



Virginia Electric and Power Company

d/b/a

Dominion Virginia Power

Annual Report to the State Corporation Commission

on Renewable Energy, in accordance with

§ 56-585.2.H of the Code of Virginia

November 1, 2012

I. INTRODUCTION

Pursuant to § 56-585.2 H of the Code of Virginia (“Va. Code”), Virginia Electric and Power Company (“Dominion Virginia Power” or the “Company”) submits this Annual Report on Renewable Energy (“Report”) to the Virginia State Corporation Commission (“Commission”). Va. Code § 56-585.2 H requires each investor-owned incumbent electric utility to report to the Commission annually on (i) its efforts to meet renewable portfolio standard goals; (ii) its generation of renewable energy; and (iii) advances in renewable generation technology that affect the utility’s activities. Exhibit 1 to this Annual Report shows the Company’s RPS compliance position for meeting its RPS Goals, including 2011 actual compliance and 2012-2025 forecasted compliance.

2011 RPS Compliance

The Company met and exceeded its 2011 VA RPS Plan renewable target of 1,732,746 MWh through implementation of its RPS Plan approved by the Commission as illustrated in Exhibit 2 of this Annual Report (as verified by Chiman H. Muchhala). In 2011, Dominion Virginia Power generated enough renewable energy from its own resources (including NUGs) to meet 74% of its 2011 RPS Goal. As permitted by Va. Code § 56-585.2, the Company optimized and/or banked portions of this renewable energy for the benefit of customers.

II. EFFORTS TO MEET RENEWABLE PORTFOLIO STANDARD GOALS

A. **Statutory Guidance**

For the purposes of complying with Virginia’s Renewable Energy Portfolio Standard (“RPS”) Goals as set forth in Va. Code § 56-585.2 *et seq.*, “renewable energy” is defined (by reference to Va. Code § 56-576) as “energy derived from sunlight, wind, falling water, biomass, sustainable or otherwise, (the definitions of which shall be liberally construed), energy from

waste, land fill gas, municipal solid waste, wave motion, tides, and geothermal power, and does not include energy derived from coal, oil, natural gas or nuclear power. Renewable energy shall also include the proportion of the thermal or electric energy from a facility that results from the co-firing of biomass.”

Va. Code § 56-585.2 further defines how such renewable energy can qualify for compliance with the Virginia RPS Goals. Such renewable energy must be:

- generated or purchased in the Commonwealth or in the interconnection region of the regional transmission entity of which the participating utility is a member, as it may change from time to time;
- generated by a public utility providing electric service in the Commonwealth from a facility in which the public utility owns at least a 49 percent interest and that is located in a control area adjacent to such interconnection region; or
- represented by renewable energy certificates.¹

“Renewable energy” shall not include electricity generated from pumped storage, but shall include run-of-river generation from a combined pumped-storage and run-of-river facility. Va. Code § 56-585.2

Va. Code § 56-585.2 B provides that “[a]ny investor-owned incumbent electric utility may apply to the Commission for approval to participate in a renewable energy portfolio standard program” and that the “Commission shall approve such application if the applicant demonstrates that it has a reasonable expectation of achieving 12 percent of its base year electric

¹ "Renewable energy certificate" means either (i) a certificate issued by an affiliate of the regional transmission entity of which the participating utility is a member, as it may change from time to time, or any successor to such affiliate, and held or acquired by such utility, that validates the generation of renewable energy by eligible sources in the interconnection region of the regional transmission entity or (ii) a certificate issued by the Commission pursuant to subsection J and held or acquired by a participating utility, that validates a qualified investment made by the participating utility. Va. Code § 56-576

energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025”

Va. Code § 56-585.2 D sets forth the RPS Goals that utilities must meet to qualify for a 50 basis point Performance Incentive:

- RPS Goal I: In calendar year 2010, 4 percent of total electric energy sold in the base year.
- RPS Goal II: For calendar years 2011 through 2015, inclusive, an average of 4 percent of total electric energy sold in the base year, and in calendar year 2016, 7 percent of total electric energy sold in the base year.
- RPS Goal III: For calendar years 2017 through 2021, inclusive, an average of 7 percent of total electric energy sold in the base year, and in calendar year 2022, 12 percent of total electric energy sold in the base year.
- RPS Goal IV: For calendar years 2023 and 2024, inclusive, an average of 12 percent of total electric energy sold in the base year, and in calendar year 2025, 15 percent of total electric energy sold in the base year.

B. Dominion Virginia Power’s RPS Plan

On July 28, 2009, the Company submitted its Application for Approval to Participate in a Renewable Energy Portfolio Standard Program Pursuant to Va. Code § 56-585.2 (the “Application”), in Case No. PUE-2009-00082. The Application represented the Company’s initial filing for approval of its RPS Plan. On May 18, 2010, the Commission issued its Final Order (the “Final Order”), finding that the Company has demonstrated that it has a reasonable expectation of achieving 12 percent of its base year electric energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025, and granting Dominion Virginia Power’s Application seeking approval to participate in a RPS program. Any references to MWh goals, renewable generation and REC transactions set forth in this report are shown at the Virginia Jurisdictional percentage level and not at the Total System level. The 2011 Virginia

Jurisdictional percentage is 80.9405% of the Total System level and is shown rounded for the purposes of this report to 80.94%. This percentage is based on the Company's most recent cost of service study for the 12 months ending December 31, 2011. This allocation factor is used as the basis for apportioning existing generation MWh for inclusion in its Virginia RPS Plan.

