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STATE CORPORATION COMMISSION

September 29, 2014

The Honorable Terence R. McAuliffe
Governor, Commonwealth of Virginia

The Honorable John C. Watkins
Chairman, Senate Committee on Commerce and Labor

The Honorable Terry G. Kilgore
Chairman, House Committee on Commerce and Labor

Gentlemen:

Chapter 771 of the 2011 Virginia Acts of Assembly directs the State Corporation Commission ("Commission") to provide annual reports on any solar energy distributed generation programs approved pursuant to that legislation. Under this legislation, the Commission has received and approved: (i) one application to construct and operate distributed solar generation facilities; and (ii) one application for special tariffs to facilitate customer-owned distributed solar generation as an alternative to net metering.

The Commission is pleased to transmit the attached report regarding such applications. As always, we will provide additional information or assistance upon request.

Respectfully submitted,

Judith Williams Jagdmann, Chair

James C. Dimitri, Commissioner

Mark C. Christie, Commissioner

Attachment

EXECUTIVE SUMMARY

Chapter 771 of the 2011 Virginia Acts of Assembly ("Chapter 771") directs the State Corporation Commission ("Commission") to consider for approval petitions filed by a utility to construct and operate distributed solar generation facilities and to offer special tariffs to facilitate customer-owned distributed solar generation. Pursuant to Chapter 771, the Commission has received and approved two such applications, both filed by Virginia Electric and Power Company d/b/a Dominion Virginia Power ("DVP"). These are:

(i) An application to construct and operate distributed solar generation facilities (called the Solar Partnership Program); and

(ii) An application for approval of tariffs designed to facilitate customer-owned distributed solar generation as an alternative to net metering (called the Solar Purchase Program).

The Solar Partnership Program has two participants, Old Dominion University in Harrisonburg, Virginia, and Canon Environmental Services in Gloucester, Virginia. Four additional projects are under construction and another twelve sites are in active development. DVP projects that the initial cap on program expenditures will be reached by the end of 2015, and potential projects for 2016 are subject to additional funding.

In addition to site development, the Solar Partnership Program also includes an educational program that eventually will enable local personnel to provide secondary and post-secondary instruction on solar powered systems. DVP also is using this program to gather information that should enable DVP to refine its electrical distribution planning model and to forecast future solar generation impacts on certain areas of DVP's circuitry and distribution system.

The Solar Purchase Program began June 20, 2013. Under this program, customers install and own solar distributed generation systems and sell that power back to DVP along with

associated renewable energy certificates ("RECs"). DVP reached the non-residential limit for this program within the first 25 days, and residential interest also was high. However, DVP has experienced a slower adoption and installation period than originally anticipated. As of June 30, 2014, 52 projects had been completed, with another 35 projects under construction. DVP is considering additional measures to spread program awareness to fulfill remaining available capacity in this program.

LEGISLATION

Chapter 771 of the 2011 Virginia Acts of Assembly ("Chapter 771") directs the State Corporation Commission ("Commission") to consider for approval petitions filed by a utility to construct and operate distributed solar generation facilities and to offer special tariffs to facilitate customer-owned distributed solar generation. Pursuant to Chapter 771, the Commission has received and approved two such applications, both filed by DVP. These are:

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PROGRAMS

Solar Partnership Program

The Commission approved the Solar Partnership Program on November 28, 2012.[1] This program is designed to study the impacts and assess the benefits of distributed solar photovoltaic ("PV") generation on DVP's electric distribution grid.

Under this program, DVP conducts two types of projects. The first type is for smaller projects of less than 500 kilowatts ("kW") located on public or community buildings. These projects are designed to provide opportunities for customer outreach, facilitate education relative to solar technologies, and provide generation load profile data in specific locations across DVP's service territory. The second type of project is designed for larger sites that can accommodate solar distributed generation ("DG") facilities of greater than 500 kW on targeted DVP circuits.

[1] *Application of Virginia Electric and Power Company For approval of a Community Solar Power Program and for certification of proposed distributed solar generation facilities pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly and §§ 56-46.1 and 56-580 D of the Code of Virginia,* Case No. PUE-2011-00117, 2012 S.C.C. Ann. Rept. 328-33, Order (Nov. 28, 2012).

According to DVP, all prospective project sites undergo a rigorous selection process, including thorough engineering analyses, and are subject to mutually agreeable lease terms with property owners.

From more than 300 customer inquiries and applications, DVP selected nearly 20 qualifying commercial, industrial and university customers with suitable facilities in select target areas for the installation of the solar projects for demonstration and study purposes. DVP's first two projects are in service, and initial study objective data is being analyzed to develop better planning models and a more robust grid protection plan for interconnection of renewable generators. One of these participants also hopes to include at a later time, electrical storage of solar electricity as part of its project as such technology further develops.

Old Dominion University ("ODU") was the first participant for the Solar Partnership Program and the first of the smaller host demonstration projects. Completed this past summer, this project resulted in the installation of more than 600 solar panels on the roof of ODU's Student Recreation Center, generating up to 125 kW alternating current ("AC"), or 150 kW direct current ("DC"), for the electric grid. Three other smaller host study sites, not yet publically announced,[2] are in various stages of development to be completed by the end of the year.

