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BEFORE THE PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

SURREBUTTAL TESTIMONY OF

GLENN HUBBARD, PH.D.

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NOS. 2017-207-E AND 2017-305-E

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1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is Robert Glenn Hubbard, and my business address is Graduate
3 School of Business, Columbia University, 101 Uris Hall, 3022 Broadway, New
4 York, New York 10027.

5 **Q. ARE YOU THE SAME GLENN HUBBARD WHO HAS PREVIOUSLY**
6 **FILED TESTIMONY IN DOCKETS 2017-207-E, 2017-305-E, AND 2017-**
7 **370-E?**

8 A. Yes, on August 2, 2018, I filed Direct Testimony on behalf of South
9 Carolina Electric & Gas Company ("SCE&G" or the "Company") in Docket No.
10 2017-370-E. I also filed Direct Testimony in Docket Nos. 2017-207-E and 2017-
11 305-E on September 24, 2018, and I filed Rebuttal Testimony in Docket No. 2017-
12 370-E on October 24, 2018. My prior testimony addresses various issues related
13 to the abandonment of the New Nuclear Development Project ("NND" or "NND
14 Project"), and the subsequent legislative and regulatory response. In particular,
15 my September 24 testimony discussed the Direct Testimony of Dr. Mark Cooper,
16 filed August 13, 2018 on behalf of Friends of the Earth and the Sierra Club.[1]
17 Because my Rebuttal Testimony in Docket No. 2017-370-E addressed many of the
18 issues raised here, I have attached that pre-filed testimony and exhibits thereto as
19 Exhibit No. __ (RGH-1) to this testimony and incorporate by reference that
20 testimony into my pre-filed surrebuttal testimony in these dockets.

[1] Direct Testimony of Dr. Mark Cooper, South Carolina Public Service Commission, Docket Nos. 2017-207-E, 2017-305-E, and 2017-370-E, August 13, 2018 ("Cooper Direct Testimony").

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1 **Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

2 A. The purpose of my surrebuttal testimony is to respond to the Rebuttal
3 Testimony of Dr. Mark Cooper, filed on behalf of Friends of the Earth and the
4 Sierra Club on October 24, 2018.[2]

5 **Q. CAN YOU PLEASE SUMMARIZE THE ISSUES YOU INTEND TO**
6 **ADDRESS WITH REGARD TO MR. COOPER'S REBUTTAL**
7 **TESTIMONY?**

8 A. Dr. Cooper raises four issues where he disagrees with the Direct Testimony
9 I filed on September 24. Those issues are:

10 1) Hindsight bias;
11 2) Sunk costs;
12 3) Consequences of disallowance on SCE&G and its customers; and
13 4) Alleged withholding of information by SCE&G.

14 I address each of these issues below.

15 **Q. WHAT ISSUE DOES DR. COOPER RAISE WITH REGARD TO**
16 **HINDSIGHT BIAS?**

17 A. Dr. Cooper disputes my claim that his Direct Testimony: "relies on
18 hindsight bias in his assessment of purported flaws in SCE&G's economic
19 analyses of the [NND Project] versus a natural gas combined cycle alternative."[3] I

[2] Rebuttal Testimony of Dr. Mark Cooper, South Carolina Public Service Commission, Docket Nos. 2017-207-E, 2017-305-E, and 2017-370-E, October 24, 2018 ("Cooper Rebuttal Testimony").
[3] Direct Testimony of Glenn Hubbard, South Carolina Public Service Commission, Docket Nos. 2017-207-E and 2017-305-E, September 24, 2018 ("Hubbard September 24 Testimony"), at 5.

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1 offered natural gas prices as an example of Dr. Cooper's reliance on hindsight.
2 Dr. Cooper claims, however, that testimony he filed in 2012, which he referred to
3 in his Direct Testimony, "was not '20-20 hindsight,' but reasonably prudent
4 foresight, based on the then-current facts on the ground, including sunk costs and
5 severe delay problems the project was suffering."[4]

6 **Q. HOW DO YOU RESPOND TO DR. COOPER'S CLAIM?**

7 A. Focusing first on natural gas prices, my prior testimony described Dr.
8 Cooper's reliance on hindsight to support his claim that: "[t]he second big
9 repeated error is natural gas price estimates."[5] Specifically, I noted that Dr.
10 Cooper criticizes the estimate of 2018 gas prices that Dr. Lynch made in 2008
11 because the decade-ahead forecast turned out to be 450 percent higher than actual
12 prices.[6] This comparison of a forecast made in 2008 to an actual outcome in 2018
13 is, by definition, hindsight. Dr. Cooper does not specifically refute this evidence
14 of his reliance on hindsight, but rather just issues the general denial quoted above.

15 **Q. ARE THERE OTHER EXAMPLES WHERE DR. COOPER APPEARS TO**
16 **RELY ON HINDSIGHT?**

17 A. Yes. There appear to be several such instances included in his Rebuttal
18 Testimony. For example:

[4] Cooper Rebuttal Testimony, at 10.
[5] Cooper Direct Testimony, at 41-42. I note that Dr. Cooper's Direct Testimony also references natural gas price forecasts on pages 30 and 46.
[6] Hubbard September 24 Testimony, at 6.

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- As evidence that his 2012 projection of NND cost overruns for future years was accurate, Dr. Cooper states that: "[s]uch cost increases were a virtual historical certainty, as corroborated by the 50% cost overrun at the time of abandonment, with much more to come."[7] Use of known actual cost overruns at the time of abandonment to "corroborate" a forecast from 2012 is a clear use of hindsight.
- In criticizing an analysis by a consultant, Howard Axelrod, hired by Santee Cooper in 2013 to evaluate the cost of completing the NND Project compared to the cost of various alternatives, Dr. Cooper states that one of Dr. Axelrod's "erroneous 'tweaked' assumptions" was that: "Economic recovery accelerated demand, which did not happen."[8] Reliance on the fact that there was no actual acceleration in demand after 2013 to criticize Dr. Axelrod's assumption in 2013 represents another clear reliance on hindsight.[9]

Thus, Dr. Cooper continues to rely on hindsight, even while he denies doing so.

[7] Cooper Rebuttal Testimony, at 18.
[8] Cooper Rebuttal Testimony, at 21.
[9] Rebuttal Testimony of Scott J. Rubin, South Carolina Public Service Commission, Docket No. 2017-370-E, September 24, 2018 ("Rubin Direct Testimony"), Exhibit SJR-2, at 8, and Exhibit SJR-3, at 10.

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1 **Q. WHAT ISSUE DOES DR. COOPER RAISE WITH REGARD TO SUNK**
2 **COSTS?**

3 A. As I noted in my prior testimony, it is improper to include sunk costs when
4 deciding between investment alternatives.[10] This conclusion holds irrespective of
5 whether those sunk costs initially were prudent or imprudent.[11] Specifically, I
6 noted that "Dr. Cooper appears to base his conclusion in significant part on the
7 incorrect view that the [NND Project] expenditures prior to the relevant decision
8 or economic analyses dates, which financial economists refer to as 'sunk costs,'
9 should count against the nuclear option but not the combined-cycle alternative."[12]

10 Dr. Cooper's Direct Testimony claims that he did "consider" sunk costs,
11 and his Rebuttal Testimony notes that he "isolated the sunk costs" in his Direct
12 Testimony.[13]

13 **Q. HOW DO YOU RESPOND TO DR. COOPER'S CLAIM?**

14 A. Although Dr. Cooper states that he "isolated" sunk costs and did "consider"
15 them, it is not clear exactly what this 'isolation' and 'consideration' actually
16 means from an economic perspective. Perhaps the clearest example of his reliance
17 on sunk costs comes from his 2012 testimony. He conducts an analysis comparing
18 the levelized cost of nuclear and gas generation that is based on updating the cost

[10] Hubbard September 24 Testimony, at 7-8.
[11] Hubbard September 24 Testimony, at 8.
[12] Hubbard September 24 Testimony, at 7.
[13] Cooper Direct Testimony, at 32-33; Cooper Rebuttal Testimony, at 10.

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1 differential for the change in gas prices between 2008 and 2012.[14] Based on this
2 analysis he states that: "at current [2012] EIA projected prices the natural gas
3 scenario would be over $115 million per year lower."[15] Because he focuses solely
4 on the difference in levelized costs, which include the "*total cost of building* and
5 operating a generating plant," he effectively includes the sunk costs of the NND
6 Project.[16] Dr. Cooper makes similar levelized cost comparisons elsewhere, which
7 also suffer from the flaw of including sunk costs (unless it happens to be the case
8 that the remaining costs of completing the NND Project after incurring the costs to
9 date is the same as the initial estimate of total costs, which seems unlikely).[17]

10 Other parts of Dr. Cooper's testimony also indicate that he does not treat
11 sunk costs correctly. As I noted in my prior testimony: "Dr. Cooper states that
12 '[u]njustifiable, sunk costs were imposed on the alternatives' and that 'all of the
13 costs incurred by the utility for the abandoned nuclear project should be
14 disallowed as imprudent.'"[18] In his Direct Testimony and again in his Rebuttal
15 Testimony, Dr. Cooper points to the "To-Go Scam," which he describes as: "a

[14] Specifically, this analysis from his Exhibit MNC-2 proceeds as follows. First, he took the 2008 evidence from Lynch Exhibit JML-2 showing that the levelized cost differential between nuclear and natural gas increases by $53.4 million when changing the average gas price by $4.10/MBtu, a sensitivity of $13.02 million per each $1/MBtu change in gas price. Second, he states that natural gas prices as of 2012 were $10.13 lower than in 2008, implying a $131.9 million change from the 2008 results (=$13.02 million per $1/MBtu × $10.13/MBtu). Third, the 2008 results had a $15 million nuclear advantage over gas in levelized cost, so the revised results point to a $115 million advantage for gas (= −$15 million + $132 million, subject to rounding error).
[15] Cooper 2012 Direct Testimony, at 15.
[16] Cooper 2012 Surrebuttal Testimony, at 18 (emphasis added). Dr. Cooper cites the EIA definition of levelized costs: "Levelized cost is often cited as a convenient summary measure of the overall competitiveness of different generating technologies. Levelized cost represents the present value of the total cost of building and operating a generating plant over an assumed financial life and duty cycle, converted to equal annual payments and expressed in terms of real dollars to remove the impact of inflation."
[17] *See, e.g.*, Cooper 2012 Direct Testimony, at 16-17 and Exhibits MNC-4, MNC-5, MNC-6, MNC-7.
[18] Hubbard September 24 Testimony, at 7 (citing Cooper Direct Testimony, at 6, 45).

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1 policy game that tries to show that *net of sunk costs*, it is best to continue the
2 project."[19] These statements by Dr. Cooper indicate that he believes sunk costs
3 related to the NND project should be considered in a way that either increases the
4 costs of the nuclear option or decreases the cost of the combined-cycle alternative.

5 **Q. WHAT ISSUE DOES DR. COOPER RAISE WITH REGARD TO THE**
6 **CONSEQUENCES OF DISALLOWANCES ON SCE&G AND ITS**
7 **CUSTOMERS?**

8 A. A key point of my August 2 and September 24 testimony was that
9 retroactively changing the terms affecting investors after they have committed
10 capital may be viewed by market participants as regulatory opportunism. I
11 discussed that, conceptually, the consequence of such an action is effectively to
12 increase the cost of capital that investors will demand.[20] I also summarized a
13 variety of empirical evidence to show that the retroactive abrogation of the BLRA
14 is a real issue that will increase capital costs and rates in the future, if market
15 participants see it as an act of regulatory or political opportunism. In addition, I
16 noted that such retroactive abrogation may reduce investment below optimal levels
17 and/or lead to inefficient investment, for example, by encouraging the building of
18 smaller, less efficient plants that forego the benefits of economies of scale.[21] In

[19] Cooper Direct Testimony, at 43 (emphasis added).
[20] Hubbard September 24 Testimony, at 9, 11; Hubbard August 2 Testimony, at 9, 11, 32-33.
[21] Hubbard September 24 Testimony, at 5, 11; Hubbard August 2 Testimony, at 10, 32, 38-47. Perversely, the fear of a retroactive change in law or a failure to follow existing law by regulators or political actors may also cause regulated entities to complete facilities that should be abandoned, just to avoid the risk of an ex-post opportunistic

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1 sum, an action like abrogating the BLRA is not a "free lunch," as the testimony of
2 Dr. Cooper and others involved in this matter seem to suggest.
3 Dr. Cooper raises three points related to this issue. First, he claims that I
4 have a: "remarkably narrow, pro-utility view."[22] Second, Dr. Cooper seems to
5 claim that retroactive abrogation of the BLRA in this case would be perceived by
6 market participants to be a "one-shot" problem that will pass with time.[23] Third,
7 he claims that imposing NND Project costs on customers may be better than the
8 possibility of higher financing costs, noting that excessive costs may cause
9 customers to flee from SCE&G, resulting in a "death spiral."[24]

10 **Q. HOW DO YOU RESPOND TO DR. COOPER'S CLAIMS ABOUT THE**
11 **CONSEQUENCES OF DISALLOWANCES?**

12 A. First, in my prior testimony, I discuss and emphasize the need for regulators
13 to "balance" the interests of the utility, its investors, and its customers.[25]
14 Specifically, the primary message from my testimony is to remind the
15 Commission that ignoring the BLRA and disallowing costs previously determined
16 to have been prudently incurred is not a "free lunch." If market participants
17 believe that such an action by the Commission is opportunistic, the future
18 economic costs to SCE&G and, ultimately, its customers, will be significant. As I

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disallowance. *See, e.g.*, Kolbe, A. Lawrence and William Tye (1991), "The Duquesne Opinion: How Much 'Hope' is There for Investors in Regulated Firms?" *Yale Journal on Regulation*, 8(1), at 145-146.
[22] Cooper Rebuttal Testimony, at 11.
[23] Cooper Rebuttal Testimony, at 12.
[24] Cooper Rebuttal Testimony, at 12.
[25] Cooper Rebuttal Testimony, at 11; Hubbard August 2 Testimony, at 22; Hubbard October 24 Testimony, at 5, 22, 44, 46-47.

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1 have stated previously, while disallowances may reduce customer rates in the short
2 run, the economic cost of a retroactive abrogation of a law upon which investors
3 relied in committing their capital will lead to higher rates in the medium to longer
4 term.

5 Second, I do not agree with Dr. Cooper's suggestion that financial markets
6 will react benignly to adoption of the ORS Proposal. The issue is not so much that
7 the NND Project was a "one-shot mistake that the utility is not likely to make
8 again for decades."[26] Rather, the concern is the abrogation of the rule of law.
9 Once that precedent is made, investors will be skeptical of future expropriation. I
10 discussed this issue extensively in my prior testimony, citing empirical evidence
11 from prior nuclear disallowances, as well as international evidence documenting
12 the connection between the rule of law and development of financial markets.[27]
13 Indeed, the credit rating agencies have noted that permanent loss of BLRA-related
14 revenue would result in downgrades.[28]

15 Third, Dr. Cooper argues that including the NND costs in rates will cause
16 SCE&G's customers to "self generate," thereby reducing SCE&G's revenues. He

[26] Cooper Rebuttal Testimony, at 12.
[27] *See, e.g.*, Hubbard August 2 Testimony, at 38-47.
[28] *See, e.g.*, Fitch Ratings, "Fitch Downgrades SCANA to 'BB+' / SCE&G to 'BBB-'; Negative Watch Maintained," September 29, 2017 ("While not part of Fitch's base case scenario, any permanent loss of BLRA-related revenues and associated write-offs would materially impair SCE&G's financial health, leading to multi-notch rating downgrades for SCE&G and SCANA depending on the repayment mechanisms and financing options available to them. In absolutely the worst-case scenario, if SCE&G is asked to refund to customers the $1.8 billion collected to date under the BLRA and all stranded assets are disallowed, the financial viability of the companies could be threatened."). *See also* Moody's Investors Service, "Rating Action: Moody's Confirms SCANA, SCE&G and PSNC, Rating Outlook Negative," July 2, 2018; S&P Global Ratings, "SCANA Corp. and Subsidiaries 'BBB' Ratings Remain on CreditWatch Negative on Passage of South Carolina Bill," July 3, 2018.

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1 argues further that this reduction will, in turn, lead to even higher rates in the
2 future for remaining customers, which will cause more customers to switch to
3 "self generation," and so on, resulting in what he calls a "death spiral" for
4 SCE&G. However, while Dr. Cooper refers to a "widespread availability of
5 decentralized alternatives," he neither specifies the alternatives nor provides any
6 evidence that any of these alternatives would result in low enough costs to cause
7 SCE&G customers to switch. For example, assuming solar energy is one of the
8 decentralized alternatives that Dr. Cooper is referring to, he has provided no
9 evidence that it would make economic sense for any SCE&G customers to switch
10 to solar energy rather than pay SCE&G rates with recovery of the NND costs
11 included. As a result, very little or no weight should be given to this point.

12 **Q. WHAT ISSUE DOES DR. COOPER RAISE WITH REGARD TO SCE&G**
13 **ALLEGEDLY WITHHOLDING INFORMATION ABOUT THE NND**
14 **PROJECT?**

15 A. Dr. Cooper claims that I failed to acknowledge the alleged withholding of
16 information from the PSC.[29]

17 **Q. HOW DO YOU RESPOND TO DR. COOPER'S CLAIM?**

18 A. I understand that, in these proceedings, various parties have raised issues
19 concerning the timely and accurate disclosure of various types of information
20 about the NND Project. However, this is not an issue I have investigated and

[29] Cooper Rebuttal Testimony, at 12.

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1 therefore am not in a position to opine as to its impact on these proceedings. Also,
2 as noted in my prior testimony, I understand that a number of parties participated
3 in hearings conducted by the Commission and had the opportunity to scrutinize the
4 project and its costs.[30] In particular, I understand that the ORS monitored progress
5 on the project, audited SCE&G's expenditures, and presented the results of its
6 oversight and audits in all nine rate approvals granted by the Commission.

7 **Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?**

8 A. Yes, it does.

[30] Hubbard August 2 Testimony, at 48.

Exhibit__(RGH-1) to Surrebuttal Testimony

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BEFORE THE PUBLIC SERVICE COMMISSION

OF SOUTH CAROLINA

REBUTTAL TESTIMONY OF

GLENN HUBBARD, PH.D.

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. 2017-370-E

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Robert Glenn Hubbard, and my business address is Graduate School of Business, Columbia University, 101 Uris Hall, 3022 Broadway, New York, New York 10027.

Q. ARE YOU THE SAME GLENN HUBBARD WHO HAS PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?

A. Yes, I filed Direct Testimony on behalf of South Carolina Electric & Gas Company, referred to throughout my Direct Testimony as "SCE&G" or the "Company."

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the Direct Testimony of the following witnesses: Mr. Scott Rubin on behalf of AARP and Mr. Lane Kollen on behalf of the South Carolina Office of Regulatory Staff ("ORS").

II. EXECUTIVE SUMMARY

Q. CAN YOU PLEASE SUMMARIZE YOUR OPINIONS WITH REGARD TO MR. RUBIN'S DIRECT TESTIMONY?

A. I find that an economic analysis of the facts and findings of the *Duquesne* opinion cited by Mr. Rubin is consistent with and supports the conclusions from my prior testimony. In fact, a contemporaneous economic study of that case, published by Drs. Kolbe and Tye, warned of the potential significant negative economic

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1 consequences to investors and customers if the regulatory "rules of the game" are
2 changed after the fact in an opportunistic manner. This finding mirrors one of my
3 key opinions in this case.

4 Second, I note that there are at least two key differences between *Duquesne*
5 and this case, both of which support my opinions. First, the utility in *Duquesne*
6 operated in a traditional rate-making framework based on an *ex post* prudence
7 review, whereas the New Nuclear Development Project ("NND" or "NND Project")
8 was completed under the BLRA, which is an *ex ante* paradigm. All else equal, this
9 difference would lead to a greater economic impact from an opportunistic
10 disallowance in this case than in *Duquesne*. Second, the Kolbe and Tye article
11 emphasizes that the Court's decision in *Duquesne* was based in part on its finding
12 that the effect of an opportunistic regulatory regime change on a utility, as measured
13 by the size of the disallowance, must be "slight." Here, the economic effect of the
14 regime change on SCE&G cannot be characterized as "slight."

