

COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION

PREFILED STAFF TESTIMONY

VIRGINIA ELECTRIC AND POWER COMPANY

For approval and certification of the proposed
Greensville County Power Station and related
transmission facilities pursuant to §§ 56-580 D,
56-265.2, and 56-46.1 of the Code of Virginia,
and for approval of a rate adjustment clause,
designated Rider GV, pursuant to § 56-585.1 A 6 of
the Code of Virginia

Public Version

Case No. PUE-2015-00075

November 20, 2015

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PART A

Summary of the Testimony of Marc A. Tufaro

1 My testimony includes the following findings and recommendations:

- 2 1. Virginia Electric & Power Company's ("Dominion" or "Company") Integrated
3 Resource Plans ("IRP") have identified a 3x1 natural gas-fired combined cycle
4 unit ("NGCC") to meet future customer capacity and energy needs.
- 5 2. The Greensville County Power Station ("Greensville" or "Greensville Facility") is
6 expected to have the lowest total cost when dispatched in excess of a 20 percent
7 capacity factor.
- 8 3. Based on the Company's sensitivity studies the Company has calculated
9 Greensville will produce net present value savings, compared to those alternatives
10 that it studied, of between \$1.5 billion and \$2.304 billion.
- 11 4. The Company issued a formal request for proposals ("RFP") to provide the
12 Company with incremental generation, to commence in the January 1, 2019 to
13 May 31, 2020, time frame, in November of 2014.
- 14 5. The Commission must determine if the Company's evaluation of third-party
15 market alternatives meets the Commission's "adequately considered" standard
16 and the 2013 amendment to § 56-585.1 A 6 of the Code of Virginia ("Code")
17 regarding third-party market alternatives.
- 18 6. The Commission Staff ("Staff") Staff believes that there have been no significant
19 changes associated with this proceeding that would necessitate a change in the
20 methodology used to develop the proposed Rider GV charges.
- 21 7. Should the Commission approve a revenue requirement that differs from the
22 Company's requested revenue requirement, the Staff recommends that the
23 corresponding Rider GV charges be adjusted consistent with the class allocation
24 as approved herein, and with the Company's proposed class rate design.
- 25 8. Should the Commission determine that the Company has adequately considered
26 third-party market alternatives, Staff is not opposed to the approval a CPCN for
27 Greensville.

**PREFILED TESTIMONY
OF
MARC A. TUFARO

APPLICATION OF
VIRGINIA ELECTRIC & POWER COMPANY
CASE NO. PUE-2013-00075**

1 **Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE STATE**
2 **CORPORATION COMMISSION (“COMMISSION”).**

3 **A1.** My name is Marc A. Tufaro. I am a Principal Utilities Analyst in the
4 Commission's Division of Energy Regulation.

5 **Q2. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
6 **PROCEEDING?**

7 **A2.** My testimony will address the Company's application requesting approval of a
8 CPCN for the Greenville Facility. The Company's request for approval of a
9 separate CPCN for the associated transmission interconnection infrastructure
10 ("Transmission Interconnection Facilities" or "Transmission Project") required for
11 the Greenville Facility (collectively with Greenville, "the Project") is discussed
12 in Staff witness Cizenski' S testimony. Further, my testimony will address the
13 proposed rate adjustment clause for the recovery of costs associated with
14 construction of Greenville and the associated Transmission Interconnection
15 Facilities. More specifically, my testimony will:

- 16 • provide an overview of the Greenville Facility;
- 17 • discuss the Company's need for additional capacity and energy needs;
- 18 • describe alternative resources to the proposed Greenville Facility;

- 1 • discuss the adequacy of the Company's evaluation of third party
- 2 market alternatives;
- 3 • discuss other considerations regarding the need for the proposed
- 4 Greenville Facility; and
- 5 • address the mechanics and design of the proposed Rider GV.

PROPOSED GENERATING PLANT OVERVIEW

Q3. PLEASE DESCRIBE THE PROPOSED GENERATING FACILITY.

A3. The Company is petitioning the Commission for a CPCN for approval to construct and operate the Greenville Facility, a 1,588 megawatt ("MW") (nominal) NGCC electric generating facility in Greenville County, Virginia. The Company plans to begin construction of the proposed generation facility in April 2016 and have it in commercial operation by December 2018. The Company states in its Application that the total construction cost of the Project will be approximately \$1.33 billion, excluding financing costs, which equates to an average capacity cost of approximately \$837 per kilowatt ("kW") at the 1,588 MW (nominal) rating.¹ This cost is comparable with the U.S. Energy Information Administration's ("EIA") estimate of the capital cost of an advanced NGCC located in Lynchburg, Virginia, of \$952 per kW (2012 \$).² The EIA NGCC estimate reflects an expected nominal heat rate of 6,430 Btu/kWh while Greenville is expected to have a net heat rate more efficient than the EIA NGCC estimate.

¹ Application at 7.

² EIA, "Updated Capital Cost Estimates for Electricity Generation Plants", April 2013, Appendix A, Tables 6-1 and 6-2.

CAPACITY AND ENERGY NEEDS

1 **Q4. PLEASE DESCRIBE THE COMPANY'S NEED FOR THIS PROJECT?**

2 **A4.** Historically, Dominion has been a "summer-peaking" utility, which means that
3 the Company's peak load for the entire year occurs in the summer months. The
4 Company's actual peak load grew 4,532 MW, or by a 1.6% average annual
5 growth rate, over the last 15 years (2000 to 2014). The Company projects that the
6 weather-normalized peak load for the Dominion Zone ("DOM Zone") will
7 increase 4,580 MW, or by a 1.5% average annual growth rate, over the next 15
8 years (2016 to 2030). Additionally, the Company projects that the annual energy
9 need in the DOM Zone will increase by 20,559 gigawatt hours, or by a 1.4%
10 average annual growth rate over the next 15 years.³

11 **Q5. PLEASE DESCRIBE THE COMPANY'S CAPACITY NEEDS.**

12 **A5.** Dominion's forecasted capacity requirements are set forth in Schedule 46A, which
13 compares the Company's forecasted capacity requirements against its forecasted
14 available resources.⁴ The Company's expected available capacity (including
15 planned up-rates and capacity under construction), capacity requirement
16 (including reserves), and net capacity positions without Greenville are as
17 follows:

³ Prefiled Direct Testimony of Company witness Glen A. Kelly at 3-5.

⁴ See Schedule 46A Statement 1, Page 2 of 2. Staff removed the supply associated with the Remington Solar Project starting in 2021. See *Application of Virginia Electric and Power Company, For approval and certification of the proposed Remington Solar Facility pursuant to 56-580 D and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause under § 56-585.1 A 6 of the Code of Virginia*, Case No. PUE-2015-00006, Doc. Con. Cen. No. 151030161, Final Order (Oct. 20, 2015).

Year	Available Capacity	Capacity Requirement	Capacity Position
2015	20,155	19,213	942
2016	20,623	19,619	1,004
2017	19,997	19,863	134
2018	19,796	20,236	-440
2019	19,618	20,682	-1,064
2020	18,494	21,011	-2,517
2021	18,493	21,180	-2,687
2022	18,275	21,424	-3,149
2023	17,464	21,672	-4,208
2024	18,273	22,127	-3,854
2025	18,272	22,427	-4,155
2026	18,271	22,720	-4,449
2027	18,270	22,916	-4,646
2028	18,269	23,078	-4,809
2029	18,269	23,374	-5,105
2030	18,164	23,775	-5,611

1 As can be seen from the table above, the Company expects to be capacity
 2 deficient in 2018, and expects to remain capacity deficient in all years thereafter.
 3 The following table reflects Dominion's projected capacity position after the
 4 addition of the proposed Greenville Facility:

Year	Available Capacity	Capacity Requirement	Capacity Position
2015	20,155	19,213	942
2016	20,623	19,619	1,004
2017	19,997	19,863	134
2018	19,796	20,236	-440
2019	21,203	20,682	521
2020	20,079	21,011	-932
2021	20,078	21,180	-1,102
2022	19,860	21,424	-1,564
2023	19,049	21,672	-2,623
2024	19,848	22,127	-2,279

2025	19,857	22,427	-2,570
2026	19,856	22,720	-2,864
2027	19,845	22,916	-3,071
2028	19,854	23,078	-3,224
2029	19,854	23,374	-3,520
2030	19,749	23,775	-4,026

1 These future deficits would presumably be satisfied through a mix of future
2 capacity additions and market purchases.

3 **Q6. PLEASE BRIEFLY SUMMARIZE HOW THE COMPANY PLANS TO**
4 **MEET ITS ENERGY AND CAPACITY NEEDS OVER THE NEXT**
5 **SEVERAL YEARS.**

6 **A6.** The Company annually files with the Commission an IRP pursuant to § 56-599 of
7 the Code. An IRP, as defined by § 56-597 of the Code, is "a document developed
8 by an electric utility that provides a forecast of its load obligations and a plan to
9 meet those obligations by supply side and demand side resources over the ensuing
10 15 years to promote reasonable prices, reliable service, energy independence, and
11 environmental responsibility." Pursuant to § 56-599 C of the Code, the
12 Commission determines whether an IRP is reasonable and in the public interest.

13 In each of the Company's filed IRPs since 2011, a 3x1 NGCC was
14 identified by the Company to meet future customer capacity and energy needs.⁵
15 In its 2015 IRP ("2015 IRP")⁶ the Company analyzed a number of alternatives,
16 including: a Least Cost Non-Compliant Plan, Plan A: Solar, Plan B: Co-fire,
17 Plan C: Nuclear, and Plan D: Wind. Each of these plans includes the retirement

⁵ Prefiled Direct Testimony of Company witness Glen A. Kelly at 5.

⁶ *Commonwealth of Virginia, ex rel., State Corporation Commission, In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 et seq.*, Case No. PUE-2015-00035, (filed July 1, 2015).

1 of Yorktown Power Station Units 1-2 in 2016, which is approximately 323 MW
2 by 2016. Additionally, Plans A, C, and D include approximately 1,200 MW of
3 additional retirements by 2020.

ALTERNATIVE RESOURCES

4 **Q7. PLEASE DESCRIBE THE GENERATING ALTERNATIVES**
5 **CONSIDERED BY THE COMPANY.**

6 **A7.** Typically, there are three basic types of conventional capacity available to serve
7 new load: base, intermediate or peaking. Base load units generally have high
8 fixed costs and low variable operating costs. Pulverized coal ("PC"), integrated
9 gasification, circulating fluidized bed, and nuclear units have historically been
10 considered to be base load. Peaking units typically have low fixed costs and high
11 variable operating costs. Oil- or gas-fired combustion turbine units ("CTs") are
12 generally considered to be peaking units. Intermediate units have fixed and
13 variable operating costs that fall somewhere in between that of base and peaking
14 units. While NGCCs are often considered to be intermediate units, they may
15 operate as base load facilities during periods of relatively low natural gas prices.

16 The capacity obligations detailed above reflect only peak load
17 expectations and do not reflect Dominion's ability to meet its incremental energy
18 needs. These energy needs will determine the type of capacity that is best suited
19 to satisfy the Company's expected needs at the lowest cost. Historically, base
20 load units have been the best alternative if the new unit was expected to operate at
21 a higher capacity factor. Peaking units are generally considered to be the best
22 alternative if the unit is expected to operate at lower capacity factors. The

1 capacity factor of a specific unit is generally a result of actual unit dispatch based
2 on actual fuel costs, heat rates and emissions costs. and how those costs compare
3 with the dispatch costs of other available generation.

4 The Company considered a number of alternative generating technologies
5 including biomass, solar, onshore wind, offshore wind, fuel cell, CT, NGCC, and
6 nuclear generation facilities.

7 Company witness Kelly's testimony presents screening curves that show
8 the levelized costs of power generation at different capacity factors.⁷ The average
9 annual costs will decrease as capacity factors increase since fixed capital costs are
10 spread over a larger denominator. As Figure 8 of Company witness Kelly's
11 testimony shows, solar and wind are intermittent resources and cannot generate
12 over the full range of capacity factors. Consequently, the solar and wind curves
13 terminate at capacity factors of 30 percent and 40 percent, respectively. As
14 Figure 7 of Company witness Kelly's testimony shows, Greenville is expected to
15 have the lowest total cost when dispatched in excess of a 20 percent capacity
16 factor.

17 It should be noted that while the screening curve chart indicates that
18 Greenville is a low cost unit when dispatched in excess of a 20 percent capacity
19 factor, screening curves are high level tools that do not consider the interaction of
20 these generating alternatives with the Company's entire portfolio of generating
21 facilities. Better estimates of the impact of the generating alternatives can be
22 developed through comprehensive modeling of overall system production costs
23 designed to assess the system impacts of the various new generating alternatives.

⁷ *Id.* at 14-15. Such screening curves have been used by Staff in prior proceedings.

1 **Q8. DID THE COMPANY PERFORM SUCH MODELING?**

2 **A8.** Yes. The Company states that the Project is expected to produce net present
3 value savings over its expected life of approximately \$2.1 billion when compared
4 to market purchases.⁸ The Company's analysis reflects changes in the dispatch of
5 Dominion's overall fleet that would be caused by the addition of the Greenville
6 Facility. These savings include displacement of purchased power and decreased
7 dispatch of more costly units.