As set forth in the Company's approved RPS Plan, the Company plans to use existing renewable energy sources (including that renewable energy provided by contract with non-utility generators ("NUGs"))², to develop new renewable energy generation facilities where feasible, and to purchase renewable energy certificates ("RECs") to achieve the RPS Goals. Specifically, the renewable energy from existing renewable energy sources and new renewable energy sources identified in the 2012 IRP, are estimated to be approximately 3.3 million megawatt hours ("MWh") in 2022 and 3.9 million MWh in 2025.³ The Company also plans to develop additional new renewable generation facilities where feasible or purchase approximately 1.9 million RECs in 2022, and 2.6 million RECs in 2025 to comply with the 2022 and 2025 targets of 5.2 million MWh and 6.5 million MWh respectively.

The Company met RPS Goal I in 2010.⁴ The Company's RPS Plan will also meet the interim RPS Goals II through IV as described in the RPS application. Exhibit 1 to this Annual Report shows the Company's RPS compliance position for meeting its RPS Goals, including 2011 actual compliance and 2012-2025 forecasted compliance.

² The Commission approved the Company's use of renewable energy from NUGs where the contract on renewable attributes was silent in its *Order on Petition, Petition of Virginia Electric and Power Company for a declaratory judgment*, Case No. PUE-2010-00132 (June 17, 2011).

³ At this time, most of the NUG contracts have expiration dates prior to 2025.

⁴ Application of Virginia Electric and Power Company for a 2011 biennial review of the rates, terms, and conditions for the provision of generation, distribution, and transmission services pursuant to Sec. 56-585.1 A of the Code of Virginia, Final Order at 22, Case. No., PUE-2011-00027 (Nov. 30, 2011).

1. Total Electric Energy Sold in the Base Year

Pursuant to Va. Code § 56-585.2 A, “[t]otal electric energy sold in the base year” is “total electric energy sold to Virginia jurisdictional retail customers by a participating utility in calendar year 2007, excluding an amount equivalent to the average of the annual percentages of the electric energy that was supplied to such customers from nuclear generating plants for the calendar years 2004 through 2006.” The Company has calculated its total electric energy sold in the base year as follows:

Electric Energy Sold to Retail Customers in 2007 (Virginia Jurisdiction)	64,621,534 MWh
Three-year Average (2004-2006) Nuclear Generation (Virginia Jurisdiction)	<u>21,302,885 MWh</u>
Total Electric Energy Sold in the Base Year (Target Baseline)	<u>43,318,649 MWh</u>

2. RPS Goals for the Years 2011 Through 2025

The Company’s RPS Goals were established and approved in Case No. PUE-2009-00082 by multiplying the total electric energy sold in the base year (described above) by the RPS Goals for the years 2011 through 2025.

Pursuant to 56-585.2 D, the RPS Goals II-IV are based on a multiyear averages. The Company’s RPS Goals for each individual year as represented in MWh (or average MWh for a group of years) are as follows:

Year	2011- 2015	2016	2017-2021	2022	2023-24	2025
Percent	4% Average	7%	7% Average	12%	12% Average	15%
Goal	1,732,746	3,032,305	3,032,305	5,198,238	5,198,238	6,497,797

3. Resources to Fulfill the RPS Goals

a. Existing and Under Development or Consideration DVP Renewable Energy Generation Facilities⁵

1. Dominion Virginia Power owns the following renewable energy facilities in its generation fleet:

Existing Renewable Energy Facilities Owned by Dominion Virginia Power			
Facility	State	Capacity	Fuel
Gaston	NC	220 MW	Hydroelectric
Roanoke Rapids	NC	95 MW	Hydroelectric
Cushaw	VA	2 MW	Hydroelectric
North Anna	VA	1 MW	Hydroelectric
Pittsylvania	VA	83 MW	Biomass
Subtotal		318 MW	Hydroelectric
Subtotal		83 MW	Biomass
Total		401 MW	

2. Dominion Virginia Power has gained Commission approval for and is developing the following renewable generation facilities:

Renewable Energy Facilities Under Development by Dominion Virginia Power			
Facility	State	Capacity	Fuel
Altavista	VA	51 MW	Biomass
Hopewell	VA	51 MW	Biomass
Southampton	VA	51 MW	Biomass
VCHEC	VA	58.5 MW	Biomass
Total		211.5	

⁵ Based on the Company's most recent cost of service study for the 12 months ending December 31, 2011, Virginia Jurisdiction is responsible for approximately 80.94% of the Company's electricity demand, and the Company used this allocation factor as the basis for apportioning approximately 80.94% of the existing generation MWh for inclusion in its Virginia RPS Plan.