15 Third, I disagree with Mr. Rubin that traditional regulation requires that
16 investment projects enter rate base only if they are both prudent investments and
17 meet the used and useful standard. Indeed, as discussed in the aforementioned
18 study, the *Duquesne* opinion identifies four regulatory regimes, some of which do
19 not require both standards.

20 Fourth, Kolbe and Tye argue that a utility exposed to disallowance risk
21 should receive a risk premium, which would increase rates. Retroactively changing

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1 the regulatory regime would result in forcing the utility to bear risk for which it was
2 not properly compensated.

3 Fifth, I agree with Mr. Rubin's conceptual point that a disallowance can
4 result in losses for both customers and the utility, consistent with the balancing
5 principle in *Hope*. I note that the Customer Benefits Plan in the proposed business
6 combination with Dominion Energy does impose significant losses on SCE&G, and
7 the Company has already suffered significant losses as evidenced by its significant
8 negative stock price reaction since the abandonment announcement. Based on an
9 event study, I estimate that SCE&G equity investors have lost $2.1 billion or more
10 related to the abandonment and the related legislative and regulatory responses.

11 Finally, I disagree that the Axelrod study is a reliable basis for Mr. Rubin's
12 conclusion that SCE&G should have abandoned the NND Project by March 2013.

13 **Q. CAN YOU PLEASE SUMMARIZE YOUR OPINIONS WITH REGARD TO**
14 **MR. KOLLEN'S DIRECT TESTIMONY?**

15 A. Mr. Kollen proposes a number of adjustments to rates related to the NND
16 Project costs, the proposed business combination with Dominion Energy, and
17 changes to the tax law. Among these adjustments is making experimental rates
18 permanent. The net effect of these adjustments are significant proposed reductions
19 in revised rates: $193 million in 2019 and $160 million in 2020. He also proposes
20 additional reductions in annual rates of $34 million to $51 million related to a
21 proposed securitization of SCE&G's NND costs.

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1 If all of Mr. Kollen's recommendations are approved by the Commission,
2 SCE&G would be allowed to recover just $321.2 million (present value), or less
3 than 8 percent, of the $4.0 billion in NND costs, excluding certain wholesale-related
4 and transmission costs, incurred to date by SCE&G, and just 26.1 percent of the
5 present value of rates under the Customer Benefits Plan, which includes significant
6 concessions to customers, including a $1.3 billion refund.

7 Mr. Kollen focuses on the relief provided to customers through lower rates.
8 While customers may favor lower rates in a vacuum, a broader perspective is
9 necessary. To the extent that lower rates arise from a retroactive change to the law,
10 investors will be expected to respond to regulatory opportunism by increasing the
11 cost of capital going forward. Thus, the reduced rates that Mr. Kollen calculates are
12 likely to be temporary in nature.

13 Further, Mr. Kollen does not address the impact these significant cuts would
14 have on the financial integrity of SCE&G or its ability to provide safe and reliable
15 electric service to its customers.

16 Mr. Kollen's analysis also suffers from various flaws. First, by crediting
17 customers with both the return on the Toshiba Proceeds and a refund of revised
18 rates, he has effectively double-counted the benefits conferred to customers.
19 Correcting this flaw by excluding the return on the Toshiba Proceeds from Mr.
20 Kollen's model increases the present value of rates revenue in his model by
21 approximately $83 million.

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1 Despite the flaws in Mr. Kollen's logic, if one assumes that customers are
2 entitled to a return on the Toshiba Proceeds, a return calculated with an
3 economically appropriate interest rate would produce higher rates than calculated
4 by Mr. Kollen. Using Mr. Kollen's model, the increased present values of rates
5 revenues would range from approximately $50 million to $72 million, depending
6 on the type of interest rate used.

7 Second, Mr. Kollen incorrectly calculates a return on his refund of revised
8 rates using SCE&G's allowed rate of return. However, a lower rate is more
9 appropriate. Adjusting his analysis to avoid these flaws increases the present value
10 of rates revenue by $18 million to $26 million depending on the approach used.

11 Another flaw in Mr. Kollen's analysis is his estimate of SCE&G's cost
12 savings following the proposed business combination with Dominion Energy. He
13 estimates that such annual cost savings would lower SCE&G's rates by $70 million
14 in 2020 based on his estimate that Dominion will reduce its costs by 33 percent
15 following the transaction. However, his 33 percent estimate is unreliable as it is
16 based on a sample of only two prior acquisition targets, both of which were 18 years
17 ago and neither of which involved an electric utility. His analysis is also incomplete
18 in that he does not consider other factors that may have caused the costs of those
19 two firms to decline, and he also does not evaluate the shifting of costs from those
20 target firms to their new parent.

21 **Q. HOW IS THE REMAINDER OF YOUR REBUTTAL TESTIMONY**
22 **ORGANIZED?**

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A. The remainder of my Rebuttal Testimony is organized according to my response to the Direct Testimony of each witness. Section III pertains to AARP Witness Scott Rubin's testimony and Section IV discusses the testimony of ORS Witness Lane Kollen.

III. RESPONSE TO THE DIRECT TESTIMONY OF MR. RUBIN

Q. MR. RUBIN'S TESTIMONY STATES THAT: "[DR. HUBBARD] DISCUSSES TWO DECISIONS OF THE U.S. SUPREME COURT THAT HE SAYS PROVIDE THE 'APPROPRIATE LEGAL FRAMEWORK AND REASONING THAT UNDERLIE TRADITIONAL RATE-OF-RETURN REGULATION.'"[1] DOES THIS STATEMENT ACCURATELY CHARACTERIZE YOUR DIRECT TESTIMONY?

A. No. This statement implies that I was offering a legal opinion that the two decisions (*Bluefield* and *Hope*) provide "the appropriate legal framework and reasoning underlying traditional utility ratemaking." That is not correct. I stated that those two decisions "address" the appropriate reasoning that underlies utility ratemaking. I referred to selected language from those two decisions to note that it reflected sound economic reasoning and policy, not to make a legal argument as Mr. Rubin implies.

Q. MR. RUBIN EXPRESSES SURPRISE THAT YOU DID NOT DISCUSS OR CITE THE *DUQUESNE LIGHT CO. V. BARASCH* ("*DUQUESNE*")

[1] Direct Testimony of Scott J. Rubin, Docket No. 2017-370-E ("Rubin Direct Testimony"), at 8.

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1 **DECISION BY THE U.S. SUPREME COURT IN YOUR DIRECT**
2 **TESTIMONY.[2] HOW DO YOU RESPOND?**
3 A. Mr. Rubin appears to misconstrue my purpose in referring to *Bluefield* and
4 *Hope*, which was to draw attention to language from two Supreme Court decisions
5 that supports an economically sensible approach to utility rate regulation. I was not
6 performing a legal analysis nor was I attempting to identify all potentially relevant
7 legal decisions, Supreme Court or otherwise. That said, and because Mr. Rubin
8 asserts that the *Duquesne* decision sets forth constitutional mandates important to
9 this docket, I have reviewed the decision and an economic analysis of it. In doing
10 so, I found that the key facts and economic substance of the *Duquesne* decision also
11 support my opinions in this case.
12 **Q. PLEASE EXPLAIN WHY YOU BELIEVE THAT AN ECONOMIC**
13 **ANALYSIS OF THE *DUQUESNE* CASE SUPPORTS YOUR OPINIONS IN**
14 **THIS CASE.**
15 A. First, the core facts of the *Duquesne* case from an economic perspective are
16 similar to this case in that they reflect a retroactive regulatory change. Indeed, in
17 some ways, the changes in the *Duquesne* case, while similar in type to the present
18 case, were less economically significant. Therefore, many if not most of aspects of
19 the relevant economic analysis are similar.
20 **Q. PLEASE EXPLAIN WHAT YOU MEAN.**

[2] Rubin Direct Testimony, at 9.

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1 A. Like the present case, the utility in the *Duquesne* case abandoned the
2 construction of several nuclear plants and attempted to recover the plants'
3 construction costs through higher rates.[3] At every stage, these costs were
4 determined to be both reasonable and prudent.[4] Nevertheless, a month before the
5 end of the rate proceeding: "the Pennsylvania legislature enacted a law that
6 precluded inclusion of costs of construction of facilities in rate bases, prior to the
7 time such facilities were 'used and useful in service to the public.'"[5] This law
8 effectively required the regulators to exclude the abandoned nuclear plant costs from
9 the rate base, thereby effectively making a retroactive change in the regulatory
10 framework under which the utility had decided to build the plant.[6]

11 Similarly, in this case the South Carolina legislature ("Legislature") just this
12 year passed Acts 258 and 271 ("Acts"), which SCE&G contends retroactively
13 changed the BLRA by implementing an "experimental rate" that removed from rates
14 (or "disallowed") the return on the costs of the NND Project that previously had
15 been approved under the BLRA.[7] In this proceeding, ORS effectively is proposing

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[3] Greenhouse, Linda, "High Court Rejects Charges by Utilities for Unused Plants," *The New York Times,* January 12, 1989.

[4] In 1982, the Pennsylvania Public Utility Commission approved a return *of* (though not a return *on*) the capital investment in the plants over a ten year period. Greenhouse, Linda, "High Court Rejects Charges by Utilities for Unused Plants," *The New York Times,* January 12, 1989; Kolbe, A. Lawrence and William Tye (1991), "The *Duquesne* Opinion: How Much '*Hope*' is There for Investors in Regulated Firms?" *Yale Journal on Regulation,* 8(1) ("Kolbe and Tye"), at 118-119.

[5] Kolbe and Tye, at 118.

[6] As discussed below, this law effectively attempts to change the regulatory regime from a "pure prudent investment" or *ex post* "modified prudent investment" regime to an *ex post* "used and useful" regime. See below for a detailed discussion of these terms.

[7] The Acts effectively attempt to abrogate the *ex ante* "pure prudent investment" regime, as provided for in the BLRA, and replace it with a regime that effectively also allows application of an *ex post* "used and useful" standard as well as a prudency standard. The federal court decision denying SCE&G's motion for preliminary injunction of the Acts

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1 to endorse and expand the retroactive changes in the rules of the game begun by the
2 Legislature including by effectively modifying the *ex ante* prudency regime under
3 the BLRA to an *ex post* regime in which the "used and useful" standard is
4 applicable.[8] However, unlike the *Duquesne* case, in this case, the investments in the
5 NND Project were deemed prudent *ex ante*, and investors expected that they would
6 receive a return of and a return on their capital under the provisions of the BLRA
7 even if the NND Project was abandoned. The BLRA regime, therefore, provided
8 even stronger investor protections than in the *Duquesne* case, where investors
9 expected that the prudency of the investment would be determined *ex post*, and thus
10 were not necessarily guaranteed a return of or on the costs of the nuclear
11 development at the time of their investment.[9] In addition, in the *Duquesne* case, the
12 costs incurred by Duquesne at the time of the abandonment in 1980 were $34.7
13 million ($112.6 million in 2018 dollars),[10] which represented only about two percent
14 of the company's rate base.[11] In comparison, the total costs that SCE&G had

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is being appealed. *South Carolina Elec. & Gas Co. v. Randall*, No. 3:18-cv-01795-JMC, 2018 U.S. Dist. LEXIS 131587, at *4-*9, *38-*39 (August 6, 2018 D.S.C.).

[8] I understand that the parties dispute whether the actual or proposed actions by the Legislature and ORS in this matter constitute a violation of the BLRA. For example, the parties dispute whether, following the abandonment decision in mid-2017, SCE&G still was entitled under the BLRA to collect a return on the NND Project costs ("revised rates") (*See* Kollen at 26-28). In addition, the parties dispute whether the abandonment decision was made on a timely basis. The outcome of these disputes is not currently knowable. In this case, my opinions regarding the negative economic consequences of a retroactive change or abrogation of the BLRA assume that the actions of the Legislature and/or ORS, and the outcomes of disputes regarding the BLRA, violate the reasonable investment-backed expectations of market participants regarding the BLRA.

[9] However, the Pennsylvania regulators did indeed determine that the investments were prudent and, therefore, the investors in *Duquesne* reasonably expected that they would therefore receive a return of their capital investment. Kolbe and Tye, at 118-119.

[10] $112.6 million = September 2018 CPI-All Urban Consumers / January 1980 CPI-All Urban Consumers × $34.7 million = 252.4 / 77.8 × $34.7 million.

[11] Greenhouse, Linda, "High Court Rejects Charges by Utilities for Unused Plants," *The New York Times,* January 12, 1989.

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1 incurred at the time of abandonment in 2017 were $4.6 billion or about 55 percent
2 of SCE&G's total electric rate base, which was approximately $8.4 billion as of
3 December 31, 2017.[12]

4 Although the Supreme Court ruled against the utility in the *Duquesne* case,
5 "[t]he opinion did not entirely foreclose future constitutional challenges to the 'used
6 and useful' standard for setting rates."[13] As stated in *Duquesne*: "No argument has
7 been made that these slightly reduced rates jeopardize the financial integrity of the
8 companies, either by leaving them insufficient operating capital or by impeding
9 their ability to raise future capital."[14] In contrast, in this case, the proposed
10 disallowances are both large relative to the company's rate base and are the result
11 of an *ex post* change in a law that was supposed to prohibit the disallowance of costs
12 that had been previously ruled to be prudent. Thus, the proposed disallowances in
13 this case would cause the company's financial situation to deteriorate, as evidenced
14 both by the decline in the company's stock price since September 2017 when ORS
15 began requesting rate relief[15] and by downward revision in the credit rating
16 agencies' opinions.[16]

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[12] 55 percent = $4.6 billion / $8.4 billion. *See* Exhibit No. ___ (RGH-1) for the NND costs incurred at the time of abandonment in 2017. *See* "Testimony Exhibits – December 2017 Test Year – Kollen Option.xlsx," Tab "APPL_P1," Cell C42 for SCE&G's total electric rate base.

[13] Greenhouse, Linda, "High Court Rejects Charges by Utilities for Unused Plants," *The New York Times*, January 12, 1989.

[14] *Duquesne*, at 312-313.

[15] *See* Exhibit No. ___ (RGH-2), Page 1, which I discuss further below.

[16] *See, e.g.*, Fitch Ratings, "Fitch Downgrades SCANA to 'BB+' / SCE&G to 'BBB-'; Negative Watch Maintained," September 29, 2017 ("While not part of Fitch's base case scenario, any permanent loss of BLRA-related revenues and associated write-offs would materially impair SCE&G's financial health, leading to multi-notch rating downgrades for SCE&G and SCANA depending on the repayment mechanisms and financing options available to them. In absolutely the worst-case scenario, if SCE&G is asked to refund to customers the $1.8 billion collected to date under

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1 **Q. DOES MR. RUBIN DISCUSS THE CONCEPTS OF "PRUDENCY" AND**
2 **"USED AND USEFUL" AS THEY ARE APPLIED IN UTILITY**
3 **RATEMAKING PROCEEDINGS?**

4 A. Yes. He states that: "… traditional regulation requires investment to be both
5 prudently incurred and used and useful."[17] He also states that I "err[ed]" in using
6 "the disjunctive ('or') in describing the inter-relationship of prudency and the 'used
7 and useful' principle."[18]

8 **Q. DO YOU AGREE WITH MR. RUBIN?**

9 A. No. I think he is confusing the relationship between the "used and useful"
10 and "prudency" standards and their relationship to what I (and he) refers to as
11 "traditional regulation" or "traditional utility rate regulation."

12 **Q. CAN YOU PLEASE CLEAR UP MR. RUBIN'S CONFUSION?**

13 A. Yes. In *Duquesne*, the Supreme Court provided a classification of regulatory
14 frameworks that are helpful to explain the confusion here. Two economists, Larry
15 Kolbe and William Tye, published an article in the *Yale Journal on Regulation* that
16 provides an economic analysis and discussion of the four separate utility
17 "Ratemaking Regimes" that the Supreme Court discussed in *Duquesne*.[19] The two

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the BLRA and all stranded assets are disallowed, the financial viability of the companies could be threatened."). *See also* Moody's Investors Service, "Rating Action: Moody's Confirms SCANA, SCE&G and PSNC, Rating Outlook Negative," July 2, 2018; S&P Global Ratings, "SCANA Corp. and Subsidiaries 'BBB' Ratings Remain on CreditWatch Negative on Passage of South Carolina Bill," July 3, 2018.

[17] Rubin Direct Testimony, at 8.

[18] Rubin Direct Testimony, at 8.

[19] Kolbe and Tye, at 121-122.

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that are most relevant here are the "pure prudent investment" regime and the "used and useful" regime.[20]

- The "pure prudent investment" regime: Under this regime, "all prudent investments go into the rate base **regardless of whether they are used or useful**," and "[t]he investor thus would receive both a return *of* and a return *on* capital for the canceled plants."[21] I agree with the authors' characterization of this regime as the "traditional economic paradigm of rate regulation."[22] Prudency determinations under this regime were most often made after the fact, or on an *ex post* basis. Furthermore, and importantly, "used and useful" is not a necessary condition under this paradigm. The BLRA is a statutory codification of an *ex ante* version of a pure prudent investment regime.[23]
- The "used and useful" regime: The authors describe the "used and useful" regime as a separate regime under which investors receive neither a return of nor a return on their investment, even if the investment is deemed to have been prudent, if regulators or lawmakers later determine that the investment

[20] Kolbe and Tye, at 121-122. The other two regimes are "modified prudent investment" (in which investments that are found to be prudent but not used and useful will earn a return of capital but not a return on capital) and "fair value" (in which investments can earn market-based returns that could be above or below costs).
[21] Kolbe and Tye, at 121 (bold emphasis added).
[22] Kolbe and Tye, at 118.
[23] I understand that, under the BLRA regime, the NND costs were determined to have been prudent in proceedings before the South Carolina Public Service Commission ("Commission"). Consistent with the traditional rate-making paradigm, the BLRA regime provides for *ex ante* (as well as ongoing) prudency determinations and, therefore, it is not known whether a plant will eventually become "used and useful" after the prudency determination. *See, e.g.*, *Randall*, 2018 U.S. Dist. LEXIS 131587, at *4-*6.

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1 is not "used and useful."[24] The abandoned or canceled nuclear plants in both
2 the *Duquesne* and current cases did not achieve "used and useful" status.
3 In my testimony, I use the term "traditional" to refer to the *ex post* prudency
4 determinations that typically were used in utility regulation. In this context, the
5 distinction between *ex post* (the traditional approach) and *ex ante* relates only to the
6 timing of the determinations, while the distinction between a "used and useful"
7 regime and a "pure prudent investment" regime concerns the criteria for what can
8 be included in a utility's rate base. For example, under a traditional "pure prudent
9 investment" regime, investments can be deemed prudent even if they never become
10 "used and useful." As a news article covering the *Duquesne* decision noted in 1989,
11 only about half of U.S. states at that time employed a "used and useful" standard.[25]
12 **Q. MR. RUBIN CONCLUDES THAT THE SUPREME COURT IN *DUQUESNE***
13 **GAVE "STATES AND UTILITY COMMISSIONS WIDE LATITUDE TO**
14 **DEVELOP RATEMAKING MECHANISMS AND APPROACHES THAT**
15 **BEST MEET THE NEEDS OF THE PARTICULAR CIRCUMSTANCES**
16 **THEY FACE. IN THE PENNSYLVANIA CASE REVIEWED BY THE**
17 **COURT, THE STATE LEGISLATURE CONCLUDED THAT AN**
18 **APPROPRIATE RESULT WAS TO PROTECT CONSUMERS FROM**
19 **PAYING ANYTHING FOR PLANT INVESTMENTS THAT NEVER**

[24] Kolbe and Tye, at 116, 122.
[25] Greenhouse, Linda, "High Court Rejects Charges by Utilities for Unused Plants," *The New York Times,* January 12, 1989.

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PROVIDED SERVICE TO THE PUBLIC."[26] DO YOU AGREE WITH MR. RUBIN'S CHARACTERIZATION OF THE *DUQUESNE* DECISION?