8 The Company further states that it conducted studies to assess the
9 sensitivity of this cost savings estimate for both higher and lower fuel costs,
10 higher and lower than expected construction costs, and no carbon cost. These
11 sensitivities were modeled with the carbon price being captured using a shadow
12 price and as a tax. Based on these sensitivity studies the Company estimates that
13 Greenville will produce net present value savings, compared to those alternatives
14 that it studied, of between \$1.5 billion and \$2.304 billion.⁹

15 These studies reflect a comprehensive estimate of the cost implications of
16 a resource plan that includes the Project given the various sensitivities, and
17 compares those cost estimates against cost estimates that are associated with a
18 generating resource plan that does not include the Project. These studies simulate
19 the dispatch of both existing and new generating resources over the life of the
20 Project and the resulting production costs. These production costs plus the capital
21 costs of new generation added during the study period represent the total plan

⁸ *Id.* at 17. This is the Rule 111 (d) – Solar Plan with the carbon price being captured as modeled in the 2015 IRP ("Base Plan").

⁹ *Id.*

1 costs. The Company's estimates of the savings associated with the Project
2 represent the comparison of plan costs with and without the Greenville Facility
3 and the associated Transmission Project. As such, these "customer savings" do
4 not reflect a reduction in the Company's future revenue requirements. Instead, the
5 estimated savings simply indicate that future revenue requirements will be less
6 than they would otherwise be if the Project were not built because higher cost
7 alternatives or higher priced market purchases would be necessary.

8 **Q9. DOES THE COMPANY'S ECONOMIC MODELING ADDRESS THE**
9 **EPA'S FINAL SECTION 111(D) RULE ISSUED ON AUGUST 3, 2015?**

10 **A9.** No. The economic modeling was performed and filed prior to the EPA's final
11 Section 111(d) regulations¹⁰ ("final rule"). The economic modeling was
12 developed with consideration of the EPA's proposed rule. The final rule is
13 substantially different from the proposed rule and changes in the rule limit the
14 effectiveness of using the Company's current IRP for assessing the impact of the
15 final section 111(d) rule on future rates and planning activities. For example, the
16 final rule delays implementation of the section 111(d) limits and lowers the
17 expected emissions targets specific to Virginia.¹¹ The final rule is so different that
18 the cost and rate projections offer very limited insight as to the impact of the final
19 rule.

¹⁰ As it is Staff's understanding that the final rule has yet to be published in the Federal Register, my testimony necessarily addresses the "pre-publication" version of final rule posted online by the EPA. This version, posted by FERC on August 3, 2015, states that "it is not the official version."

¹¹ The final rule also modifies the treatment of new gas units and effectively changes how such units are considered in applying the emissions limits. This revised treatment of new gas units offsets some of the changes associated with Virginia's less rigid emissions limits. Additionally, the final rule establishes, as a rate based alternative to state-specific emission rate limits, limits for two "subcategories" of generators – fossil fuel steam and stationary combustion turbines.

1 **Q10. IN STAFF'S VIEW, ARE THE COMPANY'S SAVINGS ESTIMATES AN**
2 **ACCURATE VIEW OF THE TRUE BENEFITS OF THE PROPOSED**
3 **PROJECT?**

4 **A10.** No. The Company's projected savings represent the results of forecasted fuel
5 prices, forecasted market purchase prices, and a number of other factors that are
6 extremely difficult to predict with a high degree of accuracy. As such, the Staff
7 believes that the Company's cost savings estimates reflect some, and perhaps a
8 significant degree of, uncertainty.

9 While the Staff has some reservation with respect to the exact level of
10 benefits that may be associated with the Project, the Staff believes that the Project
11 compares very favorably to other Company-build alternatives and will provide
12 benefits over its life.

13 **Q11. DID THE COMPANY INCLUDE DEMAND SIDE MANAGEMENT**
14 **PROGRAMS ("DSM") WHEN PLANNING?**

15 **A11.** Yes. The Company included the effects of DSM programs that were found cost-
16 effective by the Company in the 2015 IRP.¹²

THIRD-PARTY MARKET ALTERNATIVES

17 **Q12. DID THE COMPANY CONSIDER THIRD-PARTY MARKET BASED**
18 **ALTERNATIVES TO THE PROPOSED FACILITY?**

19 **A12.** Yes. As described further in the testimonies of Company witnesses Kelly and
20 Michael S. Hupp, Jr., the Company issued a formal RFP to provide the Company

¹² *Id.* at 16.

1 with incremental generation to commence in the January 1, 2019 to May 31,
 2 2020 time frame.

3 On November 3, 2014, the Company announced the RFP and provided
 4 notice directly to 19 potential bidders, including the Company's self-build
 5 group.¹³ The bidders were directed to a website and were also give the
 6 opportunity to ask clarifying questions. Intent to bid forms were due by
 7 November 14, 2014, with proposals due by December 19, 2014.¹⁴ The Company
 8 concluded the RFP on March 10, 2015.

9 **Q13. DID THE COMPANY HAVE AN OBLIGATION TO ISSUE A FORMAL**
 10 **RFP IN THIS CASE?**

11 **A13.** Yes. Company witness Hupp cites in his testimony to the Commission's Final
 12 Order in the Brunswick County Power Station case in this regard.¹⁵ The
 13 Commission stated in regards to the amendment to § 56-585.1 A 6 and third-party
 14 market alternatives:

Specifically, the 2013 General Assembly added the following legal
 requirement for CPCN proceedings: 'A utility seeking approval to
 construct a generating facility *shall demonstrate* that it has considered and
 weighted alternative options, including third-party market alternatives, in
 its selection process.' Although this new law is not applicable to the
 instant case, it clearly will affect CPCN proceedings in the future. This is
 a new statutory standard that an applicant will have to satisfy. This is,
 under this new statute, a CPCN applicant no longer has the option of
 trying to prove its case without evidence of consideration of actual third-
 party alternatives in its selection process.¹⁶

¹³ Prefiled Direct Testimony of Company witness Michael S. Hupp, Jr. at 4.
¹⁴ The Company's self-build proposal was due a day earlier.
¹⁵ *Id.* at 4.
¹⁶ *Application of Virginia Electric and Power Company, For approval and certification of the proposed Brunswick County Power Station and related transmission facilities pursuant to §§ 56-580 D, 56-265.2, and 56-46.1 of the Code of Virginia, and for approval of a rate adjustment clause, designated Rider BW, pursuant to § 56-585.1 A 6 of the Code of Virginia, Case No. PUE-2012-00128, 2013 S.C.C. Ann. Rept. 302, Final Order (Aug. 2, 2013).*

1 **Q14. HAS THE COMMISSION PROVIDED ANY FURTHER GUIDANCE ON**
2 **EVALUATING THIRD-PARTY MARKET ALTERNATIVES?**

3 **A14.** Yes. The Commission provided additional guidance in Case No. PUE-2011-
4 00092.¹⁷ On pages 4 and 5 of that Final Order the Commission states the
5 following:

6 We also believe that Dominion should adequately consider third-
7 party market alternatives as capacity resources. We do not
8 conclude, however, that Dominion should be required to perform
9 independent market tests as part of the IRP because, as noted by
10 Consumer Counsel, 'the IRP is a planning document, and is not a
11 commitment to pursue any particular investment.' Rather, we find
12 that market alternatives are appropriate for consideration in cases
13 where Dominion seeks a certificate of public convenience and
14 necessity for specific investments. Indeed, the Commission has
15 previously explained that third-party alternatives, including
16 purchased power and new construction, 'would likely be relevant
17 evidence in an application proceeding [for a self-build option for
18 new generation].'

19 Dominion bears the burden to show that it adequately considered third-
20 party market alternatives as capacity resources.

21 **Q15. DID THE COMPANY ADEQUATELY CONSIDER THIRD-PARTY**
22 **MARKET ALTERNATIVES IN THIS CASE?**

23 **A15.** That is a difficult question to answer. Ultimately, the Commission must
24 determine if the Company's evaluation of third-party market alternatives meets
25 the Commission's "adequately considered" standard and the 2013 amendment to §
26 56-585.1 A 6 regarding third-party market alternatives.

¹⁷ *Commonwealth of Virginia, ex rel., State Corporation Commission, In re: Virginia Electric and Power Company's Integrated Resource Plan filing pursuant to Va. Code § 56-597 et seq., Case No. PUE-2011-00092, 2012 S.C.C. Ann. Rept. 296, Final Order (Oct. 5, 2012).*

1 The Staff will further develop the record on the Company’s evaluations of
 2 these alternatives below to assist the Commission in reaching a determination of
 3 whether the Company “adequately considered” third-party market alternatives.

4 **Q16. DO YOU HAVE ANY COMMENTS ON THE RFP AND THE THIRD-**
 5 **PARTY MARKET ALTERNATIVES?**

6 **A16.** The RFP contained a request for "Unit Firm Capacity",¹⁸ which could only be
 7 base load or intermediate resources for a term from ten to 20 years commencing
 8 no earlier than January 1, 2019, and no later than May 31, 2020. The quantity
 9 was up to approximately 1,600 MW, and the Company would not consider
 10 proposals for facilities that were not directly connected the PJM transmission
 11 system. Also the RFP set parameters for technology and fuel reliability as well as
 12 requiring potential responders to have a credible development plan.

13 The Company received a total of eleven proposals for eight separate
 14 generation units or combination of units. The Company evaluated these proposals
 15 on both price and non-price criteria. This testimony will focus on the price
 16 criteria.

17 The Company's first step was to perform an initial economic screen of
 18 each proposal using a levelized busbar curve, which shows the levelized cost of
 19 generation at different capacity levels. According to Company witness Kelly, no

¹⁸ Prefiled Direct Testimony of Company witness Michael S. Hupp, Jr. at 5. Unit Firm Capacity is defined by witness Hupp as, "capacity, energy, ancillary services and environmental attributes delivered from a specific new or existing facility."

1 proposal was eliminated from further consideration based upon the busbar
 2 screening curves.¹⁹

3 The Company then used the Strategist production cost model to estimate
 4 each proposal's expected customer value against a forecast model of PJM
 5 wholesale market prices for capacity and energy as an alternative to compare to
 6 the Project. To compare agreements of varying lengths to Greensville, the
 7 Strategist production cost model allocates the capital costs to annual values over
 8 the 36 year life of Greensville. This generates a value to the customers of
 9 deferring the building of Greensville by a given number of years. The Strategist
 10 production cost model also compares bids of different sizes by dividing the
 11 customer net present value of each proposal by its summer capacity to derive a
 12 dollar per kW net present value metric. This metric was used to rank the bids for
 13 a price evaluation.

14 In the last step of the Company's evaluation process, Strategist was
 15 allowed the opportunity to select multiple proposals in an optimization run.
 16 According to witness Kelly, the purpose of this final step was to test if combining
 17 bids could result in a lower cost plan than the Base Plan.²⁰ These combinations
 18 were also ranked by customer net present value per kW.

19 Witness Kelly concludes that under all three price evaluation
 20 methodologies Greensville was a better option than any third-party alternatives.²¹
 21 Currently there are no respondents or comments filed by the public contesting this
 22 conclusion, though ultimately, the Commission must determine if the Company's

¹⁹ Prefiled Direct Testimony of Company witness Glen A. Kelly at 19.
²⁰ *Id.* at 19-20.
²¹ *Id.* at 20.

1 solicitation of and evaluation of third-party market alternatives meets the
 2 Commission's "adequately considered" standard and the 2013 amendment to § 56-
 3 585.1 A 6 regarding third-party market alternatives.

RATE ADJUSTMENT CLAUSE

4 **Q17. PLEASE DESCRIBE THE COMPANY'S CALCULATION OF THE**
 5 **PROPOSED RIDER GV RATES.**

6 **A17.** In its Application, the Company proposes a revised Rider GV for the 2016 Rate
 7 Year. The Rider GV surcharge is based on the same methodology has been
 8 approved by this Commission in several other rider cases.²²

9 The jurisdictional revenue requirement proposed by the Company in this
 10 case is \$41,643,000.²³ The Company allocates this amount to the eight Virginia
 11 jurisdictional customer classes using the 2014 Production Demand Allocation
 12 Factor.²⁴ Next, by dividing the allocated class amounts by their respective
 13 projected April 2016 – March 2017 kWh sales, the Company calculates a rate for
 14 each customer class. Those eight customer class rates are then used to develop
 15 charges, one applicable for each of the Company's rate schedules.

²²See *Application of Virginia Electric and Power Company, For revision of rate adjustment clause: Rider W, Warren County Power Station, for the Rate Year Commencing April 1, 2015*, Case No. PUE-2014-00042, Doc. Con. Cen. No. 150220018, Final Order (Feb. 18, 2015); *Application of Virginia Electric and Power Company, For revision of rate adjustment clause: Rider B, Biomass Conversions of the Altavista, Hopewell, and Southampton Power Stations, for the Rate Year Commencing April 1, 2015*, Case No. PUE-2014-00050, Doc. Con. Cen. No. 150310314, Final Order (Mar. 12, 2015); *Application of Virginia Electric and Power Company, For revision of rate adjustment clause: Rider R, Bear Garden Generating Station*, Case No. PUE-2014-00052, Doc. Con. Cen. No. 150310315, Final Order (Mar. 12, 2015).

²³ As is discussed in Staff witness Myers' testimony, Staff recommends a Rider GV total revenue requirement of \$39.182 million.