3. Dominion Virginia Power has proposed for approval or is considering proposing the following renewable generation facilities:

Renewable Energy Facilities Under Development by Dominion Virginia Power			
Facility	State	Capacity	Fuel
Solar DG	VA	30 MW	Solar
Solar Tag	VA	TBD	Solar
On-shore wind	VA	TBD	Wind
Off-shore wind	VA	TBD	Wind

Pursuant to Va. Code § 56-585.2 F, utilities participating in an RPS program are permitted to use a combined 1.5 million green tons of certain tree-based material, as defined in the statute.⁶ In its Final Order, the Commission determined that DVP's pro rata share of the 1.5 million ton restriction for certain green tree-based materials is 73.929% or 1,108,940 tons. Since the Company's Pittsylvania biomass facility is grandfathered as an existing facility under the statute, the Company has not burned any incremental tree-based material subject to the 1.5 million ton limitation in 2012. Pursuant to Va. Code § 56-585.2 F, this limitation on woody biomass does not apply to "mill residue, except wood chips, sawdust and bark; pre-commercial soft wood thinning; slash; logging and construction debris; brush; yard waste; shipping crates;

⁶ The relevant portion of Va. Code § 56-585.2 F states:

Utilities participating in such program shall collectively, either through the installation of new generating facilities, through retrofit of existing facilities or through purchases of electricity from new facilities located in Virginia, use or cause to be used no more than a total of 1.5 million tons per year of green wood chips, bark, sawdust, a tree or any portion of a tree which is used or can be used for lumber and pulp manufacturing by facilities located in Virginia, towards meeting RPS goals, excluding such fuel used at electric generating facilities using wood as fuel prior to January 1, 2007. A utility with an approved application shall be allocated a portion of the 1.5 million tons per year in proportion to its share of the total electric energy sold in the base year, as defined in subsection A, for all utilities participating in the RPS program. A utility may use in meeting RPS goals, without limitation, the following sustainable biomass and biomass based waste to energy resources: mill residue, except wood chips, sawdust and bark; pre-commercial soft wood thinning; slash; logging and construction debris; brush; yard waste; shipping crates; dunnage; non-merchantable waste paper; landscape or right-of-way tree trimmings; agricultural and vineyard materials; grain; legumes; sugar; and gas produced from the anaerobic decomposition of animal waste.

dunnage; non-merchantable waste paper; landscape or right-of-way tree trimmings; agricultural and vineyard materials; grain; legumes; sugar; and gas produced from the anaerobic decomposition of animal waste.” *Id.*

b. NUG Renewable Energy Resources

In addition to Company-owned resources, Dominion Virginia Power has existing renewable energy resources in the form of long-term contracts with various renewable energy NUGs. In its RPS Application, the Company took the position that the NUG contracts for renewable energy include all aspects of that energy, including the renewable attributes. In 2010, the Company filed a Petition for Declaratory Judgment with the Commission in Case No. PUE-2010-00132 to determine if the Company could use the renewable energy generated by a qualifying NUG where the contract was silent on ownership of such renewable attributes. By its Order on Petition dated June 17, 2011, the Commission decided that the Company should apply the NUG renewable energy as part of its RPS Plan. As a result, the Company has banked the renewable energy generation of 0.7 million MWh produced by qualifying NUGs in 2010 and an additional 0.7 million MWh from 2011 to apply to future targets. Because the Commission did not make a specific determination regarding the ownership of the NUG RECs (which may no longer have any value if the Company has the right to use the renewable attributes through application of the renewable energy through its RPS plan), it is unlikely that the Company will be able to optimize the NUG renewable energy where the Company did not also have rights to the RECs.

c. New Renewable Energy Sources

The Company intends to develop new renewable generation facilities. Decisions to build new generation will be determined based on need and as part of the Company’s Integrated

Resource Planning process. Each new facility will need to be approved by the Commission and granted a certificate of public convenience and necessity.

Specifically, the Company continues to evaluate renewable development opportunities for availability by 2025. For modeling the RPS Plan, the Company has included up to 58.5 MW of renewable energy from its Virginia City Hybrid Energy Center ("VCHEC") using biomass co-fired with coal for availability starting in 2013.⁷ In addition, the Company has modeled 153 MW of renewable energy as a result of the approval of the Company's Application in Case No. PUE-2011-00073 for the conversion of the Altavista, Hopewell and Southampton Power stations from burning coal to biomass (primarily waste wood) ("Biomass Conversions"). Because the Biomass Conversions are expected to use primarily waste wood, the Company does not expect to exceed its pro-rata share of the state's restriction on certain tree-based materials mentioned previously. The Company has also requested approval from the Commission to construct and operate up to 30 MW of distributed solar generation in Case No. PUE-2011-00117 ("Solar DG Demonstration"). The Company anticipates that VCHEC and the Biomass Conversions, as well as the Solar DG Demonstration, if approved and constructed, will generate higher value RECs that can be optimized under Va. Code § 56-585.2 F (as described below).

