INTRODUCTION AND QUALIFICATIONS

Q: Please state your name, position, and business address for the record.
A: My name is Elizabeth A. Stanton, Ph.D. I am the Director and Senior Economist of the Applied Economics Clinic, 1012 Massachusetts Avenue, Arlington MA 02476.

Q: Have you previously submitted direct testimony in this proceeding?
A: Yes, I have.

Q: On whose behalf are you testifying in this proceeding?
A: I am submitting this testimony on behalf of the Sierra Club.

Q: What is the purpose of your sur-rebuttal testimony in this proceeding?
A: The purpose of my sur-rebuttal testimony is to respond to the rebuttal testimony of John J. Spanos, Henry E. Delk, Jr., W. Keller Kissam, and James W. Neely (“DESC Witnesses”) filed on behalf of Dominion Energy South Carolina (“DESC” or “the Company”).

Q: Please identify the documents and filings on which you base your opinions regarding DESC’s coal plant economics.
A: I reviewed the rebuttal testimony of DESC witnesses John J. Spanos, Henry E. Delk, Jr., W. Keller Kissam, and James W. Neely.

Q: How is your testimony organized?
A: My sur-rebuttal testimony is organized into five sections, outlined below:
1. Rebuttal Testimony of DESC Witness John J. Spanos
3. Rebuttal Testimony of DESC Witness W. Keller Kissam
4. Rebuttal Testimony of DESC Witness James W. Neely
5. Recommendations and Conclusions for the Commission

Q: Please summarize your primary conclusions.
A: DESC made a surprising revelation in their rebuttal testimony: that the Wateree and Cope coal plants are now peaker plants, which was never discussed in their 2020 IRP. This new information, which was unsupported by analysis or data, makes it clear that DESC has not provided the information necessary to assert with any certainty that the Wateree, Williams and Cope plants are economic or that they have an appropriate role to play in a least-cost portfolio.

For these reasons I continue to recommend that:

- the Commission require DESC to produce a detailed retirement and (multi-year, multi-resource, system-wide) capacity expansion analysis (as has been ordered in the 2020 IRP docket); and
- that the Commission hold off on placing costs of capital improvements—past and future—to DESC’s coal plants until a retirement analysis is conducted and its results made available.

1. REBUTTAL TESTIMONY OF DESC WITNESS JOHN J. SPANOS

Q: Have you reviewed the rebuttal testimony of John J. Spanos as it relates to your direct testimony?
A: Yes.
Q: Does Mr. Spanos accurately describe the recommendations from your testimony?

A: No, Mr. Spanos seems to misinterpret my recommendation to require a retirement analysis before spending more of ratepayers money on aging coal plants and inaccurately conflates this recommendation with a call for the “immediate shutdown of [these] facilities.”

Q: Do you agree with Mr. Spanos’ interpretation?

A: I disagree with Mr. Spanos’ assumption that the “most likely alternative” to the Wateree, Williams and Cope coal-fired power plants would be to build new generation at a higher cost. That conclusion has not yet been determined and cannot be until an economic analysis of the coal plants is performed. The point of an economic analysis—which I understand is now required to be performed and the results incorporated into DESC’s next full IRP in 2023—is to compare the forward-looking economics of the coal plants to multiple different replacement scenarios in order to determine which is least expensive for ratepayers. An economic analysis should also provide information on the timing of retirement, which is unlikely to be “immediate” or selected for all coal plants at once.

2. **REBUTTAL TESTIMONY OF DESC WITNESS HENRY E. DELK, Jr.**

Q: Have you reviewed the rebuttal testimony of Henry E. Delk, Jr. as it relates to your direct testimony?

A: Yes.

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1 Spanos Rebuttal at 48.
Q: Mr. Delk claims that the Wateree, Williams, and Cope coal-fired plants are of critical importance to maintain reliability. How do you respond?

A: Mr. Delk first claims that Wateree, Williams, and Cope are “highly reliable” and “critically important to the Company’s ability to serve its customer’s peak demand.”\(^3\) He then clarifies that Williams is used as “dispatchable, base load capacity” needed to maintain voltage in its local area.\(^4\) On page 10 of his rebuttal, Mr. Delk explains that gas-fired units are now “base loaded” not coal: “Today, high-efficiency natural gas units are dispatched as much as possible to take advantage of their lower fuel costs and high efficiency in converting natural gas to electricity. DESC’s coal units are often held in economic reserve to be brought on line to serve customer’s needs during peak load months or when other units are down for scheduled maintenance.” Mr. Delk appears to testify that DESC’s coal units (with the exception of Williams) have been providing peak load and not base since 2010, a circumstance that is not mentioned in DESC’s 2020 IRP. As I describe below, the 2020 IRP discusses peakers in several sections but does not mention coal plants used as peakers or modified for performance as peakers.

