

August 23, 2017

VIA ELECTRONIC FILING

Ms. M. Lynn Jarvis, Chief Clerk
North Carolina Utilities Commission
Dobbs Building
430 North Salisbury Street
Raleigh, North Carolina 27603

Re: *Application of Dominion Energy North Carolina for Approval of Cost Recovery for Renewable Energy and Energy Efficiency Portfolio Standard Compliance and Related Costs*
Docket No. E-22, Sub 544

Dear Ms. Jarvis:

Pursuant to North Carolina General Statutes (“N.C.G.S.”) § 62-133.8 and Rule R8-67(e) of the Rules and Regulations of the North Carolina Utilities Commission (“Commission”), Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina (the “Company”), hereby files its Application for approval to recover the Company’s Renewable Energy and Energy Efficiency Portfolio Standard Compliance and Related Costs (“Application”). In support of its Application, the Company is filing the Direct Testimony and Exhibits of George E. Hitch, Alan J. Moore, and James D. Merritt. In accordance with Commission Rule R8-67(c), the Company is also filing its 2017 Renewable Energy and Energy Efficiency Portfolio Standard Compliance Report for calendar year 2016, as Exhibit GEH-1 to the Direct Testimony of Company Witness Hitch.

Portions of the Application contain confidential information related to REC contract pricing and other vendor contract information, including Company Exhibit GEH-1, Company Exhibit GEH-2, Schedules 1 and 2, and Company Exhibit AJM-1, Schedules 1 and 2. Information designated by the Company as confidential qualify as “trade secrets” under N.C.G.S. § 66-152(3). *See Order Granting in Part and Denying in Part Motion for Disclosure*, Docket No. E-100, Sub 137 (June 3, 2013) (holding “specific information concerning REPS contract prices, REC quantities and prices, and other terms would impair [the Company’s] ability to negotiate and transact business on favorable terms” and therefore qualifies as trade secret information). Pursuant to N.C.G.S. § 132-1.2, the Company has redacted this confidential information from this public version of the Company’s Application and is contemporaneously filing these confidential pages

Ms. M. Lynn Jarvis
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under seal. The Company will make this information available to other interested parties pursuant to an appropriate nondisclosure agreement.

Please do not hesitate to contact me if you have any questions. Thank you for your assistance in this matter.

Very truly yours,

s/ E. Brett Breitschwerdt

Enclosures

cc: Robert S. Gillam
Tim R. Dodge



**Dominion
Energy[®]**

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Aug 23 2017

**Application, Direct Testimony
and Exhibits of Virginia Electric
and Power Company, d/b/a
Dominion Energy North
Carolina**

Before the North Carolina Utilities
Commission

In the Matter of
Application by Virginia Electric and
Power Company, d/b/a Dominion
Energy North Carolina, for Approval of
Renewable Energy and Energy Efficiency
Portfolio Standard Cost Recovery Rider
Pursuant to N.C.G.S. § 62-133.8 and
NCUC Rule R8-67

Docket No. E-22, Sub 544

Filed: August 23, 2017

PUBLIC VERSION

**Dominion Energy North Carolina
Application for Approval to Recovery Renewable Energy
and Energy Efficiency Portfolio Standard Compliance Costs**

DOCKET NO. E-22, SUB 544

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Company Exhibit GEH-1 - 2017 REPS Compliance Report for 2016 Compliance Year
(confidential information redacted)

Company Exhibit GEH-1 – Year 3 Microgrid Demonstration Study Report (Appendix C)

Company Exhibit GEH-2, Schedule 1 - Incremental Costs for July 1, 2016 - June 30,
2017 EMF True Up Period (confidential information redacted)

Company Exhibit GEH-2, Schedule 2 - Incremental Costs for Rate Period January 1,
2018 - December 31, 2018 (confidential information redacted)

Direct Testimony of Alan J. Moore

Company Exhibit AJM-1, Schedule 1 - Revenue Requirement (Rider RP) For the Rate
Period January 1, 2018 - December 31, 2018 (confidential information redacted)

Company Exhibit AJM-1, Schedule 2 - Experience Modification Factor (Rider RPE)
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Company Exhibit JDM -1, Schedule 2 - Allocation of Incremental Costs to Classes for
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Company Exhibit JDM -1, Schedule 5 - Calculation of Rider RP

Company Exhibit JDM -1, Schedule 6 - Total Monthly per Customer REPS Charges

Company Exhibit JDM -1, Schedule 7 - Rider RP and Rider RPE

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-22, SUB 544

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	
Application by Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina, for Approval of Renewable Energy and Energy Efficiency Portfolio Standard Cost Recovery Rider Pursuant to G.S. 62-133.8 and Commission Rule R8-67) APPLICATION FOR APPROVAL OF REPS COST RECOVERY RIDER AND 2017 REPS COMPLIANCE REPORT

Pursuant to North Carolina General Statutes (“N.C.G.S”) § 62-133.8 and Rule R8-67 of the Rules and Regulations of the North Carolina Utilities Commission (“NCUC” or the “Commission”), Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina (“Dominion Energy North Carolina” or the “Company”), by counsel, hereby applies to the Commission for approval of its annual Renewable Energy and Energy Efficiency (“REPS”) cost recovery riders, Riders RP and RPE, as further described herein (“Application”). Through this Application, Dominion Energy North Carolina also requests Commission approval of the Company’s 2017 REPS Compliance Report for calendar year 2016 REPS compliance, being filed herewith as Company Exhibit GEH-1 attached to the direct testimony of Company Witness George E. Hitch.

In support thereof, the Company respectfully asserts as follows:

INTRODUCTION TO APPLICATION FOR REPS RIDER APPROVAL

1. The Company is a public utility operating in the State of North Carolina as Dominion Energy North Carolina and is engaged in the business of generating, transmitting, distributing, and selling electric power and energy to the public for compensation. As such, the Company’s operations in the State are subject to the

jurisdiction of the Commission. The Company is also a public utility under the Federal Power Act, and certain of its operations are subject to the jurisdiction of the Federal Energy Regulatory Commission. The Company is a wholly-owned subsidiary of Dominion Energy, Inc. Dominion Energy North Carolina serves approximately 120,000 customers in North Carolina, with a service territory of about 2,600 square miles in northeastern North Carolina, including Roanoke Rapids, Albemarle, Ahoskie, Elizabeth City, and the Outer Banks. The Company serves major industrial facilities, as well as commercial, governmental, and residential customers. The post office address of Dominion Energy North Carolina is P.O. Box 26666, Richmond, Virginia 23261.

2. The attorneys for the Company are:

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Copies of all pleadings, testimony, orders, and correspondence in this proceeding should be served upon the attorneys listed above.

3. Session Law 2007-397 (“Senate Bill 3”) established annual renewable energy compliance obligations starting in 2010 for all electric power suppliers providing retail service in North Carolina. These obligations are codified in N.C.G.S. § 62-133.8(b), (c),¹ (d), (e), and (f). N.C.G.S. § 62-133.8(h)(1) also establishes that electric power suppliers, including Dominion Energy North Carolina, shall be allowed to recover their reasonable and prudent “incremental costs” incurred to comply with their REPS obligations and any similar future federal mandate, as well as to fund research that encourages the development of renewable energy, energy efficiency, and improved air quality, up to \$1,000,000 per year. Subsection (h)(5) of this Statute directed the Commission to establish a procedure for the annual assessment of the per-account charges to allow for timely recovery of all reasonable and prudent costs of compliance with the REPS requirements and funding of eligible research. N.C.G.S. § 62-133.8(h)(5).

4. Senate Bill 3 also established a cost containment framework for REPS cost recovery, providing that electric power suppliers shall be allowed to expend and recover all such reasonable and prudent incremental REPS compliance costs and the funding of qualifying research through an annual rider up to the per-account annual charges specified in Subsection (h)(4) of the Statute. Specifically, this subsection, as amended by Session Law 2017-192 enacted on July 27, 2017, provides that electric public utilities’ incremental REPS costs shall not exceed the following per-account charges:

¹ The compliance obligation set forth in N.C.G.S. § 62-133.8(c) does not apply to Dominion Energy North Carolina. However, the Company has committed to provide REPS compliance for the Town of Windsor, a full requirements customer of the Company, which is subject to the requirements of this subsection.

<u>Customer Class</u>	<u>2008-2011</u>	<u>2012-2014</u>	<u>2015 and thereafter</u>
Residential per account	\$10.00	\$12.00	\$27.00
Commercial per account	\$50.00	\$150.00	\$150.00
Industrial per account	\$500.00	\$1,000.00	\$1,000.00

5. Commission Rule R8-67 was adopted in February 2008² to implement the legislature's mandate that the Company and the other electric power suppliers achieve compliance with the annual REPS requirements and to provide for timely recovery of the incremental costs incurred by the respective utilities to achieve such compliance up to the per-account cost caps. The Commission also established annual reporting requirements for the electric power suppliers to annually verify REPS compliance for the prior annual compliance period, and to inform the Commission on their future REPS compliance planning. *See* Commission Rule R8-67(c) and (b), respectively.

6. Rule R8-67(c) and (e) provide for the Commission to conduct an annual proceeding for each electric public utility to review the utility's costs to comply with N.C.G.S. § 62-133.8 and to establish the electric public utility's annual rider to recover such costs in a timely manner. The Commission shall also establish an experience modification factor ("EMF") to collect the difference between the electric public utility's actual reasonable and prudent incremental REPS costs incurred and the actual revenues received during the annual test period. Rule R8-67(c) further provides that the Commission shall consider each electric public utility's REPS compliance report at the hearing provided for in Rule R8-67(e) and shall determine whether the electric public utility has complied with N.C.G.S. § 62-133.8(b), (d), (e) and (f).

² *In the Matter of Rulemaking Proceeding to Implement Session Law 2007-397*, Order Adopting Final Rules Docket No. E-100, Sub 113 (Feb. 28, 2013).

7. According to Rules R8-67(c) and (e), the electric public utility is to file its application for recovery of its REPS costs, as well as its REPS compliance report, at the same time it files the information required by Rule R8-55, and the Commission is to conduct an annual rider hearing as soon as practicable after the hearing required by Rule R8-55. Rule R8-67 also provides that the electric public utility shall annually use the same test period as used in its annual R8-55 fuel proceeding (unless otherwise ordered by the Commission), and shall also recover its REPS costs through a fixed cost recovery period. Rule R8-67(e)(3)-(4). For Dominion Energy North Carolina, the annual Rule R8-55 historical EMF test period is the preceding July 1 to June 30 period, and the rate period is the future calendar year, January 1 to December 31 annually (the "Rate Period").

REQUEST FOR COST RECOVERY

8. Pursuant to the provisions of N.C.G.S. § 62-133.8 and Rule R8-67(e), the Company requests approval of its updated REPS Rider, Rider RP, to recover its reasonable and prudent incremental REPS costs projected to be incurred during the calendar year 2018 Rate Period, \$0.716 million, as well as its updated EMF Rider, Rider RPE, to recover all of Dominion Energy North Carolina's reasonable and prudently-incurred REPS compliance costs during the EMF test period, \$0.469 million. Combined, Rider RP and the EMF rider, Rider RPE, are intended to allow the Company to recover \$1.186 million of incremental REPS costs during the 2018 Rate Period.

9. Pursuant to N.C.G.S. § 62-133.8 and Rule R8-67(e), the Company requests Commission approval of annual Rider RP billing adjustments of \$0.30 per month for Residential Customers; \$1.64 per month for Commercial Customers; and

\$10.95 per month for Industrial Customers. The Company also requests Commission approval of annual Rider RPE billing adjustments of \$0.19 per month for the Residential Customers, \$1.07 per month for Commercial Customers, and \$7.17 per month for Industrial Customers. Rider RP and Rider RPE are proposed to become effective January 1, 2018.

10. Pursuant to Rule R8-69(e)(8) and Rule R8-27, the Company requests approval to defer prudently-incurred costs to FERC Account 182.3, "Other Regulatory Assets," until recovered. This includes the deferral of the difference between actual reasonable and prudently-incurred incremental costs and the related revenues realized under rates in effect.

11. In support of the requested change in rates, the Company has attached hereto, as required by Rule R8-67(c)(2) and (e), the direct testimony and exhibits of George E. Hitch, Alan J. Moore, and James D. Merritt.

WHEREFORE, Dominion Energy North Carolina respectfully requests that the Commission approve the changes to its rates as set forth in Paragraph nine (9) above, finding them just and reasonable, and approve the Company's 2017 REPS Compliance Report.

Respectfully submitted, this the 23rd day of August, 2017.

DOMINION ENERGY NORTH CAROLINA

By: s/ E. Brett Breitschwerdt
Counsel

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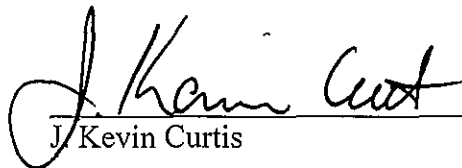
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*Counsel for Virginia Electric and Power
Company, d/b/a Dominion Energy North
Carolina*

VERIFICATION

E-22, Sub 544

I, J. Kevin Curtis, Vice President – Technical Solutions, for Virginia Electric and Power Company, do solemnly swear that the facts stated in the foregoing *Application for Approval of Renewable Energy and Energy Efficiency Portfolio Standard Cost Recovery Rider Pursuant to G.S. 62-133.8 and Commission Rule R8-67* insofar as they relate to Virginia Electric and Power Company d/b/a Dominion Energy North Carolina, are true and correct to the best of my knowledge and belief.


J. Kevin Curtis

COMMONWEALTH OF VIRGINIA)
)
City of Richmond) to wit:

The foregoing instrument was sworn to and acknowledged before me this 22nd day of August, 2017.


Notary Public

My registration number is 7296406 and my commission expires:

07/31/2021

Amy Leigh Bowers
NOTARY PUBLIC
Commonwealth of Virginia
Reg. #7296406
My Commission Expires 7/31/2021

**DIRECT TESTIMONY
OF
GEORGE E. HITCH
ON BEHALF OF
DOMINION ENERGY NORTH CAROLINA
BEFORE THE
NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-22, SUB 544**

1 **Q. Please state your name, business address and position with Virginia**
2 **Electric and Power Company (“Dominion Energy North Carolina” or the**
3 **“Company”).**

4 **A. My name is George E. Hitch, and my business address is 5000 Dominion**
5 **Boulevard, Glen Allen, Virginia. I am a Senior Market Originator for**
6 **Dominion Energy North Carolina and Dominion Energy Virginia.**

7 **Q. Please describe your current responsibilities for the Company.**

8 **A. I am part of the team responsible for developing Dominion Energy North**
9 **Carolina’s short-term compliance strategy for the North Carolina Renewable**
10 **Energy and Energy Efficiency Portfolio Standard (“REPS”), as well as the**
11 **Virginia Renewable Energy Portfolio Standards (“RPS”). My responsibilities**
12 **include developing the Company’s Rule R8-67(b) REPS Compliance Plan and**
13 **Rule R8-67(c) REPS Compliance Report. I am also responsible for managing**
14 **the Company’s capacity, energy, and renewable energy certificate (“REC”)**
15 **portfolios.**

1 **Q. What is the purpose of your testimony?**

2 A. My testimony supports the Company's request to recover all reasonable and
3 prudent incremental REPS compliance costs. More specifically, the purpose
4 of my testimony is to describe the Company's REPS compliance activities
5 under review in this proceeding and the costs the Company has incurred, or
6 will incur, in support of its compliance efforts with North Carolina's REPS
7 under N.C.G.S. § 62-133.8. My testimony supports the Company's
8 incremental REPS compliance costs incurred for calendar year 2016 and
9 future years' compliance, and also forecasts the incremental REPS costs the
10 Company expects to incur during the calendar year 2018 rate period ("Rate
11 Period").