²⁴ Anderson Direct at 3; This allocation factor may change pursuant to the Final Order in the Company's 2015 Biennial Review, which is currently pending before the Commission. See *Application of Virginia Electric and Power Company, For a 2015 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to §56-585 .1 A of the Code of Virginia*, Case No. PUE-2015-00027.

1 For any rate schedule that is made up of customers from only one
2 customer class, such as the Residential Rate Schedules 1, 1P, 1S, 1T, and 1W, the
3 associated rate schedule revenue requirement is simply equal to the per-kWh rate
4 for the applicable customer class times the associated kWh sales. For Rate
5 Schedules GS-3, GS-4 (Primary), GS-4 (Transmission), and the Special Contract
6 rates, which are billed on a demand basis, the respective rate class revenue
7 requirement is divided by the associated per kilowatt ("kW") billing determinant
8 to determine the Rider S rate. Rate Schedules GS-2 and GS-2T are billed either
9 on a demand basis or an energy basis depending on the individual customer's load
10 factor. If the customer's monthly load factor is 50 percent or less, charges are
11 billed on an energy basis; if the monthly load factor exceeds 50 percent, charges
12 are billed on a kW demand basis.²⁵ The GS-2 and GS-2T Rider GV rate is based
13 on the combined GS-2 and GS-2T revenue requirement divided by the combined
14 energy usage of the two rate schedules. The per kW charges were developed in a
15 similar manner.

16 **Q18. PLEASE DISCUSS THE IMPACT OF THE PROPOSED SURCHARGES**
17 **ON CUSTOMERS' BILLS.**

18 **A18.** Typical bill impact comparisons for Residential Schedule 1, General Service
19 Schedules GS-1, GS-2, GS-3 and GS-4 and Church Schedule 5C are shown on
20 Schedule 3, pages 1 through 10, of Company Witness Anderson's direct
21 testimony. As shown on page 1 of Company Witness Anderson's Schedule 3, for

²⁵ *Id.* at 4.

1 a residential customer using 1,000 kWh per month, the proposed Rider GV charge
2 would result in an increase of \$0.75 per month.

3 It should be noted that, as of filing date of this testimony, the
4 Company had six other rate adjustment clause proceedings pending before the
5 Commission.²⁶ The total bill impact for a typical residential customer for all
6 seven rate pending adjustment clauses, as proposed, is shown below:

²⁶ *Application of Virginia Electric and Power Company For revision of rate adjustment clause: Rider B, Biomass Conversions of the Altavista, Hopewell, and Southampton power stations, for the rate year commencing April 1, 2016*, Case No. PUE-2015-00058, (filed June 1, 2015); *Application of Virginia Electric and Power Company For revision of rate adjustment clause: Rider S, Virginia City Hybrid Energy Center*, Case No. PUE-2015-00060, (filed June 1, 2015); *Application of Virginia Electric and Power Company For revision of rate adjustment clause: Rider W, Warren County Power Station*, Case No. PUE-2015-00061, (filed June 1, 2015); *Application of Virginia Electric and Power Company For revision of rate adjustment clause: Rider R, Bear Garden Generating Station, for the rate year commencing April 1, 2016*, Case No. PUE-2015-00059, (filed June 1, 2015); and *Application of Virginia Electric and Power Company For approval to continue new demand-side management programs and for approval of two updated rate adjustment clauses pursuant to § 56-585.1 A 5 of the Code of Virginia,,* Case No. PUE-2015-00089, (filed August 28, 2015); and *Application of Virginia Electric and Power Company, For revision of rate adjustment clause: Rider BW, Brunswick County Power Station, for the rate year commencing September 1, 2015*, Case No. PUE-2015-00102, (filed September 1, 2015).

	<u>Change</u>	<u>Total Bill</u>	<u>% Change from 11/1/15</u>
November 1, 2015 Bill Amount		\$113.24	
Rider GV Change	\$0.75	\$113.99	0.66%
Rider B Change	\$0.39	\$114.38	0.34%
Rider R Change	(\$0.06)	\$114.32	-0.05%
Rider S Change	\$0.45	\$114.77	0.40%
Rider W Change	(\$0.14)	\$114.63	-0.12%
May 1, 2016 Rider C1A & C2A Change	\$0.30	\$114.93	0.26%
September 1, 2016 Rider BW Change	\$1.20	\$116.13	1.05%
Total Changes	\$2.89	\$116.13	2.55%

1 **Q19. DOES THE STAFF HAVE ANY ADDITIONAL COMMENTS**
 2 **REGARDING THE RIDER GV CHARGES PROPOSED IN THIS CASE?**

3 **A19.** Yes. The Staff believes that there have been no significant changes associated
 4 with this proceeding that would necessitate a change in the methodology used to
 5 develop the proposed surcharges.²⁷ Should the Commission approve a revenue
 6 requirement that differs from the Company's requested revenue requirement, the
 7 Staff recommends that the corresponding Rider GV charges be adjusted consistent
 8 with the class allocation as approved herein, and with the Company's proposed
 9 class rate design.

²⁷ Staff notes that the 2015 Session of the Virginia General Assembly amended § 56-585.1 A 6 of the Code to provide that "[a] utility that constructs or purchases any such generation facility consisting of at least one megawatt of generating capacity using energy derived from sunlight and located in the Commonwealth and that utilizes goods or services sourced, in whole or in part, from one or more Virginia businesses, shall have the right to recover the costs of the facility, as accrued against income, through its rates, including projected construction work in progress, and any associated allowance for funds used during construction, planning, development and construction or acquisition costs, life-cycle costs, costs related to assessing the feasibility of potential sites for new underground facilities, and costs of infrastructure associated therewith, plus, as an incentive to undertake such projects, an enhanced rate of return on common equity calculated as specified below..." (amended language italicized for emphasis).

1 **Q20. WHAT IS YOUR RECOMMENDATION IN THIS CASE?**

2 **A20.** Should the Commission determine that the Company has adequately considered
3 third-party market alternatives; Staff is not opposed to the approval of a CPCN for
4 Greenville. Staff witness Cizenski addresses Staff's recommendation for the
5 CPCN for the associated Transmission Project in his pre-filed testimony.

6 **Q21. DOES THIS CONCLUDE YOUR TESTIMONY IN THIS PROCEEDING?**

7 **A21.** Yes, it does.

PART B

PREFILED TESTIMONY

**OF
MICHAEL A. CIZENSKI**

**APPLICATION OF
VIRGINIA ELECTRIC AND POWER COMPANY
CASE NO. PUE-2015-00075**

1 **Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE STATE**
2 **CORPORATION COMMISSION ("COMMISSION").**

3 **A1.** My name is Michael Cizenski. I am a Utilities Engineer in the Commission's
4 Division of Energy Regulation.

5 **Q2. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

6 **A2.** On July 1, 2015, Virginia Electric and Power Company filed an Application
7 requesting (1) approval and certification to construct and operate a 1,588
8 megawatt (nominal) natural gas-fired combined-cycle electric generation facility
9 in Greensville County and the associated 500 kilovolt ("kV") transmission
10 interconnection facilities and (2) approval of a rate adjustment clause to recover
11 costs associated with such facilities ("Application"). The purpose of my testimony
12 is to sponsor the Staff Report, which describes the results of Staff's investigation
13 of the transmission interconnection facilities proposed in the Application. The
14 Report is attached to this testimony.

15 **Q3. DOES THIS CONCLUDE YOUR TESTIMONY?**

1 A3. Yes, it does.

**COMMONWEALTH OF VIRGINIA
STATE CORPORATION COMMISSION
DIVISION OF ENERGY REGULATION**

**STAFF REPORT ON THE APPLICATION OF
VIRGINIA ELECTRIC AND POWER COMPANY TO CONSTRUCT
500 kV TRANSMISSION INTERCONNECTION FACILITIES FOR THE
GREENSVILLE COUNTY POWER STATION
IN GREENSVILLE COUNTY**

**PREPARED BY
MICHAEL A. CIZENSKI**

CASE NO. PUE-2015-00075

November 20, 2015

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Attachments:

1. Route map
2. Cross-sectional view of proposed Line #596.
3. Cross-sectional view of proposed Line #585 Junction.
4. Company's Response to Staff discovery request no. 2-5.
5. Company's Response to Staff discovery request no. 1-2.

SUMMARY

1 My testimony addresses the Application of Virginia Electric and Power Company
2 (“Company”) for approval and certification of the proposed Greenville County Power
3 Station and related transmission facilities. In order to reliably interconnect the proposed
4 Greenville County Power Station, an approximately 1,588 megawatt (nominal) 3x1
5 natural gas-fired combined-cycle electric generating facility in Greenville County,
6 Virginia, with the Company's transmission system, which is centrally operated by PJM
7 Interconnection, L.L.C. (“PJM”) as part of the PJM Regional Transmission Organization,
8 the Company proposes to construct new 500 kilovolt (“kV”) transmission facilities in
9 Greenville and Brunswick Counties, Virginia. Specifically, the Company proposes to
10 construct a new 500 kV Rogers Road Switching Station, and a new single circuit 500 kV
11 transmission line connecting the Greenville County Power Station to the switching
12 station. Additionally, the Company proposes to tap the existing 500 kV Carson–Heritage
13 Line #585 and loop it in and out of the new switching station. The purpose of this Staff
14 Report is to comment on the Company's proposed Transmission Interconnection
15 Facilities.

16 My conclusions and recommendations are summarized below:

- 17 • After thorough review, the Staff concludes that the Company has reasonably
18 demonstrated the need for the Transmission Interconnection Facilities which
19 would connect the Greenville County Power Station to the Company's bulk
20 power system.

1 INTERCONNECTION TRANSMISSION FACILITIES PROJECT SUMMARY

2 On July 1, 2015, Virginia Electric and Power Company, d/b/a Dominion Virginia
3 Power ("Dominion" or "Company") filed an application ("Application") with the State
4 Corporation Commission ("Commission") requesting approval to construct and operate a
5 generation facility and associated transmission facilities and for approval of a rate
6 adjustment clause to recover costs associated with such facilities. The Application was
7 docketed as Case No. PUE-2015-00075.

8 With respect to the facilities, the Company specifically requests: (1) a certificate
9 of public convenience and necessity ("CPCN" or "certificate") authorizing it to construct
10 and operate a 1,588 megawatt ("MW") (nominal) natural gas-fired combined-cycle
11 generation facility in Greensville County ("Greensville County Power Station" or
12 "Greensville") and (2) a CPCN to construct 500 kilovolt ("kV") transmission
13 interconnection facilities ("Transmission Interconnection Facilities" or "TIF") in
14 Greensville and Brunswick Counties. Collectively, the generation facility and the
15 transmission facilities are referred to as the "Project."¹

16 The TIF includes a 500 kV six-breaker Rogers Road Switching Station
17 ("Switching Station"), to be located on the Greensville County Power Station site. The
18 TIF also includes an approximately 0.2 mile long 500 kV transmission line, designated
19 Line #596 (Greensville–Rogers Road Line), which is necessary to interconnect the
20 Greensville County Power Station with the Switching Station. Additionally, the
21 Company proposes to split an existing transmission line on the site of the Project (500 kV

¹ Application at 1.

1 Line #585 Carson–Heritage) and loop it into and then out of the proposed Switching
2 Station via an approximately 0.9 miles extension of double-circuit 500 kV bus work from
3 the Switching Station to the existing 500 kV Line #585. The result would be two lines:
4 500 kV Line #585 (Carson–Rogers Road) and 500 kV Line #503 (Rogers
5 Road–Heritage). Also included in the Transmission Project is the uprate of existing
6 500kV Line #511 (Carson–Rawlings).²

7 The purpose of this Staff Report is to comment on the Company's proposed
8 Transmission Interconnection Facilities. Other witnesses from the Commission's Staff
9 ("Staff") address the Company's request to construct and operate the Greenville County
10 Power Station and its request for a rate adjustment clause.

PROPOSED ROUTE

11
12 The Company's proposed Transmission Interconnection Facilities would be
13 located mostly on the Company-owned Greenville County Power Station site. The
14 500 kV Switching Station would be located on the generation plant site, slightly
15 northwest of the Greenville County Power Station and adjacent to an existing
16 transmission line corridor. This transmission corridor consists of the Company's 500 kV
17 Line #570 (Heritage–Wake). The proposed route for Line #596 would start at the site of
18 the Greenville County Power Station and travel in a northwestern direction for
19 approximately 0.2 miles before terminating at the proposed Switching Station. A map of
20 the proposed route for Line #596 appears as Attachment 1 to my Report.³

² Application at 12.
³ See Application at 12: Prefiled Direct Testimony of Company Witness Peter Nedwick at 2.

1 As discussed above, in order to interconnect the Greenville County Power Station
2 to the Company's transmission system, the Company's existing Line #585 would be split
3 and looped in and out of the Switching Station, thereby creating two networked 500 kV
4 transmission lines: Line #585 and Line #503. The two proposed lines leave the Switching
5 Station and travel north approximately 0.8 miles to connect to the existing
6 Carson-Heritage Line #585. Approximately 0.2 mile of the 0.8 mile route leaves the
7 generation plant property and is located on private property owned by a single property
8 owner.⁴ A layout of the split of existing Line #585 is depicted as Attachment II.A.2 to
9 the Transmission Appendix of the Application.

