' "experience" in the industry. Tr. 736:2-6.

Rather than follow industry best practices, Mr. Looney's team did not use Strategist's optimization function, but instead "conducted piecemeal analyses that did not optimize bids." Detsky Direct Test. 5. In contrast, "best practices" in the industry "are to use capacity-expansion modeling software to evaluate incoming bids from one or more RFPs and, specifically, to let the software combine these bids into optimized resource portfolios." *Id.* Thus, the evidence in the record is uncontroverted that "the gas bids were not evaluated [by Strategist] in terms of whether they are the best combination of units for a cost-effective portfolio." Detsky Direct Test. 16-17.

Instead of allowing the Strategist model to optimize APC's portfolio—to choose the optimal set of resources to meet APC's alleged capacity shortfall at the lowest cost—SCS used Strategist to evaluate each proposed resource against a benchmark case, specifically by "evaluating the changes [in total cost] that happen when [they] add a resource relative to the base case or reference case." Looney Depo. 90:3-5; Looney Direct Test. 4. Southern's benchmark case contained only combustion turbines and combined cycle gas plants, not renewables or demand-side resources. Looney Depo. 91:2-5; Kelley Rebuttal Test. 15.

The record establishes that Southern's use of a fossil fuel-based reference case prevented Strategist from identifying renewable sources as a lower-cost resource option, or in other words, using renewables "to 'solve' for the resource need." Detsky Direct Test. 15. SCS did not proffer any contradicting evidence on how Strategist's results would have changed if the benchmark case included renewable or demand-side resources. Tr. 750:12-21. As discussed below, SCS provided no evidence that its benchmark case was consistent with best practices or would lead to an optimized, least-cost portfolio of resource additions.

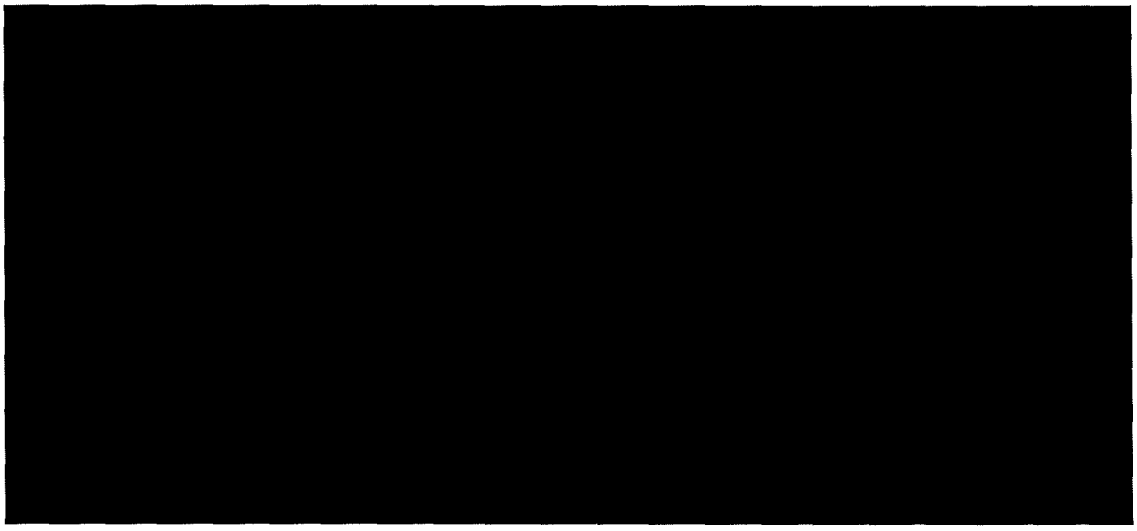
SCS could have pursued an altogether more effective strategy had it eliminated the separate turnkey RFP it originally conducted and instead conducted one open RFP, then taken the bids it received in the 2018 renewable RFP process and, before winnowing the bids from either RFP, placed all of the bids received from both RFPs in one model that could have solved for the least-cost combination of bids. If APC was concerned about transmission issues associated with some of those resources, *see* Tr. 846:5-6; Part III.A.2.iii *supra*, the Company could have added the costs of resolving such issues before inputting the bids into an optimization model. Given that solar/BESS bids were much lower cost than renewables, there is strong evidence suggesting that pursuing a truly optimizing strategy would have resulted in a final portfolio with more megawatts of renewable and storage capacity. *See* Detsky Direct Test. 5.

In the non-optimizing Strategist modeling that SCS did use, SCS introduced further bias by evaluating each proposed resource over a forty-year period, because forty years is the "expected useful life of Barry Unit 8." Looney Direct Test. 3-5. APC received bids for a variety of resources with different useful lifespans, ranging from ten-year PPAs, to the Hog Bayou nineteen-year PPA, to the twenty-three-year Central Alabama acquisition. SCS did not value the shorter-lived resources as the potentially lower-cost units they were. Tr. 1139:5-12. Instead, SCS skewed the results when it used an analysis period that stretched until 2063, the duration of Barry Unit 8's useful life, and simply assumed that the other gas-fired units would be replaced with combustion turbines—whose own construction, operation, and fuel costs were then added to the cost of the gas plants from the RFP—once those gas plants' useful lives ended. Looney Direct Test. 5. Stated another way, for assets other than Barry Unit 8, SCS's calculations included the cost of two generation assets: the cost of the asset that was actually bid into the capacity RFP,

and the cost of a second generation asset, a combustion turbine, that would run until the end of Barry Unit 8's forty-year lifespan.

Figure 1, below, shows what transpired during this stage of Southern's analysis. The "TOTAL GENERATION" column sums the capacity and generation costs of the different resources. *See* Attach. Y to Ala. Power Co. Resp. to Sierra Disc. Req. 2 Interrog. 5. At this point in Southern's analysis, Barry Unit 8 (labeled "Project Dominion #1") had the highest cost out of all the gas-fired units SCS was considering. *Id.* (capitalization in original). SCS then calculated a "TERM Adjustment," which is the net present value ("NPV") of the cost of adding a new combustion turbine at the end of each bid's useful life, or upon expiration of their PPAs. Barry Unit 8 is expected to have a useful life of forty years, through the end of the analysis period, and is thus never replaced by a combustion turbine. *Id.* It therefore has the smallest term adjustment value, at $4.06/kW. *Id.* The PPAs that expire after only 10 years, on the other hand, have the largest term adjustment value, at $415.18. *Id.* It is only after the "TERM Adjustment" values are added to the "TOTAL GENERATION" values, resulting in the "TOTAL RANK VALUE," that Barry Unit 8 has the lowest cost of all of the resources that SCS evaluated in its analysis. *Id.*

Figure 1. Attach. Y to Ala. Power Co. Resp. to Sierra Club Disc. Req. 1 Interrog. 5



Thus, Mr. Looney's team did not give Strategist an opportunity to measure any cost savings associated with shorter-lived resources. And, given that APC anticipates a capacity decline of around 800 MW in 2026, *see* Part III.A.1.vii.a *supra*, such cost savings would very likely have been measured had Mr. Looney's team not distorted its analysis.