12 **Q. Are you sponsoring any exhibits or schedules in support of your**
13 **testimony?**

14 A. Yes. Company Exhibit GEH-1 is the Company's 2017 REPS Compliance
15 Report for calendar year 2016 REPS compliance. The Company's third annual
16 update on the microgrid research demonstration project located at the Kitty
17 Hawk District Office ("NC Microgrid Project") is also being filed as part of
18 Exhibit GEH-1. Company Exhibit GEH-2 consists of two schedules,
19 Schedule 1 and 2. (Exhibits GEH 1-2 provided in public and confidential
20 versions filed under seal). Both the Company's 2017 REPS Compliance
21 Report and my Schedules 1 and 2 were prepared by me and are accurate and
22 complete to the best of my knowledge and belief. Schedule 1 provides actual
23 REPS compliance costs, by source, that the Company has incurred during the

1 July 1, 2016, to June 30, 2017, experience modification factor true up period
2 (“EMF True Up Period”), as further described in the Company’s Application
3 and later in my testimony. My Schedule 2 provides REPS compliance costs,
4 by source, that the Company projects to incur during the Rate Period in
5 support of compliance with the REPS.

6 **Q. Can you please describe the Company’s REPS obligations under**
7 **N.C.G.S. § 62-133.8?**

8 A. Pursuant to N.C.G.S. § 62-133.8,¹ as an electric power supplier, the
9 Company² is required to comply with the overall REPS requirement (“Total
10 Obligation”) by submitting for retirement a total volume of RECs in each
11 calendar year that is equivalent to the following percentages of its North
12 Carolina retail sales in the prior year:

- 13 • In 2012, 2013, and 2014, three percent (3%);
- 14 • In 2015, 2016 and 2017, six percent (6%);
- 15 • In 2018, 2019, and 2020, ten percent (10%); and
- 16 • In 2021 and thereafter, twelve and one-half percent (12.5%).

17 Furthermore, each electric power supplier must comply with the requirements
18 of N.C.G.S. § 62-133.8(d), (e), and (f) (individually referred to as the “Solar
19 Set-Aside,” “Swine Waste Set-Aside,” and “Poultry Waste Set-Aside,”

¹ In its *Order Clarifying Electric Power Suppliers’ Annual REPS Requirements*, issued on November 26, 2008, in Docket No. E-100, Sub 113, the Commission clarified that the calculation of these requirements for each year shall be based upon the electric utility’s North Carolina retail sales for the prior year.

² As discussed later in my testimony, the REPS requirements described in this testimony and accompanying Schedules reflect the REPS requirements of the Company’s retail customers only.

1 respectively). These provisions of the overall REPS require that within the
2 Total Obligation described above, each electric power supplier is to ensure
3 that specific quantities of qualifying solar RECs, swine waste RECs, and
4 poultry waste RECs are also submitted for retirement. The Company
5 generally refers to its Total Obligation net of the three set-asides as its
6 “General Requirement.”

7 To comply with the Solar Set-Aside, each electric power supplier is required
8 to submit for retirement a volume of qualifying solar RECs equivalent to the
9 following percentages of its North Carolina retail sales in the prior year:

- 10 • In 2010 and 2011, two-hundredths of one percent (0.02%);
- 11 • In 2012, 2013, and 2014, seven-hundredths of one percent (0.07%);
- 12 • In 2015, 2016, and 2017, fourteen-hundredths of one percent (0.14%);
- 13 and
- 14 • In 2018 and thereafter, two-tenths of one percent (0.2%).

15 To comply with the Swine Waste Set-Aside, each electric power supplier is
16 also required to submit for retirement a volume of qualifying swine waste
17 RECs equivalent to its pro-rata share of total retail electric power sold in
18 North Carolina multiplied by the statewide, aggregate swine set-aside

1 requirement.³ The Company's Swine Waste Set-Aside requirements, as
2 recently modified by the Commission,⁴ are as follows:

- 3 • In 2017 and 2018, its pro-rata share of seven-hundredths of one
4 percent (0.07%) of the total retail electric power sold in North Carolina
5 in the year prior;
- 6 • In 2019, 2020, and 2021, its pro-rata share of fourteen-hundredths of
7 one percent (0.14%) of total retail electric power sold in North
8 Carolina in the year prior; and
- 9 • In 2022 and thereafter, its pro-rata share of two-tenths of one percent
10 (0.2%) of total retail electric power sold in North Carolina in the year
11 prior.

12 Finally, each electric power supplier is also to submit for retirement a volume
13 of qualifying poultry waste-to-energy RECs equivalent to its pro-rata share of
14 the aggregate poultry set-aside obligation. The Company's Poultry Waste
15 Set-Aside requirements, as modified by the Commission, are as follows:

³ In its *Order on Pro Rata Allocation of Aggregate Swine and Poultry Waste Set-Aside Requirements and Motion for Clarification* in Docket No. E-100, Sub 113 (March 31, 2010), the Commission approved the electric power suppliers' proposed pro-rata allocation of the statewide aggregate swine and poultry waste set-aside requirements, such that the aggregate requirements will be allocated among the electric power suppliers based on the ratio of each electric power supplier's prior year retail sales to the total statewide retail sales.

⁴ On October 17, 2016, the Commission issued an Order delaying the initial Swine Waste Set-Aside requirement until 2017 and delaying the scheduled increase in the poultry requirement by one year. *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief* at 6, Docket No. E-100, Sub 113 (October 17, 2016) ("2016 Delay Order").

- 1 • In 2016, its pro-rata share of 170,000 MWh.
- 2 • In 2017, its pro-rata share of 700,000 MWh.
- 3 • In 2018 and each year thereafter, its pro-rata share of 900,000 MWh.⁵

4 The Company's pro-rata share will be determined by averaging three years of
5 historic retail sales.⁶ The resulting allocation will be held constant for three
6 years. For example, starting in 2016, and continuing in 2017 and 2018, the
7 Company's pro-rata share will be the average of 2013, 2014 and 2015 retail
8 sales. The North Carolina Renewable Energy Tracking System ("NC-RETS")
9 administrator calculates each electric power supplier's proportionate share of
10 the Poultry Waste Set-Aside Obligation using this methodology.⁷

11 **Q. Please describe Dominion Energy North Carolina's REPS compliance for**
12 **the prior compliance years.**

13 A. The Company has fully complied with its prior years' REPS compliance
14 obligations, including the 2015 Poultry Waste Set-Aside compliance
15 obligation, the 2010-2015 Solar Set-Aside compliance obligation and the
16 2013-2015 Total Obligations, for the 2010 through 2015 REPS compliance
17 periods. The Commission approved the Company's 2011, 2012, 2013, 2014,

⁵ In its *Order Establishing Method of Allocating the Aggregate Poultry Waste Resource Set-Aside Requirement*, issued on April 18, 2016, in Docket No. E-100, Sub 113, the Commission ordered that, starting with calendar year 2016, the calculation of the requirements for each compliance year shall be based upon the electric utility's North Carolina retail sales for the prior 3 years and held constant for 3 years.

⁶ 2016 Delay Order at 6.

⁷ On August 6, 2016, the Commission approved the NC-RETS administrator's proposed Poultry Waste Set-Aside allocation in the *Order Establishing 2016, 2017, and 2018 Poultry Waste Set-Aside Requirement Allocation* issued in Docket No. E-100, Sub 113.

1 2015, and 2016 REPS Compliance Reports in Orders issued on
2 December 15, 2011,⁸ December 11, 2012,⁹ December 18, 2013,¹⁰ December
3 18, 2014,¹¹ December 16, 2015,¹² and December 20, 2016,¹³ respectively.

4 **Q. Please discuss the Company's REPS obligations during the 2016**
5 **Compliance Period under review and during the proposed 2018 Rate**
6 **Period.**

7 A. For purposes of the 2016 compliance year, the Company will submit for
8 retirement a total of 247,549 RECs and 15,105 Energy Efficiency Credits
9 ("EECs") to meet its 2016 Total Obligation. Within this total, the Company
10 will submit for retirement 6,129 RECs to meet the Solar Set-Aside
11 requirement. The Company will also submit for retirement 5,628 RECs to
12 meet the Poultry Waste Set-Aside requirement. As noted above, the initial
13 year for compliance with the Swine-Waste Set Aside has been delayed to
14 2017.

15 Calendar year 2018 represents the Company's Rate Period. The Company
16 estimates that it will be required to submit for retirement a total of 414,769
17 RECs to meet its 2018 Total Obligation. Within this total, the Company

⁸ Order Approving 2010 REPS Compliance Report, Docket No. E-22, Sub 475 (Dec. 15, 2011).

⁹ Order Approving 2011 REPS Compliance, Docket No. E-22, Sub 487 (Dec. 11, 2012).

¹⁰ Order Approving REPS and REPS EMF Riders and 2012 REPS Compliance, Docket No. E-22, Sub 503 (Dec. 18, 2013) ("2013 REPS Order").

¹¹ Order Approving REPS and REPS EMF Riders and 2013 REPS Compliance, Docket No. E-22, Sub 514 (Dec. 11, 2014) ("2014 REPS Order").

¹² In 2017, the Company estimates that it will be required to submit for retirement 257,644 RECs to meet its Total Obligation. Within this total, the Company is also required to retire the following: 6,012 solar RECs, 3,006 swine waste RECs, and 23,174 poultry waste RECs.

¹³ The Company is reviewing how to most appropriately track and allocate such costs and may seek to recover such incremental internal REPS labor costs in the future.

1 estimates that it will be required to retire approximately 8,296 solar RECs,
2 2,904 swine waste RECs, and 29,796 poultry waste RECs.

3 **Q. Has the Company complied with its Solar Set-Aside obligation for 2016?**

4 A. Yes. The Company met the 2016 Solar Set-Aside requirement of 6,129 solar
5 RECs. Pursuant to the NC-RETS Operating Procedures, the Company has
6 submitted for retirement 6,129 solar RECs. Specifically, the RECs to be used
7 for 2016 compliance have been transferred from the NC-RETS Dominion
8 Energy North Carolina Electric Power Supplier account to the Dominion
9 Energy North Carolina Compliance Sub-Account. As in past years, upon
10 completion of this regulatory proceeding and approval of the Company's
11 Compliance Report, the Commission will finalize retirement of the RECs.

12 **Q. Has the Company complied with its Poultry Waste Set-Aside obligation**
13 **for 2016?**

14 A. Yes. The Company has met the 2016 Poultry Waste Set-Aside requirement of
15 5,628 poultry waste RECs. Pursuant to the NC-RETS Operating Procedures,
16 the Company has submitted for retirement 5,628 poultry waste RECs. Again,
17 the RECs to be used for 2016 compliance have been transferred from the NC-
18 RETS Dominion Energy North Carolina Electric Power Supplier account to
19 the Dominion Energy North Carolina Compliance Sub-Account.

1 **Q. Has the Company complied with its General Requirement obligation for**
2 **2016?**

3 A. Yes. The Company has met the 2016 General Requirement of 250,897 RECs.
4 Pursuant to NC-RETS Operating Procedures, the Company has submitted for
5 retirement 235,792 RECs and 15,105 EECs in a similar manner to that
6 described above. Upon completion of this regulatory proceeding, the
7 Commission will finalize retirement of these RECs for 2016 compliance.

8 **Q. Is Dominion Energy North Carolina positioned to comply with its REPS**
9 **requirements in 2017?**

10 A. The Company is well-positioned to comply with its Solar Set-Aside, Poultry
11 Waste Set-Aside, Swine Waste Set-Aside, and General Requirements in
12 2017.¹⁴ However, the Company projects that it may not have sufficient in-
13 state Poultry Waste RECs to meet the Town of Windsor's in-state Poultry
14 Waste Set-Aside compliance obligation in 2017. The Company has executed
15 three (3) contracts that could each, individually, provide sufficient RECs in
16 2017. However, each supplier is significantly behind schedule due to delays
17 in securing sites and vendor equipment deliveries. The Company anticipates
18 the Electric Power Suppliers will file a joint motion to request a delay in the
19 2017 Swine Waste Set Aside and a modification of the 2017 Poultry Waste
20 Set Aside.

¹⁴ In 2017, the Company estimates that it will be required to submit for retirement 257,644 RECs to meet its Total Obligation. Within this total, the Company is also required to retire the following: 6,012 solar RECs, 3,006 swine waste RECs, and 23,174 poultry waste RECs.

1 **Q. Please summarize the actions Dominion Energy North Carolina has**
2 **undertaken to satisfy its current and future REPS requirements.**

3 A. The Company continues to produce and procure RECs to satisfy its REPS
4 obligations. Specifically, the Company has taken the following actions:
5 (1) introduced additional energy efficiency programs that will generate
6 savings that can be counted towards the Company's REPS obligation;
7 (2) executed and continued negotiations for additional REC purchase
8 agreements with renewable facilities; (3) solicited renewable energy proposals
9 of various types, namely for swine waste-to-energy and poultry waste-to-
10 energy resources; (4) participated in joint procurement activities with other
11 electric power suppliers, including the Poultry Waste REC Buyers Group and
12 the Swine Waste REC Buyers Group; and (5) participated in the bi-annual
13 stakeholder meetings organized by the Public Staff to facilitate discussion
14 regarding Swine Waste and Poultry Waste Set-Aside compliance. The
15 Company intends to contract for Poultry and Swine REC supply in excess of
16 the initial Rate Period Swine Waste and Poultry Waste Set-Aside compliance
17 requirements to compensate for the experienced high failure rate of animal
18 waste to energy projects. The Company will evaluate the banking or sale of
19 Swine or Poultry RECs in excess of its Rate Period compliance obligations to
20 manage any significant inventories that may develop.