A. No. While the Supreme Court did recognize that states have some discretion to develop their own ratemaking mechanisms, Mr. Rubin fails to recognize the Court's consideration of "the constitutional range of reasonableness," which led it to conclude that *Duquesne* did not amount to an unconstitutional taking because it found that the impact of the change in ratemaking regimes on the company was slight.[27] As stated in *Duquesne*:

> No argument has been made that these slightly reduced rates jeopardize the financial integrity of the companies, either by leaving them insufficient operating capital or by impeding their ability to raise future capital. Nor has it been demonstrated that these rates are inadequate to compensate current equity holders for the risk associated with their investments under a modified prudent investment scheme.[28]

Unlike *Duquesne*, in this case the proposed disallowances are both large relative to the company's rate base and are the result of an *ex post* change in a law that was presumed to prohibit the disallowance of costs that previously had been ruled to be prudent. Thus, the proposed disallowances in this case represent a more significant departure from the "rules of the game" than in *Duquesne*, because the BLRA specifically codified an *ex-ante* prudency review process. Furthermore, the

[26] Rubin Direct Testimony, at 10.
[27] *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989) ("*Duquesne*"), at 312-313; Kolbe and Tye, at 114.
[28] *Duquesne*, at 312-313.

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1 proposed disallowances in this case would cause the company's financial situation
2 to deteriorate as discussed above.

3 **Q. ARE THERE ADDITIONAL WAYS THAT THE *DUQUESNE* DECISION**
4 **DIFFERS FROM THE CURRENT CASE?**

5 A. Yes. The Court in *Duquesne* made it clear that any increased regulatory risk
6 due to the discretion that state regulators have under the Constitution would need to
7 be reflected in a higher allowed rate of return in order to be consistent with *Hope*:

> 8 The loss to utilities from prudent but ultimately unsuccessful
> 9 investments under such a system [that has been modified to
> 10 incorporate a used and useful test] is greater than under a pure
> 11 investment rule, but less than under a fair value approach.
> 12 **Presumably the PUC adjusts the risk premium element of the rate**
> 13 **of return on equity accordingly.**[29]

14 I have seen no evidence in this case that SCE&G's allowed rate of return was
15 increased to account for the risk that the BLRA would be abrogated after the fact
16 and that costs incurred and determined to have been prudent under the BLRA would
17 be disallowed. Rather, SCE&G's cost of capital would have been reduced due to
18 the presence of the BLRA, all else equal, due in significant part to investors' belief
19 that it reduced the regulatory risk of an *ex-post* disallowance. All else equal, this
20 lower cost of capital benefited SCE&G's customers by eliminating a potentially
21 prohibitive regulatory risk premium, which I discuss below.

[29] *Duquesne*, at 310-311 (endnote 7) (emphasis added).

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While I do not offer a legal conclusion of the appropriate regulatory response to a cancelled construction project, I do conclude that the economic analysis that Kolbe and Tye applied to the *Duquesne* case provides clear economic insights into what would happen when market participants observe a "pure prudent investment" regime, such as the BLRA, is retroactively replaced by a regime that also applies a "used and useful" test.[30] Specifically, as I described in my prior testimony, such an action, if seen as opportunistic, will result in losses to the utility and its investors, causing an increase in its cost of capital and a reduction in its incentive to invest, both of which will cause harm to its customers and, potentially, other residents of the state. Indeed, Kolbe and Tye reached similar conclusions:

> High costs for new electric power plants have led to a series of regulatory and legislative decisions that may retroactively rewrite the rules that utility investors relied upon when they supplied capital for these projects… The effect of [*Duquesne*] is to permit state regulators to shift to investors losses from utility assets that are never used and never shown to be useful.[31]

> An important consequence of *Duquesne* is that retroactive changes in the "rules of the game" become an inherent risk in regulation and will be deemed proper as long as (a) the regulatory commission adjusts, *ex ante*, the allowed rate of return to reflect the fact that the rules may change during the game, or (b) the losses from the change are slight. Investor perceptions of an increased risk of future regulatory change are inevitable under these conditions, particularly given the underestimated economic loss in *Duquesne*.[32]

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[30] Again it is important to note that Kolbe and Tye were analyzing a prudent investment regime with *ex-post* prudency reviews whereas, under the BLRA, prudency reviews were conducted on an *ex-ante* basis. Thus, in this case, the actual and proposed disallowances represent a qualitatively more significant departure from the "rules of the game."
[31] Kolbe and Tye, at 114.
[32] Kolbe and Tye, at 153-154.

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> An economic environment with increasing business risk, combined with a perception of high regulatory risk, may cause serious problems, including underinvestment in regulated industries and economically inappropriate incentives for industry operation.[33]

> Unless regulatory institutions change to accommodate the economic realities identified above, failure to account explicitly for regulatory and other asymmetric risk will usher in a new era of an undercapitalized public utility sector. Regulated firms will have strong incentives to defer investment and utilize small scale technology that is below minimum efficient scale. We are already beginning to see a "reverse Averch-Johnson-Wellisz (A-J-W) effect," whereby some public utilities will be starved for capital. Potentially inefficient forms of industry structure may also emerge as regulated firms minimize the assets exposed to opportunistic behavior by regulators.[34]

Q. ARE THERE ANY REGULATORY RESPONSES TO REMEDY THE PROBLEMS CREATED BY AN *EX POST* "USED AND USEFUL" REGIME?

A. Yes. One is to increase the allowed rate of return to reflect the extra regulatory risk. But that adjustment is difficult to do accurately. A second is for: "… regulators … to announce the rules of the game in advance of play and account for regulatory risk explicitly."[35] Kolbe and Tye state, for example, that:

> This scenario has the best chance of success if regulators choose ratemaking mechanisms that minimize regulatory risk and refrain from exploiting the window of constitutional magnitude by avoiding retroactive changes in the rules that are adverse to investor interests. If this is the approach, the (1) prudent original cost test is preferred

[33] Kolbe and Tye, at 154.
[34] Kolbe and Tye, at 154.
[35] Kolbe and Tye, at 154.

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1 over the (2) modified prudent investment test, which in turn is
2 preferred to the (3) used and useful test.[36]

3 This description is apt with respect to the motivation for and provisions of the
4 BLRA.

5 **Q. PLEASE SUMMARIZE YOUR TESTIMONY WITH REGARD TO THE**
6 ***DUQUESNE* DECISION AND THE CONCEPTS OF PRUDENCY AND**
7 **"USED AND USEFUL" IN THIS CASE.**

8 A. As I discuss above, certain facts of the *Duquesne* case are similar to those of
9 the current case, and an economic analysis of those facts, such as that performed by
10 Kolbe and Tye, also supports the opinions that I am offering here. Specifically, an
11 economic analysis of *Duquesne* highlights and clarifies the economic distinction
12 between the application of a "pure prudent investment" regime, such as the BLRA,
13 and the "used and useful" regime, including the application of a "used and useful"
14 standard that the South Carolina legislature and ORS have applied or are proposing
15 to apply retroactively in this case. Mr. Rubin's view that both of these concepts are
16 required under traditional regulation is inconsistent with the taxonomy of regulatory
17 regimes articulated in *Duquesne*.

18 **Q. MR. RUBIN ALSO SAYS THAT "UTILITY REGULATORS HAVE**
19 **RESPONDED TO MAJOR PLANT CANCELLATIONS AND THE**
20 **RESULTING FINANCIAL DISTRESS BY LOOKING TO ESTABLISHED**

[36] Kolbe and Tye, at 154-155.

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1 **REGULATORY PRINCIPLES."[37] HOW DO THOSE PRINCIPLES APPLY**
2 **TO THIS CASE?**
3 A. I understand that historically, plants owned by investor-owned utilities that
4 ultimately were cancelled were constructed under the traditional regulatory
5 paradigm, in which investors were exposed to the risk of an *ex post* denial of
6 prudency. Presumably those investors recognized this possibility in forming their
7 expectations and setting the terms of their capital contributions. But in this case,
8 SCE&G began construction of the nuclear plants, and investors contributed capital,
9 under the BLRA paradigm. As explained above and at length in my prior testimony,
10 the BLRA was a departure from the traditional rate-making framework in that the
11 prudency determination was shifted from *ex post* to *ex ante*. The benefit of this shift
12 is that it reduces uncertainty for utilities and their investors, as well as their
13 customers, thereby mitigating the potential for underinvestment in large-scale
14 projects that can result from the traditional framework. This reduced uncertainty
15 can result in a lower cost of capital, which provides an economic benefit to
16 customers in the form of lower rates. In addition, the BLRA facilitated the NND
17 Project, which was expected to provide both lower cost power and significant fuel
18 diversification benefits to SCE&G and Santee Cooper customers as well as SCE&G
19 investors.

[37] Rubin Direct Testimony, at 5.

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1 **Q. MR. RUBIN CONTINUES: "WHEN INVESTMENTS FAIL, THERE IS NO**
2 **QUESTION THAT INVESTORS WILL LOSE A SIGNIFICANT PORTION**
3 **OF THEIR INVESTMENT. BUT BECAUSE UTILITIES PROVIDE AN**
4 **ESSENTIAL PUBLIC SERVICE, CUSTOMERS MAY ALSO SUFFER IF**
5 **THEY ARE REQUIRED TO PAY HIGHER RATES TO ENSURE THE**
6 **CONTINUED VIABILITY OF THE UTILITY. THERE IS A LIMIT,**
7 **HOWEVER, TO HOW HIGH THOSE RATES SHOULD GO TO PROP UP**
8 **UTILITY INVESTORS. THE FAILURES IN WASHINGTON,**
9 **PENNSYLVANIA, AND NEW YORK THAT I SUMMARIZED ALL**
10 **RESULTED IN CUSTOMERS PAYING HIGHER RATES AND**
11 **INVESTORS SUFFERING SUBSTANTIAL LOSSES OF THEIR**
12 **INVESTMENT. NO ONE WINS, BUT A REASONABLE RESULT IS**
13 **REACHED THAT SHARES THE BURDEN OF THE FAILED**
14 **INVESTMENT."[38] DO YOU AGREE?**
15 A. I do, in part. Mr. Rubin notes that both customers and investors suffered
16 losses in prior project failures. Such an outcome reflects a balancing of interest that
17 dates back to at least *Hope*.[39] Loss-sharing and balancing is a feature of both the
18 proposed business combination between Dominion Energy and SCANA and from
19 ORS in this case. The question becomes one of degree and depends on the particular

[38] Rubin Direct Testimony, at 8.
[39] *Federal Power Commission v. Hope Nat. Gas Co.*, 320 U.S. 591 (1944) ("*Hope*"), at 63 ("The ratemaking process under the Act, *i.e.*, the fixing of 'just and reasonable' rates, involves a balancing of the investor and the consumer interests.").

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1 facts of each case. What sets *this* matter apart from the others is the presence of the
2 BLRA.

3 This case is different because the BLRA assured investors that they would
4 be able to recover all investments deemed prudent by the Commission even if the
5 plant was not completed. In fact, the BLRA specifically contemplated the possible
6 abandonment of the Project and provided:

> 7 Where a plant is abandoned after a base load review order approving
> 8 rate recovery has been issued, the capital costs and AFUDC related to
> 9 the plant shall nonetheless be recoverable under this article provided
> 10 that the utility shall bear the burden of proving by a preponderance of
> 11 the evidence that the decision to abandon construction of the plant was
> 12 prudent. Without limiting the effect of Section 58-33-275(A),
> 13 recovery of capital costs and the utility's cost of capital associated
> 14 with them may be disallowed only to the extent that the failure by the
> 15 utility to anticipate or avoid the allegedly imprudent costs, or to
> 16 minimize the magnitude of the costs, was imprudent considering the
> 17 information available at the time that the utility could have acted to
> 18 avoid or minimize the costs. The commission shall order the
> 19 amortization and recovery through rates of the investment in the
> 20 abandoned plant as part of an order adjusting rates under this article.[40]

21 This feature of the BLRA encouraged investors to provide capital on more
22 favorable terms than under a traditional rate-making framework, which would have
23 reduced the financing costs borne by customers. Retroactively exposing investors
24 to risks they did not agree to take would amount to changing the rules of the game
25 after it started and, as discussed in my prior testimony, such expropriation, if viewed

[40] S.C. Code Ann. Section 58-33-277 (K).

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as opportunistic, would result in a higher cost of capital going forward and/or reduced or inefficient investment by the utility.

Q. IS IT REASONABLE TO BELIEVE THAT INVESTORS MIGHT NOT HAVE CONTRIBUTED CAPITAL TO THE PROJECT WITHOUT THE ASSURANCE OF THE BLRA?

A. It is clear that investors contributed capital following SCE&G's disclosures of the BLRA to investors in its SEC filings.[41] It also is clear that the credit rating agencies viewed the BLRA as supportive of large capital investments.[42] In my judgment, the BLRA would have been material to investors, and the Company would not have been able to raise as much capital on the same terms in its absence. In particular, in the absence of the BLRA, investors would have been uncertain about whether the NND costs would be ruled prudent and, therefore, would have been uncertain over whether they could have recovered their investments. This uncertainty would have driven up the return demanded by investors and could have potentially made capital unobtainable. As the authors of the economic analysis of *Duquesne* concluded:

> Unless regulatory institutions change to accommodate the economic realities identified above, failure to account explicitly for regulatory and other asymmetric risk will usher in a new era of an

[41] *See* Exhibit No. ___ (RGH-3) and Exhibit No. ___ (RGH-4). *See also* SCANA Corporation Form 10-K for the Fiscal Year Ended December 31, 2008 for SCANA's discussion on "Rate Matters."

[42] *See, e.g.*, Moody's Investors Service, "South Carolina Electric & Gas Company: Update Following Downgrade to Baa3," March 9, 2018 ("The transparent and prescriptive features of the BLRA previously served to offset the company's elevated business risk profile as it embarked on an extremely large and complex project to build a new nuclear plant.").

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1 undercapitalized public utility sector. Regulated firms will have
2 strong incentives to defer investment and utilize small scale
3 technology that is below minimum efficient scale.[43]

4 **Q. DO KOLBE AND TYE APPLY AN ECONOMIC ANALYSIS TO**
5 **QUANTIFY THE RISK PREMIUM ASSOCIATED WITH THE**
6 **INCREASED PROBABILITY AND SIZE OF A DISALLOWANCE FROM,**
7 **FOR EXAMPLE, ADDING A USED AND USEFUL TEST TO A PURE**
8 **PRUDENT INVESTMENT REGIME?**

9 A. Yes. They quantify the risk premium associated with an increase in the
10 possibility that regulators could disallow recovery of an investment, thereby
11 exposing investors to an asymmetry in returns in which they are exposed to the
12 downside but capped on the upside.[44] The regulatory risk premium represents the
13 compensation investors require for exposure to this asymmetric distribution of
14 outcomes. Their model incorporates a range of probabilities of a disallowance and
15 a range of the potential size of such a disallowance in percentage terms.[45] They find
16 a range of increases in the allowed rate of return ranging from 0.4 percent at 1
17 percent chance of a 25 percent disallowance, to 345 percent at a 75 percent chance
18 of a full disallowance.[46]

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[43] Kolbe and Tye, at 154.
[44] Kolbe and Tye, at 141-145.
[45] Kolbe and Tye, at 144.
[46] Kolbe and Tye assume a 15 percent cost of capital with a zero percent chance of a disallowance. The numbers discussed above are calculated by subtracting 15 percent from the numbers shown in Kolbe and Tye, Table 1, at 144:
0.4 percent = 15.4 percent – 15.0 percent;
345 percent = 360 percent – 15 percent.

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1 **Q. CAN THE AUTHORS' FRAMEWORK BE USED TO ESTIMATE THE**
2 **MAGNITUDE OF THE POTENTIAL ECONOMIC HARM TO SCE&G**
3 **AND/OR ITS CUSTOMERS IN THIS CASE?**

4 A. Yes. First, it is important to realize that the economic losses to SCE&G's
5 investors and/or its customers can come from two sources, both of which stem from
6 the retroactive abrogation of the BLRA. The first source is the disallowance of costs
7 that regulators promised and investors believed would be included in rate base. Any
8 such disallowance will result in lower returns than investors reasonably expected
9 and lower future cash flows to SCE&G and its investors.[47] These lower future cash
10 flows will have a negative effect on SCE&G and its customers while reducing the
11 financial integrity of SCE&G and increasing its cost of capital, all else equal. This
12 increased cost of capital will harm customers to the extent that the higher cost is
13 passed along to them in rates. The second source of harm is an additional increase
14 to SCE&G's cost of capital due to investors' assessment of a higher level of
15 regulatory risk of investing in SCE&G. This second type of economic harm, which
16 ultimately will also be borne by customers, is what Kolbe and Tye's methodology
17 is designed to measure.

18 **Q. PLEASE DESCRIBE HOW THE KOLBE AND TYE MODEL CAN BE**
19 **APPLIED IN THIS CASE.**

[47] All else equal, lower rates due to regulatory disallowances of the NND costs will benefit customers and the economy of South Carolina in the short run. However, in both the short and longer run, these disallowances and lower rates, if approved, also will have significant offsetting negative economic consequences for SCE&G, its customers, and the state of South Carolina, including potentially leading to higher rates.

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A. As discussed in my prior testimony, actions that violate reasonable investor expectations under the BLRA will lead to an increase in investors' assessment of the regulatory risk of investing in SCE&G or other utilities in South Carolina. Kolbe and Tye's model is designed to estimate the potential harm from such an increase in assessed regulatory risk. To accomplish this objective, they calculate a forward-looking estimate of the increase in the cost of equity capital if there is a risk of a change in the regulatory regime that increases the probability and size of a potential disallowance, relative to the cost of equity capital under a "pure prudent investment" regime.[48] In general, the results can be interpreted as one measure of the increased cost of equity capital investors would demand due to an increased risk that their investment will be excluded from rate base for unanticipated, possibly opportunistic, reasons unrelated to the prudency of the investment. Table 1, below, shows the additional return in dollars that investors would demand to supply capital in the presence of increased regulatory risk, assuming $1 billion in additional investment and applying the Kolbe and Tye model.[49]

[48] Kolbe and Tye, at 141-145.

[49] Additional detail on the assumptions and calculations used to generate these results as well as a sensitivity using alternative assumptions are provided in Exhibit No. ___ (RGH-5).

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1 **Table 1. Impact of Disallowance Risk on Cost of Equity (Millions of $)**

Probability of Disallowance (π)	Disallowance (d)			
	-25%	-50%	-75%	-100%
0%	$0	$0	$0	$0
1%	$2	$4	$6	$8
5%	$13	$22	$31	$40
10%	$27	$46	$66	$85
25%	$80	$139	$197	$256
50%	$240	$416	$592	$768
75%	$720	$1,248	$1,775	$2,303

2 As this table shows, the economic harm to SCE&G's customers under this
3 measure can be very large. For example, assume that investors' perception of
4 regulatory risk following the abrogation of the BLRA increases such that their
5 assessed probability of a 50 percent investment disallowance rises from zero to 25
6 percent, on a hypothetical future investment of $1 billion. In that case, customers
7 would have to pay an additional $139 million in higher capital costs, over and above
8 a normal cost of capital, in order to offset the increased risk. Furthermore, this
9 increase in cost likely understates the additional cost in this case because the Kolbe
10 and Tye model is a single period model. Adding additional years would simply
11 increase the estimated potential cost.

12 **Q. DOES THIS REPRESENT A LOSS TO SCE&G'S INVESTORS, ITS**
13 **CUSTOMERS OR BOTH?**

14 A. The application of the Kolbe and Tye model that I describe above is meant
15 to illustrate the magnitude of the increased cost of capital that will prevail in the
16 future to the extent that the Commission's ruling in this case is perceived as

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1 opportunistic in whole or in part. This increased cost of capital will harm SCE&G's
2 customers through higher rates or inefficient investment going forward. Existing
3 and future investors in SCE&G presumably will demand the higher cost of capital
4 in exchange for bearing more risk.[50] Thus, the Kolbe and Tye model used in this
5 way focuses on present and future investor and customer losses, not on historical
6 losses. However, the Kolbe and Tye model conceptually could provide one measure
7 of the magnitude of the actual economic losses suffered by SCE&G investors.

8 **Q. HOW COULD THE KOLBE AND TYE MODEL BE USED TO MEASURE**
9 **ACTUAL LOSSES?**

10 A. In the course of its construction of the NND Project, all parties, including the
11 Commission and SCE&G, believed the BLRA was a valid framework, and that
12 SCE&G would receive a return of and on the costs it incurred under the BLRA.
13 Further, SCE&G believed that under the BLRA it would receive a return of and on
14 its investment even if it decided to abandon construction, as long as the
15 abandonment decision was deemed to be prudent.[51] Now, after the fact, it has

[50] As I discuss below, perceived increased regulatory risk due to the political and regulatory reaction to the abandonment decision is one reason why SCANA's shareholders suffered losses from a reduction in the market value of their securities.