Also, SCS did not evaluate the bids from the 2018 renewable RFP, let alone model them in Strategist. Tr. 752:13-23; 753:1-10. Instead, APC separately evaluated renewable proposals using spreadsheets rather than modeling tools. *Id.* Mr. Looney opined that spreadsheets were not as effective as capacity expansion models such as Strategist, because spreadsheets are a "sort of brute force solution," whereas a model such as Strategist is "designed to accomplish those simulations very efficiently." Tr. 752:1-4.

Mr. Looney testified that the Commission and APC's customers have to simply "trust" his belief that using Strategist to model fossil fuel resources, and spreadsheets to evaluate renewable resources, had no impact on Southern's selection of fossil fuel generation sources over renewable sources. Tr. 753:23.

In short, Mr. Looney's team used Strategist to simply calculate the NPV of the production costs of each proposed gas-fired resource from the 2018 capacity RFP, not to select the least-cost portfolio of resources through an optimization process. Meanwhile, Mr. Kelley's team had separately used spreadsheets to analyze the relative costs of the renewable bids from APC's 2018 renewable RFP. Kelley Direct Test. 18; Looney Direct Test. 3.

vi. Part Six: Southern Company Selected Its Portfolio by Ranking the Remaining Bids Based on Their Individual Production Costs, Rather Than Calculating the Optimized, Least-Cost Resource Portfolio of Resources

Mr. Looney's team compiled a list containing Barry Unit 8, the gas resources from the capacity RFP that it evaluated in Strategist, and the renewable energy and storage resources from the renewable RFP that it evaluated using spreadsheets; calculated how each proposed resource would fare under low and medium gas prices[11] and a $20 carbon price;[12] averaged the "net present value basis in terms of dollars per kilowatt" for each resource across those pricing scenarios; and ranked each proposed resource in terms of its average NPV. Looney Direct Test. 7-8. As a final step, Mr. Looney's team simply selected the eight highest-ranked resources to include in the present Petition. Ala. Power Co. Hr'g Ex. 36.

The results of Mr. Looney's exercise in ranking the generation resources in this case is stunning. As Figure 2 shows, the renewable energy and storage bids that APC received in its renewable RFP are far cheaper than the large gas-fired plants that APC is proposing to acquire in this case.

[11] SCS did not model whether gas-fired generation was a least-cost alternative under high gas prices; Mr. Looney's team considered only how low and moderate gas prices would affect the prices of each resource. Looney Direct Test. 7-8; Tr. 403:9-12; 883:12-18. There is no evidence in the record that the choice to exclude a high gas price scenario was cost-minimizing, or that modeling only low and moderate gas prices presented a realistic scenario. SCS failed to evaluate the high gas price scenario simply because APC had not asked it to, not because doing so was unwarranted. Tr. 20:5-14. Yet uncontroverted record evidence makes clear that it is the pattern and practice for "[o]ther affiliates as well as Alabama Power Company [to] at times utilize the high gas forecast for certain analyses." Tr. 820:18-20.

[12] SCS considered the costs of gas-fired proposals under only a $20/ton carbon price, but not under a higher carbon price, nor under any other potential regulations. Looney Direct Test. 8. SCS chose the $20/ton carbon price arbitrarily; it was not based on current or prior governmental policy, and it was the only analysis of potential regulatory compliance costs that SCS modeled. Tr. 405:20-23; 406:1-14. Nonetheless, decision makers at SCS, including Mr. Bush, agreed that the "regulatory requirements" imposed on Barry Unit 8 could change throughout its lifespan. *See* Bush Depo. 74:19-23.

Figure 2. Average Production Costs (Stated in NPV) Across APC's Proposed Resources

Mr. Looney, who evaluated the bids, acknowledged there was a large range between the costs associated with the solar/BESS and the gas plants. Tr. 768:2-7. According to Mr. Looney, in his ranking, a negative average NPV "indicate[d] that the values that we quantified were greater than the costs that we quantified," thus "making the resource rank very well comparable to the other resources." Tr. 765:11-15. In other words, those renewable resources are "high value projects" that would "sav[e] customers money" by putting "downward pressure" on costs across APC's system. Tr. 765:22-23; 766:19-21.

The five solar/BESS PPAs were ranked as the lowest-cost options, with average NPVs of [redacted] and [redacted]. Ala. Power Co. Hr'g Ex. 36. The average NPVs of Hog Bayou and Central Alabama were much higher than those of the renewable bids. Hog Bayou's average

NPV was [redacted] and Central Alabama's was [redacted] Those high NPVs were very close in value to the average NPVs of the nine gas-fired projects that SCS rejected as being too costly.[13] *Id.*

APC had originally received twelve solar/BESS bids in response to its renewable RFP, and the Company ultimately selected five of those as part of its portfolio, because they had much lower costs than the gas-fired resources APC was considering. Detsky Direct Test. 23. APC had rejected the other seven bids due to purported but unspecified transmission issues, Tr. 846:5-6, but APC did not assess whether resolving such transmission issues would have been lower cost than constructing or purchasing a new gas plant.

Despite the large discrepancy in average NPVs between the solar/BESS and gas resources, SCS did not perform a second RFP to attempt to capture lower-cost resources somewhere within that range, and did not reach out to any market participants to attempt to find lower-cost resources. Tr. 768:17-21; 770:13-23. Again, neither SCS nor APC pursued follow-up negotiations with solar/BESS bidders to resolve supposed transmission issues, the way they engaged in follow up negotiations around the gas assets. This occurred despite Mr. Looney's realization that "over the last several years, every renewable solicitation tends to produce lower prices than the one before it." Tr. 773:19-22.

If APC had included all twelve solar/BESS bids it received, and simply added in the costs of resolving their transmission issues, or solicited more solar/BESS bids, SCS could have inputted all of those bids, along with all of its gas-fired bids, into an optimization model to derive the least-cost portfolio of resources. In light of that viable, cost-minimizing alternative, APC has failed to provide credible, competent, or substantial evidence that the flawed process it undertook

[13] APC rejected seven out of the twelve solar/BESS bids it initially received for its renewable RFP due to unspecified transmission issues, but should have assessed whether resolving such transmission issues would have been lower cost than constructing or purchasing a new gas plant.

resulted in the selection of the lowest-cost resource portfolio. Moreover, Mr. Looney admitted that his team never "evaluate[d] whether a combination of solar plus battery projects and demand-side measures, like distributed resources, would be a lower cost option as compared to gas generators." Tr. 822:9-13.