1 **Q. More specifically, what actions has Dominion Energy North Carolina**
2 **taken to procure or develop swine waste-to-energy resources to meet its**
3 **Swine Waste Set-Aside requirements?**

4 A. In an ongoing effort to comply with the Swine Waste Set-Aside, the Company
5 has attempted to obtain swine waste RECs from facilities in Virginia, North
6 Carolina, and across the continental United States. The Company has
7 contacted digester owners and operators, hog producers, and REC
8 marketers/brokers to determine if any swine waste RECs are available for
9 purchase by the Company.

10 Initially, the Swine Waste REC Buyers Group executed seven (7) long-term
11 contracts with a number of swine waste-to-energy developers. Four (4) of
12 these swine waste REC contracts were terminated in May and June 2012 due
13 to consistent failure by the developers to meet project milestones and to
14 demonstrate progress toward commercial operation. Because of these
15 terminations, the Company continues to conduct new searches for other swine
16 waste REC suppliers in North Carolina and across the nation. Dominion
17 Energy North Carolina has spent considerable time and effort in its attempts to
18 locate operational swine waste digesters in the continental United States.

19 In January 2016, the Company executed a contract with Orion Energy
20 Marketing & Consulting, Inc. (“Orion”) for sufficient swine waste RECs to
21 meet compliance during the period 2016 to 2020. Orion made a partial
22 delivery of 2016 vintage RECs and two complete quarterly deliveries in 2017.
23 Orion is currently meeting all contractual obligations. The Company

1 continues to work with the Swine Waste REC Buyers Group to secure
2 additional swine RECs that could be banked for future use or used for
3 compliance.

4 **Q. Also, what actions has Dominion Energy North Carolina undertaken to**
5 **procure or develop poultry waste-to-energy resources in order to satisfy**
6 **its Poultry Waste Set-Aside requirements?**

7 A. The Company has worked actively and diligently to comply with its Poultry
8 Set-Aside requirements for the Company and the Town of Windsor. The
9 Company, after searching the REC market for available in-state RECs,
10 concluded that joining the Poultry Waste REC Buyers Group was the most
11 prudent way to meet the Town of Windsor's Poultry Waste Set-Aside
12 requirement.

13 The Poultry Waste REC Buyers Group executed three (3) long-term poultry
14 waste contracts and the Company, as a part of this group, executed three (3)
15 long-term contracts for the Town of Windsor's in-state requirements. One
16 (1) of these contracts was terminated by mutual agreement with the supplier
17 in September 2013. The remaining long-term contracts will not produce any
18 significant poultry waste RECs until late 2017 or early 2018. At this time,
19 the Company believes it can meet the Town of Windsor's in-state Poultry
20 Waste Set-Aside requirement for 2017 only if the Commission delays the
21 scheduled increase from the initial 170,000 MWhs to 700,000 MWhs by one
22 year, as it did for compliance years 2015 and 2016. The Company also

1 believes it is likely to have sufficient RECs for the Town of Windsor's in-state
2 Poultry Waste Set-Aside requirement for 2018 and 2019.

3 The Company has sufficient poultry waste RECs in NC-RETS to comply
4 with both Dominion Energy North Carolina's and the Town of Windsor's
5 out-of-state Poultry Waste Set-Aside requirements for years 2016-2020.

6 **Q. Please also provide an update on the Company's efforts to comply with its**
7 **General Requirement in 2017.**

8 A. The Company is well-positioned to comply with its General Requirement, and
9 Total Obligation, in 2017. The Company's efforts to comply with the General
10 Requirement and Total Obligation include its continued implementation of
11 energy efficiency programs and the purchase of RECs from renewable energy
12 facilities. As allowed by Senate Bill 3, Dominion Energy North Carolina
13 continues to find that purchasing out-of-state RECs to achieve all aspects of
14 its Total Obligation is the most cost-effective REPS compliance option for the
15 Company and its customers.

16 The Company has sufficient RECs in NC-RETS to comply with both
17 Dominion Energy North Carolina's and the Town of Windsor's General
18 Requirements for years 2017 and 2018.

19 **Q. Please also provide an update on the Company's efforts to comply with its**
20 **Solar Set-Aside requirement in 2017.**

21 A. The Company is well-positioned to comply with its Solar Set-Aside
22 requirement in 2017. The Company has also purchased enough RECs to

1 comply with in-state Solar Set-Aside requirements for the Town of Windsor
2 in 2017-2020.

3 **Q. Is the Company continuing to execute additional REC purchase**
4 **agreements?**

5 A. Yes. The Company continues to execute additional REC purchase
6 agreements, as needed, to meet its future REPS General Obligation and set-
7 aside requirements. The Company addresses its REPS compliance strategy in
8 its 2017 REPS Compliance Plan, which was filed as an Appendix to the
9 Company's 2017 Integrated Resource Plan Update on May 1, 2017, in Docket
10 No. E-100, Sub 147.

11 **Q. What are the Company's costs associated with REPS compliance during**
12 **the EMF True Up Period and the upcoming Rate Period?**

13 A. Costs requested to be recovered include REC costs, as well as other
14 incremental REPS compliance expenses (e.g., Renewable Energy Tracking
15 System fees) (collectively, "Other Incremental Costs"). Both REC expenses
16 and Other Incremental Expenses incurred after June 30, 2017, will be trued up
17 and recovered as part of the Company's EMF in its 2018 REPS cost recovery
18 proceeding. My Exhibit 2, Schedule 1 presents the Company's reasonable
19 and prudently-incurred incremental REPS Compliance Costs during the EMF
20 True Up Period. My Exhibit 2, Schedule 2 presents the Company's forecasted
21 incremental REPS compliance costs projected to be incurred during the
22 calendar year 2018 Rate Period.

1 **Q. Has the Company made any purchases of renewable energy as part of its**
2 **compliance strategy?**

3 A. No. The Company has not made any bundled renewable energy purchases to
4 date. For this reason, 100 percent of the Company's incurred REC costs are
5 "incremental costs" recoverable through the REPS Rider. While the
6 Company presents its avoided cost capacity and energy rates in its 2017 REPS
7 Compliance Plan, these avoided costs were not required to determine the
8 incremental costs of Dominion Energy North Carolina's REC purchases for
9 recovery in this proceeding.

10 **Q. In addition to REC costs, please explain the Other Incremental Costs of**
11 **REPS compliance that the Company seeks to recover in this proceeding.**

12 A. My Exhibit 2, Schedules 1 and 2 identify the Other Incremental Costs
13 that the Company has incurred in association with REPS compliance.
14 Other Incremental Costs represent the Company's direct and non-labor
15 costs associated with REPS compliance, including the Company's
16 subscription to NC-RETS, internal REC tracking software costs, and
17 REC broker fees. The Company is not seeking to recover any
18 incremental internal labor costs associated with administration of
19 REPS compliance for either the EMF True Up Period or forecasted
20 Rate Period in this proceeding.¹⁵

¹⁵ The Company is reviewing how to most appropriately track and allocate such costs and may seek to recover such incremental internal REPS labor costs in the future.

1 The Company is also seeking to recover maintenance and fuel costs
2 associated with its NC Microgrid Project located at its Kitty Hawk
3 District Office. The Microgrid was dedicated and local operation
4 commenced in July 2014, and a small-scale fuel cell was added in July
5 2015. As further explained by Company Witness Alan J. Moore, the
6 Company is requesting to recover the ongoing operations and
7 maintenance costs associated with the NC Microgrid Project during
8 the Rate Period.

9 As directed in the Commission's *2013 REPS Order*, the Company is
10 providing its third and final NC Microgrid Project study phase report
11 as Appendix C to the Company's REPS Report.

12 **Q. Please describe Dominion Energy North Carolina's internal REC**
13 **Portfolio Management System noted above.**

14 A. The Company uses the Environmental Management Account ("EMA") RECs
15 system developed by APX to support the Company's REPS compliance
16 efforts. The EMA system is a REC asset management tool, which includes
17 multiple REPS compliance functionalities, including supporting the
18 Company's REC portfolio management and valuation, allowing connectivity
19 to NC-RETS, as well as managing post-trade settlement, credit, delivery, and
20 compliance and invoicing services.

1 **Q. What portion of the EMA costs is the Company requesting to recover**
2 **from its North Carolina customers as an incremental cost of REPS**
3 **compliance?**

4 A. Consistent with the approach since the 2014 REPS Order, the Company has
5 allocated the regulated portion of EMA system costs between Virginia and
6 North Carolina because the EMA system will also be used for REC
7 management in the Company's Virginia jurisdiction. Company Witness
8 Merritt supports the two-state factor 3 allocation approach, which allocates
9 5.1786 percent of the regulated portion of the EMA system costs and
10 maintenance fees to the North Carolina jurisdiction. Company Witness
11 Moore presents the EMA costs included for recovery on Page 2 of his
12 Schedule 1 for the Rate Period Rider RP revenue requirement, and Page 3 of
13 his Schedule 2 for the True-Up Period EMF Rider RPE revenue requirement.

14 **Q. Do the costs presented in your Exhibit No. 2, Schedules 1 and 2 also**
15 **include REC costs incurred by the Company attributable to the Town of**
16 **Windsor?**

17 A. No. The incremental REPS costs presented in my Schedules 1 and 2 are net
18 of the REC costs incurred by the Company for the Town of Windsor's REPS
19 compliance. As I have noted previously, the Company is uniquely situated in
20 that it is statutorily authorized to use 100 percent out-of-state RECs to achieve
21 REPs compliance. In most instances, the Company has found purchasing out-
22 of-state RECs to be more cost effective than almost all other REPS
23 compliance options, even including using its utility-owned renewable

1 generating facilities for North Carolina REPS compliance.¹⁶ In contrast to the
2 Company, the Town of Windsor is required to obtain 75% of its RECs from
3 in-state renewable resources. Thus, the Company has been required to
4 purchase in-state RECs that are specifically designated for the Town of
5 Windsor's REPS compliance. For this reason, the Company has directly
6 assigned specific REC costs to the Town of Windsor that may be used for its
7 REPS compliance, and has excluded them from the REPS costs that the
8 Company is requesting to recover from the North Carolina retail jurisdiction
9 in this proceeding.

10 **Q. Are the REPS Costs incurred for the Town of Windsor's REPS**
11 **compliance presented in the Company's REPS Plan and Report?**

12 A. Yes.

13 **Q. Do the costs presented in your Exhibit No. 2, Schedules 1 and 2 include**
14 **non-REC costs incurred by the Company attributable to the Town of**
15 **Windsor?**

16 A. No. The Company's Other Incremental Costs requested to be recovered in
17 this proceeding do not include non-REC costs reasonably attributable to the
18 Town of Windsor. While the Town of Windsor's compliance obligation
19 accounts for a very small percent of Dominion Energy North Carolina's non-
20 REC costs of REPS compliance, the Town of Windsor is still responsible for

¹⁶ For example, the Company has found it more cost-effective to purchase out-of-state RECs for North Carolina REPS compliance and to sell the biomass RECs generated by the Company's biomass-fueled generating facilities at a higher price into other renewable energy compliance markets. The revenue generated from such REC sales is then credited back to North Carolina customers through base rates.

1 certain of these costs. The Company has either assigned or allocated these
2 costs to the Town of Windsor. For example, broker's fees attributable to REC
3 transactions for the Town of Windsor's REPS compliance are directly
4 assigned to the Town of Windsor. For any Other Incremental Costs not
5 directly assignable to the Town of Windsor, the Company has adopted NC-
6 RETS' approach of allocating its costs based upon each electric power
7 supplier's load-ratio share determined on an energy basis for the prior
8 calendar year. As the Town of Windsor is approximately 1.2 percent of the
9 Company's total load-ratio share, the Company feels that this percentage of its
10 Other Incremental Cost of REPS compliance should be attributable to the
11 Town of Windsor and should not be recovered from North Carolina retail
12 customers. My Exhibit 2, Schedules 1 and 2 specifically exclude Other
13 Incremental Costs assigned or allocated to the Town of Windsor.

14 **Q. Are you satisfied that the Company's REPS compliance costs incurred**
15 **during the EMF True Up Period have been prudently incurred, and that**
16 **the projected Rate Period costs will be prudently incurred?**

17 A. Yes. The Company has incurred and also projects to incur all of its costs
18 associated with REPS compliance in a prudent manner. For example,
19 Dominion Energy North Carolina has effectively evaluated its options and
20 negotiated with counter-parties to procure reasonably-priced out-of-state
21 RECs for compliance with the Swine Waste and Poultry Waste Set-Asides.
22 This also holds true for the General Requirements RECs. Dominion Energy
23 North Carolina has significant experience and expertise within the national

1 REC market, and the Company has taken full advantage of its statutory ability
2 to procure its full REC requirements from out-of-state facilities. As noted
3 above, this strategy has resulted in very reasonable compliance costs for our
4 customers.

5 **Q. Does this conclude your testimony?**

6 A. Yes.

**BACKGROUND AND OUALIFICATIONS
OF
GEORGE E. HITCH**

I joined Dominion Energy (the “Company”) in 2002 as an Hourly Trader. I have a Bachelor of Science Degree from Virginia Tech. I have been an Hourly Trader, Coordinator Hourly Trading, and Generation Asset Trader at both the regulated utilities and Dominion Energy Marketing. I have traded physical and financial power, capacity, and RECs in the spot and forward markets.

I am currently a Senior Market Originator and part of the group responsible for managing the Company’s regulated capacity, energy, and REC portfolios, and developing and executing compliance strategies for the Company’s North Carolina Renewable Energy and Energy Efficiency Portfolio Standards and the Virginia Renewable Energy Portfolio Standards.

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-22, SUB 544

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of)	2017 REPS COMPLIANCE
Dominion Energy North Carolina)	REPORT OF DOMINION
REPS Compliance Report Pursuant)	ENERGY NORTH CAROLINA
to Rule R8-67(c))	FOR CALENDAR YEAR 2016

Pursuant to North Carolina General Statute (“N.C.G.S.”) § 62-133.8 and Rule R8-67(c) of the Rules of the North Carolina Utilities Commission (“Commission”), Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina (“Dominion Energy North Carolina” or the “Company”), hereby files its 2017 North Carolina Renewable Energy and Energy Efficiency Portfolio Standards (“NC REPS”) Compliance Report for calendar year 2016.

As required by Rule R8-67(c)(1), each year, each electric power supplier shall file with the Commission a report describing the electric power supplier’s compliance with the requirements of N.C.G.S. § 62-133.8(b), (c),¹ (d), (e) and (f) during the previous calendar year. The elements of the Company’s 2017 NC REPS Compliance Report for calendar year 2016 are stated below and correspond to the items listed in Rule R8-67(c)(1).

As demonstrated by this Report, the Company achieved its 2016 REPS compliance requirements by satisfying the solar carve-out requirement, the poultry waste carve-out and the general REPS requirement.² The Company also satisfied the solar requirement, poultry requirement and general REPS requirement for the Town of Windsor, a wholesale customer.