Q: Mr. Delk argues that your testimony incorrectly claims that the Wateree, Williams, and Cope coal-fired plants are unreliable and uneconomic. How do you respond?

A: Mr. Delk argues that the economics of DESC’s Wateree, Williams and Cope plants should be understood in the context of their role as peaker plants.\(^5\) If these plants are in fact being operated as peakers, than I would have expected DESC to provide a different form of analysis to justify its continued expenditures on coal plants and I in turn would

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\(^3\) Delk Rebuttal at 3.
\(^4\) Delk Rebuttal at 4.
\(^5\) Delk Rebuttal at 10.
have conducted my analysis differently. I agree with Mr. Delk that an economic
assessment of a peaking plant would be different than that of a baseload plant. I
c Conducted my analysis under the assumption that DESC’s Wateree, Williams and Cope
plants were baseload plants since DESC’s 2020 IRP does not refer to these coal plants as
peaking resources, Mr. Delk specifically refers to the Williams plant as baseload, and Mr.
Kissam’s rebuttal testimony also refers to DESC’s coal units as base load.\(^6\) The IRP
instead refers to DESC’s gas CTs as “peakers,”\(^7\) shows gas as having the “highest
capacity contribution on peak,”\(^8\) and provides a discussion of the potential replacement of
gas peakers with clean energy sources.\(^9\) The IRP also notes the importance of “[r]eliable,
fast-starting, and efficient peaking resources”\(^10\)—characteristics that do not typically
apply to aging coal plants.

Mr. Delk’s assertion that DESC’s Wateree and Cope coal plants are now relied on for
peak energy needs raises questions regarding what modifications these plants have
undergone to achieve the flexibility needed for this new operational role and at what cost.
Base-load plants, like most coal plants, are not well-suited for the frequent cycling
needed to operate effectively (that is, without frequent outages and added maintenance
costs) as peakers.

Q: **Can the operation of coal baseload plants be shifted to use as peakers at no cost?**

A: Analysis by the National Renewable Energy Laboratory (NREL) suggests that baseload
ccoal generation stations requires modifications to be able to operate as peaking plants,

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\(^6\) Kissam Rebuttal at 7.
\(^7\) DESC 2020 IRP at 31.
\(^8\) DESC 2020 IRP at 32.
\(^9\) DESC 2020 IRP at 38.
\(^10\) Id.
and that these modifications are not without cost.\textsuperscript{11} NREL notes limitations to coal plants’ “ability to cycle on and off and run at lower output” and that cycling “does damage the plant and impact[s] its life expectancy compared to baseload operations.” The engineering specifications of these modifications are outside of my area of expertise but should be addressed in IRP and required retirement analysis with regards to cost of modifications (both equipment and operational), changes to plant life expectancy, and the timing of when such modifications would be implemented.

**Q:** Are Wateree, Williams, and Cope operated as peakers?

**A:** Mr. Delk states that Williams is operated as a baseload plant. If Wateree and Cope are operated as peakers this information should have been made clear in DESC’s 2020 IRP together with evidence related to their effectiveness and efficiency as peakers. It may be the case that Wateree and Cope have been serving peak load in the DESC system, but have they provided peak needs in the most cost-effective way for customers?

As Mr. Delk suggests, these plants availability on peak has a value, but that fact, on its own, provides no evidence that peak capacity could not have been provided since 2011 using less expensive resources. If DESC’s aging coal plants are the best and least-cost choice to meet customer needs, the Company should provide evidence of their superiority in comparison to the costs and efficiency of other potential resources in their required retirement analysis, in the next full IRP in 2023. The modeling made available through discovery by DESC and in the 2020 IRP does not address this important question.

Q: Mr. Delk claims that your testimony confuses different concepts related to generation operations, including: availability factor, forced outage rate, and capacity factor. How do you respond?

A: Availability factor, forced outage rate, and capacity factor are all important—and distinct—concepts in utility planning. Mr. Delk’s testimony does not demonstrate any confusion on my part. I agree, however, that my presentation of outage rates may include structural biases that, based on data presented in Mr. Kissam’s rebuttal testimony, may exaggerate DESC’s coal plants’ challenges with reliability. Specifically, I present all outages instead of unforced outages and my analysis is limited to the last three years of data. Both of these biases are a function of my having undertaken a limited analysis, which can only be accessed in monthly reports that are not machine readable or coded for sorting as forced/unforced.