3. Overwhelming Evidence in the Record Demonstrates That APC's Proposed Capacity Additions Present APC's Customers with Great Financial and Environmental Risk

i. Starting in 2026, APC Will Not Need the 756 MW Barry Unit 8 to Meet Its Winter Target Reserve Margin, Less Than Three Years After Barry Unit 8 Comes Online

As discussed in greater detail above, APC alleges it has a capacity shortfall that exists today, and will reach approximately 2400 MWs in the winter of 2023-2024. *See* Part III.A.2.v *supra*. Between 2020 and 2023, APC will rely upon the operating companies' surplus capacity and the IIC to meet any capacity shortfall it does experience. *Id.*

By 2026, APC itself projects that its total capacity requirements will fall by approximately 800 MWs, and expects that, with its proposed resource additions, it will have an excess capacity of 800 MWs over and above its newly established 25.25 percent winter target reserve margin. Thus, less than three years after Barry Unit 8 is slated to come on line, APC itself projects it will not need the 756 MWs of capacity that Barry Unit 8 offers. Kelley Direct Test. 11. Indeed, Mr. Kelley admitted that, if the Company's Petition is granted, its capacity

might come to exceed its long-term target reserve margin,[14] resulting in wholesale sales of APC's excess capacity. Kelley Rebuttal Test. 14.

ii. APC Proposes to Place Tremendous Financial Costs and Risks on Its Customers

APC's customers will bear the full costs of construction, operations and maintenance, depreciation, fuel, and environmental compliance for APC's proposed gas plants throughout their nineteen- to forty-year lifespans.[15] Tr. 659:23; 660:1-8; 857:1-9; Baker Direct Test. 4. APC publicly broadcasted a $1.1 billion cost, but that figure includes only the capital costs of Barry Unit 8 and Central Alabama. Kelley Depo. 63:6-23. The total cost of APC's proposed resource portfolio, including the costs of Hog Bayou and the other PPAs, and the costs of procuring fuel for the three gas plants, will be much higher. Kelley Depo. 64:8-11.

Stated another way, the [redacted] in-service cost of Barry Unit 8 captures only the "capital costs related to infrastructure required to get the unit online and available to run." Bush Depo. 44:23; 45:1-3. Mr. Bush testified that the costs of fuel throughout the forty-year lifespan of a combined cycle plant can exceed the plant's in-service cost of [redacted]. Tr. 659:19-22; Bush Direct Test. 8.

Ms. Baker, APC's Director of Regulatory Pricing & Costing Services, stated that APC's customers would bear the financial risks of APC's petition. Tr. 858:14-22. However, nowhere

[14] In that scenario, Mr. Kelley testified that APC would consider "short-term wholesale sales" of its excess capacity. Kelley Rebuttal Test. 14. But Mr. Kelley does not suggest that the Company's profits from such sales would be returned to its customers, who will still be paying for that capacity through their electricity bills.

[15] The Commission affirms Administrative Law Judge Garner's ruling that Sierra Club has associational standing to participate as an intervenor in this proceeding. *See* Part II.A above for a discussion of the six Sierra Club witnesses who will be burdened by increased bills, environmental impacts, and the financial fallout from those environmental impacts, including climate damages; the stipulation between Sierra Club and APC establishing Sierra Club's standing, which is filed in the record; and the Commission's formal recognition of Sierra Club's associational standing in this proceeding.

has SCS clearly provided the total cost of the resources proposed in its present Petition. Ms. Baker predicted that the average APC customer's rates would rise at least $50 per year, but that increase does not include the higher costs that would accompany high gas prices or a price on carbon. Tr. 870:3-13; 883:12-16; 885:2-6.

Mr. Kelley admitted that there is no guarantee that the current price of gas will mirror future prices. Tr. 402:14-20; 403:2-8. And Mr. Kelley admitted that the decision makers behind the proposed resource additions are not experts on gas or gas pricing. Tr. 402:14-20; 403:2-8. And, as noted above, Southern's ranking of its potential resource additions reflected each resource's average cost across scenarios of low and moderate gas prices. SCS never considered the resources' relative costs under a scenario of high gas prices. *See* Part III.A.2.vi *supra.*

iii. APC's Proposal to Invest Heavily In 1896 MWs of Gas-Fired Generation Comes at a Time of Rapid, Massive Cost Reductions in Renewable Energy and Storage

The evidence in the record is uncontroverted that the costs of renewable energy have been, and are, plummeting. In the last ten years, the prices of solar generation decreased by 89 percent and the prices of wind generation fell by 70 percent. Detsky Direct Test. 9. Mr. Kelley agreed that the cost of solar has plunged since 2008. Tr. 355:8-12.

Southern's own witness, Mr. Bush, expects—and believes "the expectation in the industry" is that—the costs of wind, solar, and batteries will "come down" even further. Bush Depo. 89:1-14. Ms. Wilson agreed that the capital costs of renewable generation resources "have been declining over time and are expected to continue to do so." R. Wilson Direct Test. 22. Mr. Looney testified that "over the last several years, every renewable solicitation tends to produce lower prices than the one before it." Tr. 773:19-22.

As discussed below, such a large financial investment in an asset with a forty-year lifespan carries a lot of economic risk during such a time of flux in the industry. A report issued by the Rocky Mountain Institute ("RMI") forecasted prices and concluded "that in the future, it will be cheaper to build new renewable-plus-storage units than to continue operating existing gas units." R. Wilson Direct Test. 22.

iv. Substantial Evidence in the Record Demonstrates That APC's Proposal to Invest Billions in Gas-Fired Plants Presents a Significant Risk That the Gas Investments Will Become Uneconomic Stranded Assets in the Future

Evidence in the record demonstrates that rising gas prices, falling prices for renewable energy and storage, and future environmental regulations all create a significant risk that APC's proposed gas plants may become more expensive to operate than to shutter, which means they will become stranded assets.

As Ms. Wilson explained, citing "an extensive, nationwide analysis" performed by RMI, "in the future, it will be cheaper to build new renewable-plus-storage units than to continue operating existing gas units." R. Wilson Direct Test. 22; Sierra Club Hr'g Ex. 15. More specifically, "by 2035, nearly all currently proposed gas capacity will have operating costs higher than new renewable and storage resources due to expected price declines in these technologies." R. Wilson Direct Test. 23; Sierra Club Hr'g Ex. 15. By 2040, only seventeen years into Barry Unit 8's forty-year lifespan, "RMI's analysis shows that all the gas units currently proposed will become stranded assets." R. Wilson Direct Test. 24. In fact, in public utility commissions elsewhere in the United States, "state regulators are regularly citing stranded asset risk as one of the main reasons why they have rejected proposed gas units." *Id.*

Despite this, SCS "did not attempt to forecast future solar prices and then determine when it may be cheaper to build new solar plants than to operate these natural gas assets." Tr. 831:16-23; 832:1-3.