[51] SCE&G's belief that it would receive a return of and on its investment even if it decided to abandon construction is evident in several disclosures made by SCANA around the time of abandonment. For instance, SCANA Corporation's Form 10-K for fiscal year 2017 stated that: "The BLRA provides that, in the event of abandonment prior to plant completion, costs incurred, including AFC, and a return on those costs may be recoverable through rates, if the SCPSC determines that the decision to abandon the Nuclear Project was prudent." *See* SCANA Corporation Form 10-K for the Fiscal Year Ended December 31, 2017, at 14.

Similarly, in an analyst presentation on the day that abandonment was announced (July 31, 2017), SCANA CEO Kevin March noted: "Additionally, I want to highlight the abandonment provisions of the BLRA law that we will be seeking to apply to our project costs. The law contemplated this type of scenario when it was written. It allows for the recovery of project costs as well as an earned return in an abandonment scenario." *See* also New Nuclear Project Decision Analyst Call Transcript, July 31, 2017, at 8.

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1 become apparent that the South Carolina legislature has decided to ignore the
2 assurances that market participants believed were previously provided by the BLRA
3 and retroactively change them. Thus, during construction, SCE&G's investors
4 actually bore more regulatory risk than they thought they were bearing. But they
5 received no compensation for bearing that extra risk. Conceptually, one could use
6 the Kolbe and Tye model to quantify the value of the extra risk premium that
7 SCE&G's investors would have required, if it was possible to determine investors'
8 assessment of the probability of a disallowance, as well as their assessment of the
9 likely size of the disallowance. Determining these inputs could be difficult.
10 However, given the results in Table 1, and the actual committed NND costs of $4.2
11 billion (after write-off of $490 million in 2017), such a calculation likely would
12 produce a significant value for the harm.[52]

13 **Q. ARE THERE OTHER, MORE PRACTICAL METHODS THAT CAN BE**
14 **USED TO ESTIMATE THE ACTUAL ECONOMIC HARM THAT**
15 **SCE&G'S INVESTORS ALREADY HAVE INCURRED?**

16 A. Yes, it is possible to get an approximate idea of the potential harm to
17 SCE&G's shareholders to date by calculating the decline in the market
18 capitalization of SCANA following the abandonment decision, after excluding the

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On the same day SCANA reaffirmed its earnings guidance for 2017 and maintained its 3-5 years EPS growth and 55-65 percent dividend payout at the same levels in the post abandonment period as in the prior period. This guidance is consistent with SCANA's belief that it would receive a return of and on its investment even after abandonment of the nuclear project. *See* Analyst Conference Call presentation, July 31, 2017, at 12.

[52] It is important to note that Table 1 only calculates the equity impact. To the extent that SCE&G's debt also would have been priced at a higher yield, SCE&G's lenders also suffered harm by bearing higher than expected regulatory risk. The NND costs of $4.2 billion represent NND costs after SCE&G's write-off in 2017 of $490 million of the $4.6 billion total NND costs. *See* Exhibit No. ___ (RGH-1).

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1 impact of factors other than the abandonment that also affect market
2 capitalization.[53,54]

3 I measure the change in SCANA's market capitalization from just before the
4 announcement of the abandonment on July 31, 2017 to December 27, 2017, which
5 is the end of the week prior to the proposed business combination announcement on
6 January 3, 2018. I exclude from this measurement any change in market
7 capitalization that can be attributed to market or industry forces or to other non-
8 abandonment factors. My analysis is based on a methodology that is called an
9 "event study" or "cumulative abnormal return (CAR)" analysis. This is a standard
10 methodology that financial economists use to measure the impact of particular
11 events on the value of companies. This methodology is based on the well-known
12 and extensively examined theory that the markets for the securities of publicly
13 traded companies are informationally efficient and, therefore, the prices of these
14 securities reflect all material, publicly available information. As a result, the market
15 price of a security can be considered to be unbiased and the best available objective
16 measure of value.

17 **Q. WHY ARE THESE ANALYSES CALLED "EVENT STUDIES" OR**
18 **"CUMULATIVE ABNORMAL RETURN" ANALYSES?**

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[53] Market capitalization in this context is the total dollar value of SCANA's issued and outstanding equity securities. My analysis here thus excludes any potential losses due to possible declines in the market value of SCANA's and SCE&G's debt securities.

[54] SCE&G is the largest of SCANA's wholly owned subsidiaries. At the end of fiscal 2017, SCE&G and affiliates contributed $15.9 billion (or 85.1 percent) of SCANA's consolidated total assets of $18.7 billion. For fiscal 2017, SC&G and affiliates contributed approximately 70 percent of SCANA's total operating revenue of about $4.4 billion. (*See* SCANA Corporation Form 10-K for the Fiscal Year Ended December 31, 2017, at 61-63, 71-73.)

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A. Event studies are used to determine how a specific public event, or a set of events, affects the market price of a firm's securities. To make such a determination, it is necessary to control for other observable factors that may also affect price, such as changes in broad market or industry forces or firm-specific events other than those that are being examined. The percentage change in the dividend-adjusted price of the security (often referred to as a "return") that cannot be attributed to observable factors other than the event of interest is referred to as the "abnormal" or "excess" return. The sum of such abnormal or excess returns over time is referred to as a "cumulative" abnormal return. The statistical significance of an abnormal return, often measured over a short time period, such as a day or a few days, can then be estimated. Researchers deem a statistically significant abnormal return to be evidence of the impact of the event in question because, to the extent possible, other observable causes for the stock price movement have been ruled out.[55]

Q. WHAT DOES YOUR CUMULATIVE ABNORMAL RETURN ANALYSIS SHOW?

[55] To implement this analysis I first developed a statistical model to control for the impact of market and industry forces on SCANA's stock price. (*See* Exhibit No. ___ (RGH-2), at 6.) The stock price changes that are left over after controlling for market and industry forces are those that might be due to firm-specific events such as the abandonment decision. Next, I identified specific days between the abandonment announcement and the merger announcement on which major news related to the abandonment and the expected regulatory response was released. To do this, I, or those working under my direction, performed an exhaustive search and review of all available public information that could be relevant to SCANA and the abandonment decision within this time frame. This review covered information included in disclosures made by the firm, industry analysts, and relevant news stories from January to December 2017 (using the *Factiva* database).

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A. I detail my event study analysis of the change in SCANA's market capitalization following the announcement of the abandonment decision in Exhibit No. ___ (RGH-2).

The key results of my analysis are as follows:

(1) Between the abandonment announcement date and the proposed business combination announcement date, SCANA's stock price fell by approximately 39 percent, from about $62 to about $38. This decline represents a reduction in market capitalization of approximately $3.4 billion.[56]

(2) Of this total decline, I calculate that the portion that can be attributed to the abandonment decision and the subsequent regulatory developments is in the range of $2.1 billion to $2.5 billion. These amounts represent the range of losses already incurred by SCE&G / SCANA shareholders due to the abandonment and subsequent regulatory developments related to the rate reversal. I calculate the upper and lower bounds of this range using two approaches:

(a) First, I consider the change in SCANA's stock price that cannot be attributed to market or industry factors on each trading day from September 21, 2017 (four trading days before the announcement of ORS' request to SCPSC for rate relief on September 27, 2017) and ends December 29, 2017 (the last trading date in the week prior to the proposed business combination announcement on January 3, 2018), a total of 70

[56] Exhibit No. ___ (RGH-2), at 1.

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1 trading days.[57] The implicit assumption is that the entire price change
2 over this period, after removing the impact of market and industry factors,
3 can be attributed to the abandonment decision and the subsequent rate
4 reversal developments.[58] The decline in SCANA's market capitalization
5 over the period, net of market or industry factors, equals $2.1 billion.[59]
6 (b) Second, I consider a smaller set of 18 trading days within this period on
7 which I can identify specific developments that are related to the
8 abandonment decision.[60] The total decline in SCANA's market
9 capitalization that cannot be attributed to market or industry factors
10 equals $2.5 billion when measured only over these select days.[61] As
11 compared to the approach outlined in (a) above, this measure of the
12 decline in SCANA's market capitalization is more stringent in terms of
13 excluding non-abandonment factors that affect SCANA's stock price.

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[57] The time period over which I measure the abnormal returns extends from July 25, 2017 through December 29, 2017. Even though the abandonment announcement was actually made on July 31, 2017, I chose a start date of July 25, 2017 because equity analysts had started publishing reports stating that abandonment was highly likely a few days before the actual announcements. *See, e.g.*, "SCANA Corp (SCG-$65.64-NYSE): Potential Abandonment/Lowered From Buy To Hold," *Gabelli & Company*, July 28, 2017; "SCG – Downgrading to Sell – The Curtain Call Cometh," *Guggenheim*, July 28, 2017.

[58] This approach is based on buy-and-hold abnormal returns, which are calculated as the difference between the buy-and-hold (or compound) returns on SCANA's stock over the period and the buy-and-hold (or compound) returns on a risk-matched benchmark over the same period. An advantage of this approach is that, for measuring long-window returns, it can provide less biased and statistically more appropriate measurement of abnormal returns than other approaches. *See* Barber, Brad M., and John D. Lyon (1997), "Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics," *Journal of Financial Economics*, 43, at 341-372.

[59] Exhibit No. ___ (RGH-2), at 5, Row [9]. Using a measurement period beginning July 25, 2017 results in an even larger estimate of the decline in market capitalization (-$3.0 billion). See Exhibit No. ___ (RGH-2), at 5, Row [10].

[60] This set of dates and the key development on these dates is identified in Exhibit No. ___ (RGH-2), at 5-6, columns [A]-[F]. This approach has the advantage that days unrelated to abandonment or the NND project can be excluded.

[61] Exhibit No. ___ (RGH-2), at 4, Row [7]. Using a measurement period beginning July 25, 2017 results in an even larger estimate of the decline in market capitalization (–$2.8 billion). See Exhibit No. ___ (RGH-2), at 5, Row [8].

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The $2.5 billion decline in market capitalization represents an estimate of the economic harm that SCE&G's equity investors have suffered due to the decision to abandon the construction of the nuclear power plant and the subsequent regulatory discussion to disallow incurred costs from being recovered.

(3) My analysis also shows that, as expected, there was little or no decline in SCANA's stock price or market capitalization, net of industry and market factors, following the abandonment announcement on July 31, 2017.[62] At this time SCANA investors expected that that SCE&G would be able to earn its allowed rate of return on all of the incurred costs, as provided for in the BLRA, and that the incurred costs would not be disallowed. It was not until ORS's request for rate relief on September 27, 2017, a move that increased investors' expectations not just of a disallowance but also of a change in regulatory regime, that SCANA's stock price and market capitalization declined sharply.[63]

The $2.1 to $2.5 billion decline in SCANA's market capitalization that I have estimated reflects investors' expectation both of the amount of the disallowance and of the consequences for firm value of heightened regulatory risk in South Carolina. It should be noted that this measure captures the loss only to the equity investors.

[62] Exhibit No. ___ (RGH-2), at 4, Row [1].
[63] Exhibit No. ___ (RGH-2), at 4, Row [2].

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Q. DOES THE PROPOSED BUSINESS COMBINATION PRICE COMPENSATE SCE&G'S INVESTORS FOR THE ECONOMIC HARM THAT THEY ALREADY HAVE INCURRED?

A. The available evidence suggests that it does not. The proposed business combination proposal sets the price for SCANA shares at a fixed amount of 0.669 shares of Dominion Energy's common stock.[64] To date, this offer has not been withdrawn or modified. Economic intuition suggests that Dominion Energy's offer will not necessarily compensate, dollar for dollar, for the economic loss that SCE&G's investors have suffered due to an expected disallowance.

If regulators approve rates that are significantly less than investors and Dominion Energy expected prior to the proposed business combination announcement, then Dominion Energy will bear the brunt of the losses from the reduced rates. Alternatively, Dominion Energy may withdraw the offer entirely, meaning that the losses ultimately incurred by SCANA's shareholders could be significantly greater than calculated here.

Q. IN HIS TESTIMONY, MR. RUBIN CONCLUDES THAT: IN MARCH 2013, "A PRUDENT UTILITY WOULD HAVE DECLINED TO SPEND MORE MONEY ON THE PROJECT."[65] PLEASE DESCRIBE THE BASES OF MR. RUBIN'S OPINION.

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[64] *See* Joint Application and Petition of South Carolina Electric & Gas Company and Dominion Energy, Inc., Docket No. 2017-370-E ("Joint Petition"), at 11.
[65] Rubin Direct Testimony, at 17.

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1 A. Mr. Rubin's opinion appears to be based on his review of various Santee
2 Cooper documents indicating: (1) that there were significant construction delays and
3 deficiencies on the NND Project as of March 2013, (2) that Santee Cooper had tried
4 to sell a portion of the NND Project through a long-term power purchase agreement
5 ("PPA") to another utility and not found a willing buyer, and (3) that a study by a
6 consultant, Dr. Howard Axelrod, had found that the levelized cost of electricity from
7 a nuclear unit was greater than the levelized cost of electricity from a CCGT under
8 certain scenarios.[66]

9 **Q. DO YOU AGREE THAT THESE FINDINGS PROVIDE A REASONABLE**
10 **BASIS FOR MR. RUBIN'S CONCLUSION?**

11 A. No. The appropriate analysis to determine whether to finish constructing a
12 facility of any type is to analyze the benefits of completing the project less the costs
13 yet to be expended, excluding sunk costs – *i.e.*, expenditures already made that
14 cannot be recovered, relative to the cost of abandoning the project and constructing
15 a different type of facility. Dr. Axelrod's analysis does not do this nor was it
16 performed for this purpose.

17 Instead, Dr. Axelrod was hired by Santee Cooper to assist with efforts to sell
18 a portion of the NND Project through a PPA and was asked "to assist in the
19 development and execution of a strategic marketing plan" for the V. C. Summer
20 ("VCS") units.[67] As an input into his marketing plan, Dr. Axelrod analyzed the

[66] Rubin Direct Testimony, at 11-17.
[67] Rubin Direct Testimony, Exhibit SJR-2, at 2.

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levelized cost of electricity for a nuclear unit versus a CCGT under various scenarios.[68] The scenarios considered by Dr. Axelrod do not appear to remove sunk costs nor do they appear to consider the costs of abandoning the nuclear project.[69]

Furthermore, although Mr. Rubin selects certain findings of Dr. Axelrod to quote in his testimony, he ignores the conclusions that Dr. Axelrod reached based on the same data. In particular, although Dr. Axelrod found that under certain scenarios a CCGT had a lower levelized cost of electricity than a nuclear unit, such as if natural gas prices remained low and no carbon tax was enacted,[70] Dr. Axelrod concluded that:

> It is very likely that natural gas prices will begin to rise and that global warming issues will drive regulations that result in carbon mitigation costs. While it may take a few years to realize these changes, the economic advantage of VCS will become transparent.[71]
>
> The VCS plants will someday be a valuable asset for Santee Cooper. By the time these plants are operational, it is more than likely that a rational assessment comparing base load nuclear to coal or CCGT would demonstrate the economic and environmental advantage of VCS.[72]

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[68] Rubin Direct Testimony, Exhibit SJR-2, at 5-7; Rubin Direct Testimony, Exhibit SJR-3, at 6-8; Rubin Direct Testimony, Exhibit SJR-11.

[69] For example, Dr. Axelrod reports that in his base case, the levelized cost of electricity from a new nuclear unit is $94/MWh with a 90 percent confidence interval of $72 to $139/MWh. He then compares his estimates to those reported in the U.S. Energy Information Administration's Annual Energy Outlook for 2013, which range from $104/MWh to $115/MWh. *See* Rubin Direct Testimony, Exhibit SJR-11, at 4; "Levelized Cost of New Generation Resources in the Annual Energy Outlook 2013," *U.S. Energy Information Administration*, January 2013, at 5.

[70] Rubin Direct Testimony, Exhibit SJR-2, at 5-7; Rubin Direct Testimony, Exhibit SJR-3, at 6-8; Rubin Direct Testimony, Exhibit SJR-11, at 9-19.

[71] Rubin Direct Testimony, Exhibit SJR-11, at 25.

[72] Rubin Direct Testimony, Exhibit SJR-3, at 11.

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Further, in discussing his conversations with utility executives who were uninterested in committing to a PPA for the NND Project, Dr. Axelrod opined that:

> Nuclear power, especially newer units are currently viewed by many power system analysts as uneconomic and non-competitive when compared to state-of-the-art CCGTs. This view of nuclear power economics appears short sighted as it fails to consider future rising natural gas prices and the cost of carbon emissions whether in the form of a carbon tax or cap and trade protocol. Our studies found that there is a high probability that nuclear power can be economically advantageous to alternative state-of-the-art CCGT.[73]

IV. RESPONSE TO THE DIRECT TESTIMONY OF MR. KOLLEN

Q. PLEASE SUMMARIZE THE RELEVANT CHARACTERISTICS OF MR. KOLLEN'S DIRECT TESTIMONY FROM YOUR PERSPECTIVE.

A. Mr. Kollen proposes a number of adjustments to rates related to the NND Project costs, the proposed business combination proposal, and the Tax Cut and Jobs Act ("TCJA"). Key adjustments include the termination of the revised and experimental rates, a proposal for recovery of the "net" NND Project costs as he calculates them, a reduction in rates to reflect the impact of the TCJA, a reduction in rates to assign potential proposed business combination costs savings to customers, and a one-time reduction in rates to reflect a regulatory liability related to the TCJA.[74] The net impact of all of these adjustments is a "recommendation" that rates be reduced by $193.3 million for 2019 and $160.1 million for 2020,

[73] Rubin Direct Testimony, Exhibit SJR-3, at 4.
[74] Direct Testimony & Exhibits of Lane Kollen, Docket No. 2017-370-E ("Kollen Direct Testimony"), at 4.

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1 according to his calculations.[75] He also recommends securitization of the "net"
2 NND Project costs at proposed rates of either four or five percent.[76] Securitization,
3 if adopted by the Commission, would further reduce rates by $33.8 to $50.9 million,
4 for total reductions ranging from $227.1 to $244.2 million in 2019 and from $193.9
5 to $211.0 million in 2020, according to Mr. Kollen's calculations.[77] In present value
6 terms, his recommendations result in a "Present Value NND Cost Recovery" of
7 $785.2 million in his "ORS Recommendation" case and $321.2 million in his "ORS
8 Securitization" case, again according to his calculations.[78] Thus, if all of Mr.
9 Kollen's recommendations are approved by the Commission, SCE&G would be
10 allowed to recover just $321.2 million (present value), or less than 8 percent, of the
11 $4.0 billion in NND costs, excluding certain wholesale-related and transmission
12 costs, incurred to date by SCE&G, and just 26.1 percent of the present value of rates
13 under the proposed business combination Customer Benefits Plan, which includes
14 significant concessions to customers, including a $1.3 billion refund.[79,80]

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[75] Kollen Direct Testimony, at 5.
[76] Kollen Direct Testimony, ORS Exhibits LK-18, LK-19.
[77] Kollen Direct Testimony, at 10.
[78] Kollen Direct Testimony, at 8.
[79] Kollen Direct Testimony, at 8: $321.2 million / $1,230.5 million = 26.1 percent. The value of $321.2 million is based on an assumption of a four percent securitization rate (Kollen Direct Testimony, ORS Exhibit LK-19) and relates to retail revenues only. Mr. Kollen also presents a securitization scenario based on a rate of five percent that produces a present value of revenue equal to $477.0 million (Kollen Direct Testimony, ORS Exhibit LK-18, at 9). For purposes of these and other illustrations, I have used the present values calculated by Mr. Kollen. I do not express an opinion on whether these present values were correctly calculated.
[80] As shown in Exhibit No. ___ (RGH-1), SCE&G incurred $4.6 billion in total NND costs, which is net of certain transmission costs, of which SCE&G decided to write-off $490 million in 2017. Of the remaining $4.2 billion, 96.83 percent was allocable to retail according to Mr. Kollen. Applying this percentage to $4.2 billion leaves $4.0 billion. I have excluded transmission costs and focused on retail to be consistent with Mr. Kollen's calculations.