10 In the Application, the Company noted that the Transmission Interconnection
11 Facilities would be located wholly within the certificated service territory of
12 Mecklenburg Electric Cooperative ("MEC"). According to the Application, MEC does
13 not oppose the construction of the Transmission Interconnection Facilities.⁵
14 Additionally, the Greenville County Power Station site and route corridor crosses
15 commercial loblolly pine plantations and one privately owned property. According to the
16 Company, there is no proximate commercial or residential development and there are no
17 dwellings located within 500 feet of the Transmission Interconnection Facilities.⁶

18 CONSTRUCTION PERIOD

19 The Company states that the Transmission Interconnection Facilities would
20 require a pre-construction activity period of six months for engineering, material

⁴ Transmission Appendix at 79, 87, 112.

⁵ Transmission Appendix at 84-86.

⁶ Transmission Appendix at 79, 94.

1 procurement, and construction permitting. According to the Company, the estimated
 2 construction time is 12 months with an in-service date of December 2017, except for the
 3 uprate of Line #511 which must be completed by December 2018.⁷

4 TRANSMISSION PROJECT COST

5 The Company estimates that the Transmission Project will cost \$29.4 million
 6 (2015 dollars).⁸ The costs are classified under the following two categories.

7 Attachment Facilities and Direct Network Upgrades

8 The Attachment Facilities and Direct Network Upgrades account for
 9 approximately \$28.4 million of the Transmission Project's cost. Of that, \$10.4 million is
 10 for the transmission line work and \$18.0 million is for the station work.⁹

11 Non-Direct Network Upgrades

12 The Non-Direct Network Upgrades are the additions and upgrades to the existing
 13 transmission system relatively distant from the Transmission Project that are necessary to
 14 mitigate any reliability problems in the transmission system that would be created by the
 15 interconnection of the generation. This work includes the uprate of existing Line #511
 16 (Carson–Rawlings). The total cost of this work is \$1.0 million and includes
 17 approximately \$0.1 million for transmission line work and \$0.9 million for station
 18 work.¹⁰

19 RIGHT-OF-WAY DESCRIPTION AND CROSS-SECTION

⁷ Application at 13; Transmission Appendix at 70.

⁸ See the Company's Response to Staff Interrogatories Set 2, Question No. 5, which is attached to my testimony as Attachment 4.

⁹ See Attachment 4.

¹⁰ See Attachment 4.

1 Attachment 2 to my Report depicts a cross-sectional view of the proposed Line
 2 #596 Rogers Road Station–Greenville Power Station. The cross-sectional view is the
 3 typical right-of-way looking toward the Greenville Power Station. Attachment 3 to my
 4 Report depicts a cross-sectional view of the proposed Line #585 junction looking south
 5 toward the Switching Station. Both attachments include descriptions of foundations,
 6 structures, and conductors. Line #596, #585 and #503 would utilize galvanized steel
 7 lattice towers. The Company explains that galvanized steel structures are similar in nature
 8 to the existing lattice towers in the area and that they are the most economical structure
 9 type.¹¹ For Line #596, the average pole height would be approximately 120 feet and
 10 would have an approximate average span length of 589 feet. For Line #503 and #585, the
 11 average pole height would be approximately 139 feet and the line would have an average
 12 span length of approximately 958 feet. All poles would be mounted on concrete
 13 foundations.¹²

14 Line #596, #585 and #503 would each have three triple-bundled 1351.5 ACSR
 15 (aluminum conductor, steel reinforced) 45/7 phase conductors with two fiber optic shield
 16 wires. Each line would have a transfer capability of 4,330 MVA.¹³

17 New Rogers Road Switching Station

18 The proposed 500 kV Rogers Road Switching Station would include six 500 kV
 19 circuit breakers in a ring bus configuration, three 500 kV line terminals and fifteen
 20 500 kV, 4000A switches, and associated 500 kV bus work. The Switching Station would

¹¹ Prefiled Direct Testimony of Company Witness Robert J. Shevenock, II at 3-4.

¹² Attachment 2; Attachment 3.

¹³ Prefiled Direct Testimony of Company Witness Robert J. Shevenock, II at 3.

1 also include a new control enclosure to house communication and protective relaying
 2 equipment.¹⁴ The completed bus would terminate proposed Line #596, network Line
 3 #503, and network Line #585, which would accomplish the interconnection of the
 4 Greenville County Power Station.¹⁵

5 The point of origin (Switching Station) and point of termination (existing Line
 6 #585) are located on Company-owned property. Additionally, the proposed route
 7 represents the shortest alignment to interface these two points, and as such, no alternate
 8 routes were provided.¹⁶

9 UTILIZING EXISTING UTILITY RIGHT-OF-WAY

10 The requirement to consider use of existing right-of-way in locating electric utility
 11 facilities, as directed by §§ 56-46.1 C and 56-259 C of the Code of Virginia ("Code"), is
 12 designed to minimize the incremental impact and cost associated with building new
 13 electric transmission facilities. The joint use of right-of-way by public service
 14 corporations is contemplated by the Code. These sections of the Code align with Federal
 15 Energy Regulatory Commission's *Guidelines for the Protection of Natural, Historic,*
 16 *Scenic, and Recreational Values in the Design and Location of Rights-of-Way and*
 17 *Transmission Facilities*, in which Guideline No. 1 states, "...right-of-way should be
 18 selected with the purpose of minimizing conflict between the rights-of-way and present
 19 and prospective uses of the land on which they are located. To this end, existing rights-

¹⁴ Transmission Appendix at 91.

¹⁵ Transmission Appendix at 92.

¹⁶ Transmission Appendix at 82.

1 of-way should be given priority, and the joint use of existing rights-of-way by different
2 kinds of utility services should be considered."

3 **PARALLELING EXISTING UTILITY RIGHTS-OF-WAY**

4 While the Code only requires that the use of existing public utility rights-of-way
5 be considered, it is common practice to also consider routes on new easements parallel
6 with (adjacent to) existing linear utilitarian facilities such as electric transmission lines,
7 natural gas transmission lines, pipelines, highways, and railroads. As such, the
8 paralleling of utility lines is generally assumed to reduce incremental impacts of the new
9 transmission line.

10 **NEED FOR THE TRANSMISSION INTERCONNECTION FACILITIES**

11 In order for the proposed Greenville County Power Station to fulfill its role as a
12 source of electrical energy to supply customer loads, it must be provided with an
13 interconnection to the Company's bulk power system. The interconnection must be of
14 adequate capacity and reliability to qualify the power plant for full capacity rights within
15 the PJM Interconnection, L.L.C ("PJM"). As the regional transmission organization
16 ("RTO") covering Dominion's service territory, PJM controls the operation of the
17 Company's transmission network and oversees the dispatch of the Company's generating
18 units. Additionally, PJM administers the process for the interconnection of all new
19 generators within the PJM RTO.

20 The existing 500 kV Line #570 and #585 are the only transmission lines near
21 Greenville Power Station that are capable of carrying the plant's full output. On October
22 31, 2013, the Company's Generation Construction group submitted a request (Queue

1 Request Z1-086) to PJM for a feasibility and interconnection study for a 1,630 MW
 2 (summer capacity) 3x1 combined cycle generating facility to be located at the Greenville
 3 County Power Station site. On February 28, 2014, PJM issued its Feasibility Study
 4 Report.¹⁷ On October 24, 2014, PJM completed its System Impact Study for the proposed
 5 queue request.¹⁸ The Facilities Study Report was completed in June 2015.¹⁹ The
 6 aforementioned reports confirm need for the proposed 500 kV Switching Station and
 7 associated Transmission Interconnection Facilities to reliably connect the proposed
 8 Greenville County Power Station to the transmission system. Additionally, the reports
 9 indicate the need to uprate the existing Line #511 (Carson–Rawlings). Fortunately, the
 10 Company has indicated there is sufficient ground clearance for Line #511 to allow for the
 11 increase in maximum operating temperature of the conductors. Four of the existing
 12 towers will require several structural members to either be reinforced or replaced.²⁰

13 **ECONOMIC DEVELOPMENT BENEFIT**

14 The proposed TIF is the PJM-approved interconnection designed to reliably
 15 connect the Greenville County Power Station to the area bulk power system.
 16 Accordingly, the TIF is essential to the operation of the power plant, and as such,
 17 essential to achieving the economic development benefits associated with the Greenville
 18 County Power Station. Those benefits are discussed in the testimony of Staff witness
 19 Marc Tufaro.

¹⁷ Transmission Appendix at 5-16.
¹⁸ Transmission Appendix at 17-49.
¹⁹ Transmission Appendix at 50-64.
²⁰ See the Company’s Response to Staff Interrogatories Set 1, Question No. 2, which is attached to my testimony as Attachment 5.

DEQ COORDINATED ENVIRONMENTAL REVIEW

1
2 In accordance with paragraph 3 of the Department of Environmental Quality-State
3 Corporation Commission Memorandum of Agreement Regarding Coordination of
4 Reviews of the Environmental Impacts of Proposed Electric Generating Plants dated,
5 August 14, 2002, and the request of the Staff, the Virginia Department of Environmental
6 Quality ("DEQ") coordinated an environmental review of the project by the various state
7 and local agencies responsible for reviewing the environmental impacts of electric utility
8 projects. The results of DEQ's review are contained in a report dated September 16, 2015
9 ("DEQ Report") and filed with the Commission on September 17, 2015. The DEQ
10 Report summarizes the Project's potential impacts on natural resources, makes
11 recommendations for minimizing those impacts, and outlines the Company's
12 responsibilities for compliance with legal requirements governing environmental
13 protection. The DEQ Report also includes copies of the comments provided to DEQ by
14 the reviewing agencies.

WETLAND IMPACTS CONSULTATION

15
16 In accordance with § 62.1-44.15:21 of the Code and the Department of
17 Environmental Quality-State Corporation Commission Memorandum of Agreement
18 Regarding Wetland Impacts Consultation dated July 2003, the DEQ, acting on behalf of
19 the State Water Control Board, provided a wetland impacts consultation for the Project.
20 DEQ's review is summarized in a letter from Michelle Henicheck of DEQ to Courtney R.
21 Fisher of the Company dated May 18, 2015, which was filed with the Commission on

1 September 17, 2015, as part of the DEQ Report. The wetland impacts summary letter
2 also appears as Transmission Attachment 2.D.1 in the DEQ Supplement to the
3 Application.

4 **CONCLUSIONS AND RECOMMENDATIONS**

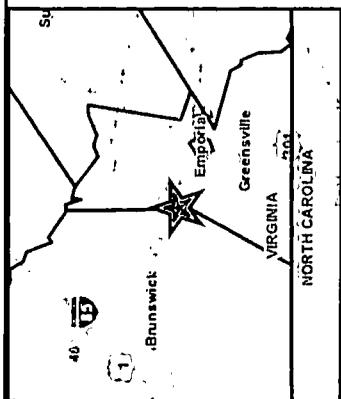
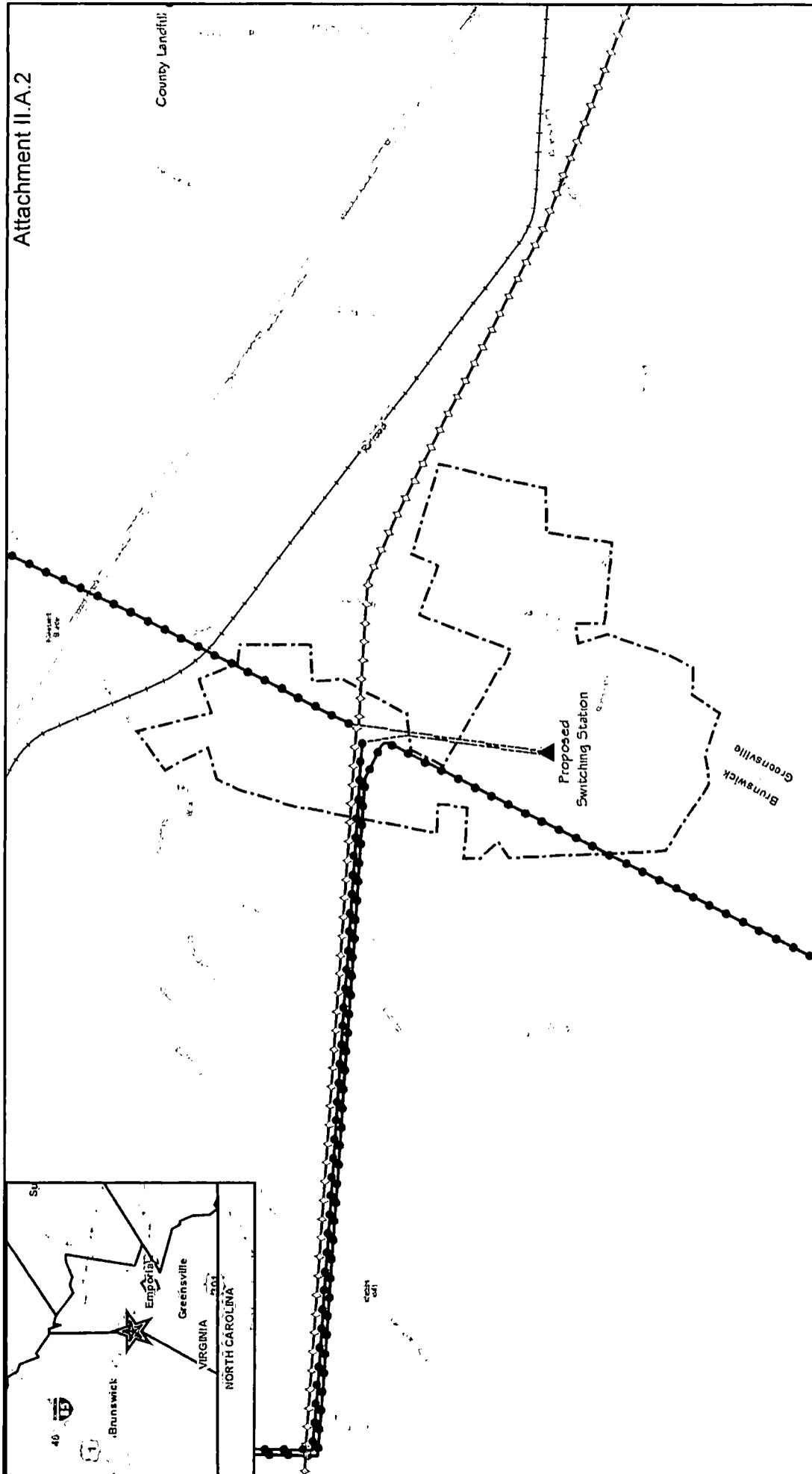
5 The Staff concludes that the Company has reasonably demonstrated the need for the
6 Transmission Interconnection Facilities, which would connect the Greenville County
7 Power Station to the Company's bulk power system.