If Barry Unit 8 ceases to be economically efficient, APC proposes that its customers still be required to pay the full capital costs of that facility, and that APC and SCS be insulated from the risk of Barry Unit 8 becoming uneconomic. Indeed, executives at both APC and SCS believe that APC, the company proposing to procure almost 1900 MW of new and existing gas-fired facilities, should not bear any of the stranded asset risk associated with Barry Unit 8, Hog Bayou, or Central Alabama. Tr. 431:12-23; 432:1-5.

To be sure, executives at APC and SCS contend that the risk of Barry Unit 8 becoming uneconomic is low. Tr. 431:12-23; 432:1-5. Yet they provide no evidence in support of that belief. Neither APC nor SCS quantified Barry Unit 8's stranded asset risk.

The last time APC sought a certificate of convenience and necessity from this Commission to construct gas-fired units Barry Units 6 and 7, APC's executives readily offered to assume the stranded asset risk associated with those units. *See* Sierra Club Hr'g Ex. 21. They have not offered to do so with respect to Barry Unit 8, and indeed, neither company provided documentation showing it even contemplated whether to assume that risk in lieu of APC's customers. Tr. 432:13-21; 620:15-20.

v. APC and SCS Consistently Ignore the Positive Feedback Loop Between Increased Gas-Fired Plants and an Increased Risk of Forced Outages, Which in Turn Increases Southern's Target Reserve Margin

One source of risk discussed in both Southern's 2015 and 2018 Reserve Margin Studies is the Southern system's "increased reliance on natural gas." This adds risk to Southern's system—and thereby contributes to higher target reserve margins—because gas-fired plants tend to experience higher forced outage rates in the winter. *See* Ex. Ala. Power Co. Hr'g Ex. 1, at A-12; Tr. 102:5-19. The Reserve Margin Study reported that "there have been occasions in the last ten years when more than 10 percent of the capacity of the system has been in a forced outage state concurrently." Ala. Power Co. Hr'g Ex. 1, at iii. Indeed, according to Southern's own witness, Mr. Weathers, "gas plants have a higher risk of forced outages in cold weather than solar generators." Tr. 149:6-9. Mr. Weathers explained that, all else equal, replacing gas-fired plants with renewables "would lead to a lower target reserve margin." Weathers Depo. 161:9-10.

Moreover, in very cold temperatures, gas pipelines can experience operating constraints, thereby creating a risk of reduced fuel supply that also results in an increased target reserve margin. *See* Weathers Depo. 121:19-23; 122:1-7; Ala. Power Co. Hr'g Ex. 1, at A-14.

Both in its 2018 Reserve Margin Study and in the current proceeding, SCS failed to recognize the positive correlation between an increased reliance on gas and an increased, higher-cost target reserve margin. APC's Petition calls for a heavy investment—of approximately 1900 MWs—in gas generation, *see* Part III.A.1.iv *supra*, which would exacerbate the risk of forced outages and pipeline constraints in cold weather, and thereby contribute to higher reserve margins in future years.

vi. APC Admits That the Solar/BESS Assets Have Many Advantages Over the Combined Cycle Gas-Fired Plants in Its Proposal

APC's witness Mr. Kelley admitted that integrating more renewable resources into Southern's system could serve as a hedge "against the volatility of fuel cost." Tr. 351:10-16. Mr. Kelley also realized that renewable energy can be constructed in smaller increments to meet incremental increases in demand more nimbly than gas; if APC selected more solar resources today, they could come online in only one year. Tr. 424:9-23; 425:1-3. And Mr. Kelley agreed that, "[o]f all the projects proposed in this petition, the five solar plus battery projects are the most cost effective." Tr. at 504, lines 15-19.

Mr. Weathers, one of APC's own witnesses, admitted that renewable energy is more reliable than gas in the winter, and "gas plants have a higher risk of forced outages in cold weather than solar generators." Tr. 149:6-9; *see* Part III.A.3.v *supra*. APC's witnesses also recognize that the battery component of solar/BESS projects allows for renewable energy to be dispatched whenever it is needed, thereby removing the reliability concerns associated with solar-only resources. Tr.150:19-23; 151:1-2. That battery component can therefore make solar generation available during APC's claimed winter peak from six to eight a.m. on weekday mornings. *See* Part III.A.1.viii *infra*.

APC also risks facing future losses of customers, and thereby reductions in revenue, if its new generation sources are primarily derived from fossil fuels. Mr. Kelley is aware that some of APC's customers "have sustainability goals to lower their carbon footprint[s]." Tr. 499:4-17. To this end, Southern has committed to a "fifty percent reduction in carbon dioxide emissions by 2030 when compared to 2007, [and] low to no carbon [emissions] by 2050." Tr. 408:8-10. Yet Mr. Bush's team did not use Southern's climate goals as any part of its analysis in this case, nor

did it consider whether Barry Unit 8 was the lowest reasonable cost option for transitioning to clean energy. Bush Depo. 19:18-23; 20:1-5; 54:11-17.

vii. APC Never Considered the Environmental Risks That Its Proposal Presents to APC's Customers, or the Financial Impacts on Its Customers That Those Environmental Risks Pose

The steep costs and financial risks of APC's proposed gas-fired generation assets will be shouldered by Alabama Power's customers, many of whom live in polluted, low-income communities like Africatown, which hosts the Hog Bayou gas plant. *See* Womack Direct Test. 2. Before seeking this Commission's approval for the Hog Bayou PPA, Mr. Looney did not analyze the impacts of pollution on fenceline communities, such as Africatown, in conducting his evaluation of proposed resource additions. Tr. 776:9-23; 777:1-6. In fact, SCS does not consider environmental justice at all in making its resource decisions, even though Alabama consumers spend a higher percentage of their income on electricity than consumers in other states. Tr. 713:6-10; Energy Alabama/GASP Hr'g Ex. 8. And any environmental compliance costs that are imposed on APC's units are to be fully included in customers' rates.[16] Baker Direct Test. 3.

The potential environmental costs of APC's proposal on its customers will be added to the environmental costs of APC's existing assets. Barry Unit 8, for example, will be essentially co-located with the existing Barry plant. Both the air and water permits associated with Barry Units 4 and 5 are outdated and fail to require compliance with current environmental regulations. *See GASP, et al. v. LeFleur, et al.*, No. 03-cv-2020-900493.00, (Mont. Cir. Ct. Apr. 2, 2020). In

[16] Ms. Baker believes that, just as APC's environmental compliance costs are fully recovered from customers, litigation over its plants' environmental compliance would similarly be financed by its customers. Tr. 927:6-20. In other words, any customers objecting to APC's activities—for instance, claiming discrimination under section 37-1-83, *Code of Alabama* (2006)—might have to fund both sides of the lawsuit.