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1 **Q. HOW DO MR. KOLLEN'S RECOMMENDATIONS COMPARE TO THE**
2 **PROPOSALS CONTAINED IN SCE&G'S MERGER PROPOSALS?**
3 A. Mr. Kollen proposes significantly lower rates than in either the "No Merger
4 Benefits" plan or in the "Customer Benefits Plan." According to his calculations,
5 the Present Value of NND Cost Recovery would be $2.7 billion under the No
6 Merger Benefits plan and $1.2 billion under the Customer Benefits Plan.[81] Thus his
7 recommendations reflect reductions relative to the Company proposals ranging
8 from $2.4 billion, when comparing the "ORS Securitization" case to the No Merger
9 Benefit plan, to $0.4 billion, when comparing the ORS Plan without securitization
10 to the Customer Benefits Plan.[82]
11 **Q. MR. KOLLEN RECOMMENDS THAT THE EXPERIMENTAL RATE**
12 **SHOULD BE MADE PERMANENT.[83] HOW DO YOU RESPOND?**
13 A. As I describe in my Direct Testimony, I understand that the experimental rate
14 amounts to a retroactive repeal or abrogation of the BLRA. All else equal, this
15 retroactive or *ex post* change in law, to the extent that it is perceived to be regulatory
16 opportunism, can be expected to have significant negative economic consequences
17 for SCE&G, its customers and the state of South Carolina. Making this rate cut
18 permanent, as recommended by Mr. Kollen, will simply exacerbate this harm
19 through a further weakening of the financial condition of SCE&G and result in an

[81] Kollen Direct Testimony, at 8.
[82] $2.4 billion = $2.7 billion – $321.2 million; $0.4 billion = $1.2 billion – $785.2 million. Kollen Direct Testimony, at 8.
[83] Kollen Direct Testimony, at 8.

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1 increase in SCE&G's effective cost of capital due to the perceived higher regulatory
2 risk of doing business. While lower rates from this recommendation may make
3 customers better off in the short run, they will face higher costs in the long run. Mr.
4 Kollen does not appear to consider or analyze these higher costs. In particular, he
5 makes no adjustment to his proposed allowed rate of return to reflect the higher
6 capital costs due to higher perceived regulatory risk. As a result, he also fails to
7 consider the disincentive to invest that would be created if his recommendation is
8 approved by the Commission.

9 **Q. MR. KOLLEN ALSO RECOMMENDS THAT THE NET NND PROJECT**
10 **COSTS SHOULD BE SECURITIZED. HOW DO YOU RESPOND?**

11 A. Securitization would lower rates even further and would represent yet
12 another departure from the rules of the game as specified by the BLRA. The
13 proposed securitized financing would represent a further reduction in the present
14 value of SCE&G's revenue. In particular, the present value of revenue with
15 securitization would be approximately $464.0 million lower than the significant
16 reductions contained in the "ORS Recommendation," according to Mr. Kollen's
17 calculations.[84] This difference in present value arises from the fact that the "ORS
18 Recommendation" includes a rate of return equal to SCE&G's cost of capital (9.03
19 percent according to Mr. Kollen), whereas his securitization proposal applies
20 assumed rates of return of either four or five percent.[85]

[84] Kollen Direct Testimony, at 8. $785.2 million – $312.2 million = $464.0 million.
[85] Kollen Direct Testimony, at ORS Exhibits LK-17, LK-18, LK-19.

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However, Mr. Kollen provides no justification or basis for his use of rates of return of four or five percent. Additionally, using SCE&G's cost of capital to compute the return on capital included in revised rates is more consistent with the BLRA.[86] If Mr. Kollen's present value calculations are correct, then his securitization recommendation would represent an *additional* significant economic loss imposed on SCE&G that also would reflect a further abrogation of the BLRA. In particular, Mr. Kollen recommends this further reduction in rates even on the NND costs that he argues should be allowed.[87] This action, therefore, represents not only an abrogation of the BLRA, but also of the traditional rate-making principle in which the allowed rate of return (full cost of capital) is applied to the approved rate base. Securitization is therefore more likely to be seen as regulatory opportunism by investors, which would increase SCE&G's effective cost of capital and cause the negative economic consequences I have previously described.[88] Again, customers may see a short-run benefit in the form of lower rates, but will experience higher costs in the future that Mr. Kollen ignores.

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[86] *See* S.C. Code Ann. Section 58-33-280 (B) ("A utility must be allowed to recover through revised rates its weighted average cost of capital applied to all or, at the utility's option, part of the outstanding balance of construction work in progress, calculated as of a date specified in the filing."). The rates of return suggested by Mr. Kollen would imply equity investors in SCE&G would be allowed to earn only a low rate of return on their investment.

[87] Kollen Direct Testimony, at 9-10.

[88] *See, e.g.*, Moody's Investors Service, "Moody's Downgrades SCE&G to Baa3 and SCANA to Ba1, Ratings Remain Under Review," February 5, 2018 ("We also believe the politically charged environment will weigh heavily on the SCPSC as it looks to implement rates that are fair and reasonable, perhaps leading to rates that are authorized at unusually low levels or include provisions that significantly delay recovery. Events over the past few months have led us to conclude the regulatory environment for SCE&G has deteriorated markedly and is now considerably below average."). *See also*, Moody's Investors Service, "Rating Action: Moody's Places SCANA and SCE&G on Review for Downgrade," November 1, 2017 and Moody's Investors Service, "SCE&G Company: Update Following Downgrade to Baa3," March 9, 2018.

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1 **Q. MR. KOLLEN FURTHER RECOMMENDS THAT ADDITIONAL NND**
2 **COSTS SHOULD BE DISALLOWED, BEYOND THOSE PROVIDED FOR**
3 **IN THE PROPOSED BUSINESS COMBINATION PROPOSAL.[89] HOW DO**
4 **YOU RESPOND?**

5 A. Mr. Kollen's recommendation that additional NND costs should be
6 disallowed is yet another recommendation that market participants likely would
7 perceive as a retroactive abrogation of the BLRA. Again, considered either alone
8 or together with Mr. Kollen's other recommended rate reductions and departures
9 from the BLRA, this additional recommendation would exacerbate the negative
10 economic consequences I have already discussed. Indeed, in all of these cases, Mr.
11 Kollen fails to consider the negative effect of his recommendations on the financial
12 condition of SCE&G, as well as the long-run negative effects on its customers and
13 the state of South Carolina. Specifically, as I stated in my previous testimony, a key
14 principle of economically sound utility rate design is that it should *balance* the
15 interests of the customers with the Company's interest in maintaining financial
16 integrity. In violation of this principle, Mr. Kollen recommends actions that will
17 lower customer rates, without regard to the consequences his recommendations have
18 on investor expectations and the Company's financial integrity.[90] His singular focus

[89] Kollen Direct Testimony, at 19.
[90] I note that Mr. Kollen offers what amount to *legal* conclusions and opinions for his recommended adjustments. *See, e.g.*, Kollen Direct Testimony, at 20 ("This return should have been deferred as a regulatory liability to offset the recovery through revised rates"), 23 ("Customers are entitled to the return on those proceeds from the dates the proceeds were received until the regulatory liability is fully amortized as a reduction to the NND costs recovered by SCE&G"). However, he is silent regarding the net *economic* impact of his recommendations.

on reducing rates creates the risk that the long-term harm to customers caused by his recommendations will offset the benefit from temporarily lower rates.

Q. HAVE YOU ATTEMPTED TO QUANTIFY THE LOSSES THAT SCE&G SHAREHOLDERS ALREADY HAVE INCURRED?

A. Yes. As described above, SCANA's stock price fell by approximately 39 percent, and its market capitalization fell by approximately $3.4 billion in the period that starts just before SCE&G's decision to abandon the construction of the NND Project and that ends just prior to the merger announcement. The portion of this decline that can be attributed to regulatory and political reaction suggesting that rates would be reduced despite the presence of the BLRA ranged from $2.1 to $2.5 billion.[91] While the proposed business combination announcement in January 2018 and the resulting increase in SCANA's stock price initially partially reversed these losses, this partial reversal was largely temporary.[92] These declines in SCANA's equity value can be interpreted as indicative of the losses that SCE&G's shareholders have suffered as a result of the decision to abandon the NND Project and the resulting risk of regulatory disallowance of NND costs, *as well as* newly formed perceptions of increased regulatory risk associated with investing in SCE&G.

Q. WHAT IS THE SIGNIFICANCE OF THESE RESULTS?

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[91] The CAR related to the abandonment decision was not statistically significant, suggesting that investors initially believed that the BLRA would allow SCE&G to recover a return of and on its NND costs, despite the decision to abandon the Project. This evidence supports a finding that up until that date, investors had committed capital on the assumption that the BLRA would protect against regulatory disallowances, even in the case of abandonment.

[92] Exhibit No. ___ (RGH-2), at 1, 4, Row [7] and 5, Row [8].

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1 A. SCANA's shareholders already have suffered billions of dollars of losses
2 even considering the merger offer from Dominion Energy. For example, SCANA's
3 closing stock price on October 23, 2018 was $37.46, which is about the same level
4 as the price just before the proposed business combination was announced.[93] If the
5 proposed business combination was approved today, without a change in terms,
6 SCANA's shareholders would receive about $49 per share.[94] The fact that
7 SCANA's stock price is trading well below the proposed business combination price
8 suggests that investors believe either that there is a relatively low probability that
9 the proposed business combination will be consummated on the current terms, or
10 that it will be consummated at terms that are less favorable to SCANA's existing
11 shareholders, or both. In either event, this evidence suggests that SCANA's
12 shareholders may suffer additional losses in the future. The evidence that SCANA's
13 shareholders already have suffered billions of dollars of losses and that investors
14 believe that the proposed business combination proposal may be in jeopardy strikes
15 me as relevant evidence for the Commission to consider as it determines whether to
16 approve the proposal and, more broadly, to reach a decision that achieves a proper
17 long-term balance between the interests of SCE&G's investors and its customers,
18 and that avoids damaging the investment climate in South Carolina.[95]

[93] The closing price of SCANA stock was $37.46 on October 23, 2018 and $38.87 on January 2, 2018, two days before the merger announcement. Stock price data from Bloomberg.
[94] The closing price of Dominion stock was $72.91 on October 23, 2018. Applying the exchange ratio of 0.669, 0.669 × $72.91 = $48.78. Stock price data from Bloomberg.
[95] I am aware that there are shareholder suits that conceivably could result in recoveries that reduce shareholder losses. However, I understand that those matters are in their early stages.

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1 **Q. MR. KOLLEN ARGUES IN HIS DIRECT TESTIMONY THAT**
2 **CUSTOMERS ARE ENTITLED TO THE ENTIRE AMOUNT OF THE**
3 **TOSHIBA PROCEEDS.[96] HOW DO YOU RESPOND?**
4 A. Mr. Kollen does not state the basis for his contention that customers are
5 "entitled" to the entire amount of the Toshiba Proceeds.[97] As I discuss above,
6 economically sound regulation requires balancing the interests of both customers
7 and the investors who supply the capital. If regulators or politicians ignore or short
8 change investor interests in favor of customers, without a valid reason other than
9 that they want lower rates, then investors will not be willing to supply the capital
10 that is required to produce reliable and high quality utility service at reasonable
11 rates. Indeed, in this case investors committed capital to SCE&G in reliance on the
12 BLRA, which I understand entitles SCE&G to put all prudently incurred costs into
13 the rate base.[98] If that entitlement is applicable in this case then, all else equal, the
14 presumption should be in favor of SCE&G when the Commission is balancing the
15 interests of investors and customers.
16 **Q. WHAT ARE THE IMPLICATIONS OF THIS NEED TO BALANCE**
17 **CUSTOMER AND INVESTOR INTERESTS FOR MR. KOLLEN'S**
18 **ARGUMENT THAT CUSTOMERS ARE "ENTITLED" TO ALL OF THE**
19 **PROCEEDS?**

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[96] Kollen Direct Testimony, at 23.
[97] The Toshiba Proceeds were composed of an approximately $1 billion in funds that SCE&G received from Toshiba to settle SCE&G's claim against Westinghouse for that firm's guarantee under the fixed price contract between the parties. *See* Joint Petition, at 36.
[98] My understanding of the legal requirements of the BLRA comes from SCE&G legal counsel.

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1 A. In contrast to Mr. Kollen's position that all of the Toshiba Proceeds belong
2 to customers, an economically logical approach would be to apportion the Proceeds
3 to customers and investors according to which of the two groups will bear the gross
4 losses under each proposal. In this case, SCE&G incurred $4.6 billion in total costs
5 in building the NND Project through September 2017 when the Proceeds were
6 received.[99] In addition, customers arguably committed approximately $1.7 billion
7 in capital in the form of revised rates revenues through that date.[100] Under the
8 Customer Benefits Plan, Dominion Energy and SCE&G have offered write offs and
9 disallowances totaling $1.4 billion, or approximately 22.2 percent of the combined
10 gross loss by investors and customers.[101] Arguably, therefore, under the Customer
11 Benefits Plan SCE&G's investors are entitled to approximately 22.2 percent of the
12 Toshiba Proceeds or $243 million to offset their portion of the costs of the
13 abandoned plant.[102] The percentage to which SCE&G's investors would be
14 economically entitled is even higher under Mr. Kollen's proposed disallowances,
15 because investors would bear more of the gross losses. After Mr. Kollen's proposed
16 refund of revised rates, securitization and other disallowances, investors would bear

[99] $4.6 billion is actual costs incurred as of September 30, 2017 (before write-offs). This number represents company-wide total costs incurred, excluding transmission costs.
[100] Exhibit No. ___ (RGH-6).
[101] 22.2 percent = $1.4 billion / ($4.6 billion + $1.7 billion). *See* Exhibit Nos. ___ (RGH-1) and (RGH-6).
[102] $243 million = 22.2 percent × $1.1 billion. *See* Kollen Direct Testimony, at 17.

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1 30.4 percent of the losses and thus would be "entitled" to 30.4 percent of the Toshiba
2 proceeds.[103]

3 **Q. HOW IS YOUR ANALYSIS AFFECTED BY THE FACT THAT DOMINION**
4 **AND SCE&G OFFERED TO REFUND THE TOSHIBA PROCEEDS TO**
5 **CUSTOMERS?**

6 A. Dominion Energy and SCE&G have offered to refund approximately $1.3
7 billion to customers under the Customer Benefits Plan, in addition to writing off the
8 $1.4 billion in costs as discussed above.[104] Furthermore, as I discuss above, SCE&G
9 would be legally entitled to put all prudently incurred costs into rate base under its
10 interpretation of the BLRA. Thus, to the extent that the refund offered to customers
11 by Dominion Energy and SCE&G includes the Company's investors' portion of the
12 Toshiba Proceeds, it should be recognized as a significant customer benefit and a
13 concession on their part. That refund should not be viewed as simply paying
14 customers what they are due, as implied by Mr. Kollen.

15 **Q. MR. KOLLEN ARGUES THAT "SCE&G HAS OWED THE TOSHIBA**
16 **PROCEEDS TO CUSTOMERS SINCE THE DATES ... THE FUNDS WERE**
17 **RECEIVED FROM TOSHIBA AND CITIBANK, RESPECTIVELY" AND**

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[103] 30.4 percent = ($1.4 billion + $0.5 billion) / ($4.6 billion + $1.5 billion). $1.4 billion and $0.5 billion represent write-offs proposed by SCE&G and Dominion and additional write-offs proposed by ORS—*see* Exhibit No. ___ (RGH-1). As discussed above, customers have already contributed $1.7 billion through revised rates to NND costs—*see* Exhibit No. ___ (RGH-6). Mr. Kollen's proposed refund of revised rates amounts to approximately $168.3 million through October 15, 2017, which would reduce the customers' contribution through revised rates from $1.7 billion to $1.5 billion. $168.3 million is estimated based on the average of the "Regulatory Liability Disallowed Revised Rates Revenues Subject to Refund" for September and October of 2017—*see* cells AK24 and AL24 on the sheet "REG LIAB REF REV RATES" in the file "ORS v Dom Customer Rate Impact 09.22.18 Full Refund Rev Rate.xlsx."
[104] Kollen Direct Testimony, at 14-15.

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THAT UNDER A HYPOTHETICAL RIDER "THE TOSHIBA PROCEEDS WOULD HAVE BEEN USED TO REDUCE THE NND COSTS AND TO REDUCE THE REVENUE REQUIREMENT FOR THE SAVINGS IN FINANCING COSTS. THIS SAVINGS IN FINANCING COSTS WOULD HAVE BEEN CALCULATED AT THE GROSSED-UP RATE OF RETURN AND WOULD HAVE FLOWED AUTOMATICALLY TO CUSTOMERS THROUGH THE RIDER"[105] HOW DO YOU RESPOND?

A. Presumably, Mr. Kollen and the ORS believe that a return on the Toshiba Proceeds must be awarded to customers in order to make them whole. Specifically, Mr. Kollen argues that customers are "entitled" to a return on the Toshiba Proceeds equal to SCE&G's grossed up rate of return because the Proceeds "would have been used to reduce the NND costs" and "would have" resulted in lower financing costs that "automatically" would have flowed through to customers.[106] According to this logic, Mr. Kollen is arguing that customers are entitled to a refund of financing costs they already have paid because the Toshiba Proceeds should have been offset against NND costs, thereby reducing financing costs. However, he also separately argues that the entire amount of "financing costs" on the NND Project – *i.e.*, total revised rates revenue – should never have been charged to customers after the July 2017 decision to abandon the project and, therefore, should be refunded in their entirety after that date plus a return.[107] The combination of the two

[105] Kollen Direct Testimony, at 21.
[106] Kollen Direct Testimony, at 21.
[107] Kollen Direct Testimony, at 27-28.

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1 recommendations creates a logical conflict. Specifically, Mr. Kollen's refund of
2 revised rates puts customers in a position of having incurred no financing costs
3 beginning in August 2017. As a result, any additional credit to customers related to
4 financing costs since August 2017 would be a windfall to customers – *i.e.*, it would
5 push their financing cost below zero. By crediting customers with both a return on
6 the Toshiba Proceeds *and* a refund of revised rate revenue, Mr. Kollen's calculations
7 result in such a windfall. Put another way, you can only "refund" all of the financing
8 costs for the NND costs once.

9 **Q. HOW SHOULD THE COMMISSION ADJUST MR. KOLLEN'S**
10 **CALCULATIONS TO CORRECT FOR THIS LOGICAL FLAW IN HIS**
11 **ANALYSIS?**

12 A. One approach would be simply to exclude the return on the Toshiba Proceeds
13 from Mr. Kollen's rate calculations. I have done so using his spreadsheet. The
14 bottom line impact is that his recommended reduction in rates is smaller (rates
15 increase) by $82.7 million in present value terms.[108] It is important to note that this
16 approach to quantifying the impact of correcting Mr. Kollen's logic assumes that
17 the Company would have had no obligation to provide a return on the Toshiba
18 proceeds to customers if it had stopped charging customers revised rates after
19 abandonment as assumed in Mr. Kollen's analysis. Whether that would have been
20 the case appears to be a legal question.

[108] When setting cells E36 and E38 to zero on the sheet "ORS LEVEL NND & REG LIAB" in the file "ORS v Dom Customer Rate Impact 09.22.18 Full Refund Rev Rate.xlsx," the "NPV of Revenue Requirement" in cell AA68 changes from $785.2 million to $867.9 million, an increase of $82.7 million.

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1 **Q. ASSUMING THAT, LEGALLY, CUSTOMERS ARE ENTITLED TO A**
2 **RETURN OF AND ON THE TOSHIBA PROCEEDS, IN ADDITION TO A**
3 **REFUND OF REVISED RATES AND A RETURN ON THAT REFUND, IS**
4 **THERE A DIFFERENT ECONOMIC COMPENSATION FRAMEWORK**
5 **UNDER WHICH A RETURN ON THE TOSHIBA PROCEEDS COULD, IN**
6 **FACT, BE INCLUDED AS AN ADJUSTMENT TO FUTURE RATES?**
7 A. Yes. An alternative framework for compensating customers would be to
8 argue that all or a portion of the Toshiba Proceeds should have been refunded to or
9 earmarked for customers when the Proceeds were received.[109] In that case, to be
10 made whole, customers would be entitled to the present value of the Toshiba
11 Proceeds as of December 2018, calculated at an appropriate interest rate. From an
12 economic perspective, the appropriate interest rate is one that is commensurate with
13 the risk that the customers have borne from the date they "should" have received
14 their refund (October 2017), to the date of "payment" (December 2018, according
15 to Mr. Kollen), no more and no less. Investment returns are compensation for
16 bearing risk. If customers receive a return in excess of the risk they have borne,
17 then they will receive a windfall. Economically, this reasoning is similar to the
18 reasoning used to determine an appropriate prejudgment interest rate.