Attachment 1

Route Map

151130244

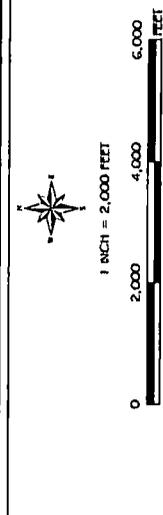
Attachment II.A.2



- LEGEND**
- PROPOSED 500 KV INTERCONNECTION LINE
 - EXISTING 115 KV
 - EXISTING 500 KV
 - - - - PROPERTY LINE FOR POWER PLANT SITE
 - ▲ PROPOSED GREENSVILLE SWITCHING STATION

PROPOSED GREENSVILLE
DOUBLE CIRCUIT 500 KV
INTERCONNECTION ELECTRIC
TRANSMISSION LINE

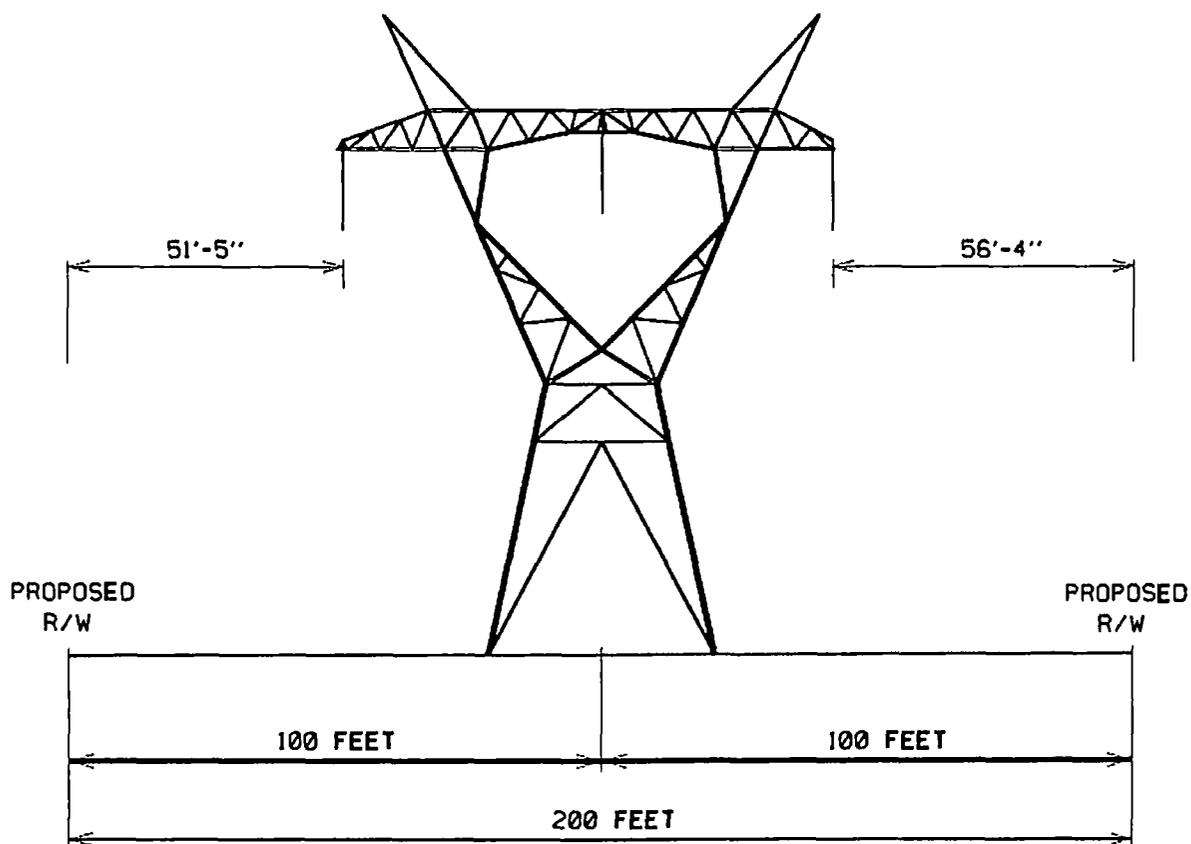
JUNE 04, 2015



Attachment 2

Cross-Sectional View of Proposed Line #596

PROPOSED
500KV CIRCUIT
(LINE #596)



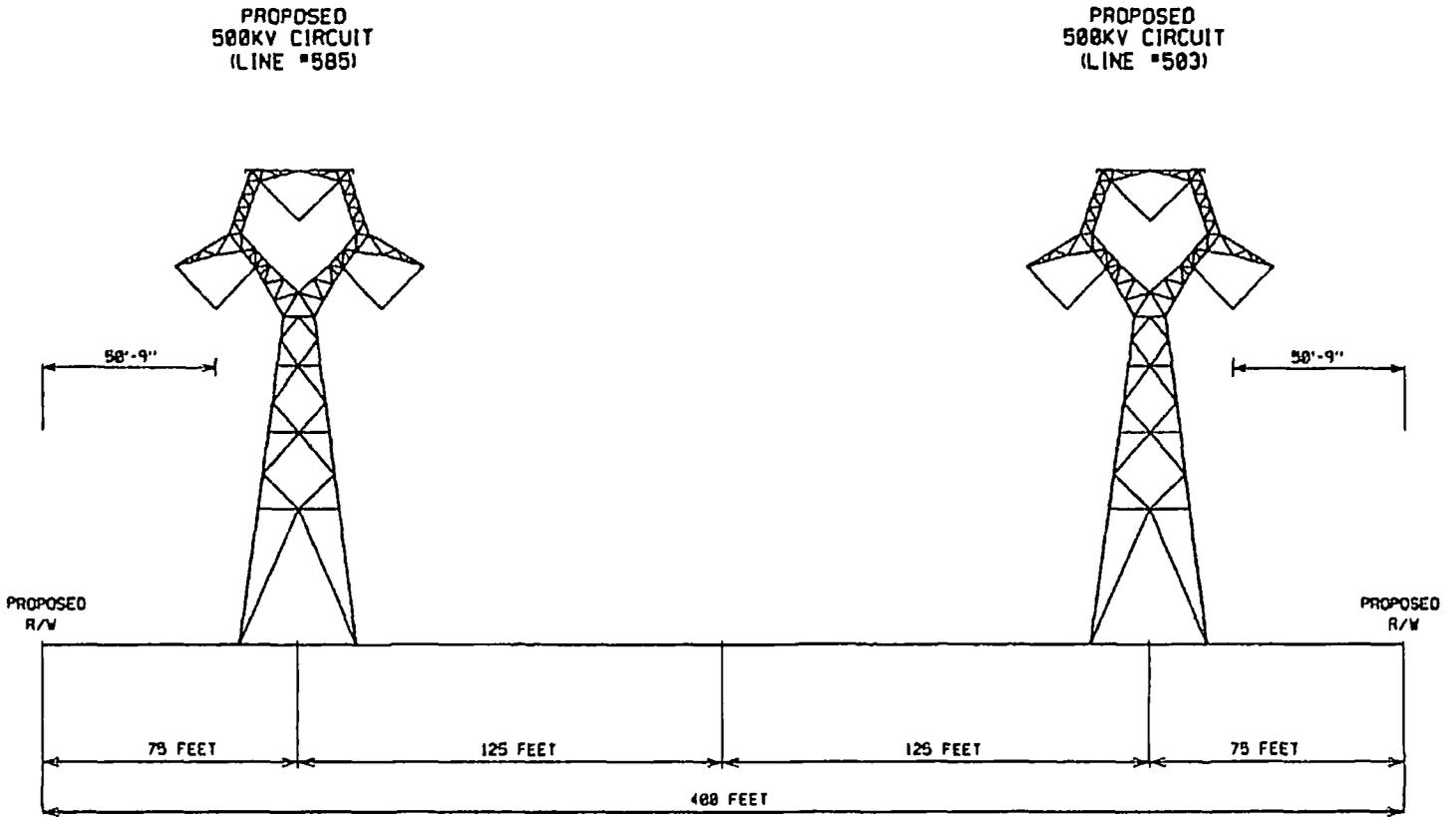
PROPOSED CONFIGURATION

TYPICAL RIGHT OF WAY LOOKING TOWARD GREENSVILLE POWER STATION

TYPE OF STRUCTURE:	LATTICE TOWER
FOUNDATION :	CONCRETE
APPROXIMATE AVERAGE HEIGHT:	120 FEET
WIDTH AT CROSSARM:	93 FEET
WIDTH AT BASE:	43 FEET
APPROX. AVERAGE SPAN LENGTH:	589 FEET
CONDUCTOR TYPE:	ALUMINUM
RIGHT OF WAY WIDTH:	200 FEET
APPROXIMATE LENGTH OF LINE :	0.22 MILES

Attachment 3

Cross-Sectional View of Proposed Line #585 Junction



PROPOSED CONFIGURATION
TYPICAL RIGHT OF WAY LOOKING TOWARD ROGERS ROAD STATION

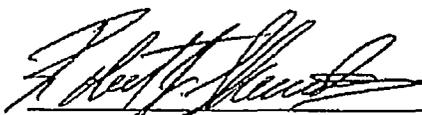
	<u>LINE 585</u>	<u>LINE 503</u>
TYPE OF STRUCTURE:	LATTICE TOWER	LATTICE TOWER
FOUNDATION :	CONCRETE	CONCRETE
APPROXIMATE AVERAGE HEIGHT:	139 FEET	139 FEET
WIDTH AT CROSSARM:	73 FEET	73 FEET
WIDTH AT BASE:	34 FEET	34 FEET
APPROX. AVERAGE SPAN LENGTH:	950 FEET	1024 FEET
CONDUCTOR TYPE:	ALUMINUM	ALUMINUM
RIGHT OF WAY WIDTH:	400 FEET	400 FEET
APPROXIMATE LENGTH OF LINE :	0.91 MILES	0.78 MILES

Attachment 4

Company's Response to Staff discovery request no. 2-5

Virginia Electric and Power Company
Case No. PUE-2015-00075
Virginia State Corporation Commission Staff
Second Set

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on October 9, 2015, has been prepared under my supervision as it pertains to transmission line costs.



Robert J. Shevenock II
Consulting Engineer
Dominion Technical Solutions, Inc.

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on October 9, 2015, has been prepared under my supervision as it pertains to station costs.

William C. Bland
Engineer III
Dominion Technical Solutions, Inc.

Question No. 5

Please provide updated costs associated with page 13 of the Application as well as section I.G of the Transmission Appendix.

Response:

The only Project cost update relates to the Transmission Project.

As stated in the Company's response to Question No. 2 of the Staff's First Set, the uprate of Line #511 will not require the increase in height or replacement of any of the existing towers in connection with the Transmission Project. The elimination of this work from the Transmission Project scope will result in a reduction in the transmission line cost of the Transmission Project by approximately \$3.4 million – from approximately \$3.5 million to approximately \$0.1 million.

Virginia Electric and Power Company
Case No. PUE-2015-00075
Virginia State Corporation Commission Staff
Second Set

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on October 9, 2015, has been prepared under my supervision as it pertains to transmission line costs.

Robert J. Shevenock II
Consulting Engineer
Dominion Technical Solutions, Inc.

The following response to Question No. 5 of the Second Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on October 9, 2015, has been prepared under my supervision as it pertains to station costs.



William C. Bland
Engineer III
Dominion Technical Solutions, Inc.

Question No. 5

Please provide updated costs associated with page 13 of the Application as well as section I.G of the Transmission Appendix.

Response:

The only Project cost update relates to the Transmission Project.

As stated in the Company's response to Question No. 2 of the Staff's First Set, the uprate of Line #511 will not require the increase in height or replacement of any of the existing towers in connection with the Transmission Project. The elimination of this work from the Transmission Project scope will result in a reduction in the transmission line cost of the Transmission Project by approximately \$3.4 million – from approximately \$3.5 million to approximately \$0.1 million.