In addition, the Company is assessing the potential for an additional 58.5 MW from biomass at VCHEC (for a total of 117 MW of biomass at VCHEC). The Company is exploring the viability of on-shore and off-shore wind facilities in the future. Whether such facilities are constructed depends on a variety of factors which cannot be known at this time, including the

⁷ VCHEC is designed to produce up to 117 MW of renewable energy, but the actual amount of renewable energy produced at the facility may vary from year to year, particularly as plant operations begin and develop over the first 8-10 years. The Company anticipates that a small quantity of RECs will be created in late 2012 from the testing of co-firing with biomass. VCHEC is expected to begin normal co-firing operation in 2013. It is anticipated that it will provide approximately 5% of renewable energy from years 2013-15 and step up to 10% renewable energy starting in 2020. Should the facility produce additional renewable energy beyond the 58.5 MW modeled, the Company will also count this additional renewable generation toward its RPS Goals for that year.

market for renewable resources, access to capital, environmental laws, siting and permitting issues, federal legislation, technical innovations, and Commission approval.

d. Research and Development Initiatives

A 2012 revision to § 56-585.2 of the Code of Virginia resulting from Chapter 274 (HB 1102) and Chapter 717 (SB 413) of the 2012 Acts of the General Assembly, allows utilities that are participating in Virginia's incentive-based RPS program to meet up to 20% of their annual RPS Goals using RECs issued by the Commission for qualified investments in renewable and alternative energy research and development activities.⁸ Pursuant to § 56-585.2, the Company is currently evaluating several Virginia research and development projects. As authorized by the statute, these projects may involve partnership with Virginia institutions of higher education. The Company intends to file its first annual report by March 31, 2014, analyzing the prior year's PJM REC prices and quantifying its qualified investments made in 2013 to facilitate the Commission's validation and issuance of RECs for Virginia renewable and alternative research and development projects.

e. Purchase of RECs

After counting the MWh from the existing renewable energy sources, the RPS Plan calls for the Company to fulfill any deficit by purchasing lower cost RECs that fit within the definition of Va. Code § 56-585.2. Though Virginia law makes no distinction regarding types of RECs based on the source of renewable energy, most jurisdictions and markets do make distinctions,

⁸ "Qualified investment" means an expense incurred in the Commonwealth by a participating utility in conducting, either by itself or in partnership with institutions of higher education in the Commonwealth or with industrial or commercial customers that have established renewable energy research and development programs in the Commonwealth, research and development activities related to renewable or alternative energy sources, which expense (i) is designed to enhance the participating utility's understanding of emerging energy technologies and their potential impact on and value to the utility's system and customers within the Commonwealth; (ii) promotes economic development within the Commonwealth; (iii) supplements customer-driven alternative energy or energy efficiency initiatives; (iv) supplements alternative energy and energy efficiency initiatives at state or local governmental facilities in the Commonwealth; or (v) is designed to mitigate the environmental impacts of renewable energy projects. Va. Code § 56-585.2

and currently these distinctions affect the valuation of the RECs. The price of individual RECs is based on a variety of factors, including energy source. The Company expects that it will be able to fully satisfy the RPS Goals II through IV through the Company's existing renewable generation portfolio, new renewable generation facilities and the purchase of lower cost RECs. In addition, based on an amendment to Va. Code § 56-585.2 during the 2010 General Assembly, utilities are permitted to sell more expensive RECs generated at its facilities (or acquired through a purchase power agreement) and replace them with lower cost RECs from the market and credit the difference to customers (REC optimization).⁹ The Company utilized REC optimization in 2010 and 2011 and intends to carry-out REC optimization transactions in the future where economically feasible for the benefit of ratepayers. In addition, the 2012 General Assembly amended the RPS Statute so as to permit the use of certain thermal energy and equivalent RECs for RPS compliance.¹⁰

f. Banking of Excess Renewable Energy and/or RECs

Under the RPS Plan, the Company will bank any excess amounts of renewable energy and/or RECs for application in future years in which there is a deficit pursuant to Va. Code § 56-585.2 D. Section 56-585.2 D allows a utility to apply renewable energy sales or RECs acquired during the periods covered by any RPS goal that are in excess of the sales requirement for that goal to the sales requirements for a future RPS goal.

⁹ Chapter 850 of the 2010 Acts of the Assembly.

¹⁰ See Chapter 46 and Chapter 200 of the 2012 Acts of the Assembly.

C. Application of the Renewable Resources to meeting the Company's RPS Plan

The Company's RPS Plan will permit the Company to meet its RPS Goals.

1. 2011 Renewable Energy Generated & REC Transactions

The Company met and exceeded its 2011 VA RPS Plan renewable target of 1,732,746 MWh through implementation of its RPS Plan approved by the Commission as illustrated in Exhibit 2 of this report. The Company achieved compliance by applying 311,426 RECs or Renewable Energy created by Company-owned facilities, as well as 1,424,320 purchased RECs. An additional 1,004,888 RECs purchased in 2011 will be banked for future use. This bank also includes 1,267,636 MWh of renewable attributes generated in 2010 and 2011 from NUGs. Additionally, the company optimized 320,686 Company-generated RECs. In 2011, the Company generated enough renewable energy from its own resources (including NUGs) to meet 74% of its 2011 RPS Goal. As permitted by Va. Code § 56-585.2, the Company optimized and/or banked portions of this renewable energy for the benefit of customers.

Pursuant to Va. Code § 56-585.2 H the breakdown of the Company's efforts to meet its RPS goals for 2011 is as follows:

- § 56-585.2 H 1.a.--A list of all states where the purchased or owned renewable energy was generated, specifying the number of megawatt hours or renewable energy certificates originating from each state.

State	PA	MD	NC ¹¹	NJ	VA ¹²	Total
Totals	483,059	1,916,941	309,901	29,208	971,150	3,710,259
Applied	478,171	916,941	309,901	29,208	1,525	1,735,746
Banked	4,888	1,000,000	0	0	648,939	1,653,827
Optimized	0	0	0	0	320,686	320,686

¹¹ All of the RECs from NC are from Company-owned renewable energy resources.