[109] I understand that, had SCE&G refunded the Toshiba Proceeds to customers, as a practical matter SCE&G likely would have had to issue additional long-term debt. This may have increased rates in the long run. In addition, as discussed above, refunding the entire amount of the additional required financing proceeds would overcompensate customers from an economic perspective, because logically a portion of the proceeds would have been attributable to investors in proportion to their share of the expected losses. However, to be consistent with Kollen's assumption and the Customer Benefits Plan refund, I assume in this section of my testimony that the entire economic benefit of the Proceeds would have been or will be provided to Customers.

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1 **Q. WHAT IS THE ECONOMICALLY APPROPRIATE INTEREST RATE FOR**
2 **CALCULATING THE RETURN ON THE TOSHIBA PROCEEDS UNDER**
3 **THIS ALTERNATIVE FRAMEWORK?**

4 A. Economic research has identified either a risk-free interest rate or SCE&G's
5 debt rate as two interest rates that reflect the risk borne by the affected parties in
6 situations such as this.[110] First, in practical terms, SCE&G has not declared
7 bankruptcy and is in a position today to provide customers with the economic
8 benefit of the Proceeds in the form of a lower recovery of NND costs in rates.[111]
9 Therefore, customers are not actually bearing any risk in the calculation and award
10 of a return on the Toshiba Proceeds in this case. In other words, if a return on the
11 Toshiba Proceeds is awarded, the customers are virtually certain to receive it.
12 Therefore, one appropriate interest rate is the risk-free rate (the short-term U.S.
13 Treasury bill rate).[112] Alternatively one can recognize that customers have borne
14 the risk that SCE&G might have declared bankruptcy between the date the Proceeds
15 were received and December 2018. Therefore, assuming that the customers' claim
16 to the economic benefit of the Toshiba Proceeds is akin to an unsecured debt claim,

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[110] Fisher, Franklin and R. Craig Romaine (1990), "Janis Joplin's Yearbook and the Theory of Damages," *Journal of Accounting, Auditing & Finance,* 5(1); Patell, James, Roman Weil, and Mark Wolfson (1982), "Accumulating Damages in Litigation: The Roles of Uncertainty and Interest Rates," *The Journal of Legal Studies,* 11(2).

[111] In addition, as we stand here today, the Toshiba Proceeds are a known amount and, therefore, have no systematic risk associated with them. Systematic risk represents the portion of risk that is not diversifiable. Under standard finance theory, investors receive compensation for bearing systematic risk but do not receive compensation for bearing risk that is diversifiable. This is a "technical" argument for application of the risk-free rate, which has a zero risk premium. *See, e.g.*, Brealey, Richard A., Stewart Meyers, and Franklin Allen (2007), *Principles of Corporate Finance*, New York: McGraw-Hill/Irwin, Chapter 9.

[112] Fisher, Franklin and R. Craig Romaine (1990), "Janis Joplin's Yearbook and the Theory of Damages," *Journal of Accounting, Auditing & Finance,* 5(1).

a second appropriate rate would be the rate on unsecured debt with comparable credit risk to SCE&G.[113]

Q. WHAT IS THE IMPACT OF THESE LOWER RATES ON MR. KOLLEN'S CALCULATIONS?

A. The return on the Toshiba Proceeds using the appropriate economic interest rates that I just described is calculated in Exhibit No. ___ (RGH-7). As shown in the exhibit, if these lower and more economically correct returns are incorporated in to Mr. Kollen's model, the following results are obtained:

Table 2. Impact of Using the Appropriate Economic Interest Rates to Calculate the Regulatory Liability for the Toshiba Proceeds ($000s)

Assumed Return	Regulatory Liability for Toshiba Proceeds	NPV of Revenue Requirement
WACC (Kollen)	$106,140	$785,171
Cost of Debt	$41,578	$835,469
1-month Treasury Rate	$14,073	$856,896
Difference vs Kollen		
Cost of Debt	−$64,562	$50,297
1-month Treasury Rate	−$92,067	$71,725

[113] Patell, James, Roman Weil, and Mark Wolfson (1982), "Accumulating Damages in Litigation: The Roles of Uncertainty and Interest Rates," *The Journal of Legal Studies,* 11(2). Presumably, if SCE&G had declared bankruptcy, the right of SCE&G to recover under the BLRA would have been litigated by the Bankruptcy Trustee on behalf of the bankrupt estate. *See* Michael, M. Beal, "Memorandum re: Potential Consequences of a SCANA/SCE&G Bankruptcy Filing if Future Collections under the Base Load Review Act Are Suspended or if the Base Load Review Act is Repealed or Deemed Unconstitutional," January 12, 2018, at 2-3. If customers won the right to a refund, including the Toshiba Proceeds, in that proceeding, I assume that the judgment likely would have been treated as a senior or unsecured debt claim. To be conservative, I assume in my calculations that any such judgment would have been treated as an unsecured debt claim. SCE&G does not have unsecured debt so I use the yield on an index of BBB-rated 20-year unsecured corporate bonds. From 2015 through present, SCE&G had an issuer credit rating of BBB and a weighted-average debt maturity of 19 to 20 years. *See* Exhibit No. ___ (RGH-7).

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As the Table shows, using an economically appropriate interest rate to calculate the return on the Toshiba Proceeds would increase future rate revenue using Mr. Kollen's model by either $50.3 million or $71.7 million on a present value basis, depending on the rate used.[114]

Q. DID MR. KOLLEN CALCULATE THE RETURN ON HIS PROPOSED REFUND OF REVISED RATES CORRECTLY?

A. No. As with the Toshiba proceeds under the alternative economic compensation framework, Mr. Kollen used SCE&G's grossed up weighted average cost of capital, which is too high, to calculate a return on his proposed refund of revised rates. This choice runs counter to his argument for the refund, which is that SCE&G should have stopped charging revised rates beginning at the termination date. Under this logic, customers were deprived of their funds each month from the date of termination of the Project through December 2018. This argument is similar to customers being deprived of the Toshiba Proceeds or the economic rights to the Proceeds.

In both cases, customers can be considered to have borne either zero risk or the risk of an unsecured debt claim on SCE&G's assets. From an economic perspective, compensation for bearing these lower levels of risk should be calculated at either the risk free interest rate or an unsecured debt rate.

Q. HAVE YOU PERFORMED THESE CALCULATIONS?

[114] As noted previously, I do not offer an opinion on whether Mr. Kollen calculated the rates correctly.

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A. Yes. Exhibit No. ___ (RGH-7), provides my calculations of the reduced return on the refund of revised rate revenue using the risk-free rate and SCE&G's unsecured debt rate. I also summarize these results in the table below:

Table 3. Impact of Using the Appropriate Economic Interest Rates to Calculate the Regulatory Liability for the Rate Refund ($000s)

Assumed Return	Regulatory Liability for Rate Refund	NPV of Revenue Requirement
WACC (Kollen)	$37,264	$785,171
Cost of Debt	$15,105	$803,175
1-month Treasury Rate	$5,014	$811,325
Difference vs WACC		
Cost of Debt	−$22,159	$18,003
1-month Treasury Rate	−$32,250	$26,153

As the Table shows, using an economically appropriate interest rate to calculate the return on the Toshiba Proceeds would increase future rate revenue using Mr. Kollen's model by either $18.0 million or $26.2 million on a present value basis, depending on the rate used.[115] This increase is additive with the increases ($50.3 million or $71.7 million), assuming the return on the Toshiba Proceeds is calculated properly.

Q. MR. KOLLEN RECOMMENDS A RATE REDUCTION OF $35 MILLION IN THE FIRST YEAR AND $70 MILLION IN THE SECOND YEAR AND ANNUALLY THEREAFTER IN THE FORM OF A MERGER SAVINGS RIDER FOR THE ESTIMATED SAVINGS IN OPERATING EXPENSES IF

[115] As noted previously, I do not offer an opinion on whether Mr. Kollen calculated the rates correctly.

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THE PROPOSED BUSINESS COMBINATION IS IMPLEMENTED.[116] DO YOU AGREE WITH HIS ANALYSIS?

A. I do not agree. Mr. Kollen's estimated merger savings of 33 percent are based on an analysis of the change in costs for Hope Gas, Inc. ("Hope") and East Ohio Gas Company ("East Ohio") after their acquisitions by Dominion Energy in 2000. This analysis is conceptually suspect for a number of reasons.

First, Mr. Kollen's estimate of cost savings is based on a small sample that is not representative of the proposed Dominion Energy-SCANA business combination. Mr. Kollen's estimate is based on a sample of only two companies, Hope and East Ohio, which are natural gas utilities that do not provide electric power service. In addition, these acquisitions occurred 18 years ago, and Mr. Kollen does nothing to justify their current relevance.

Second, in estimating the expected cost savings of the proposed business combination, Mr. Kollen arbitrarily assumes that the post-merger decline in operating expenses that East Ohio and Hope experienced were entirely due to merger synergies. Mr. Kollen did not control for other confounding factors that could have influenced those costs. For example, it is plausible that costs would have declined even absent a merger had these companies experienced a decline in output. Indeed, as I show in Exhibit No. ___ (RGH-8), this is exactly what occurred for East Ohio. Although East Ohio's operating expenses (excluding fuel costs) in 2002 were

[116] Kollen Direct Testimony, at 12.

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1 42 percent lower than the company's operating expenses (excluding fuel costs) in
2 1999, its revenue and volume of natural gas sold in 2002 were also 40 percent and
3 50 percent lower, respectively, than in 1999.[117]

4 Third, Mr. Kollen's methodology is flawed because he examines only the
5 costs incurred by the target firms and makes no attempt to control for offsetting
6 increases in costs to the parent company due to the acquisition. For example,
7 Dominion may have cut the legal teams from Hope and East Ohio, reducing
8 expenses on their books, but then increased the size of its own legal team to perform
9 the additional work associated with Hope and East Ohio.

10 **Q. WHAT ACTION DO YOU RECOMMEND THAT THE COMMISSION**
11 **TAKE WITH RESPECT TO MR. KOLLEN'S POTENTIAL MERGER**
12 **SAVINGS?**

13 A. For the reasons stated above, Mr. Kollen's analysis of potential merger
14 savings is unreliable and, therefore, I do not see a valid basis to include them in Mr.
15 Kollen's rate calculations. Furthermore, to the extent that quantifiable operating
16 cost savings are realized at the SCE&G level in later periods, rates can be reduced
17 through future rate proceedings.

18 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

19 A. Yes, it does.

[117] I note that the version of Mr. Kollen's source document (AIR 7-8) that was provided to me was marked "revised." While the dollar amounts of expenses differ slightly from those in his testimony (at 60-61), the percentage changes are within one percentage point.

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EXHIBIT NO. ___ (RGH-1)

SUMMARY OF THE ORS RECOMMENDATION FOR ALLOWED NEW NUCLEAR DEVELOPMENT ("NND") COSTS

	NND Costs	Est. NND Cost (Retail)
	[A]	[B]
[1] Total Direct Costs	$4,472.2	$4,330.5
[2] Allowance for Fund Used During Construction ("AFUDC")	$173.3	$167.8
[3] Total Actual NND Costs at September 30, 2017	$4,645.5	$4,498.3
[4] SCE&G 2017 Write-offs	($490.0)	($474.5)
[5] Total NND Costs after 2017 Write-offs	$4,155.5	$4,023.8
[6] Additional Write-offs Proposed by Dominion and SCANA	($913.0)	($884.1)
[7] Total NND Costs Included in the Merger CBP	$3,242.5	$3,139.7
[8] Additional Write-offs Proposed by ORS	($470.9)	($456.0)
[9] Total NND Costs Proposed by ORS	$2,771.6	$2,683.7

Notes and Sources:

In millions of USD.

Direct Testimony of Lane Kollen, Docket No. 2017-370-E ("Kollen Direct Testimony").

Direct Testimony of Kevin R. Kochems, Docket No. 2017-370-E ("Kochems Direct Testimony").

Direct Testimony of Iris N. Griffin, Docket No. 2017-370-E ("Griffin Direct Testimony").

Kollen Direct Testimony, ORS Exhibit LK-16, Response to South Carolina Electric & Gas Company Office of Regulatory Staff's Continuing Audit Information Request 1-2 Attachment ORS 1-116, Docket Nos. 2017-207-E, 2017-305-E, 2017-370-E ("Attachment ORS 1-116").

Joint Application and Petition of South Carolina Electric & Gas Company and Dominion Energy, Inc. Docket No. 2017-370-E ("Joint Petition").

[B] =[A]*96.83%. 96.83% represents "SC Retail Allocation Factor" from Kollen Direct Testimony, ORS Exhibit LK-17.

[1] From Kochems Direct Testimony, Exhibit No. ___ (KRK-1). Represents "Total Revised Project Cash Flow" in Exhibit No. ___ (KRK-1).

[2] From Kochems Direct Testimony, Exhibit No. ___ (KRK-1). Represents "AFUDC (Capitalized Interest)" in Exhibit No. ___ (KRK-1).

[3] =[1] + [2]. Excluding BLRA transmission costs and transfer to Unit 1 and switchyard. *See* also Kollen Direct Testimony, at 14.

[4] From Griffin Direct Testimony, at 36, Chart G.

[5] =[3] + [4].

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EXHIBIT NO. ___ (RGH-1)

**SUMMARY OF THE ORS RECOMMENDATION
FOR ALLOWED NEW NUCLEAR DEVELOPMENT ("NND") COSTS**

[6] Represents the difference between $1.4 billion and [4].
$1.4 billion from Kollen Direct Testimony, ORS Exhibit LK-16, "Attachment ORS 1-116," at tab 'Customer Benefits Plan.'
Includes $1.2 billion in assets that have not previously been subject to consideration in setting revised rates and approximately $200 million in assets that have previously been subject to consideration in setting revised rates. *See* Joint Petition, at 24.
[7] =[5] + [6].
[8] =[9] - [7].
[9] From Kollen Direct Testimony, ORS Exhibit LK-17, at 1.
Equals the sum of "Allowed NND Costs Before Transfers, Sales and Other Reductions (Total Company)"
and "ORS CWIP Adjustments (not including transfers) (Total Company)"
and "Transfers to Unit 1 and Trans. (Total Company)."
Represents the estimation of ORS for the allowed NND costs as of March 12, 2015. *See* Kollen Direct Testimony, at 14.

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EXHIBIT NO. ___ (RGH-2)
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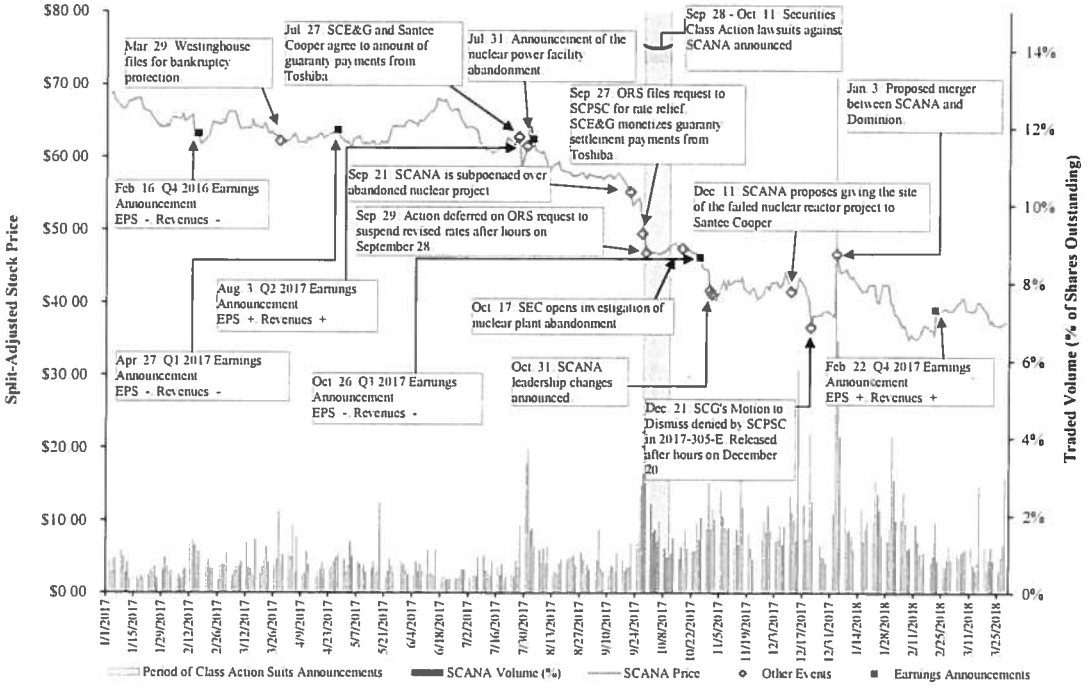
SCANA: PRICE AND VOLUME
JANUARY 3, 2017 THROUGH MARCH 31, 2018



Notes and Sources:
SCANA price and volume data from Bloomberg
Volume calculated as a percentage of shares outstanding
Earnings announcement dates from Bloomberg Earnings announcement boxes include the sign of the EPS and Revenue Surprises Surprise values from Thomson Reuters
Additional timeline details from Factiva

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EXHIBIT NO. ___ (RGH-2)
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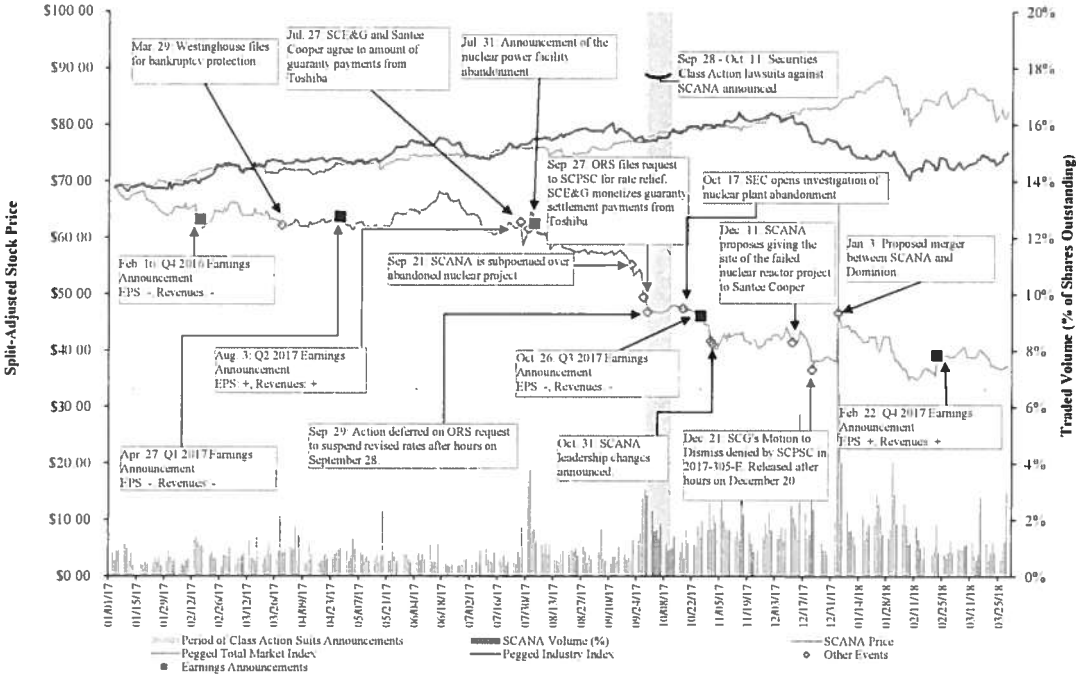
SCANA: PRICE CHART WITH PEGGED MARKET AND INDUSTRY INDICES
JANUARY 3, 2017 THROUGH MARCH 31, 2018



Notes and Sources:
SCANA price and volume data from Bloomberg.
Volume calculated as a percentage of shares outstanding
Market Index is the CRSP Total Market Index and Industry Index is the CRSP US Utilities Index, both from Bloomberg
Market and Industry indices pegged to SCANA price as of January 3, 2017
Earnings Announcement dates from Bloomberg Earnings Announcement boxes include the sign of the EPS and Revenue Surprises
Surprise values from Thomson Reuters
Additional timeline details from Factiva.