April 2020, Sierra Club filed suit over ADEM and APC's failure to renew the permits associated with those units, which have exposed the community around Barry to pollution for decades. *Id.* Notably, Barry Unit 4 is one of the last coal-fired units in the country with no post-combustion sulfur dioxide controls at all, and it has not yet been required to comply with the 2010 Sulfur Dioxide ambient air quality standards, which are nearly a decade old. *Id.*

Constructing Barry Unit 8 could well exacerbate the pollution facing the communities that have already been harmed by APC's failure to renew its coal units' permits. Barry Unit 8, with all its attendant air emissions, is located less than a mile away from a coal ash pond at the Barry site. Tr. 644:6-18. Barry Unit 8 will also be located near Barry Units 6 and 7, two other combined cycle gas turbines owned by APC. Bush Direct Test. 5. Despite Barry Unit 8's potential to pollute, either alone or in combination with the nearby APC facilities, according to Mr. Looney, SCS considered no potential environmental impacts, or environmental justice impacts, associated with Barry Unit 8, apart from its possible emission of criteria air pollutants. Tr. 715:12-17. And Mr. Bush and Mr. Kelley both admitted that APC has made no attempt to minimize Barry Unit 8's environmental impacts, including on Barry Unit 8's fenceline community. Tr. 595:18-23; Kelley Depo. 77:3-6.

Ms. Baker's estimates of rate increases also do not include the cost of environmental or climate damages, a potential cost that Southern reported in its 2020 10-K Form. Tr. 924:18-23; 925:1-13; Sierra Club Hr'g Ex. 5. For example, uncontroverted testimony from expert witness Ms. Wilson demonstrates a tremendous economic impact from the carbon emissions of APC's proposal. Applying a mid-range carbon price calculated by the U.S. Interagency Working Group on the Social Cost of Greenhouse Gases to APC's proposal, Ms. Wilson concluded that the 108 million tons of CO_2 expected to be emitted by the three gas plants would result in "climate

damages" of "$3.9 billion in net present value terms over their anticipated service lives." R. Wilson Direct Test. 4, 27. Yet APC did not consider the costs of climate damages, which would be imposed on the general public, in evaluating its proposal.

B. Conclusions of Law

In light of the foregoing evidence, this Commission concludes that Alabama Power failed to meet its burden under section 37-4-38, and therefore denies the Company's Petition.

1. Standard of Review

Section 37-4-28 of the Alabama Code requires Alabama Power to proffer substantial evidence of the (1) need and (2) cost-effectiveness of its proposed 2400 MW portfolio of capacity resource additions, if this Commission is to approve the Company's Petition. *See* Ala. Admin. Code r. 770-X-4-.15(5) (stating that an "[a]pplicant, complainant or petitioner must, except as otherwise provided by law, establish the facts alleged by him as the basis for the relief sought"). Under section 37-4-28, the Commission may or may not issue "a certificate of convenience and necessity, and if issued, may prescribe such conditions upon the issuance as it may deem advisable." Ala. Code § 37-4-28.

To grant APC's Petition, this Commission must find that Alabama Power established need and cost-effectiveness through "credible, competent, and substantial evidence." *Neely Truck Line, Inc. v. Evergreen Transp., Inc.*, 607 So.2d 149, 151 (Ala. 1992). The Supreme Court has remanded a Commission order because there was "no competent evidence which support[ed]" one of this Commission's findings underlying the order. *Ala. Power Co. v. Ala. Pub. Serv. Comm'n*, 390 So.2d 1017, 1023 (Ala. 1980) (The Alabama Supreme Court "must set aside an order of the Commission as being arbitrary as a matter of law, and a denial of due

process, when such order is based upon findings without evidence to support them."); *Hiller Truck Lines, Inc. v. Ala. Pub. Serv. Comm'n*, 290 So.2d 649, 650 (Ala. 1974) (explaining that, to be upheld on appeal, the Commission's findings must be "supported by legal evidence of substantial weight and probative force").

The Alabama Supreme Court has held that "[t]he propriety of granting a certificate of convenience and necessity, due to the nature of the authority granted to the Commission, must be determined according to the facts and circumstances in each case." *Railway Exp. Agency, Inc. v. Ala. Pub. Service Comm'n*, 265 Ala. 369, 375 (Ala. 1956); *see also* Ala. Power Co., No. 31653, at 6 (Ala. P.S.C. Sept. 9, 2011) ("Given the facts and circumstances presented" in that certificate of convenience and necessity docket, the Commission required additional oversight of Alabama Power's decisions regarding a PPA).

When making that determination, this Commission, in keeping with the responsibility vested in all public utility commissions, will serve as a check on the monopoly utility's profit motives and safeguard the public's interest in paying just and reasonable electricity rates. 2015 Order at 11 (stating that the Commission must determine whether a section 37-4-28 Petition is just and reasonable, and in the public interest, before granting it); *State v. Ala. Pub. Serv. Comm'n*, 307 So.2d 521, 527 (Ala. 1975) ("The legislature has committed to the Alabama Public Service Commission matters of vast public interest. Among these powers are the regulation of utilities and their rates . . . .").

For the reasons discussed below, the Company, which now seeks a capacity expansion of unprecedented magnitude, with total costs in the billions—despite predicting declines in demand in only a few years—has failed to meet its burden of producing substantial evidence

demonstrating the scope of the need and the cost-effectiveness of its proposed resource expansion.

2. APC Failed to Provide Credible, Competent, or Substantial Evidence of a Need for Over 2400 MW of New Capacity Additions

To establish need under section 37-4-28, APC may not simply show that it projects *some* additional demand for its electricity in the future. Rather, it must prove that the 2400 MW of capacity resources that it seeks is necessary on the timeline that APC proposes to add them.

In its Petition, Alabama Power makes the startling assertion that it needs to add approximately 2400 MWs of capacity resources, a nearly twenty percent increase above its current capacity, all within approximately three years. *See* Part III.A.1.iv *supra*. By any measure, this is an exceptional increase in capacity within a very short period of time. To put APC's proposal in perspective, in the past few proceedings under section 37-4-28, APC has sought, and this Commission has approved, capacity increases of a much smaller size. *See* 2015 Order (granting a Petition for only 500 MW of additional renewable generation); Ala. Power Co., No. 26115 (Ala. P.S.C. Dec. 31, 1997) (authorizing only 800 MW of capacity additions when the Company last sought to add gas plants at the Barry site).

i. APC's Claimed 2400 MW Need Does Not Comport with Conditions and Predictions Pertaining to Its System

APC does not seek this expansion because it expects load demand to rise by 2400 MWs in the near future, nor because it has identified 2400 MWs of existing capacity that it will retire in the near-term. Indeed, Alabama Power expects a fifteen-year annual load growth of [redacted], and expects to lose nearly 800 MWs of demand at the end of 2025. *See*

Part III.A.1.vi *supra*. Thus, the long-term demand on APC's system is not expected to change in a manner commensurate with a request to acquire 2400 MWs of capacity. Nor is APC's system expected to see a drop in existing capacity commensurate with a request to acquire 2400 MWs of capacity. Moreover, APC does not foresee any changes in transmission that would hinder the ability of its supply to meet its demand, just as APC does not anticipate environmental changes that will alter weather patterns in the coming years, as compared to the past thirty years, that are commensurate with a 2400 MW need for capacity resources. Rather, APC seeks 2400 MW of additional capacity mostly because it has reevaluated the size of an already existent—and thus far sufficient—safety margin in its planning process.