¹ The compliance obligation set forth in N.C.G.S. § 62-133.8(c) does not apply to electric public utilities, such as Dominion Energy North Carolina. However, the Company has committed to provide REPS compliance services for Town of Windsor, a full requirements customer of the Company, which is subject to the requirements of this subsection.

² On October 17, 2016, the Commission issued an Order delaying the initial Swine Waste Set-Aside requirement until 2017 and delaying the scheduled increase in the poultry requirement by one year. *Order Modifying the Swine and Poultry Waste Set-Aside Requirements and Providing Other Relief*, Docket No. E-100, Sub 113 (October 17, 2016) (“2016 Delay Order”).

(i) Provide the sources, amounts, and costs of renewable energy certificates, by source, used to comply with N.C.G.S. § 62-133.8(b), (c), (d), (e) and (f). Renewable energy certificates for energy efficiency may be based on estimates of reduced energy consumption through the implementation of energy efficiency measures, to the extent approved by the Commission;

Status: As the Commission has previously confirmed, N.C.G.S. § 62-133.8(b)(2)(e) provides that Dominion Energy North Carolina may use unbundled out-of-state RECs to meet some or all of the Company's NC REPS requirements.³ With regard to the Town of Windsor's compliance obligations, 75% of its general obligation and set-aside REPS requirements must be satisfied by renewable power or RECs generated from in-state facilities.

The Company purchased unbundled out-of-state poultry waste RECs, out-of-state wind RECs and in-state and out-of-state solar RECs to comply with its 2016 NC REPS requirements. In addition, the Company is using energy efficiency ("EE") savings created by Commission-approved EE programs for 2016 compliance. The Company also purchased sufficient in-state and out-of-state solar RECs, poultry waste RECs, and biomass RECs for the Town of Windsor.

Figure 1.1 shows RECs to be retired for 2016 compliance with the solar set-aside REPS requirement for the Company, as well as for the Town of Windsor. Figure 1.2 shows poultry waste RECs to be retired for 2016 compliance with the poultry waste set-aside REPS requirement for the Company, as well as for the Town of Windsor. Figure 1.3 shows the wind, biomass, energy efficiency and hydro RECs to be retired for 2016 compliance with the general REPS requirement for the Company, as well as for the Town of Windsor.

³*Order on Dominion's Motion for Further Clarification*, Docket No. E-100, Sub 113 (Sept. 22, 2009) (holding that the meaning of N.C.G.S. § 62-133.8(b)(2)(e) is to allow Dominion Energy North Carolina to achieve up to 100% REPS general obligation and set-aside compliance using out-of-state RECs).

CONFIDENTIAL INFORMATION REDACTED

Figure 1.1 RECs Used for 2016 Solar Set-Aside Compliance

	Quantity	Price / MWh	REC Cost
For Company (Requirement)	6,129		
	606		
	2,515		
	160		
	2,848		
	71		
	54		
	17		
Total Volume	6,200	Total REC Cost	\$33,597.50

CONFIDENTIAL INFORMATION HIGHLIGHTED IN YELLOW

Figure 1.2 RECs Used for 2016 Poultry Waste Set-Aside Compliance

	Quantity	Price / MWh	REC Cost
For Company (Requirement)	5,628		
	5,628		
For Town of Windsor (Requirement)	65		
	16		
	9		
	40		
Total Volume	5,693	Total REC Cost	\$133,875.00

CONFIDENTIAL INFORMATION REDACTED

Figure 1.3 RECs Used for 2016 General REPS Compliance

	Quantity	Price / MWh	REC Cost
For Company (Requirement)	250,897		
	22,890		
	886		
	41,631		
	25,000		
	3,690		
	25,000		
	50,000		
	16,695		
	50,000		
Company Energy Efficiency ¹	15,105	N/A ²	N/A ²
For Town of Windsor (Requirement)	2,908		
	251		
	1,995		
	662		
Total Volume	256,713	Total REC Cost	\$137,799.20

1) Vintage 2016 energy efficiency credits ("EECs") are derived from Appendix C of the Company's 2017 Evaluation, Measurement, and Verification Report, as filed in Docket No. E-22, Sub 536, on May 1, 2017. Total is net of the Fractional Generation Remaining Post-Certificate Creation adjustments made by NC-RETS.
2) The cost of EECs is based upon the Company's EE program deployment cost approved annually by the Commission for recovery pursuant to N.C.G.S. § 62-133.9.

ii) *Provide the actual North Carolina retail sales and year-end number of customer accounts by customer class;*

Status: The following figures are based on the actual Dominion Energy North Carolina retail sales and year-end number of customer accounts by customer class as of December 31, 2016.⁴

Actual North Carolina Retail Sales: 4,294,053MWh

Residential Customer Accounts:	102,258
Commercial Customer Accounts:	17,911
Industrial Customer Accounts:	<u>52</u>
Total Accounts:	120,221

In addition, the Company has a full requirement contract with the Town of Windsor, and its actual retail sales were 48,968 MWh for calendar year 2016 (as reported to the Company by the Town of Windsor).

(iii) *Current avoided cost rates and the avoided cost rates applicable to energy received pursuant to long-term power purchase agreements are discussed below;*

Status: The Company's most recently approved Schedule 19 avoided cost rates that would be generally applicable to energy received pursuant to renewable power purchase agreements were approved by the Commission in Docket No E-100, Sub 140.⁵ However, no long-term power purchase agreements have been entered into to comply with N.C.G.S. § 62-133.8(b), (c), (d), (e) or (f), so Dominion Energy North Carolina's avoided costs are not required to determine its incremental costs of 2016 REPS compliance.

(iv) *Provide the Company's actual total and incremental costs during the calendar year incurred to comply with N.C.G.S. § 62-133.8(b), (c), (d), (e) (f);*

Status: Figure 2.1 shows the Company's actual total and incremental REPS compliance costs incurred during calendar year 2016 were comprised of the following: purchasing various types of RECs, as well as other reasonable and prudent incremental direct costs.

⁴ Pursuant to the Commission's *Order Clarifying Electric Power Suppliers' Annual REPS Requirements* in Docket No. E-100, Sub 113 (November 26, 2008), each year's solar, swine waste and poultry waste set aside requirements are based on the previous year's actual sales. The Company's actual 2015 sales were 4,377,561 MWh. The Town of Windsor's actual 2015 sales were 50,704MWh.

⁵ Dominion Energy North Carolina filed updated avoided cost rates for Commission approval on November 15, 2016, in Docket No. E-100, Sub 148.

For the Town of Windsor, the Company incurred costs of approximately \$5,600 during calendar year 2016. Since the Company is purchasing unbundled RECs, actual and incremental compliance costs are the same.

Figure 2.1 Dominion Energy North Carolina Total Costs

	REC Purchases	Direct	Total Costs
Actual Total Compliance Costs	\$299,822.45	\$17,821.92	\$317,644.37
Actual Total Avoided Costs	-	-	-
Actual Incremental Costs	\$299,822.45	\$17,821.92	\$317,644.37

(v) Provide a comparison of the actual incremental costs incurred during the calendar year to the per-account annual charges (in N.C.G.S. § 62-133.8(h)(4)) applied to its total number of customer accounts as of December 31 of the previous calendar year;

Status: Dominion Energy North Carolina determined the number of year-end 2015 customer accounts by customer class. The year-end number of customer accounts was then multiplied by the per-account charges set forth in N.C.G.S. § 62-133.8(h)(4) to calculate the cost cap by customer class and in the aggregate. The Company then allocated its share of the incremental costs based upon the customer class' pro rata share of the aggregate cost cap.

Figure 2.2 Dominion Energy North Carolina Customers

	Total 2015 Year-End Retail Accounts	2016 Per-Account Cost Cap	Total Annual Cost Cap	Actual Incremental Costs
Account Type				
Residential	101,802	\$27.00	\$2,748,654.00	\$159,084.20
Commercial	17,924	\$150.00	\$2,688,600.00	\$155,608.44
Industrial	51	\$1,000.00	\$51,000.00	\$2,951.73
Total	119,777	Total	\$5,488,254.00	\$317,644.37

(vi) *Discuss the status of compliance with the requirements of N.C.G.S. § 62-133.8(b), (c), (d), (e) and (f);*

Status:

Solar REPS requirements of N.C.G.S. § 62-133.8(d). The Company has complied with the N.C.G.S. § 62-133.8(d) solar set-aside requirement for 2016 through the purchases of 6,129 solar RECs, representing 0.14% of its 2015 retail megawatt hour sales of 4,377,561. The Company also purchased 71 qualifying solar RECs on behalf of the Town of Windsor, representing 0.14% of Windsor's 2015 retail megawatt hour sales of 50,704.

Swine Waste Set-Aside requirements of N.C.G.S. § 62-133.8(e). Through the 2016 Delay Order, the Commission delayed the Company's and Town of Windsor's 2016 swine waste set-aside compliance obligation by one (1) year. However, as directed by Ordering Paragraph 7 of both the 2012 and 2013 Delay Orders, Dominion Energy North Carolina has continued to take all reasonable actions to purchase any available swine RECs. In addition, the Company is filing Semiannual Progress Reports as required by Ordering Paragraph 3 of the 2015 Delay Order. The Company has also attended all the semiannual stakeholder meetings arranged by the Public Staff.

The Company has sufficient RECs in NC-RETs to satisfy both Dominion Energy North Carolina and the Town of Windsor's 2017 requirements. The Company continues to work with the Swine Waste REC Buyers Group to secure additional swine RECs that could be used for compliance or banked for future use.

Poultry Waste Set-Aside requirements of N.C.G.S. § 62-133.8(f). Dominion Energy North Carolina has complied with the N.C.G.S. § 62-133.8(f) poultry waste set-aside requirement for 2016 through the purchases of 5,628 poultry waste RECs, representing 0.13% of the Company's 2015 retail megawatt hour sales of 4,377,561. The Company also purchased 65 qualifying poultry waste RECs on behalf of the Town of Windsor, representing 0.13% of Windsor's 2015 retail megawatt hour sales of 50,704.

Because the Company may meet all of its Poultry Waste Set-Aside requirements with out-of-state RECs, the Company will be able to meet its 2017 poultry REPS requirement, as well as the 25% out-of-state allowance for the Town of Windsor's poultry waste REPS requirements. At this time, the Company does not reasonably anticipate that it can meet the Town of Windsor's in-state poultry waste set-aside requirement for 2017 unless the Commission delays the scheduled increase in the requirement by one year.

General REPS requirements of N.C.G.S. § 62-133.8(b). Dominion Energy North Carolina has complied with the N.C.G.S. § 62-133.8(b) general REPS requirement for 2016, by retiring 250,897 RECs and EECs, representing 5.73% of the Company's 2015 retail megawatt hour sales and consisting of eligible wind RECs and EECs. The Company also purchased 2,657 qualifying general obligation RECs and retired 251 SEPA hydro RECs, on behalf of the Town of Windsor, representing 5.73% of Windsor's 2015 retail megawatt hour sales.

(vii) Identify any renewable energy certificates or energy savings to be carried forward pursuant to N.C.G.S. § 62-133.8(b)(2)f or (c)(2)f;

Appendix A contains the renewable energy certificates to be carried forward by the Company on behalf of Dominion Energy North Carolina and the Town of Windsor.

(viii) The dates and amounts of all payments made for renewable energy certificates; and

Appendix B contains the dates and amounts of all payments made for renewable energy certificates for the period January 1, 2016, through July 31, 2017.

(ix) For electric membership corporations and municipal electric suppliers, reduced energy consumption achieved after January 1, 2008, through the implementation of a demand-side management program.

Status: As an investor owned utility, this question is not applicable to the Company.

Pursuant to Rule R8-67(c)(4), in each electric power supplier's initial REPS compliance report, the electric power supplier shall propose a methodology for determining its cap on incremental costs incurred to comply with N.C.G.S. § 62-133.8(b), (c), (d), (e) and (f) and fund research as provided in N.C.G.S. § 62-133.8(h)(1), including a determination of year-end number of customer accounts. The proposed methodology may be specific to each electric power supplier, shall be based upon a fair and reasonable allocation of costs, and shall be consistent with N.C.G.S. § 62-133.8(h). The electric power supplier may propose a different methodology that meets the above requirements in a subsequent REPS compliance report filing. For electric public utilities, this methodology shall also be used for assessing the per-account charges pursuant to N.C.G.S. § 62-133.8(h)(5)

Status:

The Company has defined a "Customer" for the purposes of REPS billing as a "service point" or "application of a tariff" to determine the per-account REPS charge. The following rate schedules are not considered "accounts" for purposes of the per-account charge because these rate schedules are generally secondary accounts and customers on these rate schedules will pay a per-account charge under another primary tariff connected with these rate schedules.

- Residential Time Controlled Storage Water Heating (Schedule 1W)
- Residential Dual Fuel (Schedule 1DF)
- Outdoor Lighting (Schedule 26)
- County, Municipal or State – Traffic Control (Schedule 30T)
- Commercial Electric Heating (Schedule 7)
- Commercial Schedule SG (Schedule SG)

Further, if a customer has a non-demand metered service point on contiguous property, with the same service address, premise and name, that account may be deemed to be auxiliary and not subject to the REPS riders if the Company is notified by the Customer. Upon written notification from the Customer, accounts meeting these criteria will be coded in the billing system to allow the customer to receive only one monthly REPS charge at the Primary service point. A governmental customer for purposes of the application of the REPS charge is considered a commercial account.

Qualifying Research Projects of G.S. 62-133.8(h)(1). In 2013, the Commission approved the Company's request to pursue a Microgrid demonstration project as a research project qualifying for REPS rider cost recovery pursuant to G.S. 62-133.8(h)(1).⁶ The Microgrid project is located at the Company's Kitty Hawk District Office. Construction of the Microgrid project started in February 2014. The facility was dedicated and local operation commenced in July 2014. A fuel cell was added to the project in July 2015.

The Commission's 2013 Order approving the Microgrid directed Dominion Energy North Carolina to file annual project updates with the Commission detailing its Microgrid study results after each year of the three-year demonstration period (2015 to 2017). The Company is submitting its third and final annual study period report as Appendix C to this 2017 REPS Compliance Report.

⁶ *Order Approving REPS and REPS EMF Riders and 2012 REPS Compliance*, Docket No. E-22, Sub 503 (Dec. 18, 2013).