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EXHIBIT NO. ___ (RGH-2)
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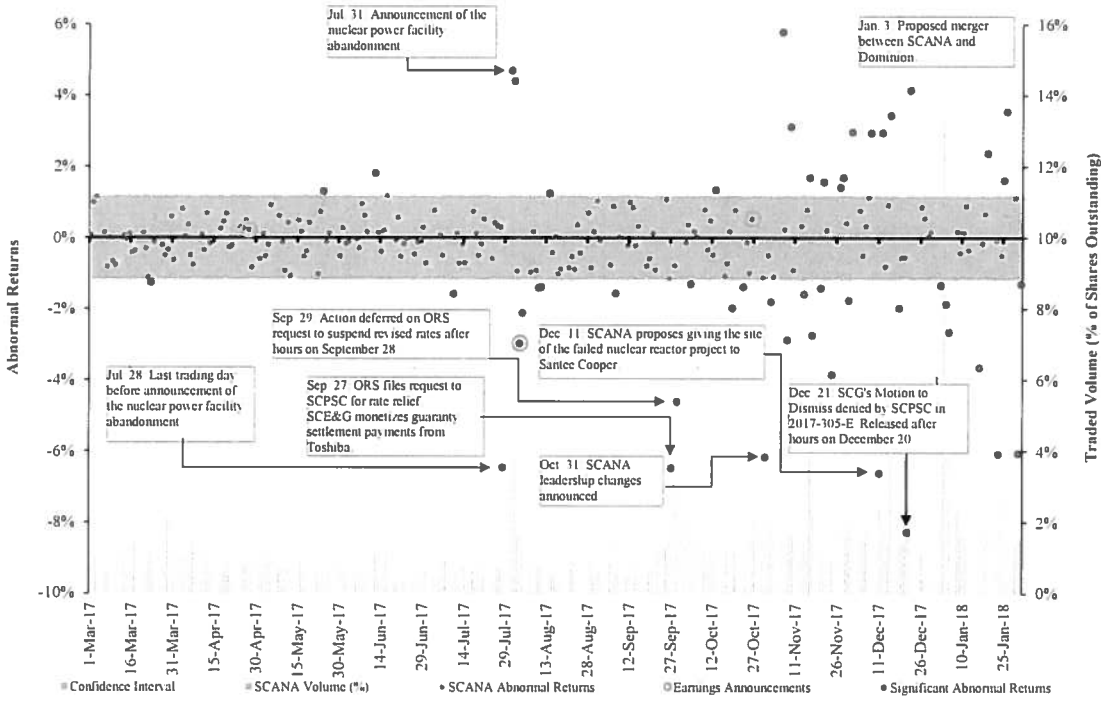
SCANA: ABNORMAL RETURNS
MARCH 1, 2017 THROUGH JANUARY 31, 2018



Notes and Sources:
Analysis based on the Model (3) from Exhibit No ___ (RGH-2), at 6 Estimation period used for the regression July 1, 2016 to June 30, 2017 95% confidence level is used in determining significant AR and confidence intervals
Data from Bloomberg

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EXHIBIT NO. ___ (RGH-2)
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SCANA CUMULATIVE ABNORMAL RETURNS (CAR)
JANUARY 3, 2017 THROUGH MARCH 31, 2018

	Date	Window	First Day	Last Day	# Days	Description	Price Change	CAR	t-stat	Price Change Unexplained By Market or Industry	Shares Outstanding ('000)	Impact on Market Value ($MM)
	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
	Short-Window CARs:											
[1]	7/31/2017	[-4, +4]	7/25/2017	8/4/2017	9	Days surrounding the abandonment announcement on Jul 31. The window also includes: - Announcement of the agreement over the amount of guaranty payments from Toshiba on Jul 27 - Q2 2017 earnings announcement and conference call on Aug 3, at which the financial impact of the nuclear plant abandonment was extensively discussed	($0.74)	-2.36%	-1.33	($1.46)	142,917	($208.5)
[2]	9/27/2017	[-4, +4]	9/21/2017	10/3/2017	9	Days surrounding ORS request to SCPSC for rate relief (Sep 27). The window also includes - Announcement of the SCPSC deferment of action on the ORS request to suspend revised rates collections (Announcement made after hours on Sep 28, thus effective date of Sep 29.) - South Carolina Attorney General's request for a criminal investigation of the failed nuclear project on Sep 25 - Monetization of guaranty settlement payments from Toshiba on Sep 27 - Fitch and S&PGR downgrading SCANA on Sep 29 - Multiple class action lawsuits filed against SCANA between Sep 28 and Oct 5	($8.93)	-15.25%	-8.55	($8.51)	142,917	($1,216.5)
[3]	10/17/2017	[0]	10/17/2017	10/17/2017	1	SEC opened an investigation of nuclear plant abandonment.	($0.04)	-0.72%	-1.21	($0.34)	142,917	($49.0)
[4]	10/26/2017	[-2, +2]	10/24/2017	10/30/2017	5	Days surrounding Q3 2017 earnings announcement and conference call on Oct 26. The announcement included discussion of impairment losses due to nuclear plant abandonment. The window also includes - the South Carolina House Committee recommendation to stop cost recovery on Oct 30	($2.36)	-5.19%	-3.90	($2.42)	142,917	($346.2)
[5]	12/11/2017	[0]	12/11/2017	12/11/2017	1	SCANA offers giving up the site of the failed nuclear reactor project to Santee Cooper.	($2.73)	-6.62%	-11.13	($2.93)	142,616	($417.2)
[6]	12/21/2017	[-1, 0]	12/20/2017	12/21/2017	2	Announcement of the denial of SCG's Motion to Dismiss SCPSC in 2017-305-E. (After market close on Dec 20, thus effective date of 12/21/2017.) The window also includes - SCPSC's order for a hearing on the ORS request to reduce rates on Dec 20	($4.41)	-8.83%	-10.50	($3.62)	142,616	($516.44)
[7]	Total 1 (Cumulation window starts before ORS request. Start date 9/21/2017)				18		($18.47)					($2,545.3)
[8]	Total 2 (Cumulation window starts before abandonment announcement. Start date 7/25/2017)				27		($19.21)					($2,753.7)

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EXHIBIT NO. ___ (RGH-2)
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SCANA CUMULATIVE ABNORMAL RETURNS (CAR)
JANUARY 3, 2017 THROUGH MARCH 31, 2018

	Date	Window	First Day	Last Day	# Days	Description	Price Change	BHAR	t-stat	Price Change Unexplained By Market or Industry	Shares Outstanding ('000)	Impact on Market Value ($MM)
	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]
	Long-Window BHARs:											
[9]			9/21/2017	12/29/2017	70	Period that starts prior to ORS request to SCPSC for rate relief (Sep 27) in [2] and ends on last trading day in the week prior to merger announcement.	($16.88)	-26.14%	-5.26	($14.59)	142,749	($2,082.6)
[10]			7/25/2017	12/29/2017	111	Period that starts prior to announcement of nuclear plant abandonment in [1] and ends on last trading day in the week prior to merger announcement.	($22.77)	-33.59%	-5.36	($20.73)	142,811	($2,960.4)
[11]			7/25/2017	10/15/2018	310	Period that starts prior to announcement of nuclear plant abandonment in [1] through October 15, 2018.	($22.79)	-30.48%	-2.91	($18.81)	142,724	($2,684.8)

Notes and Sources:

Abnormal returns were estimated from Model (3). *See* Exhibit No. ___ (RGH-2), at 6.

[A] Event date around which daily abnormal returns were cumulated.

[B] Indicates the days relative to the event date, which is set as day 0.

[F] Timeline details from Factiva.

[H] Cumulative Abnormal Return (CAR) is the sum of abnormal returns between (inclusive) the days indicated in columns [C] and [D]. In rows [9]-[11] abnormal returns over the window are calculated as Buy-and-Hold Abnormal Returns (BHAR).

[J] = [H] x (closing price on day prior to the first day in the event window).

[L] = [J] x [K].

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EXHIBIT NO. ___ (RGH-2)
PAGE 6 OF 6

EVENT STUDY REGRESSIONS
ESTIMATION PERIOD JULY 1, 2016 THROUGH JUNE 30, 2017

			Orthogonalized Industry Returns	
	Model (1)	Model (2)	Model (3)	Model (4)
R_M	-0 077	0 057	0 509	0 509
	(-1 05)	-0 79	(7 36)***	(7 25)***
R_{IND1}	1 132			
	(24 54)***			
R_{IND2}		1 067		
		(24 02)***		
RES_{IND1}			1 132	
			(24 54)***	
RES_{IND2}				1 067
				(24 02)***
Constant	0 000	0 000	-0 001	-0 001
	(-1 15)	(-1 18)	(-1 83)*	(-1 80)*
N	252	252	252	252
Adj R^2	0 723	0 714	0 723	0 714

Notes and Sources:
The event study results used in my testimony rely on Model (3)
Data are from Bloomberg
t-statistics in parentheses *** p<0 01, ** p<0 05, * p<0 1

Model: $\ln R_{it} = \alpha + \beta_1 \ln R_{Mt} + \beta_2 \ln R_{INDt} + \varepsilon_{it}$
Estimation period: July 1, 2016 to June 30, 2017

ln — The ln prefix indicates the natural log of (1+daily return)

R_{it} — Daily returns on SCANA's common stock

R_M — Daily returns on the CRSP Total Market Index in Models (1)-(4) CRSP Total Market Index is a value-weighted index of NYSE, NYSE MKT, NASDAQ and ARCA firms Daily returns include all distributions

R_{IND1} — Daily returns on the CRSP US Utilities Index
R_{IND2} — Daily returns on a value-weighted Peer Index, constructed based on SCANA and 13 firms that ValueLine identified as peers of SCANA These firms are east coast electric utilities plants I dropped one of the 14 firms from the ValueLine list (ticker SUME) because it is an OTC stock

RES_{IND} — Residual from a regression of $\ln R_{IND}$ on $\ln R_M$ RES_{IND} captures the variation in R_{IND} that is orthogonal to R_M

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EXHIBIT NO. ___ (RGH-3A)

SCANA CORPORATION
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

		FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
[1]	**Assets**											
[2]	Utility Plant In Service	$9,807	$10,433	$10,835	$11,714	$12,000	$11,865	$12,213	$12,289	$12,883	$13,444	$14,370
[3]	Accumulated Depreciation and Amortization	($2,981)	($3,146)	($3,302)	($3,495)	($3,836)	($3,811)	($4,011)	($4,088)	($4,307)	($4,446)	($4,611)
[4]	Construction Work in Progress	$400	$711	$1,149	$1,081	$1,482	$2,084	$2,724	$3,323	$4,051	$4,845	$471
[5]	Plant to be Retired, Net	-	-	-	-	-	$362	$177	$169	-	-	-
[6]	Nuclear Fuel Net of Accumulated Amortization	$82	$77	$97	$132	$171	$166	$310	$329	$308	$271	$208
[7]	Goodwill	$230	$230	$230	$230	$230	$230	$230	$210	$210	$210	$210
[8]	Utility Plant, Net	$7,538	$8,305	$9,009	$9,662	$10,047	$10,896	$11,643	$12,232	$13,145	$14,324	$10,648
[9]	Nonutility Property and Investments											
[10]	Nonutility property, net of accumulated depreciation	$131	$194	$291	$299	$305	$306	$317	$284	$280	$276	$270
[11]	Assets held in trust, net-nuclear decommissioning	$62	$54	$67	$76	$84	$94	$101	$113	$115	$123	$136
[12]	Other investments	$82	$68	$73	$78	$87	$87	$86	$75	$71	$76	$68
[13]	Nonutility Property and Investments Net	$275	$316	$431	$453	$476	$487	$504	$472	$466	$475	$474
[14]	Current Assets:											
[15]	Cash and cash equivalents	$134	$272	$162	$55	$29	$72	$136	$137	$176	$208	$409
[16]	Receivables											
[17]	Customer net of allowance for uncollectible accounts	$641	$828	$694	$837	$756	$780	$802	$684	$505	$616	$665
[18]	Receivables-affiliated companies	$29	-	-	-	-	-	-	-	-	-	-
[19]	Income taxes	-	-	-	-	-	-	-	-	-	$142	$198
[20]	Other	-	-	-	-	-	-	-	$154	$227	$127	$105
[21]	Inventories											
[22]	Fuel	$286	$358	$376	$316	$313	$304	$231	$221	$164	$136	$143
[23]	Materials and supplies	$107	$108	$115	$125	$129	$136	$131	$139	$148	$155	$161
[24]	Emission allowances	$33	$15	$10	$6	$2	$1	$1	$1	-	-	-
[25]	Prepayments and other	$62	$232	$164	$271	$236	$223	$120	$468	$158	$122	$116
[26]	Derivative financial instruments	-	-	-	-	-	-	-	-	-	-	$54
[27]	Assets held for sale	-	-	-	-	-	-	-	$341	-	-	-
[28]	Deferred income taxes	$9	$23	-	$21	$26	$11	-	-	-	-	-
[29]	Total Current Assets	$1,301	$1,836	$1,521	$1,631	$1,491	$1,527	$1,421	$2,145	$1,378	$1,506	$1,851
[30]	Deferred Debits and Other Assets											
[31]	Regulatory assets	$712	$905	$985	$1,061	$1,279	$1,464	$1,360	$1,823	$1,937	$2,130	$5,580
[32]	Pension asset, net	$224	-	-	-	-	-	$47	-	-	-	-
[33]	Other	$115	$140	$148	$161	$241	$242	$189	$146	$220	$272	$186
[34]	Total Deferred Debits and Other Assets	$1,051	$1,045	$1,133	$1,222	$1,520	$1,706	$1,596	$1,969	$2,157	$2,402	$5,766
[35]	Total Assets	$10,165	$11,502	$12,094	$12,968	$13,534	$14,616	$15,164	$16,818	$17,146	$18,707	$18,739

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EXHIBIT NO. ___ (RGH-3A)

SCANA CORPORATION
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

		FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
[36]	**Capitalization and Liabilities**											
[37]	Common Stock	$1,407	$1,449	$1,640	$1,789	$1,886	$1,983	$2,280	$2,378	$2,390	$2,390	$2,390
[38]	Retained Earnings	$1,575	$1,705	$1,823	$1,960	$2,097	$2,257	$2,444	$2,684	$3,118	$3,384	$2,915
[39]	Accumulated Other Comprehensive Loss	($22)	($109)	($55)	($47)	($94)	($86)	($60)	($75)	($65)	($49)	($50)
[40]	Total Common Equity	$2,960	$3,045	$3,408	$3,702	$3,889	$4,154	$4,664	$4,987	$5,443	$5,725	$5,255
[41]	Preferred Stock (Not subject to purchase or sinking funds)	$106	$106	-	-	-	-	-	-	-	-	-
[42]	Preferred Stock, net (Subject to purchase or sinking funds)	$7	$7	-	-	-	-	-	-	-	-	-
[43]	Long-Term Debt, Net	$2,879	$4,361	$4,483	$4,152	$4,622	$4,949	$5,395	$5,497	$5,882	$6,473	$5,906
[44]	Total Capitalization	$5,952	$7,519	$7,891	$7,854	$8,511	$9,103	$10,059	$10,483	$11,325	$12,198	$11,161
[45]	Current Liabilities											
[46]	Short-term borrowings	$627	$80	$335	$420	$653	$623	$376	$918	$531	$941	$350
[47]	Current portion of long-term debt	$233	$144	$28	$337	$31	$172	$54	$166	$116	$17	$727
[48]	Accounts payable	$401	$405	$428	$526	$374	$428	$425	$520	$590	$404	$438
[49]	Accounts payable-affiliated companies	$27	-	-	-	-	-	-	-	-	-	-
[50]	Customer deposits and customer prepayments	$85	$97	$103	$100	$103	$86	$88	$98	$137	$168	$112
[51]	Taxes accrued	$156	$128	$134	$146	$154	$164	$206	$182	$242	$201	$214
[52]	Interest accrued	$51	$69	$71	$72	$74	$82	$82	$83	$83	$84	$87
[53]	Dividends declared	$53	$56	$59	$61	$63	$66	$69	$73	$76	$80	$86
[54]	Liabilities held for sale	-	-	-	-	-	-	-	$52	-	-	-
[55]	Derivative financial instruments	-	-	$8	$65	$77	$80	$8	$233	$50	$35	$6
[56]	Other	$88	$176	$90	$140	$113	$110	$134	$143	$127	$135	$93
[57]	Total Current Liabilities	$1,721	$1,155	$1,256	$1,867	$1,642	$1,811	$1,442	$2,468	$1,952	$2,065	$2,113
[58]	Deferred Credits and Other Liabilities											
[59]	Deferred income taxes, net	$944	$1,009	$1,122	$1,391	$1,533	$1,653	$1,703	$1,931	$1,907	$2,159	$1,261
[60]	Deferred investment tax credits	$104	$103	$111	$56	$40	$36	$32	$28	-	-	-
[61]	Asset retirement obligations	$307	$458	$477	$497	$474	$561	$576	$563	$520	$558	$568
[62]	Pension and postretirement benefits	$185	$261	$229	$202	$291	$387	$227	$315	$315	$373	$360
[63]	Unrecognized tax benefits	-	-	-	-	-	-	-	-	$44	$219	$19
[64]	Regulatory liabilities	$830	$838	$879	$913	$778	$882	$966	$814	$855	$930	$3,059
[65]	Other	$122	$159	$129	$188	$265	$183	$159	$215	$228	$205	$198
[66]	Total Deferred Credits and Other Liabilities	$2,492	$2,828	$2,947	$3,247	$3,381	$3,702	$3,663	$3,866	$3,869	$4,444	$5,465
[67]	Commitments and Contingencies	-	-	-	-	-	-	-	-	-	-	-
[68]	Total Capitalization and Liabilities	$10,165	$11,502	$12,094	$12,968	$13,534	$14,616	$15,164	$16,818	$17,146	$18,707	$18,739
[69]	Long-Term Debt, Net to Asset Ratio	28.3%	37.9%	37.1%	32.0%	34.2%	33.9%	35.6%	32.7%	34.3%	34.6%	31.5%
[70]	Short-Term Borrowings to Asset Ratio	6.2%	0.7%	2.8%	3.2%	4.8%	4.3%	2.5%	5.5%	3.1%	5.0%	1.9%
[71]	Current Portion of Long-Term Debt to Asset Ratio	2.3%	1.3%	0.2%	2.6%	0.2%	1.2%	0.4%	1.0%	0.7%	0.1%	3.9%
[72]	Total Debt	$3,739	$4,585	$4,846	$4,909	$5,306	$5,744	$5,825	$6,581	$6,529	$7,431	$6,983
[73]	Total Debt to Asset Ratio	36.8%	39.9%	40.1%	37.9%	39.2%	39.3%	38.4%	39.1%	38.1%	39.7%	37.3%

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EXHIBIT NO. ___ (RGH-3A)

SCANA CORPORATION
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

Notes and Sources:
In millions of USD, except for percentages
FY2017 - FY2007 data from SCANA Corporation and South Carolina Electric & Gas Company SEC Form 10-Ks
[69] =[43]/[35]
[70] =[46]/[35]
[71] =[47]/[35]
[72] =[44] + [47] + [48]
[73] =[69] + [70] + [71]

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EXHIBIT NO. ___ (RGH-3B)