¹² All of the RECs from VA are from either Company-owned renewable energy resources, or renewable energy NUGs.

- § 56-585.2 H 1.b.--A list of the decades in which the purchased or owned renewable energy generating units were placed in service, specifying the number of megawatt hours or renewable energy certificates originating from those units.

Decade	1910s	1920s	1930s	1940s	1950s	1960s	1980s	1990s	Total
Totals	242,496	1,974,445	49,469	5,290	149,575	189,534	188,768	910,682	3,710,259
Applied	242,496	974,445	45,612	5,290	149,575	189,534	45,735	83,059	1,735,746
Banked	0	1,000,000	0	0	0	0	143,033	510,794	1,653,827
Optimized	0	0	3,857	0	0	0	0	316,829	320,686

- § 56-585.2 H 1.c. A list of fuel types used to generate the purchased or owned renewable energy, specifying the number of megawatt hours or renewable energy certificates originating from each fuel type.

Fuel Type	Hydro	MSW	Biomass (Wood Waste)	Landfill Gas	Total
Totals	2,653,187	733,913	316,829	6,330	3,710,259
Applied	1,623,479	112,267	0	0	1,735,746
Banked	1,025,851	621,646		6,330	1,653,827
Optimized	3,857	0	316,829	0	320,686

2. 2012 Renewable Energy Generated & REC Transactions

The Company will meet or exceed its 2012 VA RPS Plan renewable target of 1,732,746 MWh through implementation of its RPS Plan approved by the Commission which is illustrated in Exhibit 3.

a. Company-Owned Facilities

Total renewable energy production for 2012, through September 30, 2012, from existing renewable energy facilities owned by the Company was 462,727 MWh. The Company estimates the total renewable energy production from existing renewable energy facilities owned by the Company for calendar year 2012 will be 621,767 MWh (some of which will be optimized).

b. NUGs

The Company has determined the renewable energy production from contracted NUGs year-to-date through September 30, 2012 is 479,960 MWh. The Company estimates the total qualified renewable energy production from existing contracted NUGs for calendar year 2012 will be 610,614 MWh. Any renewable energy not needed to meet the 2012 Goal will be banked for future use as permitted by statute.

c. 2012 REC Transactions (Purchase for VA RPS Compliance/Sales for Optimization)

The Company's REC transactions for 2012 to date are summarized as follows:

- 301,021 Company generated higher valued RECs optimized
- 300,000 lower cost RECs purchased, including replacement RECs
- The Company will continue to replace the higher value RECs sold with lower cost RECs from the market, which difference will be credited to customers.

d. Banking of Excess Renewable Energy and/or RECs

The Company began 2012 with banked renewable energy and RECs of 2,272,524 MWh and expects to bank approximately 1,769,145 MWh of renewable energy and RECs toward future RPS targets by year-end 2012.

3. 2011 Through 2025 Renewable Plan

Exhibit 1 to this report outlines the Company's VA RPS Plan from 2011 through 2025, including actuals for 2011 and forecasts for the remaining years. This exhibit has been updated to reflect the assumptions used for the September 2012 IRP. For planning purposes from 2013 through 2025, no REC optimization is assumed. Based on current information, the Company forecasts that it will be able to fully satisfy the RPS Goals I through IV through the Company's

existing renewable generation portfolio, through the purchase of RECs (including optimization) and new renewable generation where economically feasible.

III. OVERALL GENERATION OF RENEWABLE ENERGY

As discussed in Section II.B.3.a above, the Company has over 400 MW of renewable energy capacity that it generates at four hydroelectric facilities and two biomass facilities. In addition, the Company intends to construct a number of new renewable energy facilities through the 2025 timeframe as discussed in Section II.B.3.c. In addition, potential new renewable energy resources are discussed in Section IV below.

Though not part of the Company's RPS Plan, the Company is also encouraging customers to support renewable energy generation resources in the region through voluntary participation in Dominion Virginia Power's Rider G Renewable Energy Program, commonly referred to as the "Green Tariff" and marketed as "Dominion Green Power®." Effective January 1, 2009, the Company began to offer its customers this companion rate for the purchase and retirement of RECs equal to all or a portion of a customer's monthly consumption. The Company's contractor, 3Degrees Group, Inc., performs REC procurement services (including certification and tracking), customer education and program promotion services, and has ensured that the Company's Green Tariff program has received Green-e® Energy certification from the Center for Resource Solutions, a national non-profit organization. As of September 30, 2012, over 14,500 customers are participating in Dominion Green Power, with 56% of participants choosing to match 100% of their monthly energy usage with purchases of RECs. The RECs purchased on behalf of customers participating in this voluntary program are not counted toward the Virginia RPS

compliance goals. Rather, this program offers Dominion Virginia Power customers a way to support renewable energy above and beyond Dominion's renewable energy initiatives.