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**Appendix A Renewable Energy Certificates to be Carried Forward by the Company On
Behalf of Dominion Energy North Carolina and the Town of Windsor**

Location	Fuel Type	Windsor	Company	Total
Out-of-State		651	126,077	126,728
In-State		16	0	16
Out-of-State		443	4,725	5,168
In-state		427	0	427
Out-of-State		9,551	0	9,551
In-State		107	0	107
In-state		23,568	0	23,568
In-state		0	5,900	5,900
Out-of-state		0	7,885	7,885
In-state		1,151	2,897	4,048
Out-of-State		272	4,280	4,552
Out-of-State		0	700,629	700,629
		36,186	852,393	888,579

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**Appendix B Payments Made in 2016 and 2017 YTD On Behalf of the
Company and the Town of Windsor for Renewable Energy Certificates**

Seller	Date	REC Cost
	1/8/2016	\$2,345.74
	1/18/2016	\$232.73
	1/28/2016	\$2,300.00
	2/10/2016	\$22,000.00
	2/11/2016	\$15,752.00
	2/29/2016	\$37,500.00
	3/2/2016	\$240,000.00
	4/26/2016	\$2,178.38
	4/29/2016	\$18.43
	5/10/2016	\$1,920.00
	7/26/2016	\$2,178.38
	10/21/2016	\$1,729.89
	1/19/2017	\$105,000.00
	2/1/2017	\$98,000.00
	2/24/2017	\$311.16
	2/24/2017	\$2,242.00
	3/13/2017	\$336,000.00
	3/13/2017	\$7,137.50
	3/28/2017	\$938.03
	4/24/2017	\$142,100.00
	5/22/2017	\$430.20
	6/7/2017	\$142,100.00
	6/26/2017	\$282.76
	7/19/2017	\$730.95
	7/21/2017	\$1,661.25
	7/21/2017	\$331.99
Payments made through 7/31/2017		\$1,165,421.39

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Appendix C 2016 Microgrid Report

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Kitty Hawk NC Microgrid Research Project
2017 Study Report to North Carolina Utilities Commission



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I. Background

On July 22, 2014, Dominion Energy North Carolina (the “Company”) commissioned its micro-grid research demonstration project in Kitty Hawk, NC (“NC Microgrid Project”). The project is co-located at the Company’s Kitty Hawk District Office. The primary goal of this project was to integrate and study innovative distributed renewable generation and energy storage technologies. A microgrid, as defined by the U.S. Department of Energy, is a group of interconnected loads and distributed energy resources within clearly-defined electrical boundaries that acts as a single controllable entity with respect to the grid, allowing it to operate in grid-connected or island mode. Interest in microgrids is gaining traction throughout the country, particularly in campus-based environments such as military bases and universities. Microgrids have the potential to enhance power grid reliability and more efficiently integrate renewable and alternative energy technologies; however, a need exists to conduct microgrid demonstrations in order to study and better understand the opportunities and challenges that microgrids may provide to utilities and their customers.

As permitted by North Carolina General Statute (N.C.G.S.) § 62-133.8(h), the Company has constructed this NC Microgrid Project “...that encourages the development of renewable energy, energy efficiency, or improved air quality” as part of its annual North Carolina Renewable Energy and Efficiency Portfolio Standard (“REPS”) Compliance.

The NC Microgrid Project consists of four types of micro-wind turbines, a solar photovoltaic (“PV”) array, a lithium-ion battery, and two fuel cells that are integrated behind-the-meter with the existing on-site diesel generator and utility feed. More specifically, the project integrates the following technologies:

- Wind turbines – one 6 kilowatt (“kW”) horizontal axis turbine and three vertical axis turbines (3 kW, 4 kW, and 1.2 kW);
- Lithium Ion Phosphate battery – 25 kW power rating, 75 kilowatt-hour (“kWh”) energy storage capacity;
- Fuel Cells – two 1.5 kW solid oxide fuel cells;
- Ground-mounted solar photovoltaic (“PV”) array – 6 kW;
- Protective relays, inverters, proprietary control software, metering, and circuit breakers; and
- Round-the-clock system monitoring.

Over a multi-year demonstration period (summer 2014 to summer 2017), the Company studied the capabilities of the NC Microgrid Project, focusing on:

- Distributed renewable generation load factor and capacity factor improvement;
- Reduction of distributed renewable generation intermittency;
- Peak shaving and peak shifting;
- Islanding during a utility outage (to reduce load on the existing diesel back-up generator);
- Energy storage functionality; and
- Microgrid performance in an environment subject to salt spray.

This is the final update on the demonstration as part of the annual REPS compliance report. Although the demonstration period has concluded, the Company intends for the NC Microgrid Project to continue to operate and offset load at the Kitty Hawk District Office.

II. NC Microgrid Project Study Results

A. Wind Turbines

Wind turbines for distributed generation follow different paradigms than do the better-understood large utility scale wind turbines and wind farms. Turbines sited for distributed generation must, in many cases, contend with lower tower heights, poorer wind regimes, obstructing objects, and generally sub-optimal site conditions. Unlike a utility-scale wind farm, which is designed and commissioned for an optimal location, distributed wind turbines must contend with whatever site conditions exist at the customer's desired location.

The NC Kitty Hawk Office is representative of these constraints. The site has the benefit of a coastal wind regime, but is limited in terms of space and surrounded by forest. The NC Microgrid Project has assessed the performance of four distributed generation wind turbines under these conditions. The small-scale distributed turbine industry has a wider variety of technologies and form factors than the utility-scale industry, giving the Company the opportunity to test the effectiveness of several different horizontal and vertical axis technologies.

The Town of Kitty Hawk's Small Wind Energy Facility Ordinance (§42-527) limited small wind energy facilities to one turbine per property, with a maximum height of 35 feet from the grade. The Town of Kitty Hawk saw fit to accept an amendment to this Ordinance, allowing the siting of up to four turbines at an electric utility research project, and allowing turbine heights to reach 70 feet from the grade.

1. Bergey 6kW Wind Turbine

The Bergey 6kW turbine is the only wind turbine on site with a horizontal axis. The turbine sits atop a 65-foot tower, and has a rated power of 6kW with a rotor diameter of 20 feet. This turbine replaced an Aeolos 5kW horizontal wind turbine, which was removed after repeated technical and support issues.



2. Aeolos-V 3kW Wind Turbine

The second turbine is a vertical axis turbine of the Darrieus/Giromill type made by Aeolos, sporting four vertically oriented airfoils which spin around the top of the tower. Vertical axis turbines have the advantages of ease of maintenance due to their drive train being located on the ground, and reduced mechanical complexity due to the lack of a need to point the turbine into the wind. The Aeolos-V is mounted at a height of 30 feet.

Experience since placing the turbine in service suggests its short stature and the tree line surrounding the Kitty Hawk District Office often prevent the turbine from receiving winds above its cut-in wind speed of 2.5 m/s, reducing its generation potential.



3. UGE 4kW Wind Turbine

Manufactured by Urban Green Energy, the UGE 4kW unit is a helical-style Darrieus turbine with three curved airfoils that rotate about the top of the tower. As a vertical axis unit, it has similar advantages to the Aeolos-V turbine. However, it has dramatically outperformed the Aeolos unit, suffering from no technical issues and delivering more consistent performance.



4. Windspire 1.2kW Wind Turbine

The Windspire 1.2 kW unit is a turbine of the Darrieus/Giromill type that distinguishes itself with a slender, space-efficient profile and very long airfoils that run for 20 feet of the unit's 30 foot height. With the turbine's swept area extending down to a mere 10 feet above ground level, this turbine suffers greatest from the wind-blocking effects of trees and buildings. Its compactness and space-efficiency, however, lends to application in narrow urban wind corridors.



5. Turbine Laydown



In accordance with the Company's core value of safety, plans are in place to secure the vulnerable wind turbines in the event of a severe storm or hurricane. If forecasts indicate that wind conditions threaten to exceed the rated survival tolerances of the turbines, the Company's contractor, PowerSecure, will deploy personnel to the site in order to conduct turbine laydown procedures. Because the number of major storms that may affect the outer banks each year is unknown, the cost of laying down the turbines will be the Company's responsibility above and beyond the regular operations and maintenance payments. The turbine towers are equipped with a system that allows them to be lowered and secured to the ground, in order to avoid structural failure and potential damage to the turbine or its surroundings during extreme weather events. This innovative practice is not a typical feature of small-scale wind turbines, but proved beneficial for safety during hurricane Matthew in October, 2016 when the company executed the turbine laydown procedures without incident.

B. Building Single-Phase to Three-Phase Conversion

The standard and lowest cost power electronics that allow for the grid connection of turbines, solar arrays, and batteries are three-phase output devices. However, the Kitty Hawk Office was originally wired with single phase service. As part of this project, the office was repowered for three phase service when it was determined that rewiring the Kitty Hawk Office would be less expensive than acquiring equipment to allow the micro-grid to operate as a single phase circuit.



C. Solar Array

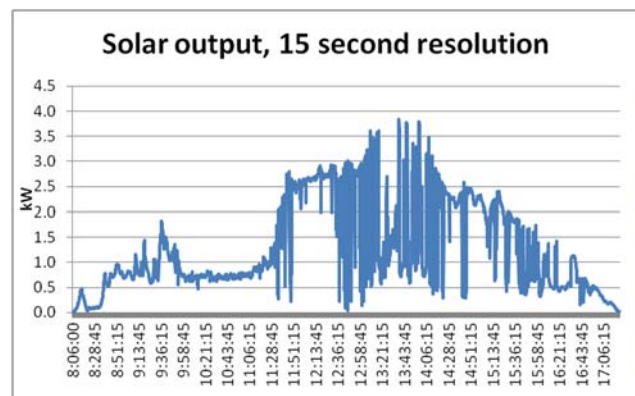
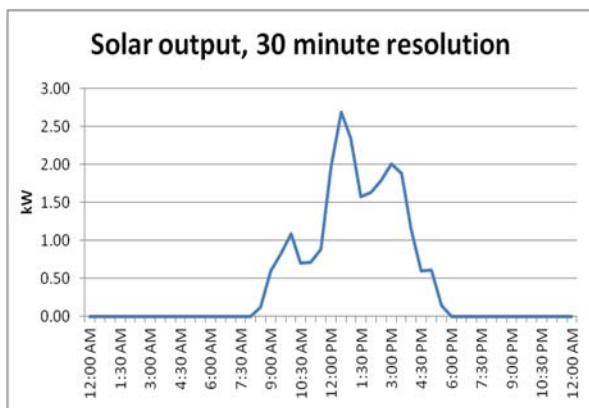
Approximately one-third of the energy generated at the Kitty Hawk Office has come from the 6 kW solar PV array, a collection of 24, 250-watt Renewable Energy Corporation Peak Energy Series solar modules.

Due to educational and aesthetic considerations, the array was neither south facing nor tilted, as would be optimal in order to maximize energy output. The ground mounted solar array had a tilt of 5 degrees, and an azimuth of 72 degrees, or 18 degrees north of east, thereby allowing the panels to be easily seen from the public kiosk and be more aesthetically pleasing.



Typical conception of the output of a solar PV array is a smooth bell-like curve centered about solar noon. Although a certain amount of intermittency of the resource is expected due to cloud cover, a low amount of data resolution can lead to the impression that this intermittency occurs mostly in extended, large events. The increased data resolution available at the Kitty Hawk Site demonstrates, however, that intermittent cloud cover can lead to short-span but high-magnitude variations in array output, even within what appears to be a single cloud cover event.

Rapid swings in voltage and current from the solar array due to these short-span, high-magnitude fluctuations present concerns for maintenance of power quality and service reliability on circuits back fed by such solar installations. The Kitty Hawk District Office is buffered by the battery and a high building demand relative to the solar output, but these concerns could manifest as increased equipment costs and decreased equipment life spans on circuits with a high proportion of solar PV, or on micro-grids that are at risk of being reliant on the intermittent resource due to islanding or outages.



D. Batteries & Peak Shaving

The Lithium Ion Phosphate (LiFePO₄) is a robust battery (similar in size to a vehicle battery) that provides a very constant discharge voltage while achieving a high power density, a long cycle life, deep cycle capabilities, high efficiency and slow degradation. The 53 LiFePO₄ batteries (totaling 25kW/75kWh) manufactured by Valence Technology have exhibited reliability and efficiency despite intensive use patterns.

Typical daily operations for the LiFePO₄ battery include discharge to as low as 6% during peak hours, along with full recharge in the early hours of the morning. The battery's cells are also equalized daily upon full recharge. The DC-DC roundtrip efficiency of the LiFePO₄ battery has averaged 93.4%, a testament to the deep cycle abilities of the cells, and their ability to efficiently charge and discharge at any state of charge or rate of charge without voltage drop-off or excessive losses.

The on-site batteries presented the advantage of being able to capture intermittent resources, allowing the micro-grid to supply smooth, even power to the Kitty Hawk District Office without reflecting that intermittency. The ability of LiFePO₄ batteries to charge efficiently even at low current makes them well suited for this application, a fact reflected in the high exhibited round-trip efficiency.

The cycling of the batteries was primarily leveraged for peak shaving purposes. The low cost of energy late at night is leveraged against the high cost of energy in the late afternoon and early evening by storing energy in the LiFePO₄ batteries. The batteries were leveraged to drive several hours of highly reduced demand each day, particularly at the peak hours around 18:00. During the non-winter months, the batteries were able to facilitate at least two hours of daily demand reduction greater than 25% with a high amount of consistency.

E. Fuel Cell

In the summer of 2015, the Company commissioned two residential/small-scale commercial fuel cells (1.5kW each) manufactured by Acumentrics into the existing Kitty Hawk Microgrid project. The total fuel cell name plate capacity is roughly 3.0 kW. The fuel cells operate at capacity most hours of the day, except when they are cycled off to prevent backfeeding the grid.

The Company has learned numerous lessons from the addition of the fuel cells into the microgrid. These are covered in section I of this report: Overall Project Lessons.

F. Protective Relays

The Company's Micro-grid project was designed with the intention to provide increased stability and reliability, and integrate renewable energy to the local Kitty Hawk District Office campus. During commissioning it was determined that in order to provide safety and reliability in accordance with the Company's system protection standards an external Schweitzer Engineering Laboratories (SEL-735) Power Relay would be installed. This relay is currently set to trip on various UL1741 set points (e.g. low voltage, and backfeeding the power grid) and has the ability to be remotely tripped by a Company operator. This relay configuration allows Company operators to remotely and safely isolate the micro-grid generation from the local grid when required due to line maintenance or field switching events.



The SEL-735 relay is configured to trip the main campus breaker, as well as simulate a loss of phase to the Automated Transfer Switch (ATS). Tripping the main campus breaker isolates the Microgrid from the main power grid without fully disabling the Microgrid. Meanwhile, the ATS responds to the simulated loss of phase by transferring load to the onsite diesel generator. As the generator reestablishes site power, the Microgrid reconnects and offsets demand from the onsite generator. This operating mode can be maintained until the cause of the trip is determined and cleared by a Company engineer or onsite staff, allowing the ATS to transfer back to the power grid.

G. Kiosk

As part of this project, a 24/7 monitoring Kiosk was installed on site allowing the general public to view the performance of all renewable generators on site and to help educate on the technologies installed as part of the NC Microgrid Project.