Canon Environmental Services manufacturing facility in Gloucester, Virginia, was the second participant for the Solar Partnership Program and the first of the larger host demonstration projects. This roof-mounted project involved over 2,000 solar panels that will generate up to 500 kW AC (521 kW DC). Another large project is under construction to install a

[2] On September 15, 2014, DVP announced that 2,500 solar panels will be installed at the Capital One Financial Corp. facility in Chesterfield, Virginia, to generate up to 500 kW of electricity later this year.

736 kW AC (860 kW DC) solar generator on the roof of the Prologis, Inc., commercial office and warehouse facility in Sterling, Virginia.

To date, four additional projects are under construction and another twelve sites are in active development including host site participant lease negotiations and site engineering activities. DVP is hoping to secure about 6 megawatts ("MW") DC by the end of 2014 and another 9 MW DC by the end of 2015, fulfilling the initial cap on program expenditures. Potential 2016 projects to install the remainder of the 30 MW DC target are subject to additional funding.

Technical feasibility specifications also were developed by DVP along with solar consultants and contractors regarding roof structural analysis, roof surface condition, a building's age and condition, an energy evaluation of the potential solar system, an environmental review of the potential site using parameters within DEQ's solar "Permit by Rule" regulations, and a preliminary interconnection study. Of the current sites secured to develop projects, only two are ground-mount solar system locations; the others are roof-mount systems.

DVP also has entered into master service agreements ("MSA") with a select group of qualified contractors for the construction and operation of the solar DG projects; contracts will be awarded by competitive bid from these contractors. This enables DVP to maintain consistent warranties and operation plans once the generators are placed in service.

In addition to site development, DVP is establishing an educational program to coincide with the installation of solar arrays on academic facilities. This program is designed to train local faculty and staff on the operation of solar powered systems in order to enable secondary and post-secondary school level instruction. The education plan also will provide detailed information on the specifics of the on-site system and key considerations used during the design

process. General customer information is available on DVP's website regarding the projects and a more detailed web-based display of real-time operation is available to the participants and DVP using a common software vendor platform for solar system monitoring and data collection. Such software allows DVP to manage its distributed generation solar system through a common web hosting platform to provide daily performance results including indices such as PV output, weather station results, solar irradiance and solar system availability at each site. This information will enable DVP to refine its electrical distribution planning model and to forecast future solar generation impacts at the system level for the study objective circuits – *i.e.*, the heavily loaded, lightly loaded, and conservation voltage reduction ("CVR") circuits.

Using the sites selected on targeted circuits will enable DVP to evaluate the effects of solar DG on circuit loading, the peak demand reduction to its distribution system, and to develop a solar DG load model to incorporate into its distribution planning process. DVP plans to quantify any reduction in line losses from solar DG at various points along the distribution system and to study the operational impact of high saturation solar DG on a single circuit and the potential for solar DG to improve CVR circuit performance.

Solar Purchase Program

On March 22, 2013, the Commission approved DVP's application to implement the Solar Purchase Program, subject to certain requirements.[3] Pursuant to this tariff, DVP will purchase up to 3 MW of energy output from customer-owned solar DG installations as an alternative to net energy metering. The 3 MW limit is divided into two categories with 60% (1.8 MW) allocated to residential participants and the remaining 40% (1.2 MW) allocated to non-residential

[3] *Petition of Virginia Electric and Power Company, For approval of a special tariff to facilitate customer-owned distributed solar generation pursuant to Chapter 771 of the 2011 Virginia Acts of Assembly*, Case No. PUE-2012-00064, Doc. Con. Cen. No. 130330138, Order (Mar. 22, 2013).

participants. DVP designed this program as an alternative to net energy metering and also as a means to help participants overcome the high cost of installing solar generation.

DVP launched the Solar Purchase Program on June 20, 2013. Positive customer response resulted in DVP reaching the non-residential limit in terms of program reservations within 25 days as well as a substantial portion of the residential limit. Such early and overwhelming interest created certain issues with customers reserving space but then not submitting required documentation and following through with actual participation. As a result, DVP implemented a 60-day deadline for submitting proper paperwork after reserving space to continue to the next phase of actual installation. This prevents customers who decide not to continue with participation from holding space that could be used by another interested customer.

As of June 30, 2014, 52 projects have been completed under the Solar Purchase Program for a combined capacity of 530.34 kW, indicating a slower adoption and installation time period than originally anticipated. An additional 35 projects totaling 540.31 kW are currently under construction. Approximately 1,100 kW of additional capacity is currently reserved by interested customers. As of June 30, 2014, about 640 kW of capacity was available for residential customers and about 175 kW in available capacity for non-residential customers. DVP is considering additional marketing and methods to spread program awareness to fulfill the remaining available capacity.

CONCLUSION

On August 29, 2014, Dominion Virginia Power submitted its first full annual report on the Solar Partnership Program and the Solar Purchase Program to the Commission Staff. DVP's report provides a more detailed review of program implementation, customer interest, and the selection and development of project sites. It also includes initial operating information, a data

collection plan to support the study objectives, and other information about installation costs as requested by the Commission. This report is available through the Commission's website, www.scc.virginia.gov/case, and searching for either Case No. PUE-2011-00117 or PUE-2012-00064.

Although DVP has several projects in operation and is currently collecting and evaluating information, data regarding energy and peak output data and the cost/benefit analysis will be more meaningful after each facility has been in operation for at least a full year. A more comprehensive analysis will be available in DVP's next annual report on or about September 1, 2015.

The Commission will continue to monitor DVP's demonstration programs and plans to provide its next annual report by October 1, 2015.