IV. ADVANCES IN RENEWABLE GENERATION TECHNOLOGY

The Company strives to remain up to date on the development of emerging renewable and alternative energy technologies. Dominion formed its Alternative Energy Solutions (AES) Group in April 2009 to conduct research, track federal and state policies, and identify potential opportunities in the alternative and renewable energy sector. Some of the renewable resources and technologies that Dominion is currently considering include:

A. Solar

In 2010 solar photovoltaic ("PV") as a percent of total generation in the U.S. remained small, comprising only 0.1 percent.¹³ Despite its small representation of total generation, solar PV technology continues to be one of the most rapidly growing renewable energy sectors with a compounded annual growth rate from 2000-2010 in the U.S. of 61.3 percent.¹⁴ With 878 MW of grid-connected PV capacity added in 2010, the U.S. was the world's fourth largest PV market in 2010.¹⁵ Solar PV panel prices and overall system prices have continued to fall, driving year over year growth in solar PV installations. At the same time, enhancements in inverter technology continue to increase the efficiency and output of solar PV systems. Nameplate capacity of solar PV increased 104 percent in 2010 over 2009¹⁶ and 109 percent in 2011 over 2010.¹⁷ Solar panel prices fell more than 50% during 2011, while weighted average PV system prices fell 20%

¹³ www.nrel.gov/analysis/pdfs/51680.pdf

¹⁴ *Id.*

¹⁵ eetd.lbl.gov/ea/ems/reports/lbnl-5047e.pdf

¹⁶ www.nrel.gov/analysis/pdfs/51680.pdf

¹⁷ Solar Energy Industries Association, *U.S. Solar Market Insight 2011 Year-in-Review*, <http://www.seia.org/cs/research/>. March 14, 2012.

during the same period as a combined result of lower component prices, improved installation efficiency, and a shift toward larger systems.¹⁸ Additionally, federal tax credits for solar, available until December 31, 2016 help make this resource more cost competitive. Solar PV generation is not dispatchable and contributes less to peak load and reserve requirements than conventional generation resources, but solar PV generation could become more reliable in the future as energy storage technology evolves.

Pursuant to Chapter 771 of the 2011 Acts of the Assembly (House Bill 1686), on October 31, 2011, the Company filed an application for approval from the Commission of a Solar DG Demonstration in Case No. PUE-2011-00117 as part of its Community Solar Power Program. As part of the Solar DG Demonstration the Company would install solar photovoltaic distributed generation ("solar DG") in strategically located areas of the Company's service territory to study the impact and assess the benefits of solar DG to the Company's distribution system.

The Solar DG Demonstration will include the development of 30 MW of utility-owned solar DG which will be tied to specific study objectives and located within the Company's service territory, if approved by the Commission. The installation of these facilities will begin in 2013 and conclude in 2015. In addition, as part of the Community Solar Power Program, the Company filed an application on May 17, 2012 for SCC approval of a Solar Purchase Program that would be an alternative to net metering. The Solar Purchase Program will allow the Company to purchase solar output subject to a proposed tariff, Rate Schedule SP, which will be offered to eligible residential and non-residential customer generators. The program would allow participation of customer-owned systems up to a maximum amount of 3 MW.

¹⁸ *Id.*

The size of the Company's combined Community Solar Power Program (Company-owned installations and purchases under the new Community Solar Power Program Tariff) would not exceed 33 MW.

B. Offshore Wind

Offshore wind has the potential to provide the largest, scalable renewable resource for Virginia with near-term resource availability of approximately 2,000 MW. Virginia has a unique offshore wind opportunity due to its shallow continental shelf extending nearly 30 miles off the coast, strong wind resource, proximity to load centers, availability of local supply chain infrastructure, and world class port facilities. Currently, offshore wind is a more costly renewable generation resource. The Company continues to pursue cost reduction efforts and to evaluate the development of offshore wind as a potential source for future generation. Dominion will consider constructing an offshore wind facility when costs are reasonable compared to other options.

There is increasing political momentum in Virginia and throughout the Mid-Atlantic surrounding offshore wind development, driven by its potential for significant economic development and job creation and renewable attributes. In House Joint Resolution 605, the 2011 Virginia General Assembly established a goal to develop 3,000 MW of offshore wind by 2025. In 2010, the Virginia General Assembly passed legislation creating the Virginia Offshore Wind Development Authority ("VOWDA"). The Company is represented at the VOWDA by an appointee of the Governor. As required by this legislation, the Company completed an offshore wind transmission study to determine possible offshore wind interconnection points to the transmission grid. The Company released the results of the study in December 2010, which

found that it would be possible to interconnect large scale wind generation facilities with the existing grid in Virginia Beach, Virginia. The study can be viewed at the following link:

<http://www.dmme.virginia.gov/DE/VOWDA/DominionOffShoreWindStudyReport.pdf>

In February 2012, the Company completed a second study to evaluate the build options for high voltage underground transmission from Virginia Beach into the Atlantic Ocean to support potentially multiple offshore wind projects. The study found that for every 500-700 MW (nameplate) of offshore wind capacity constructed, one service platform is appropriate with two lines to shore. This transmission solution limits the potential for stranded offshore transmission investment and emphasizes the potential cost savings that may be achieved through a phased build-out approach.

The Department of Interior's Bureau of Ocean Energy Management, ("BOEM") is the lead federal agency in charge of leasing areas for offshore wind development on the outer continental shelf. The BOEM Released the Call for Information and Nominations ("Call") for leases off of Virginia's coast in February 2012 to gauge interest in offshore wind development off the coast of Virginia. Dominion submitted a response to the Call in March 2012. Seven other companies also submitted responses. BOEM is expected to release a proposed sale notice in Q4 2012 and hold a competitive lease auction in 2013.