H. Microgrid Operational Challenges

During the past year, persistent electrical integration challenges arose between the microgrid and the Kitty Hawk District Office. As a result, the microgrid has been offline for a significant amount of time while the Company and its contractor investigated the cause of the issues and undertook corrective actions. The following paragraphs provide additional detail regarding the restoration efforts.

In August 2016, an event occurred on the electric distribution system near the Kitty Hawk District Office. Issues were observed with the electrical system in the Kitty Hawk District Office, such as noise coming from the fluorescent lighting systems, and the building was taken offline. In conjunction with this, the microgrid was also taken offline. Power to the Kitty Hawk District Office was eventually restored, and the effects that were previously observed did not reoccur. As the microgrid was brought back online, similar effects to electrical system in the building (lights flickering, unexpected noises) were observed, and the microgrid was again taken offline.

Troubleshooting efforts were undertaken throughout the fall and winter of 2016. Inverters on the microgrid were replaced and other components found to be defective were also replaced. Despite these actions, as the microgrid was returned to service the same effects were noted in the Kitty Hawk District Office and the microgrid was again taken offline.

More intensive troubleshooting continued through the spring and summer of 2017 with each electrical component analyzed as well as the Kitty Hawk District Office itself. It is believed the root cause of the issue has been identified (a failed component within a grouping of capacitors and inductors that are necessary to remove harmonics from an inverter).

A restart of the microgrid will commence once replacement components arrive and are installed. As an additional protective measure, an electrical protection scheme is being designed that will remove the microgrid from service if a harmonic threshold level is reached. We expect these corrective actions will allow the microgrid to return to service and provide additional protection against future disruptions to the Kitty Hawk District Office.

I. Overall Project Lessons

The test operation of the wind turbines at the Kitty Hawk District Office has yielded valuable lessons about the operating characteristics of small-scale distributed wind turbines. Suboptimal wind regimes due to siting constraints mean that turbines with a lower cut-in wind speed are required in order to yield any benefit. Further, taller towers should be considered where possible, in order to reach better winds. Most importantly, however, short-of-stature distributed wind turbines do not operate well in areas with trees, even when all trees in the immediate vicinity of the turbines have been cleared.

The small wind turbine market remains immature. The suppliers are limited in terms of the technical services they offer, and vary highly in the reliability of their products. The Aeolos-made turbines in particular have displayed evidence of poor workmanship and mechanical engineering. The reliability of small wind companies and their products is inconsistent, and the support they provide is not on par with that of larger, established manufacturers of utility-scale turbines and equipment.

Experience with small wind turbines at the Kitty Hawk Office has demonstrated the site-sensitivity of small, residential-scale wind turbines. Ensuring acceptable siting and wind-speed conditions may make small, residential-scale wind generation difficult for individual homeowners in the Company's service territory. Further, the performance of short-tower wind turbines has demonstrated that tower height restrictions such as those imposed by the Town of Kitty Hawk make small, residential-scale wind turbines largely impractical, as towers taller than the allowed height would be necessary in order to reach favorable wind speeds and conditions.

The Company has also gained valuable experience from the addition of the fuel cells into the microgrid. First, they provide reliable, consistent, baseload power to the system regardless of the weather. They operate quietly and relatively cleanly (the only emissions are CO₂); if the costs can be lowered, they could provide a safe and reliable source of distributed power. Second, there have been greater than expected losses across the inverters and converters in the system. It was expected that there would be losses around 10%; we have experienced losses around 33%. This is due to the fact that the components are oversized and operating outside without climate controls.


The laydown feature of the wind turbines has been utilized multiple times: for Hurricane Joaquin in 2015, and Hurricane Matthew in 2016. The towers were safely lowered long before the storm approached the area, and after the threat passed, the towers were raised. The entire process concluded without incident.

The Company has gained valuable experience through the development and operation of the NC Microgrid Project. Integrating multiple types of generating equipment across numerous manufacturers creates unique challenges that may ultimately lead to time consuming and difficult troubleshooting efforts. In general, microgrids are still in the developmental phase and the Company's experience with the NC Microgrid Project has provided essential lessons that can be incorporated in to future microgrid projects.


Dominion Energy North Carolina **CONFIDENTIAL INFORMATION REDACTED**

Docket E-22, Sub 544

For the EMF True Up Period July 1, 2016 to June 30, 2017

<u>Supplier</u>	<u>Renewable Resources</u>	<u>Volume</u>	<u>Price</u>	<u>Date Invoice</u> <u>Paid</u>	<u>Cost</u>
					\$2,178
					\$1,730
					\$105,000
					\$98,000
					\$336,000
					\$7,138
					\$142,100
					<u>\$142,100</u>
					\$834,246
Other Incremental Costs					
NC-RETS					\$11,431
EMA Maintenance Fee					\$1,722
Brokerage					<u>\$725</u>
					\$13,878
Less Net Revenue from Excess REC Sales					\$0
Less EMA Credit ToW					<u>-\$78</u>
Total					\$848,046

Dominion Energy North Carolina **CONFIDENTIAL INFORMATION REDACTED**
Docket E-22, Sub 544
For the 2018 Rate Period January 1, 2018 to December 31, 2018

<u>Supplier</u>	<u>Renewable Resources</u>	<u>Volume</u>	<u>Price</u>	<u>Estimated Delivery</u>	<u>Cost</u>
					\$5,382
					\$15,750
					\$142,100
					\$32,000
					\$5,579
					\$21,168
					\$5,625
					\$7,500
					\$144,235
					\$5,579
					\$144,235
					\$5,579
					<u>\$144,235</u>
					\$678,968
Other Incremental Costs					
	NC-RETS				\$11,400
	EMA Maintenance Fee				\$1,722
	Brokerage				<u>\$1,200</u>
					\$14,322
	Total				\$693,290

**DIRECT TESTIMONY
OF
ALAN J. MOORE
ON BEHALF OF
DOMINION ENERGY NORTH CAROLINA
BEFORE THE
NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-22, SUB 544**

1 **Q.** Please state your name, business address, and position with Virginia
2 Electric and Power Company (“Dominion Energy North Carolina,” or
3 the “Company”).

4 A. My name is Alan J. Moore. I am a Regulatory Analyst III in the Regulatory
5 Accounting Department for Virginia Electric and Power Company doing
6 business in North Carolina as Dominion Energy North Carolina. My business
7 address is 701 East Cary Street, Richmond, Virginia 23219. A statement of
8 my background and qualifications is attached as Appendix A.

9 **Q.** Please describe your area of responsibility with the Company.

10 A. I am responsible for analyzing and calculating revenue requirements for the
11 Company.

12 **Q.** What is the purpose of your testimony in this proceeding?

13 A. My testimony supports the Company’s request to recover all reasonable and
14 prudent incremental Renewable Energy and Energy Efficiency Portfolio
15 Standard (“REPS”) compliance costs. North Carolina General Statute
16 (“N.C.G.S.”) § 62-133.8(h)(1) provides that the recoverable “incremental
17 cost” of REPS compliance includes “all reasonable and prudent costs incurred
18 by an electric power supplier” to comply with its REPS obligations “that are

1 in excess of the electric power supplier's avoided costs other than those costs
2 recovered [through the demand side management rider] pursuant to N.C.G.S.
3 § 62-133.9." North Carolina Utilities Commission ("NCUC" or the
4 "Commission") Rule R8-67(e)(2) states that "[t]he cost of an unbundled
5 renewable energy certificate, to the extent that it is reasonable and prudently-
6 incurred, is an incremental cost and has no avoided cost component," and is,
7 therefore, eligible for full recovery through the REPS Rider. In addition to
8 recovery of all reasonable and prudent REPS compliance costs, N.C.G.S. §
9 62-133.8(h)(1)(b) provides that an electric power supplier may also recover
10 any investments in "research that encourages the development of renewable
11 energy, energy efficiency, or improved air quality, provided those costs do not
12 exceed one million dollars (\$1,000,000) per year."

13 The purpose of my testimony is to address the development of the Company's
14 REPS Riders RP and RPE updated revenue requirements in support of the
15 Company's Application. Specifically, my testimony presents: (i) the
16 Company's forecasted revenue requirement for the calendar year 2018 rate
17 period ("Rate Period") to be recovered through the Company's updated REPS
18 rider, Rider RP; and (ii) the Company's revenue requirement for the
19 Company's experience modification factor ("EMF") true-up period of July 1,
20 2016, through June 30, 2017 ("EMF True Up Period"), to be recovered
21 through the Company's updated REPS EMF rider, Rider RPE. The
22 Company's Application and the pre-filed direct testimony of Company
23 Witness George E. Hitch supports the Company's request to recover all

1 reasonable and prudently-incurred REPS compliance costs incurred during the
2 EMF True Up Period and projected to be incurred during the calendar year
3 2018 Rate Period.

4 **Q. Mr. Moore, are you sponsoring any exhibits or schedules in connection**
5 **with your testimony?**

6 A. Yes. Company Exhibit AJM-1, consisting of Schedules 1-2 (Schedules 1-2
7 provided in public and confidential versions filed under seal), was prepared
8 under my supervision and direction, and is accurate and complete to the best
9 of my knowledge and belief. My Schedule 1 supports the projected Rate
10 Period revenue requirement for Rider RP. My Schedule 2 presents the
11 revenue requirement for EMF Rider RPE for the True Up Period.

12 **Q. Please summarize the key components of the Rate Period Rider RP**
13 **revenue requirement presented in this case.**

14 A. The testimony of Company Witness Hitch provides the forecasted Rate Period
15 incremental costs related to the Company's compliance with the REPS
16 requirements of N.C.G.S. § 62-133.8(b), (d), (e) and (f), and projected
17 maintenance and fuel costs associated with the Company's microgrid research
18 demonstration project located at the Company's Kitty Hawk District Office
19 ("NC Microgrid Project"). I have used these cost projections to calculate the
20 forecasted revenue requirement for the REPS Rider RP during the Rate Period
21 in this proceeding.

1 **Q. Is it your understanding that the cost information used to develop the**
2 **revenue requirements in this proceeding includes only Dominion Energy**
3 **North Carolina’s incremental retail REPS compliance expenses and does**
4 **not include costs associated with any wholesale customers’ REPS**
5 **compliance?**

6 A. Yes. Although the Company does provide REPS compliance services for the
7 Town of Windsor, as described by Company Witness Hitch in his pre-filed
8 direct testimony, his Exhibit 2, Schedules 1 and 2 present the Company’s
9 retail incremental REPS compliance costs, net of the costs assigned or
10 allocated to the Town of Windsor. Consistent with previous REPS rider
11 filings, the Company is not allocating any research costs associated with the
12 NC Microgrid Project to the Town of Windsor.

13 **Q. Are there specific components of the Rate Period revenue requirement**
14 **that you would like to explain further?**

15 A. Yes. In order to calculate the Rate Period REPS Rider RP revenue
16 requirement, I incorporated the following cost components: (1) projected
17 renewable energy credit (“REC”) costs associated with REPS compliance year
18 2018 and other REPS compliance-related expenses projected to be incurred
19 during the Rate Period; and (2) qualifying projected research maintenance and
20 fuel costs associated with the Company’s NC Microgrid Project, inclusive of
21 the continued annual amortization of one-fifth of the North Carolina
22 Renewable Energy Tax Credit (“RETC”).

1 **Q. Can you comment on the tax credits being refunded back to the**
2 **Company's customers?**

3 A. Yes. Consistent with the revenue requirement approved in the Company's
4 2013 – 2016 REPS cost recovery proceedings in Docket No. E-22, Subs 503,
5 514, 525, and 535 respectively, the current Rider RP revenue requirement
6 includes the fifth and final 20% amortization of the North Carolina RETC net
7 of the Federal effect of State RETC in the projected 2018 Rate Period and will
8 be passed through to the North Carolina retail customers. The total projected
9 Rate Period tax credit benefits included in the Company's current Rider RP
10 revenue requirement (grossed up to a revenue requirement level) equals
11 (\$35,617). This amount reflects the final one-fifth of the accrued North
12 Carolina RETC amount.¹

13 **Q. Please describe the recovery of previously incurred costs during the EMF**
14 **True Up Period through the REPS EMF Rider RPE requested in this**
15 **case.**

16 A. As noted above, the Company is requesting to fully recover its reasonable and
17 prudently-incurred incremental REPS compliance costs incurred during the
18 July 1, 2016, through June 30, 2017 EMF True Up Period. As described by
19 Company Witness Hitch, the EMF True Up Period costs proposed to be
20 recovered include: (i) incremental REPS costs incurred during the current

¹ N.C.G.S. § 105-129.16A requires the NC RETC to be taken in five equal installments beginning with the taxable year in which the property is placed in service. The Company will credit the final one-fifth of the North Carolina RETC to retail customers through the current REPS Rider filing for the 2018 Rate Period.

1 EMF True Up Period to achieve REPS compliance for the current and future
2 reporting years; (ii) the Company's "Other Incremental Costs" of REPS
3 compliance; and (iii) actual costs and investment tax credits incurred through
4 the end of the True Up Period related to the Company's NC Microgrid
5 Project.

6 **Q. What is the total revenue requirement for Riders RP and RPE?**

7 A. As summarized on Page 1 of my Schedule 1, through Rider RP, the Company
8 is requesting recovery of projected REPS compliance costs of \$716,429. In
9 addition, the Company's EMF Rider RPE is presenting a revenue requirement
10 in the amount of \$469,296. The combined revenue requirements for the two
11 riders, Rider RP and Rider RPE, for the Rate Period totals \$1,185,725,
12 representing a (\$724,226) decrease over the rates currently in effect.

13 **Q. Does this conclude your pre-filed direct testimony?**

14 A. Yes, it does.

**BACKGROUND AND QUALIFICATIONS
OF
ALAN J. MOORE**

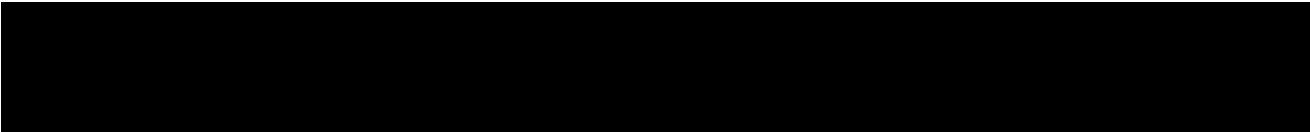
Alan J. Moore received his undergraduate degree from Longwood University with a Bachelor of Science in Business Administration with an Accounting concentration in 2007. Mr. Moore received his Master's of Business Administration degree from Longwood University in 2015. Mr. Moore was hired by the Company in 2007 as an Internal Auditor prior to joining the Regulatory Accounting Department in April 2014. His current position of Regulatory Analyst III in the Regulatory Accounting Department includes responsibility for analyzing and calculating revenue requirements for Dominion Energy North Carolina rate proceedings.

