

**SUR-REBUTTAL TESTIMONY OF
ELIZABETH A. STANTON, PHD
ON BEHALF OF
SIERRA CLUB
DOCKET NO. 2020-125-E**

INTRODUCTION AND QUALIFICATIONS

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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 1. Rebuttal Testimony of DESC Witness John J. Spanos
- 2 2. Rebuttal Testimony of DESC Witness Henry E. Delk, Jr.
- 3 3. Rebuttal Testimony of DESC Witness W. Keller Kissam
- 4 4. Rebuttal Testimony of DESC Witness James W. Neely
- 5 5. Recommendations and Conclusions for the Commission

6 **Q: Please summarize your primary conclusions.**

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

13 For these reasons I continue to recommend that:

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

20 **1. REBUTTAL TESTIMONY OF DESC WITNESS JOHN J. SPANOS**

21 **Q: Have you reviewed the rebuttal testimony of John J. Spanos as it relates to your**
22 **direct testimony?**

23 A: Yes.

1 **Q: Does Mr. Spanos accurately describe the recommendations from your testimony?**

2 A: No, Mr. Spanos seems to misinterpret my recommendation to require a retirement
3 analysis *before* spending more of ratepayers money on aging coal plants and inaccurately
4 conflates this recommendation with a call for the “immediate shutdown of [these]
5 facilities.”¹

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

7 A: I disagree with Mr. Spanos’ assumption that the “most likely alternative” to the Wateree,
8 Williams and Cope coal-fired power plants would be to build new generation at a higher
9 cost. That conclusion has not yet been determined and cannot be until an economic
10 analysis of the coal plants is performed. The point of an economic analysis—which I
11 understand is now required to be performed and the results incorporated into DESC’s
12 next full IRP in 2023²—is to compare the forward-looking economics of the coal plants
13 to multiple different replacement scenarios in order to determine which is least expensive
14 for ratepayers. An economic analysis should also provide information on the timing of
15 retirement, which is unlikely to be “immediate” or selected for all coal plants at once.

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

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

19 A: Yes.

¹ Spanos Rebuttal at 48.

² PSC Directive, Docket No. 2019-226-E, December 9, 2020.

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

3 A: Mr. Delk first claims that Wateree, Williams, and Cope are “highly reliable” and
4 “critically important to the Company’s ability to serve its customer’s peak demand.”³ He
5 then clarifies that Williams is used as “dispatchable, base load capacity” needed to
6 maintain voltage in its local area.⁴ On page 10 of his rebuttal, Mr. Delk explains that gas-
7 fired units are now “base loaded” not coal: “Today, high-efficiency natural gas units are
8 dispatched as much as possible to take advantage of their lower fuel costs and high
9 efficiency in converting natural gas to electricity. DESC’s coal units are often held in
10 economic reserve to be brought on line to serve customer’s needs during peak load
11 months or when other units are down for scheduled maintenance.”

12 Mr. Delk appears to testify that DESC’s coal units (with the exception of Williams) have
13 been providing peak load and not base since 2010, a circumstance that is not mentioned
14 in DESC’s 2020 IRP. As I describe below, the 2020 IRP discusses peakers in several
15 sections but does not mention coal plants used as peakers or modified for performance as
16 peakers.

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

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

³ Delk Rebuttal at 3.

⁴ Delk Rebuttal at 4.

⁵ Delk Rebuttal at 10.

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

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

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

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

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.

1 and that these modifications are not without cost.¹¹ NREL notes limitations to coal plants’
2 “ability to cycle on and off and run at lower output” and that cycling “does damage the
3 plant and impact[s] its life expectancy compared to baseload operations.” The
4 engineering specifications of these modifications are outside of my area of expertise but
5 should be addressed in IRP and required retirement analysis with regards to cost of
6 modifications (both equipment and operational), changes to plant life expectancy, and the
7 timing of when such modifications would be implemented.

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

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

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

¹¹ Flexible Coal Evolution from Baseload to Peaking Plant, National Renewable Energy Laboratory, December 2013, available at: <http://www.nrel.gov/docs/fy14osti/60575.pdf>

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

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

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

1 cost system-wide solution. DESC has not conducted that type of capacity expansion
2 modeling and analysis, but should in their next full IRP in 2023.

3 **3. REBUTTAL TESTIMONY OF DESC WITNESS W. KELLER KISSAM**

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

6 A: Yes.

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

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

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

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

12 1) DESC produce a detailed retirement analysis (as has been recently required in the
13 2020 IRP docket); and

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

16 **4. REBUTTAL TESTIMONY OF DESC WITNESS JAMES W. NEELY**

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

19 A: Yes.

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

22 **How do you respond?**

23 A: I maintain that system revenue is important to a full understanding of both system and
24 plant economics, even in a vertically integrated system. Mr. Neely asserts that

1 PROSYM’s revenue report is “not relevant for DESC’s system” but does not provide
2 whatever analysis DESC uses to determine a least-cost resource plan for customers. This
3 would have been useful contextual information when DESC provided revenue
4 information in response to our discovery requests.¹²

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

9 Mr. Neely asserts that PROSYM’s system revenue is not relevant to DESC’s planning,
10 information that should have been shared in response to our discovery requests and in the
11 2020 IRP.

12 Mr. Neely explains that DESC instead uses the kind of single-year single-resource
13 replacement analysis presented in his testimony and that this is sufficient to determine the
14 Company’s capacity addition and retirement decisions. Mr. Neely does not present any
15 details regarding the sources of his assumptions or the methodology used; he presents
16 only his results. Without this detailed information it is not possible for stakeholders or
17 this Commission to evaluate or verify his claims.

¹² See e.g. Exhibits EAS-3 through EAS-5, Direct Testimony of Elizabeth A. Stanton.

1 **Q: Is single-year single-resource replacement analysis insufficient for determining the**
2 **least cost resource plan, and if so, what type of analysis would be necessary to**
3 **identify a least-cost portfolio of generation and capacity resources for DESC?**

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

7 **RECOMMENDATIONS FOR THE COMMISSION**

8 **Q: Please summarize your recommendations for the Commission.**

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

20 DESC’s rebuttal testimonies claim that its coal units are economic, reliable and an
21 important part of its capacity portfolio going forward but the Company has not backed up
22 these assertions with any analysis. Without access to whatever analysis supports these

1 claims it is not possible for stakeholders and the Commission to provide necessary review
2 and quality assurance of the findings.

3 **Q: Does this conclude your testimony?**

4 **A:** Yes.