C. Other Renewable Technologies

The Company is also continuing to evaluate other emerging alternative energy technologies including waste-to-energy, geothermal, and tidal and wave power.

- Waste-to-energy ("WtE") technologies involve converting waste sources such as municipal solid waste, landfill gas, and agricultural waste into electricity. WtE is a dispatchable and a potentially cost competitive form of renewable energy.

- Geothermal power is power extracted from heat stored deep within the earth's surface. The United States has more geothermal capacity than any other country. Eighty percent of this capacity is in California, where more than 40 geothermal plants provide nearly 5 percent of the state's electricity. Very limited geothermal energy resources are available in Virginia.
- Tidal and wave power relies on ocean water fluctuations to collect and release energy. In September 2011, backed by \$10 million of United States Department of Energy funding, Ocean Renewable Power installed a tidal-power turbine with 180 kW of capacity off the northeastern Maine Coast supplying the grid under a power purchase agreement. While significant research and isolated projects such as the above-referenced project in Maine continue to occur, neither tidal nor wave facilities have proven to be commercially viable on a wide scale. The Company will continue to monitor developments surrounding these technologies.

V. CONCLUSION

The Company received Commission approval of its proposed RPS Plan in Case No. PUB-2009-00082, demonstrating that it has a reasonable expectation of achieving 12 percent of its base year electric energy sales from renewable energy sources during calendar year 2022, and 15 percent of its base year electric energy sales from renewable energy sources during calendar year 2025. In the past year, the Company views its efforts toward its RPS Plan in Virginia as successful and highlights the following:

- The Company met its RPS Goal II for calendar year 2011 (1,732,746 MWh) by applying renewable energy generated at its own facilities, applying renewable energy and/or RECs purchased in the market, and established a

bank of 2,272,524 MWh of renewable energy and RECs at year-end to apply towards future Company RPS goals. For 2011 RPS Goal II compliance, the Company optimized 320,686 higher value RECs and replaced them with lower cost RECs from the market, which difference will be credited to customers. The Company's 2011 RPS compliance is supported by Exhibit 2.

- The Company will meet its RPS Goal II for calendar year 2012 of 1,732,746 MWh of renewable energy and/or RECs by applying renewable energy generated at its own facilities and renewable energy and/or RECs purchased in the market while expecting to bank 1,769,145 MWh of renewable energy and/or RECs to apply towards future Company RPS goals.
- The Company has optimized 301,021 higher value RECs as of September 30, 2012 for 2012 RPS Goal II compliance, and will replace them with lower cost RECs from the market, which difference will be credited to customers.

EXHIBIT 4
 ANNUAL REPORT TO THE SCC ON RENEWABLE ENERGY
 DOMINION VIRGINIA POWER
 RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM
 VIRGINIA GOALS

TOTAL ELECTRIC ENERGY SOLD IN THE BASE YEAR

Total Electric Energy Sold in Virginia Jurisdictional Base Customers in 2007
 51,521,534 MWh
 Less: Three Year Average (2014-2008) Nuclear Generation
 27,302,865 MWh
 Total Electric Energy Sold in the Base Year
 24,218,669 MWh

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Renewable Energy Portfolio Standard Goals	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745
Percent Goal (MWh)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%

Generation Resources (MWh)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Small Hydro	5,282	10,955	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101	14,101
Large Hydro	309,901	302,587	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244	452,244
Biomass	316,835	268,234	122,284	297,370	519,531	508,267	508,267	513,819	526,516	526,516	526,516	526,516	526,516	526,516	526,516
VCHEC Co-Fire ¹	0	0	0	157,525	161,566	181,316	212,270	244,894	259,025	210,148	331,615	336,058	336,058	336,058	336,058
Biomass Conversions New Build	0	0	0	214,723	357,540	559,032	595,131	594,558	559,272	1,002,404	698,954	995,654	995,654	995,654	995,654
Solar New Build	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gasless Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NUCS	618,538	610,614	419,533	432,844	297,558	158,449	158,016	158,016	158,016	158,449	158,449	158,016	158,016	158,016	158,016
Total	1,581,054	1,222,281	1,598,050	2,450,813	2,484,681	2,330,198	2,351,313	2,428,292	2,416,283	2,532,693	2,656,231	2,722,582	2,678,482	2,514,071	2,391,722
Total Renewable Resources (MWh)	2,692,785	1,228,268	1,598,050	2,450,813	2,484,681	2,330,198	2,351,313	2,428,292	2,416,283	2,532,693	2,656,231	2,722,582	2,678,482	2,514,071	2,391,722
VA Bank, Balance Reporting of Year	1,922,865	2,272,524	1,799,145	1,634,499	2,252,117	1,014,134	2,362,245	1,711,254	1,055,241	513,219	20,808	0	0	0	0
Target (MWh)	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745	1,722,745
Net Position (MWh)	2,272,524	1,722,524	1,598,050	2,252,117	2,252,117	2,330,295	1,711,254	1,055,241	513,219	20,808	0	0	0	0	0

NOTES: 1. Based on Dominion forecast used for the 2012 VA RFP and (2012-2011) Virginia Jurisdictional Forecast of DOW (MWh of 80,524).
 2. 2011 a column and 2012 column include through 12/31/2012 and production management year-end.
 3. VA City Hydro (VCHH) target for 2013 to 2015, remaining 1% of year beginning April 1, 2016 and remaining 10% by April 1, 2017 and beyond.
 4. Solar generation and Contract's Wind project capacity as shown by Dominion, however, this energy is captured in the target, it is not shown in our cost.
 5. Total Renewable Resources includes Company and other MWh generated internally through the RFP process and RFP Contract.