Dominion Energy North Carolina
Docket No. E-22, Sub 544
Revenue Requirement for the REPS Rider RP
For the Rate Period January 1, 2018 - December 31, 2018

<u>line</u> <u>no.</u>	<u>REPS Rider RP</u>	<u>Item Location / Formula</u>
1 Projected REPS Compliance Costs Revenue Requirement	\$ 693,290	Sch 1, Page 2, Lines 1 & 2
2 Projected Microgrid Research Project Costs Revenue Requirement	<u>\$ 23,140</u>	Sch 1, Page 2, Line 3
3 Total REPS Rider RP Revenue Requirement	\$ 716,429	Line 1 + Line 2

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Dominion Energy North Carolina
Docket No. E-22, Sub 544
Projected Revenue Requirement for REPS Rider RP
For the Rate Period January 1, 2018 - December 31, 2018

line no.	<u>Projection</u> <u>Jan-18</u>	<u>Projection</u> <u>Feb-18</u>	<u>Projection</u> <u>Mar-18</u>	<u>Projection</u> <u>Apr-18</u>	<u>Projection</u> <u>May-18</u>	<u>Projection</u> <u>Jun-18</u>	<u>Projection</u> <u>Jul-18</u>	<u>Projection</u> <u>Aug-18</u>	<u>Projection</u> <u>Sep-18</u>	<u>Projection</u> <u>Oct-18</u>	<u>Projection</u> <u>Nov-18</u>	<u>Projection</u> <u>Dec-18</u>	<u>Rate Period</u> <u>Total</u>
1 Projected NC Jurisdiction Revenue Requirement REPS Compliance Costs													\$ 693,290
2 Projected NC Jurisdiction EMA Revenue Requirement EMA RECS Tracking System Costs													\$ -
3 Microgrid Research Project Costs													\$ 23,140
4 Total REPS Rider RP Revenue Requirement	\$ 22,349	\$ 143,317	\$ (2,400)	\$ 41,089	\$ 194,222	\$ 1,217	\$ 8,519	\$ 153,432	\$ 1,217	\$ 6,797	\$ 145,452	\$ 1,217	\$ 716,429

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Dominion Energy North Carolina
Docket No. E-22, Sub 544
DSM/EE Experience Modification Factor REPS Rider RPE for the Test Period July 1, 2016 through June 30, 2017
For (Refund)/Recovery in the Rate Period January 1, 2018 - December 31, 2018

line no.														EMF REPS Rider RPE
	<u>Jul-16</u>	<u>Aug-16</u>	<u>Sep-16</u>	<u>Oct-16</u>	<u>Nov-16</u>	<u>Dec-16</u>	<u>Jan-17</u>	<u>Feb-17</u>	<u>Mar-17</u>	<u>Apr-17</u>	<u>May-17</u>	<u>Jun-17</u>	<u>Total</u>	
1 Monthly REPS Rider RPE Revenue Requirement (Page 2, Line 4)	\$ 25,415	\$ 1,486	\$ 1,367	\$ 3,097	\$ 1,347	\$ 1,367	\$ 106,148	\$ 98,976	\$ 310,614	\$ 143,124	\$ 1,427	\$ 144,774	\$ 839,144	
2 Monthly REPS Compliance Rider RP Revenues (exclude EMF rev)	\$ 25,858	\$ 30,224	\$ 27,679	\$ 27,638	\$ 25,013	\$ 27,517	\$ 30,028	\$ 34,176	\$ 37,339	\$ 32,105	\$ 35,276	\$ 36,995	\$ 369,848	
REPS EMF Rider RPE (Over)/Under Recovery to be (refunded)/collected over the														
3 Rate Period January 1, 2018 - December 31, 2018 (Line 1 - Line 2)	\$ (443)	\$ (28,738)	\$ (26,311)	\$ (24,541)	\$ (23,666)	\$ (26,149)	\$ 76,120	\$ 64,800	\$ 273,274	\$ 111,019	\$ (33,849)	\$ 107,780	\$ 469,296	

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Dominion Energy North Carolina
Docket No. E-22, Sub 544
Actual Revenue Requirement for DSM/EE Experience Modification Factor REPS Rider RPE
For the Test Period July 1, 2016 - June 30, 2017

line no.	<u>Actual</u> <u>Jul-16</u>	<u>Actual</u> <u>Aug-16</u>	<u>Actual</u> <u>Sep-16</u>	<u>Actual</u> <u>Oct-16</u>	<u>Actual</u> <u>Nov-16</u>	<u>Actual</u> <u>Dec-16</u>	<u>Actual</u> <u>Jan-17</u>	<u>Actual</u> <u>Feb-17</u>	<u>Actual</u> <u>Mar-17</u>	<u>Actual</u> <u>Apr-17</u>	<u>Actual</u> <u>May-17</u>	<u>Actual</u> <u>Jun-17</u>	<u>Totals</u>
1 NC Jurisdictional REPS Compliance Costs REC Purchases Broker Fees for REC Purchases Admin Expenses (NC - RETS Fees) Excess REC Sales EMA Credit ToW EMA Maintenance Fee													
2 NC Jurisdiction EMA Costs (Page 3, Line 6) EMA RECS Tracking System													
3 Micro Grid O&M Expenses													
4 Revenue Requirement (Line 1 + Line 2 + Line 3)	\$ 25,415	\$ 1,486	\$ 1,367	\$ 3,097	\$ 1,347	\$ 1,367	\$ 106,148	\$ 98,976	\$ 310,614	\$ 143,124	\$ 1,427	\$ 144,774	\$ 839,144

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Dominion Energy North Carolina
Docket No. E-22, Sub 544
DSM/EE Experience Modification Factor REPS Rider RPE for the Test Period July 1, 2016 through June 30, 2017
EMA RECs Tracking Software Costs
For (Refund)/Recovery in the Rate Period January 1, 2018 - December 31, 2018

line no.	<u>Actual Jul-16</u>	<u>Actual Aug-16</u>	<u>Actual Sep-16</u>	<u>Actual Oct-16</u>	<u>Actual Nov-16</u>	<u>Actual Dec-16</u>	<u>Actual Jan-17</u>	<u>Actual Feb-17</u>	<u>Actual Mar-17</u>	<u>Actual Apr-17</u>	<u>Actual May-17</u>	<u>Actual Jun-17</u>	<u>Totals</u>
1 Monthly System EMA O&M Expense EMA RECS Tracking System	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2 Monthly Amortization of System EMA Pre-paid Subscription to APX EMA RECS Tracking System													
3 Monthly Amortization of System Enhancements to Dominion Owned Software EMA RECS Tracking System													
4 Total System Monthly Operating Expense - EMA Software (Line 1 + Line 2 + Line 3) EMA RECS Tracking System													
5 Jurisdictional Allocation Factor EMA RECS Tracking System	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%	5.1786%
6 Revenue Requirement NC REPS (Line 4 * Line 5)													

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**DIRECT TESTIMONY
OF
JAMES D. MERRITT
ON BEHALF OF
DOMINION ENERGY NORTH CAROLINA
BEFORE THE
NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-22, SUB 544**

1 **Q.** Please state your name, business address, and your position with Virginia
2 Electric and Power Company (“Dominion Energy North Carolina” or the
3 “Company”).

4 **A.** My name is James D. Merritt. I am a Regulatory Analyst II for Dominion
5 Energy North Carolina. My business address is One James River Plaza, 701
6 East Cary Street, Richmond, Virginia 23219. A statement of my background
7 and qualifications is attached as Appendix A.

8 **Q.** What is the purpose of your testimony in this case?

9 **A.** My testimony supports the Company’s request to recover all reasonable and
10 prudent incremental Renewable Energy and Energy Efficiency Portfolio
11 Standard (“REPS”) compliance costs. The purpose of my testimony is to:
12 (i) describe the Company’s approach to defining a “customer account” for
13 purposes of calculating the REPS riders; (ii) explain the Company’s system-
14 level allocation approach for allocating the cost of the Environmental
15 Management Account RECs (“EMA”) software; and (iii) present the
16 calculation of the Company’s updated REPS rider, Rider RP, and the updated
17 Experience Modification Factor (“EMF”) rider, Rider RPE. Proposed Rider
18 RP is designed to recover the Company’s reasonable and prudent incremental

1 REPS costs forecasted to be incurred during the calendar year 2018 rate
2 period ("Rate Period"). Proposed Rider RPE is designed to recover the
3 Company's reasonable and prudent incremental REPS costs incurred during
4 the July 1, 2016, to June 30, 2017 EMF true up period ("EMF True Up
5 Period"), as described in the Company's Application and the prefiled direct
6 testimony of Company Witness George Hitch. The Company is requesting
7 that the proposed Rider RP and Rider RPE become effective for usage on
8 January 1, 2018.

9 **Q. Mr. Merritt, are you sponsoring any exhibits or schedules in connection**
10 **with your testimony?**

11 A. Yes. Company Exhibit No. JDM-1, consisting of Schedules 1 through 7, was
12 prepared under my supervision and is accurate and complete to the best of my
13 knowledge and belief.

14 **Q. How has Dominion Energy North Carolina defined a "customer" for the**
15 **purposes of developing Rider RP and Rider RPE?**

16 A. The Company has followed the same approach that the Commission approved
17 in the Company's most recent REPS Rider cost recovery proceeding, Docket
18 No. E-22, Sub 535, and prior cases. For purposes of developing the per-
19 account REPS charges, the Company has defined a "customer account" as a
20 "service point" or "application of a tariff." The following rate schedules are
21 not considered "accounts" for purposes of the per-account charge because
22 these rate schedules are generally secondary accounts and customers on these

1 rate schedules will pay a per-account charge under another primary tariff
2 connected with these rate schedules.

- 3 • Residential Time Controlled Storage Water Heating (Schedule 1W)
- 4 • Residential Dual Fuel (Schedule 1DF)
- 5 • Outdoor Lighting (Schedule 26)
- 6 • County, Municipal or State – Traffic Control (Schedule 30T)
- 7 • Commercial Electric Heating (Schedule 7)
- 8 • Commercial Schedule SG (Schedule SG)

9 Further, if a customer has a service point on contiguous property with the
10 same service address, premise and name, that account may be deemed to be
11 auxiliary and not subject to the REPS Riders RP and RPE if the Company is
12 notified by the customer. Upon written notification from the customer,
13 accounts meeting these criteria will be coded in the billing system to allow the
14 customer to be charged only a single monthly REPS charge at the customer's
15 primary service point. A governmental customer for purposes of the
16 application of the REPS charge is considered a commercial account.

17 **Q. In determining the Company's incremental REPS compliance costs to be**
18 **recovered through its REPS Riders, has the Company addressed**
19 **allocation of any system-level costs to the North Carolina jurisdiction?**

20 A. Yes. While incremental REPS compliance costs are generally assigned to and
21 fully recoverable from the Company's North Carolina jurisdiction, the
22 Company has also recognized that, in certain unique circumstances, capital
23 investments made by the Company at a system level that are allocated
24 between the Company's respective jurisdictions and are incremental to North
25 Carolina REPS compliance should also be allocated between the Company's

1 respective jurisdictions. The Company has determined that allocation of the
2 costs of its investment in the EMA system represents an instance where such
3 allocation is appropriate.

4 **Q. Would you please explain the method used to allocate these system-level**
5 **EMA costs between Virginia and North Carolina jurisdictional**
6 **customers?**

7 A. Consistent with the approach first approved by the Commission in Docket
8 E-22, Sub 503, and followed in the Company's most recent cost recovery
9 proceeding, Docket No. E-22, Sub 535, the Company has used its two-state
10 factor 3 allocation approach to determine the proper amount of EMA system
11 costs to be allocated to the North Carolina jurisdiction. This is an allocation
12 factor based upon relative energy sales between the customers served in
13 Virginia and customers served in North Carolina and is based on the twelve
14 months ending December 31, 2016. The North Carolina energy sales
15 component excludes the Town of Windsor. Using this approach, the
16 Company's Rider RP revenue requirement for the forecasted Rate Period
17 includes an allocated 5.1786% share of the regulated portion of EMA costs for
18 recovery from the Company's North Carolina jurisdictional customers.

19 **Q. Would you please discuss the calculation of the proposed Rider RPE to**
20 **collect for the EMF True Up Period?**

21 A. Rider RPE is calculated using the Rider RPE revenue requirement provided
22 by Company Witness Alan J. Moore, as shown in my Schedule 1. My
23 Schedule 2 presents the allocation of the Rider RPE revenue requirement

1 amongst the Company's residential, commercial, and industrial customer
2 classes. In 2017, House Bill 589 revised the residential 2015 and thereafter
3 REPS cost cap from \$34 to \$27 effective July 1, 2017. There were no
4 changes to the commercial or industrial cost caps. The annual revenue cap
5 was calculated by multiplying the revised applicable cost caps for each
6 customer class by the Company's forecasted average adjusted number of
7 customer accounts for the 2018 rate year. A cost cap allocation factor was
8 then calculated by dividing the annual REPS revenue cap for each class by the
9 total annual revenue cap established for all classes. This allocation factor was
10 then used to allocate the Company's REPS compliance requirement to each of
11 the three customer classes.

12 The Company also incorporated an adjustment to allocate Energy Efficiency
13 Credit ("EEC") RECs to the customer class that created the EEC savings. The
14 EEC RECs can only be used to meet the Company's General Obligation REC
15 requirement; therefore, schedule 2 and schedule 4 have been divided between
16 General Obligation REC costs and all costs other than for General Obligation
17 RECs. Once the EECs were deducted according to the class that created the
18 EE savings, a new adjusted allocation factor was calculated and the Rider
19 RPE revenue requirement from my Schedule 1 was allocated to the customer
20 classes based on the newly calculated allocation factor.

1 **Q. How does the recent legislative change to the residential cost cap impact**
2 **the cost allocation factor for the True Up Period and the Rate Period?**

3 A. Based upon the July 1, 2017 effective date of the change, the adjusted
4 residential class cost cap does not affect the EMF True Up Period cost
5 allocation but will be used for allocating Rate Period REPS costs between the
6 customer classes.

7 **Q. Would you please discuss the calculation of the monthly RPE per**
8 **customer charges?**

9 A. My Schedule 3 presents the total annual Rider RPE and then calculates the
10 monthly per-account customer charge for each customer class by dividing the
11 annual value by 12. This charge is then adjusted to account for the North
12 Carolina regulatory fee to calculate the final per-account customer charges
13 that will be shown for the residential, commercial, and industrial customer
14 classes in the rider.