SCE&G
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

		FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
[1]	**Assets**											
[2]	Utility Plant In Service	$8,380	$8,918	$9,286	$10,112	$10,312	$10,096	$10,378	$10,650	$11,153	$11,510	$12,161
[3]	Accumulated Depreciation and Amortization	($2,643)	($2,794)	($2,926)	($3,098)	($3,367)	($3,322)	($3,499)	($3,667)	($3,869)	($3,991)	($4,124)
[4]	Construction Work in Progress	$383	$704	$1,138	$1,051	$1,472	$2,073	$2,682	$3,302	$3,997	$4,813	$375
[5]	Plant to be Retired, Net	-	-	-	-	-	$362	$177	$169	-	-	-
[6]	Nuclear Fuel, Net of Accumulated Amortization	$82	$77	$97	$133	$171	$166	$310	$329	$308	$271	$208
[7]	Utility Plant, Net	$6,202	$6,905	$7,595	$8,198	$8,588	$9,375	$10,048	$10,783	$11,589	$12,603	$8,620
[8]	Nonutility Property and Investments											
[9]	Nonutility property, net of accumulated depreciation	$38	$46	$42	$46	$52	$57	$69	$67	$68	$69	$71
[10]	Assets held in trust, net-nuclear decommissioning	$62	$54	$67	$76	$84	$94	$101	$113	$115	$123	$136
[11]	Other investments	-	-	$2	$4	$2	$3	$3	$2	$1	$3	$2
[12]	Nonutility Property and Investments, Net	$100	$100	$111	$126	$138	$154	$173	$182	$184	$195	$209
[13]	Current Assets											
[14]	Cash and cash equivalents	$41	$119	$134	$31	$16	$51	$92	$100	$130	$164	$395
[15]	Receivables											
[16]	Customer, net of allowance for uncollectible accounts	$320	$483	$397	$507	$482	$483	$486	$413	$324	$378	$390
[17]	Receivables-affiliated companies	$29	$23	$41	-	$9	$2	$19	$109	$22	$16	$32
[18]	Income taxes	-	-	-	-	-	-	-	-	-	$53	$198
[19]	Other	-	-	-	-	-	-	-	$111	$202	$94	$85
[20]	Inventories.											
[21]	Fuel	$139	$172	$259	$216	$196	$203	$131	$131	$98	$83	$90
[22]	Materials and supplies	$97	$100	$107	$117	$120	$126	$120	$129	$136	$143	$149
[23]	Emission allowances	$33	$15	$10	$6	$2	$1	$1	-	-	-	-
[24]	Prepayments and other	$52	$155	$89	$168	$82	$143	$80	$253	$107	$89	$84
[25]	Derivative financial instruments	-	-	-	-	-	-	-	-	-	-	$54
[26]	Deferred income taxes	$5	-	-	$15	$8	-	-	-	-	-	-
[27]	Total Current Assets	$716	$1,067	$1,037	$1,060	$915	$1,009	$929	$1,246	$1,019	$1,020	$1,477
[28]	Deferred Debits and Other Assets											
[29]	Due from parent - pension asset, net	$228	-	-	-	-	-	-	-	-	-	-
[30]	Regulatory assets	$629	$854	$936	$996	$1,206	$1,377	$1,303	$1,745	$1,857	$2,030	$5,476
[31]	Pension asset	-		-	$57	-	-	$96	$10	-	-	-
[32]	Other	$102	$126	$134	$137	$190	$189	$151	$112	$116	$243	$164
[33]	Total Deferred Debits and Other Assets	$959	$980	$1,070	$1,190	$1,396	$1,566	$1,550	$1,867	$1,973	$2,273	$5,640
[34]	Total Assets	$7,977	$9,052	$9,813	$10,574	$11,037	$12,104	$12,700	$14,078	$14,765	$16,091	$15,946

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EXHIBIT NO. ___ (RGH-3B)

SCE&G
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

		FY2007	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
[35]	**Capitalization and Liabilities**											
[36]	Common Stock	$1,425	$1,440	$1,788	$1,934	$2,041	$2,167	$2,479	$2,560	$2,760	$2,860	$2,860
[37]	Retained Earnings	$1,205	$1,310	$1,407	$1,505	$1,627	$1,766	$1,896	$2,077	$2,265	$2,481	$1,982
[38]	Accumulated Other Comprehensive Loss	($8)	($46)	($33)	($2)	($3)	($4)	($3)	($3)	($3)	($3)	($4)
[39]	Total Common Equity	$2,622	$2,704	$3,162	$3,437	$3,665	$3,929	$4,372	$4,634	$5,022	$5,338	$4,838
[40]	Noncontrolling interest	-	$95	$97	$104	$108	$114	$117	$123	$129	$134	$142
[41]	Total Equity	$2,622	$2,799	$3,259	$3,541	$3,773	$4,043	$4,489	$4,757	$5,151	$5,472	$4,980
[42]	Preferred stock (Not subject to purchase or sinking funds	$106	$106	-	-	-	-	-	-	-	-	-
[43]	Preferred Stock, net (Subject to purchase or sinking	$7	$7	-	-	-	-	-	-	-	-	-
[44]	Long-Term Debt, net	$2,003	$3,033	$3,158	$3,037	$3,222	$3,557	$4,007	$4,270	$4,659	$5,154	$4,441
[45]	Total Capitalization	$4,738	$5,945	$6,417	$6,578	$6,995	$7,600	$8,496	$9,027	$9,810	$10,626	$9,421
[46]	Minority Interest	$89	-	-	-	-	-	-	-	-	-	-
[47]	Current Liabilities											
[48]	Short-term borrowings	$464	$34	$254	$381	$512	$449	$251	$709	$420	$804	$252
[49]	Current portion of long-term debt	$13	$140	$18	$22	$19	$165	$48	$10	$110	$12	$723
[50]	Accounts payable	$175	$187	$250	$341	$231	$281	$241	$294	$469	$247	$251
[51]	Affiliated payables	$178	$80	$144	$140	$136	$124	$117	$180	$113	$122	$102
[52]	Customer deposits and customer prepayments	$42	$56	$51	$60	$54	$51	$56	$61	$93	$126	$70
[53]	Taxes accrued	$116	$120	$128	$137	$150	$151	$223	$170	$299	$195	$208
[54]	Interest accrued	$33	$50	$51	$50	$54	$63	$64	$64	$66	$68	$67
[55]	Dividends declared	$37	$44	$50	$54	$39	$46	$62	$74	$75	$79	$82
[56]	Derivative financial instruments	-	-	-	-	$2	$66	$1	$208	$34	$28	$2
[57]	Derivative liabilities	$13	$55	-	$34	-	-	-	-	-	-	-
[58]	Other	$33	$28	$43	$80	$61	$50	$71	$71	$61	$55	$47
[59]	Total Current Liabilities	$1,104	$794	$989	$1,299	$1,258	$1,446	$1,134	$1,841	$1,740	$1,736	$1,804
[60]	Deferred Credits and Other Liabilities											
[61]	Deferred income taxes, net	$820	$890	$972	$1,240	$1,371	$1,479	$1,509	$1,724	$1,732	$1,939	$1,173
[62]	Deferred investment tax credits	$103	$102	$111	$56	$40	$36	$32	-	-	-	-
[63]	Asset retirement obligations	$294	$437	$458	$478	$449	$535	$547	$536	$488	$522	$529
[64]	Pension and postretirement benefits	$187	$236	$168	$163	$179	$254	$173	$195	$186	$232	$217
[65]	Unrecognized tax benefits	-	-	-	-	-	-	-	-	$44	$236	$19
[66]	Regulatory liabilities	$609	$608	$639	$662	$575	$665	$732	$610	$635	$695	$2,667
[67]	Other	$33	$40	$59	$98	$170	$89	$77	$122	$113	$89	$97
[68]	Other-affiliate	-	-	-	-	-	-	-	$23	$17	$16	$19
[69]	Total Deferred Credits and Other Liabilities	$2,046	$2,313	$2,407	$2,697	$2,784	$3,058	$3,070	$3,210	$3,215	$3,729	$4,721
[70]	Commitments and Contingencies	-	-	-	-	-	-	-	-	-	-	-
[71]	Total Capitalization and Liabilities	$7,977	$9,052	$9,813	$10,574	$11,037	$12,104	$12,700	$14,078	$14,765	$16,091	$15,946
[72]	Long-Term Debt, Net to Asset Ratio	25.1%	33.5%	32.2%	28.7%	29.2%	29.4%	31.6%	30.3%	31.6%	32.0%	27.9%
[73]	Short-Term Borrowings to Asset Ratio	5.8%	0.4%	2.6%	3.6%	4.6%	3.7%	2.0%	5.0%	2.8%	5.0%	1.6%
[74]	Current Portion of Long-Term Debt to Asset Ratio	0.2%	1.5%	0.2%	0.2%	0.2%	1.4%	0.4%	0.1%	0.7%	0.1%	4.5%
[75]	Total Debt	$2,480	$3,207	$3,430	$3,440	$3,753	$4,171	$4,306	$4,989	$5,189	$5,970	$5,416
[76]	Total Debt to Asset Ratio	31.1%	35.4%	35.0%	32.5%	34.0%	34.5%	33.9%	35.4%	35.1%	37.1%	34.0%

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EXHIBIT NO. ___ (RGH-3B)

SCE&G
CONSOLIDATED BALANCE SHEETS
FY2007 – FY2017

Notes and Sources:
In millions of USD, except for percentages
FY2017 - FY2007 data from SCANA Corporation and South Carolina Electric & Gas Company SEC Form 10-Ks
[45] Note that for FY2007, minority interest (i.e. noncontrolling interest) is not included in the calculation of total capitalization, although it is included in the calculation of total capitilization and habilities.
[72] =[44]/[34]
[73] =[48]/[34]
[74] =[49]/[34]
[75] =[44] + [48] + [49]
[76] =[72] + [73] + [74]

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EXHIBIT NO. ___ (RGH-4A)

SCANA CORPORATION
FINANCING HISTORY
FY2007 – FY2017

	Total Debt		Book Value of Equity			
			Common Stock		Preferred Stock	
Year	Change	Total	Change	Total	Change	Total
2007		$3,739		$1,407		$113
2008	$846	$4,585	$42	$1,449	-	$113
2009	$261	$4,846	$191	$1,640	($113)	-
2010	$63	$4,909	$149	$1,789	-	-
2011	$397	$5,306	$97	$1,886	-	-
2012	$438	$5,744	$97	$1,983	-	-
2013	$81	$5,825	$297	$2,280	-	-
2014	$756	$6,581	$98	$2,378	-	-
2015	($52)	$6,529	$12	$2,390	-	-
2016	$902	$7,431	-	$2,390	-	-
2017	($448)	$6,983	-	$2,390	-	-

Notes and Sources:
In millions of USD.
Debt calculated as the sum of long-term debt, short-term borrowings, and current portion of long-term debt. *See* Exhibit No. ___ (RGH-3A).
FY2017 - FY2007 data from SCANA Corporation and South Carolina Electric & Gas Company SEC Form 10-Ks.

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EXHIBIT NO. ___ (RGH-4B)

SCE&G
FINANCING HISTORY
FY2007 – FY2017

	Total Debt		Book Value of Equity			
			Common Shares		Preferred Shares	
Year	Change	Total	Change	Total	Change	Total
2007		$2,480		$1,425		$113
2008	$727	$3,207	$15	$1,440	-	$113
2009	$223	$3,430	$348	$1,788	($113)	-
2010	$10	$3,440	$146	$1,934	-	-
2011	$313	$3,753	$107	$2,041	-	-
2012	$418	$4,171	$126	$2,167	-	-
2013	$135	$4,306	$312	$2,479	-	-
2014	$683	$4,989	$81	$2,560	-	-
2015	$200	$5,189	$200	$2,760	-	-
2016	$781	$5,970	$100	$2,860	-	-
2017	($554)	$5,416	-	$2,860	-	-

Notes and Sources:
In millions of USD.
Includes debt issued by SCE&G only.
Debt calculated as the sum of long-term debt, short-term borrowings, and current portion of long-term debt. *See* Exhibit No. ___ (RGH-3B).
FY2017 - FY2007 data from SCANA Corporation and South Carolina Electric & Gas Company SEC Form 10-Ks.

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EXHIBIT NO. ___ (RGH-5)

DISALLOWANCE PROBABILITY IMPACT ON COST OF EQUITY

FAIR RETURN ON EQUITY (Ru) WITH A CHANCE OF DISALLOWANCE

$$Ru = (1 + Rp - \pi*(1 + d))/(1 - \pi) - 1$$ [A]

Probability of Disallowance (π)	Disallowance (d) -25%	-50%	-75%	-100%
0%	9.10%	9.10%	9.10%	9.10%
1%	9.44%	9.70%	9.95%	10.20%
5%	10.89%	12.21%	13.53%	14.84%
10%	12.89%	15.67%	18.44%	21.22%
25%	20.47%	28.80%	37.13%	45.47%
50%	43.20%	68.20%	93.20%	118.20%
75%	111.40%	186.40%	261.40%	336.40%

EXTRA FINANCE COST TO RATEPAYERS PER $1 BILLION CONSTRUCTION ($M)[B]

Probability of Disallowance (π)	Disallowance (d) -25%	-50%	-75%	-100%
0%	$0	$0	$0	$0
1%	$2	$4	$6	$8
5%	$13	$22	$31	$40
10%	$27	$46	$66	$85
25%	$80	$139	$197	$256
50%	$240	$416	$592	$768
75%	$720	$1,248	$1,775	$2,303

Notes and Sources:

[A] *See* Kolbe, A. Lawrence and William B. Tye (1991), "The Duquesne Opinion: How Much 'Hope' is There for Investors in Regulated Firms?" *Yale Journal on Regulation*, 8(1), at 142.

[B] Calculated as difference in cost of equity (Ru - Rp) times dollars of equity (RB*(E/V)), grossed up for taxes (divided by (1 - τ)).

	Variable	Value	Symbol	Source
[1]	Equity Cost (No Disallowance)	9.10%	Rp	Kollen Direct Testimony, at 9.8
[2]	Tax Rate	24.95%	τ	Exhibit LK-20, Page 1.
[3]	Fraction Equity	52.81%	E/V	Exhibit LK-20, Page 1.
[4]	Total Rate Base (Millions)	$1,000	RB	Placeholder.

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EXHIBIT NO. ___ (RGH-6)

ESTIMATE OF CUMULATIVE NND RATES PAID BY SCE&G RETAIL CUSTOMERS APRIL 1, 2009 THROUGH OCTOBER 2, 2017

Rates Effective		Period in	NND Target Retail Revenue Requirement		
			Addition to	Total	
Start	End	Place (years)	Prior Amount	Annual	Collected
[A]	[B]	[C]	[D]	[E]	[F]
04/01/09	10/29/09	0.5781	$7,802,491	$7,802,491	$4,510,481
10/30/09	10/29/10	0.9973	$22,514,356	$30,316,847	$30,233,787
10/30/10	10/29/11	0.9973	$47,177,526	$77,494,373	$77,282,060
10/30/11	10/29/12	1.0000	$52,376,421	$129,870,794	$129,870,794
10/30/12	10/29/13	0.9973	$48,958,718	$178,829,512	$178,339,568
10/30/13	10/29/14	0.9973	$58,388,793	$237,218,305	$236,568,392
10/30/14	10/29/15	0.9973	$60,222,413	$297,440,718	$296,625,812
10/30/15	11/26/16	1.0767	$57,438,926	$354,879,644	$382,103,288
11/27/16	10/02/17	0.8466	$57,888,094	$412,767,738	$349,438,989
Cumulative Total					$1,684,973,171

Notes and Sources:

[A], [D] From Kollen spreadsheet "ORS v Dom Customer Rate Impact 09.22.18 Full Refund Rev Rate.xlsx," at tab 'NND AND TRAN INCL REV RATES.'

[B] = ([A] from next row) - 1. October 2, 2017 end date based on last payment of Toshiba Proceeds. Kollen Direct Testimony, at 17.

[C] = ([B] - [A]) / 365.

[E] = Cumulative sum of [D].

[F] = [C]*[E].

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EXHIBIT NO. ___ (RGH-7)

REVISED KOLLEN REVENUE REQUIREMENT
ORS RECOMMENDATION SCENARIO

	Reg. Liability for Return on:		NPV of Revenue Requirement		
Assumed Return	**Toshiba Proceeds**	**Rate Refund**	**Toshiba Proceeds**	**Rate Refund**	**Total**
	[A]	[B]	[C]	[D]	[E]
[1] WACC (Kollen)	$106,140.08	$37,263.64	$785,171.29	$785,171.29	$785,171.29
[2] Cost of Debt	$41,577.66	$15,105.02	$835,468.57	$803,174.79	$853,472.07
[3] 1-Month Treasury Rate	$14,073.26	$5,013.66	$856,895.80	$811,324.56	$883,049.07
Difference vs. Kollen					
[4] Cost of Debt	($64,562)	($22,159)	$50,297	$18,003	$68,301
[5] 1-Month Treasury Rate	($92,067)	($32,250)	$71,725	$26,153	$97,878

Notes and Sources:

[1] From Kollen ORS Exhibit LK-17. Return calculated using grossed-up WACC of 9.03 percent.

[2] Calculated from Kollen Direct Testimony, ORS Exhibit LK-17 as provided in 'ORS v Dom Customer Rate Impact 09.22.18 Full Refund Rev Rate.xlsx.' Return calculated using the yield on the 20-year BBB+/BBB/BBB- rated corporate bonds index at the beginning of each month, from Bloomberg ticker IGUUBC20. SCE&G had a BBB+/BBB/BBB- S&P and Baa3/Baa2 Moody's credit rating from 2015 through 2018, as reported by Standard & Poor's Capital IQ. Provided rates divided by 12 to compute the return in each month. November and December 2018 rates equal to October 2018 rate.

[3] Calculated from Kollen Direct Testimony, ORS Exhibit LK-17 as provided in 'ORS v Dom Customer Rate Impact 09.22.18 Full Refund Rev Rate.xlsx.' Return calculated using the 1-month U.S. Treasury yield at the beginning of each month. Treasury yields are from https://fred.stlouisfed.org, with provided rates divided by 12 to compute the return in each month. November and December 2018 rates are equal to October 2018 rate.

[4] = [2] - [1].

[5] = [3] - [1].

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EXHIBIT NO. ___ (RGH-8)

ANALYSIS OF EAST OHIO GAS AND HOPE GAS BEFORE AND AFTER THEIR ACQUISITION BY DOMINION IN EARLY 2000

	East Ohio Gas			Hope Gas		
Year	Operating Expenses, ex Gas Supply Expenses	Revenue	Volume Sold (Mcf)	Operating Expenses, ex Gas Supply Expenses	Revenue	Volume Sold (Mcf)
	[A]	[B]	[C]	[D]	[E]	[F]
1999	**268,798**	**913,343**	**160,263,934**	**36,239**	**100,072**	**12,810,287**
2000	245,831	1,228,431	165,851,105	33,631	105,338	13,381,377
2001	199,381	958,039	97,926,692	32,654	108,063	13,719,760
2002	156,818	549,294	80,636,377	24,725	109,582	13,089,315
2003	160,201	781,883	87,118,432	29,014	121,163	13,967,703
2004	170,645	837,840	79,073,728	33,990	139,431	13,164,894
Change From 1999 Value						
2001	-25.8%	4.9%	-38.9%	-9.9%	8.0%	7.1%
2002	-41.7%	-39.9%	-49.7%	-31.8%	9.5%	2.2%
2003	-40.4%	-14.4%	-45.6%	-19.9%	21.1%	9.0%
2004	-36.5%	-8.3%	-50.7%	-6.2%	39.3%	2.8%

Notes and Sources:

In thousands of USD.

[A] Kollen Direct Testimony, ORS Exhibit LK-24, Response to South Carolina Electric & Gas Company Office of Regulatory Staff's Continuing Audit Information Request 7-8 (Revised), Docket Nos. 2017-207-E, 2017-305-E, 2017-370-E, Tab 'East Ohio - O&M,' Row 291.

[B] SNL Financial: Retail Gas Sales Revenue - Bundled (EIA 176 Filing).

[C] SNL Financial: Retail Gas Sales Volume - Bundled (EIA 176 Filing).

[D] Kollen Direct Testimony, ORS Exhibit LK-24, Response to South Carolina Electric & Gas Company Office of Regulatory Staff's Continuing Audit Information Request 7-8 (Revised), Docket Nos. 2017-207-E, 2017-305-E, 2017-370-E, Tab 'Hope -O&M,' Row 291.

[E] SNL Financial: Retail Gas Sales Revenue - Bundled (EIA 176 Filing).

[F] SNL Financial: Retail Gas Sales Volume - Bundled (EIA 176 Filing).