EXHIBIT 2
DOMINION VIRGINIA POWER
RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM
2011 SUMMARY

TOTAL ELECTRIC ENERGY SOLD IN THE BASE YEAR (MWh)	
Total Electric Energy Sold to Virginia Jurisdictional Retail Customers in 2007	64,621,534
Less Three-year Average Percentages (2004-2006) Nuclear Generation	<u>21,302,885</u>
Total Electric Energy Sold in the Base Year	<u>43,318,649</u>

RENEWABLE ENERGY PORTFOLIO STANDARD GOALS	
	2011
Percent	<u>4%</u>
Goal (MWh)	<u>1,732,746</u>

Company RPS Generation Resources (MWh)	Total Energy Generated during 2011	VA Jurisdictional Energy Generated during 2011⁽¹⁾
Company Owned		
Hydro		
Cushaw	4,766	3,857
North Anna	1,885	1,525
Gaston	198,080	160,326
Roanoke Rapids	184,797	149,575
Subtotal Hydro	<u>389,528</u>	<u>315,283</u>
Biomass		
Pittsylvania	391,435	316,829
Subtotal Biomass	<u>391,435</u>	<u>316,829</u>
Total Company Owned	<u>780,963</u>	<u>632,112</u>
NUGS⁽²⁾	<u>801,749</u>	<u>648,939</u>
TOTAL Renewable Energy Generated During 2011	<u>1,582,712</u>	<u>1,281,051</u>
Total Company Generated Renewable Energy as a % of goal		<u>74%</u>

Less Company Generated Renewable Energy Credits Optimized	<u>(320,686)</u>
Total Renewable Energy Available for 2011 Compliance	<u>960,365</u>
REC Purchases	<u>2,429,208</u>
2010 NUG Renewable Energy and RECs Banked	<u>618,697</u>
Total Renewable Energy and RECs Available for 2011 Compliance	<u>4,008,270</u>
Less Renewable Energy and RECs Banked for Future RPS Application	<u>(2,272,524)</u>
Renewable Energy and RECs Applied for Compliance⁽³⁾	<u>1,735,746</u>

Notes: (1) Based on VA jurisdictional allocation of 80.9405%. (2) NUG RECs are banked for future use.
(3) The Company retired a total of 1,735,746 for RPS Compliance. Because Goal II is a multi-year average, the Company may apply this coverage of 3,000 RECs in future years.

EXHIBIT 3
DOMINION VIRGINIA POWER
RENEWABLE ENERGY PORTFOLIO STANDARD PROGRAM
2012 SUMMARY

TOTAL ELECTRIC ENERGY SOLD IN THE BASE YEAR (MWh)	
Total Electric Energy Sold to Virginia Jurisdictional Retail Customers in 2007	64,621,534
Less Three-year Average Percentages (2004-2006) Nuclear Generation	<u>21,302,885</u>
Total Electric Energy Sold in the Base Year	<u>43,318,649</u>

RENEWABLE ENERGY PORTFOLIO STANDARD GOALS

Percent	2012
Goal (MWh)	4% <u>1,732,746</u>

<u>Generation Resources (MWh)</u>	<u>Actual through September 30, 2012</u>	<u>Projected through Balance of Year</u>	<u>Estimated Total 2012⁽¹⁾</u>
COMPANY-OWNED			
Hydro			
Cushaw	6,674	1,993	8,666
North Anna	1,803	387	2,190
Gaston	121,657	55,020	177,677
Roanoke Rapids	118,949	55,961	174,910
Subtotal Hydro	<u>249,082</u>	<u>114,361</u>	<u>363,443</u>
Biomass			
Pittsylvania	213,644	44,680	258,324
Subtotal Biomass	<u>213,644</u>	<u>44,680</u>	<u>258,324</u>
Sub-total COMPANY-OWNED	<u>462,727</u>	<u>159,041</u>	<u>621,767</u>
NUG Renewable Energy	479,960	130,654	610,614
TOTAL	942,686	289,695	1,232,381
Company-Owned Renewables	462,727	159,041	621,767
less REC-Optimized Resources	<u>301,021</u>	<u>1,993</u>	<u>303,014</u>
Net Company-Owned	<u>161,706</u>	<u>157,048</u>	<u>318,753</u>
REC Purchases	300,000	0	300,000
NUG Renewable Energy	479,960	130,654	610,614
TOTAL 2012 Renewable Resources	941,665	287,702	1,229,367
2011 Bank Carried Forward			<u>2,272,524</u>
Renewable Resources to be Retired (per Target)			1,732,746

Company's Estimated Net Renewable Position for 2012 Year-End **1,769,145**

Notes: (1) Based on projected VA jurisdictional allocation of 80.94%.