The allocation of interconnection costs between the Brunswick County Power Station and Greenville County Power Station is under review. When the final interconnection agreement establishing the allocation is executed, the Company will update its response to this Question No. 5.

The costs set forth in Paragraph 20 of the Application can be revised as follows as it pertains to the Transmission Project:

The estimated cost of the Transmission Interconnection Facilities, comprised of Attachment Facilities and Direct Network Upgrades, is approximately \$28.4 million (\$10.4 million for transmission line work and \$18.0 million for the station work). The estimated cost for the required Non-Direct Network Upgrades, which will be the Line #511 uprate, is \$1 million (\$0.1 million for transmission line work and \$0.9 million for station work), for a total cost of required interconnection facilities for the Greenville County Power Station of approximately \$29.4 million (2015 dollars).

The costs set forth in Section I.G of the Transmission Appendix can be revised as follows as it pertains to the Transmission Project:

The estimated cost of the Transmission Project is approximately \$29.4 million (\$10.5 million for transmission line work and \$18.9 million for the station work). All costs are in 2015 dollars.

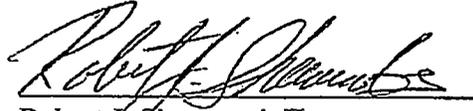
Attachment 5

Company's Response to Staff discovery request no. 1-2

Virginia Electric and Power Company
Case No. PUE-2015-00075
Virginia State Corporation Commission Staff
First Set

15130244

The following response to Question No. 2 of the First Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on August 26, 2015, has been prepared under my supervision.


Robert J. Shevenock II
Consulting Engineer
Dominion Technical Solutions, Inc.

Question No. 2

On page 3 of the Direct testimony of Company witness Shevenock and on page 1 of the Transmission Appendix, the Company indicates it needs to uprate line #511 by replacing approximately ten structures with taller structures, without reconductoring. Please provide:

- a) Detail on the work to be done at each tower. The application uses the terms “replace” and “raise” interchangeably, please clarify whether such interchangeable use is intentional;
- b) The anticipated construction steps required to replace or raise a tower;
- c) The heights of the existing towers;
- d) The heights of the proposed towers;
- e) The number of towers to be replaced or raised and the location of each such tower, including the county each tower is located in; and
- f) A detailed description of how changing the structures without reconductoring will provide the additional capacity desired.

Response:

Based on the design specifications of Line #511, the Company initially anticipated that a limited number of structures would need to be replaced to ensure adequate clearances. However, the Company obtained aerial survey data for Line #511 on July 26, 2015, which indicated that the phase conductors were installed at a higher tension than the original design tensions, resulting in

increased ground clearances in the conductor spans compared to the original design. This increased ground clearance will allow the increase in the maximum operating temperature of the conductor for the ampacity uprate contemplated as part of the electric transmission interconnection facilities ("Transmission Project") and will not require any of the existing towers to be raised or replaced in connection with the Transmission Project.

However, based on the increased conductor tension observed from the aerial survey, additional loading is being applied to the angle structures. The angle structures and foundations have been reviewed for the increased loadings and four angle structures located in Dinwiddie County require minor modifications regardless of whether the Company constructs the Transmission Project. Tower #221 on Line #511 will require three tower members to be reinforced or replaced. Tower #258 and #265 will require two tower members to be reinforced. Tower #272 will require replacement of approximately nine bolts. These adjustments to the existing towers are being treated as ordinary operations and maintenance work on existing Line #511 outside of the scope of the Transmission Project.

PART C

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Summary

My testimony includes the following findings and recommendations:

1. Staff recommends approval of a Rider GV revenue requirement for the 2016 Rate Year of \$39.182 million, which includes a Projected Cost Recovery Factor ("Projected Factor") revenue requirement of \$37.652 million and an AFUDC Cost Recovery Factor revenue requirement of \$1.530 million.
2. Staff's recommended revenue requirement is \$2.461 million lower than the Company's proposed revenue requirement of \$41.643 million.
3. The difference between Staff's and the Company's revenue requirements for the 2016 Rate Year is primarily due to Staff's use of a return on equity ("ROE") of 9.25% to calculate: (1) the Projected Factor revenue requirement for the 2016 Rate Year; and (2) the projected AFUDC revenue requirement for the period of December 1, 2015 through March 31, 2016. The Company proposes to utilize an ROE of 10.0% for these purposes. Staff's use of an ROE of 9.25%, effective December 1, 2015, is consistent with the recommendations included in Staff witness Oliver's testimony in the Company's 2015 Biennial Review, Case No. PUE-2015-00027.

**PREFILED STAFF TESTIMONY
OF
CAROL B. MYERS
VIRGINIA ELECTRIC AND POWER COMPANY
CASE NO. PUE-2015-00075
NOVEMBER 20, 2015
PUBLIC VERSION**

1 **Q1. PLEASE STATE YOUR NAME AND THE POSITION YOU HOLD WITH THE**
2 **STATE CORPORATION COMMISSION ("COMMISSION").**

3 **A1.** My name is Carol B. Myers, and I am a Manager with the Commission's Division of
4 Utility Accounting and Finance.

5 **Q2. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

6 **A2.** In this proceeding, Virginia Electric and Power Company d/b/a Dominion Virginia Power
7 ("Company") requests approval of the following: (1) a certificate of public convenience
8 and necessity ("CPCN") to construct and operate an approximately 1,588 megawatt
9 (nominal) natural gas-fired combined-cycle electric generating facility in Greensville
10 County, Virginia ("Greensville Facility"); (2) a CPCN to construct a new 500 kilovolt
11 transmission line, a new switching station, and associated facilities in Brunswick and
12 Greensville Counties, Virginia ("Transmission Interconnection Facilities") (collectively,
13 the Greensville Facility and Transmission Interconnection Facilities will be referred to
14 herein as the "Greensville Project"); and (3) a rate adjustment clause ("Rider GV") to
15 recover the costs of the proposed Greensville Project pursuant to § 56-585.1 A 6 of the

1 Code of Virginia ("Code").¹ Staff witnesses Marc A. Tufaro and Michael A. Cizenski
2 address the Company's request for approval of the CPCNs for the Brunswick Facility and
3 Transmission Interconnection Facilities, respectively.

4 My testimony addresses the Company's request for Rider GV. Specifically, I
5 address the following: (1) the components of the Company's Rider GV revenue
6 requirement for the rate year April 1, 2016, through March 31, 2017 ("2016 Rate Year");
7 (2) Staff's audit of actual Greenville Project expenditures through March 31, 2015; (3)
8 Staff's proposed Rider GV revenue requirement for the 2016 Rate Year; and (4) the
9 differences between Staff's and the Company's Rider GV revenue requirements for the
10 2016 Rate Year. Staff witness Lawrence T. Oliver presents testimony on the return on
11 equity ("ROE") and capital structure to be used in calculating the Rider GV revenue
12 requirement.

13 **Q3. PLEASE PROVIDE A LIST OF THE SCHEDULES ACCOMPANYING YOUR**
14 **TESTIMONY.**

15 **A3.** My testimony includes the following Schedules:

16 Schedule 1 - Total Revenue Requirement for the Greenville Project for the 2016 Rate
17 Year

18 Schedule 2 - Projected Cost Recovery Factor Revenue Requirement for the Greenville
19 Project for the 2016 Rate Year

¹ Staff notes that the 2015 Session of the Virginia General Assembly amended § 56-585.1 A 6 of the Code to provide that "[a] utility that constructs *or purchases* any such *generation facility consisting of at least one megawatt of generating capacity using energy derived from sunlight and located in the Commonwealth and that utilizes goods or services sourced, in whole or in part, from one or more Virginia businesses,* shall have the right to recover the costs of the facility, as accrued against income, through its rates, including projected construction work in progress, and any associated allowance for funds used during construction, planning, development and construction *or acquisition* costs, life-cycle costs, costs related to assessing the feasibility of potential sites for new underground facilities, and costs of infrastructure associated therewith, plus, as an incentive to undertake such projects, an enhanced rate of return on common equity calculated as specified below...." (amended language italicized for emphasis).

1 Schedule 3 - Cumulative Rate Base for the Greenville Project – March 2016 through
2 March 2017

3 Schedule 4 - AFUDC² Cost Recovery Factor Revenue Requirement for the Greenville
4 Project for the 2016 Rate Year

5 Schedule 5 - Amortization of Projected AFUDC Revenue Requirement – For the
6 Amortization Period of April 2016 through November 2018

7 Schedule 6 - Calculation of Projected AFUDC Revenue Requirement – For the Period
8 of April 2015 through March 2016

9 Appendix - Company responses to certain Staff interrogatories

10 **Q4. PLEASE DESCRIBE THE COMPONENTS OF THE RATE ADJUSTMENT**
11 **CLAUSE THAT THE COMPANY IS PROPOSING TO RECOVER IN THIS**
12 **PROCEEDING.**

13 **A4.** The Rider GV revenue requirement, as proposed for the 2016 Rate Year, consists of two
14 components: (1) the Projected Cost Recovery Factor ("Projected Factor"); and (2) the
15 AFUDC Cost Recovery Factor ("AFUDC Factor").³

16 The Projected Factor is a forward-looking mechanism that allows the Company a
17 current return on its projected capital investment. The Company's Projected Factor for
18 the 2016 Rate Year provides a current return on average projected rate base⁴ for the

² AFUDC is the acronym for "Allowance for Funds Used During Construction." In this proceeding, AFUDC consists of accrued and deferred financing costs, including both debt and equity components, for the Greenville Project.

³ If approved, future Rider GV revenue requirements will also include a third component, the Actual Cost True-up Factor ("True-up Factor"), which will compare actual revenues recovered and actual costs incurred in order to credit to or recover from customers any over- or under-recoveries. Staff expects that the first True-up Factor will be included in the revenue requirement for the rate year beginning April 1, 2018, and will true-up cost recoveries associated with calendar year 2016.

⁴ Average rate base for the 2016 Rate Year is comprised only of construction work in progress ("CWIP") and associated accumulated deferred income taxes ("ADIT").

1 thirteen months ended March 31, 2017,⁵ as well as carrying costs on the average
2 unamortized balance of AFUDC for the thirteen months ended March 31, 2017. In
3 calculating the above-described current return and carrying costs for recovery in the
4 Projected Factor revenue requirement in this proceeding, the Company utilized its
5 December 31, 2014 ratemaking capital structure and an ROE of 10.0%. The Company's
6 Projected Factor is calculated to recover a revenue requirement of \$40.059 million.

7 The Company's AFUDC Factor is designed to recover a rate year level of
8 amortization of projected AFUDC. The Company began accruing AFUDC on its books
9 in April 2015 and will cease accrual on March 31, 2016, the date prior to when the first
10 Rider GV becomes effective, because a current return on projected average CWIP will
11 then be included in rates. The Company's AFUDC Factor is designed to recover a total
12 projected revenue requirement of \$4.223 million over a 32-month period, from April 1,
13 2016, through November 30, 2018, prior to the date the Greenville Facility is expected
14 to commence commercial operation.⁶ In calculating the projected total AFUDC revenue
15 requirement of \$4.223 million, the Company utilized its December 31, 2014 ratemaking
16 capital structure and an ROE of 10.0%. The Company proposes to recover 12 months of
17 amortization of the AFUDC revenue requirement in the 2016 Rate Year in this
18 proceeding in the amount of \$1.584 million.

⁵ The use of a thirteen-month average rate base for the rate year ended March 31, 2017 for the Greenville Project does not result in a violation of the Internal Revenue Service's normalization rules because the ADIT balances included in such thirteen-month average rate base do not include liberalized depreciation.

⁶ Projected AFUDC amounts will be trued up through future Commission-approved True-up Factors.

1 The Company's proposed total Rider GV revenue requirement for the rate year is
2 \$41.643 million (Projected Factor of \$40.059 million plus AFUDC Factor of \$1.584
3 million).⁷

4 **Q5. HAS STAFF REVIEWED THE ACTUAL AND PROJECTED COSTS**
5 **UNDERLYING THE COMPANY'S REVENUE REQUIREMENT IN THIS**
6 **PROCEEDING?**

7 **A5.** The Company's revenue requirement in this proceeding is calculated based upon actual
8 Greensville Project expenditures through March 31, 2015 and projected Greensville
9 Project expenditures from April 1, 2015, through March 31, 2017. The following
10 Extraordinarily Sensitive chart includes the Company's actual and projected Greensville
11 Project expenditures that are the basis for the Company's revenue requirement in this
12 proceeding.⁸

⁷ Staff notes that, for purposes of calculating the projected Rider GV revenue requirement in this proceeding, both Staff and the Company use the Company's 2014 Virginia jurisdictional allocation Factor 1 that includes Micron as a Virginia jurisdictional customer for all twelve months of 2014 as a placeholder. However, in future True-up Factors, the actual 2015, 2016, and 2017 Virginia jurisdictional allocation factors will be used for purposes of calculating the actual Rider GV revenue requirement to be recovered from customers. The calculation of the 2015, 2016, and 2017 allocation factors should reflect Micron as either a jurisdictional or non-jurisdictional customer, consistent with the Commission's ruling in Case No. PUE-2015-00027 ("2015 Biennial Review"). See *Application of Virginia Electric and Power Company For 2015 biennial review of rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUE-2015-00027.