15 **Q. Would you please discuss the calculation of the proposed Rider RP to**
16 **collect for the Rate Period?**

17 A. My Schedule 4 shows the total projected REPS compliance calculation for
18 Rider RP during the Rate Period. The methodology is the same as the
19 calculations for Rider RPE that I have just described, but uses forecasted EEC
20 savings, as well as a forecasted revenue requirement. My Schedule 1 shows
21 the forecasted Rider RP revenue requirement. My Schedule 5 then calculates

1 the monthly per-account customer charge for each customer class. This
2 charge is then adjusted for the North Carolina regulatory fee to calculate the
3 final per-account customer charges that will be shown in the Rider RP.

4 **Q. Have you confirmed that the Company's proposed total monthly REPS**
5 **per-account customer charges to be recovered through Riders RP and**
6 **RPE do not exceed the per-account cost caps established in N.C.G.S. § 62-**
7 **133.8(h)(4)?**

8 A. Yes. My Schedule 6 presents the total monthly REPS per-account customer
9 charges to be recovered through Riders RP and RPE. These per-account
10 charges do not exceed the caps on allowable per-account annual charge
11 established in N.C.G.S. § 62-133.8(h)(4), as amended by Session Law 2017-
12 192, and satisfy the requirements of Commission Rule R8-67(e)(9).

13 **Q. Have you included the Company's proposed Riders RP and RPE in**
14 **Schedule 7 of your pre-filed direct testimony?**

15 A. Yes. Schedule 7 comprises the tariff sheets showing the proposed Riders RP
16 and RPE, which, if approved as proposed, would be applicable for usage on
17 and after January 1, 2018.

18 **Q. Would you explain how the proposed Riders RP and RPE will impact**
19 **customers' bills?**

20 A. Per my Schedule 6, customers served on a residential rate will see a total
21 REPS charge on their bill of \$0.49 which is a decrease of \$0.39 per month
22 from the previous monthly REPS charge. Commercial customers will see a

1 \$2.71 charge per month on their bills resulting in a decrease of \$1.16 per
2 month from the previous monthly REPS charge, and an industrial customer
3 will see a charge of \$18.12 per month resulting in a decrease of \$7.70 per
4 month from the previous monthly REPS charge. Monthly billing schedules
5 will be prorated only if the number of days in the billing month is less than 26
6 or greater than 40.

7 **Q. Does this conclude your prefiled direct testimony?**

8 **A. Yes, it does.**

**BACKGROUND AND QUALIFICATIONS
OF
JAMES D. MERRITT**

James D. Merritt graduated from Virginia Commonwealth University in 2008 with a Bachelor of Arts degree in Political Science. He received his Master of Public Administration from Virginia Polytechnic and State University in 2014. He was hired by Virginia Electric and Power Company in January 2009. From 2009 to 2010, he worked in the PJM/LSE/Wholesale Data Management Group. In 2010, he served in Customer Relations, assisting with regulatory policy and customer service analytics. In 2011, he moved to the Regulatory Case Management group, coordinating many of the Company's rate cases and other regulatory filings. In 2013, Mr. Merritt moved to the Customer Rates group, performing rate design, the large industrial manual bill process, typical bills, rate design software implementation and programming, and communication. He has also assisted with multiple rate case filings in Virginia and North Carolina.

Mr. Merritt has previously presented testimony before the North Carolina Utilities Commission in Docket No. E-22, Sub 535 and before the Virginia State Corporation Commission.

Dominion Energy North Carolina
Revenue Requirements for Riders RPE and RP

E-22, Sub 544

Company Exhibit JDM - 1
Schedule 1
Page 1 of 1

Line No.		Revenue Requirement	
1	Rider RPE Revenue Requirement	\$839,144	Exhibit AJM-1, Schedule 2
2	REPS Compliance Rider RPE Revenues	\$369,848	Exhibit AJM-1, Schedule 2
3	REPS Compliance Recovery (Line 1 - Line 2)	\$469,296	REPS EMF Rider RPE (over)/under recovery Exhibit AJM-1, Sched. 2
4	Rider RP Revenue Requirement	\$716,429	Exhibit AJM-1, Schedule 1
5	Total REPS Recovery	\$1,185,725	
6	Rider RPE - Cost of General RECs only	\$105,000	Exhibit GEH-2, Schedule 1 Wind & Hydro
7	Rider RP - Cost of General RECs only	\$32,000	Exhibit GEH-2, Schedule 2 Wind
8	Rider RPE - All other costs	\$734,144	Line 1 Minus Line 6
9	Rider RP - All other costs	\$684,429	Line 4 Minus Line 7

RIDER RPE

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
						All Costs other than for General RECS	Other than General RECS Annual Per- Account Charge
Line No.	Customer Class	Total Adjusted Number of Accounts*	Annual Rider Cap per Customer Class	Calculated Annual Revenue Cap (II)*(III)	Cost Cap Allocation Factor (IV)*Total(IV)	(V)*Total(VI)	(VI)/(II)
1	Residential	102,840	\$ 27	\$ 2,776,680	50.76%	\$ 208,420	\$ 2.027
2	Commercial	17,548	\$ 150	\$ 2,632,200	48.12%	\$ 197,575	\$ 11.259
3	Industrial	61	\$ 1,000	\$ 61,000	1.12%	\$ 4,579	\$ 75.061
4	Total	120,449		\$ 5,469,880	100%	\$410,574	

Fig. 1.5.2 The Plan GEH-1, Figure 2.2

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
								Gen'l REC Rev Req Allocated to Customer Class Based on Adjusted Cost Cap Allocation Factor (VII)*Total(VIII)	General REC Annual Per-Account Charge (VIII)/Number of Accounts
Line No.	Customer Class	General RECS obligation required for 2016 Compliance Year	Class allocation of total RECS obligation using cost cap allocation Factor.	REP Requirement Supplied by EE by Class**	% of EE REC Supplied by Class** (IV)/(II)	Number of RECs Required Net of EE (II)-(IV)	Adjusted Cost Cap Allocation Factor (VI)/Total(VI)		
5	Residential	128,839	50.76%	3,877	3.01%	124,962	52.35%	\$ 30,742	\$ 0.299
6	Commercial	122,135	48.12%	11,089	9.08%	111,046	46.52%	\$ 27,318	\$ 1.557
7	Industrial	2,830	1.12%	139	4.91%	2,691	1.13%	\$ 662	\$ 10.854
8	Total	253,805	100.00%	15,105	5.95%	238,700	100%	\$58,722	
		GEH-1, Figure 1.3		GEH-1, Figure 1.3					

* 2018 year average projected number of account adjusted to remove "companion" accounts and "auxilliary" accounts.

** REC Requirement supplied by EE credits are under the 25% Cap

Total EMF **\$469,296**

AJM-1, Schedule 2 page 1 of 3

Dominion Energy North Carolina

Schedule 3

Page 1 of 1

RIDER RPE

	(I)	(II)	(III)	(IV)	(V)
		Annual RPE Per-Account Charge	Monthly RPE Per- Account Charge (II)/12	Regulatory Fee (III)*.0014	Total Monthly RPE Per-Account Charge (III)+(IV)
Line No.	Customer Class				
1	Residential	\$ 2.3256	\$ 0.1938	\$ 0.0003	\$ 0.1941
2	Commercial	\$ 12.8159	\$ 1.0680	\$ 0.0015	\$ 1.0695
3	Industrial	\$ 85.9152	\$ 7.1596	\$ 0.0100	\$ 7.1696

	(I)	(II)	(III)	(IV)
		Rounded Monthly RPE Per-Account Charge	Total Adjusted Number of Accounts*	Annual Revenue Including Regulatory Fee (II)*(III)*12
4	Residential	\$ 0.19	102,840	\$ 234,475
5	Commercial	\$ 1.07	17,548	\$ 225,316
6	Industrial	\$ 7.17	61	\$ 5,248
				\$ 465,040

* 2018 year average projected number of account adjusted to remove "companion" accounts and "auxilliary" accounts.

Dominion Energy North Carolina
Calculation of incremental costs per customer class for the Rate Period

E-22, Sub 544
RIDER RP

Company Exhibit JDM - 1
 Schedule 4
 Page 1 of 1

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
		Total Adjusted Number of Accounts*	Annual Rider Cap per Customer Class	Calculated Annual Revenue Cap (II)*(III)	Cost Cap Allocation Factor (IV)*Total(IV)	All Costs other than for General RECS (V)*Total(VI)	Other than General RECS Annual Per- Account Charge (VI)/(II)
Line No.	Customer Class						
1	Residential	102,840	\$ 27	\$ 2,776,680	50.76%	\$ 347,438	\$ 3.378
2	Commercial	17,548	\$ 150	\$ 2,632,200	48.12%	\$ 329,359	\$ 18.769
3	Industrial	61	\$ 1,000	\$ 61,000	1.12%	\$ 7,633	\$ 125.127
4	Total	<u>120,449</u>		<u>\$ 5,469,880</u>	100%	<u>\$ 684,429</u>	

Exhibit No. JDM - 1

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
		General RECS obligation required for 2018 Compliance Year	Class allocation of total RECS obligation using cost cap allocation Factor.	REP Requirement Supplied by EE by Class**	% of EE REC Supplied by Class** (IV)/(II)	Number of RECs required net of EE (II)-(IV)	Adjusted Cost Cap Allocation Factor (VI)/Total(VI)	Gen'l REC Rev Req Allocated to Customer Class Based on Adjusted Cost Cap Allocation Factor (VII)*Total(VIII)	General REC Annual Per- Account Charge (VIII)/Number of Accounts
Line No.	Customer Class								
5	Residential	189,739	50.76%	11,191	5.90%	178,548	51.08%	\$ 16,346	\$ 0.159
6	Commercial	179,866	48.12%	12,900	7.17%	166,966	47.77%	\$ 15,285	\$ 0.871
7	Industrial	4,168	<u>1.12%</u>	<u>139</u>	<u>3.33%</u>	<u>4,029</u>	<u>1.15%</u>	\$ 369	\$ 6.047
8	Total	<u>373,773</u>	100.00%	<u>24,230</u>	6.48%	<u>349,543</u>	100%	<u>\$ 32,000</u>	

Fig. 1.7.1 of the Plan

Fig. 1.4.1 of the Plan

Exhibit No. JDM - 1

* 2018 year average projected number of account adjusted to remove "companion" accounts and "auxilliary" accounts.

** REC Requirement supplied by EE credits are under the 25% Cap

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Dominion Energy North Carolina**RIDER RP**

	(I)	(II)	(III)	(IV)	(V)
		Monthly RPE Per-			
		Annual RPE	Per-	Account Charge	Total Monthly RPE Per-Account
Line No.	Customer Class	Account Charge	(II)/12	Regulatory Fee (III)*.0014	Charge (III)+(IV)
1	Residential	\$ 3.5374	\$ 0.2948	\$ 0.0004	\$ 0.2952
2	Commercial	\$ 19.6401	\$ 1.6367	\$ 0.0023	\$ 1.6390
3	Industrial	\$ 131.1741	\$ 10.9312	\$ 0.0153	\$ 10.9465

	(I)	(II)	(III)	(IV)
		Rounded Monthly	Total Adjusted	
		RPE	Number of	Annual Revenue Including
		Per-	Accounts*	Regulatory Fee (II)*(III)*12
		Account Charge		
4	Residential	\$ 0.30	102,840	\$ 370,224
5	Commercial	\$ 1.64	17,548	\$ 345,345
6	Industrial	\$ 10.95	61	\$ 8,015
				\$ 723,584

* 2018 year average projected number of account adjusted to remove
"companion" accounts and "auxilliary" accounts.

**Dominion Energy North Carolina Retail Customers
Total Monthly REPS Charges Per Customer
To Be Effective January 1, 2018**

(I)		(II)		(III)		(IV)		(V)		(VI)	
Line No.	Customer Class	Monthly Rider		Total Monthly REPS		Total Adjusted		Annual Payment**			
		Monthly Rider RP per account charge	RPE per account charge	per customer charge (II)+(III)	per customer charge (II)+(III)	Number of Accounts*	(IV)*(V)*12				
1	Residential	\$ 0.30	\$ 0.19	\$ 0.49		102,840	\$ 604,699				
2	Commercial	\$ 1.64	\$ 1.07	\$ 2.71		17,548	\$ 570,661				
3	Industrial	\$ 10.95	\$ 7.17	\$ 18.12		61	\$ 13,264				
							\$ 1,188,624				

* 2018 year average projected number of account adjusted to remove "companion" accounts and "auxilliary" accounts.

**Includes regulatory fee.

RIDER RPRENEWABLE ENERGY & ENERGY EFFICIENCY PORTFOLIO STANDARD RIDER

Service supplied to Dominion Energy North Carolina retail customers is subject to the Renewable Energy and Energy Efficiency Portfolio Standard (“REPS”) monthly charge¹. This Rider is not applicable to agreements for the Company’s Outdoor Lighting Rate Schedule 26, Traffic Control Rate Schedule 30T, companion rates such as Schedule 1W, Schedule 1DF or Schedule 7, or auxiliary accounts². An auxiliary account is defined as a non-demand metered service at the same premise, with the same service address, and the same customer account name as an account for which a REPS charge has been applied.

Rate Class	Dollars per Customer Charge Monthly Bill
Residential Customer	\$ 0.30
Commercial Customer	\$ 1.64
Industrial Customer	\$10.95

¹ Monthly billing schedules will only be prorated if the number of days in the billing month is less than 26 or greater than 40.

² To qualify for auxiliary service, not subject to this Rider, the Customer must notify the Company. The Company will verify that such agreement is considered an auxiliary service, after which the Rider charge will not be applied to the auxiliary service account. The Customer shall also be responsible for notifying the Company of any change in service that would no longer qualify the service as auxiliary.

RIDER RPE
REPS EXPERIENCE MODIFICATION FACTOR
(REPS EMF)

Service supplied to Dominion Energy North Carolina retail customers is subject to the Renewable Energy and Energy Efficiency Portfolio Standard (“REPS”) monthly charge¹. This Rider is not applicable to agreements for the Company’s Outdoor Lighting Rate Schedule 26, Traffic Control Rate Schedule 30T, companion rates such as Schedule 1W, Schedule 1DF or Schedule 7, or auxiliary accounts². An auxiliary account is defined as a non-demand metered service at the same premise, with the same service address, and the same customer account name as an account for which a REPS charge has been applied.

Rate Class	Dollars per Customer Charge Monthly Bill
Residential Customer	\$ 0.19
Commercial Customer	\$ 1.07
Industrial Customer	\$7.17

¹ Monthly billing schedules will only be prorated if the number of days in the billing month is less than 26 or greater than 40.

² To qualify for auxiliary service, not subject to this Rider, the Customer must notify the Company. The Company will verify that such agreement is considered an auxiliary service, after which the Rider charge will not be applied to the auxiliary service account. The Customer shall also be responsible for notifying the Company of any change in service that would no longer qualify the service as auxiliary.