APC's short-term claimed capacity need between now and 2026, when APC loses approximately 800 MWs of demand, is unreasonably misaligned with the long-term gas-fired plants it intends to build and purchase. APC seeks to construct Barry Unit 8, a gas plant with a forty-year lifespan, to meet a capacity deficit that is predicted to last three years, from 2023 to 2026. *See* Part III.A.1.vii *supra*. Barry Unit 8 will not even be outfitted with its maximum winter generation capacity until around 2025, just one year before APC expects its demand to drop. APC does not attempt to justify its decision on the grounds that it may come to need more capacity to meet increases in demand on a scale of 2400 MWs in the late 2020s or 2030s. APC witnesses testified that post-2025 retirements did not play a role in its Petition, and again, the Company forecasts declining demand in just a few years. Regardless, the Company could not make that argument, because section 37-4-28 requires a showing of present need, not a speculation that a company might someday experience capacity needs. If APC comes to need additional capacity in the late 2020s, it may file a Petition at that point in time—and benefit from any technological improvements and price reductions that occur between now and then.

3. APC Failed to Consider Existing, Available IIC Resources Before Claiming It Needed to Construct and Acquire 2400 MW of New Capacity Resources

Members of the IIC Pool regularly experience excess capacity, and made twenty-five separate sales of electricity to the wholesale market in the last ten years. *See* Part III.A.1.ii *supra.* APC not only recognized that the IIC was a possible means of receiving excess capacity, but also intends to use IIC capacity, if needed, to meet any capacity needs it may face from now until 2023, when the assets APC proposes to acquire would come on line. *See* Part III.A.1.vii *supra.*

Mr. Kelley has readily admitted that APC plans to use IIC surplus capacity to meet a 1702 MW deficit—which includes its winter target reserve margin—in 2022, yet incredulously asserts that the IIC's capacity cannot be used to meet any of the 2447 MW capacity deficit, which includes APC's winter target reserve margin, that might occur the very next year, or any of the 2229 MW capacity need anticipated the following year. APC provides no evidence for its claim that the IIC's capacity would be unavailable to meet any of the 1652 MW of APC's predicted capacity deficit, which already includes its winter target reserve margin in 2026, or any capacity deficits thereafter. In fact, APC expects Pool members to engage in coordinated planning through 2029 at least. *See* Part III.A.1.ii *supra.*

Notably, Alabama Power did not even enter the IIC into the record until Sierra Club challenged its failure to do so. Now that the IIC is in the record, it contains no terms that suddenly preclude APC from continuing its longstanding practice of using capacity in the IIC Pool to meet its speculative capacity shortages, and APC's pattern and practice constitutes prima facie evidence that such reliance is possible. *See State ex rel. O'Dell v. Coker*, 59 So.3d 670, 672 (Ala. 2010) ("The question whether a contract is ambiguous is for a court to decide....[and a]s

long as the contractual terms are clear and unambiguous, questions of their legal effect are questions of law.").

Thus, due to the rich evidence that APC has used IIC capacity in the past, and intends to do so until 2023, APC has failed to provide credible, competent, or substantial evidence that it has a need to purchase 2400 MW of new capacity resources, as it must show to prevail under section 37-4-28.

4. APC Calculated its Claimed Capacity Need Using Southern's Inflated Winter Target Reserve Margin of 25.25 Percent

As discussed in Part III.A.1.v *supra*, Alabama Power's claimed capacity needs are based on Southern's 2018 Reserve Margin Study, which rests on flawed assumptions about temperature patterns and ignores the growing risks posed to the system by its increased reliance on gas-fired generation. In short, neither SCS nor APC has proffered credible, competent, or substantial evidence that a 25.25 percent winter target reserve margin is justified, and thereby that 2400 MW of additional capacity resources are needed. APC's inaccurately high projected capacity need is a costly mistake that also contravenes section 37-4-28.

Next year, SCS will conduct a new Reserve Margin Study, which will take into account more updated data and could very likely yield a different result. SCS should address the shortcomings described above, and in Energy Alabama and GASP's proposed order, when it conducts its 2021 Reserve Margin Study. APC, before constructing Barry Unit 8 or finalizing its PPAs, needs to consider the resulting winter target reserve margin and recalculate its projected capacity needs.

5. APC Failed to Provide Credible, Competent, or Substantial Evidence that Its Proposed Resource Portfolio is Cost-Effective, or Is the Least-Cost Combination of Resource Additions

Even if Alabama Power had submitted substantial evidence of a need for an additional 2400 MWs of capacity resources, this Commission still must deny APC's Petition because the Company failed to show that the portfolio of resource additions it is proposing to acquire is indeed cost-effective, or is the least-cost portfolio, to meet that need. This is particularly true given uncontroverted evidence that the proposed portfolio is more expensive than APC's past practice of reliance on existing IIC Pool assets, and that the market is providing renewable energy and storage resources at far cheaper prices than the gas-fired plants APC is proposing.

It is not enough for Alabama Power to demonstrate that its proposed portfolio of resources is cheaper than a set of alternatives that it has pre-selected, adjusted, and found to be more expensive. Instead, Alabama Power, under section 37-4-28, must show that its proposed portfolio of resource additions is a cost-effective approach to meeting its alleged need. A cost-effective portfolio must be the least-cost means for a utility to meet its claimed capacity need, out of all "other viable alternative" portfolios of demand- and supply-side resources. *See* Ala. Power Co., No. 26115 (Ala. P.S.C. Apr. 5, 1999); Tr. 822:9-23; 823:1.

Yet the record in this proceeding reflects significant flaws in APC's and Southern's analyses. Moreover, the record evidence overwhelmingly demonstrates that viable assets are available that are far cheaper than those in the present Petition, and would result in lower costs to customers than the proposed gas-fired additions. As discussed in greater detail below, three categories of less expensive assets stand out as having been precluded from effectively competing with the gas-fired plants that APC seeks to have approved in this proceeding: (1)

existing assets in the IIC Pool that APC is currently relying on to meet any winter capacity needs; (2) renewable energy and storage resources, which entered the Petition from a separate, more constrained RFP process than the gas-fired bids, and were not evaluated against gas-fired bids using an optimization model; and (3) demand-side resources, which APC never ran through Strategist, and whose costs APC never identified—indeed, it appears that APC added those resources to its Petition at the last minute to fill a perceived gap in capacity, and never calculated the optimal quantity of those measures.