Wateree, Williams, and Cope’s capacity factors are—as Mr. Delk’s indicates—critical to an understanding of these plants’ economics and are dependent on fuel and other variable costs per megawatt-hour. Mr. Delk suggests that a full understanding of “peaker plants” net revenues requires accounting for a capacity value within DESC’s system that does not have a substitute or a market price. If these plants are being used as peakers, which was mentioned for the first time in his rebuttal testimony, than I agree with that assessment, and capacity value may even be of lesser importance to the economics of baseload plants. In the absence of a market for capacity, IRP modeling would require detailed capacity expansion modeling covering multiple possible resources, multiple years, and performing this assessment to the system as a whole: an “integrated” approach. This type of modeling should allow unit retirement as an option that can be selected to find a least-
cost system-wide solution. DESC has not conducted that type of capacity expansion
modeling and analysis, but should in their next full IRP in 2023.

3. REBUTTAL TESTIMONY OF DESC WITNESS W. KELLER KISSAM

Q: Have you reviewed the rebuttal testimony of W. Keller Kissam as it relates to your
direct testimony?

A: Yes.

Q: What does Mr. Kissam claim with regard to the conclusions of your testimony?

A: Mr. Kissam claims that “Dr. Stanton advocates retiring coal plant on the DESC system
based upon capacity factors.”

Q: Does your testimony advocate retiring coal plants based on their capacity factors?

A: No, it does not. My recommendations are that:

1) DESC produce a detailed retirement analysis (as has been recently required in the
2020 IRP docket); and

2) That the Commission hold off on placing costs of capital improvements—past and
future—to DESC’s coal plants until a retirement analysis is conducted.

4. REBUTTAL TESTIMONY OF DESC WITNESS JAMES W. NEELY

Q: Have you reviewed the rebuttal testimony of James W. Neely as it relates to your
direct testimony?

A: Yes.

Q: Mr. Neely argues that “Plant revenue is not an appropriate measure of plant value
in a system that does not participate in an organized competitive power market.”

How do you respond?

A: I maintain that system revenue is important to a full understanding of both system and
plant economics, even in a vertically integrated system. Mr. Neely asserts that
PROSYM’s revenue report is “not relevant for DESC’s system” but does not provide whatever analysis DESC uses to determine a least-cost resource plan for customers. This would have been useful contextual information when DESC provided revenue information in response to our discovery requests.\footnote{See e.g. Exhibits EAS-3 through EAS-5, Direct Testimony of Elizabeth A. Stanton.}

Revenue results provided from electric sector modeling are, like all modeling results, an estimate of likely future results given assumed conditions. Revenue may be estimated based on energy generated and a forecast of the expected revenue per megawatt-hour, or calculations based on marginal costs may be presented as a proxy for revenues.

Mr. Neely asserts that PROSYM’s system revenue is not relevant to DESC’s planning, information that should have been shared in response to our discovery requests and in the 2020 IRP.

Mr. Neely explains that DESC instead uses the kind of single-year single-resource replacement analysis presented in his testimony and that this is sufficient to determine the Company’s capacity addition and retirement decisions. Mr. Neely does not present any details regarding the sources of his assumptions or the methodology used; he presents only his results. Without this detailed information it is not possible for stakeholders or this Commission to evaluate or verify his claims.
Q: Is single-year single-resource replacement analysis insufficient for determining the least cost resource plan, and if so, what type of analysis would be necessary to identify a least-cost portfolio of generation and capacity resources for DESC?

A: Determination of a least-cost portfolio requires capacity expansion modeling over multiple years and performed system-wide, and would need to allow the model to choose to retire resources in order to achieve a least-cost result for customers.

RECOMMENDATIONS FOR THE COMMISSION

Q: Please summarize your recommendations for the Commission.

A: I continue to recommend that the Commission require DESC to produce a detailed retirement and (multi-year, multi-resource, system-wide) capacity expansion analysis (as I understand has been required in the 2020 IRP Directive); and that the Commission hold off on placing costs of capital improvements—past and future—to DESC’s coal plants until a retirement analysis is conducted and its results made available. DESC made a surprising revelation in their rebuttal testimony: that Wateree and Cope coal plants are now peaker plants, which was never discussed in their 2020 IRP. This new information, which was unsupported by analysis or data, makes it clear that DESC has not provided the information necessary to assert with any certainty that the Wateree, Williams and Cope plants are economic or that they have an appropriate role to play in a least-cost portfolio.

DESC’s rebuttal testimonies claim that its coal units are economic, reliable and an important part of its capacity portfolio going forward but the Company has not backed up these assertions with any analysis. Without access to whatever analysis supports these
claims it is not possible for stakeholders and the Commission to provide necessary review
and quality assurance of the findings.

Q: Does this conclude your testimony?

A: Yes.