⁸ For more detailed actual and projected Greensville Project expenditures, see the Company's response to Staff interrogatory 5-13, Extraordinarily Sensitive Attachment 2, included in the Appendix to my testimony.

1 [BEGIN EXTRAORDINARILY SENSITIVE]

[REDACTED]			
[REDACTED]		[REDACTED]	
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

2 [END EXTRAORDINARILY SENSITIVE]

3 Staff does not take issue with any of the Company's Greenville Project
4 expenditures at this time, but will continue to review the costs of the Greenville Project
5 as they are actually incurred by the Company.¹⁰ Staff has sampled and reviewed
6 supporting documentation for the actual Greenville Project expenditures incurred
7 through March 2015 and will continue to sample and review supporting documentation
8 for expenditures as they are incurred and included in future Rider GV proceedings.

9 **Q6. WHAT RIDER GV REVENUE REQUIREMENT DOES STAFF RECOMMEND**
10 **FOR THE 2016 RATE YEAR?**

11 **A6.** As reflected in my Schedule 1, Staff recommends a Rider GV total revenue requirement
12 of \$39.182 million for the 2016 Rate Year, which is \$2.461 million lower than the
13 Company's proposed revenue requirement. Staff's revenue requirement is comprised of a

⁹ The Company's actual Greenville Project expenditures through October 31, 2015 total [BEGIN
EXTRAORDINARILY SENSITIVE] [REDACTED] [END EXTRAORDINARILY SENSITIVE] See the
Company's supplemental response to Staff interrogatory 5-13, Extraordinarily Sensitive Supplemental Attachment 3,
included in the Appendix to my testimony.

¹⁰ Staff does take issue with the use of an ROE of 10.0% to calculate financing costs and certain AFUDC amounts
for recovery through Rider GV, as addressed further below and in the testimony of Staff witness Oliver.

1 Projected Factor revenue requirement of \$37.652 million and an AFUDC Factor revenue
 2 requirement of \$1.530 million.

3 **Q7. PLEASE EXPLAIN THE DIFFERENCE BETWEEN STAFF'S AND THE**
 4 **COMPANY'S PROPOSED RIDER GV REVENUE REQUIREMENTS FOR THE**
 5 **2016 RATE YEAR.**

6 **A7.** The difference of \$2.461 million between Staff's and the Company's revenue
 7 requirements for the 2016 Rate Year is primarily due to Staff's use of an ROE of 9.25%
 8 to calculate: (1) the Projected Factor revenue requirement for the 2016 Rate Year; and (2)
 9 the projected AFUDC revenue requirement for the period of December 1, 2015 through
 10 March 31, 2016.¹¹ As noted above, the Company proposes to utilize an ROE of 10.0%
 11 for these purposes. Staff's use of an ROE of 9.25%, effective December 1, 2015, is
 12 consistent with the recommendations included in Staff witness Oliver's testimony in the
 13 2015 Biennial Review. The following chart reconciles the differences between Staff's
 14 and the Company's Rider GV revenue requirements for the 2016 Rate Year:

**Reconciliation Between Staff and Company Revenue Requirements
 (In Millions)**

	Projected Factor	AFUDC Factor	Total Rider GV Revenue Requirement
Company Proposed Revenue Requirement	\$40.059	\$1.584	\$41.643
Return on Equity of 9.25% vs. 10.0%	(\$2.402)	(\$0.053)	(\$2.455)
Error Corrections and Rounding	(\$0.005)	(\$0.001)	(\$0.006)
Staff's Proposed Revenue Requirement	<u>\$37.652</u>	<u>\$1.530</u>	<u>\$39.182</u>

¹¹ Both Staff and the Company use an ROE of 10.0% for purposes of calculating the projected AFUDC revenue requirement prior to December 1, 2015.

1 Q8. DOES THIS CONCLUDE YOUR TESTIMONY?

2 A8. Yes, it does.

VIRGINIA ELECTRIC AND POWER COMPANY
 REVENUE REQUIREMENT FOR THE GREENSVILLE PROJECT
 FOR THE RATE YEAR APRIL 1, 2016 THROUGH MARCH 31, 2017

(IN THOUSANDS)

<u>Line No.</u>	<u>Description</u>	<u>Staff</u>	<u>Company</u>	<u>Difference</u>
1	Projected Cost Recovery Factor (Schedule 2, Line 3)	37,652	40,059	(2,407)
2	AFUDC Cost Recovery Factor (Schedule 4, Line 5)	1,530	1,584	(54)
3	Total Rider GV Revenue Requirement	39,182	41,643	(2,461)

VIRGINIA ELECTRIC AND POWER COMPANY
 REVENUE REQUIREMENT FOR THE GREENSVILLE PROJECT
 PROJECTED COST RECOVERY FACTOR
 FOR THE RATE YEAR APRIL 1, 2016 THROUGH MARCH 31, 2017

(IN THOUSANDS)

<u>Line No.</u>	<u>Description</u>	<u>Staff Amount</u>
1	Projected Thirteen-Month Average Rate Year Rate Base (Schedule 3, Line 7)	\$389,088
2	Times: Overall Cost of Capital, Grossed-up for Taxes (Company 12/31/14 Ratemaking Capital Structure; ROE of 9.25%)	<u>9.677%</u>
3	Revenue Requirement - Projected Cost Recovery Factor	<u><u>37,652</u></u>

VIRGINIA ELECTRIC AND POWER COMPANY
GREENSVILLE PROJECT RATE YEAR AVERAGE RATE BASE
MARCH 2016 THROUGH MARCH 2017
IN THOUSANDS

(1) Line No.	(2) Description	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16) Rate Year Average Mar 16 - Mar 17
1	Projected Construction Work in Progress ("CWIP")	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Mar 16 - Mar 17
2	Projected Accumulated Deferred Income Taxes ("ADIT")	\$125,326 (1,841)	\$169,957 (1,508)	\$220,433 (1,103)	\$241,869 (692)	\$317,252 (178)	\$392,736 (452)	\$485,399 (1,081)	\$573,007 (1,854)	\$632,694 (2,722)	\$695,775 (3,668)	\$732,631 (4,728)	\$780,166 (5,858)	\$830,454 (7,062)	\$476,746 \$1,700
3	Subtotal Projected CWIP and ADIT	\$123,484 0.806304	\$168,448 0.806304	\$219,330 0.806304	\$241,176 0.806304	\$317,074 0.806304	\$393,188 0.806304	\$486,480 0.806304	\$574,861 0.806304	\$635,416 0.806304	\$699,443 0.806304	\$737,359 0.806304	\$786,023 0.806304	\$837,516 0.806304	\$478,446 0.806304
4	Times: Demand Allocation Factor	99,566	135,820	176,847	194,461	255,658	317,029	392,251	463,513	512,338	563,964	594,535	633,774	675,292	385,773
5	VA Jurisdictional CWIP and ADIT	4,080	3,953	3,825	3,698	3,570	3,443	3,315	3,188	3,060	2,933	2,805	2,678	2,550	3,315
6	Plus: Unamortized Balance of Juris. AFUDC	\$103,646	\$139,773	\$180,672	\$198,159	\$259,228	\$320,472	\$395,566	\$466,700	\$515,398	\$566,896	\$597,340	\$636,451	\$677,843	\$389,088
7	VA Jurisdictional Rate Year Rate Base														

VIRGINIA ELECTRIC AND POWER COMPANY
 REVENUE REQUIREMENT FOR THE GREENSVILLE PROJECT
 AFUDC COST RECOVERY FACTOR
 FOR THE RATE YEAR APRIL 1, 2016 THROUGH MARCH 31, 2017
 (IN THOUSANDS)

<u>Line No.</u>	<u>Description</u>	<u>Staff Amount</u>
1	Projected AFUDC Revenue Requirement - April 2015 through March 2016 (Schedule 6, Line 13)	4,080
2	Divided by: AFUDC Cost Recovery Period - April 2016 through November 2017 (32 Months)	<u>32</u>
3	Monthly AFUDC Revenue Requirement Recovery Amount	128
4	Multiplied by: 12 Months for the Rate Year of April 1, 2016 through March 31, 2017	<u>12</u>
5	Rate Year AFUDC Cost Recovery Factor Revenue Requirement	<u><u>1,530</u></u>

**VIRGINIA ELECTRIC AND POWER COMPANY
GREENSVILLE PROJECT AFUDC AMORTIZATION
FOR APRIL 2016 - NOVEMBER 2018
IN THOUSANDS**

(1)	(2)	(3)	(4)
<u>Month</u>	<u>Beginning Balance</u>	<u>Amortization</u>	<u>End of Month Balance</u> (2)-(3)
Mar-16			4,080
Apr-16	4,080	128	3,953
May-16	3,953	128	3,825
Jun-16	3,825	128	3,698
Jul-16	3,698	128	3,570
Aug-16	3,570	128	3,443
Sep-16	3,443	128	3,315
Oct-16	3,315	128	3,188
Nov-16	3,188	128	3,060
Dec-16	3,060	128	2,933
Jan-17	2,933	128	2,805
Feb-17	2,805	128	2,678
Mar-17	2,678	128	2,550
Apr-17	2,550	128	2,423
May-17	2,423	128	2,295
Jun-17	2,295	128	2,168
Jul-17	2,168	128	2,040
Aug-17	2,040	128	1,913
Sep-17	1,913	128	1,785
Oct-17	1,785	128	1,658
Nov-17	1,658	128	1,530
Dec-17	1,530	128	1,403
Jan-18	1,403	128	1,275
Feb-18	1,275	128	1,148
Mar-18	1,148	128	1,020
Apr-18	1,020	128	893
May-18	893	128	765
Jun-18	765	128	638
Jul-18	638	128	510
Aug-18	510	128	383
Sep-18	383	128	255
Oct-18	255	128	128
Nov-18	128	128	0

**VIRGINIA ELECTRIC AND POWER COMPANY
CALCULATION OF PROJECTED AFUDC FOR THE GREENSVILLE PROJECT
FOR THE PERIOD APRIL 2015 THROUGH MARCH 2016
(IN THOUSANDS)**

(1) Line No.	(2) Date	(3) Monthly Expenditures	(4) Monthly AFUDC Rate at 11.4% ROE	(5) AFUDC Accrual prior mo. (6)^(4)	(6) Cumulative Expenditures prior mo. (6)^(3)	(7) Monthly Wtd. Cost of Debt	(8) Rev. Req. Debt prior mo. (6)^(7)	(9) Net Income (5)-(8)	(10) Gross-up Factor	(11) Rev. Req. Equity (9)/(10)	(12) Total Revenue Requirement (8)+(11)	(13) Demand Allocation Factor	(14) VA. Juris. Projected AFUDC (12)^(13)
1	Apr-15	17,764	0.58334% (a)	0	17,764	0.1743% (b)	0	0	0	0	0	0.806304	0
2	May-15	9,006	0.58334%	104	26,769	0.1743%	31	73	61.1%	119	150	0.806304	121
3	Jun-15	7,173	0.58334%	156	33,942	0.1743%	47	110	61.1%	179	226	0.806304	182
4	Jul-15	4,719	0.58334%	198	38,661	0.1743%	59	139	61.1%	227	286	0.806304	231
5	Aug-15	5,839	0.58334%	226	44,500	0.1743%	67	158	61.1%	259	326	0.806304	263
6	Sep-15	6,501	0.58334%	260	51,001	0.1743%	78	182	61.1%	298	376	0.806304	303
7	Oct-15	5,936	0.58334%	298	56,937	0.1743%	89	209	61.1%	342	430	0.806304	347
8	Nov-15	2,363	0.58334% (c)	328	59,300	0.1743%	99	233	61.1%	381	481	0.806304	387
9	Dec-15	26,381	0.55297% (c)	474	85,681	0.1743% (d)	103	225	61.1%	368	471	0.806304	380
10	Jan-16	11,793	0.55297%	474	97,474	0.1743%	149	324	61.1%	531	681	0.806304	549
11	Feb-16	10,684	0.55297%	539	108,158	0.1743%	170	369	61.1%	604	774	0.806304	624
12	Mar-16	17,168	0.55297%	598	125,326	0.1743%	188	410	61.1%	671	859	0.806304	693
13	Total	125,326											4,080

(a) Effective Semi-Annual AFUDC Compounding Rate:
 2014 Capital Structure, 10% ROE
 $= (1 + (\text{Annual AFUDC Rate}/2)^2)^{(1/12)} - 1$
 $= (1 + (.07103/2)^2)^{(1/12)} - 1$
 $= 0.58334\%$ Monthly AFUDC Accrual Rate

(b) Effective Semi-Annual Debt Compounding Rate:
 2014 Capital Structure
 $= (1 + (\text{Weighted Cost Debt Rate}/2)^2)^{(1/12)} - 1$
 $= (1 + (.00019 + .02080/2)^2)^{(1/12)} - 1$
 $= 0.1743\%$ Monthly Weighted Cost of Debt

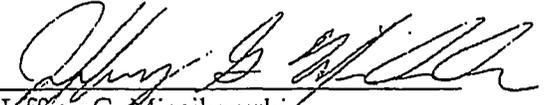
(c) Effective Semi-Annual AFUDC Compounding Rate:
 2014 Capital Structure, 9.25% ROE
 $= (1 + (\text{Annual AFUDC Rate}/2)^2)^{(1/12)} - 1$
 $= (1 + (.06728/2)^2)^{(1/12)} - 1$
 $= 0.55297\%$ Monthly AFUDC Accrual Rate

(d) Effective Semi-Annual Debt Compounding Rate:
 2011 Capital Structure
 $= (1 + (\text{Weighted Cost Debt Rate}/2)^2)^{(1/12)} - 1$
 $= (1 + (.00019 + .02080/2)^2)^{(1/12)} - 1$
 $= 0.1743\%$ Monthly Weighted Cost of Debt

APPENDIX

Virginia Electric and Power Company
Case No. PUE-2015-00075
Virginia State Corporation Commission Staff
Fifth Set

The following response to Question No. 13 of the Fifth Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on November 05, 2015, has been prepared under my supervision.