Fundamentally, ascertaining the least-cost portfolio of resources is an optimization problem. Thus, it should be resolved using a complete, unbiased set of inputs; a thorough consideration of the risks associated with each input; and a model that selects an optimized, least-cost bundle of resources to meet the specific identified need—in this case, a peak winter demand that occurs on cold winter weekdays mornings between the hours of six and eight a.m. As discussed below, this Commission directs SCS and APC to return to the market and issue one single fair, open, and competitive RFP that allows bids from all market-based demand- and supply-side solutions, so that the Commission, APC, and its customers are assured that the resource portfolio that APC selects to address its corrected capacity need is indeed the most cost-effective, or least-cost, solution that the market has to offer.

i. SCS Should Have Expanded Its Process to Consider Other Existing Generation Resources, Both Within and Outside of the Southern System

Neither APC nor SCS provides documentation showing it behaved reasonably in excluding existing Southern generation resources from consideration, and there is evidence to suggest that such resources have historically been considered just, reasonable, and least cost in the past. Moreover, APC's and Southern's failure to undergo an optimization process to

determine the least-cost combination of gas-fired, renewable, and demand-side resources was unreasonable and precluded the Company from providing any evidence that its portfolio of resource additions was truly least cost, or equivalently, cost-effective.

a. APC Did Not Proffer Any Evidence to Warrant the Exclusion of Existing Southern Company Generation Resources from APC's Proposed Resource Portfolio, and Yet Such Resources Have Historically Been Deemed Cost-Effective and Should Have Been Considered

For years, APC has been part of a power system whose members regularly coordinate planning and share capacity with one another. The IIC explicitly encourages members to share excess capacity, correctly claiming that such cooperation is economically efficient. *See* Part III.A.1.ii *supra.* The fact that Georgia Power, the largest of the Southern Company operating companies, is summer peaking and Alabama Power is winter peaking renders the IIC Pool an especially efficient mechanism for allocating capacity among its members. Before settling on a resource portfolio, Alabama Power should have calculated the cost of continuing to rely on purchases from the IIC to meet its perceived need for additional capacity.

After APC's IIC agreement was placed into evidence, and it became clear the IIC does not prohibit such reliance on the IIC Pool, APC argued that using IIC generation assets would be cost prohibitive. Specifically, APC now argues that reliance on other operating companies' assets would, beginning in 2023, require formal transactions that would be overly costly. *See* Part III.A.1.vii.c *supra.* Even if APC were correct in assuming such formalized transactions were necessary, the Company failed to meet its section 37-4-28 duty to submit credible, competent, and substantial evidence that engaging in such transactions would be costlier than constructing and purchasing the resources in APC's Petition. APC provided no evidence of the cost of such a

formalized transaction, and also deliberately avoided gathering such evidence, by precluding sister companies from submitting bids in response to its 2018 capacity RFP. Thus, APC failed to provide credible, competent, or substantial evidence that its proposal is cost-effective, or equivalently, is a least-cost portfolio of resources, because at the very least, it failed to compare the cost of continuing to use IIC Pool capacity, and the cost of forming short-term PPAs with its sister companies, to the cost of the resource portfolio in this Petition, when APC has a history of relying on IIC resources as a cost-effective means of meeting its capacity needs.

Moreover, APC claimed that it cannot utilize affiliate transactions to meet its claimed capacity deficits. But the record makes clear such transactions are feasible. APC itself has relied upon such affiliate transactions in the past. Indeed, APC's witness Mr. Kelley admitted to at least one affiliate transaction involving Alabama Power that FERC had approved. *See* Part III.A.1.vii.c *supra.*

Providing credible, competent, and substantial evidence that APC's proposed portfolio is cost-effective, or least cost, requires, at the very least, that APC identify and compare the cost of assets that it has found cost-effective in the past, and that it is currently relying upon, with the cost of the assets that it proposes to acquire.

b. APC Failed to Provide Credible, Competent, or Substantial Evidence That Its Heavy Reliance on Gas-Fired Compared to Renewable Supply-Side Resources is Cost-Effective, or Least Cost

The evidence in the record is uncontroverted that renewable energy represents roughly fifteen percent of APC's proposed acquisition of 2236 MWs of supply-side generation, while gas comprises approximately eighty-five percent of APC's proposed supply-side additions. Adding this disproportionately gas-heavy resource portfolio disregards widely recognized realities in the

power industry: renewable prices are rapidly falling, renewables are often lower-cost generation options than gas-fired facilities, renewables present zero fuel costs and no possibility of pipeline failures; renewables do not present stranded asset risks; renewables can be added to the grid more quickly and in smaller increments than gas facilities, and renewables have lower risks of forced outages than gas facilities. APC's and Southern's executives knew about those industry trends, yet failed to incorporate that knowledge into their actions. *See* Part III.A.3 *supra.*

This Commission has itself recognized that renewable energy sources can be especially cost-effective when it approved Alabama Power's wind-power PPA. *See* Ala. Power Co., No. 31653, at 3-4 (Ala. P.S.C. Sept. 9, 2011). In its Order granting a Petition in that proceeding, the Commission recognized that the price of that renewable energy "is expected to be lower than the cost the Company would incur to produce that energy from its own resources . . . with the resulting energy savings flowing directly to the Company's customers." *Id*; *see also* Ala. Power Co., No. 31859, at 3 (Ala. P.S.C. Sept. 17, 2012) (similarly granting a Petition for a wind-energy PPA because, using the same reasoning, the Commission deemed it cost-effective).

Indeed, as discussed in Part III.A.3 above, the industry trends of rapidly declining renewable energy and storage costs are borne out in this case: the five solar/BESS bids that APC did select are far cheaper than APC's proposed gas-fired resource additions. There is therefore substantial evidence that APC would likely have produced a lower-cost final portfolio if it had evaluated more than five renewable projects.

In short, overwhelming evidence in the record suggests that if APC were to correct the mistakes in its RFP processes and its analysis of renewable resources, and put the renewable energy and storage resources on equal footing with gas-fired resources, SCS would likely arrive at a lower-cost resource portfolio than the one it presented to the Commission. For example,

APC could have pursued negotiations with renewable energy and storage providers, as it did with gas generation providers. APC could have structured its 2018 capacity RFP to have the same transmission and fee ownership limitations as its renewable RFP, or it could have leveled the playing field by removing those restrictions from its renewable RFP. SCS could have quantified the costs of removing the transmission constraints associated with seven out of the twelve solar/BESS responses to its 2018 renewable RFP, and compared those costs to the high costs of acquiring new gas-fired generation. SCS could have outfitted Strategist with a benchmark case containing renewables, or inputted APC's renewables into Strategist's optimization function, so that Strategist could have calculated whether a proposal containing more than 340 MW of renewables would be a lower-cost option than the present one. *See* III.A.2.v *supra.* SCS did not provide credible, competent, or substantial evidence that its failure to take the above actions nonetheless resulted in a least-cost portfolio of resource additions.

c. Neither APC Nor SCS Provided Evidence for Their Failure to Consider Resource Portfolios Containing Low-Cost Demand-Side Measures

Uncontroverted evidence in the record reveals that APC did not seek demand-side resources or energy efficiency measures through its 2018 capacity RFP, nor did APC solicit such measures through any other means. Instead, Alabama Power added to its portfolio only 200 MW of as-yet-unidentified demand-side resources, in a last-minute, ad-hoc strategy for filling the gap between its 2236 MW of proposed generation and its claimed 2400 MW capacity need. *See* Part III.A.2.ii *supra.*

Yet there is significant evidence in the record that demand-side and energy efficiency measures are often lower-cost options than supply-side generation sources. Reducing customer demand and improving energy efficiency certainly does not involve the high construction,

maintenance, and fuel costs associated with supply-side gas-fired generation assets. Moreover, this Commission has itself instructed APC to "investigate and actively pursue viable demand side management programs." Ala. Power Co., No. 21887, at 3 (Ala. P.S.C. Jan. 1992).

Thus, there is evidence in the record that demand-side resources are cost-effective, and should have been analyzed on equal footing with the gas-fired resources APC considered. APC and Southern's failure to do so undercuts its evidence that its selected assets are actually least cost, and raises a significant risk that they failed to select the least-cost resource portfolio by not calculating the NPVs of demand-side resources, let alone calculating the cost-minimizing ratio of demand-side to supply-side resources.

ii. SCS Should Have Considered the Financial and Related Environmental Risks Associated with Gas-Fired Plants

Alabama Power is asking to make a costly, risky forty-year investment in fossil fuel infrastructure with its customers' money at a time of rapid change in the utility industry. As discussed at length elsewhere, with the costs of renewable energy and storage rapidly falling, gas-fired plants could well become uneconomic long before the end of their useful lifespans. Alabama Power failed to consider the risks outlined in Part III.A.3.iv in selecting a portfolio of resources to meet its ostensible 2400 MW capacity need.

There is no evidence in the record showing that Southern's choice to consider only a low $20/ton carbon price, its failure to measure the impact of a high gas price, its failure to consider and forecast renewable and storage prices in the future, and its disregard of any other potential future environmental compliance costs were just or reasonable, or presented a realistic least-cost analysis. *See* Part III.A.2.vii *supra.*

iii. Southern, by Not Using Optimization to Select the Cost-Minimizing Portfolio of Resource Additions, Failed to Adhere to Section 37-4-28's Cost-Effectiveness Standard

APC failed to provide credible, competent, and substantial evidence that the predominantly gas-fired resources in its Petition are in fact the cheapest possible portfolio of resources, in light of all viable alternatives, that APC could have put forward. Among other mistakes and oversights, Southern's failure to optimize its resource evaluation process prevented it from selecting the optimal, least-cost ratio of gas-fired generation to renewable and demand-side generation. In fact, as discussed in Part III.A.3.vi, there is overwhelming evidence in the record that a portfolio including more renewable, storage, and demand-side resources could be lower cost, and lower risk, than the gas-heavy portfolio of resources that APC proposed in its Petition.

APC intends for its customers to bear the full costs, and the full stranded asset risks, of its proposed gas-fired plants. APC's costs of construction, operations and maintenance, depreciation, fuel, and environmental compliance for the entire lifespans of its three proposed gas plants will be reflected, dollar-for-dollar, in customers' bills. If, as predicted by the RMI report discussed by Ms. Wilson, those gas plants cease to be economically sound in a decade or two, customers will still be fully responsible for paying for the useless plants. Yet SCS never quantified that risk. *See* Part III.A.3.iv *supra.*

Not only is Alabama Power likely imposing unnecessary costs on its customers in the near-term, and certainly asking its customers to carry a huge financial risk in the long-term, but it is also seeking to impose environmental burdens on its customers and on fenceline environmental justice communities that, in the very least, carry economic implications that

should be considered. The costs of the proposal's carbon emissions, using federal government benchmarks, dwarf the direct capital investment required for construction. Moreover, Alabama Power is proposing to build a 743 MW power plant at its Barry site, which as noted above, has two coal units with long-expired Clean Air Act and Clean Water Act permits. *See* Part III.A.3.vii *supra.* Similarly, the low-income community of Africatown is located right near Hog Bayou, a site that has faced a disproportionate share of industrial pollution for years. *See* Womack Test. 2:5-13, 4:1-11.

In short, the tremendous financial and environmental risks that accompany APC's Petition further undermine the Company's assertion that its proposal in this case is cost-effective, or equivalently, least cost.

IT IS, THEREFORE, ORDERED BY THE COMMISSION, that Sierra Club has associational standing to participate as an intervenor in this proceeding, on behalf of its affected members who live, work, and recreate in Alabama. *See* Part II.A *supra*. Thus, the foregoing record evidence submitted by Sierra Club, including its expert witnesses' pre-filed and hearing testimonies, is properly included in the record and in this Order.

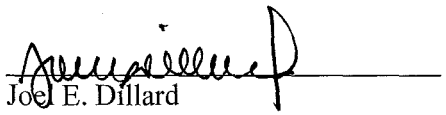
IT IS FURTHER ORDERED BY THE COMMISSION, that the Sept. 6, 2019 Petition of Alabama Power be and hereby is denied, as described in the body of this Order, with respect to the gas-fired plants, and approved with respect to the solar/BESS resources. This Commission previously approved 500 MWs of renewable projects in its 2015 Order, subject to final approval of specific projects. The record in this case proffers credible, competent, and substantial evidence that the specific solar/BESS projects proposed by Alabama Power entail cost savings for customers, in contrast with gas-fired generation assets. Should Alabama Power seek approval for additional capacity resources in the future to meet a winter target reserve margin, the

Commission recommends that Alabama Power better document the scope of its claimed need, and issue a broad RFP that allows all potential assets to compete on equal footing.

IT IS FURTHER ORDERED BY THE COMMISSION, that once APC identifies specific demand-side measures to implement, Alabama Power may present such measures to the Commission. The Commission will look upon demand-side measures favorably, given their attendant cost savings for customers.

IT IS FURTHER ORDERED BY THE COMMISSION, that if and when Alabama Power submits an updated analysis and petitions for approval to acquire gas-fired plants, such approval will be conditioned upon APC's assumption of the financial stranded asset risk associated with any gas-fired plants.

Respectfully submitted this 1st day of May, 2020.



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