Jeffrey G. Miscikowski
Director, Generation Construction Financial
Management & Controls
Dominion Resources Services, Inc

Question No. 13

Please provide schedules, in the same format as Company witness McKinley's Extraordinarily Sensitive Schedule 10 and in Microsoft Excel format with formulas intact that include the following information:

- (a) Actual Greenville project costs, by month and budget item, for 2013, 2014, and 2015 to-date;
- (b) All projected Greenville project costs, by month and budget item, for the remainder of 2015, 2016, 2017, and 2018; and
- (c) Projected Greenville project costs that the Company currently has a contractual or legal obligation to pay, by month and budget item, for the remainder of 2015, 2016, 2017, and 2018.

Response:

- (a) See Extraordinarily Sensitive Attachment Staff Set 5-13(1) for the capital costs charged to the Greenville Project through March 31, 2015. All SAP journal entries booked to the project through March 31, 2015 have been provided along with a summary of these line items by cost category and by month. These costs served as the basis for the Rider Filing submitted on July 1, 2015.
- (b) See Extraordinarily Sensitive Attachment Staff Set 5-13(2) for actual and projected capital charges to the Greenville Project by cost category and by month through project completion. This forecast model served as the basis for the Rider Filing submitted July 1, 2015.

- (c) All Greenville Project costs that the Company had a contractual or legal obligation to pay as of July 1, 2015 were estimated and are included in Extraordinarily Sensitive Attachment Staff Set 5-13(2).

Extraordinarily Sensitive Attachments Staff Set 5-13(1) and (2) are Extraordinarily Sensitive in their entirety and are being provided to Staff pursuant to the protections set forth in 5 VAC 5-20-170, the July 31, 2015 Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information entered in Case No. PUE-2015-00075 and any other protective rulings that may be issued for confidential or extraordinarily sensitive information in this proceeding

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Virginia Electric and Power Company
Case No. PUE-2015-00075
Virginia State Corporation Commission Staff
Fifth Set

The following *supplemental* response (dated November 17, 2015) to Question No. 13(a) and (c) of the Fifth Set of Interrogatories and Requests for Production of Documents Propounded by the Virginia State Corporation Commission Staff received on November 05, 2015, has been prepared under my supervision.


Jeffrey G. Miscikowski
Director, Generation Construction Financial
Management & Controls
Dominion Resources Services, Inc

Question No. 13

Please provide schedules, in the same format as Company witness McKinley's Extraordinarily Sensitive Schedule 10 and in Microsoft Excel format with formulas intact that include the following information:

- (a) Actual Greensville project costs, by month and budget item, for 2013, 2014, and 2015 to-date;
- (b) All projected Greensville project costs, by month and budget item, for the remainder of 2015, 2016, 2017, and 2018; and
- (c) Projected Greensville project costs that the Company currently has a contractual or legal obligation to pay, by month and budget item, for the remainder of 2015, 2016, 2017, and 2018.

Supplemental Response:

- (a) See Extraordinarily Sensitive Supplemental Attachment Staff Set 5-13(3) for the capital costs charged to the Greensville Project through October, 2015. All SAP journal entries booked to the project through October 31, 2015 have been provided along with a summary of these line items by cost category and by month.
- (c) Additional Greensville Project costs that the Company has a contractual or legal obligation to pay as of October, 2015 are included in Extraordinarily Sensitive Attachment Staff Set 5-13(3) and Extraordinarily Sensitive Attachment Staff Set 5-13(4). See Exhibit D and Exhibit E (pages, 207-208 and 213-214 respectively) in each attachment (Transformer

Supply Agreements) for the contractual obligation amounts. The Company's ongoing obligations to pay under the TSA and EPC contracts described in the Company's responses to Question Nos. 14 and 15 of the Staff's Fifth Set represent and the Transformer Supply Agreements represent the significant majority of any such obligations.

Extraordinarily Sensitive Supplemental Attachment Staff Set 5-13(3) is Extraordinarily Sensitive in its entirety and is being provided to Staff pursuant to the protections set forth in 5 VAC 5-20-170, the July 31, 2015 Hearing Examiner's Protective Ruling and Additional Protective Treatment for Extraordinarily Sensitive Information entered in Case No. PUE-2015-00075 and any other protective rulings that may be issued for confidential or extraordinarily sensitive information in this proceeding

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PART D

Summary

My testimony includes the following findings and recommendations:

- 1) I support the Company's proposals to use its December 31, 2014 capital structures for purposes of calculating the Projected Cost Recovery Factor and the AFUDC Cost Recovery Factor.
- 2) Consistent with the Commission's decisions in prior Biennial Reviews and Staff's recommendation in the 2015 Biennial Review, I support the following base ROEs (which would continue to be eligible for the 100 basis point adder) for the specified time periods listed below:
 - 10.0% for calculating AFUDC through November 30, 2015; and
 - 9.25% for AFUDC beginning on December 1, 2015, for the Projected Cost Recovery Factor beginning April 1, 2016, and for purposes of truing-up cost recoveries in future Rider GV proceedings as deemed appropriate by the Commission.

PREFILED TESTIMONY
OF
LAWRENCE T. OLIVER

VIRGINIA ELECTRIC & POWER COMPANY
CASE NO. PUE-2015-00075

Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE VIRGINIA STATE CORPORATION COMMISSION ("COMMISSION").

A1. My name is Lawrence T. Oliver. I am a Deputy Director in the Commission's Division of Utility Accounting and Finance.

Q2. PLEASE SUMMARIZE THE COMPANY'S PROPOSAL IN THIS PROCEEDING?

A2. On July 1, 2015, Virginia Electric & Power Company d/b/a Dominion Virginia Power ("Company") filed an application for a certificate of public convenience and necessity ("CPCN") for the construction and operation of its Greensville County Power Station, a 1,588 megawatt (nominal) natural gas-fired combined-cycle generating facility ("Greensville" or "Facility") to be located in Greensville County, Virginia. In addition, the Company is seeking a CPCN to construct a 500 kilowatt transmission line, a new switching station and associated facilities related to Greensville. Lastly, the Company seeks approval of a rate adjustment clause ("RAC") pursuant to § 56-585.1 A 6 of the Code of Virginia, through which the Company will recover the costs associated with Greensville and the associated transmission facilities ("Rider GV").

The revenue requirement in this case is made up of the Projected Cost Recovery Factor and the Allowance For Funds Used During Construction ("AFUDC") Cost Recovery Factor for the rate year April 1, 2016 through March 31,

2017. Both the Projected Cost Recovery Factor and AFUDC Cost Recovery Factor revenue requirements, as proposed by the Company are calculated using the Company's December 31, 2014 ratemaking capital structure and a return on common equity ("ROE") of 10%. The 10% ROE was authorized by the Commission for the Company's RACs in the Company's 2013 biennial review proceeding ("2013 Biennial Review").¹

Q3. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A3. My testimony addresses the Company's proposals with respect to capital structure and ROE.

Q4. WHAT CAPITAL STRUCTURE DOES THE COMPANY PROPOSE TO USE IN THIS PROCEEDING TO DETERMINE THE REVENUE REQUIREMENT?

A4. For determining the revenue requirement in this case, the Company is proposing the use of its December 31, 2014 ratemaking capital structure. As shown on Schedule 1, page 7 of 7 of Company witness Rick L. Propst's testimony, this capital structure is composed of 5.864% short-term debt, 44.077% long-term debt, 49.989% common equity, and 0.070% job development tax credits. I have also included this capital structure as of December 31, 2014, in Schedule 1 of my testimony.

Q5. WHAT CAPITAL STRUCTURE DO YOU BELIEVE IS APPROPRIATE FOR USE IN SETTING RATES IN THIS CASE?

¹ *Application of Virginia Electric and Power Company, For a 2013 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Case No. PUE-2013-00020, 2013 S.C.C. Ann. Rept. 371, Final Order (Nov. 26, 2013).*

A5. I support the Company's proposals to use its December 31, 2014 ratemaking capital structure for calculating the Projected Cost Recovery Factor and AFUDC Cost Recovery Factor revenue requirements in this proceeding. In the Company's 2013 Biennial Review, the Commission found a capital structure with a 50% equity ratio to be reasonable for use in establishing rates, including the Company's various RACs. Since the December 31, 2014 capital structure contains a 50% equity ratio, Staff supports its use in the proceeding.

Q6. WHAT ROE DOES THE COMPANY PROPOSE TO USE FOR ESTABLISHING THE REVENUE REQUIREMENT IN THIS CASE?

A6. As noted earlier, for calculating the Projected Cost Recovery Factor and AFUDC Cost Recovery Factor revenue requirements, the Company proposes an ROE of 10%, which is the ROE the Commission found in the Company's 2013 Biennial Review to be reasonable, effective December 1, 2013, for the Company's RACs.

Q7. WHAT ROE DO YOU SUPPORT FOR ESTABLISHING THE REVENUE REQUIREMENT IN THIS CASE?

A7. In the Company's 2015 biennial review proceeding ("2015 Biennial Review"),² Staff supported a base ROE of 9.25% to be used for the Company's RACs, effective December 1, 2015. Therefore, consistent with Staff's recommendation in the 2015 Biennial Review, I support the use of an ROE of 9.25% to calculate the Projected Cost Recovery Factor revenue requirement in this case and for purposes of

² *Application of Virginia Electric and Power Company, For a 2015 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia, Case No. PUE-2015-00027, Doc. Con. Cen. No. 150330090, Application (Mar. 31, 2015).*

calculating AFUDC beginning December 1, 2015 and for true-up cost recoveries in future Rider GV proceedings, as deemed appropriate by the Commission.

In my opinion, a base ROE of 10.0% is no longer reasonable for the reasons stated in my Pre-Filed Direct Testimony in DVP's 2015 Biennial Review. In that case, I supported the use of the 9.25% base ROE for the Company's RACs effective on December 1, 2015.

By its Order On Additional Filings ("Order") entered in this docket on November 10, 2015, the Commission found that additional filings on the appropriate ROE for Rider GV should be submitted in this docket. To that end, Staff will provide a full analysis of its position on ROE at the appropriate time in compliance with the requirements set forth in the Order. However, until this issue is resolved, Staff continues to use the 9.25% ROE to determine the revenue requirement in this case.

Q8. DOES THIS CONCLUDE YOUR TESTIMONY?

A8. Yes.

Virginia Electric and Power Company
 Capital Structure and Cost of Capital
 December 31, 2014

<u>Component</u>	<u>Amount Outstanding (000)</u>	<u>Weight</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Short-Term Debt	\$1,173,610,462	5.864%	0.320 %	0.019 %
Long-Term Debt	\$8,821,388,640	44.077%	4.720 %	2.080 %
Preferred Stock	\$0	0.000%	0.000 %	0.000 %
Common Equity	\$10,004,582,049	49.989%	10.000 %	4.999 %
Investment Tax Credits	<u>\$14,016,021</u>	<u>0.070%</u>	7.526 %	<u>0.005 %</u>
Total Capitalization	\$20,013,597,172	100.00%		7.103 %

Cost of Investment Tax Credits

<u>Component</u>	<u>Amount Outstanding (000)</u>	<u>Weight</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	\$8,821,388,640	46.858%	4.720 %	2.212 %
Preferred Stock	\$0	0.000%	0.000 %	0.000 %
Common Equity	<u>\$10,004,582,049</u>	<u>53.142%</u>	10.000 %	<u>5.314 %</u>
Total	\$18,825,970,689	100.00%		7.526 %

Virginia Electric and Power Company
 Capital Structure and Cost of Capital
 December 31, 2014

<u>Component</u>	<u>Amount Outstanding (000)</u>	<u>Weight</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Short-Term Debt	\$1,173,610,462	5.864%	0.320 %	0.019 %
Long-Term Debt	\$8,821,388,640	44.077%	4.720 %	2.080 %
Preferred Stock	\$0	0.000%	0.000 %	0.000 %
Common Equity	\$10,004,582,049	49.989%	9.250 %	4.624 %
Investment Tax Credits	<u>\$14,016,021</u>	<u>0.070%</u>	7.127 %	<u>0.005</u> %
Total Capitalization	\$20,013,597,172	100.00%		6.728 %

Cost of Investment Tax Credits

<u>Component</u>	<u>Amount Outstanding (000)</u>	<u>Weight</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	\$8,821,388,640	46.858%	4.720 %	2.212 %
Preferred Stock	\$0	0.000%	0.000 %	0.000 %
Common Equity	<u>\$10,004,582,049</u>	<u>53.142%</u>	9.250 %	<u>4.916</u> %
Total	\$18,825,970,689	100.00%		7.127 %